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INDUSTRIAL DEVELOPMENT IN CIS COUNTRIES: ARE THERE CONDITIONS FOR RE-INDUSTRIALIZATION CAPACITY BUILDING?

Analytical Report

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Acknowledgments

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Introduction

To help countries achieve their full industrialization potential and fulfil the sustainable development goals (SDGs) and thereby improve their general welfare, UNIDO is promoting the concept of comprehensive and sustainable industrial development (ISID), which was established in the Lima Declaration adopted by UNIDO Member States on 2 December 2013. The UN General Assembly recognizes the significance of ISID as an important strategic direction for fostering global development in the future. ISID is a key instrument for achieving sustainable economic growth, the creation of quality jobs, the building of equal societies, the protection of the environment, and the active shaping of comprehensive sustainable globalization. The promotion of ISID as the key driver for successful integration of economic, social and environmental factors necessary to achieve full implementation of sustainable development by creating and improving countries' industrial potential is the main priority of UNIDO's current activities. To successfully implement ISID, UNIDO acts as a global forum for industrial development and the establishment of relevant international standards, including standards on industrial statistics [UNIDO, 2014; 2013a].

Accordingly, UNIDO has been implementing the regional project "Improvement of industrial statistics and development of statistical indicators for the analysis of industrial development in the CIS countries" since 2013. The project's main objective is to provide methodological assistance to the Commonwealth of Independent States' (CIS) national statistical services in implementing international standards on industrial statistics in the statistical practice and presentation of modern, internationally comparable information for a qualitative and reliable reflection of industrial development processes.

This report presents the results of the statistical analysis describing the availability, quality and measurement capabilities of official statistics in the CIS countries accumulated over the period 2005-2014.

The analysis of the scope of development and the trends of the manufacturing sector in the CIS countries evaluates the efficiency of the integration processes, the quality of industrial policy and increases in competitiveness in the economic area of the CIS. The relevance of this research is reflected by the fact that any country, including a loose geographic confederation of states such as the CIS, should have the capacity to carry out all relevant international comparisons, measure the country's level of development and the dynamics of the national industry indicators relative to the comparable and official data, both of cross-border and of strategically important states.

Profound technological changes that affect all forms of economic activity and the rapid emergence of new determinants of competitive advantage foster the renewal of each country's industrial context, regardless of its level of income and development. A country's economy

should be able to fully participate in the global international flows of products and gain maximum output from all factors of aggregate productivity. It then becomes possible to realize the full production potential of recent technologies. To benefit from such global chains, the country needs to sustainably integrate not only factors of competitiveness, such as natural resources and the workforce, but also develop the necessary technological and organizational skills, introduce fast and cheap communication technologies, enhance the available infrastructure, provide training programmes in the latest developments and introduce effective investment promotion strategies [UNIDO, 2015a; UNO, 2015].

Sustainable long-term trends in the dynamics of cross-border interactions between countries, especially in the context of the development of competitive industrial activities, play an important role in national economic monitoring. The implementation of integration measures and cooperation in innovative industries can have a strong multiplier effect on other spheres of the economy in CIS member states [UNO, 2015; Eurasian Development Bank, 2015a, 2015b]. Industries that substitute imported products from third countries with products of a comparable quality from more powerful or more specialized members of the confederation can gain new momentum [Eurasian Development Bank, 2014].

For the national industrial policy to be successful, it should primarily aim at expanding the industries with high value added and build-up factor productivity, which largely depends on the extent of structural change in the country's economy, its ability to create new and fast-growing types of activity and the introduction of innovations. The need to create a detailed "gap analysis" of the technological competencies in as many types of industrial activities, processes and functions as possible in order to achieve the necessary coordination between national and international actors, becomes more obvious.

To implement the relevant industrial policy, the magnitude and capacity of the national industry must first be determined, its position in the global and regional economic area, the extent to which the country is capable of producing and exporting competitive industrial products and its industrial and export potential compared to equal or reference states.

The key questions addressed in this analytical report are as follows: should countries pursue well-resourced growth or the innovative development of manufacturing industries? Should the production space be phased down or the reindustrialization processes accelerated? Should the borders be loosened or reinforced? This study examines whether all possibilities in the development of the national economies in the CIS region were realized in the decade since 2005 to build up the competitive potential through reindustrialization.

The 2005 to 2014 period is analysed to determine the CIS countries' and Russia's economic development and covers a full business cycle from the beginning of a deep recession in 2008-2009 to the beginning of a second one (2014). The study examines the manufacturing sector in

Russia (RU) and the CIS member states Azerbaijan (AZ), Armenia (AM), Belarus (BY), Kazakhstan (KZ), Kyrgyzstan (KG), Moldova (MD), Tajikistan (TJ) and Ukraine (UA).

1. General methodological framework: method, analytical approach and data sources

This report is a composite module of UNIDO's regional project "Improvement of industrial statistics and development of statistical indicators for the analysis of industry in the CIS countries". The report evaluates the efficiency of the countries' national industrial policies which are based on the selection and systematization of official, accessible and comparable statistical data and a unified system of indicators, assessments, graphical visualizations and exclusive analytical systems and which can be used to carry out cross-country comparisons.

The relative efficiency of a country's industrial policy is determined on the basis of preliminary joint assessments of the reindustrialization processes in countries that share cross-border socioeconomic interests. All measures taken, the estimates obtained and the visualization of the results are available to all managerial users as well as decision makers.

The proposed approach is used for the first time for joint assessments of economic and industrial development trajectories in the CIS region for the period 2005-2014. It is based on the toolkit "EQuIP - Enhancing the Quality of Industrial Policies" developed by the German Development Cooperation and the German Federal Enterprise for International Cooperation within the framework of joint activities with UNIDO on the development of assessments of inclusive economic growth and the index of industrial competitiveness [UNIDO and GIZ, 2015], and has already been successfully applied to the analysis of reindustrialization processes in a number of countries [UNIDO, 2015a; Government of Nepal and UNIDO, 2014; Government of URT and UNIDO, 2012].

The applied diagnostic procedure consists of an extended sequence of stages that allow obtaining an aggregate picture of the growth dynamics and structure of national economies, position and scale of the industrial sector, intensity of and changes as a result of the influence of industrialization on the development of each CIS member state on the basis of official, accessible and methodologically comparable data submitted to the international databases by the countries' national statistical services.

One important stage in this assessment process is determining successful periods of industrialization, not only for each individual country, but also for the group of countries as a whole. Such periods are characterized by sustainable growth over a long period of time.

The following factors were consistently assessed for the CIS region: the level of potential and short-term output gaps; the convergence of the cycles of economic growth; the structure of the aggregate value added; the level of industrialization and sectoral distributions; structural changes in the overall economic and industrial development; the ability to produce and export

the main industrial products; the production and export potential; the significance and influence of the manufacturing sector on total gross value added (GVA) in the region; the relationship between the growth and influence of GVA and exports from the manufacturing sector; generalizing the comparative assessment of the efficiency of the manufacturing industry as a whole and by industry for integration; the level of technological modernization and diversification; structure and changes in the dynamics of employment in the manufacturing sector, the extent of industry greening; and the effects of trade alliances in the region.

A bilateral procedure was also used to monitor structural changes. First, following "positive economic theory", the shares of all economic sectors of the economy to the GDP of all Commonwealth countries at given reference times are analysed. By averaging such data, a general model of structural change can be obtained without taking the homogeneity of the observed economies into account. Further, ongoing changes in sectoral shares in each country's GDP are analysed depending on the size of population and the level of national per capita income. At the second stage of monitoring, the relationship between economic growth and structural change in the countries analysed should be evaluated; shares of the manufacturing sector's valued added in the GDP of the countries are determined for the period under consideration. Such analysis is based on the so-called "normative economic theory" and allows evaluation of ongoing structural changes in various types of industrial activity – the main driver of sustainable economic growth in the CIS region [UNO, 2006].

The study's common methodological features are:

- preferential use of sound statistical data published by official bodies of all countries analysed, comparable and regularly published by the recognized international body (or several bodies);
- use of legitimate international data sources only and classifications for cross-country comparisons that allow obtaining of relevant estimates of heterogeneous samples;
- combining macro and industrial developments to obtain estimates of the aspired trends and activity levels up to a two-digit national classification code compatible with the International Standard Industrial Classification of All Economic Activities (ISIC).

In addition to empirical groupings of countries obtained as a result of the assessments, the normative classification of countries is applied in terms of gross national per capita income recommended by the World Bank [WB, 2012]. According to this classification, the following groups of countries are identified in the Commonwealth region:

- with an above average income level (USD 12,475-4,036): Azerbaijan, Belarus, Kazakhstan, Russian Federation, Turkmenistan;
- with an average income level (USD 4,035-1,026): Armenia, Moldova, Ukraine, Uzbekistan;
- with a low income level (USD 1,025 and below.): Kyrgyzstan, Tajikistan [WB, 2012].

The analytical methods used are a combination of the following basic methods of

analytical research: economic diagnostics; graphical methods for quantitative data; statistical analysis (structural and dynamic) and decomposition of macro and industrial development, in particular cross-correlation analysis, statistical filtration (Hodrick-Prescott method) and the production function. To process the range of statistical data, mathematical statistical methods are applied, including Statistica and EViews application packages.

The UNIDO Statistics Data Portal, Rosstat UniSIS (Unified Interdepartmental Statistical Information System) database, data from the CIS Statistical Committee "CIS Statistics", the database of the United Nations Conference on Trade and Development (UNCTADstat) are used as sources of statistical data to assess the development of the manufacturing sector in the CIS over a ten-year period. The range of data used contain information on the main indicators of economic development of countries in the CIS region, including those of up to 24 types of manufacturing activities at the two-digit ISIC level for the period 2005 to 2014. Individual exported products (255 in total) from the UNCTADstat database were combined in the report into activities by analogy to the production classification.

Selected industries are typical representatives of all industry groups with different technological content. The most important ones in the Commonwealth region are raw materials processing, low-tech, medium- and high-tech manufacturing, characterized by different levels of technology, capital intensity and labour intensity.

The report uses time series of basic statistical indicators for Russia and the CIS countries, which are necessary to assess the efficiency of industrial strategies, in particular:

- the gross domestic product (GDP) of countries in current and constant prices, USD million (at the current exchange rate of national currencies);
- the gross value added (GVA) of countries in current and constant prices (total and by main type of economic activity), USD million (at the current exchange rate of national currencies);
- the exports and imports of countries (total and by main type of industrial activity) in current prices, USD million;
- industrial production index (for Russia), in percentage;
- investments in fixed assets by main type of economic activity (for Russia), million roubles;
- the number of employees by main type of economic activity, thousand persons;
- labour productivity index by main economic activity (for Russia), in percentage;
- level of unemployment (for Russia), in percentage;
- the number of working-age population, thousand persons, etc.

Based on the information derived, relevant indicators are calculated for each country in the region, in particular:

- the potential level and short-term gaps in the development of QIN GDP;
- the long-term stable cycles and short-term cycles of economic and industrial growth;
- the share of GVA of the main types of economic activity in GDP, in percentage;
- the value added of industry per capita (by type of industrial activity); in current and constant prices, USD;
- the share of value added of each country's industry in the regional (CIS) industrial GVA (by type of industrial activity), in percentage;
- the share of manufactured goods exports in the total exports of the country (by type of industrial activity), in percentage;
- exports of industrial goods per capita (by type of industrial activity); in current and constant prices, USD;
- the share of industrial exports of each country in regional (CIS) industrial exports (by type of industrial activity), in percentage;
- the compound annual growth rate, in percentage;
- the growth rates (current quarter versus the corresponding quarter of the previous year), in percentage;
- absolute changes (year to year), in percentage;
- the coefficients of absolute and relative structural change;
- integral coefficients of structural change, etc.

The following main data sources and methodological support were selected:

- Unified Interdepartmental Statistical Information System of Rosstat (UniSIS)[1];
- database "CIS Statistics" of the CIS Statistical Committee[2];
- database of the United Nations Conference on Trade and Development UNCTADstat[3];
- UNIDO Statistics Data Portal[4]
- UNIDO project "EQuIP - Enhancing the Quality of Industrial Policies" [UNIDO, GIZ, 2015];
- International recommendations on industrial statistics 2008 [UNO, 2010];
- Industrial statistics: Guidelines and methodology [UNIDO, 2010];
- UNIDO report "The Role of Technology and Innovation in Inclusive and Sustainable Industrial Development" [UNIDO, 2015a].

To carry out all necessary measurements, annual statistical information on the CIS countries for the period 2005-2014 was reduced to a single comparable currency – USD in accordance with the average annual exchange rate of national currencies.

[1] http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/databases/emiss/.
[2] http://www.cisstat.com/0base/index.htm.
[3] http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx.
[4] http://stat.unido.org/.

2. Main trends of cross-border development in the industrial and economic area of the CIS

2.1. Specific features of modern economic development in Russia

Since 2014, the Russian economy has been in recession. Russia had to transform its economic regime by replacing its depleted 15-year economy of "rapid consumption growth" with a "supply" model and basic expansion strategy. Reindustrialization processes that could reduce the country's dependence on well-resourced growth need to be developed to expand the gross value added of innovative quality.

A gradual slowdown in economic growth recorded since 2012 led to protracted stagnation, primarily in the real economy, with industries reaching the limits of their potential. Internal vulnerability rose and no relevant structural changes, especially in the manufacturing sector, were recoded, which would have helped overcome the inefficient distribution of production factors, the presence of non-competitive markets, the limitations of innovations, corruption and the strong and long-term dependence on conditions of the global commodity markets.

In the second half of 2014, the following factors contributed to the deepening of the recession and the economic mood slump: increased geopolitical tensions, escalation of external political risks and shocks, significant restriction of access to international financial markets for banks and non-financial organizations, sanctions on exports of high-tech goods, primarily from the energy sector. There was a general decline in investments and a transfer of innovative technologies, which hampered the successful implementation of the import substitution policy.

By the end of 2014, at the same time when global prices in the commodity markets began falling, when the exchange and stock markets experienced a protracted period of high volatility and as a result of the absence of compensatory economic measures for these developments, the first marked depreciation of the national currency was observed and the inflationary pressure intensified.

In early 2015, a decline in the real income of the population was recorded. At the same time, the debt load accumulated due to the deferred effect of large-scale consumer lending in previous years, which accelerated the reduction of the cushion of liquid assets in the banking sector. Consumption finally ceased to be the driving force of economic growth and economic prospects were becoming less predictable. The emerging crisis of confidence in investments and production decisions became noticeably more acute.

Throughout 2015, certain measures were taken to stabilize the economy and consumer confidence. A number of successful counter-cyclical responses prevented a further escalation of

the economic crisis, of mass impoverishment and the marked deterioration of the population's quality of life. Enterprises gradually began adapting to the rapidly changing business environment. The successful measures included in particular: transition to a floating exchange rate, the expansion of currency liquidity, softening of regulations and the introduction of the capital support programme, fiscal stimulus, promotion of buffer stock schemes and the reduction of energy subsidies. At the same time, a restriction of wage indexation was introduced and the level of insured deposits of private investors was doubled. This contributed to a temporary preservation of social transfers and continuation of the pension reform.

The most significant factors hampering the further development of systemic crisis response were the considerable buffer stocks that had accumulated in the Reserve Fund since 2010, the possibility of limiting the rise of budget expenditures in line with inflation, a low volume of public debt (10 per cent to 15 per cent of GDP) and the maintenance of the surplus of current trading operations.

The prospects for successful economic transformation are not yet visible. The capital needed to implement the investment decisions is dependent on the political cycle in Russia. Social expenses cannot be squeezed further. The limitation of the combination of factors that can drive oil demand has resulted in growing economic uncertainty, which in turn increases the pressure on the country' s balance of payments, constrains the possibilities of using fiscal policy to stimulate the economy and ensure demand. However, inefficient budget expenditures with a low multiplying effect on the economy are increasing. At the same time, the presence of strong administrative and structural barriers, more expensive borrowing, uncertainty regarding the duration of sanctions and the transfer of the devaluation of the rouble onto the prices did not contribute to an increase in demand and investments. Consequently, a lag in the growth dynamics of the value added tax revenue increasingly disrupted the government balance sheet and the possibilities of establishing anti-crisis regulations. Since mid-2016, the consolidation efforts of economic agents and regulators have helped adapt the national economy to the secondary impacts from shocks, other factors and internal vulnerability. This has significantly limited the depth of the economic recession and the degree of uncertainty in the country in comparison to previous years.

2.2. Assessment of the development of macroeconomic growth in Russia

Let us consider the specific features of the development of the total value of Russia's GDP for 2005-2015 in terms of neo-Keynesian economic theory. It is assumed that an unobservable component of GDP dynamics, such as long-term potential, corresponds to stable price levels, and that the short-term potential of real development reflects price and income adaptation to shocks [Dornbush and Fisher, 1994; Blanchard, 2000; Mankiw, 2009; Sacks and Larrain, 1993; Mankiw and Romer, 1991; Abel et al, 2008].

The rate at which an economy is able to increase the volume of goods and services produced without increasing inflation, in other words, the rate at which it can ensure a long-term potential growth in output, determines whether the economy is a "high-speed economy" [IMF, 2015]. Such high-speed development primarily depends on changes in the main factors of production and the level of productivity of their use. To ensure economic growth in the mid- and long-term, stable expansion of the supply of production factors is necessary. However, Russia's structural policy and the cyclical phase of the growth of macro-variables did not contribute to the increase in total factor productivity (TFP). The return on productive capital, education and innovation should be considerable continuously for the growth rate to realize its actual potential. The current 'high-speed economy' will most likely continue to exist in the future in Russia's low value economy. A similar situation is characteristic to a certain extent for all emerging market economies and the CIS region. Special political measures are required to promote the growth of capital, neutralize the aging of the population and to stimulate innovations.

The estimates of potential growth and gaps to actual growth should be taken into account in political decision making on macroeconomic stabilization [IMF, 2014]. The appropriateness of specific regulatory measures, such as consolidation or stimulation to ease fluctuations in macroeconomic development, depends on whether the economic aggregate is growing above or below its potential level.

The main challenge in terms of growth measurement is whether the economy's potential is being correctly observed. A fairly wide range of tools can be used, each with its own degree of reliability and accuracy. Many economic factors as well as the peculiarities of statistical observation and recording in different countries further complicate the problem of decomposition of the dynamics of total value of GDP. Strong exogenous fluctuations may arise, for example, due to the influence of exchange commodity prices and gaps of a cyclical and structural nature that can lead to significant and abrupt changes in the intensity of macroeconomic growth. Nevertheless, these factors do not constitute the basis of potential growth. To a large extent, the measurement of economic growth is hampered by changes in classifications, revisions and adjustments of data, data gaps and incompleteness of the dynamics of statistical indicators at constant prices at time intervals necessary for applying mathematical statistics.

Measurement of potential level of GDP

To calculate the potential level of GDP, the OECD algorithm was used based on the concept of a production function with the Cobb-Douglas specification [De Masi, 1997; Giorno et al, 1995]. The basis of the methodology is the lag-linear equation of gross value added (GVA), labour input, capital and total factor productivity (TFP):

$\ln Y_t = \ln E_t + \alpha \ln(K_t) + (1-\alpha)\ln(L_t)\ln Y_t = \ln E_t + \alpha \ln(K_t) + (1-\alpha)\ln(L_t)$, or

$y_t = e_t + \alpha B_t + (1-\alpha)n_t y_t = e_t + \alpha B_t + (1-\alpha)n_t$, where:

Y is the GVA of the business sector,

K, denotes the capital and labour in the business sector,

E, TFP,

α=0,3, is the parameter of the average value of the share of capital expenditures;

correspondingly, (1-α) – 0.7 signifies the parameter of the average value of the share of labour input.

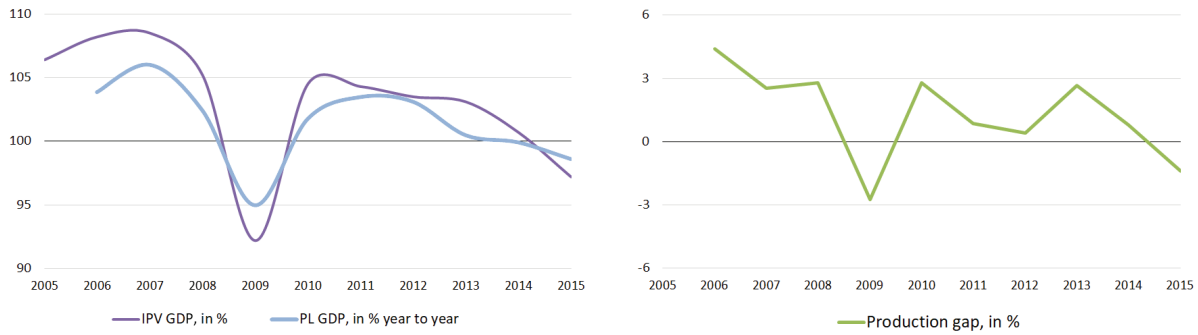
According to the algorithm, TFP is smoothed at coefficients α and (1-α), using the Hodrick-Prescott statistical filter to obtain the desired trend or the "potential" factor productivity. These values are again substituted into the production function along with the actual values of investments in fixed assets and the estimated "potential" unemployment rate (based on the NAIRU unemployment rate). Further, from the production function, the logarithm of the output of the business sector is determined, which, according to the proposed concept, is considered the potential output. The potential output, which is the aggregate for the entire economy, is obtained by adding the current value added of the state administration to the obtained values of the potential output in the business sector.

According to the OECD methodology, the potential output of the state administration is considered equal to the current value added of that sector. It is believed that by using this sequence and the production function method, the estimates of the potential level of GDP are cleared of cyclical fluctuations, since the GDP decomposition is specifically aimed at distinguishing the contribution of production factors to the rates of economic growth. In this case, the production gap represents the ratio of the actual GDP and its potential level.

In this study, the values of the potential level of GDP in the dynamics of the total values of GDP were made dependent on the following economic variables: gross value added (at constant prices) in all types of economic activity except for the public sector; gross fixed capital formation (at constant prices) excluding government expenditure; average annual number of persons employed in all types of economic activity, excluding civil servants; index of labour productivity by types of economic activity; unemployment rate for all entities of the RF at the end of the year; average annual number of persons employed in the economy by types of activity.

Empirical estimates of the potential level of GDP are presented in Figure 1, reflecting the total values of aggregate output at which no downward or upward pressure on the production costs is created in the economy and hence on inflation, and is given in percentage for a year-to-year comparison using the development of QIN GDP.

Figure 1 – Economic growth, potential level and short-term output gaps (empirical estimates)



Note: QIN – quantity index number, PL – potential level

Source: Rosstat, authors' calculations, production function method (Cobb-Douglas), OECD algorithm, IMF recommendations.

Negative output gaps point to the underutilization of capital and of the labour force, which predetermines the need to mitigate macroeconomic impacts. At the same time, positive gaps, especially during periods of overheating of the economy, allow to tighten the monetary policy. Calculations of these dynamic components for Russia are complicated by the presence of a number of noise effects: the high dependence on oil, the significant sectoral and territorial heterogeneity and the dominant role of the energy sector in the exports market [IMF, 2014].

According to the calculation results, positive values of the output gap recorded in recent years, defined in the theory as an indicator of inflationary pressure, reflect the increasing real excess of the target values by inflation, significantly limiting the possibilities of monetary policy and determining the need for its tightening. When moving to the negative area of production gap values, there is a need to mitigate the macroeconomic impact. Excessively aggressive policy cannot only foster domestic demand, but heat up inflation to a greater extent [WB, 2016].

In the period considered, the following trends are evident: prior to and after the crisis of 2008-2009, there was a clear decrease in the potential level of GDP, when the economy to a certain extent functioned above its potential. However, after 2010, there was no recovery of pre-crisis values in the potential level of GDP and it decreased below the estimates of 2005-2008. High positive values of gaps in this period testified to an overheating of the economy, mostly due to high increases in price levels in the external commodity markets, and subsequent negative values from mid-2014 corresponded to the beginning of another crisis, in which labour and capital were no longer being used to their full potential. This contributed to a gradual increase in economic uncertainty and investment risks and complicated the task of expanding budgetary reserves. At the same time, the following factors prevailed noticeably among the main factors of the decrease in the potential level of total output in the country in 2012-2015:

- stabilization and subsequent significant drop in oil prices;
- suspension of structural reforms;
- decrease in the growth of total factor productivity, especially in productive capital;
- unfavourable population development and low retirement age;
- weak investment support and marked reduction in external investments;
- infrastructure deficiencies;
- substantial presence of state enterprises in basic industries.

The following common measures that can strengthen the national economy's potential growth include:

- strengthening of state support for research and development, strengthening the patent-licensing system, providing tax incentives for introducing technological innovations in the production sector and increasing TFP growth;
- reduction of trade barriers;
- improvement of the quality of education, business environment, business climate and functioning of commodity markets;
- supporting domestic demand and stimulating investment through monetary and fiscal policy tools.

Structural reforms carried out in a well-considered sequence and in accordance with additional measures to support the development of new knowledge, products and technologies, can reverse the negative nature of the "high-speed economy" like Russia's.

For early diagnoses (now-casting) of changes in macroeconomic activity, the results of business surveys are widely used in international practice, in particular, the Economic Sentiment Index [EC, 2016a, 2016b]. In Russia, the measurement of the total economic sentiments by the index (ESI HSE) is carried out by the National Research University "Higher School of Economics" (NIU HSE)[5] [CBTS ISSEK, NIU HSE, 2009-2016 b].

[5] Under the Programme of Fundamental Research of the National Research University "Higher School of Economics" (HSE) and state support from the leading universities of the Russian Federation "5-100".

Economic Sentiment Index (ESI HSE)

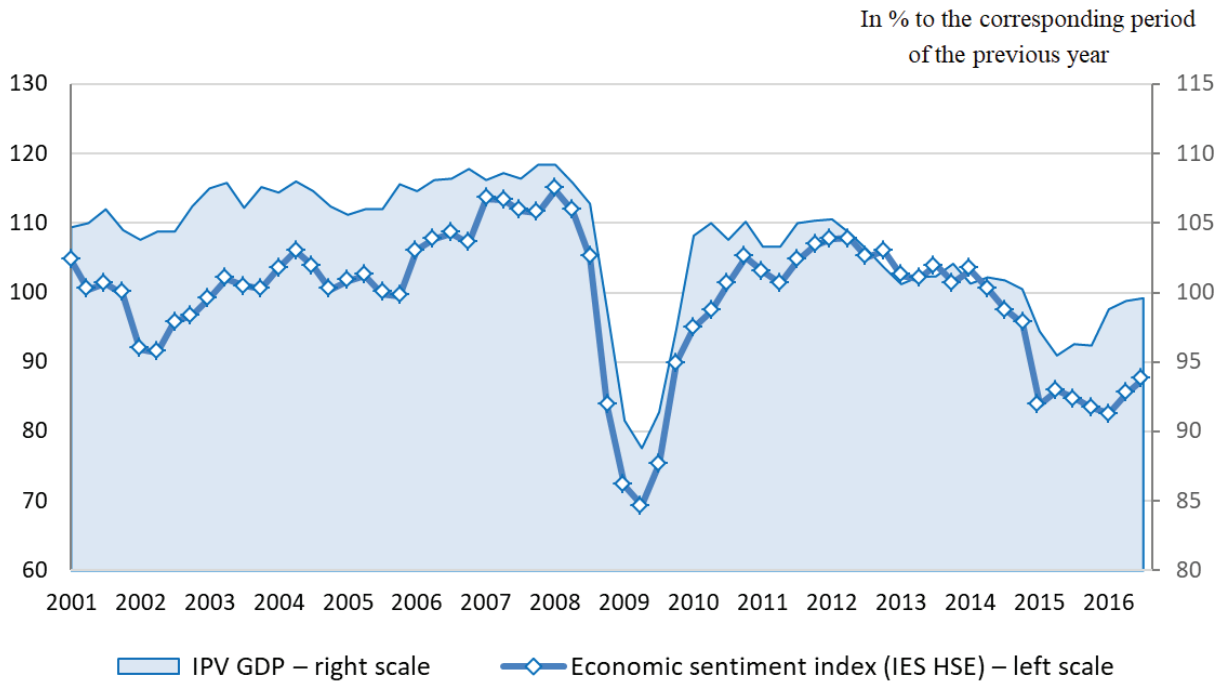
When calculating the ESI HSE for the purpose of comparability with international standards, a data processing procedure is used that is very similar to the European Harmonized System for calculating the same indicator [EU, 2016b]. Thereby, the results of surveys of business activity of Russian enterprises and organizations, as well as consumer expectations are used in the monitoring procedure conducted by the Federal Service for State Statistics of the Russian Federation. About 20,000 heads of organizations of various industries of the economy (more than 3,000 large and medium-sized industrial enterprises, 6,500 construction firms, 4,000 retail organizations, 5,500 service organizations) participate in regular monitoring, as well as 5,000 respondents representing the country's adult population. The ESI HSE consists of data that make up the information base of surveys in industries of the economy that contribute over 60 per cent to the country's GDP. Long-term international [EU, 2016a, b] and Russian [Kitrar et al., 2014] studies revealed a close correlation of ESI HSE values and the dynamics of the GDP physical volume indices.

ESI HSE is based on a set of assessments by entrepreneurs and consumers of the level (higher, below average, average) and trends (increase, unchanging, decrease) of key indicators that adequately and quickly respond to emerging market fluctuations in the country's economy.

Applying a regular procedure to process the results of surveys and combining them in the Index, the percentages (share) of respondents' answers for each indicator are first calibrated according to rank (-1; 0; 1) in compliance with their level or trend estimates: lower (decline), average (unchanging), higher (growth). The average values obtained, the so-called balance sheet valuations, are determined as the difference in the share of respondents' positive and negative answers (in percentages). Consequently, the seasonally adjusted time series of the balance sheet valuations are standardized to be able to compare the development of the values in terms of their level and variation. The resulting standardized components of the Index are weighed according to sectoral weights. The calculated weighted average values are then scaled to arrive at an average value of 100 and a standard deviation of 10 for a long period. At normal distribution, the ESI HSE varies from 90 to 110 in most cases, with values of about 100 corresponding to normal sentiments in the entrepreneurial environment; those that are much higher than 100 correspond to the most favourable and optimistic sentiments; and values well below 100 to depressive/ crisis sentiments.

The ESI HSE development showed a downward trend from the end of 2012 (cyclical peak) until the beginning of 2016, with the exception of two short-term recovery correction episodes in the first quarter of 2014 and in the second quarter of 2015. Starting in the first quarter of 2016, after the lowest point over the last seven years had been hit, an increase in the indicator values was recorded over the next three quarters in 2016.

Figure 2 – Economic Sentiment Index (ESI HSE) and index of physical volume of GDP of Russia



Source: Rosstat, Centre for Business Tendency Studies, ISSEK, NIU HSE

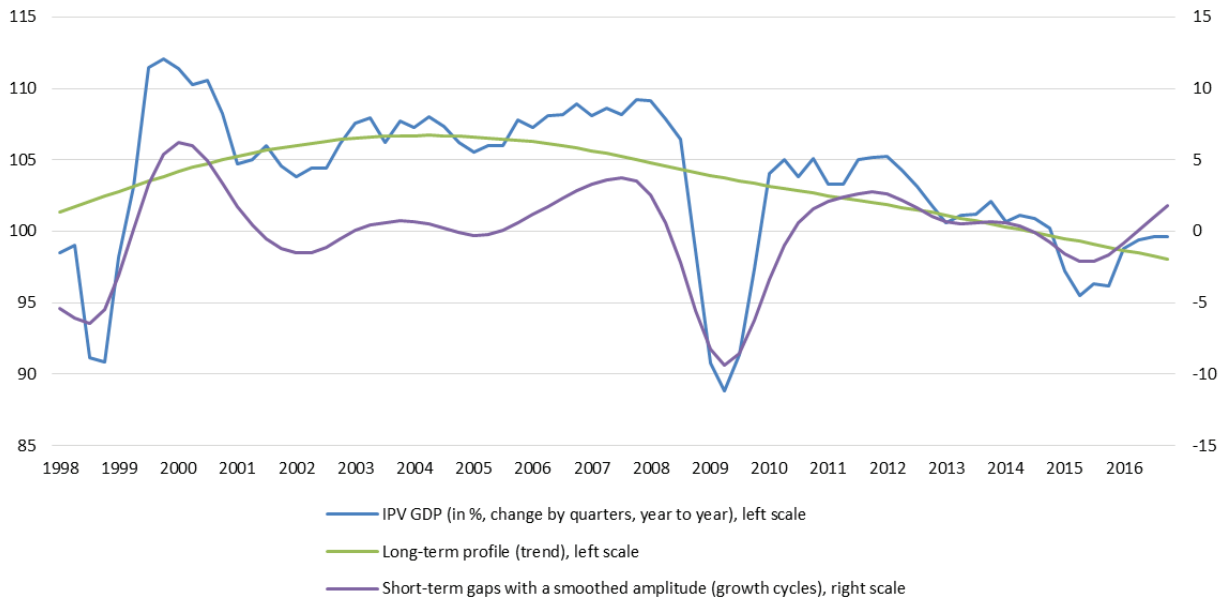
Despite obvious compensation management during recession and leaving the range of the crisis values of 2015, the ESI HSE remained below its average level (100) for ten consecutive quarters, demonstrating the unfavourable business climate of the Russian economy. At the same time, the ESI HSE values during previous crises in the Russian economy were well below the levels of the last two years, with the economic sentiments hitting a record low in mid-2009 according to the overall results of business surveys in the country.

3. Convergence of economic growth in the region: decomposition of development and cyclical relationship

Economic development in the CIS region in recent years has been characterized by increased uncertainty, particularly with reference to the key integration strategies, largely due to the fall in world oil prices, a change in the structure of the oil market, the ambiguous monetary policies of the countries issuing reserve currencies, the devaluation influence of national currencies in the region and decreasing business activity.

By decomposing macroeconomic development, we can identify long-term sustainable growth trends as well as short-term growth cycles[6] in the aggregate cyclical development of the Russian and CIS economies to evaluate the convergence process. Figures 3 and 4 illustrate empirical estimates of long-term trends and short-term cycles, revealing four peaks for Russia in the period 1998-2015 and four drops in GDP in the short-term cyclical movement of QIN GDP and IPI as well as in the fifth growth cycle, which began in 2012, and one year earlier for IPI. The lowest point in the cyclical movement of indicators in the preceding six years occurred in mid-2015.

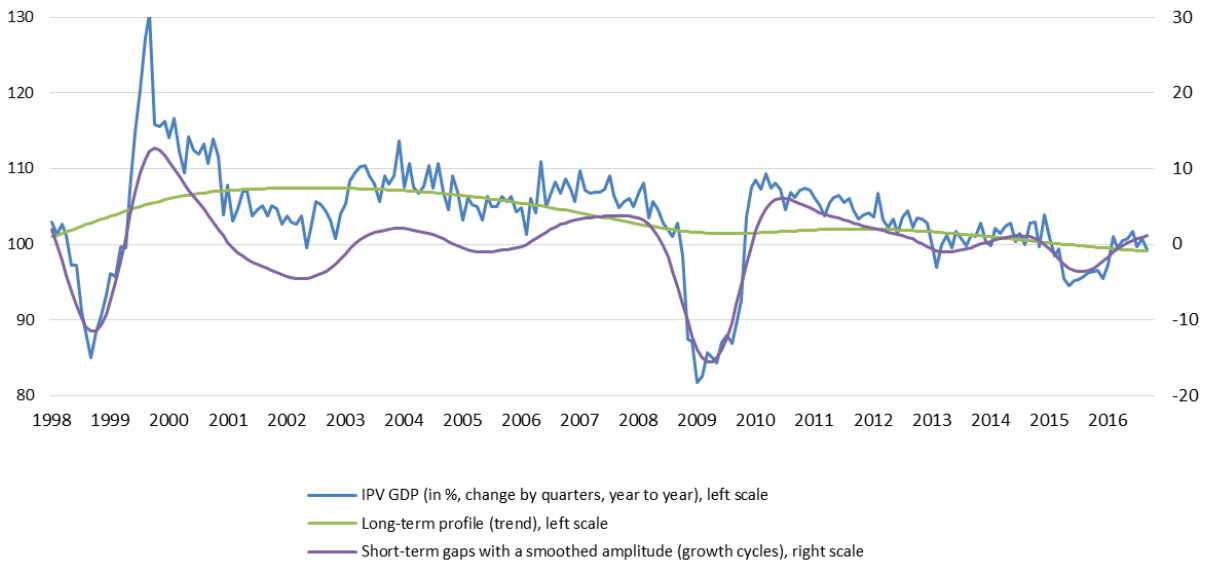
Figure 3 – Cyclicity of economic growth in Russia



Source: Rosstat, authors' calculations, Hodrick-Prescott statistical filter (double pass)

[6] The OECD concept is used, according to which the short-term growth cycle is a deviation from economic activity from the long-term sustainable level (trend) [OECD, 2016].

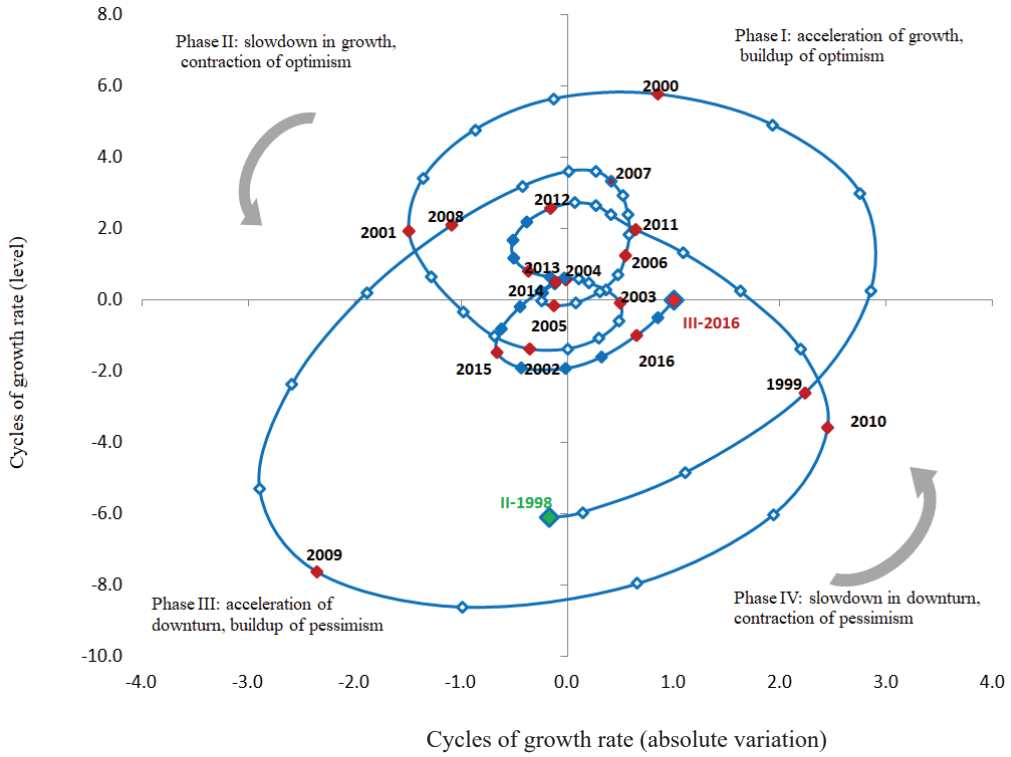
Figure 4 – Cyclicity of industrial growth in Russia



Source: Rosstat, authors' calculations. Hodrick-Prescott statistical filter (double pass).

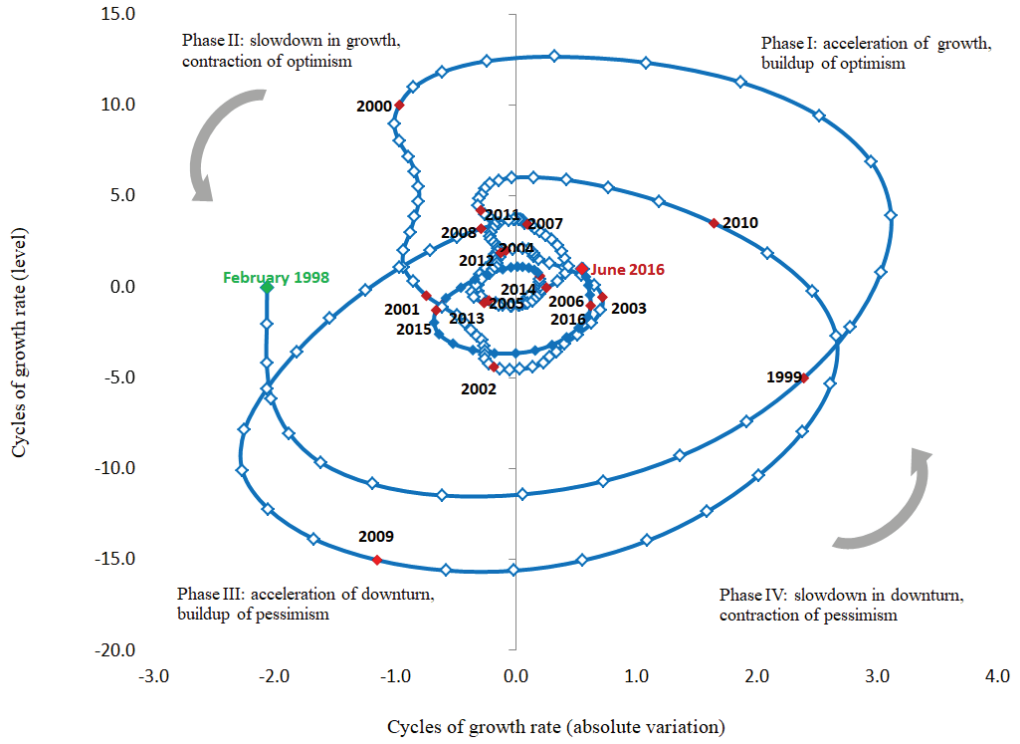
Tracers of cyclical trends in the development of the analysed indicators are used in this study to visualize short-term growth cycles. The construction of such tracers is based on the approach of the European Commission, through which the proposed location of quadrants and the direction of cyclical movements [EC, 2015] are observed. The tracer is constructed using a double Hodrick-Prescott statistical filter of the QIN GDP development. The first filter determines the dynamics of GDP growth rates and their influence on long-term trends (15 years), and the second filter distinguishes a short-term growth cycle of 30 months, smoothing shorter fluctuations that are insignificant for the decomposition of growth cycles. These periods were selected in advance for Russia using empirical means [Kitrar et al., 2014]. The decomposition of macroeconomic development through such statistical filtering was conducted in accordance with OECD guidelines [Nilsson and Guidetti, 2008; OECD, 2012]. Figures 5 and 6 present the tracers of short-term cyclical trends in the development of QIN GDP and IPI for Russia.

Figure 5 – Tracer of short-term cyclical trends in QIN GDP development of Russia



Source: Rosstat, authors' calculations, double Hodrick-Prescott statistical filter.

Figure 6 – Tracer of short-term cyclical trends in the IPI development in Russia



Source: Rosstat, authors' calculations, double Hodrick-Prescott statistical filter.

The ordinate denotes the level of the values of the time series of the short-term QIN GDP (IPI) cycle; the abscissa represents their quarterly absolute variations. The tracer simultaneously displays the level and change of the short-term cyclical movement of the analysed economic indicators illustrating four quadrants of the trajectory based on the following four phases of the cycle:

- upper quadrant I (phase of growth acceleration) corresponds to intensive growth of the indicator with a level above average (the origin) – growth and expansion of optimism, overheating of economy;
- upper quadrant II (phase of growth deceleration) – deceleration in the growth of the indicator with a level above average – compression of optimism, stagnation;
- lower quadrant III (phase of downturn acceleration) – intensive decline of the indicator with a level below average – increasing pessimism, crisis sentiments, recession;
- lower quadrant IV (phase of downturn deceleration) – slowdown of the indicator's decline with a level below average – compression of pessimism.

Four quadrants corresponding to the four phases of the cycle intersect counter clockwise when the tracer moves. Cyclical maxima (peaks, overheating of economy) lie in the upper central area of the diagram, while cyclical minima (bottom of crisis) lie in the lower central area.

The obtained tracers reflect the five short-term growth cycles in Russia's QIN GDP and IPI development. In the fifth cycle, a period of prolonged stagnation which began in 2012, both

indicators crossed the expansion area in their cyclical movement and began shifting towards a downturn, indicating a long-term slowdown at an unchanging intensity until mid-2014. The indicators then entered a phase of cyclical compression with an intensification of the recession. At the beginning of 2015, the values in the considered trajectories moved closer together in the ordinate axis, pointing to the approach of a new point in the cycle point – the bottom of the crisis. A subsequent move to the slowdown quadrant implied an upward turn towards growth in the cyclical development of Russia's QIN GDP and IPI.

A systemic feature of Russia's current economic development is the transition to a slower growth path as a result of the downward trend of the level of the GDP's potential value and the passing of the phase of deep recession during the most protracted fifth cycle of economic growth.

Convergence of CIS countries from 2005 to 2014[7]

In 2014, the GDP of nine CIS countries amounted to only 3.0 per cent of global GDP, which amplified the divergence between the CIS region and the rest of the world.

The share of Russia's GDP in the total GDP of the CIS region declined by 1.8 per cent to 77.8 per cent between 2005 and 2014, and reached USD 1,677 billion.

The total GDP of the major natural resource exporters in the region (Russia, Azerbaijan and Kazakhstan) increased by 35.6 per cent to USD 1,919 billion from 2005-2014, while the GDP of other countries, primarily natural resource importers grew by only 21.4 per cent, i.e. USD 1,684 billion lower.

The total GVA of the manufacturing sector of countries with a higher per capita national income (Russia, Azerbaijan, Belarus, Kazakhstan) increased by 1.2 per cent over the entire period, reaching USD 222.7 billion, surpassing the manufacturing sector's aggregate GVA by USD 210.9 billion in the remaining five countries with a lower national income.

An acceleration in the development of the annual growth rates of the manufacturing sector's GVA in countries with an above average industrial potential in the Commonwealth[8] (from USD 900 per capita), namely Russia and Kazakhstan was accompanied by a marked increase in the gap between these and other countries in the region between 2004 and 2015, forming an "empty zone" of USD 197.5 billion.

The strongest correlation from 2004-2015 representing over 90 per cent of the entire variation in the time series was observed in short-term GDP growth trends in Russia, Kazakhstan, Armenia and Tajikistan.

The "conditional" convergence which has gained momentum in the CIS does not imply a reduction in gaps between the countries' per capita economic potential and the intensity of their changes, but primarily the convergence of short-term growth cycles in the overall development of GDP growth in the region's countries.

To illustrate the "conditional" convergence of the CIS economic space as a cyclical interdependence of economic growth in the countries of the region, let us consider the tracers of economic growth for all countries participating in the integration process (Figure 7)[9].

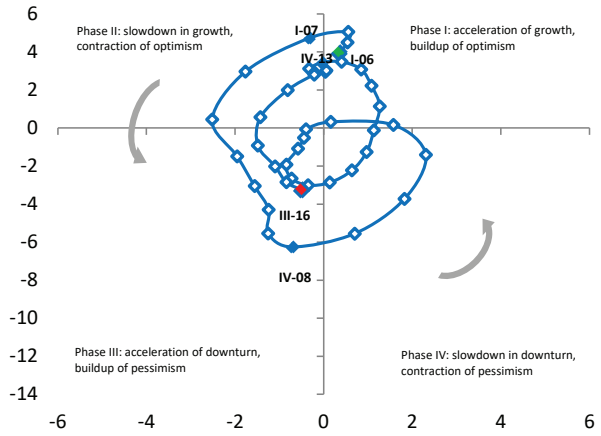
[7] Authors' calculations.

[8] Classification of the CIS region's countries by level of manufacturing potential was compiled according to the authors' estimates.

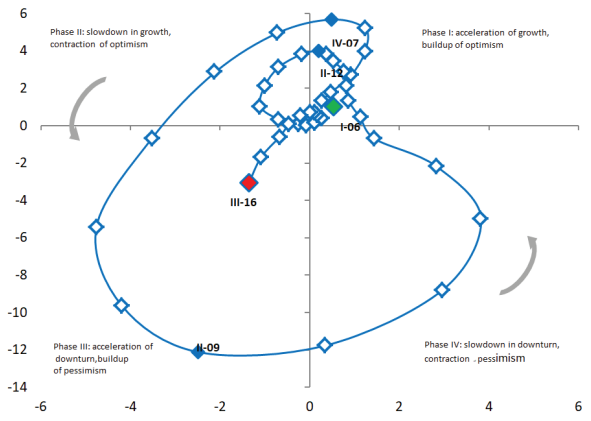
[9] Due to the low amplitude of cyclical fluctuations in Tajikistan, a different scale is used for this country.

Figure 7 – Tracer of short-term cyclical trends in the QIN GDP development of CIS countries

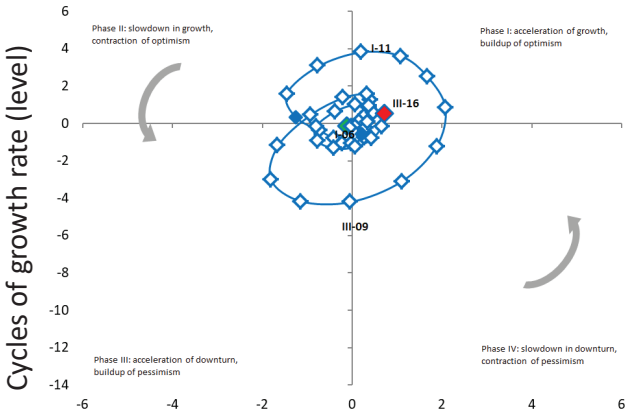
Azerbaijan (AZ)



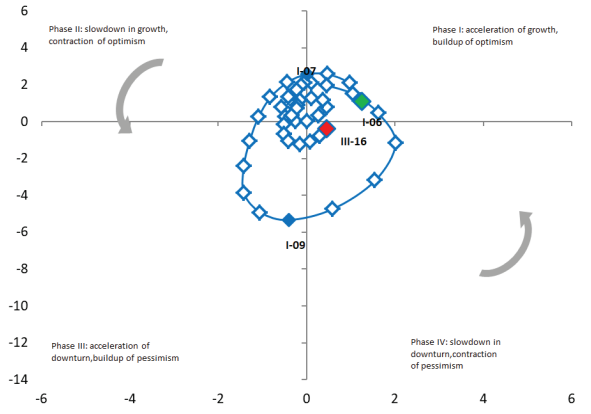
Armenia (AM)



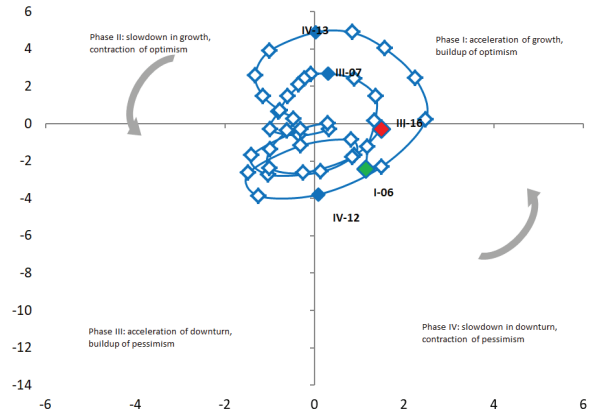
Belarus (BY)



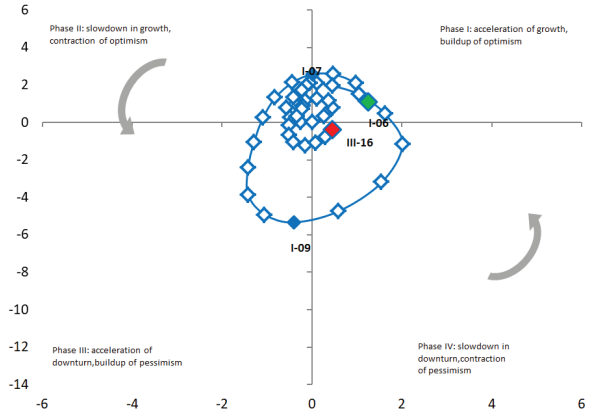
Kazakhstan (KZ)



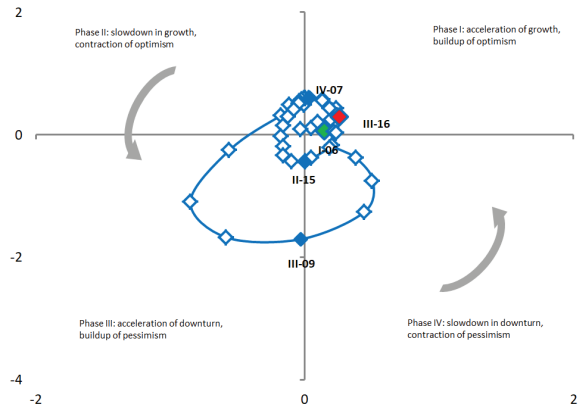
Kyrgyzstan (KG)



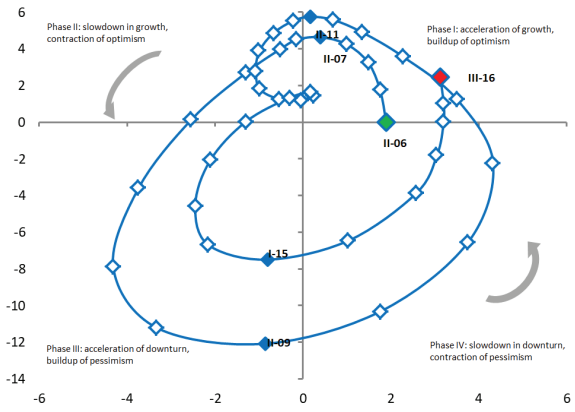
Moldova (MD)



Tajikistan (TJ)



Ukraine (UA)



Source: CIS Statistical Committee, authors' calculations, double Hodrick-Prescott statistical filter.

The GDP growth in countries with the most comparable cyclical developments like Russia's are Belarus, Kazakhstan, Ukraine, Moldova and Kyrgyzstan, in which short-term cycles of the macro-aggregate in 2014-2016 almost consistently repeated the cyclical movements, emerging from recession. The analysis of convergence as a cyclical relationship of the countries' QIN GDP quarterly developments provides information on the presence (absence) and strengthening (weakening) of the convergence processes in the development of economic growth and, accordingly, the reduction of inter-country differences in economic indicators and the synchronization of cycles. With regard to the region-wide economic policy, the presence and level of convergence of GDP growth intensity is important for assessing the degree of integration cooperation and the need for its coordination. Conclusions about the effects of such convergence processes take the entire set of goals and objectives relating to inter-country links in the region into account.

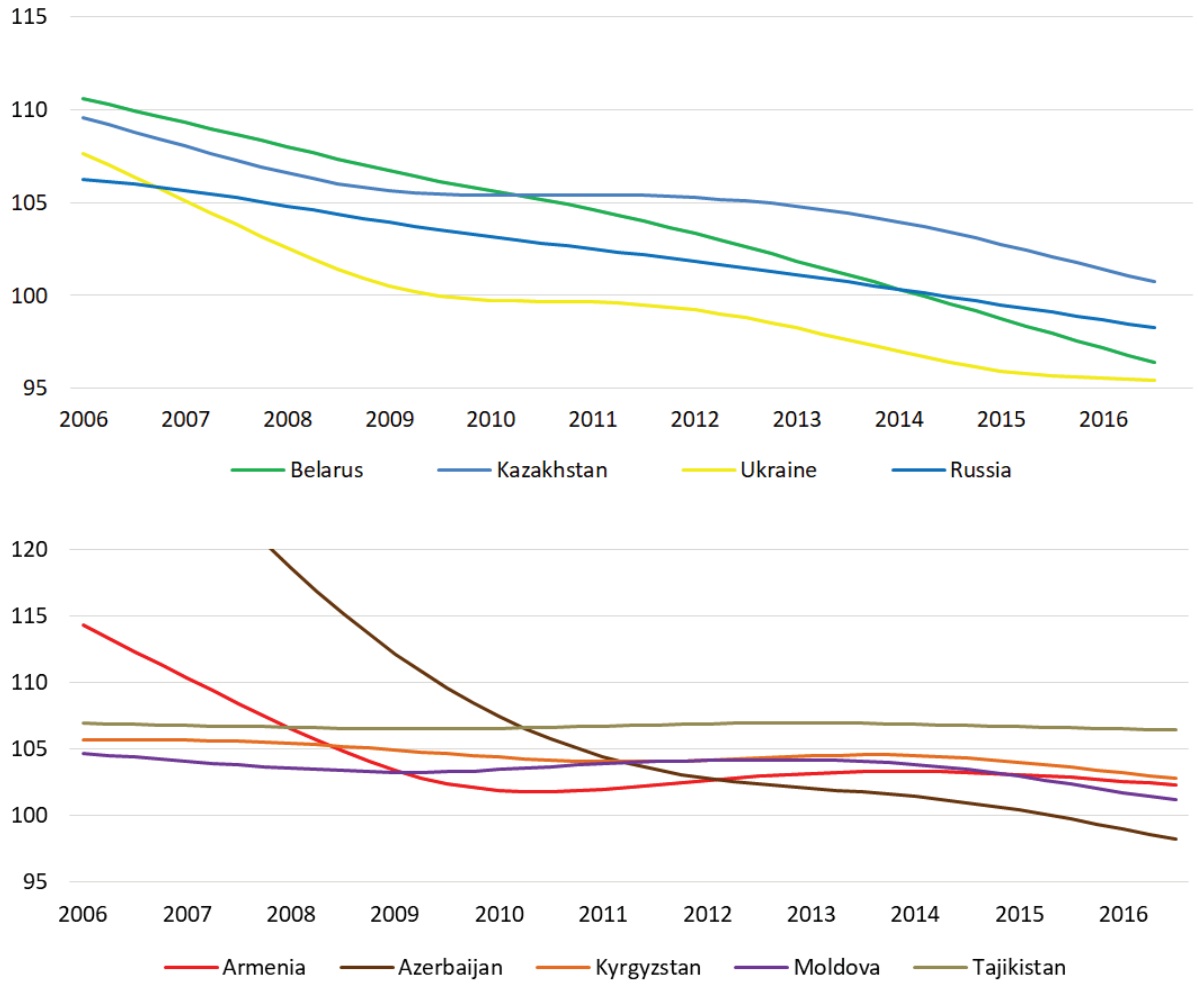
By the end of 2014, a noticeable decline in GDP growth was evident against the backdrop of falling oil prices, sanctions and a strong weakening of the rouble. There was a looming risk of further deterioration of payment balances and the cross-border effects due to a sharp downturn in the economy of the Ukraine intensified. This negative trend affected those countries the most whose cyclical trend in GDP dynamics was most comparable with that of Russia.

The following trends and main features of convergence in economic development in the CIS region have emerged in recent years. Labour productivity in most countries remained far below the European average. Despite the CIS region's global leadership in the production of natural gas, oil and coal, the region focused primarily on manufactured products for domestic consumption and its competitiveness in foreign markets was very low. The ineffective economic policy, particularly in terms of its structural and institutional nature, increased the vulnerability of the region's economies to internal and external shocks. The underdevelopment of financial

instruments and of operational risk diversification, and the restriction of access to international capital markets further reduced the already low potential to implement effective stabilization policies. At the same time, negative inflation expectations accumulated. There was a noticeable outflow of deposits and a growth of negative assets in the banking sector. Difficulties with repayments of foreign currency loans and imports of component parts increased, which, along with low reserves of a skilled workforce, led to a deterioration of the business climate. A noticeable increase in economic uncertainty in the region was observed in 2014-2015 due to falling world prices for raw materials and energy, a reduction in foreign exchange earnings from exports, as well as a strong devaluation pressure on national currencies.

Figure 8 presents the long-term 15-year trends in the development of QIN GDP growth in the countries of the Commonwealth (obtained from the first Hodrick-Prescott statistical filter), revealing a sharp reduction in the long-term development trajectory, especially in recent years.

Figure 8 – Long-term trends in the development of GDP growth in CIS countries



Source: Rosstat, CIS Statistical Committee, authors' calculations, first Hodrick-Prescott statistical filtering method.

The visualization of long-term trends shows that the growth dynamics of GDP were practically linear in Tajikistan; the highest decline in the vector of sustainable development was observed in Belarus. The QIN GDP trend in Kazakhstan was equivalent to that of Russia. A compression with very similar intensities was evident at the end of the period analysed in Azerbaijan, Moldova and Kyrgyzstan.

Based on the calculations carried out using the data published by the CIS Statistical Committee, the region is characterized by a global slowdown of long-term sustainable macroeconomic growth, as well as marked growth volatility in most countries with a clear predominance of recession before the beginning of 2016. Significant secondary effects from the economic downturn in Russia were confirmed by cross-correlation convergence parameters. One of the main developments accompanying the recession in 2014-2015 was the decline in cash transfers from Russia, which affected in particular Moldova, Armenia and Tajikistan. A decrease in imports-exports was most significant in Armenia, Kazakhstan, Belarus and Moldova. At the same time, a significant reduction in import volumes from Russia affected Azerbaijan and Tajikistan. A contraction in foreign direct investment from Russia was recorded in Armenia, Belarus, Tajikistan and Moldova. Simultaneously, there was a lack of uniform prerequisites for short-term recession vectors. Thus, rising negative trends in Belarus occurred against falling exports of investment goods and consumer demand. A slowdown in growth in Kazakhstan intensified as a result of a significant deterioration of public finances and the foreign trade balance. The crisis of Moldova's banking system intensified, and government expenditures increased. The prospects for countries exporting raw materials deteriorated progressively. The devaluation of the national currency in Kazakhstan increased the risk of a GDP growth slowdown. Economic activity in the region largely reflected these trends, with some minor differences in the scale and direction of short-term growth cycles.

The reduction in growth of the Russian economy muffled any positive prospects in the region. The situation in oil-exporting countries was aggravated by price shocks on the oil market. The revenues of oil-importing countries were largely neutralized by the deficits on the domestic market and the growing secondary effect of recession in Russia. The prolonged downturn in Russia affected the economies of Azerbaijan, Armenia, Ukraine, Moldova and Kyrgyzstan more severely.

The economic developments in early 2016 continued to be affected by increased volatility of the financial markets and the exchange rate. However, the main parameters of economic growth demonstrated a positive trend despite persistent uncertainty and the unsustainable and rather sluggish prospects. The growing debt burden of the large regional leaders Belarus and Kazakhstan, along with the external risks, remains one of the major restraining factors in the region. The depletion of the Reserve Fund in Russia continues. High budget gaps persist in Armenia and Kyrgyzstan. All countries in the region need to stabilize their expenditures and

undertake efforts to attract new sources of budget financing.

A further reduction of inflation and of the key interest rates and the restoration of consumer demand will strengthen the financial system, investment activity and business confidence in the effectiveness of the policies implemented in the CIS countries in the medium term.

3.1. Structural changes in macroeconomic development

This report analyses the main sources of current economic development with a focus on measuring the scale of national economies, the intensity of industrialization and sectoral distributions in the CIS region for the period 2005-2014. Table 1 presents the structure of gross value added (GVA) and the main types of economic activity in the countries of the CIS region.

An intensification of the negative trends by the end of the period analysed for a number of countries in the region was caused by a marked devaluation of their national currency, which significantly reduced the foreign exchange reserves of value added in 2014. The statistical data was calculated into USD to better compare the results of the region's countries.

Table 1 – GVA structure in the CIS region

	GVA at constant prices (in US $ millions)			Compound annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia (as a whole), including	**1 010 177**	**1 035 658**	**1 434 543**	**0.5**	**5.6**	**3.6**
Agriculture, hunting and forestry	47 475	47 620	53 985	0.1	2.1	1.3
Fishing, fish farming	2 283	2 089	2 858	-1.8	5.4	2.3
Mining	121 127	101 234	129 835	-3.5	4.2	0.7
Manufacturing industry	194 336	166 131	200 053	-3.1	3.1	0.3
Production and distribution of electricity, gas and water	35 960	31 110	45 341	-2.9	6.5	2.3
Construction	55 590	59 917	106 318	1.5	10.0	6.7
Wholesale and retail trade; repairs of motor vehicles, motorcycles, household goods and personal items	180 211	212 140	251 965	3.3	2.9	3.4
Services	383 265	415 418	644 960	1.6	7.6	5.3
Azerbaijan (as a whole), including	**24 042**	**51 155**	**60 349**	**16.3**	**2.8**	**9.6**
Agriculture, hunting and forestry	2 455	2 892	3 347	3.3	2.5	3.1
Fishing, fish farming	0	0	0	-	-	-
Mining	10 501	30 333	26 318	23.6	-2.3	9.6
Manufacturing industry	1 787	2 054	2 671	2.8	4.5	4.1
Production and distribution of electricity. gas and water	617	579	845	-1.2	6.5	3.2
Construction	1 956	3 198	7 517	10.3	15.3	14.4
Wholesale and retail trade; repairs of motor vehicles, motorcycles, household goods and personal items	1 702	2 978	4 914	11.8	8.7	11.2
Services	5 024	9 122	14 737	12.7	8.3	11.4

Armenia (as a whole), including	**5 175**	**7 733**	**8 179**	**8.4**	**0.9**	**4.7**
Agriculture, hunting and forestry	1 100	1 460	1 551	5.8	1.0	3.5
Fishing, fish farming	4.76	0	0	-	-	-
Mining	111	144	280	5.2	11.7	9.6
Manufacturing industry	676	745	1 106	2.0	6.8	5.0
Production and distribution of electricity, gas and water	228	282	361	4.4	4.2	4.7
Construction	1 089	1 609	1 064	8.1	-6.7	-0.2
Wholesale and retail trade; repairs of motor vehicles, motorcycles, household goods and personal items	683	1 091	1 282	9.8	2.7	6.5
Services	1 283	2 402	2 535	13.4	0.9	7.1
Belarus (as a whole), including	**39 549**	**39 776**	**13 227**	**0.1**	**-16.8**	**-10.4**
Agriculture, hunting and forestry	4 281.6	3 975.2	1 267.6	-1.5	-17.3	-11.5
Fishing, fish farming	45.37	50.21	12.10	2.0	-21.1	-12.4
Mining	486.32	421.15	181.70	-2.8	-13.1	-9.4
Manufacturing industry	11 175	11 857	3 996	1.2	-16.6	-9.8
Production and distribution of electricity, gas and water	1 837.6	1 330.3	398.4	-6.3	-18.2	-14.2
Construction	2 785.3	4 425.0	1 357.9	9.7	-17.9	-6.9
Wholesale and retail trade; repairs of motor vehicles, motorcycles, household goods and personal items	4 487.3	4 966.6	2 058.3	2.1	-13.7	-7.5
Services	14 451	12 751	3 955	-2.5	-17.7	-12.2
Kazakhstan (as a whole), including	**90 375**	**102 824**	**143 257**	**2.6**	**5.7**	**4.7**
Agriculture, hunting and forestry	5 849	6 481	6 463	2.1	0.0	1.0
Fishing, fish farming	81	66	0	-3.9	-	-
Mining	19 407	21 891	24 913	2.4	2.2	2.5
Manufacturing industry	12 630	12 455	15 955	-0.3	4.2	2.4
Production and distribution of electricity, gas and water	1 714	1 803	2 859	1.0	8.0	5.3
Construction	5 894	8 523	10 761	7.7	4.0	6.2
Wholesale and retail trade; repairs of motor vehicles, motorcycles, household goods and personal items	11 664	13 033	25 040	2.2	11.5	7.9
Services	33 136	38 570	57 264	3.1	6.8	5.6
Kyrgyzstan (as a whole), including	**3 283**	**3 918**	**4 485**	**3.6**	**2.3**	**3.2**
Agriculture, hunting and forestry	1 032	1 098	754	1.2	-6.1	-3.1
Fishing, fish farming	0.09	0.12	0	5.0	-	-
Mining	25	25	40	0.1	8.0	4.8
Manufacturing industry	547	526	757	-0.8	6.3	3.3
Production and distribution of electricity, gas and water	66	61	182	-1.6	20.1	10.7
Construction	138	281	438	15.3	7.7	12.3
Wholesale and retail trade; repairs of motor vehicles, motorcycles, household goods and personal items	536	733	927	6.4	4.0	5.6
Services	938	1 194	1 387	4.9	2.5	4.0
Moldova (as a whole), including	**3 630**	**4 361**	**4 472**	**3.7**	**0.4**	**2.1**
Agriculture, hunting and forestry	492	447	507	-1.9	2.1	0.3
Fishing, fish farming	1.3	1.9	2.0	8.6	0.8	4.7
Mining	19	20	26	1.5	4.8	3.6
Manufacturing industry	590	499	589	-3.3	2.8	0.0

Production and distribution of electricity, gas and water	101	112	83	2.0	-4.8	-1.9
Construction	172	205	221	3.6	1.3	2.6
Wholesale and retail trade; repairs of motor vehicles, motorcycles, household goods and personal items	476	732	830	9.0	2.1	5.7
Services	1 779	2 343	2 213	5.7	-1.0	2.2
Tajikistan (as a whole), including	**4 006**	**3 890**	**6 583**	**-0.6**	**9.2**	**5.1**
Agriculture, hunting and forestry	933	938	1 811	0.1	11.6	6.9
Fishing, fish farming	0	0	4.9	-	-	-
Mining	134	82	335	-9.4	26.5	9.6
Manufacturing industry	619	378	686	-9.4	10.5	1.0
Production and distribution of electricity, gas and water	178	108	148	-9.4	5.3	-1.8
Construction	410	374	538	-1.8	6.3	2.8
Wholesale and retail trade; repairs of motor vehicles, motorcycles, household goods and personal items	740	876	1 078	3.4	3.5	3.8
Services	992	1 135	1 983	2.7	9.7	7.2
Ukraine (as a whole), including	**142 997**	**95 354**	**65 634**	**-7.8**	**-6.0**	**-7.5**
Agriculture, hunting and forestry	11 331	8 144	7 126	-6.4	-2.2	-4.5
Fishing, fish farming	0	0	0	-	-	-
Mining	9 043	6 072	3 815	-7.7	-7.5	-8.3
Manufacturing industry	27 104	15 838	8 697	-10.2	-9.5	-10.7
Production and distribution of electricity, gas and water	6 593	3 905	2 472	-9.9	-7.3	-9.3
Construction	7 461	2 601	1 139	-19.0	-12.9	-17.1
Wholesale and retail trade; repairs of motor vehicles, motorcycles, household goods and personal items	18 201	13 707	9 048	-5.5	-6.7	-6.8
Services	63 265	45 086	33 337	-6.6	-4.9	-6.2

Note: Compound annual growth rate (CAAGR) – annual growth rate within a certain period of time is calculated as: $\text{CAAGR} = \left(\frac{\text{Value at the end of the period}}{\text{Value at the beginning of the period}}\right)^{\left(\frac{1}{\text{number of years}}\right)} - 1$

Source: Rosstat, CIS Statistical Committee, authors' calculations.

In Russia, on average, an expansion of GVA was recorded in the period 2005-2014, with an increase in intensity in the periods of 2005-2008 and 2010-2012. At the same time, the lowest annual growth rate was recorded in the manufacturing sector (0.3 per cent annually on average), mining (0.7 per cent) and agriculture (1.7 per cent). A GVA increase at a similar rate was recorded in fishing and fish farming as well as in the production and distribution of electricity, gas and water (2.3 per cent each). There was almost no change in the annual growth rate of trade for the entire period compared to the values before the financial crisis of 2009. The most notable GVA growth rate was recorded in the construction industry and in the services sector (10 per cent and 7.6 per cent, respectively, on average per year) between 2009 and 2014.

In Azerbaijan, significant GVA growth rates were registered throughout the entire period (9.6 per cent on average annually). The lowest GVA rates were documented in the agriculture

sector and in the production and distribution of electricity, gas and water (3.1 per cent and 3.2 per cent, respectively). A sharp decline in the compound annual growth rate of GVA occurred in the production of minerals in the middle of the decade (from 23.6 per cent to -2.3 per cent), despite this industry playing a very significant role in the country's economy. Low but fairly stable annual growth rates of GVA were recorded in the manufacturing sector: 4.1 per cent annually on average for the entire period, and 4.5 per cent for five years after 2009. The main drivers of sustainable GVA growth in Azerbaijan were wholesale and retail trade as well as the services sector. The value added of the construction industry increased significantly, especially in 2009-2014, to 15.3 per cent on average per year.

Armenia witnessed a decline in the overall development of GVA growth rates during the last five years of the period analysed, with the highest drop occurring in services and agriculture. The GVA of the construction industry decreased as well in 2009-2014, by 6.7 per cent annually on average. The GVA of the manufacturing sector expanded (from 2 per cent in 2005-2009 to 6.8 per cent on average for other years), but with very low production volumes. The country was nonetheless able to sustain its economy of services, trade and agriculture.

Over the final years of the period analysed, Kazakhstan's economy (after Russia's) became the largest growing economy in the region, characterized by sustainable development and stability of its national currency, which is key for the convergence process in the region. A distinctive feature of the country's GVA was the maintenance of moderate values of the compound annual growth rates throughout the entire period (4.7 per cent on average per year). The most noticeable expansion was recorded in wholesale and retail trade, the construction industry and in the production and distribution of electricity, gas and water. An acceleration of growth (from -0.3 per cent in 2005-2009 to 4.2 per cent annually on average over the next five years) was recorded in the manufacturing sector. At the same time, a slowdown in GVA growth occurred in the construction industry in 2009-2014. A minor annual increase was observed in the production of minerals throughout the entire period analysed. Today, the economy of Kazakhstan can already be defined as an economy of growing services. As a result of extensive de-industrialization, the GVA of the services sector now significantly exceeds the GVA of the mining and the manufacturing sector (USD 57,264 million versus USD 40,868 million).

In Belarus, along with an annual depreciation of the national currency and of the potential GDP level, the observed rate of decline increased considerably by the end of the period analysed. The largest reduction in GVA in the period 2009-2014 occurred in the production and distribution of electricity, gas and water (-18.2 per cent), the services sector (-17.7 per cent), the agriculture sector (-17.3 per cent) and the construction industry (-17.9 per cent). Despite an extensive economic downturn (almost three-fold), the country's GVA continues to evolve, mainly on account of the value added of the manufacturing sector, the services sector and trade.

The lowest growth of GVA in the period considered was recorded in Kyrgyzstan, Moldova

and Tajikistan (USD 4,485 million, USD 447.2 million and USD 6,583 million, respectively). Kyrgyzstan and Moldova's overall economic development in 2009-2014 was characterized by relatively low annual growth rates, while there was a noticeable expansion in the growth rate of Tajikistan.

A higher annual growth rate of GVA was recorded in mining (4.8 per cent) and in the agriculture sector (2.1 per cent) in Tajikistan in 2009-2014, accompanied by a slight decrease in the annual value added growth rate of the production and distribution of energy, gas and water, of the construction industry, trade and the services sector. At the same time, the GVA of the manufacturing sector increased (from -3.3 per cent annually on average to 2.8 per cent).

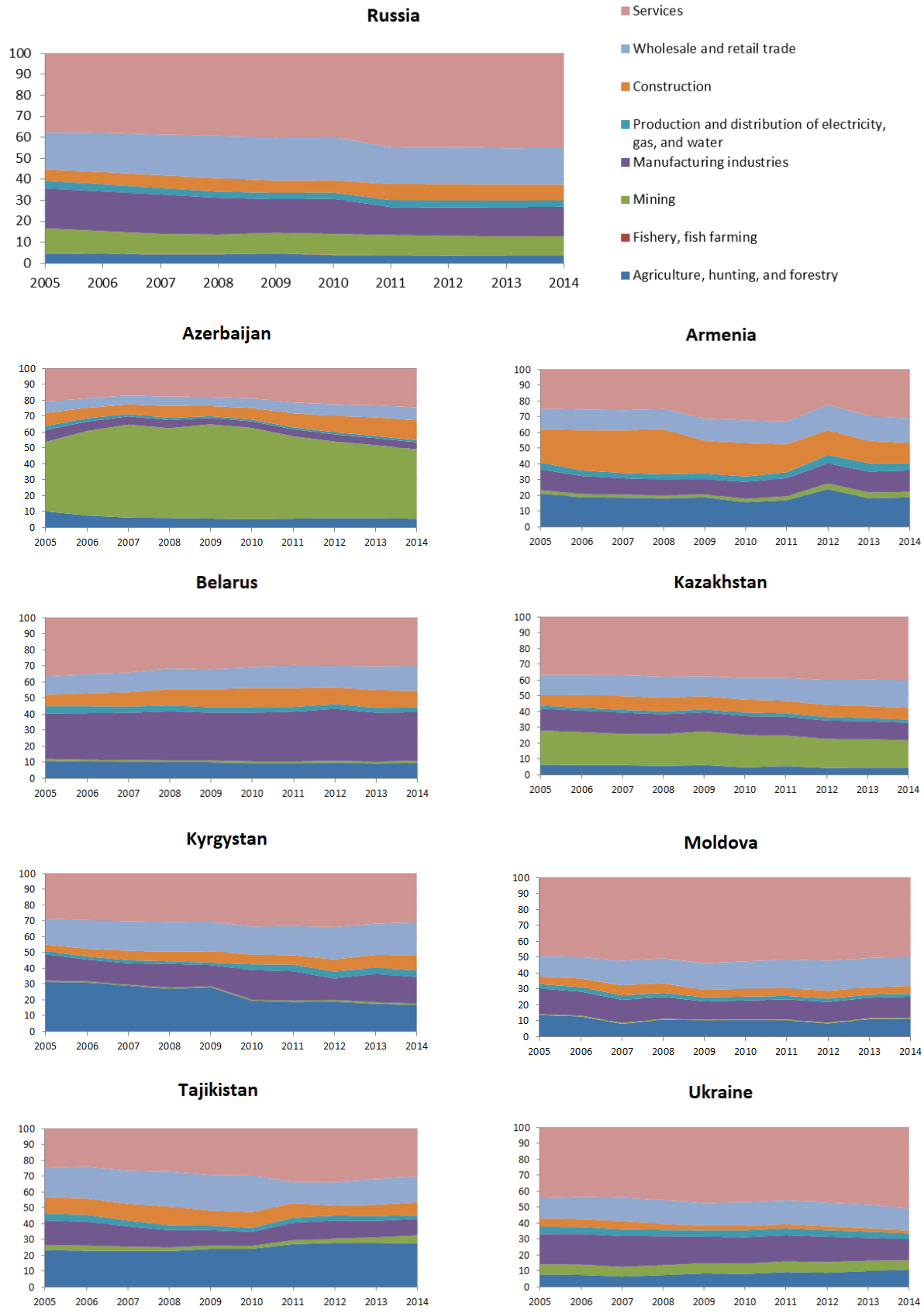
In Kyrgyzstan, a significant decline in the GVA was only recorded in agriculture in 2009-2014. In the same period, the growth rate in the services sector, trade and the construction industry slowed down. A notable average annual expansion was recorded in the production and distribution of electricity, gas and water in 2009-2014 (to 20.1 per cent). The GVA growth of the manufacturing sector during these years increased (to 6.3 per cent on average per year), following the negative trends of the previous years.

In Tajikistan, the compound annual growth rate of GVA was very high for the region, especially in the last five years of the period analysed (over 9.2 per cent). During those years, the greatest increase occurred in mining (26.5 per cent), in the agriculture (11.6 per cent) and in the services sector (9.7 per cent). Following the financial crisis of 2009, the growth of GVA in the manufacturing sector again increased noticeable (10.5 per cent annually on average).

The Ukraine (after Russia) was the largest economy of the Commonwealth until 2005: the country's GVA was over USD 140 million. However, the country's recession intensified over the years, and following a strong depreciation of the national currency in 2014, the development of all major macro-parameters of the economy were severely negatively affected. The greatest compression of GVA occurred in the construction industry (-17.1 per cent annually on average for the entire period). The GVA of the manufacturing sector declined by a noticeable -10.7 per cent annually on average. A decline in the GVA of the agriculture sector (-4.5 per cent on average per year), the services sector and trade (-6.2 per cent and -6.8 per cent, respectively) was lower than that of other sectors.

The structural changes and the development of the contribution of the main activities to GDP of the countries analysed are presented in Figure 9.

Figure 9 – Structure of economic development of CIS countries (in %)



Source: Rosstat, CIS Statistical Committee, authors' calculations.

In Russia, the contribution of agriculture, fisheries and the production and distribution of electricity, gas and water to GDP between 2005 and 2014 remained low and nearly unchanged. The GVA of the services sector and of trade (45 per cent and 17.6 per cent) remained stable and were the largest contributors to GDP. By the end of the period, the contribution of mining to the GDP had reduced slightly. The continued decrease in the share of the manufacturing sector to the GDP in the period analysed was attributable to the contraction in 2008-2009 and the absence of further restoration.

In Azerbaijan, a country with a pronounced commodity dependence, the contribution of mining to the GDP reached its peak in 2009, while the share of other sectors of the economy, with the exception of the services sector, the construction industry and trade, declined. By the end of the period analysed, the significance of mining and the agriculture sector for the national economy increased against the backdrop of a compensatory increase in the contribution of the construction industry and the services sector. Moreover, the contribution of the manufacturing sector to the GDP declined significantly in 2009, and its share remained virtually unchanged thereafter, amounting to only 4.4 per cent in 2014.

In Armenia, the contribution to the GDP of the value added of the services sector remained significant and increased throughout 2005-2014. An expansion of the agriculture sector's contribution to the GDP following a decline in the first five years of the period analysed was evident in 2014. At the same time, a growing contribution of trade to the GDP was recorded, while there was a significant reduction of the construction industry's contribution to the GDP as of 2011. The share of the GVA of mining was traditionally low. The contribution of the manufacturing sector to the GDP remained stable (13.5 per cent in 2014).

The GDP of Belarus was dominated by the GVA of the manufacturing and the services sectors (30.2 per cent and 29.9 per cent, respectively). After 2009, the contribution of wholesale and retail trade increased significantly (to 15.6 per cent). The growth of the construction industry in the country's GDP (10.3 per cent in 2014) and an approximately equal contribution of the agriculture sector (about 10 per cent) was recorded throughout the period analysed. The development of GVA share in the production and distribution of electricity, gas and water remained rather low.

The GDP of Kazakhstan was dominated by the GVA of the services sector and of trade (40 per cent and 17.5 per cent, respectively) throughout the 2005-2014 period. A notable expansion of the contribution of value-added of the services sector and of trade to the above average pre-crisis values occurred following a contraction of the share of mining and processing industries to GDP. The value added of fishing and fish farming and the production and distribution of electricity, gas and water remained the least significant contributors to the country's GDP.

The GVA of the agriculture sector, an important contributor to Kyrgyzstan's GDP, decreased

noticeably over the period analysed. At the same time, however, the services sector remained stable. A slight expansion of the contribution of trade to the GDP was registered. Mining and the production and distribution of electricity, gas and water remained irrelevant. A successful recovery of the pre-crisis share of GVA of the manufacturing sector in the country's GDP was recorded (16.9 per cent).

Almost half of Moldova's GDP throughout the period analysed was consistently dominated by the value added of the services sector. Following the financial crisis in 2009, the GVA of trade to the GDP gradually expanded. The agriculture sector steadily recovered. The contribution of mining, the production and distribution of electricity, gas and water and the construction industry to the GDP had a minor share in the last few years of the period analysed. The manufacturing sector's contribution to the GDP did not reach pre-crisis values in the period following the marked reduction in 2009, accounting for 13.2 per cent of the country's GDP.

The highest share of value added to the GDP in Tajikistan was contributed by the services and the agriculture sector throughout the period 2005-2014. By the end of the period, the greatest contraction was recorded in the contributions of the construction industry and of trade. The pre-crisis share of GVA of the manufacturing sector in the country's GDP had not been recovered by 2014 and was accompanied by a visible contraction over the decade.

More than half of the GDP of Ukraine consisted of the value added of the services sector in 2014. As of 2012, the contribution of the agriculture sector and of trade increased. The GVA of the construction industry, mining and of the production and distribution of electricity, gas and water consistently maintained very small shares in the GDP. The contraction of the GVA of the manufacturing sector intensified towards the end of the period analysed.

To summarize, in the period analysed, the extent of de-industrialization expanded so much in the CIS region that in nearly all countries with the exception of the major raw materials exporter, Azerbaijan, the share of GVA of the services sector and of trade to the GDP predominated. Among the countries in which the contribution of agriculture to GDP was highest were Tajikistan, Armenia and Kyrgyzstan. A significant share of mining in the GDP was found in Kazakhstan and Azerbaijan over the period analysed. The manufacturing sector in Belarus was an important contributor to the national GDP in the region.

Changes in the structure of economic and industrial development in the region's countries were analysed by calculating the integral coefficient of structural change, the values of which are presented in Table 1.7 in Appendix 1:

$$d_{int} = \sqrt{\frac{1}{n}\sum_{1}^{n}\left(\frac{S_{i\,2014} - S_{i\,2005}}{S_{i\,2014} + S_{i\,2005}}\right)^2}$$

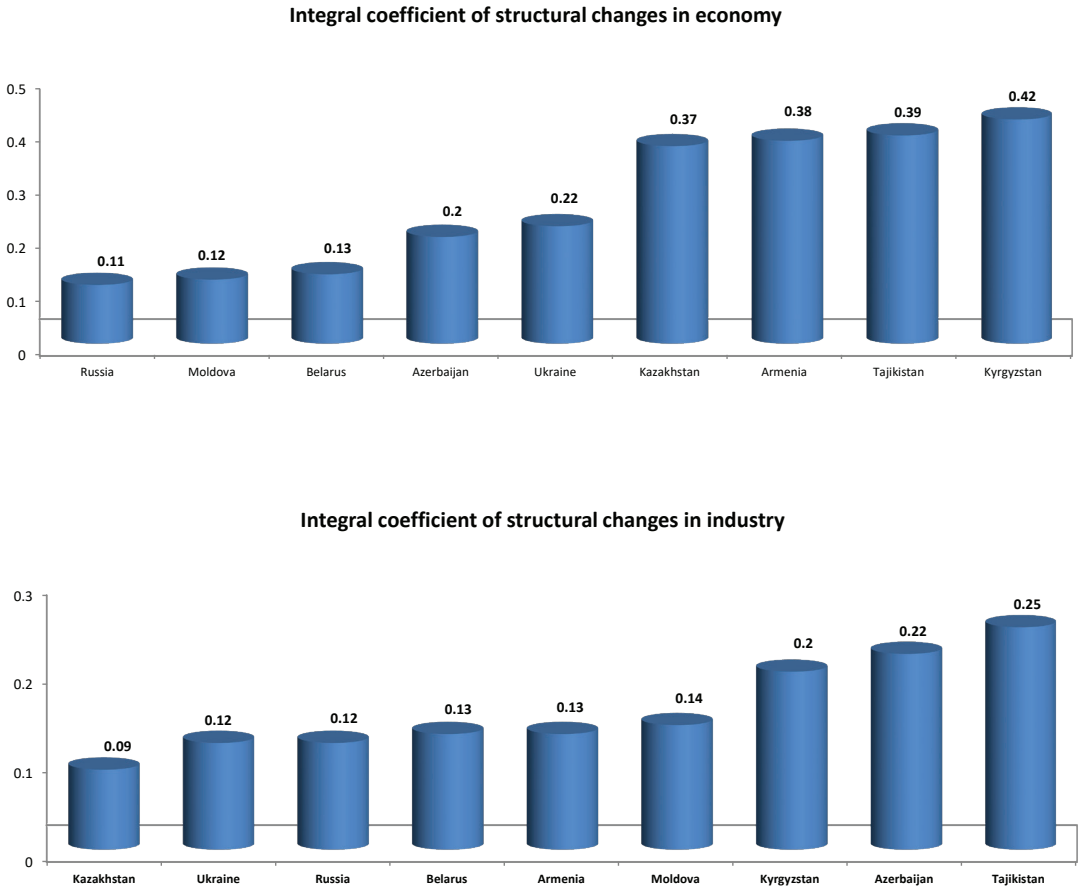
where d_{int} d_{int} is the integral coefficient of structural change;

denotes the share of value added of the *i*-th type of economic (industrial) activity in the GVA of the economy (industry) of the country;

n represents the number of activities.

Figure 10 illustrates the distribution of structural change indicators by country in the CIS region.

Figure 10 – Integral coefficients of structural change in the economy and industry



Source: Rosstat, CIS Statistical Committee, authors' calculations, UNIDO recommendations.

The obtained results reveal that no country in the region experienced a full-scale sectoral redistribution in the period 2005-2014. The structure of the economy and industry in Russia remained nearly unchanged. The highest indicator values were recorded for the economy of Kyrgyzstan and for the industrial sector of Tajikistan. A significant extent of structural change was characteristic of the general economic development of Tajikistan, Armenia and Kazakhstan. Notable values in the structural change index were also recorded in Azerbaijan and Kyrgyzstan

in the development of GVA of the industrial sector.

When analysing the efficiency of industrial policy, one important factor is the country's ability to produce and export industrial products. This is achieved by reviewing the participation of certain types of industrial activity in the country's total exports. Table 2 presents the main results of the calculations of this estimator and its absolute variations for individual periods in all countries of the Commonwealth[10]. Such assessments are necessary to arrive at preliminary findings of the export advantages of the national industrial activities, the ability of each country in the region to promote the results of its production activities in foreign markets and the development of these processes over time.

The following industry-specific structural developments were most characteristic for the CIS in the period 2005-2014:

- mining dominated the share of total exports and was characterized by an upward trend in Russia, Azerbaijan and Kazakhstan, retaining these countries' role as commodity exporters;
- the contribution of the manufacturing sector to total export volumes was not particularly high in Russia, Kazakhstan and Azerbaijan;
- the share in exports of the manufacturing sectors in Armenia, Moldova, Tajikistan and Ukraine decreased;
- manufacturing exports from Azerbaijan dropped considerably.

[10] The volume of exports of industrial products by type of activity in the analysed period - authors' estimates. Data source: UNCTADstat data portal, available at: http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx.

Table 2 – Share of industrial output in total exports of CIS countries

	Share of industry in exports (in %)		
	2005	2009	2014
Mining			
Russia	63.1	63.6	70.7
Azerbaijan	79.1	91.8	92.8
Armenia	5.0	14.5	22.7
Belarus	35.1	37.8	33.8
Kazakhstan	75.6	74.9	81.3
Kyrgyzstan	15.1	4.5	15.6
Moldova	2.0	1.3	2.2
Tajikistan	0.8	4.4	8.5
Ukraine	14.7	10.7	11.8
Manufacturing industry			
Russia	26.4	24.2	24.8
Azerbaijan	15.6	4.4	5.0
Armenia	91.2	80.6	70.2
Belarus	62.1	59.2	61.3
Kazakhstan	22.5	23.1	16.7
Kyrgyzstan	41.8	35.7	51.3
Moldova	85.5	73.3	72.8
Tajikistan	76.6	73.6	59.2
Ukraine	78.7	75.0	70.4
Production and distribution of electricity, gas and water			
Russia	0.23	0.22	0.15
Azerbaijan	0.44	0.18	0.11
Armenia	2.3	0.5	4.0
Belarus	0.13	0.00	0.10
Kazakhstan	0.14	0.09	0.14
Kyrgyzstan	3.9	3.8	3.2
Moldova	0.0	0.9	0.0
Tajikistan	6.7	4.0	2.3
Ukraine	0.5	0.6	0.9

Source: UNCTADstat Data Portal, authors' calculations.

3.2. Assessment of production and export potential

One of the most important aspects of the analysis of the quality and relevance of industrial policy is an assessment of the level of industrialization for the size of both the population and the country. Table 1.3 in Appendix 1 presents the main results of the calculations of this estimator as the GVA per capita for each industrial activity type and country of the CIS region in 2005-2014.

Based on these assessments on a yearly annual basis and on the compound annual growth rate, we identified the regional leaders with manufacturing sectors that had the highest potential by 2014, namely Russia, Kazakhstan and Belarus (despite a marked downturn in Belarus at the end of the period analysed). The potential of the manufacturing sector in Armenia, Azerbaijan

and Ukraine was mediocre, while it had a minimum per capita output in Moldova, Tajikistan and Kyrgyzstan. Azerbaijan, Kazakhstan and Russia remained drivers in the expansion of the mining industry's potential. The lowest volume of mineral extraction per capita in 2014 among the region's countries was recorded in Kyrgyzstan, Moldova and Belarus. At the same time, the mining industry's potential grew markedly in Azerbaijan and Kazakhstan; the manufacturing sector in Russia and Kazakhstan remained stable as was the case in the production and distribution of electricity, gas and water in Russia, Kazakhstan and Armenia.

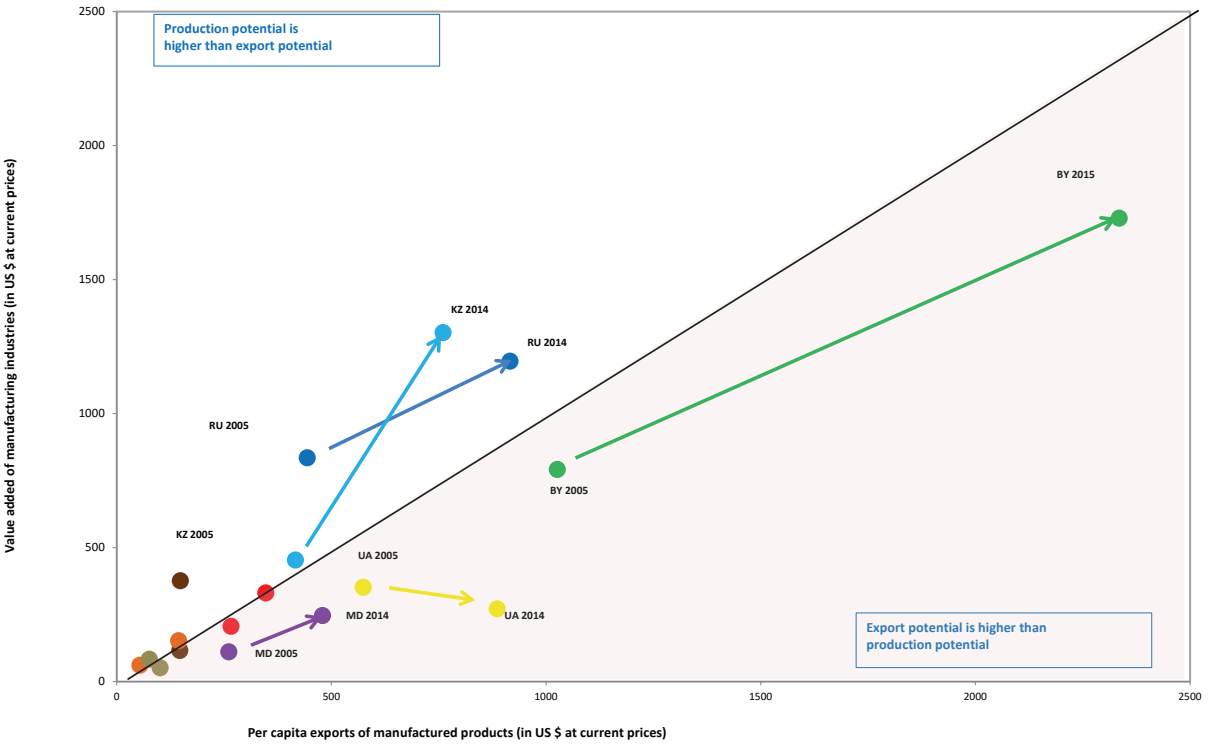
To measure the integration potential of the region's countries, the realization of external demand for national industrial products, the competitive capabilities of certain types of industrial activities of each country in the region, the annual values of industrial exports per capita as well as the compound annual growth rate for individual periods were calculated. The calculation results are presented in Table 1.4 in Appendix 1.

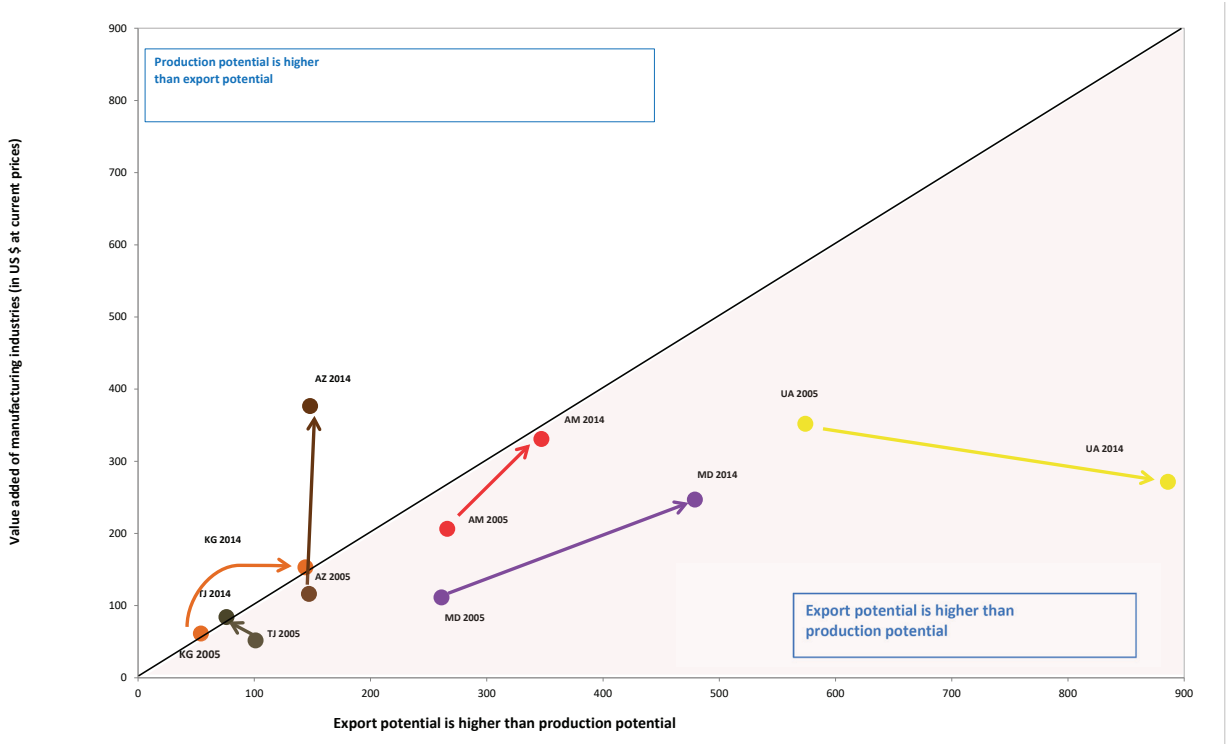
Belarus, followed by Russia, Ukraine and Kazakhstan, was the leader in the growth of export potential of the manufacturing sector in 2005-2014. The lowest volume in per capita exports from the manufacturing sector was recorded in Tajikistan. Intensive growth in exports of raw materials at the end of the period analysed was registered in Kazakhstan, Azerbaijan, Russia and Belarus.

The potential of each country in the region to produce and export manufactured products in the period analysed is illustrated in Figure 11[11].

[11] The second graph shows a group of countries concentrated at the beginning of the coordinate system of the first graph.

Figure 11 – Industrial production potential and exports of CIS countries





Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations, UNIDO recommendations.

In Figure 11, the line dividing the quadrant by 45 degrees illustrates the ideal correlation between the manufacturing sector's per capita value added and the per capita value of exports

of product types. The production potential of the countries positioned above the 45-degree line in 2014 exceeded the export potential of their products (Russia, Kazakhstan and Azerbaijan). Countries close to this boundary line witnessed a growing competitiveness of their manufactured products in foreign markets, an improvement of their business environment and a simultaneous growth of GVA, i.e. an expansion of national wealth (for example, Russia and Kazakhstan in 2005). At high levels of production, movement away from this boundary line is in many respects evidence of a significant expansion of domestic demand for a given product (Kazakhstan, Russia and Azerbaijan in 2014). At low levels of production, the GVA of the manufacturing sector reflects low competitiveness of manufactured products, significant trade barriers, weak trade integration and narrow production possibilities for domestic consumption.

In the countries positioned below the 45-degree line, the export potential of the manufacturing sector exceeds the production potential. At low levels of GVA of the sector as a whole and per capita, the growing export potential and the manufacturing industries mostly produce intermediate products not for domestic consumption, but for end use in importing countries. At the same time, the country's GVA, manufacturing sector and national wealth do not expand. The establishment of effective mechanisms capable of reorienting the revenues from foreign economic activities to the sphere of real production is most important for the countries whose export potential significantly exceeds the industrial value added per capita.

3.3. Significance and influence of the manufacturing sector

The position of each CIS country relative to other countries in the region according to their contribution to regional GVA makes it possible to determine whether the country takes a leading position in the region or lies in its periphery. The distribution of the scale and change in the impact of the nine countries in the region on the overall regional GVA and manufacturing exports in 2005-2014 are presented in Tables 3 and 4 as well as in Figure 12.

Table 3 – Influence of each country in the overall GVA of the manufacturing sector

	Share in the total GVA of the CIS manufacturing industry (in %)			Change (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia	77.90	78.93	85.31	1.03	6.38	7.41
Azerbaijan	0.72	0.98	1.14	0.26	0.16	0.42
Armenia	0.27	0.35	0.47	0.08	0.12	0.20
Belarus	4.48	5.63	1.70	1.15	-3.93	-2.78
Kazakhstan	5.06	5.92	6.80	0.85	0.89	1.74
Kyrgyzstan	0.22	0.25	0.32	0.03	0.07	0.10
Moldova	0.24	0.24	0.25	0.001	0.01	0.02
Tajikistan	0.25	0.18	0.29	-0.07	0.11	0.04
Ukraine	10.86	7.52	3.71	-3.34	-3.82	-7.16

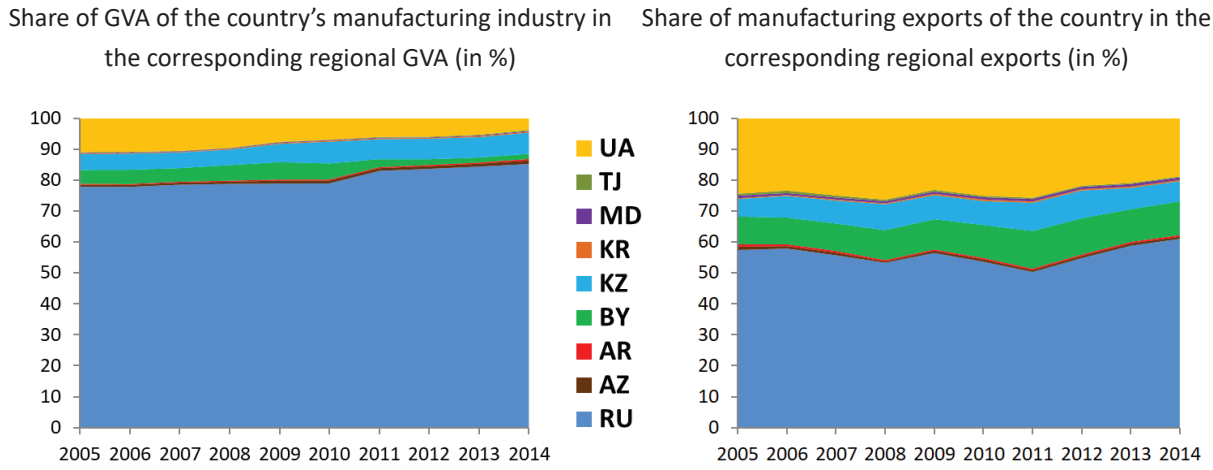
Source: Rosstat, CIS Statistical Committee, authors' calculations.

Table 4 – Influence of each country on total manufacturing exports in the CIS

	Share in total manufacturing exports of CIS (in %)			Change (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia	57.47	56.49	61.07	-0.98	4.58	3.60
Azerbaijan	1.08	0.73	0.70	-0.35	-0.03	-0.38
Armenia	0.77	0.43	0.52	-0.34	0.09	-0.25
Belarus	8.95	9.78	10.92	0.83	1.15	1.97
Kazakhstan	5.69	7.74	6.49	2.05	-1.26	0.79
Kyrgyzstan	0.25	0.46	0.41	0.21	-0.05	0.16
Moldova	0.84	0.73	0.84	-0.11	0.11	0.00
Tajikistan	0.62	0.57	0.31	-0.05	-0.26	-0.31
Ukraine	24.32	23.08	18.74	-1.25	-4.34	-5.59

Source: UNCTADstat Data Portal, authors' calculations.

Figure 12 – Distribution of the scale and change in the influence of each country on the overall regional GVA and manufacturing exports



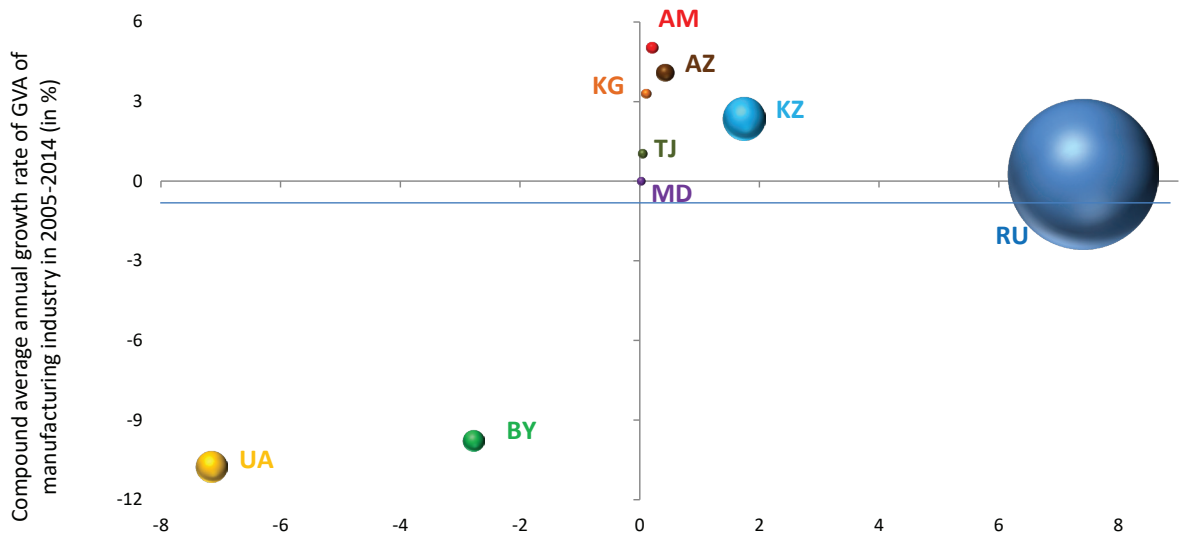
Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

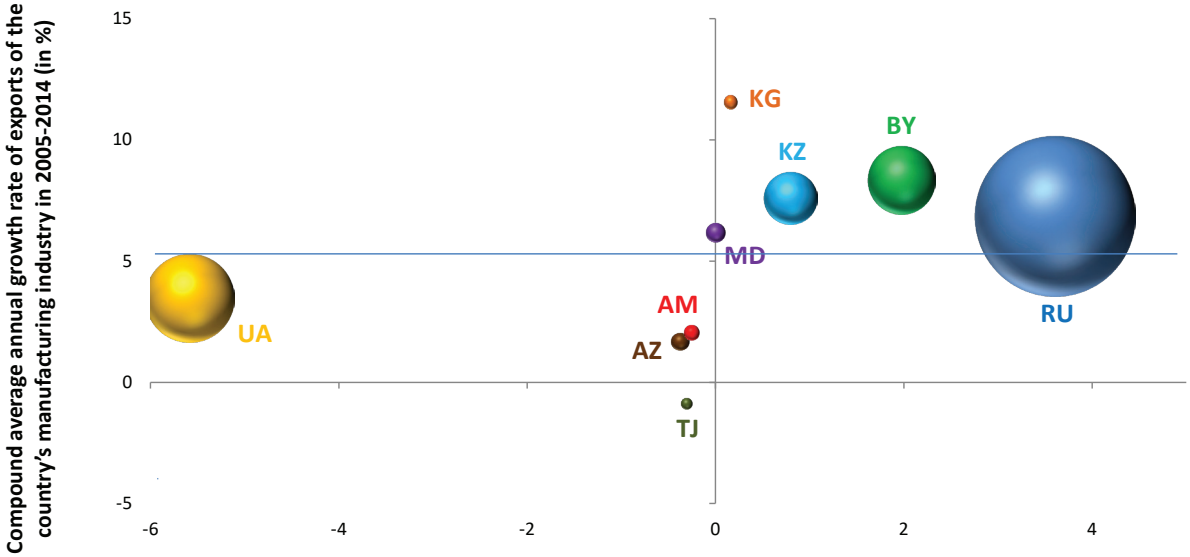
Among the Commonwealth members with high and medium production and export potential, Russia has the greatest influence on both regional GVA and regional exports. The country's share in the region's GVA expanded at a low rate after 2005 until the financial crisis of 2009. Russia's contribution to GVA increase intensely and at a rapid pace over the next three years and only stabilized slightly at the end of the period analysed. At the same time, the extent of Russian exports in total regional manufacturing exports changed unevenly, and sustainable and relatively intense growth was only recorded after 2011. Prior to 2008, the economy of Ukraine had a strong influence on the region's GVA; the continuous and accelerated growth of Kazakhstan's GVA ensured that the country assumed a stable position as the second leading country in the share of region-wide value added. Azerbaijan's position in terms of GVA share in the region expanded slightly. According to estimates of manufacturing exports, the Ukraine remained the second most important country after Russia, despite its narrowing influence by the end of the period analysed. Belarus ceased to retain its notable initial level of influence in

the regional GVA after 2010, despite a steadily increasing share of exports from the country's manufacturing industries.

Figure 13 shows the relationship between the growing exports of products and the GVA of the manufacturing sector in the CIS countries and their impact on the Commonwealth region.

Figure 13 – Relationship between growth and impact of exports and GVA of the manufacturing sector





Note: Size of the marker is determined by the volume of GVA and the individual country's manufacturing exports in 2014; the blue line corresponds to the average growth rate of GVA and the manufacturing sector's exports in the CIS region.

Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

For a country to be able to expand its influence on regional industrial exports and increase the competitiveness of its products on the external market, it must achieve higher growth rates of exports relative to the average regional values. Accelerated development of the national export potential of the country's manufacturing sector in comparison with the growth rates of exports of other countries demonstrates consistency or expansion of competitiveness of the country's industrial products in the region. The export of Russian manufactured products grew with higher intensity than the average regional level. The compound annual growth rate of the GVA of Russia's manufacturing sector remained lower in the period analysed. Kazakhstan and to a lesser degree Azerbaijan experienced the most intensive growth of value added of their manufacturing sector in the region, despite the lower volumes of GVA of their industrial production compared to Russia. In addition to Russia, Belarus and Kazakhstan consistently held top positions in the region in terms of the scale of their competitive industrial exports.

The key measurements of the efficiency of the CIS countries' national industrial policies are summarized in Table 5. The measurements reflect a change in the individual countries' potential, structure and influence. A clear and straightforward visualization not only of the bottlenecks in each country's industrialization process can be illustrated, but also of the main economic relationships between the countries in the region.

Table 5 – Assessment of aggregate efficiency of the CIS countries' manufacturing sector

	Industrial indicators				Export indicators			
	2005	2009	2014	2005-2014, %	2005	2009	2014	2005-2014, %
Russia								
Structure (%)	19.2	16.0	13.9	-5.3	26.4	24.2	24.8	-1.5
Potential (US $)	1354	1163	1389	0.3	444	511	859	6.8
Influence (%)	77.9	78.9	85.3	7.41	57.5	56.5	61.1	3.6
Azerbaijan								
Structure (%)	7.4	4.0	4.4	-3.0	15.6	4.4	5.0	-10.6
Potential (US $)	210	230	280	2.9	140	105	148	0.5
Influence (%)	0.72	0.98	1.14	0.42	1.08	0.73	0.70	-0.38
Armenia								
Structure (%)	13.1	9.6	13.5	0.5	91.2	80.6	70.2	-21.0
Potential (US $)	210	230	367	5.7	266	170	347	2.7
Influence (%)	0.27	0.35	0.47	0.20	0.77	0.43	0.52	-0.25
Belarus								
Structure (%)	28.3	29.8	30.2	2.0	62.1	59.2	61.3	-0.8
Potential (US $)	1156	1247	422	-9.6	1026	1327	2335	8.6
Influence (%)	4.48	5.63	1.70	-2.78	9.0	9.8	10.9	2.0
Kazakhstan								
Structure (%)	14.0	12.1	11.1	-2.8	22.5	23.1	16.7	-5.9
Potential (US $)	834	774	923	1.0	416	621	760	6.2
Potential (US $)	5.06	5.92	6.80	1.74	5.69	7.74	6.49	0.79
Kyrgyzstan								
Structure (%)	16.7	13.4	16.9	0.2	41.8	35.7	51.3	9.5
Potential (US $)	106	98	130	2.0	54	111	144	10.2
Influence (%)	0.22	0.25	0.32	0.10	0.25	0.46	0.41	0.16
Moldova								
Structure (%)	16.2	11.4	13.2	-3.1	85.5	73.3	72.8	-12.8
Potential (US $)	165	140	166	0.1	261	264	479	6.3
Influence (%)	0.236	0.237	0.251	0.02	0.842	0.729	0.841	-0.002
Tajikistan								
Structure (%)	15.5	9.7	10.4	-5.0	76.6	73.6	59.2	-17.4
Potential (US $)	91	51	83	-0.9	101	100	76	-2.8
Influence (%)	0.25	0.18	0.29	0.04	0.62	0.57	0.31	-0.31
Ukraine								
Structure (%)	19.0	16.6	13.3	-5.7	78.7	75.0	70.4	-8.4
Potential (US $)	578	345	203	-9.9	574	649	886	4.4
Influence (%)	10.9	7.5	3.7	-7.16	24.3	23.1	18.7	-5.6

Note: Structure (%) - share of GVA of the manufacturing sector in the country's GDP; potential (US $) – per capita GVA of the country's manufacturing sector ; influence (%) - share of GVA of the country's manufacturing sector in total GVA of the CIS countries' manufacturing sector.

Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations, UNIDO recommendations.

If all countries are ranked according to their industrial and export policy in terms of structure, potential and influence in the region and classified as high, medium and low efficiency,

we obtain a list of the regional leaders to the outsiders.

Countries that had a manufacturing sector with a highly efficient structure at the end of the period analysed were Belarus and Kyrgyzstan; the structure of Russia and Kazakhstan's manufacturing sector was of medium efficiency; and the structure of the manufacturing sector of Tajikistan, Azerbaijan, Armenia, Moldova and Ukraine was of low efficiency.

According to the parameters of the potential of industrial exports, Kazakhstan and Russia had a highly efficient policy for increasing the value added and the per capita exports of their manufactured products in 2014; Belarus, Armenia, Azerbaijan and Ukraine implemented policies of medium efficiency, while Moldova, Kyrgyzstan and Tajikistan's industrial policy was of low efficiency.

Among the countries included in the study, Russia, Kazakhstan and Belarus had a significant impact on regional industrialization and thus established the most effective trade alliances. The exports and industrial policy of Kyrgyzstan, Moldova, Armenia, Azerbaijan and Tajikistan was of medium efficiency in terms of aggregate regional participation. The export and industrial policy of the Ukraine, which recorded the largest decrease in industrialization intensity in the region, was of low efficiency.

4. Specific features of the manufacturing sector in the CIS: intensity and quality of industrialization, technological changes, mutual influences

4.1. Main sources and provisions

To assess the main factors determining the sectoral features of regional development of the manufacturing sector, a cross-country evaluation of the competitive efficiency of the CIS countries' industries with different technological levels in the period 2005-2014.

A cross-cutting approach is used to analyse sectoral technological shifts in the productive forces of each country in the region, which makes it possible to determine the attained level and dynamics of change along the following trends:

- Structure of GVA of the manufacturing sector's industries, including their technological structure;
- Growth intensity of the industries and their contribution to the industry's aggregate GVA;
- Structural change in the manufacturing sector;
- Ability to produce and export products with different technological levels;
- Production and export potential of medium- and high-tech industries;
- Intensity of industrialization and technological level of exports;
- Significance and influence of manufacturing industries with different technological levels on the overall GVA of the relevant industries in the CIS;
- Relationship between the growth and influence of GVA and exports of medium- and high-tech products;
- Efficiency of industrial policy.

Despite the fact that industrialization was not included in the Millennium Development Goals, the concept of comprehensive and sustainable industrial development is presented in the United Nation's Sustainable Development Program until 2030. Goal No. 9 comprises an active increase in the share of industry in the overall GDP and employment for this period. An important task in this regard is the modernization of infrastructure and industry, which contribute to increasing efficiency in resource use, use of clean and environmentally friendly technologies and industrial processes, expansion of scientific research, technological capabilities and innovation support [UNO, 2015].

Structural change in any sector of the economy is regulated by the determinants of supply and demand. Technological change is a determinant of supply and is the most important

factor in the promotion of labour productivity growth.

Building on the fact that the processes of structural transformation affect not only the sectors of the economy as a whole, but also occur within them, monitoring the shifts between certain types of activities in the manufacturing sector is always relevant. After all, the sustainable development of industrialization processes is a key factor of structural change in a country's economy, since it contributes considerably to capital accumulation and the promotion of new technologies.

Structural change in the manufacturing sector primarily reflects the sector's ability to create new and fast-growing industries characterized by a higher value added, contributing to the sector's growth in the economy and the implementation of innovations.

The persistence of structural imbalances in the manufacturing sector increases the vulnerability of the economies of the Commonwealth region to financial instability and external shocks, especially under conditions of a marked convergence of the cycles of economic growth, which strengthens the impulses transmitted between the countries. At the same time, the activation of exports of industrial products contributes to the growth of export earnings and long-term growth, which depends on conditions in the commodity segments of the market, because it not only accelerates the growth of labour productivity, but also results in price stability, even under growing exports and the deterioration of foreign trade conditions.

Throughout the period analysed, the share of the manufacturing sector in GDP steadily declined in nearly all countries of the Commonwealth region, with the exception of Armenia and Kyrgyzstan. In Belarus, the contribution of the manufacturing sector to GDP remained high, along with a noticeable reduction in its scale.

The manufacturing sector's contraction in the CIS region in favour of the services sector and trade does not make it possible to maintain sufficient economic growth rates for long periods of time, increasing the economy's volatility regardless of the maturity of the industrialization process in the given country. In other words, the de-industrialization process is generally premature for the entire region and restricts the possibilities of introducing large-scale industrial technologies.

It is of strategic importance for each country in the region to monitor statistical indicators that reflect the results of industrial strategies at certain stages of development, and to collect the corresponding empirical data and knowledge base, which, in turn, can ensure a synergy of national economic policies. At the same time, it is presumed that if the share of the manufacturing sector contributes less 30 per cent of GDP, and if the share of those employed in the manufacturing sector is less than 5 per cent of total employment, then the economic benefits supporting long-term growth will be difficult to implement [UNIDO, 2015a].

This raises two critical questions. Is a shift of the manufacturing sector taking place in the CIS region towards medium- and high-tech industries? And what was the extent and intensity of this shift in the countries of the region in the period 2005-2014?

The following methodological assumptions are applied:

- the aggregation level of manufacturing industries is determined on the basis of the purpose of the analysis and the availability of information;
- the used aggregation level of manufacturing industries is based on the production processes and levels of technological complexity.

The ISIC (International Standard Industrial Classification) and SITC (Standard International Trade Classification), as well as the version of the OECD classification adapted to the specific features of the Commonwealth region, linking industry costs for R&D with value added and production statistics [OECD, 2005], are used in this study as the foundation for the classification of manufacturing industries in all CIS countries The sources of such classifications of manufacturing industries in accordance with level of technology used and the ability to increase the industrial value added are the studies by S. Lall, in which, for the first time, an attempt was made to cover several aspects of technological modernization proceeding from the possibilities of national statistics [Lall, 2000].

The production classification used in this study corresponds to the majority of analytical concepts of technological ranking of industrial products and includes the following technological categories:

- Raw materials processing consists of activities that primarily have a low level of technology and are characterized by labour-intensive production processes and low capital intensity. Competitive advantages of such industries mainly arise in connection with the availability of local natural resources. More significant advantages in this group of manufacturing industries emerge, when the skills and intensive technologies used in production are capable of attracting significant capital and new technologies (in particular, modern food production).
- Manufacturing industries with a low level of technology but which are more capital-intensive were classified as low-tech industries. The technologies used in such activities are sustainable, widespread and mainly found in capital equipment with simple requirements as regards the skills and qualifications of employees. Products from such manufacturing industries are in many respects differentiated and competitive in terms of price. Labour costs are one of the main cost elements in the potential of competitiveness. It is in this production cluster in developed countries that assembly operations are often transferred to economies with cheap labour and raw material resources while keeping complex production and technological functions within the country.
- Medium and high-tech manufacturing industries, combined into one group for the CIS

region, are characterized by more sophisticated technologies, high requirements for qualification, integrated training and technological activity. At the same time, medium-technology industries, as a rule, have production technologies with moderately high levels of scientific development, require advanced skills and long-term training. Industries associated with machine building and the production of transport vehicles in particular, need to implement "best practices" of technological intensity. Such industries produce stable and mostly undifferentiated products, requiring technological efforts to improve the equipment and optimize complex processes. Barriers to entering the foreign market are generally high; compliance with international standards is a prerequisite. High-tech industries use advanced fast-changing technologies with high investments in scientific development, technological infrastructure and level of special technological skills and close institutional interaction. Many products of these industries require labour-intensive final assembly, while a high share of value added contributes to the economically beneficial location of part of the production processes in regions with low wages and energy costs. This contributes to the development of internationally integrated production systems, in which the separation and location of production is closely linked to the division of costs.

All classifications of manufacturing production should be considered conditional in terms of international competitiveness, and all types of industrial activity, regardless of their level of technology, should be technologically upgraded continuously. According to S. Lall, "there is no activity that would have immunity to technical changes" [Lall, 2000].

Table 2.1 in Appendix 2 presents the distribution of activities according to the technological structure of the manufacturing sector in Russia and the CIS countries in accordance with national industry priorities [Upadhyaya et al., 2016; Kitrar et al., 2016; UNIDO and GIZ, 2015; Government of URT and UNIDO, 2012; Government of Nepal and UNIDO, 2014].

The main assumption of this division of industrial activities is the sufficiency and availability of a constant set of comparable data at the 2-digit level of their ISIC disaggregation over a long period [UNO, 2005] for reference on sectoral technological complexity and subsequent diagnostics of industrial development.

4.2. Sectoral structure of value added: scale, growth intensity and changes

The main impulses of structural transformations between sectors of the economy that can increase the economy's gross value added arise first within the manufacturing sector and are caused by shifts between industries. When the manufacturing sector with different levels of technology is a trigger for such inter-industry developments, the expansion of industries with a high value added is facilitated by structural redistributions towards medium- and high-tech industries and the predominance of capital- and technology-intensive enterprises.

Region-wide format[12]

In 2014, the region-wide GVA of the manufacturing sector in nine CIS countries totalled USD 234.5 billion, of which 24 per cent were medium- and high-tech industries and 27 per cent and 49 per cent, respectively, were industries associated with raw materials processing and low-tech industries.

By 2014, the region-wide GVA of the manufacturing sector decreased by 6 per cent compared to 2005, whereas the GDP of the CIS countries increased by 27 per cent.

The annual growth rate of regional GVA of the manufacturing sector was -0.6 per cent in the period 2005-2014, while the industrial exports of the region's countries increased by an average of 6.2 per cent annually.

Regional manufacturing exports increased by USD 91.7 billion by 2005 and reached USD 202.5 billion in 2014. At the end of the period analysed, the share of exports of medium- and high-tech products in total volume reached 36 per cent; the share of raw materials processing and of low-tech industries attained 23 per cent and 41 per cent, respectively.

In the period 2005-2014, the total GVA of the manufacturing sector in the countries of the region with a national per capita income that was higher than the average (Azerbaijan, Belarus, Kazakhstan and Russia) increased by 1.2 per cent and amounted to USD 222.7 billion. Industrial exports reached USD 160.3 billion at the end of the period analysed compared to USD 81.1 billion in 2005.

In countries with an average level of national per capita income (Armenia, Moldova and Ukraine), the total GVA of the manufacturing sector reached USD 10.4 billion, amounting to only 37 per cent of the 2005 level in USD; the growth rate of manufacturing exports from these countries amounted to USD 40.9 billion in 2014.

The value added of the manufacturing sector in countries with a low national per capita income (Kyrgyzstan and Tajikistan) was USD 1.4 billion for the entire period analysed, increasing by 24 per cent, while the value of exports increased by USD 0.5 billion in 2014 versus US $ 1.0 billion in 2005.

Over the past decade, starting in 2005, the share of the CIS region's participation in the global GVA of the manufacturing sector[13] narrowed by 0.3 percentage points, and the scale of manufacturing exports from the Commonwealth to third countries amounted to 1.06 per cent of global exports in 2014, to USD 1.4033 billion compared to the corresponding share in 2005 (1.01 per cent).

Based on the industry classification of the manufacturing sector according to level of technology and the existence of corresponding industries in each country of the Commonwealth

[12] Authors' calculations.

[13] Data source: UNIDO Statistic Data Portal, MVA2016 database; authors' calculations.

region (presented in Table 2.1 in Appendix 2), let us determine the extent to which the scale and intensity of GVA growth of raw materials processing industries and industries with a low technological level can shift as the GDP per capita increases, giving priority to medium- and high-tech enterprises .

Table 6 presents a generalized structure of value added according to technological classification of the manufacturing sector.[14]

[14] In Appendix 2, Table 2.2 presents the results of the calculations for all industries in each country of the Commonwealth.

Table 6 – GVA structure by level of industry in the manufacturing sector in CIS countries

	GVA at constant prices (USD millions)			Compound average annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia						
Raw materials processing	44 875	43 142	43 068	-0.8	0.0	-0.4
Low-tech manufacturing	97 592	84 751	97 841	-2.8	2.4	0.0
Medium- and high-tech manufacturing	51 912	38 237	59 156	-5.9	7.5	1.3
Azerbaijan						
Raw materials processing	781	881	1 116	2.5	4.0	3.6
Low-tech manufacturing	846	1 035	1 274	4.1	3.5	4.2
Medium- and high-tech manufacturing	160	137	281	-3.1	12.7	5.8
Armenia						
Raw materials processing	359.5	466.8	718.6	5.4	7.5	7.2
Low-tech manufacturing	265.8	245.9	358.6	-1.5	6.5	3.0
Medium- and high-tech manufacturing	50.6	32.4	28.7	-8.5	-2.0	-5.5
Belarus						
Raw materials processing	3 243	3 870	1 457	3.6	-15.0	-7.7
Low-tech manufacturing	4 385	4 577	1 450	0.9	-17.4	-10.5
Medium- and high-tech manufacturing	3 547	3 410	1 089	-0.8	-17.3	-11.1
Kazakhstan						
Raw materials processing	4 110	4 281	5 010	0.8	2.7	2.0
Low-tech manufacturing	7 675	7 397	9 260	-0.7	3.8	1.9
Medium- and high-tech manufacturing	845	777	1 685	-1.7	13.8	7.1
Kyrgyzstan						
Raw materials processing	179.5	144.6	215.6	-4.2	6.9	1.9
Low-tech manufacturing	326.9	359.8	518.4	1.9	6.3	4.7
Medium- and high-tech manufacturing	41.1	21.1	22.8	-12.5	1.3	-5.7
Moldova						
Raw materials processing	373.6	333.3	367.8	-2.3	1.7	-0.2
Low-tech manufacturing	154.2	126.6	177.2	-3.9	5.8	1.4
Medium- and high-tech manufacturing	36.4	38.7	44.4	1.2	2.3	2.0
Tajikistan						
Raw materials processing	148.2	116.4	431.8	-4.7	24.4	11.3
Low-tech manufacturing	453.0	249.4	242.5	-11.3	-0.5	-6.1
Medium- and high-tech manufacturing	18.1	11.8	11.8	-8.2	0.0	-4.2
Ukraine						
Raw materials processing	6 998	5 325	3 332	-5.3	-7.5	-7.2
Low-tech manufacturing	13 866	7 140	3 906	-12.4	-9.6	-11.9
Medium- and high-tech manufacturing	6 239	3 374	1 459	-11.6	-13.0	-13.5

Source: Rosstat, CIS Statistical Committee, authors' calculations.

In Russia, the GVA of the manufacturing sector decreased 1.17-fold, losing on average 3.1 per cent annually, which was much lower not only than the average annual rate of change in the country's GDP over the same period (an increase of 0.5 per cent on average per year), but

also than the development rate of other sectors of the economy. In 2014, the value added of the manufacturing sector recovered after the crisis of 2008-2009, increasing to USD 200,053 million for the sector as a whole (compared to USD 194,336 million in 2005).

In the period 2005-2014, raw materials processing industries declined, in particular, the wood processing industry and the production of wood products (with the exception of furniture) (-2.4 per cent on average per year), the production of other non-metallic mineral products (-1.7 per cent), and food production including beverages (-0.3 per cent). Prior to the financial crisis of 2008-2009, the value added created in this group of industries fell by an average of 0.8 per cent per year, while in the next cyclical phase of industrial development (2009-2014), this trend slowed down slightly and the value added scale decreased by only 0.04 per cent annually on average. The largest value added in the raw materials processing industry in Russia was contributed by the production of food including beverages (USD 25,489 million in 2014).

In the group of low-tech industries during the period analysed, the volatility was more pronounced. However, despite the changes in value added ranging on average between -2.8 per cent before the crisis of 2009 to +2.4 per cent in subsequent years, its total gain over the entire period analysed appeared to be zero. The largest value added in Russia with a consistent growth rate of 2.4 per cent per year was contributed by coke production and petroleum products (USD 49,374 million in 2014), together with metallurgical production (USD 29,866 million in 2014), making up 40 per cent of the Russian manufacturing sector's GVA.

The compensatory average annual growth rate in the group of low-tech industries in the period analysed was mainly attributable to industries such as coke production; petroleum products (2.4 per cent annually on average), production of rubber and plastic (2.9 per cent each) as well as production of finished metal products (2.8 per cent).

In the group of manufacturing industries in Russia with a high and medium level of technologies, a marked decline was recorded in the period 2005-2009, with an average annual loss of 5.9 per cent. After the crisis, the pronounced downward trend was replaced by a distinct upward trend with a 7.5 per cent annual gain on average). In the period 2005-2014, which witnessed the highest growth rate at 7.2 per cent per year, the value added was highest in the building of ships, aircraft and space vehicles and other transport vehicles, expanding its volume 2-fold in 2005, and 2.6-fold by 2009 (USD 15,510 million in 2014 vs. USD 7,747 million and USD 5,886 million in 2005 and 2009, respectively). Among the medium- and high-tech industries, a significant value added was contributed by the production of chemicals (USD 15,879 million in 2014) and the production of machinery and equipment (USD 11,055 million in 2014) despite some losses, particularly in the period 2005-2009 (2.0 per cent and 7.8 per cent on average per year, respectively).

In Azerbaijan, high and sustainable growth in the value added of the country's

manufacturing sector, (4.5 per cent on average per year), particularly in the period 2009-2014, which was attributable to an increase in the value added of raw materials processing (3.6 per cent annually between 2005 and 2014) and low-tech industries (4.2 per cent). In 2014, USD 1,116 million of value added was created in the raw materials processing industry, and USD 1,274 million was contributed by low-tech industries. In these two groups, the bulk (nearly 90 per cent) of value added of the country's manufacturing sector in 2014 was mainly concentrated in the production of food, beverages and tobacco, as well as in the production of coke and refined petroleum products (USD 944 million). Despite a relatively high annual average growth rate of medium- and high-tech manufacturing industries (5.8 per cent in 2005-2014), the scale of such industries remained rather small (USD 281 million in 2014), which was only about 10 per cent of the share in GVA of Azerbaijan's manufacturing sector.

In Armenia, the gap between industries with different levels of technology increased significantly in the period 2005-2014. The value added of the raw materials processing industry developed at an accelerated rate (7.2 per cent on average annually since 2005), while the value added of the low-tech industries increased at an accelerated pace only after 2009. The development of medium- and high-tech industries was accompanied by a noticeable decrease (-5.5 per cent on average per year for the entire period), especially in 2005-2009 (by -8.5 per cent). The highest volume of value added in the country was created in 2014 in the production of food, including beverages and tobacco (USD 647.9 million), making up 80 per cent of GVA of the country's manufacturing sector, together with the production of base metals and finished metal products, except machinery and equipment (USD 240.5 million),. The value added of rubber and plastics expanded, amounting to USD 34.4 million in 2014 compared to USD 6.6 million at the beginning of the period analysed, with a noticeably high overall rate for the Commonwealth region (18 per cent on average per year for the entire period). The accelerated growth of the country's value added was also attributable to the production of other non-metallic mineral products (6 per cent annually).

The three industries with the highest value added in Belarus' manufacturing sector from 2005 to 2014 were the production of food, including beverages and tobacco, the production of coke, petroleum products and nuclear materials as well as the production of chemicals, which all have different levels of technology. However, a reduction in the contribution of value added of the raw materials processing industry (7.7 per cent per year on average) was caused not only by losses in the production of food due to decreasing demand, but also by losses in the production of other non-metallic mineral products by 6.9 per cent on average per year. A rapid and significant decline in GVA of low-tech industries (by 10.5 per cent) was facilitated by an average annual reduction of 11.4 per cent of value added in the production of coke, petroleum products and nuclear materials.

Since 2005, Kazakhstan has recorded a compound growth of GVA in the manufacturing

sector of 2.4 per cent annually, signalling a sustainable industrial recovery of the national economy. The main contribution to value added in the manufacturing sector was provided by two low-tech industries, the production of base metals (USD 5,008 million in 2014) and the production of coke and refined petroleum products (USD 1,481 million). The concentration of value added in the production of food, beverages and tobacco (USD 3,773 million) and the production of other non-metallic mineral products (USD 1,184 million) (raw materials processing industries) also contributed to the value added. The most intense growth was recorded in medium- and high-tech industries, increasing the value added by 7.1 per cent annually on average, reaching USD 1,685 million by 2014. A particularly striking breakthrough in the group of medium- and high-tech industries was noted in the GVA dynamics of the production of motor vehicles, trailers and semi-trailers (USD 491 million in 2014 compared to USD 40 million in 2005).

The sectoral structure of GVA of the manufacturing sector in Kyrgyzstan was dominated by a group of low-tech industries with a compound annual growth rate of 4.7 per cent and the metallurgical production and the production of finished metal products (USD 445 million). The main contribution to total value added from the raw materials processing industry in 2014 was made by the production of food, including beverages and tobacco, thereby restoring not only its pre-crisis position, but also exceeding the volume of 2005 (USD 126.3 million compared to USD 99.2 million and USD 111.6 million, respectively), adding an average of 1.2 per cent annually. The medium and high-tech group registered negative growth rates, making an even lower contribution to GVA (USD 22.8 million in 2014 compared to USD 41.1 million at the beginning of the period analysed).

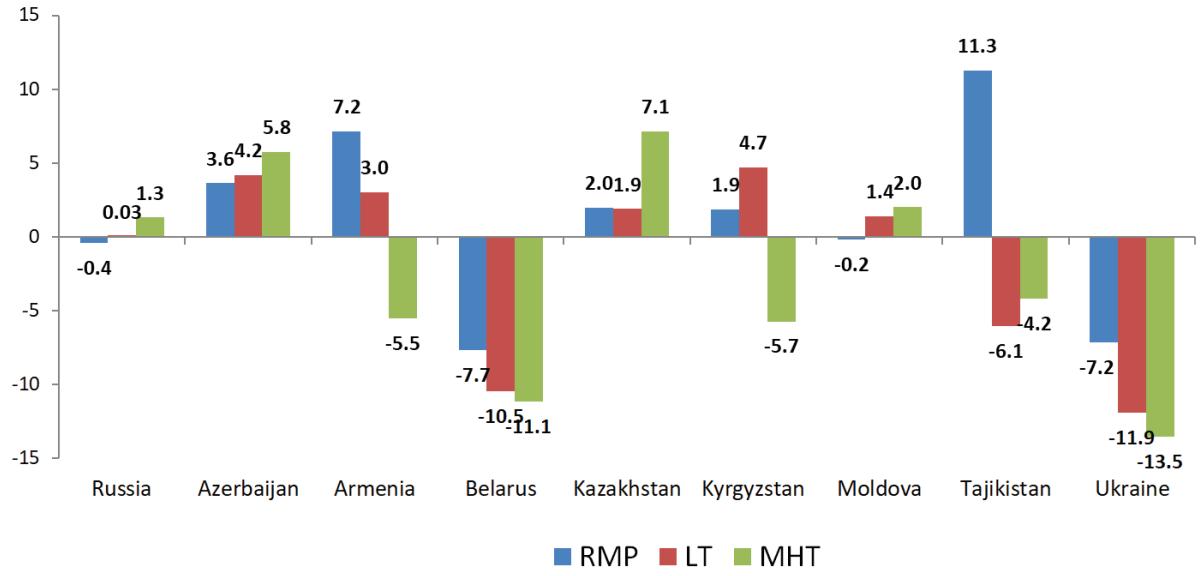
The largest contributor to GVA of the manufacturing sector in Moldova was the raw materials processing industry, where 80 per cent of value added was concentrated in the production of food and beverages (USD 294 million in 2014) and another 18 per cent was derived from the production of other non-metallic mineral products (USD 64.6 million). The value added of low-tech industries, despite low volumes, increased to USD 177.2 million by the end of the period analysed, mainly due to the strengthening of the structure of aggregate GVA in the clothing industry (2.9 per cent growth on average per year), textile production (4.5 per cent growth per year) and the production of rubber and plastics (0.7 per cent). Among the medium- and high-tech industries, the highest growth was recorded in the production of electrical machines and equipment (16.3 per cent on average per year), which contributed nearly half of GVA from all industries of the group (USD 20.9 million in 2014), as well as the production of chemical products, which recorded a 5 per cent annual increase in value added (USD 14.5 million compared to USD 8.9 million in 2005).

The contribution of Tajikistan's raw materials processing industry to aggregate GVA of the manufacturing sector increased significantly after 2009. In 2005, the highest value added (USD 453.0 million) was contributed by low-tech industries, while the raw materials processing

industry produced only one-third of total value added. The GVA of low-tech industries decreased by 6.1 percentage points on average annually, and the upsurge of commodity production following the crisis of 2009 (by 24.4 per cent on average per year) led to a clear shift in the structure of the country's manufacturing sector. At the same time, the rate of decline in the dynamics of value added of medium- and high-tech industries remained virtually unchanged from the middle of the period analysed, due primarily to the lack of a positive trend in the development of domestic and external demand. The greatest increase in value added of the commodities industries was observed in the production of food, including beverages and tobacco (USD 322 million with a 10 per cent average annual growth rate). The most intensive growth was recorded in the production of other non-metallic mineral products, with the value added of the industry significantly increasing from USD 16.8 to USD 92.9 million. Among the low-tech industries, metallurgical production and the production of finished metal products decreased more than 3-fold from the beginning of the period analysed (USD 90.2 million in 2014). The textiles and clothing industry recovered noticeably after the crisis of 2009 and even exceeded its 2005 value (USD 129.7 million versus USD 116.5 million, respectively). The economy of Tajikistan is generally still lagging behind in terms of industrialization and economic growth due to its low technological development. The country is at an early stage of industrial development, which means that the country can increase the value added of the raw materials processing industry as a starting point for further structural change.

In the period 2005 to 2011, the Ukraine's manufacturing sector did not recover following a sharp and sudden drop in 2009 caused by the global financial crisis and the political crisis unfolding in the country since the end of 2013. In 2005, the country's GVA structure was clearly dominated by low-tech industries with a total value added of USD 13,866 million, mainly from the production of base metals and finished metal products, except machinery and equipment (USD 7,887 million), as well as from the production of coke and refined petroleum products (USD 3,361 million). The remaining GVA of the country's manufacturing sector was almost equally distributed between raw materials processing and medium- and high-tech industries (USD 6,998 million and USD 6,239 million, respectively). The value added of the raw materials processing industry was primarily concentrated in the production of food, beverages and tobacco (USD 5,827 million). Medium- and high-tech industries were dominated by the production of vehicles, trailers, semitrailers and other transport vehicles with a slight majority (USD 1,938 million). In the period analysed, the main loss in value added (an average of 11.9 per cent per year) was recorded in low-tech industries, which ultimately decreased to USD 3,906 million. The GVA of medium- and high-tech industries decreased at approximately the same rate (to USD 1,459 million). The value added of the raw materials processing industry decreased by nearly half. The country's manufacturing sector contracted with the highest intensity in the entire Commonwealth region in 2014 (Figure 14).

Figure 14 – Annual growth rate of GVA of the manufacturing sector by generalized groups of industries in the CIS countries (in %)

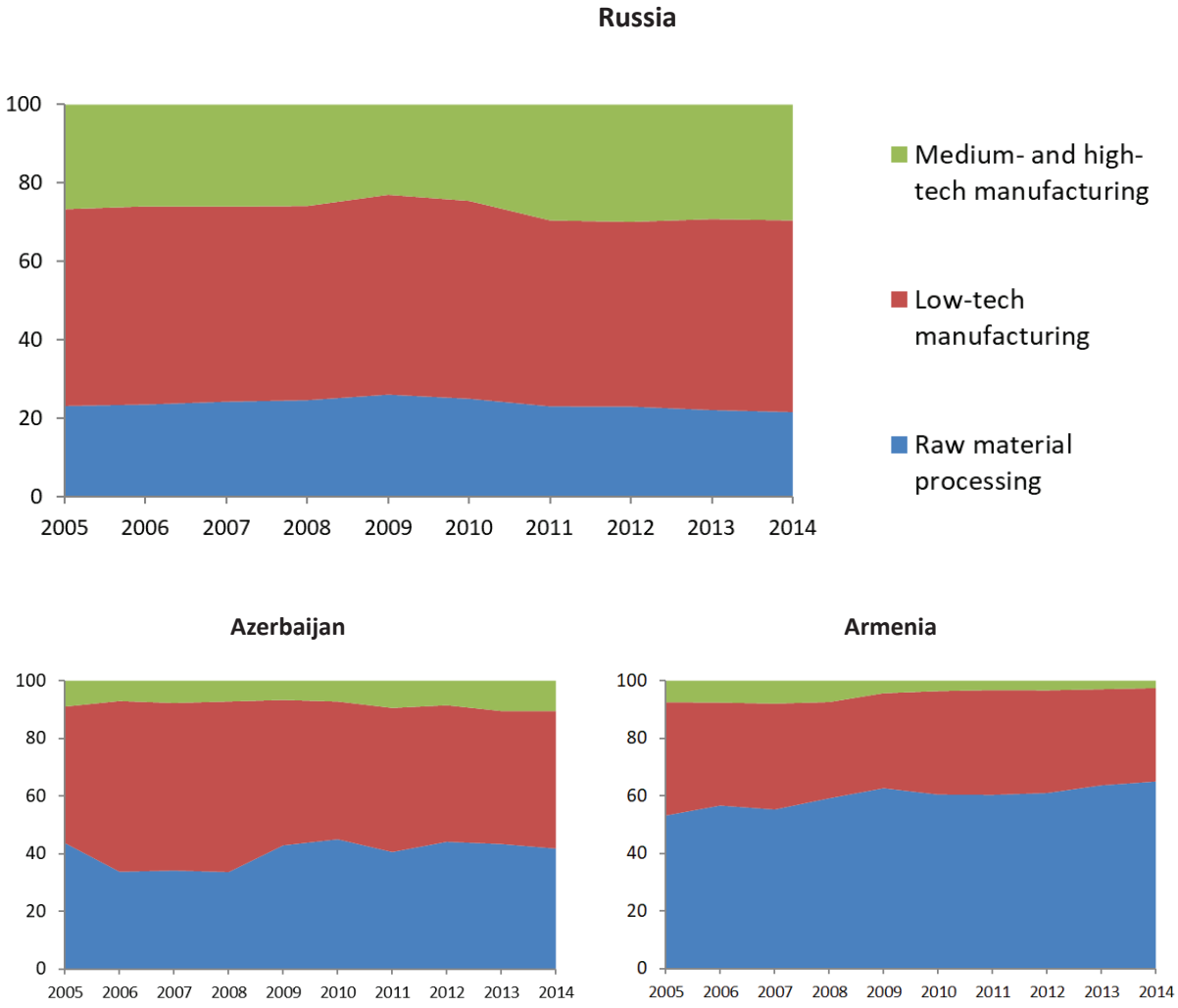


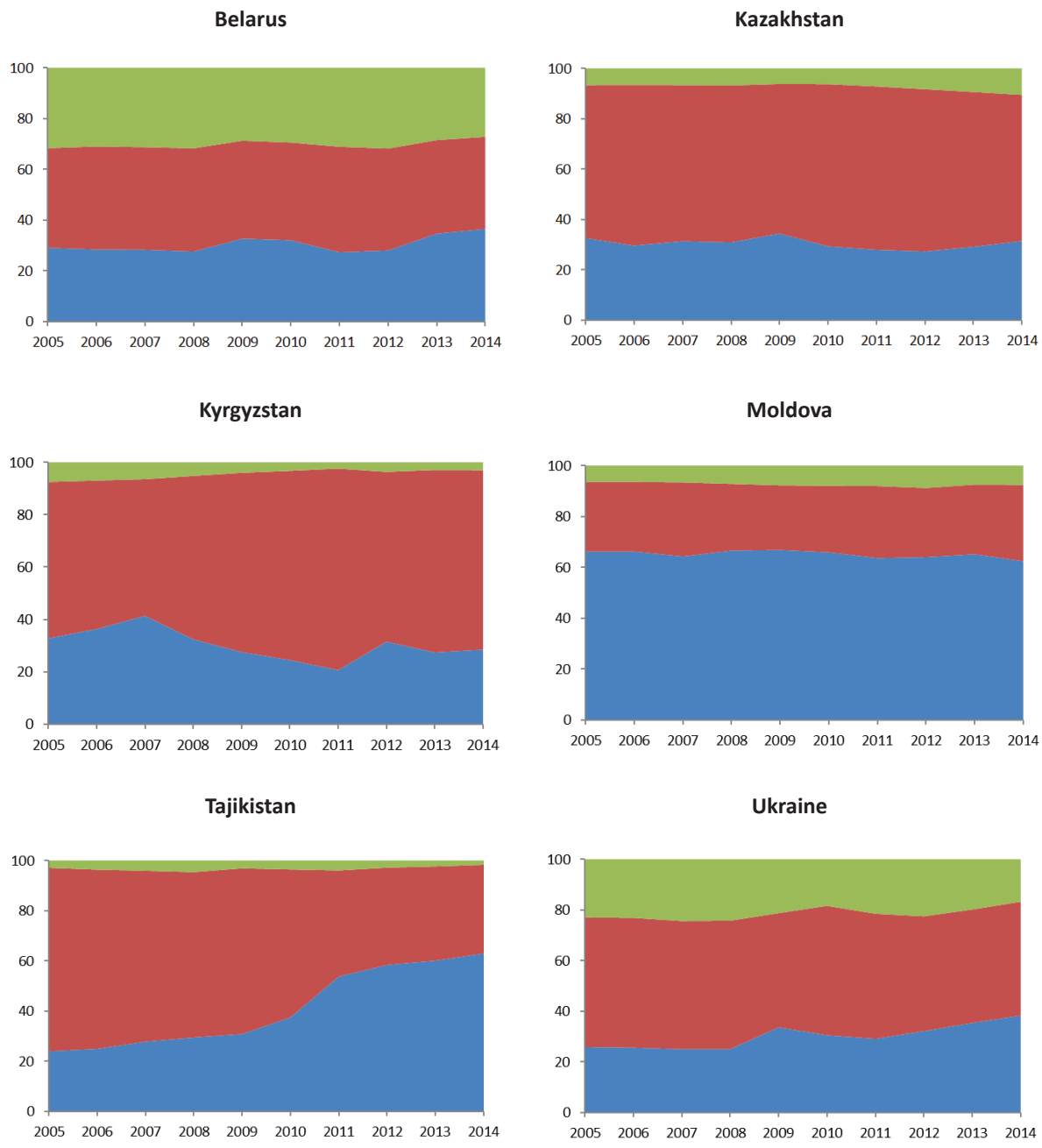
Source: Rosstat, CIS Statistical Committee, authors' calculations.

An analysis of the regional features of industrial development should be carried out, taking into account differences in the level of national per capita income and each country's industrial potential[15]. This makes it possible to observe various models of structural change and shifts in level of technology during the period analysed, depending on the heterogeneity of the selected countries. The Commonwealth region was characterized by multidirectional trends in the study period, which are weakly dependent on the homogeneity of the countries (Figure 15).

[15] The World Bank classification is used [WB, 2012]: classification of the CIS countries by industrial potential - the authors' estimates are presented in Table 1.3 in Appendix 1

Figure 15 – Distribution of GVA of the manufacturing sector by generalized groups of industries in CIS countries (in %)





Source: Rosstat, CIS Statistical Committee, authors' calculations.

The value added of the raw materials processing industry developed most dynamically in Azerbaijan and Armenia – countries with different per capita national incomes, but a similar industrial potential throughout the period analysed. The development of the value added of low-tech industries in these economies demonstrated an almost identical intensity and, accordingly, a unidirectional industrial strategy of sectoral development of the manufacturing sector. However, the cost scales of GVA differed significantly in these two industries at the end of the period analysed (USD 1,274 million in Azerbaijan compared to USD 358.6 million in Armenia).

In the first group of countries with an above average national per capita income level[16] (without Azerbaijan) and a high starting industrial potential (as of 2005), a noticeable and steady shift of the manufacturing sector towards high technologies (13.8 per cent on average per year) was recorded in Kazakhstan and with a lower intensity (7.5 per cent) in Russia in the last five years of the study period. At the same time, the volume of the value added of medium- and high-tech manufacturing industries was almost 12.5 times higher in Russia than the aggregate volumes of value added of those industries in all other countries of the region. In Belarus, the traditional structure of the manufacturing sector in terms of level technology had been preserved by the end of the period analysed. However, the intensity with which the industries from the medium- and high-tech group lost their position intensified the gaps in the structure of GVA.

Among the countries of the region with an average national per capita income and a less significant starting industrial potential, only Moldova recorded an expansion of GVA of its medium- and high-tech industries, albeit insignificant for the manufacturing sector as a whole. At the same time, the raw materials processing industry declined. However, such changes did not lead to notable shifts in the structure of GVA of the country's manufacturing sector.

In the countries of the region with a low per capita national income and a low starting industrial potential, and particularly in Tajikistan, the main trend following the 2009 crisis was an increasing structural imbalance in the manufacturing sector. Along with the expansion of the position of the raw materials processing industry, which is labour-intensive and the lowest barriers to entering the local market, the GVA was curtailed in the remaining industry groups.

A dynamic expansion of medium- and high-tech industries in the structure of the aggregate GVA of the manufacturing sector, which is critical for the accumulation of capital and for the development of the knowledge base, occurred in only two economies of the region – Russia and Kazakhstan.

At the same time, the main investment potential of the manufacturing sector in Russia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan and Ukraine consisted of low-tech industries, with the majority of finished products being intermediate products for industries with a higher technological level. The industry with the highest value added in Armenia, Moldova and Tajikistan throughout the period analysed was the raw materials processing.

The efficiency of any industry or group of industries according to level of technology, capital, labour input and exports should primarily be assessed in terms of three factors: structure, potential and influence. The assessment of competitiveness of certain manufacturing industries becomes more reliable when a comparison is made between countries that are part of a bloc or have similar manufacturing characteristics and compete in global value chains. If

[16] According to the World Bank classification [WB, 2012].

structural change in the manufacturing sector is considered in terms of its composition and the contribution of individual industries to production and total export values, then an analysis of the significance of the leading industries to total industrial value added, which represent the core of each of the three industry groups covered in this study, allows an assessment of the basic structural imbalances in the manufacturing sector, both within the individual country and for the entire region.

Let us consider the three technological industrial groups: raw materials processing, low-tech, medium- and high-tech industries, and the activities in each group with the highest value added in the period analysed in terms of their contribution to the total value of the manufacturing sector (Table 7).

Table 7 – Contribution of the main manufacturing activities to sectoral GVA by country[17]

	Share of the sector GVA in the GVA of manufacturing industry (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Raw materials processing						
Russia	23.1	26.0	21.5	2.9	-4.4	-1.6
Azerbaijan	43.7	42.9	41.8	-0.8	-1.1	-1.9
Armenia	53.2	62.7	65.0	9.5	2.3	11.8
Belarus	29.0	32.6	36.5	3.6	3.8	7.4
Kazakhstan	32.5	34.4	31.4	1.8	-3.0	-1.1
Kyrgyzstan	32.8	27.5	28.5	-5.3	1.0	-4.3
Moldova	66.2	66.9	62.4	0.6	-4.5	-3.8
Tajikistan	23.9	30.8	62.9	6.9	32.1	39.0
Ukraine	25.8	33.6	38.3	7.8	4.7	12.5
Low-tech manufacturing						
Russia	50.2	51.0	48.9	0.8	-2.1	-1.3
Azerbaijan	47.3	50.4	47.7	3.1	-2.7	0.4
Armenia	39.3	33.0	32.4	-6.3	-0.6	-6.9
Belarus	39.2	38.6	36.3	-0.6	-2.3	-3.0
Kazakhstan	60.8	59.4	58.0	-1.4	-1.4	-2.7
Kyrgyzstan	59.7	68.5	68.5	8.8	0.0	8.8
Moldova	27.3	25.4	30.1	-1.9	4.7	2.7
Tajikistan	73.2	66.1	35.4	-7.1	-30.7	-37.8
Ukraine	51.2	45.1	44.9	-6.1	-0.2	-6.2
Medium- and high-tech manufacturing						
Russia	26.7	23.0	29.6	-3.7	6.6	2.9
Azerbaijan	9.0	6.7	10.5	-2.3	3.8	1.5
Armenia	7.5	4.4	2.6	-3.1	-1.8	-4.9
Belarus	31,7	28.8	27.3	-3.0	-1.5	-4.5
Kazakhstan	6.7	6.2	10.6	-0.5	4.3	3.9
Kyrgyzstan	7.5	4.0	3.0	-3.5	-1.0	-4.5
Moldova	6.5	7.8	7.5	1.3	-0.2	1.1
Tajikistan	2.9	3.1	1.7	0.2	-1.4	-1.2
Ukraine	23.0	21.3	16.8	-1.7	-4.5	-6.2

Source: Rosstat. CIS Statistical Committee, authors' calculations.

In the Commonwealth region, the contribution to GVA of the raw materials processing industry amounted to 21.5 per cent in Russia in 2014. The remaining industry groups contributed 78.5 per cent to the total industrial value added. A similar percentage share (20-50-30), with a clear overbalance of the value added of low-tech industries and a shift towards medium- and high-tech activities, was recorded in 2005. In 2009, the structure of the value added of Russia's manufacturing sector experienced short-term changes associated with an increasing reliance on

[17] GVA shares of each industry in the GVA of the manufacturing sector (in %) in all countries of the Commonwealth are presented in Table 2.3 in Appendix 2.

raw materials processing in production strategies, in particular, the production of food, including beverages and tobacco. At the same time, during the 2008-2009 crisis, high-tech production suffered, decreasing by 3.7 per cent on average per year. During the recovery period following the crisis, the expansion of the contribution of high-tech industries to the value added of the manufacturing sector (6.6 percentage points) compensated the reduction of the share of value added of the raw materials processing and low-tech industries (by 4.4 per cent and 2.1 per cent, respectively).

In the structure of Russia's manufacturing sector, the production of food, including beverages and tobacco, remained among the top three contributors to GVA, accounting for 12.7 per cent by 2014, despite a significant decrease after reaching its peak in 2009 (16.1 per cent). Steady demand for basic food products largely determined the development of raw materials and the inflow of investments in the modernization of the technological base. However, the modernization of the industry during the period under review was based mainly on imported technological equipment, which entailed certain risks for production development. In addition, there was a lack of development of the storage and logistics infrastructure for goods movement, a weak material and technological base, a low level of competitiveness of Russian producers on the domestic and foreign market, inefficient use of waste for the production of energy resources and secondary resources and lack of prevention of harmful impacts on the environment [Government of the RF, 2012]. State support for the food industry was largely based on factors influencing the development of food production, as well as the necessity to shift towards innovative developments using resource-saving, bio- and nanotechnologies in the processing of agricultural raw materials, especially in the light of a new technological wave in the world's leading economies, with the newly implemented technologies facilitating the use of unconventional types of raw materials in processing and setting the quality parameters of manufactured products, thereby increasing environmentally safe production. At the same time, the food industry is one of those industries whose development and sustainability is subject to significant risks, in many respects of an agro-ecological nature, when the dynamics of the value added of food production depend on the volume and quality of the raw materials and, hence, on weather and climate conditions and natural and technogenic emergencies, which are difficult to predict on a long-term basis. The major consequences include not only the decreasing output and use of production capacities, but also a possible shortage of products on the domestic market, a reduction and violation of export obligations and increasing imports of products and raw materials. Among the macroeconomic risks (external, internal, social, institutional), one major technological risk for the industry by the end of the period analysed was the growing dependence of the modernization of the processing industry on the supply of imported equipment. The renewal of technological bases at virtually all production facilities was primarily supported by imported technologies and not by Russian developments. Significant shifts in politics and in trade and economic policies can further aggravate a country's lagging

behind more developed countries in terms of level of technological development.

When we consider low-tech manufacturing industries which to a large extent aim to meet the investment demands in the economy, we observe that the investment programmes in Russia shrunk considerably in the crisis years 2008-2009. There was a marked drop in demand for products from metallurgical industries as well as for other non-metallic mineral products, in particular, building materials, the main reason for GVA reduction in the entire group of low-tech industries (on average, by 2.1 per cent per year during this period) and a subsequent stagnation until 2014. In the past decade, a consistent decline in the contribution of metallurgical industries to the total value added of the manufacturing sector caused a sharp drop to 2.6 per cent in 2014 compared to 17.5 per cent in 2005. The metallurgical industry was one of the main consumers in Russia of electricity, natural gas, oil and petroleum products, freight rail transportation, engineering products, etc., and it played a significant role in demand generation for other economic activities. All inter-sectoral links with the metallurgical industry significantly influenced the formation of the structure and share in the national economy. The technological development of Russia's metallurgical industry was low and lagged behind those of industrialized countries in terms of technological and "assortment" efficiency, labour productivity, specific consumption of raw materials, materials, energy resources, environmental safety, R&D costs, etc. Dampened growth and a stagnating share of value added of the related industries linked to the metallurgical industry as final consumers as well as the production of metallurgical machine building, affected the overall development of value added of the machines and equipment industry. Its contribution to the aggregate GVA of the manufacturing sector had not recovered by the end of the study period to the starting level of 2005 following the crisis of 2008-2009.

The core of Russia's industry during the period analysed was an industry from the low-technology group, namely coke production; the production of oil products totalled USD 49,374 million in 2014 and made up 24.7 per cent of the total value added of the manufacturing sector. Not only in terms of its contribution, but also its rate of average annual growth (4.7 per cent annually for the entire period), which significantly exceeded the development of similar indicators in all other types of manufacturing activities as well as in economic sectors (except for the services sector, which contributed 7 per cent on average per year), defines this industry as the leading (system-forming) industry in Russia's manufacturing sector. At the same time, the petroleum industry was completely dependent on the strategies of the main petroleum companies which were based on the oil prices, commodity structure and demand, and in many ways aim to improve the quality of demand and stimulate investments in oil refining. Coke production in Russia, as the most significant mass product of chemical coal processing, was characterized by two main phenomena in the final years of the period analysed: 1) consumer demand, and above all, the iron and steel industry's demand for coke of high and reliable quality in accordance with the technological requirements for achieving a sufficient technological and economic performance, and 2) a low volume of innovations and insufficient investments in new

technological equipment for production. At the same time, the coke and petroleum industry provided the market with a unique supply and had virtually no competitors; moreover, the market entry barriers remained relatively high due to the significant capital intensity of creating similar products and very limited access to the sales channels. Nevertheless, market risks existed and were increasingly determined by abrupt fluctuations in oil prices, decreasing demand for petroleum products of a certain specification due to higher quality requirements and environmental friendliness of the products, as well as the expanding processes of substitution of certain products with alternative products of higher efficiency. Russia's economic strategy until 2030 envisages further development of technologies for advanced oil refining and the implementation of modern technologies, which is primarily associated with global trends of tightening environmental legislation aimed at reducing harmful emissions from fuel combustion [Ministry for Economic Development of Russia, 2013a].

In the group of medium- and high-tech industries in Russia, a significant share of value added was contributed by chemical production, an industry with a unique technological capability to produce a large number of different end products from a very limited set of raw materials, has the potential for a noticeable increase in value added with each subsequent level of production and extensive inter-industry interaction. Formally, according to the OKVED classification (2005), this industry represents a group of industries associated with advanced processing of hydrocarbon and mineral raw materials, with a starting (2005) value added of USD 17,442 million and a 9 per cent contribution to the total value of the manufacturing sector. A decline in production and the devaluation of the national currency in 2009 led to a sharp reduction in the value added of the chemical industry to USD 15,748 million. In subsequent years, an upward trend in the cost of raw materials consumed, underinvestment, lack of special measures in state regulations and guarantees for investments, lag in technologies, decline of chemical engineering, lack of qualified staff capable of operating modern equipment for automation and process control and a long-term orientation on expensive technological imports prevented this industrial activity from exiting the stagnation trap. The chemical industry's contribution to the manufacturing sector gradually reduced to 7.9 per cent by 2014. The industry with the highest value added among all medium- and high-tech industries in Russia (USD 15,879 million in 2014) was in great need of a large-scale renovation of fixed assets by the end of the period analysed to reduce the cost of production, increase its brand assortment, decrease the consumption of raw materials and heat energy and reduce the negative impact on the environment and human health.

High-tech production of ships, aircraft and space vehicles, and other transport vehicles developed in Russia from the existing set of individual industries that make up a complex organizational structure. The process of their successful integration contributed to the development of the industry as a whole, and it became one of the national leaders by the end of the period analysed. The trend towards a significant expansion of GVA of these industries was clearly manifested after 2009, when the intensity of the industry's growth began averaging 17.5

per cent per year, contributing USD 15,510 million to the manufacturing sector's value added in 2014. At the same time, the contribution of these activities increased by 3.8 percentage points to 7.8 per cent during the period analysed and almost equalled the corresponding value of GVA of the production of machinery and equipment, whose share, in turn, decreased slightly compared to its starting value in 2005. The industry is characterized by export orientation, which is attributable not only to the globalization of the end market, but also to the expansion of international cooperation in the production process. The industry in many respects became a model of outstripping development in the period analysed, an instrument for creating and maintaining the country's image and the level of its scientific and technological development. The contribution of this industrial activity was made by highly skilled employees and generated an ever wider scope of application and new end results in related high-tech industries.

The key problem for Russia in 2005-2014 was the existing structure of the country's industrial value added with its significant and traditional reliance on low-tech manufacturing. The industrial base of the country consisted of industrial products with a markedly low value added, and the national demand of the leading high-tech industries that were producing costlier products was met for a long time by imports. At the same time, during the period of rouble appreciation, the growing cost of aggregate factors of production, the extent of the accumulated sectoral imbalances and high competitiveness of foreign products, state support focused only on certain types of activities, which significantly restricted any structural diversification of the country's manufacturing sector.

In the countries of the Commonwealth region (with the exception of Belarus, whose manufacturing sector retained the most proportional structure), the structural imbalances of sectoral contributions to industrial GVA increased not only in the absence of growth or of sustainable moderate growth in the value added of the manufacturing sector as a whole, but increased the vulnerability of the regional economies despite its accelerating speed due to a high convergence and dependence on external shocks. At the same time, among all countries with an above average national per capita income level, a shift in the focus towards medium- and high-tech manufacturing industries in the structure of all sectoral contributions to the GVA of the manufacturing sector only took place in Russia and Kazakhstan. In countries with a medium and low level of national per capita income, a shift towards reductions in the raw materials processing industry and a compensatory increase in the contributions of the GVA of high-tech products only occurred in Moldova's (despite an absolute traditional overbalance of commodity production) and Kyrgyzstan's manufacturing sector.

In all Commonwealth countries with a high industrial potential and an above average level of national per capita income, significant amounts of value added were contributed by the production of food, including beverages; the production of coke; petroleum products; chemical production; production of other non-metallic mineral products and metallurgical production.

These types of industrial activities became leaders in the CIS and determined the basis of specialization of the regional manufacturing sector.

At the same time, the growth dynamics of sectoral regional leaders in the period analysed was highly multidirectional. In Russia, the value added grew considerably only in the production of coke and of petroleum products. In Kazakhstan, all industries, with the exception of the production of base metals, were characterized by high and sustainable development. Azerbaijan was characterized by the growth of all leading industries, except for chemical production and the production of other non-metallic mineral products.

In Russia, the group of manufacturing industries with the highest values of the compound annual growth rate comprised shipbuilding, the building of aircraft and spacecraft, and other transport vehicles; in Azerbaijan, the production of coke and refined petroleum products contributed the highest values; in Armenia it was the production of food, including beverages and tobacco and the production of rubber and plastics; in Kazakhstan it was the production of rubber and plastics, the production of electrical equipment and the production of motor vehicles, trailers and truck trailers; in Kyrgyzstan, wood processing and the production of wood products added the highest value; and in Moldova, it was the production of electrical machines and equipment. With the exception of food production and wood processing, all other industries belong to higher technological levels of activity, the accelerated development being primarily attributable to the growing demand for products on the domestic markets in the countries of the region throughout the period analysed.

The extent of structural change in the value added of the region's manufacturing sector can be calculated and the results are presented in Table 8.

Table 8 – Distribution of countries by the scale of structural change in the manufacturing sector

	Index of absolute structural change d(x)abs	Index of relative structural change d2rel	Integral index of structural change dint
Russia	1.908	0.017	0.036
Azerbaijan	1.267	0.031	0.047
Armenia	7.860	0.507	0.291
Belarus	4.960	0.091	0.082
Kazakhstan	2.580	0.338	0.131
Kyrgyzstan	5.860	0.397	0.253
Moldova	2.547	0.042	0.055
Tajikistan	26.000	3.092	0.360
Ukraine	8.327	0.322	0.149

Source: Rosstat, CIS Statistical Committee, authors' calculations.

Indices of structural change

In the study, $d(x)_{abs}$,d^2_{rel},d_{int} , indices are determined based on the following formulas:

$$d(x)_{abs} = \frac{\sum_1^n |S_{i\,2014} - S_{i\,2005}|}{n}$$

$$d^2{}_{rel} = \left(\frac{S_{i\,2014} - S_{i\,2005}}{S_{i\,2005}}\right)^2$$

$$d_{int} = \sqrt{\frac{1}{n}\sum_1^n \left(\frac{S_{i\,2014} - S_{i\,2005}}{S_{i\,2014} + S_{i\,2005}}\right)^2}$$

where $d(x)_{abs}$ $d(x)_{abs}$ is the coefficient of absolute structural change,

$d^2{}_{rel}$ $d^2{}_{rel}$, index of relative structural change,

d_{int} d_{int} , integral index of structural changes,

S_i, share of value added 꾇 of industry in the GVA MI

n, number of industries

According to the obtained values of coefficients, there were practically no significant sectoral redistributions of total values of activities in the CIS region in 2005-2014. The structure of the manufacturing sector in Russia, Azerbaijan, Belarus and Moldova remained almost unchanged. Minor changes were registered in the manufacturing sector of Kazakhstan and Ukraine. The most significant structural change among all countries of the region was recorded in the manufacturing sector of Tajikistan, Armenia and Kyrgyzstan.

4.3. Trends and shifts in export structure

The rate at which modern economies are globalizing does not always allow decision-making bodies to introduce system-forming solutions in the country to manoeuvre quickly in the realm of production and export development strategies. At the same time, the theory[18] that large-scale national export-oriented growth strategies are increasingly becoming a “race towards exhaustion” for countries with an emerging industrial market, i.e. these countries are gradually exhausting their potential under conditions of decreasing demand from developed countries. Particular attention in the period analysed was given to shifts in the emphasis of

[18] UNCTAD report "Trade and Development" [UNCTAD, 2013, 2014].

development strategies towards domestic markets, the promotion of sustainable domestic demand for finished manufactured products and an increase in purchasing power within the country.

In the CIS region, integration into the global trade flows, diversification of exports and an increasing share of value added of the manufacturing sector in total exports in the period analysed were only prioritized in the industrial policy of countries that are not raw materials exporters (including Belarus). The countries with a predominantly raw materials export orientation and an above average national per capita income, especially under conditions of a significant reduction in external demand and a simultaneous increase in the pressure on national currency rates, chose domestic markets as their basic model for industrial development.

Sectoral drivers of export growth in the region[19]

Within the period analysed, regional exports from the manufacturing industries came mainly from Russia with an average annual rate of 6.2 per cent to a total volume of USD 202.5 billion in 2014.

Sustainable demand was maintained for food products, including beverages and tobacco, with exports from all countries in the region increasing 3.6-fold in 2005-2014, significantly exceeding the growth rates of total industrial exports from the region.

The volume of exports of metallurgical products became the backbone of successful export policies in a number of industrialized countries in the region, which resulted in an increase of their supply to foreign markets from USD 48.7 billion in 2005 to USD 61.7 billion in 2014.

The share of exports of chemical products from the region increased from 14.8 per cent on average for all exporters in 2005 to 17.4 per cent by 2014.

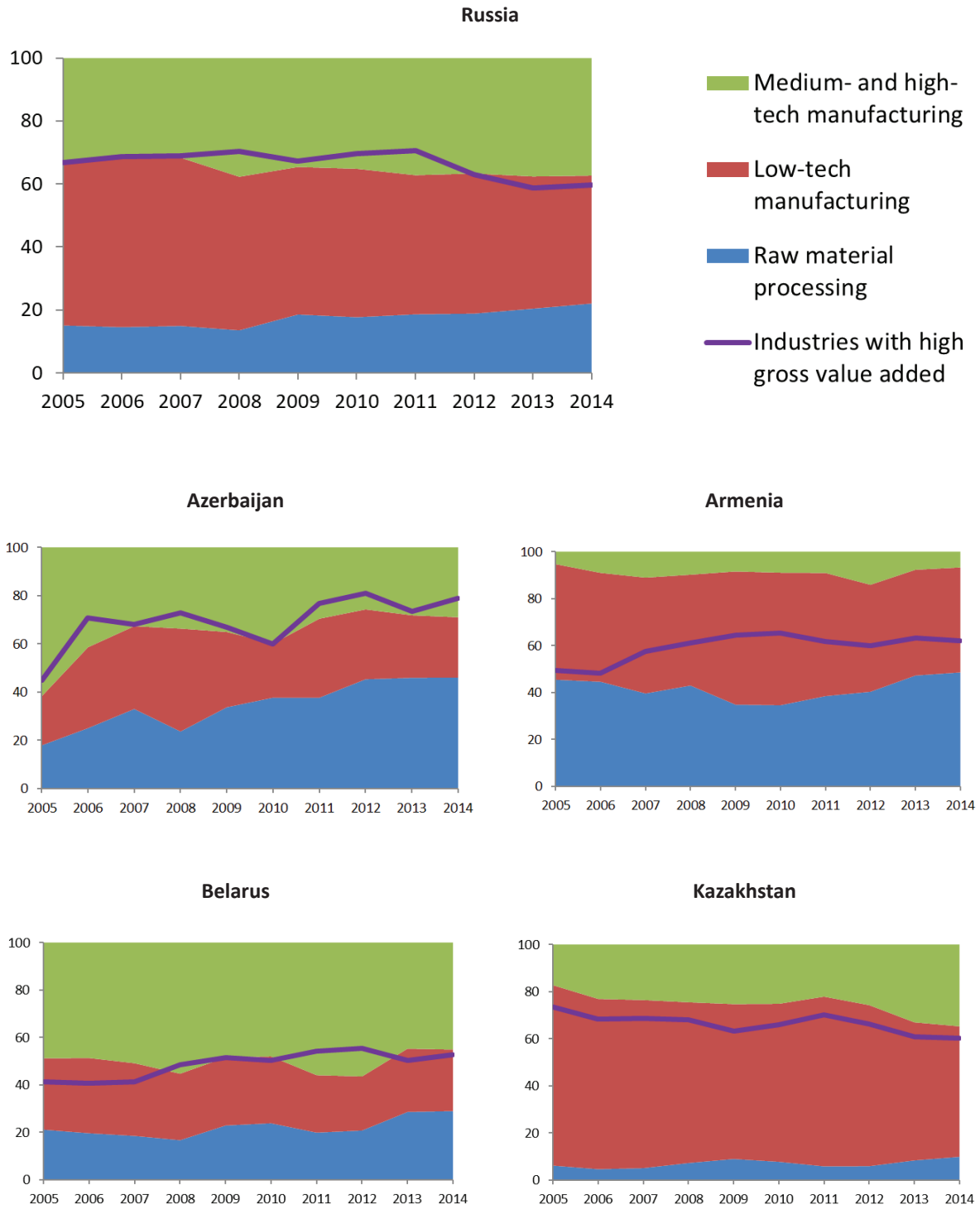
The total volume of exports of machinery and equipment (including electrical, electronic equipment and vehicles) of the largest exporters in the region (Russia, Belarus and Ukraine) increased by USD 15.8 billion since 2005, amounting to USD 34.1 billion in 2014, translating into 92.5 per cent of total regional exports of such high-tech products. This confirms a sustainable positive development of the expansion of competitiveness of high-tech products among the regional leaders of industrial exports, and highlights the continued gap with minor industrial exporters.

The structure of industrial exports in the Commonwealth region is examined to assess

[19] Authors' calculations.

the ability of each country to export manufactured products, depending on technological level and produced share of value added, and is presented in Figure 16 and in Tables 2.4 and 2.5 in Appendix 2.

Figure 16 – Distribution of manufacturing exports by industry group (in %)



Source: UNCTADstat Data Portal, authors' calculations.

Table 9 and Table 2.5 in Appendix 2 present the calculated values of contributions of exports for industries with different technological levels in the total volume of industrial exports, as well as the average annual intensity of their change in the Commonwealth region.

Table 9 – Contribution of products of certain groups of industries to total exports of the manufacturing sector[20]

	Share of products of certain industries in manufacturing exports (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia						
RMP	15.1	18.6	22.0	3.5	3.5	7.0
LT	51.2	46.8	40.6	-4.3	-6.2	-10.6
MHT	33.7	34.6	37.3	0.8	2.8	3.6
Azerbaijan						
RMP	17.9	33.7	46.0	15.8	12.3	28.1
LT	20.4	31.2	25.0	10.9	-6.2	4.6
MHT	61.7	35.1	29.0	-26.6	-6.1	-32.7
Armenia						
RMP	45.4	34.8	48.5	-10.6	13.7	3.1
LT	49.2	56.7	44.7	7.5	-12.0	-4.5
MHT	5.34	8.45	6.74	3.1	-1.7	1.4
Belarus						
RMP	21.1	22.8	28.9	1.8	6.1	7.8
LT	30.1	28.7	25.9	-1.4	-2.8	-4.2
MHT	48.8	48.4	45.1	-0.4	-3.3	-3.7
Kazakhstan						
RMP	6.11	8.93	9.86	2.8	0.9	3.8
LT	76.6	65.7	55.4	-10.8	-10.4	-21.2
MHT	17.3	25.3	34.8	8.0	9.4	17.5
Kyrgyzstan						
RMP	43.7	21.8	16.8	-21.8	-5.0	-26.8
LT	33.3	48.0	40.4	14.7	-7.7	7.1
MHT	23.0	30.1	42.8	7.1	12.7	19.8
Moldova						
RMP	47.7	35.2	31.7	-12.5	-3.5	-16.0
LT	44.4	46.6	41.1	2.2	-5.5	-3.3
MHT	7.95	18.23	27.27	10.3	9.0	19.3
Tajikistan						
RMP	1.48	29.23	7.59	27.8	-21.6	6.1
LT	91.2	43.1	80.7	-48.2	37.7	-10.5
MHT	7.3	27.7	11.7	20.4	-16.0	4.4
Ukraine						
RMP	14.0	20.3	27.4	6.3	7.1	13.4
LT	57.8	49.0	46.3	-8.8	-2.6	-11.5
MHT	28.2	30.7	26.3	2.5	-4.5	-1.9

Source: UNCTADstat Data P+ortal, authors' calculations.

In nearly all countries of the region from 2005 to 2014 (with the exception of Kyrgyzstan and Moldova), the share of products from the raw materials processing industry expanded in

[20] An expanded version of the table is provided in Appendix 2 (Table 2.5).

the total exports of the manufacturing sector, but with a varying intensity, reaching its highest values only in Azerbaijan and Armenia. After a significant growth from 2005 to 2014, the contribution of commodity production reached nearly half (46.0 per cent compared to 17.9 per cent in 2005) of all exported manufactured products in Azerbaijan. At the same time, in Armenia, a country with a traditionally significant overbalance of these industries in the total exports of the manufacturing sector, the value was similar in 2014, despite a pronounced decrease in 2009. The sectoral structure of manufacturing exports in these two countries in the period analysed was generally relatively heterogeneous. For Armenia, the total volume of exported manufactured products was much higher than that of exports from Azerbaijan (70.2 per cent compared to 5 per cent in 2014, respectively). There was a predominant expansion of the contribution of products from the raw materials processing industry in Armenia, a slight decrease in the export of low-tech products (the sum of shares amounting to nearly 94 per cent in 2014), as well as the minimum for the Commonwealth export of products from medium- and high-tech industries. For Azerbaijan, as the regional leader in the export of minerals, exports of products from medium- and high-tech industries was no less profitable than exports of low-tech products, with approximately equal shares which in 2014 amounted to nearly 55 per cent of total exports from the country's manufacturing sector. At the same time, in the five years after 2009, there was a significant shift in the export basket towards products from the raw materials processing industry.

The diversification of exports from Kyrgyzstan and Moldova with a significant decrease in the share of products from the raw materials processing industry (by 26.8 per cent and 16.0 per cent, respectively), retained significant shares of exports of low-tech products (over 40 per cent). The contribution of exports from medium- and high-tech products became the unifying trend in the integration of these two countries in foreign industrial markets. The lowest volume of exports from the raw materials processing industry was recorded in Kazakhstan and Tajikistan. The share of low-tech exports dominated in the two countries' overall export structure, with a major overbalance in Tajikistan (80.7 per cent). At the same time, the contribution of exports from medium- and high-tech industries in Kazakhstan increased significantly (by 17.5 per cent to 34.8 per cent in 2014).

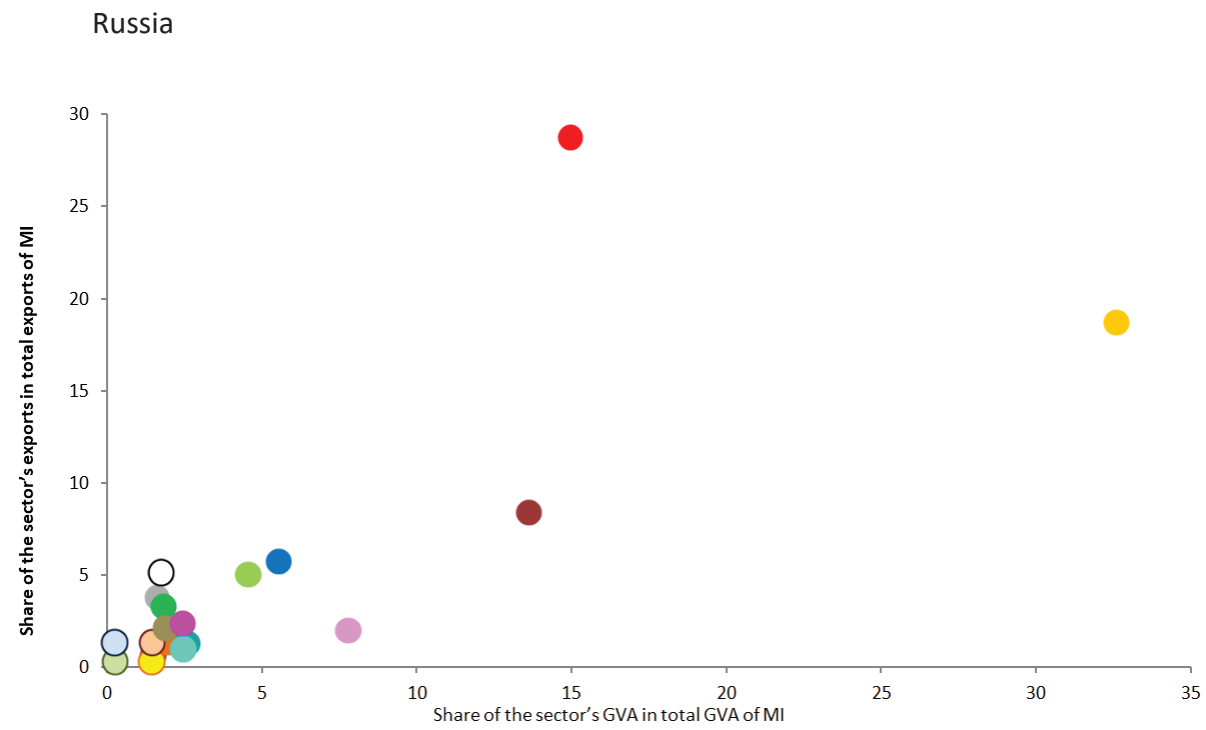
The economic policy of Belarus differed in many respects due to its predominant focus on products from medium- and high-tech industries, whose contribution to the total exports of the country's manufacturing sector remained comfortably above 45 per cent since 2005. Despite a slight drop in 2009, medium- and high-tech exports consistently exceeded the approximately equal shares of exports from the two other groups.

The industrial structure of exports from the manufacturing sector was the most sustainable in Russia throughout the period analysed. The gradual decrease in the share of low-tech industries was compensated by the expansion of exports from the raw materials processing

industry and from medium- and high-tech industries, whose shares in 2014 were 22 per cent and 37.3 per cent, respectively.

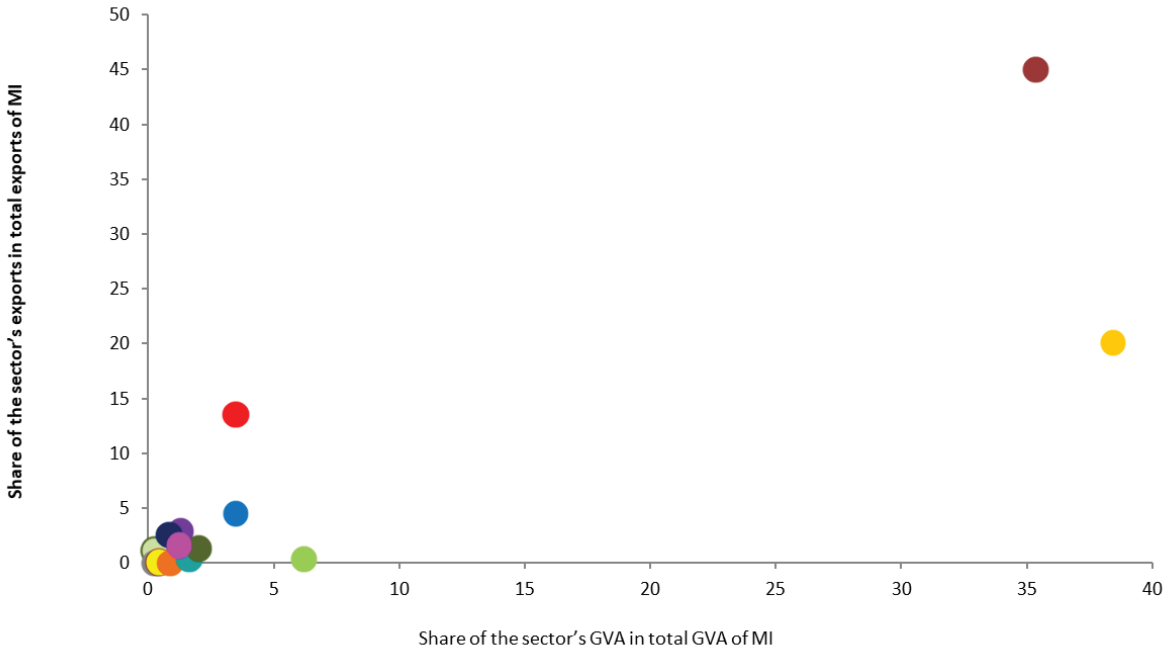
A joint analysis of the export production structure of the country's manufacturing sector at the level of industries makes it possible to assess how the manufacturing sector progressed in the study period to influence value added and a higher potential, promoting the expansion of a competitive supply of products on foreign markets and highlighting the key clusters of advanced development. The corresponding calculated values are provided in Tables 2.3 and 2.5. in Appendix 2 and are illustrated for the countries in Figure 17.

Figure 17 – Distribution of manufacturing sectors in accordance with their share in GVA and exports by countries

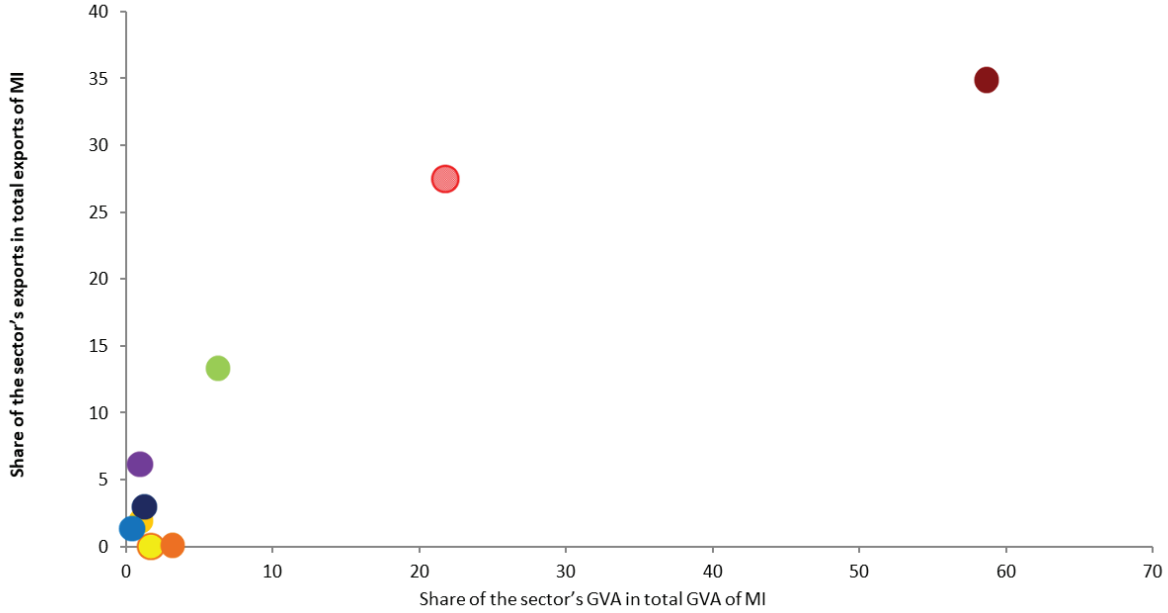


- Manufacture of food products, beverages, and tobacco
- Textile and clothing manufacture
- Production of leather, leather goods, and footwear
- Wood processing and manufacture of wood products, except furniture
- Production of pulp, wood pulp, paper, cardboard and products thereof
- Publishing polygraphic activity, replication of recorded media
- Chemical and petrochemical production
- Manufacture of rubber and plastic products
- Manufacture of other non-metallic mineral products
- Metallurgical production
- Manufacture of fabricated metal products
- Manufacture of furniture and other products NEC
- Manufacture of machinery and equipment
- Manufacture of office equipment and computers
- Production of electronic components, equipment for radio, television, and communication
- Manufacture of electrical machines and electrical equipment
- Manufacture of medical products; measuring instruments; optical devices
- Manufacture of cars, trailers, and semitrailers
- Manufacture of ships, aircrafts and space vehicles
- Manufacture of computers, electronic, optical, and electrical equipment
- Manufacture of transport vehicles
- Manufacture of basic metals and finished metal products

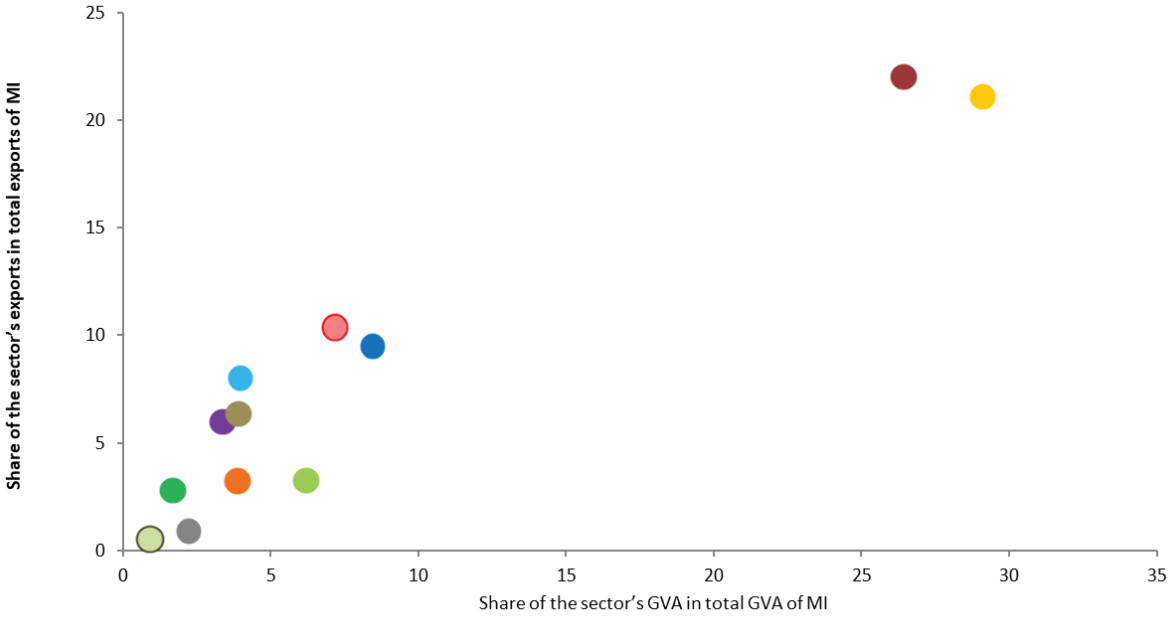
Azerbaijan



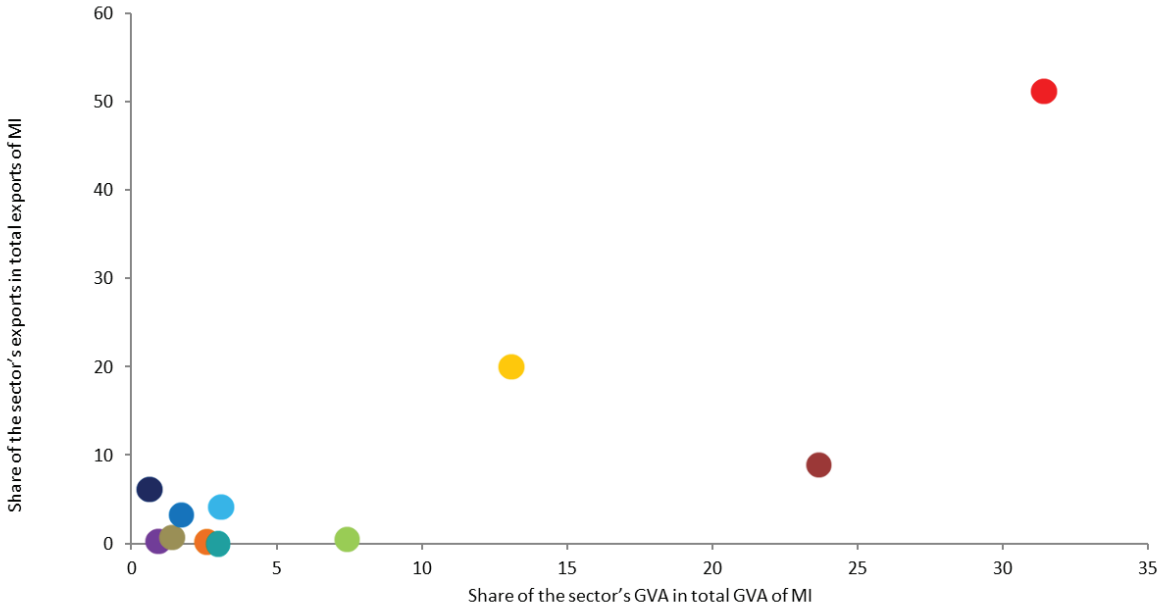
Armenia



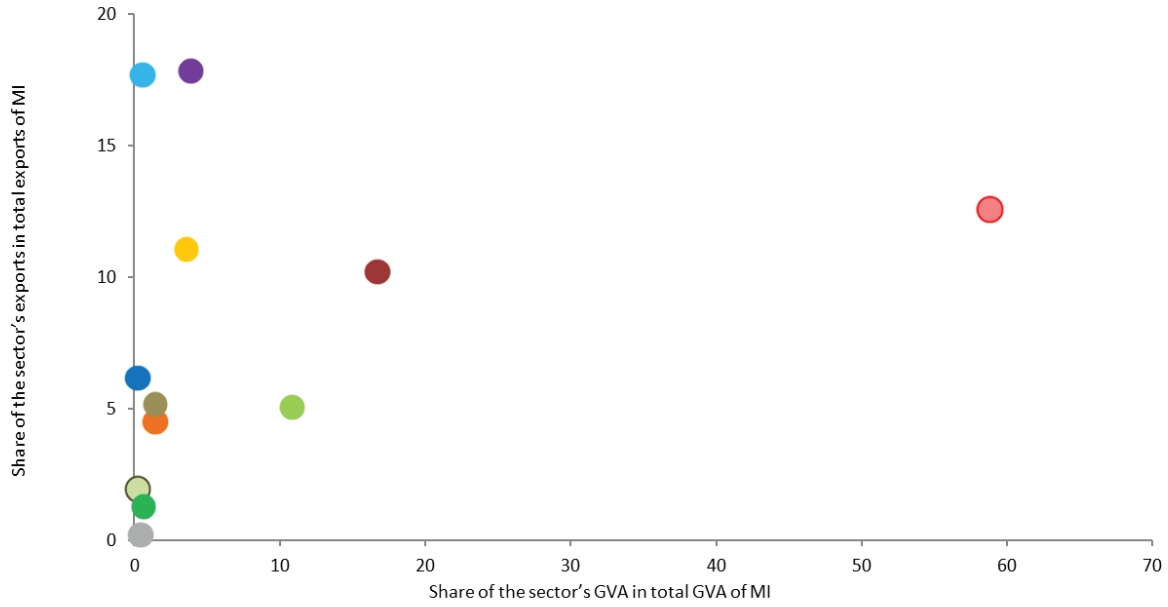
Belarus



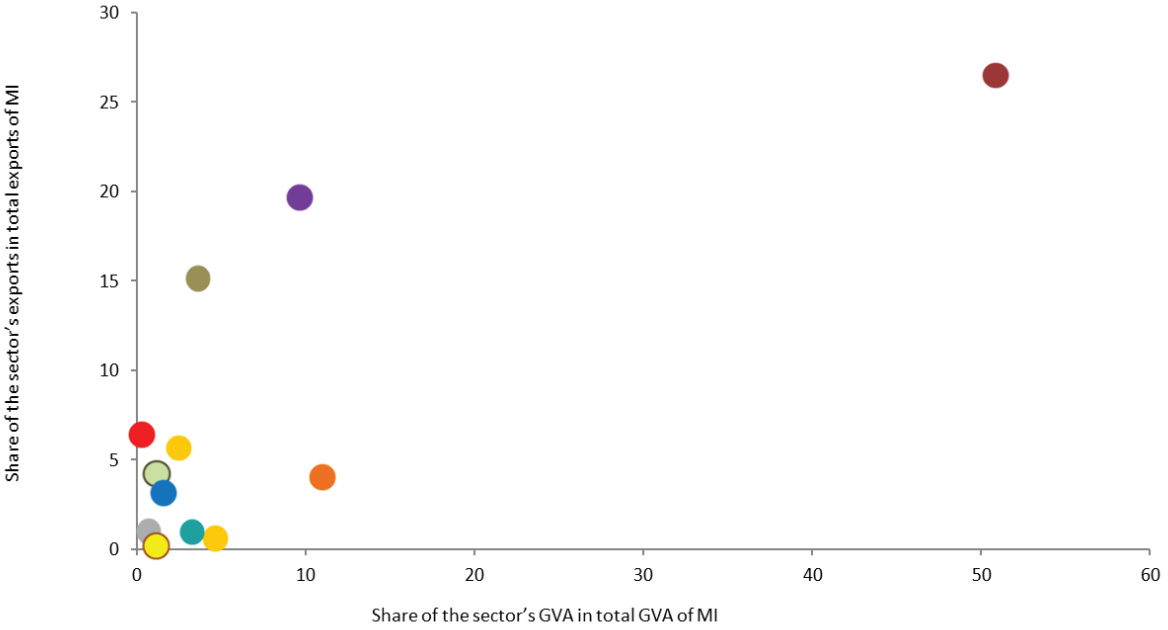
Kazakhstan



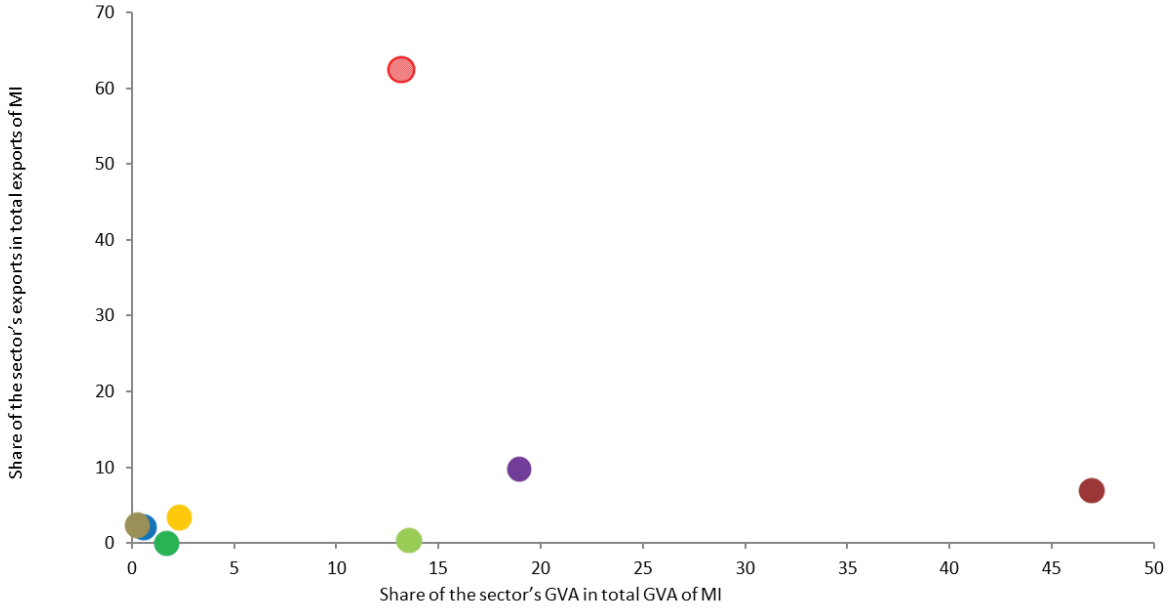
Kyrgistan



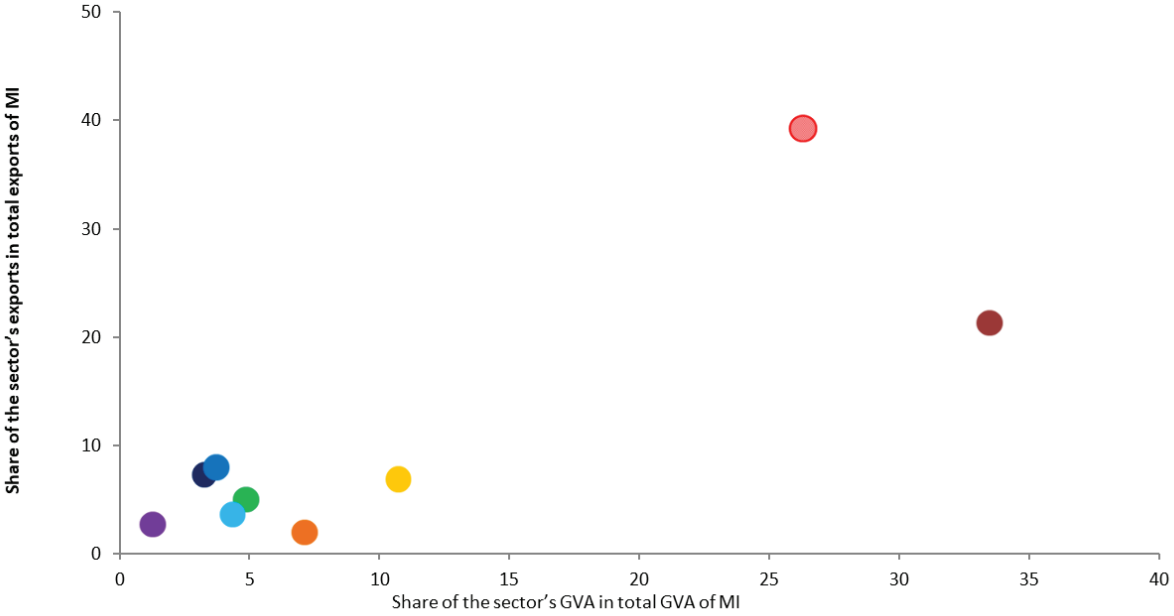
Moldova



Tajikistan



Ukraine



Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

Among the industries with a high value added in the Commonwealth region, metallurgical products were predominantly being exported by Russia, Ukraine and Kazakhstan in 2014. The main exporters of chemical and petrochemical products were Russia, Azerbaijan, Belarus and Kazakhstan. Food products were exported by Russia, Ukraine, Belarus, Moldova, Armenia, Kazakhstan, Kyrgyzstan and Azerbaijan. The biggest exporters of machinery and equipment, were Russia and Belarus.

The share of manufactured products in the total exports of the countries was relatively high, with the majority of products being at intermediate stages without expanding the GVA. In particular, a noticeable amount of exports of textile products as well as cars, trailers and semitrailers was recorded from Kyrgyzstan; the share of electrical machinery and equipment as well as furniture exports was highest from Moldova; and exports from the chemical and petrochemical industries, machines and equipment were highest from Ukraine.

The industries in the countries of the region with an external demand for their products that was not yet particularly high in the period analysed ought to be differentiated to determine whether such exports represent the country's specialization in the international division of labour, although its formation rate over the past five years was well ahead of the cumulative dynamics of industrial exports. These are sectoral clusters, common for virtually all countries in the region, with different technological profiles and the most intensive promotion of products to other countries, in particular: the production of office and computer equipment; the production of electronic components, equipment for radio, television and communications; furniture, leather, leather goods and clothing; the production of other non-metallic mineral products and the production of pulp, wood pulp and paper.

Intensity of industrialization and quality of exports

In this report, one indicator of industrialization intensity is calculated for all countries in the region as an arithmetic mean of the share of value added of the manufacturing sector in GDP and the share of medium- and high-tech industries in the value added of the manufacturing sector reflecting the national level of technological modernization.

This approach allows us to combine principal estimates of the role of the manufacturing sector in the country's economy and its technological structure. It is presumed that the structure of manufacturing industries with a more complex technological level reflects maturity and flexibility of industrial development and, accordingly, indicates how much the country has advanced from resource processing and low-tech activities to medium- and high-tech industries, to a more intensive expansion of GVA of the manufacturing sector.

Together with the industrialization intensity estimates, the technological content of the country's export basket is analysed for the period under review. This allows determining development features of the manufacturing sector; the country may have a high technological content of manufacturing exports but at the same time, assemble high-tech products for international corporations without increasing the relevant sectoral values added. In addition, medium- and high-tech contents of value added in total value of the manufacturing sector can be accounted for by strong barriers to the promotion of these products in external markets or excessive protection against international competition.

When the share of exports of medium- and high-tech products in total exports of the manufacturing sector is used in the calculation of the indicator, its increase indicates more advanced exports from the manufacturing sector in terms of the manufacturability of the exported products, as well as the extent to which a higher technological structure of exports is determined by actual modernization or is the result of production assembly.

The indicator of the technological quality of exports is defined as an arithmetic mean of the share of exports of medium- and high-tech products in total exports of the manufacturing sector and the share of exports of the manufacturing sector in total industrial exports. Thus, information on the role of the manufacturing sector in the country's total export activity and the technological complexity of the export basket of the country's manufacturing sector is combined. The result of successful export strategies is a trajectory of accelerated growth in manufacturing exports and the share of technologically complex products relative to the growth rates of exports as a whole and exports of all manufactured products. A comparison of this indicator between the countries provides a picture of how much each country is (more or less) capable of increasing its share of manufacturing exports in total exports and improves its technological content.

Tables 10 and 11 present the values of corresponding intensity and quality indicators for all analysed countries.

Table 10 – Intensity of industrialization in the CIS countries

	GVA share of medium- and high-tech MI in total GVA of the MS (in %)		Share of MI GVA in the aggregate country's GVA (in %)		Composite indicator of industrialization intensity		Average annual growth rate (in percentage points)
	2005	2014	2005	2014	2005	2014	2005-2014
Russia	26.7	29.6	19.2	13.9	23.0	21.8	-0.5
Azerbaijan	9.0	10.5	7.4	4.4	8.2	7.5	-0.9
Armenia	7.5	3.0	13.1	13.5	10.3	8.3	-2.2
Belarus	31.7	28.6	28.3	30.2	30.0	29.4	-0.2
Kazakhstan	6.7	9.4	14.0	11.1	10.3	10.3	-0.1
Kyrgyzstan	7.5	2.9	16.7	16.9	12.1	9.9	-2.0
Moldova	6.5	7.5	15.5	13.2	11.0	10.3	-0.6
Tajikistan	2.9	2.4	15.5	10.4	9.2	6.4	-3.5
Ukraine	23.0	19.9	19.0	8.5	21.0	14.2	-3.9

Note: MI – manufacturing industry, MS – manufacturing sector.
Source: Rosstat, CIS Statistical Committee, authors' calculations.

The process of industrialization in the CIS region over the 10-year period analysed expanded with maximum intensity only in Russia and Belarus due to the growing role of more technologically advanced industries, creating a noticeably high value added. Despite a significant decline in industrialization in Ukraine, the technological modernization of the country's manufacturing industries continued. The intensity of industrial development in Kazakhstan, which belonged to the group of countries deemed technological leaders in the region, did not change in the period analysed.

Table 11 – Technological level of exported products

	Share of exports of medium- and high-tech MI in total MS exports (in %)		Share of MI exports in total volume of exports (in %)		Composite indicator of exports quality		Average annual growth rate (in percentage points)
	2005	2014	2005	2014	2005	2014	2005-2014
Russia	33.7	37.3	26.4	24.8	30.1	31.1	0.3
Azerbaijan	61.7	29.0	15.6	5.0	38.7	17.0	-7.9
Armenia	5.3	6.7	91.2	70.2	48.3	38.5	-2.2
Belarus	48.8	45.1	62.0	61.2	55.4	53.2	-0.4
Kazakhstan	17.3	34.8	22.7	16.8	20.0	25.8	2.6
Kyrgyzstan	23.0	42.8	41.8	51.3	32.4	47.1	3.8
Moldova	7.9	27.3	85.6	72.8	46.8	50.0	0.7
Tajikistan	7.3	11.7	76.6	59.2	41.9	35.4	-1.7
Ukraine	28.2	26.3	78.7	70.4	53.5	48.3	-1.0

Note: MI – manufacturing industry, MS – manufacturing sector.
Source: UNCTADstat Data Portal, authors' calculations.

The highest quality exports in terms of technological content during the period analysed was recorded in Belarus, Moldova and Ukraine. The technological level of manufacturing exports from Kyrgyzstan improved nearly two-fold, and simultaneously with the highest intensity in the region, improving the quality of the country's export basket. The most significant decline in the development of the analysed quality indicator (-7.9 per cent on average annually) in 2005-2014 was registered in Azerbaijan. Despite a significant improvement in the content of the export basket of Tajikistan' manufacturing sector, the decreasing industrial contribution to the country's total exports led to deterioration in its quality in 2014. The expansion of the contribution of medium- and high-tech exports from Russia in the study period was not significant enough to promote a marked improvement in the quality of exports against the background of stagnation in the overall development of manufacturing exports.

According to the obtained estimates, the indicators for export structure were not consistent with the structural changes in GVA in any country in the region (with the exception of Russia), which would have contributed high value added to the manufacturing sector, its technological modernization and the deepening of the structure of exports of competitive products from relevant manufacturing industries. Estimates of the quality of industrial products significantly exceeded the intensity of industrialization in Tajikistan in 2014 (6-fold), in Moldova, Kyrgyzstan and Armenia (on average, 5-fold), in Azerbaijan and Ukraine (on average, 2.5-fold), in many respects as evidence of large-scale assembly production in the region.

4.4. Sectoral cross-section of production and export potential and regional influence

Estimates of the potential of various manufacturing industries to produce and export products are more useful when they are comparable with similar estimates of other countries in relation to population. The GVA adjusted for the country's size is considered a basic indicator of the capacity of each type of manufacturing activity to add value in the course of processing manufactured products. Together with per capita manufacturing exports, such data allow to determine the potential of each manufacturing industry to meet global demand for its products in a highly competitive and dynamic environment, i.e. to assess to what extent value added is created by the industry and contributes to export volume in comparison with other countries.

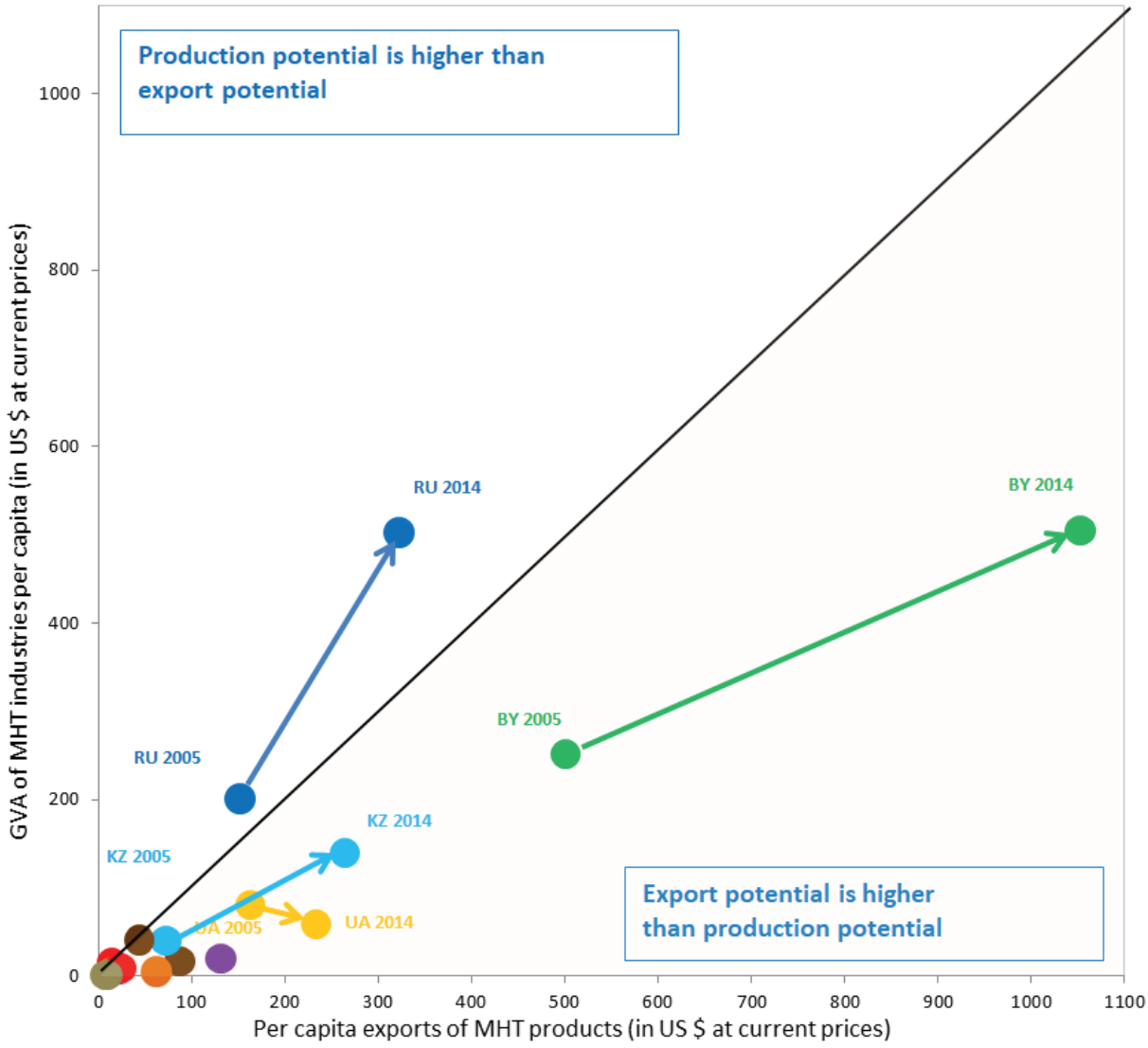
In the group of countries in the region with an above average national per capita income, the leaders in terms of the production and export potential of medium- and high-tech industries in 2014 were Russia, Belarus and Kazakhstan, despite marked differences in the level, trend and rate of change after 2005 (Tables 2.6 and 2.7 in Appendix 2). The highest levels of GVA and per capita exports of products from medium- and high-tech industries per capita level (USD 410 and USD 320.7, respectively) remained stable in Russia. At the same time, the production potential at the expense of domestic consumption exceeded the realized external demand for these products, despite a noticeable predominance of average annual growth rates of the

export potential. In this group of countries, Belarus and Kazakhstan followed with a large gap in the production potential parameters of medium- and high-tech industries, where the per capita value added was reproduced in 2014, being 3.5 and 4 times less, respectively, than in Russia. In Belarus, a rapid decline in GVA volume of medium- and high-tech production per capita was recorded against the background of an accelerated expansion of exports (by 7.7 per cent annually), exceeding similar Russian exports by 3 times. In Kazakhstan, changes in the production and export potential of medium- and high-tech industries were unidirectionally positive, although the promotion of products to the corresponding foreign trade flows was more intense. In all other countries, the export potential expanded so rapidly (in varying degrees) that it significantly exceeded the national volumes of value added per capita in medium- and high-tech industries by the end of the period analysed.

Figures 18 and 19 present the periods in which medium- and high-tech industries in most countries of the Commonwealth region created a value added per capita that was significantly lower than exports of such technological levels.[21]

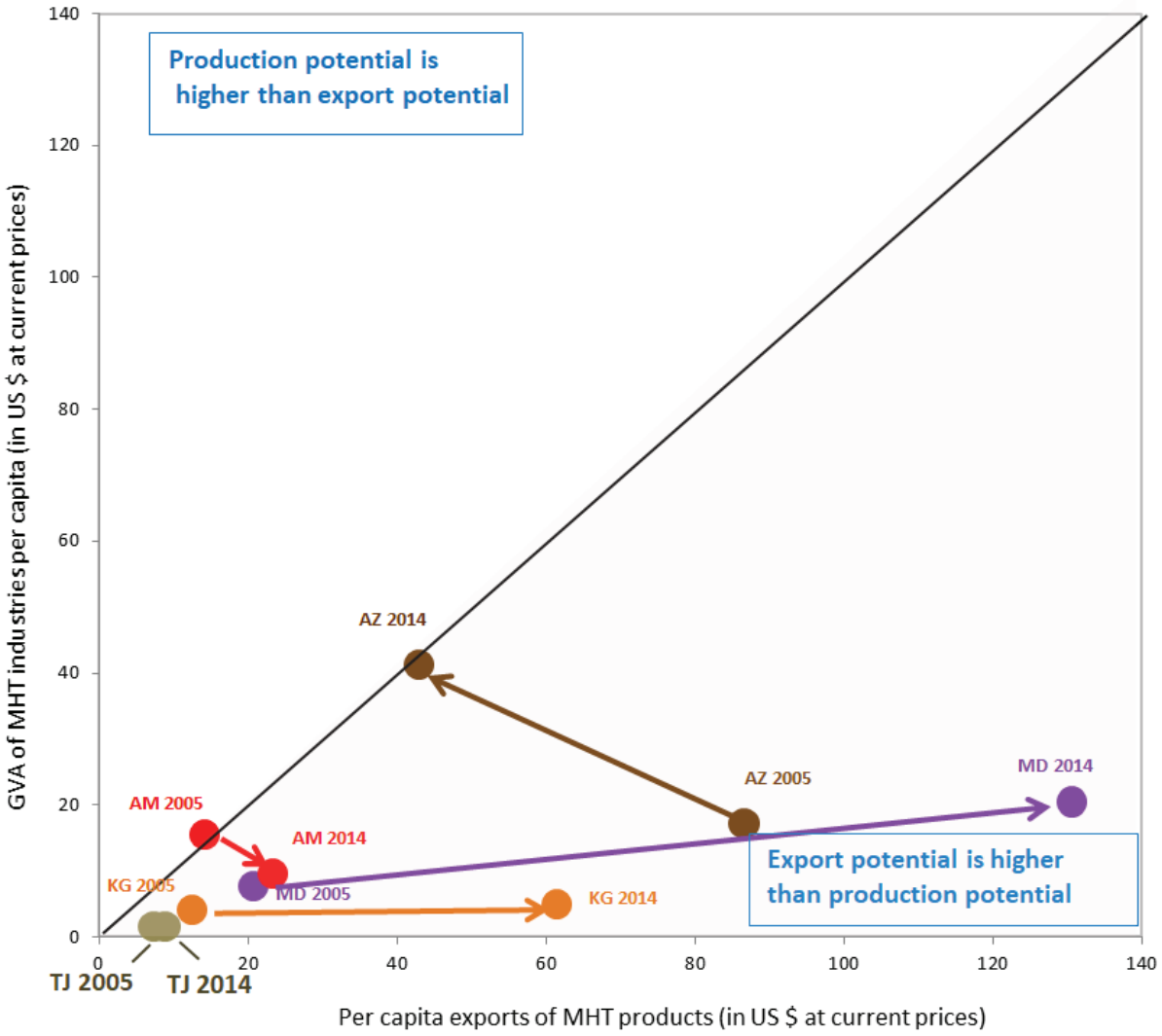
[21] For a comparative analysis with an illustration on a single chart, the values of the indicators in Figures 18-21 are presented in current prices.

Figure 18 – Potential for production and exports of medium- and high-tech manufacturing industries (total)



Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

Figure 19 – Potential for production and exports of medium- and high-tech manufacturing industries (extended)



Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

The region's countries are positioned in the quadrant of the coordinates of two indicators in current prices for each year: the production and export potential of medium- and high-tech industries. The division of the entire range of paired values by 45 degrees corresponds to the ideal line, at which the value added per capita created by this group of industries is equal to the per capita value of exports from these industries. If the country lies in the upper left part of the figure, the industrial potential of its industries exceeds their export potential. In the opposite case, the country is located below the ideal line.

Obviously, in the period analysed, only Russia had a higher potential of value added of medium- and high-tech industries, than per capita exports from these industries. This, in many respects, testifies to the significance of domestic consumption and the existing high barriers to access to external markets for certain types of products.

The marked production potential of medium- and high-tech manufacturing industries in Belarus in 2014 is comparable to Russia's. However, the export potential of Belarus significantly exceeded not only the country's per capita value added, but also the per capita exports of such products in all other countries of the region. This points to an obvious competitiveness of such products, to considerable demand in the cross-border area and the extent of the production scale of certain intermediate types of exports to international companies.

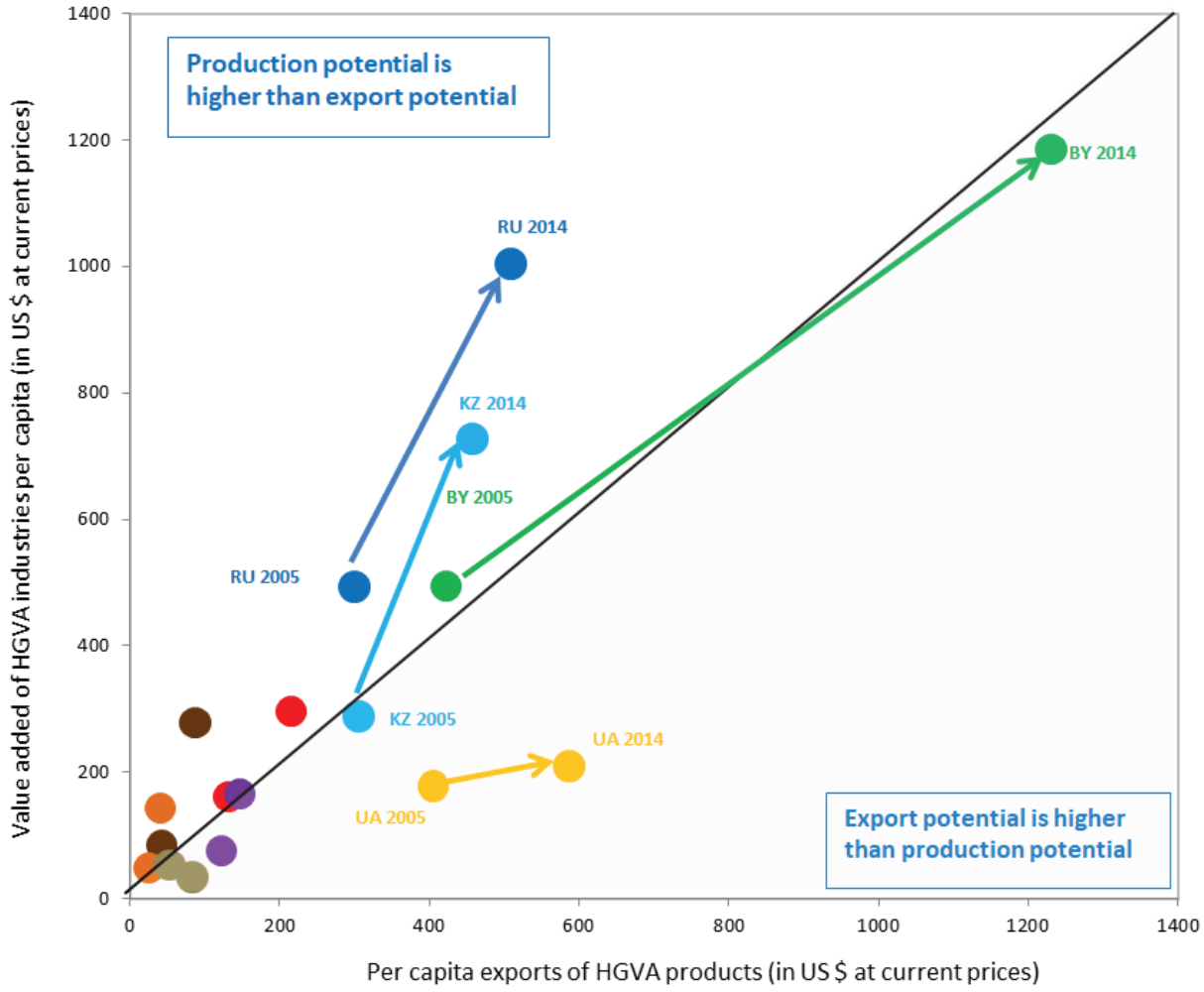
Among the countries with a lower level of national income, Ukraine and Moldova strongly deviated from their starting positions in 2005, with an accelerated increase in manufacturing exports, and a pronounced slowdown in per capita GVA growth rates in Ukraine and only a minor expansion in Moldova.

The region's outsiders in terms of capacity to produce and export medium- and high-tech products were Kyrgyzstan and Tajikistan. Kyrgyzstan's export potential was significantly higher than its production capacity. In general, the production and export potential of medium- and high-tech industries in the Commonwealth region were most balanced in Russia, Kazakhstan and Armenia in 2005, and in 2014, in Azerbaijan, despite significant differences in these countries' levels.

Figures 20 and 21 show linear vectors of development in the production and export potential of high value-added industries[22] (basic industries) in the region in 2005-2014.

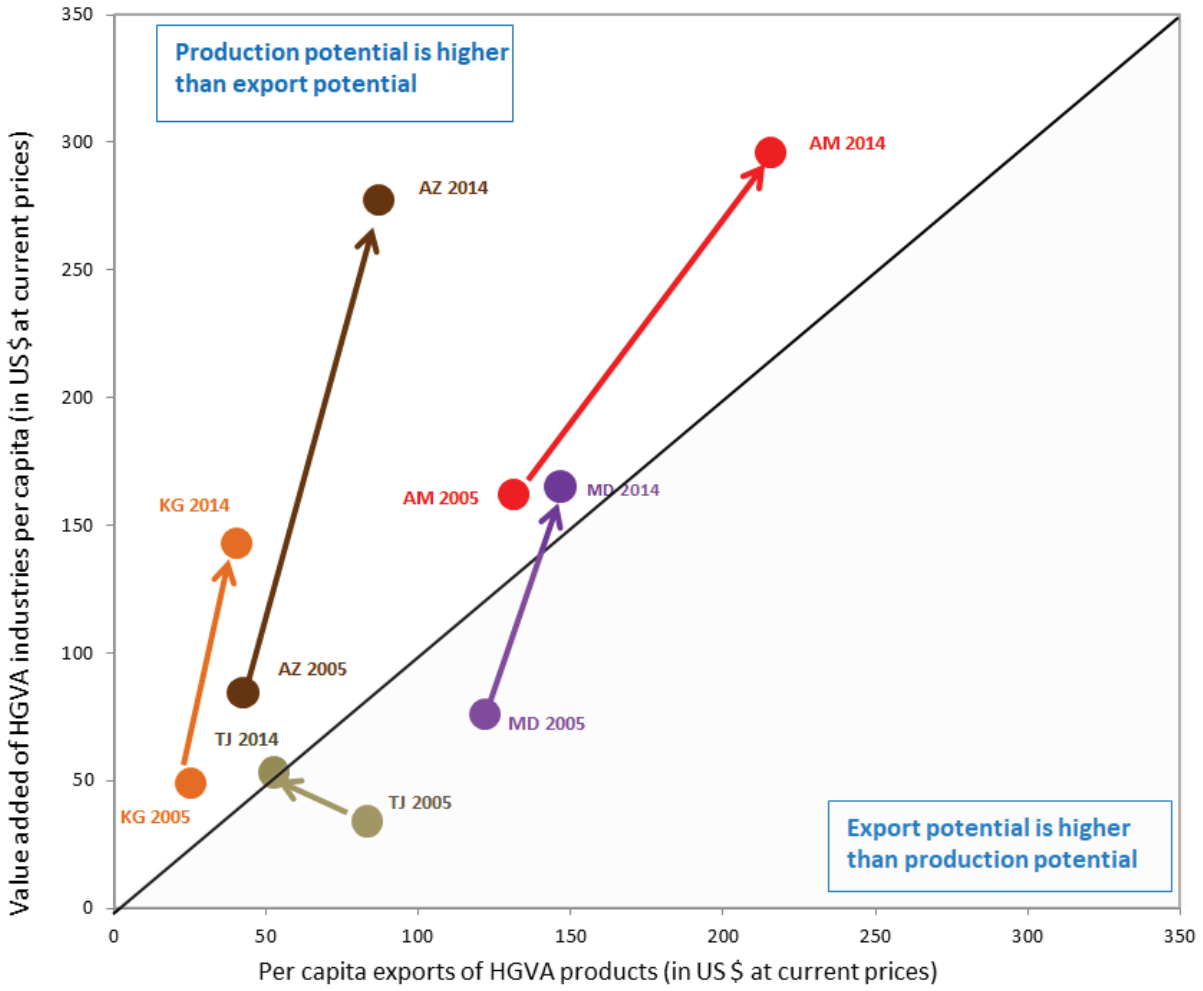
[22] Specification of a group of industries with a high value added in each country of the CIS region is based on empirical calculations of the authors by ranking industries in each individual country and establishing threshold values for the studied set of countries in the structure of the industry's contribution to the total value added in the region.

Figure 20 – Potential for production and export of products of high value added manufacturing industries (total)



Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

Figure 21 – Potential for production and export of products of high value added manufacturing industries (expanded)



Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

Among the countries with an above average national income, the values of the analysed indicators (in current prices) in the group of basic manufacturing industries came closest to the ideal line of per capita value added and exports only in Belarus. Products with a high value added from Russian industries in 2014 were mostly produced for domestic consumption. This was largely due to the initiated import substitution programme, as well as the high entry barriers to international trade. A similar situation developed in Kazakhstan, despite an almost complete balance of production and export potentials in the early years of the study period, as well as in Azerbaijan and Armenia, though with much lower volumes of potential in these countries.

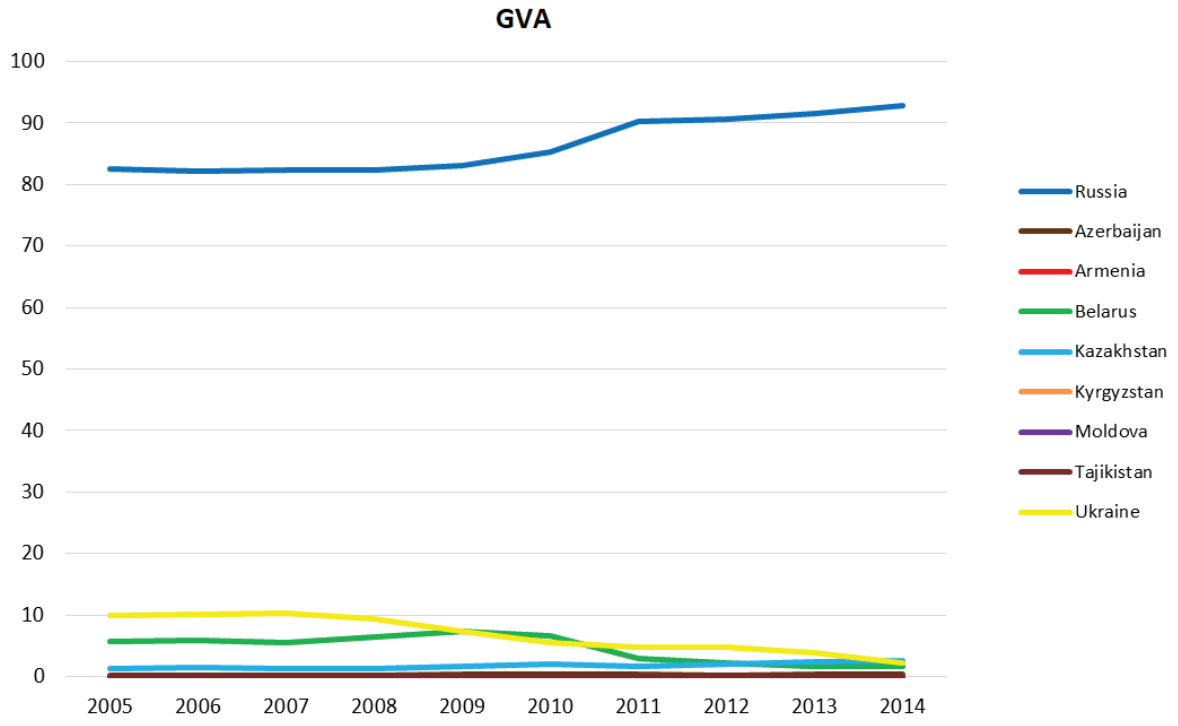
In countries with a below average production potential of their manufacturing sector, the per capita volume of exports from high value added industries increasingly exceeded the production potential created by them (in Ukraine) in 2014. In Moldova, the share of production potential gradually equalized though the export of products of the leading group of industries lagging far behind Ukrainian exports. In countries with a low level of industrial potential in 2014,

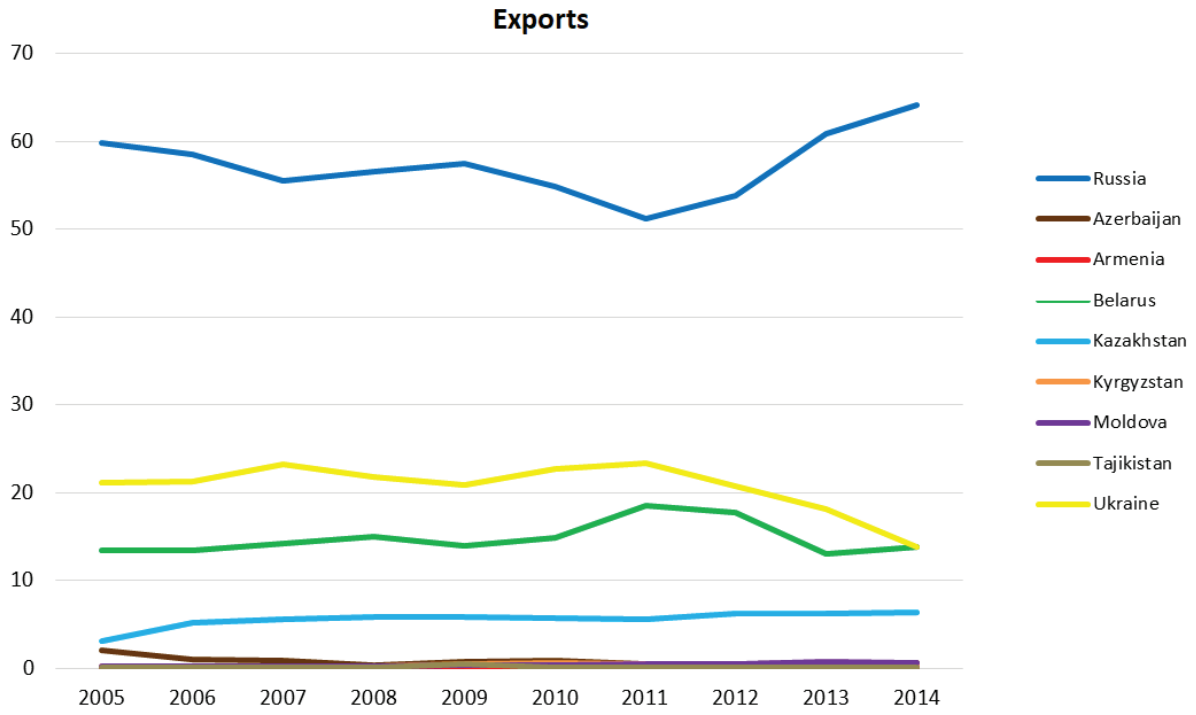
products with a high share of value added from Kyrgyzstan were mainly sold on local markets, while in Tajikistan, the per capita value added generated from basic production in current prices was very similar to that of its exports.

The relative inter-country efficiency of production and the export development of the manufacturing sector are supplemented in the report with estimates of national significance for the region of value added and exports of products from industries with different technological levels for each country.

The results of the calculations of the absolute values of GVA and the export of products from the three technological groups of industries in each country (raw materials processing, low-tech and medium- and high-tech industries) and their relative share in the corresponding total volumes of all countries of the region in 2005-2014 are presented in Tables 2.8 and 2.9. of Appendix 2. Figure 22 presents the distribution of scales and changes in the influence of the group of medium- and high-tech industries of each country on the regional volumes of GVA and exports, illustrating the position of each country relative to others in the region in terms of level and intensity of the modernization processes of the manufacturing sector, competitiveness of products with a higher technological level and, accordingly, a higher value added.

Figure 22 – Distribution of extent and change in the influence of countries on overall regional GVA and export of MHT products from manufacturing industries (in %)





Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

The leader in terms of development among all industries in the CIS countries was Russia, particularly in the group of medium- and high-tech industries. Russia witnessed an intensive expansion of this group of industries (on average, 9.7 per cent annually from 2009), contributing to an impressive share (92.8 per cent) of aggregate regional GVA of these industries in 2014. It is noteworthy that the difference between the regional significance of Russia and other CIS countries consisted not only of a marked overbalance in the share of value added and exports of products from all three technological groups, but also of a higher rate of growth and volatility. At the same time, the influence of other countries differed consistently in the period analysed due to elevated levels of multidirectional fluctuations.

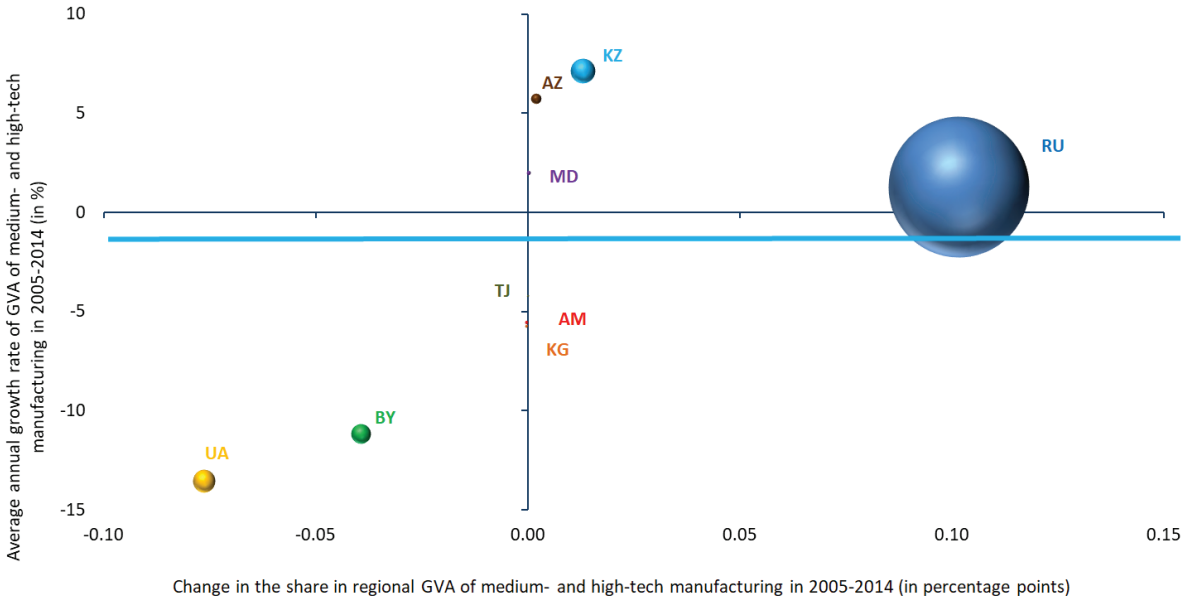
Russia's significant regional influence is an important factor for the successful development of the country in terms of measuring the relative inter-country efficiency of its industrial strategies. Despite this, a continued slowdown in production growth and weak diversification of its industry—even when external shocks are not taken into account—could push Russia into the so-called middle income and slow growth rate trap, namely dependence on such a development trajectory when the growth rate of a well-resourced country ceases for a long period after reaching a certain average income. Breaking out of the trap only becomes possible if large-scale transactions in infrastructure and high-quality education occur, when the state institutions necessary for the effective functioning of the domestic market are strengthened, when strategies for implementation of new technologies are introduced and export sales are increased.

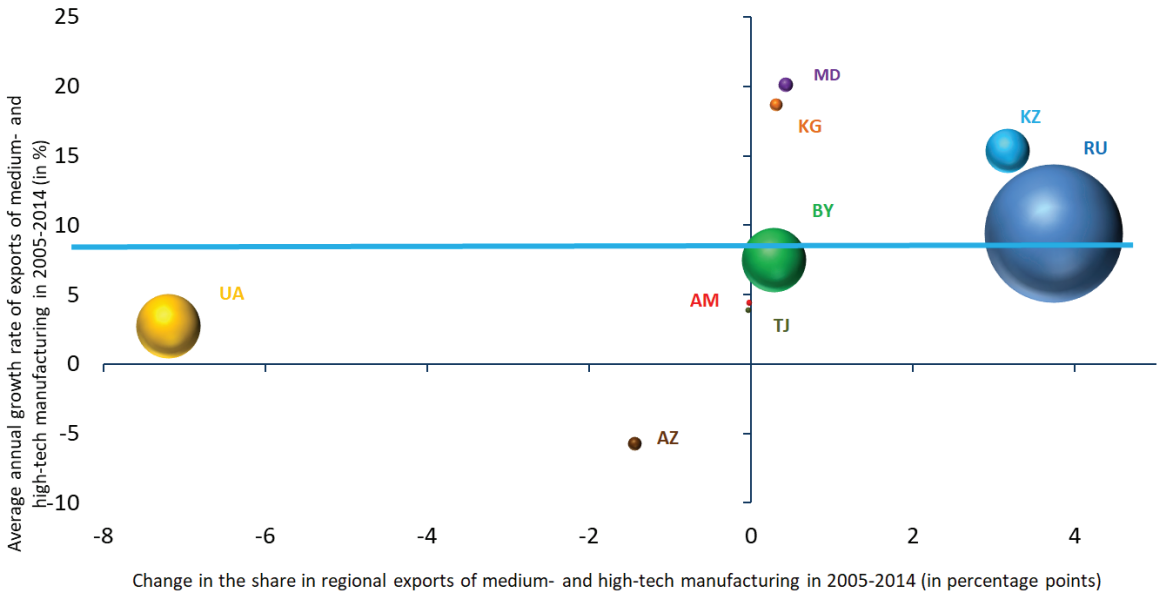
Kazakhstan stood apart from the other countries that had improved their relative position in the region. Expansion of the share of GVA of industries with a higher technological level was lower than in Russia, but accelerated growth was sustained without any major plunges.

In the context of regional comparisons of trends in industrial technological development, attempts to expand the influence of medium- and high-tech industries in the region were less successful for Ukraine (the share of its value added decreased from 10 per cent in 2005 to 2 per cent in 2014) and for Belarus (from 5.6 per cent to 1.7 per cent). At the same time, the capacity of these countries to export manufactured products left them in leading positions from the perspective of regional significance. In other countries, the level and growth of the respective indicators were very low.

Figures 23 and 24 illustrate the correlations between GVA growth and exports in the Commonwealth over the period analysed, with a change in their influence on the region for industries with a high value added and medium- and high-tech industries.

Figure 23 – Relationship between growth and influence of GVA and exports of products from medium- and high-tech industries

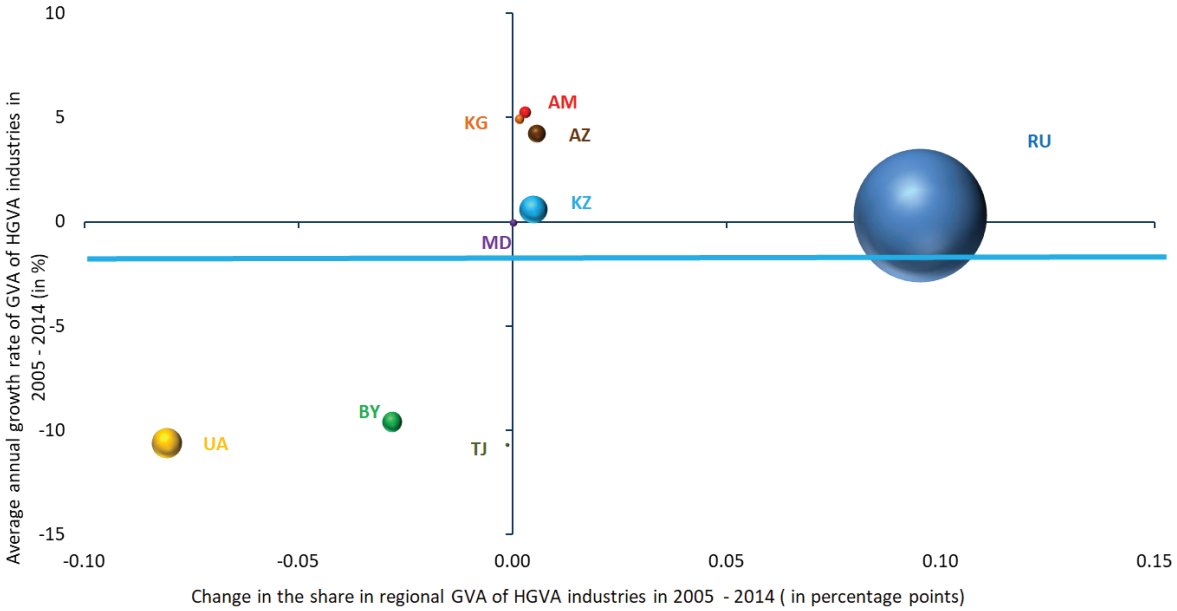


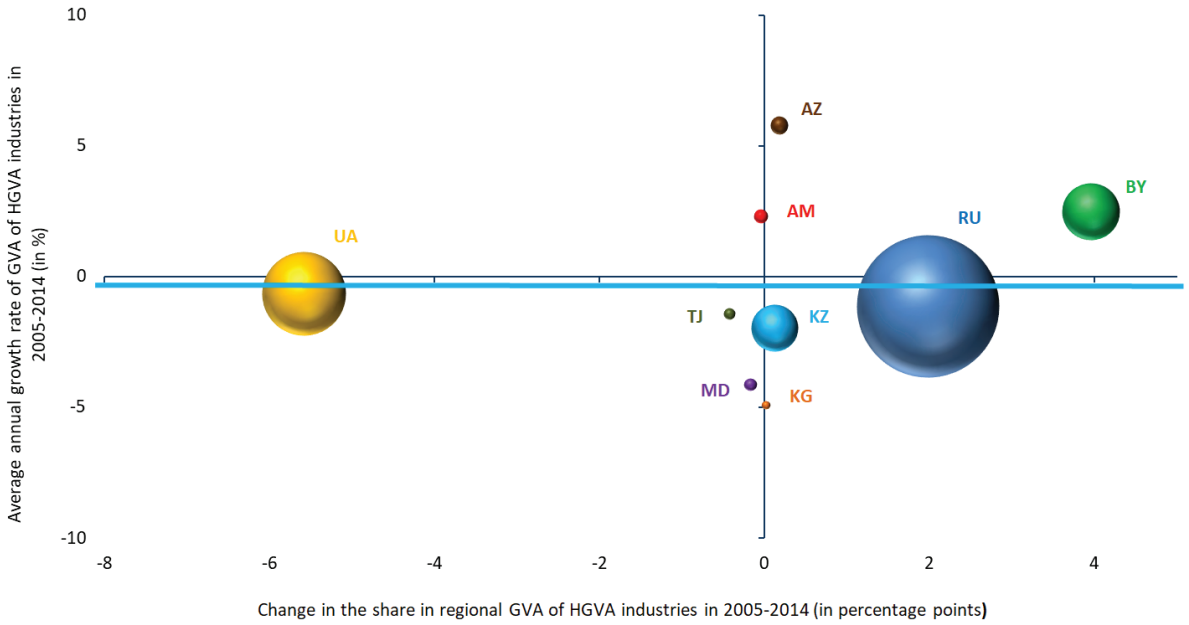


Note: The size of markers in both figures are determined by the volume of value added and exports of products from the relevant groups of manufacturing industries in the country in 2014 (the last year of observation) in current prices, USD million; the blue line corresponds to the average growth rates of value added and exports of the products of these industries in the CIS region.

Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

Figure 24 – Relationship between growth and influence of GVA and exports of industries with high GVA





Note: The size of markers in both figures are determined by the volume of value added and exports of products from the relevant groups of manufacturing industries in the country in 2014 (the last year of observation) in current prices, USD million; the blue line corresponds to the average growth rates of value added and exports of the products of these industries in the CIS region.

Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

An accelerated increase in the average annual volume of manufacturing exports does not imply that the country holds a higher share in the foreign market, if the intensity of this growth does not exceed the average regional growth rate, and the accumulated export value remains low. The average annual rate of expansion of Russian medium- and high-tech exports in the study period was slightly higher than the average values for the CIS, but the country's impressive total values allowed Russia to achieve the highest increase in the share of MHT products in the region's total exports. A combination of success factors such as rapid growth above the regional average and a substantial increase of participation in total industrial exports in the region ensured that Kazakhstan came in second in the CIS, despite not achieving very high total values. Kazakhstan was markedly ahead of Belarus and Ukraine in terms of medium- and high-tech exports. Azerbaijan, which had the lowest average annual growth rate in the region, became an outsider as regards regional participation in foreign markets for medium- and high-tech products and their competitiveness. Ukraine was on the periphery of the region, experiencing the largest loss of export share in the regional market. The total value of medium- and high-tech exports from Armenia and Tajikistan were the lowest in the region and stagnated considerably. Moldova and Kyrgyzstan were able to rapidly expand their exports and as a result, held a middle position in regional participation.

Table 12 summarizes all proposed fundamental assessments of relative inter-country efficiency of the industrial strategies of the countries of the Commonwealth region implemented

in the group of basic manufacturing industries with a high value added between 2005 and 2014, by combining the structure, potential and impact indicators characterizing the different aspects of competitiveness of these industries.

Table 12 – Assessment of competitiveness of industries with the highest share of GVA of the manufacturing sector by country

	Industrial Statistics				Export Indicators			
	2005	2009	2014	2005-2014, %	2005	2009	2014	2005-2014, %
Russia								
Manufacture of food products and beverages								
Structure (%)	13.5	16.1	12.7	-0.8	3.8	7.7	9.0	5.2
Potential (US $)	182.9	187.7	177.0	-0.3	17.1	39.2	77.4	16.3
Influence (%)	67.0	68.6	71.7	4.7	32.3	39.4	41.4	9.1
Chemical and petrochemical production								
Structure (%)	28.9	32.6	32.6	3.7	17.2	18.4	20.0	2.8
Potential (US $)	391.7	379.3	453.1	1.5	76.4	93.8	171.8	8.4
Influence (%)	84.1	86.9	92.5	8.5	66.8	64.4	70.2	3.4
Metallurgical production								
Structure (%)	17.5	15.0	14.9	-2.6	45.7	41.3	30.7	-15.1
Potential (US $)	237.4	175.1	207.4	-1.3	203.0	210.8	263.5	2.6
Influence (%)	70.5	71.2	77.9	7.5	59.8	60.9	61.5	1.7
Azerbaijan								
Manufacture of food products, beverages, and tobacco								
Structure (%)	39.0	35.1	35.4	-3.6	16.4	33.0	45.0	28.7
Potential (US $)	81.9	80.4	99.0	1.9	23.0	34.6	66.7	11.2
Влияние (%)	1.78	1.84	2.66	0.88	2.6	2.2	2.4	-0.2
Chemical and petrochemical production								
Structure (%)	33.7	40.9	38.4	4.7	14.6	12.3	20.1	5.5
Potential (US $)	70.8	93.8	107.6	4.3	20.5	12.9	29.8	3.8
Influence (%)	0.9	1.3	1.5	0.6	0.34	0.41	0.31	-0.03
Armenia								
Manufacture of food products, including beverages, and tobacco								
Structure (%)	47.2	53.1	58.6	11.4	13.2	20.0	35.0	21.7
Potential (US $)	99.2	121.9	215.0	8.0	35.2	34.0	121.3	13.2
Influence (%)	0.8	1.0	1.8	1.0	1.5	0.8	1.4	-0.1
Manufacture of basic metals and finished metal products								
Structure (%)	31.3	22.5	21.8	-9.5	36.2	44.3	27.2	-9.0
Potential (US $)	65.7	51.6	79.8	2.0	96.2	75.3	94.3	-0.2
Influence (%)	0.44	0.48	0.63	0.19	0.64	0.49	0.46	-0.17
Belarus								
Manufacture of food products, including beverages, and tobacco								
Structure (%)	20.1	22.9	26.4	6.3	13.1	17.3	22.1	8.9
Potential (US $)	232.5	285.7	111.4	-7.1	134.8	229.8	515.1	14.3
Influence (%)	5.7	7.0	3.0	-2.8	17.2	15.4	18.1	0.9
Chemical and petrochemical production								
Structure (%)	31.7	30.1	29.1	-2.6	17.2	22.3	21.1	3.9
Potential (US $)	366.6	375.3	122.7	-10.4	176.6	296.3	493.4	10.8
Influence (%)	5.3	5.7	1.6	-3.6	10.4	13.6	13.3	2.9
Manufacture of machinery and equipment								
Structure (%)	10.7	10.6	8.4	-2.3	10.9	11.7	9.5	-1.3
Potential (US $)	123.7	131.6	35.5	-11.7	111.4	155.4	222.5	7.2
Influence (%)	8.4	12.6	2.8	-5.6	14.0	14.5	15.7	1.6

Kazakhstan								
Manufacture of food products, beverages, and tobacco products								
Structure (%)	26.2	27.9	23.7	-2.6	5.7	8.5	9.0	3.3
Potential (US $)	218.5	215.6	218.3	-0.01	23.7	52.7	68.2	11.2
Influence (%)	8.4	8.9	10.6	2.2	4.7	6.0	4.4	-0.4
Manufacture of basic metals and finished metal products								
Structure (%)	37.3	36.6	31.4	-5.9	67.7	54.8	51.3	-16.4
Potential (US $)	311.2	283.3	289.7	-0.7	281.9	340.3	389.5	3.3
Influence (%)	9.7	13.0	13.1	3.3	8.8	11.1	10.9	2.1
Kyrgyzstan								
Manufacture of food products, including beverages, and tobacco								
Structure (%)	20.4	18.9	16.7	-3.7	20.9	17.1	10.2	-10.7
Potential (US $)	21.61	18.42	21.64	0.02	11.4	18.9	14.7	2.6
Influence (%)	0.28	0.25	0.36	0.07	0.78	0.72	0.32	-0.46
Manufacture of other non-metallic mineral products								
Structure (%)	10.4	6.8	10.8	0.4	21.7	2.8	5.1	-16.6
Potential (US $)	11.0	6.7	14.0	2.5	11.8	3.1	7.3	-4.7
Influence (%)	0.4	0.3	0.7	0.31	1.8	0.6	0.5	-1.3
Metallurgical production and fabrication of finished metal products								
Структура (%)	49.0	58.8	58.8	9.8	3.6	3.8	12.6	9.0
Potential (US $)	52.0	57.4	76.3	3.9	1.2	2.4	12.8	27.0
Influence (%)	0.6	0.9	1.2	0.6	0.01	0.03	0.12	0.11
Moldova								
Manufacture of food products and beverages								
Структура (%)	49.3	51.2	49.9	0.6	43.6	30.5	26.5	-17.1
Potential (US $)	77.7	71.6	82.7	0.6	113.7	80.3	126.9	1.1
Influence (%)	0.71	0.65	0.83	0.12	5.4	2.0	1.7	-3.7
Manufacture of other non-metallic mineral products								
Structure (%)	14.4	11.9	11.0	-3.4	3.1	4.2	4.1	1.0
Potential (US $)	22.7	16.7	18.2	-2.2	8.1	11.1	19.7	9.3
Влияние (%)	0.58	0.49	0.57	-0.02	0.9	1.3	0.8	-0.03
Tajikistan								
Manufacture of food products, including beverages, and tobacco								
Structure (%)	20.9	24.5	46.9	26.0	1.2	27.2	7.1	5.8
Potential (US $)	19.1	12.6	39.0	7.4	1.2	27.1	5.4	15.7
Influence (%)	0.33	0.24	0.91	0.57	0.1	1.4	0.2	0.1
Metallurgical production and fabrication of finished metal products								
Structure (%)	45.1	45.2	13.2	-31.9	81.2	33.7	62.3	-18.8
Potential (US $)	41.2	23.3	10.9	-12.4	81.8	33.5	47.3	-5.3
Influence (%)	0.58	0.49	0.24	-0.3	0.02	0.40	0.07	0.1
Ukraine								
Manufacture of food products, including beverages, and tobacco								
Structure (%)	21.5	28.5	33.5	12.0	9.9	15.4	21.4	11.5
Potential (US $)	124.2	98.5	67.9	-5.9	57.1	99.9	189.8	12.8
Influence (%)	14.9	11.6	8.2	-6.7	35.4	32.2	30.2	-5.2
Chemical and petrochemical production								
Structure (%)	18.6	15.6	10.7	-3.9	11.1	7.7	7.0	-4.1
Potential (US $)	107.5	53.8	21.8	-14.8	63.6	50.2	62.0	-0.3
Influence (%)	7.5	4.0	1.3	-6.2	18.2	11.1	7.5	-10.7
Manufacture of basic metals and finished metal products								
Structure (%)	29.1	25.3	26.3	-2.8	49.6	40.7	37.8	-11.7
Potential (US $)	168.1	87.4	53.3	-10.8	284.7	264.3	335.1	1.6
Influence (%)	16.3	11.4	6.0	-10.3	27.4	24.5	23.3	-4.2

Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

Russia, as a regional centre, retained its role of having a sustainable and rapidly evolving chemical and petrochemical industry with a predominant regional influence, a substantial volume of domestic consumption and belonging to the group of medium- and high-tech industries. Despite a high growth rate of the per capita value of exports and their increasing contribution to total industrial exports, the stagnation of structural change and the dynamics of the country's production potential did not support an extensive promotion of its food products in foreign markets or increase its competitiveness. Low-tech metallurgical production in Russia was the most competitive in terms of realizing the external demand for such products, taking into account the country's size and despite a visible annual decline in its share of exports in the total exports from the manufacturing sector in 2014.

The main characteristics of leading industries in the structure of the manufacturing sector of other countries in the region are presented in the analytical insert.[23]

Regional leading industries' production-export potential[23]

Food production in 2014 was consistently included in the group of industries with a high share of GVA of the manufacturing sector in all countries of the region, with the region-wide production potential per capita of the entire population of the CIS-9 at USD 1,032 compared to USD 1,058 in 2005. The export potential of the food industry in 2014 was USD 1,186 per capita of the entire regional population, mainly due to the export of food products from Belarus, Moldova and Ukraine.

The industry with the highest industrial potential in terms of value added in Russia, Azerbaijan and Belarus in 2014 was the chemical and petrochemical industry, which belongs to the medium- and high-tech industries group and whose per capita value added in the three countries totalled USD 683 compared to the total values of exports of such products (USD 695), primarily due to the export potential of Belarusian industries.

Products from the metallurgical industries, which belong to the low-tech group, were included in the cluster of dominant manufacturing activities in the region with a high contribution of value added in all CIS countries with the exception of Azerbaijan, Belarus and Moldova, reaching a per capita production capacity in 2014 of USD 717.4, which was USD 154 below the level of 2005, primarily due to a significant decline in the production of base metals and metal products in Ukraine, Tajikistan and Russia. At the same time, a significant per capita increase in the export potential of these products (USD 1,142) resulted in this industry coming in second in the regional exports from the manufacturing sector.

[23] Authors' calculations.

5. Effects of industrial “road maps” in the CIS

5.1. Potential of technological modernization and diversification level of manufacturing industries

In the period analysed, the cluster of countries in the CIS region that registered consistent industrialization, a significant national per capita income, high values of production and export potential, a contribution to the value added by all industrial activities and regional influence of the manufacturing sector were Russia, Kazakhstan, Ukraine and Belarus (despite a decline in the dynamics of indicators in USD at the end of 2014). At the same time, Azerbaijan and, with a slight margin, Armenia, which were ahead of the cluster of other peripheral countries with a sluggish industrial development, represented the middle group of countries that are still catching-up and promoting industrialization [Upadhyaya et al., 2016]. A distinctive feature of Azerbaijan’s manufacturing sector, which during the study period reduced the gap to the middle group to the greatest extent, was the implementation of industrial development strategies at the expense primarily of low-tech industries and an increasing share of medium- and high-tech activities in the domestic and in foreign markets. Other countries at the periphery continued to expand the large-scale processing of resources, with the exception of Kyrgyzstan, where the low volume of value added of the manufacturing sector was dominated by low-tech metallurgical production.

The key question here is: is there a group of countries in the CIS region whose potential for modernization and diversification of the manufacturing sector can stimulate industrial development towards innovative, technologically intensive production and exports resilient to external challenges?

There is a lot of empirical evidence [Rainert [2011], Malkov et al. [2008] that high-tech industries are characterized by increasing returns to scale, and that industrial strategies with a focus on an intensive development of high-tech industries contribute not only to an increasing national GVA, but also to higher income levels of the country’s population. This contributes to the expansion of domestic demand, oriented, among other things, towards new high-tech production. Countries whose industrial structure is dominated by raw materials processing tend to have a manufacturing sector with a diminishing return on scale, which leads to a gradual reduction in the population’s income in comparison with more developed countries. Under competing conditions, the manufacturing firms of such products tend to reduce production costs and cut wages, thereby contributing to a permanent decline in demand for expensive goods and first-order demands and in their further production. Such countries risk increasing the industrial lagging behind in comparison to other countries as well as of being drawn into the so-called trap of undeveloped countries.

The most important factor for the successful modernization of the manufacturing sector

of countries with a low income population is the possibility to export manufactured products by integrating them into international trade flows by building on imports of advanced technologies and attracting sufficient foreign investment under conditions of technological cooperation with more developed countries, in particular, cross-border integration.

The successful implementation of export-oriented industrial strategies based on the growth of competitive manufactured products on foreign markets and of GVA is a prerequisite for a country's sustainable development. Excessive efforts in this direction can aggravate the situation, and the country's manufacturing firms will tend to preferentially sell their products on foreign markets without targeting domestic consumption and without taking the current and expected ratio of demand into account, and to reduce their production costs by saving on employees' wages. The combination of all factors restrains the development of high-tech industries, the inflow of foreign consumer goods and gradually slows down the country's development, with a high share of exports of extracted and processed resources, driving the country into a trap of resource dependence.

A country with an intermediate level of development, which is catching-up in terms of its technological development, could fall into the trap of technological backwardness if its export-oriented strategies primarily focus on increasing the competitiveness of products from medium- and high-tech industries based on dumping to keep wages low and to reduce production costs. Such production is primarily based on imported technologies acquired through direct foreign investments, low production costs of export-oriented products and price advantages for the producer on foreign markets in accordance with the possibility of maintaining an undervalued exchange rate of the national currency. A strong direct dependence of the country on the situation in foreign markets, political challenges and economic entry barriers to foreign investment and advanced technologies, combined with a narrow domestic consumption of manufactured products and a low level of human capital either increases the technological dependence on developed countries or closes the economic development within the confines of low labour productivity and backward consumer properties of manufactured products.

For a country with a manufacturing sector that is catching up, effective industrial policies include focusing on medium- and high-tech production by increasing foreign investment and promoting new technologies (also those technologies from developed countries that are already commercially successful) and a subsequent deployment of the corresponding national production. Revenues earned on the domestic market and from exports should not only be channelled to support the rapid expansion of medium- and high-tech production and investment goals, but also to strengthen human capital, employee skills, innovative infrastructure and the improvement of the business environment in terms of readiness to implement innovations. It is assumed that the trap of technological backwardness can be overcome by balancing economic and social objectives, without risking impoverishment of the population.

The participation of manufacturing industries from the CIS region in international trade flows consists of so-called upward linkages, i.e. other countries use the goods exported by the country as raw materials or components for final production, which prevents the creation of high value added in the country exporting the intermediate products. In addition, the exports from the raw materials processing industry or the components for more technologically advanced activities with a certain time lag can return to the same country as finished imports with a corresponding mark-up, despite the fact that the share of national producers in creating value added within such imported products exceeds the contribution of foreign producers at the final stage of creation of value added. Therefore, the promotion of national manufacturing industries in international production and trade flows to be as close as possible to the end user and the extensive involvement of domestic producers in knowledge-intensive areas are key factors in ensuring effective participation of the country in modern global economic cooperation.

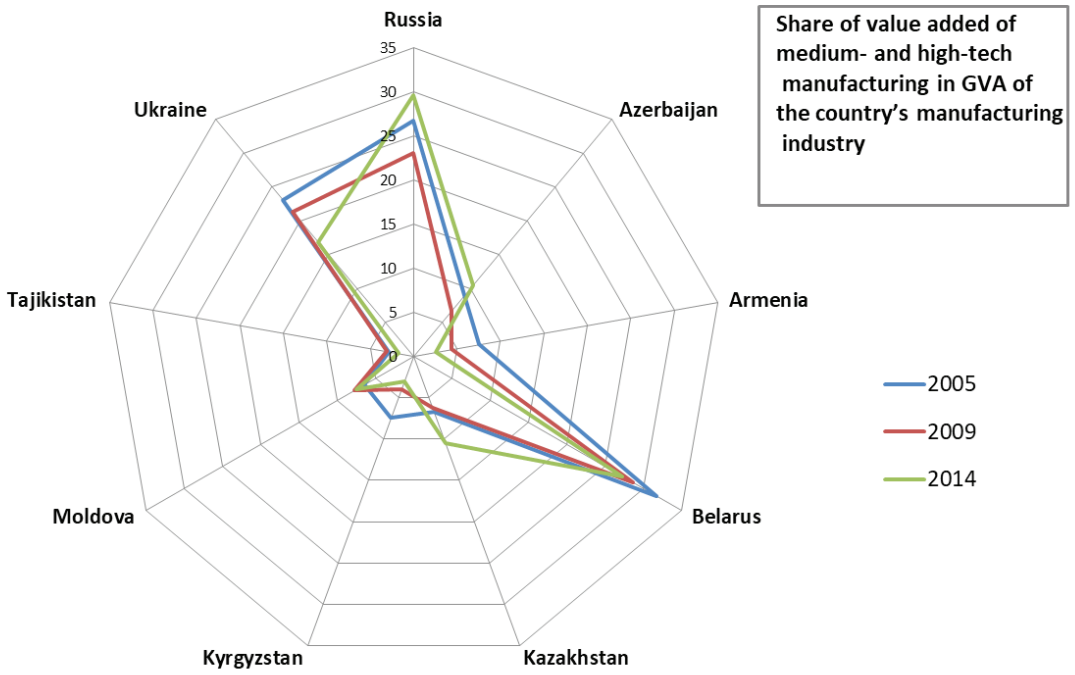
The possibility of expanding value added in the context of globalization depends to a great extent on the country's ability to accumulate and develop new technologies, marketing and management to develop the "new economy" and human capital, including level of education, a high share of employees in medium- and high-tech industries, a low unemployment rate, harmonization with international standards of public administration, etc.

To promote cross-border expansion of technological modernization in the Commonwealth region, a reduction of regional imbalances in the development of its potential and effective institutional and financial mechanisms are necessary, in particular the creation of intra-regional clusters of techno parks and venture financing, the removal of barriers to technological cooperation and the harmonization of regulators of mutual cooperation in all types of innovative activities.

The indicators of the technological content of value added and exports from the manufacturing sector, the diversification level of medium- and high-tech industries and exports were used to measure the potential of modernization of production and export processes in CIS countries at the sectoral level. The technological structures of production and exports were compared, and the concentration of medium- and high-tech content of GVA and exports from the manufacturing sector in each country were determined.

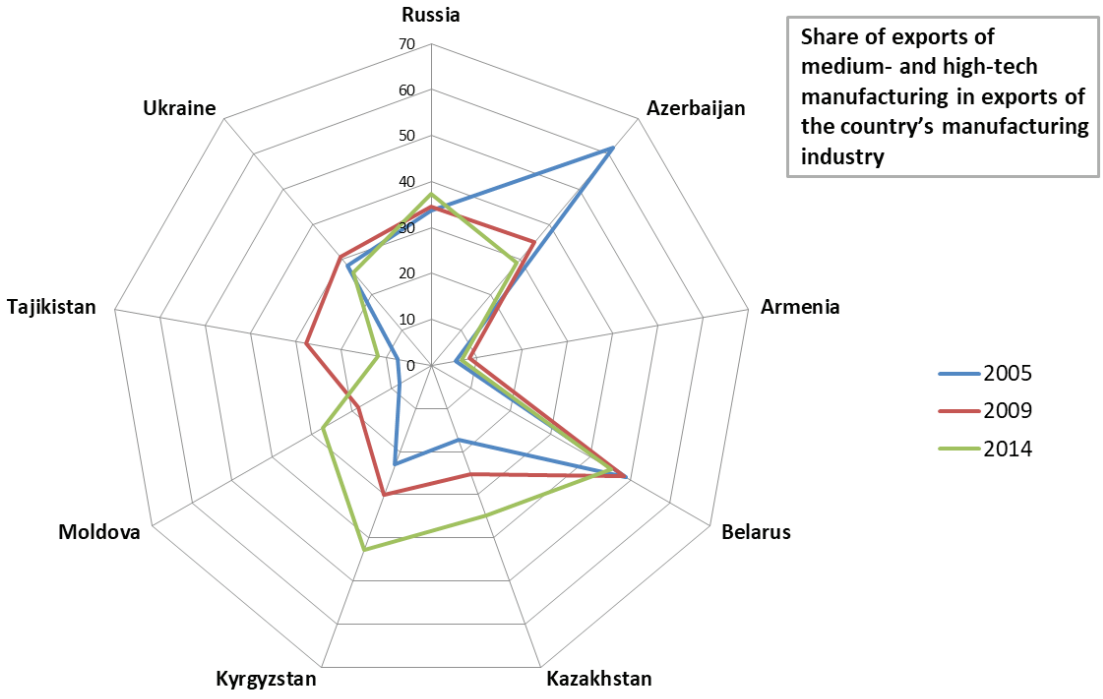
Figures 25 and 26 show changes in the level of technological modernization in the countries of the region as a share of medium- and high-tech activities in aggregate GVA and exports from the manufacturing sector in the period 2005-2014.

Figure 25 – Technological structure of GVA of the manufacturing sector (potential of modernization)



Source: Rosstat, CIS Statistical Committee, authors' calculations.

Figure 26 – Technological structure of manufacturing exports



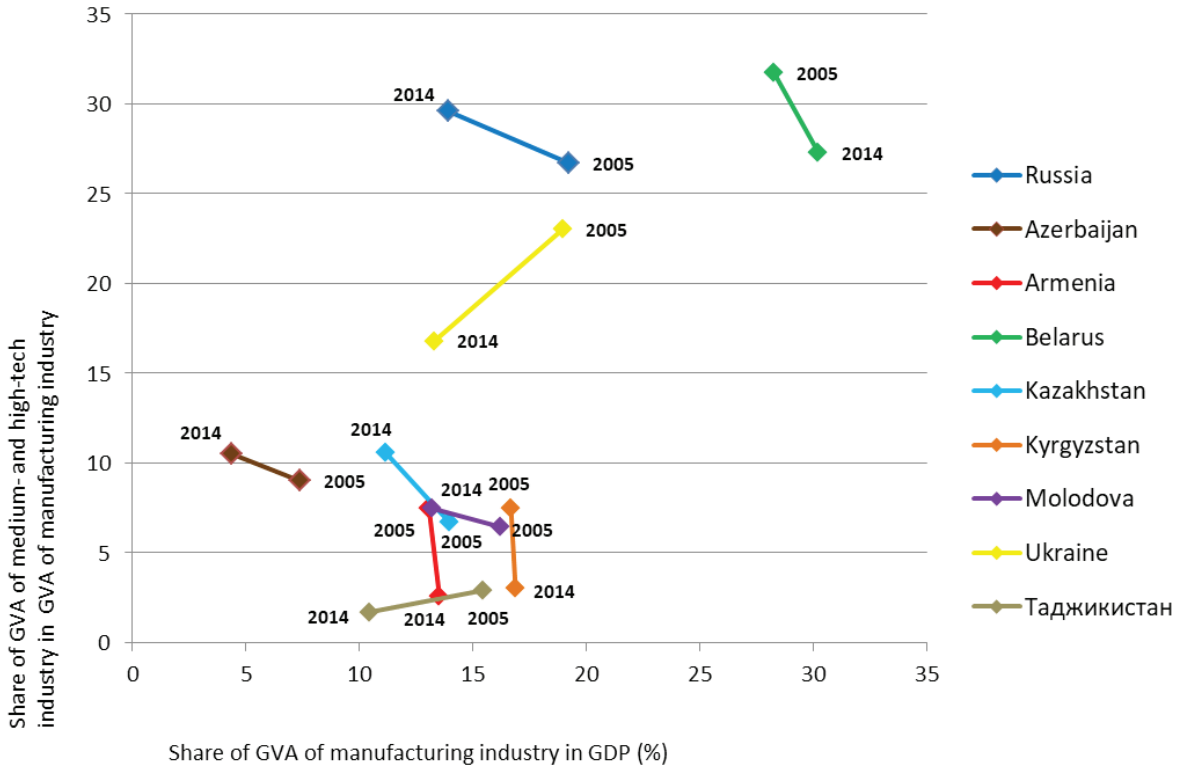
Source: Rosstat, CIS Statistical Committee, authors' calculations.

The distribution of countries in the region based on their potential of technological modernization largely reflects their differences in industrial potential and national per capita

income. The technological content of the country's manufacturing sector increasingly improves with the growth of its industrial potential and national per capita income. Groups of countries with different intensities of modernization can thus be distinguished. In the period analysed, the two countries that had experienced a long-standing and sustainable modernization process were Russia and Belarus. The technological modernization was more restrained in Ukraine, Azerbaijan and Kazakhstan. In the other countries, the modernization of the technological structure of the manufacturing sector was incipient.

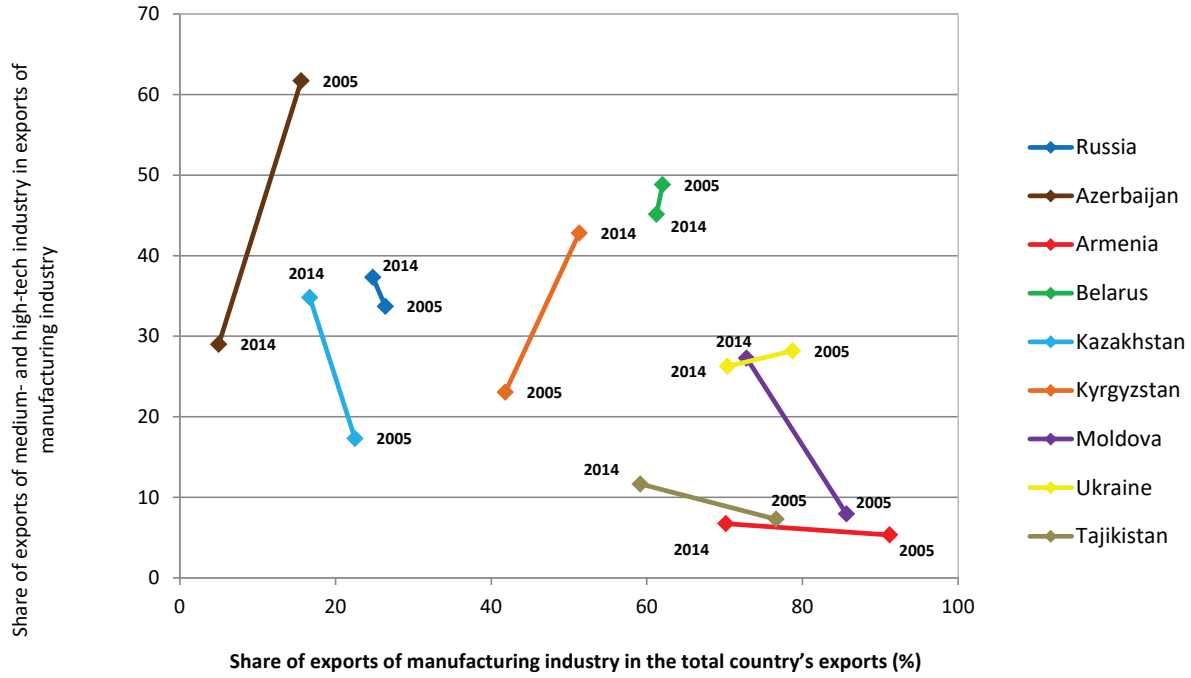
A goal-directed trend in the development of a country's manufacturing sector implies that GVA and exports grow faster than the corresponding parameters in general for all types of industrial activities in the country, and GVA and exports of technologically complex products expand intensively (Figures 27 and 28).

Figure 27 – Development of industrialization intensity



Source: Rosstat, CIS Statistical Committee, authors' calculations.

Figure 28 – Development of export structure towards technology intensive exports



Source: Rosstat, CIS Statistical Committee, authors' calculations.

A desirable trajectory of the country's development over time is an increasing share of the manufacturing sector in GVA and a simultaneous shift of the sector's structure towards more technologically complex industries. The region's countries display different patterns changing intensities of industrialization. In Russia, a gradual decline in the share of GVA of the manufacturing sector in the period 2005-2014 was characteristic, mainly as a result of the large-scale expansion of the services sector and the construction industry, while the development of the share of medium- and high-tech activities, by contrast, demonstrated an upward trend. The developments in Kazakhstan, Moldova and Azerbaijan were similar. The industrial development of Belarus, Armenia and Kyrgyzstan progressed with different intensities in the opposite direction, namely deterioration of the technological structure of the manufacturing sector and of the GVA of the manufacturing sector, as well as an absolute increment of its contribution to GDP, due mainly to a sharp reduction in the value added of the services sector in Belarus, of the construction industry and the agriculture sector in Armenia, and of the agriculture sector in Kyrgyzstan. A strong compression of the manufacturing sector in the GDP of both Ukraine and Tajikistan towards the end of the period analysed occurred together with the expansion of the services sector and a certain curtailment of medium- and high-tech manufacturing industries.

In the development of the exports structure in the Commonwealth region, only two trends were evident. One group of countries—Russia, Kazakhstan, Moldova, Armenia and Tajikistan—to varying degrees demonstrated a decreasing share of the total value of manufacturing exports in the country's total exports in addition to an increasing share of technologically more complex

exports. In the second group, which included Belarus, Ukraine and Azerbaijan, the opposite trend was observed. The exception was Kyrgyzstan, with a marked rise in the dynamics of both indicators.

Distinguishing industries that create the highest value added allows determining to what extent the volumes of industrial GVA and exports in the country are created by high-yield industries and to what extent they expand, and whether the advanced export structure results from a higher potential or from participation in assembly production and the export of intermediate products with a low value added.

Indices of production and export diversification

The analysis of the modernization potential of a country's manufacturing sector should be supplemented with estimates on the diversification levels of medium- and high-tech (MHT) industries and their exports. Such indicators allow determining the extent to which the value added of medium- and high-tech industries and the total value of the corresponding exports are concentrated in a narrow, restricted range of industries or are distributed among many industries, and how such a distribution of production relates to the degree of export diversification. As regards relative inter-country efficiency of the manufacturing strategies in the region, the indicators determine the ability of a single country to diversify its medium- and high-tech production, reducing its vulnerability as a whole in a cross-border competitive environment and allowing a comparison of estimates between countries.

To determine the relevance of a country's individual manufacturing industries grouped according to the relevance of their end products in international trade flows, the Hirschman-Herfindahl Index (HHI) is used, which covers the entire distribution range of technologically advanced industries (or products in case of intra-industry analysis). The index consists of summing up the squares of the shares of individual medium- and high-tech industries in the total value added of medium- and high-tech industries in the country's manufacturing sector (or their share in total exports) using the formula:

$$HHI = \sum_{i=1}^{N}(S_i)^2 HHI = \sum_{i=1}^{N}(S_i)^2,$$

where is the share of medium- and high-tech industries (products of the i-th analogous industry) in the total value added (total exports) of medium- and high-tech industries;

N, the total number of medium- and high-tech industries included in the sample.

The index takes the value from to 1, that is, it determines the range from the highest diversification to the highest concentration of GVA and exports from these manufacturing industries of the country. Similarly, the HHI index is constructed to determine the diversification level of the manufacturing sector's entire production and export structure as well as the industries with a high share of value added.

Table 13 – Distribution of HHI diversification of medium- and high-tech manufacturing industries by country[24]

	HHI of MHT production			HHI of exports of MHT production		
	2005	2009	2014	2005	2009	2014
Russia	0.20	0.25	0.20	0.32	0.34	0.33
Azerbaijan	0.54	0.28	0.25	0.47	0.33	0.51
Armenia	0.37	0.39	0.39	0.24	0.19	0.22
Belarus	0.28	0.29	0.30	0.25	0.30	0.30
Kazakhstan	0.30	0.32	0.26	0.31	0.60	0.38
Kyrgyzstan	0.31	0.30	0.33	0.29	0.22	0.27
Moldova	0.28	0.29	0.37	0.25	0.27	0.37
Tajikistan	0.51	0.79	0.40	0.23	0.50	0.18
Ukraine	0.26	0.25	0.26	0.26	0.22	0.23

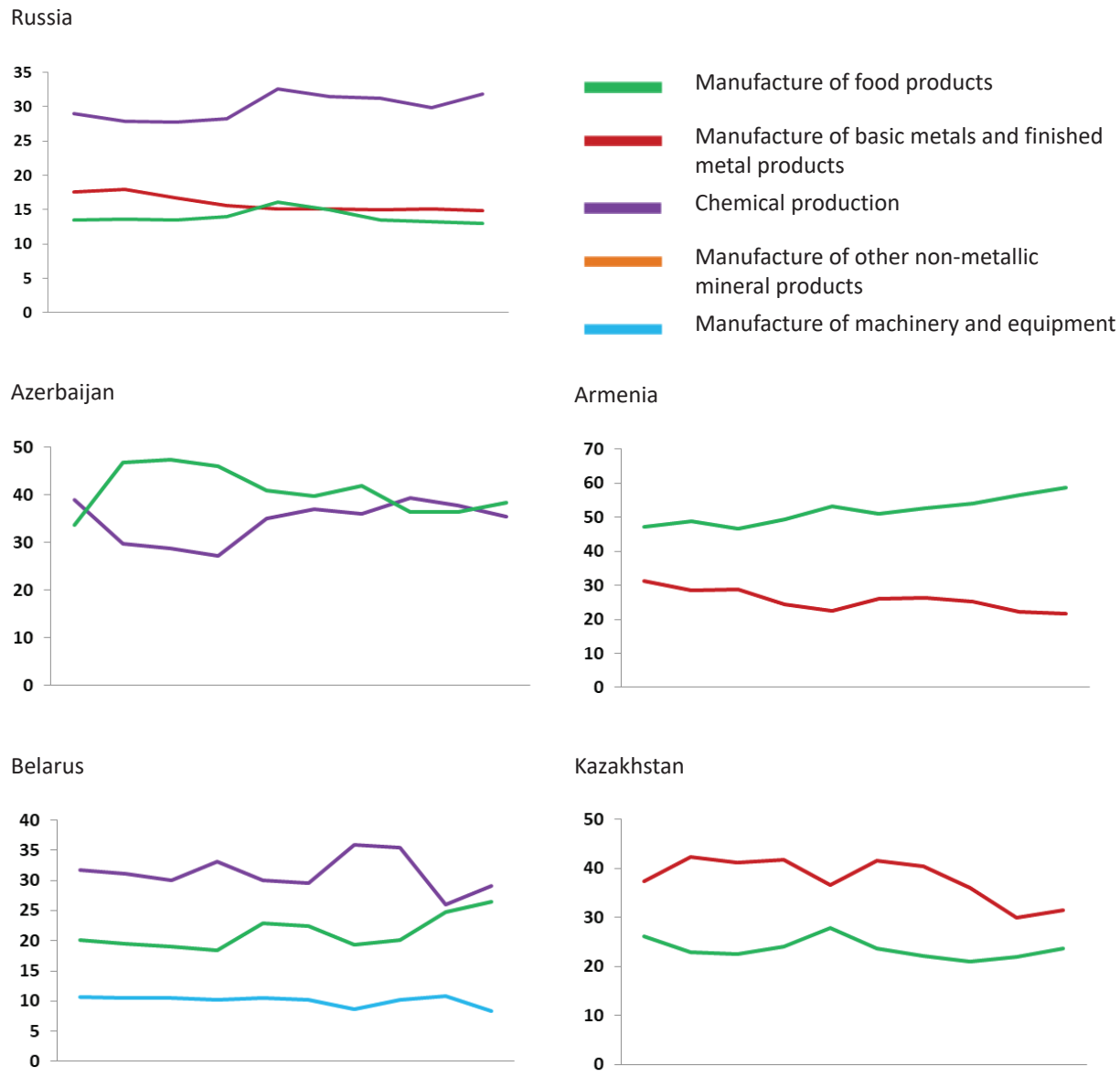
Source: Rosstat, CIS Statistical Committee, authors' calculations.

In countries with low HHI values (Table 13) in MHT production in the period 2005-2014 and higher index values in the export of products from such industries, namely Russia, Azerbaijan and Kazakhstan, only a few activities were export-oriented among all diversified industries. By contrast, in Armenia, Tajikistan and Kyrgyzstan, despite a pronounced concentration of industrial production with a higher technological level, the export basket of MHT products had a more diversified level of export activity. The highest concentration of exports in Azerbaijan indicated a clear dominance of chemical production among all medium- and high-tech industries in terms of competitiveness on the foreign market, despite a relatively wide range of industries in the overall structure of the country's manufacturing sector. A marked concentration of value added of MHT manufacturing in three industries in Tajikistan with a clear focus in 2009 on the production of machinery and equipment had the most significant diversification level of high-tech exports in the region with at least seven different industries involved in foreign trade.

The sample of MHT manufacturing in Ukraine and Belarus was consistently characterized by an intermediate level of production and export diversification of the manufacturing sector. Countries that have a manufacturing sector with a more significant diversification of the sectoral technological base and a marked orientation towards the domestic market are less subjected to changes in external market conditions, price fluctuations and competition of third countries, which significantly reduces the vulnerability of their manufacturing industries to external shocks, as their products, as a rule, do not correspond to cross-border and global demand. In countries with marked differences in the level of diversification and a low volume of exports, the majority of MHT industries are multinational corporations that set up production facilities which generate relatively low value added in areas with a low industrial potential.

[24] Minimum level of diversification in the study: =1/8=0.125.

Figure 29 – Distribution of value added of the manufacturing sector by industries with a high share of value added (in %)[25]



[25] The specification in each country of the CIS region of a group of industries with a high value added is based on empirical evaluations of the authors by ranking industries in each country and establishing threshold values for the studied set of countries of the structure of contribution by industry to the total value added of the region's manufacturing sector.

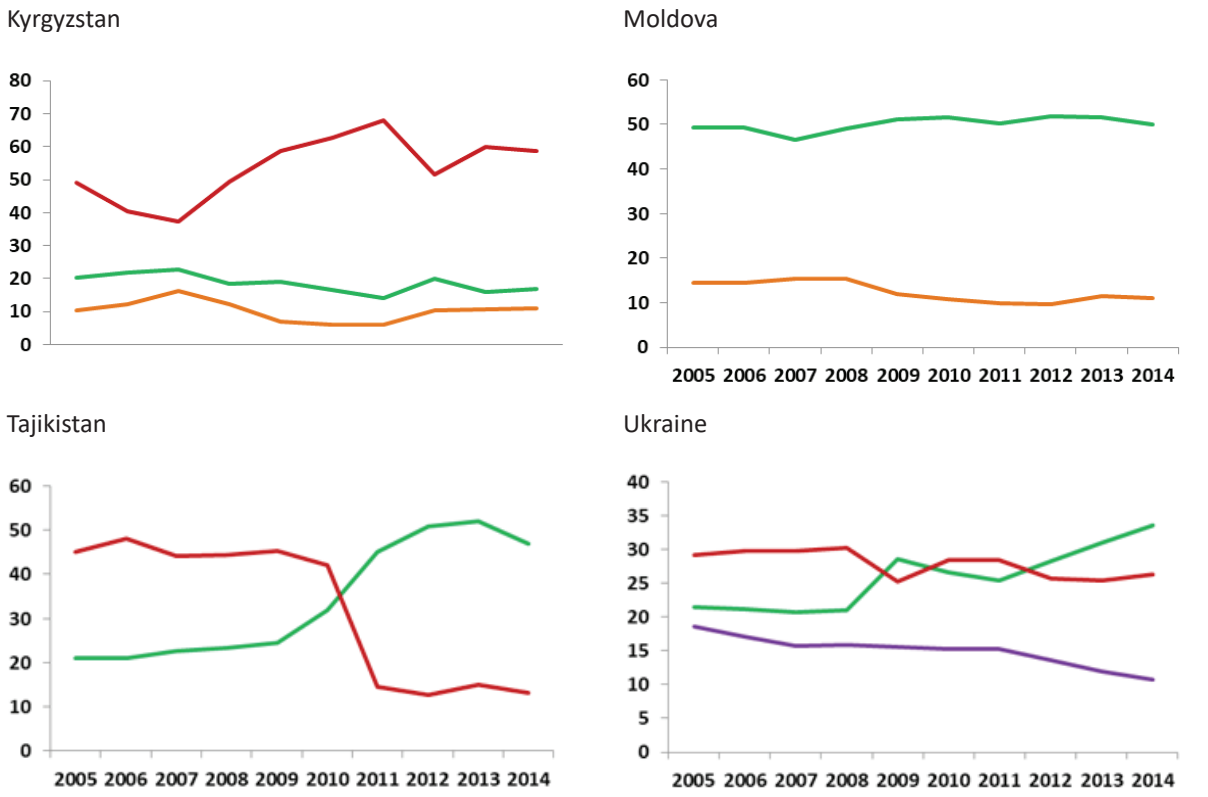
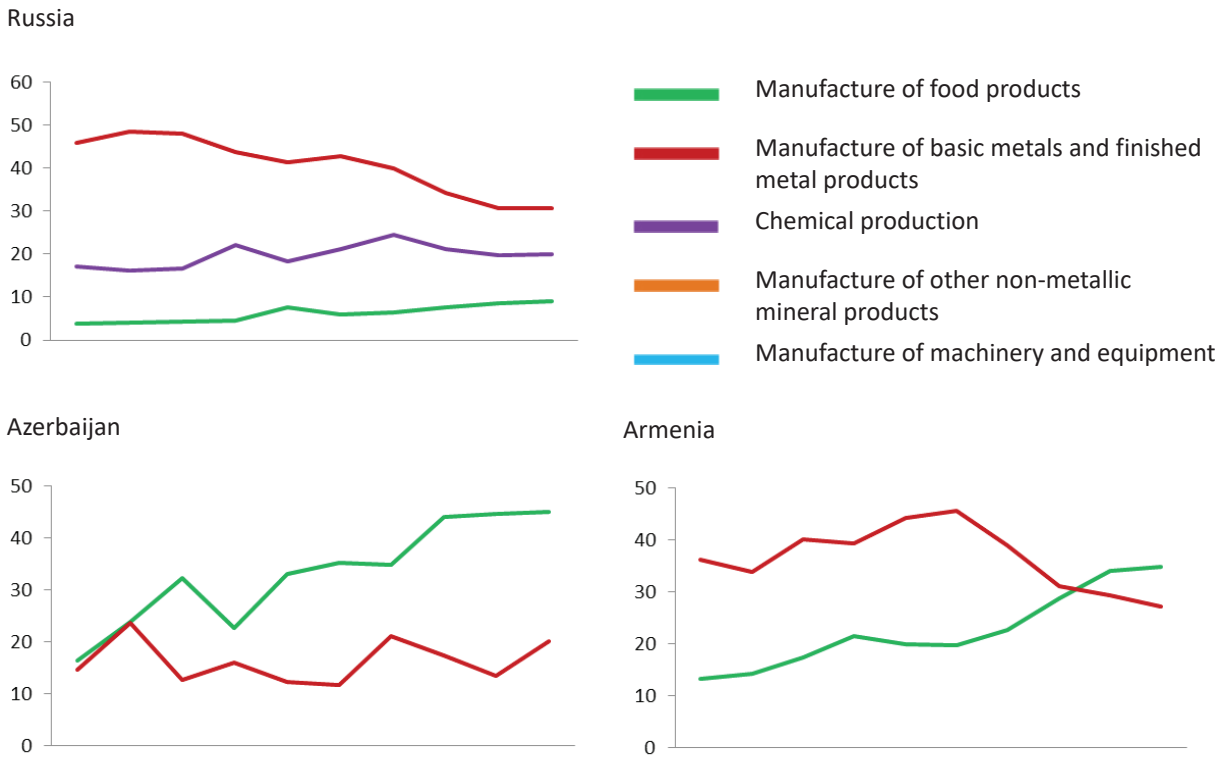
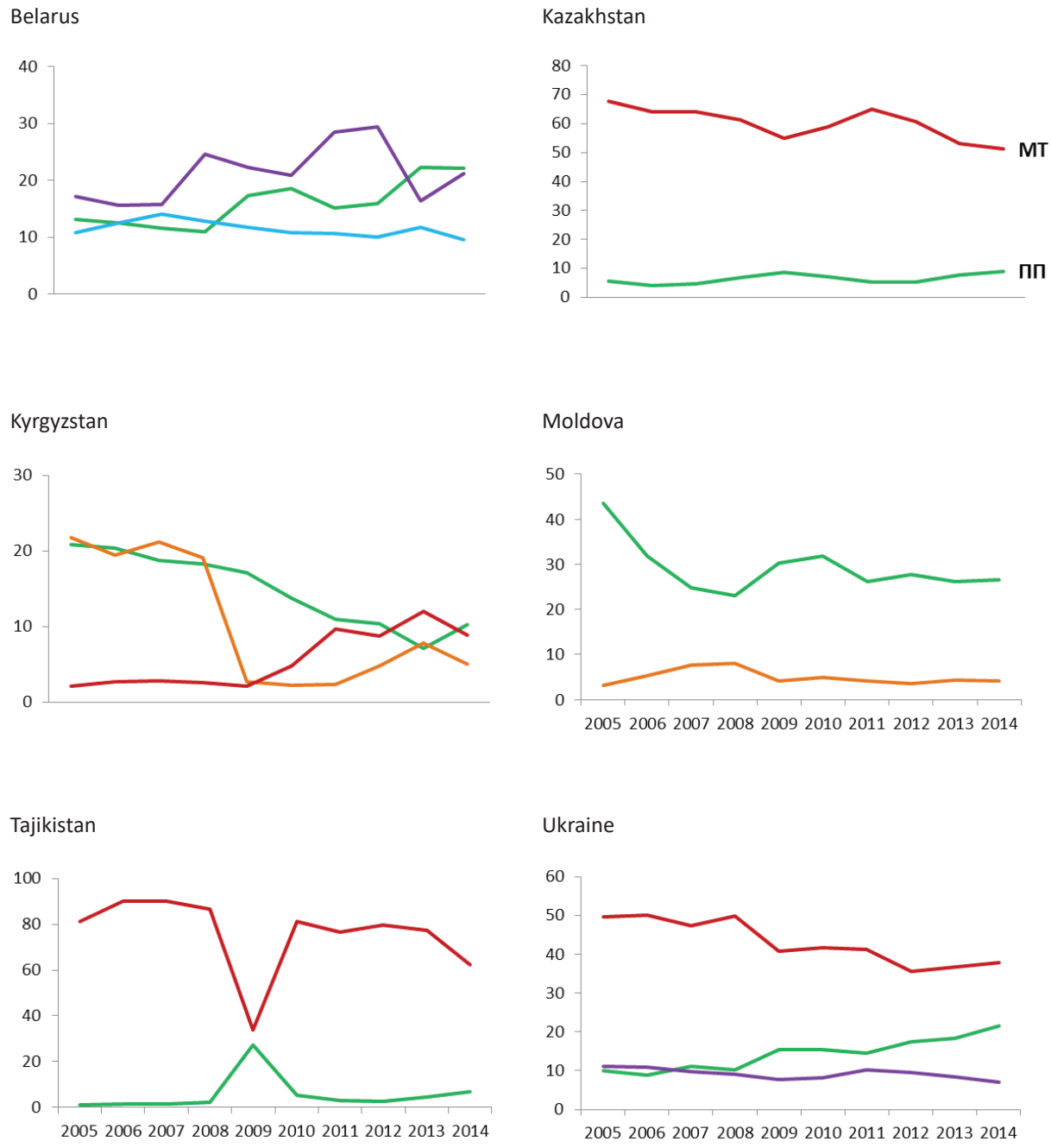


Figure 30 – Distribution of manufacturing exports by industry with a high share of value added (in %)



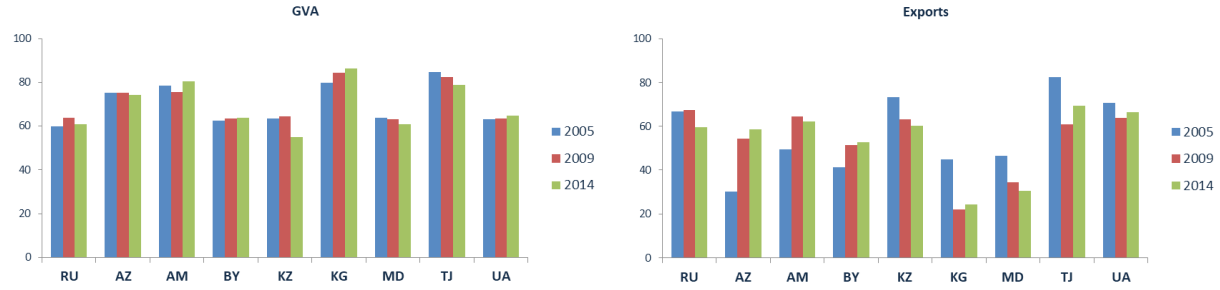


Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

Figures 29 and 30 provide an overview of another aspect of diversification, namely the basic shares in the distribution of leading industries with a high value added in production and exports in the Commonwealth region. The lower the shares of such industries and the higher their total contribution to aggregate GVA of the manufacturing sector, the more diversified the structure of value added. Furthermore, the lower the number of industries presented in the figures, the higher the concentration of the manufacturing sector in the country. Figures 29 and 30 present the distribution of GVA and of manufacturing exports among different leading

industries in the period analysed, the volatility of the changes that took place and the degree of their influence on the main parameters of production and export development among the countries of the region.

Figure 31 – Change in total share of industries with a high share of value added in GVA and manufacturing exports (in %)



Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

There were five leading industries in the manufacturing sector of the CIS region as a whole between 2005 and 2014. The most dynamic development at the end of the study period was recorded for the metallurgical industry in Russia, Ukraine, Kazakhstan, Tajikistan and Kyrgyzstan. The chemical industry only remained significant for Belarus, Russia and Ukraine. The food industry contributed the bulk of GVA of the manufacturing sector in Azerbaijan, Armenia, Moldova and Belarus and, to a lesser extent, in Russia, Ukraine, Kazakhstan, Kyrgyzstan and Tajikistan. The production of machinery and equipment only dominated the GVA of the manufacturing industry in Belarus and to a lower degree in Russia. The production of other non-metallic mineral products played an important role in Kyrgyzstan and Moldova. At the same time, the export potential of the Commonwealth region was broadly represented by metallurgical products from Russia, Ukraine, Kazakhstan, Azerbaijan, Armenia, Tajikistan and Kyrgyzstan, as well as by food products from all countries of the region, by a large margin specifically from Azerbaijan, Moldova and Armenia. Chemical products from Russia, Belarus and Ukraine were competitive on foreign markets. Exports of machinery and equipment from the CIS region consisted primarily of products from Russia and Belarus.

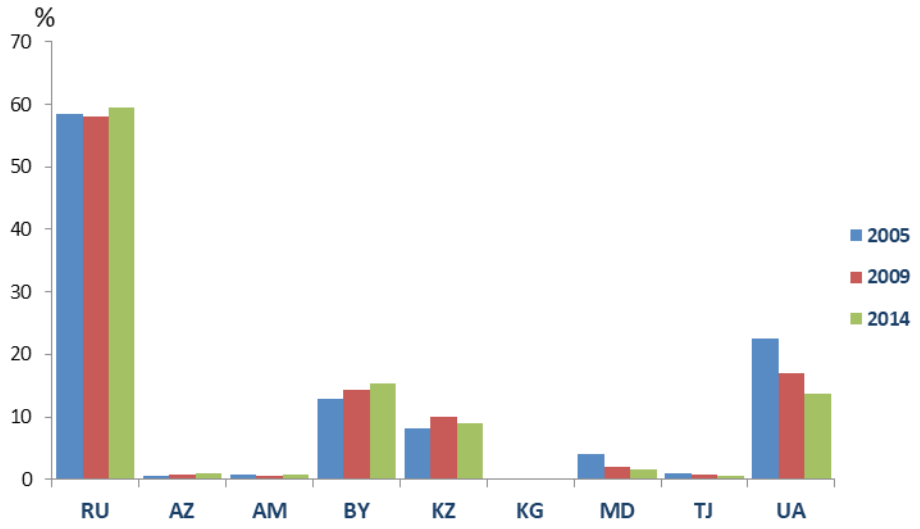
The distribution of contributions of value added by the leading industries are presented by values in Table 14, illustrating the dynamics in the development of the manufacturing sector in each country, with a high concentration of five industries in the CIS region.

Table 14 – Contribution of all industries with high value added to GVA of the CIS countries

	Share of subsector's value added in value added of manufacturing industry (in %)			Concentration (Diversification) 2005-2014
	2005	2009	2014	
Russia	60.0	63.8	60.3	
Azerbaijan	72.7	75.9	73.8	
Armenia	78.5	75.6	80.3	
Belarus	62.5	63.6	63.9	
Kazakhstan	63.5	64.5	55.0	
Kyrgyzstan	79.8	84.5	86.3	
Moldova	63.7	63.1	60.8	
Tajikistan	84.8	82.5	79.0	
Ukraine	69.2	69.4	70.5	

Source: Rosstat, CIS Statistical Committee, authors' calculations.

Figure 32 presents the share of exports of all top productions as well as their development since 2005 for each country in the region



Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

Table 15 presents the diversification level of the manufacturing exports of each country in terms of competitiveness of the manufactured product and cross-border demand on regional markets in the CIS.

Table 15 – Diversification index of manufacturing exports by country

	EDI_j			Change 2005-2014
	2005	2009	2014	
Russia	0.81	0.78	0.78	
Azerbaijan	0.39	0.50	0.45	
Armenia	0.57	0.65	0.58	
Belarus	0.59	0.63	0.70	
Kazakhstan	0.70	0.73	0.71	
Kyrgyzstan	0.33	0.48	0.59	
Moldova	0.42	0.46	0.49	
Tajikistan	0.56	0.74	0.58	
Ukraine	0.88	0.85	0.79	

Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

Export Diversification Index (EDI)

The Export Diversification Index (EDI) makes it possible to analyse the structure of the manufacturing sector as well as the changes in the structure of manufacturing exports of any region (the world as a whole), determining to what extent the country's economy depends on the manufacturing exports of specific manufacturing industries, taking into account shifts in regional manufacturing exports. It is calculated using the following formula:

$$EDI_j = 1 - \frac{\Sigma(|h_{ij} - h_i|)}{2}$$

where is the value of the diversification index of all manufacturing exports of country *j*,

denotes the share of industry *i* in the value of manufacturing exports of country *j*;

h_i is the share of products of industry *i* of all countries of the region in region-wide manufacturing exports

$ИДЭП_j$ $ИДЭП_j$ signifies the dynamics for each *j*-country indicating a change in distance (drawing closer, moving away) over time between the structure of exports of a given country and the regional (global) export structure: a decrease in the index values indicates both a lower diversification level of manufacturing exports and a growing discrepancy between the structure of manufacturing exports of the country and the structure of regional (global) exports.

The industrial policy of countries with low EDI values and HHI indices for industries with a more developed technological level and a high GVA should, based on grounded estimates of sectoral contributions to value added and exports, focus on strategies that promote not only the diversification of manufacturing industries' export baskets, but also the advancement of the export baskets' structure to meet regional (cross-border) and global demand.

Indicators of the diversification of manufacturing exports in the region can be used to identify the group of countries with the least pronounced concentration of exports of certain types of products and their correspondence to the regional export model (Russia, Ukraine, Belarus and Kazakhstan). In other countries of the Commonwealth, manufacturing exports absorbed a much smaller share of the total value of region-wide manufacturing exports and exported these products to a relatively small number of foreign markets.

Table 16 –HHI index of all manufacturing industries by country[26]

	HHI index			Concentration (Diversification) 2005-2014
	2005	2009	2014	
Russia	0.110	0.122	0.114	
Azerbaijan	0.273	0.303	0.281	
Armenia	0.352	0.385	0.437	
Belarus	0.132	0.138	0.146	
Kazakhstan	0.267	0.270	0.218	
Kyrgyzstan	0.303	0.396	0.401	
Moldova	0.326	0.325	0.336	
Tajikistan	0.344	0.338	0.296	
Ukraine	0.173	0.180	0.220	

Source: Rosstat, CIS Statistical Committee, authors' calculations.

The manufacturing sectors of Russia and Belarus were the only ones in the CIS region with a higher level of diversification of value added by 2014, despite declining after 2005. The manufacturing sectors of Ukraine and Kazakhstan trailed behind. Azerbaijan, Moldova and Tajikistan attained an intermediate level of industrial diversification in the region. A noticeable concentration of manufacturing in a smaller number of industries was recorded in Kyrgyzstan and Armenia.

Defining the technological structure of manufacturing exports is necessary to assess the country's level of modernization, demonstrating the competitiveness of its end products; the technological structure of manufacturing exports is characterized by the share of medium- and high-tech exports in the total value of manufacturing exports. In the period analysed, the technological structure of exports in the region did not change significantly. The share of MHT exports from the countries of the CIS' industrial centre CIS (Russia, Belarus and Kazakhstan) in the total manufacturing exports of these countries increased from 34.3 per cent to 38.2 per cent and amounted to USD 60.7 billion, while in the countries on the periphery of the region, the share decreased from 27.3 per cent to 26.0 per cent and amounted to USD 11.3 billion.

In most countries of the CIS region, the modernization of the manufacturing sector followed an 'adaptive' path, when the implementation of borrowed technologies and assembly production are preferred, and the innovations developed in the country do not become competitive on the foreign market and do not entail any revenue for the country, though they

[26] Minimum level of diversification: 1/N=1/23=0.0435

attract certain national resources and foreign investment. With the growth of national per capita income and the country's industrial potential, rational modernization, which strengthens the country's innovative potential, increasingly developed aside adaptive modernization. However, the continued shift in the region towards adaptive modernization clearly hampered rational modernization, which was very expensive for many countries because of the high costs associated with strengthening human and technological capital in total factor productivity.

5.2. Structure and tendencies of employment in manufacturing industries

Structural change of an economy defines its ability to continuously create new, rapidly developing activities with higher value added, labour productivity and increasing scale [UNIDO, 2013]. The notion of economic development is integral to changes in the structure of economic activity that occurs in the countries as national income per capita grows.

Macroeconomic imbalances are largely transferred to labour markets, which are weakened by the inconsistent aggregate demand. In addition, structural change, which is necessary for improving the quality of jobs and living standards, is evolving very slowly. Alongside the distribution of global investment, this prevents a rapid movement of resources towards more productive use, including in the manufacturing industries. Structural change in the economy that is associated with a rapid redistribution of employees from low-skilled to higher-skilled activities in various industries, thereby reducing the vulnerability of employment, is an important factor for improving the labour market [ILO, 2013].

Any impulse losses for structural change, especially during a crisis, are mutually conditioned by the decreasing rate and scale of the workforce shifting from the agriculture sector to sectors with higher productivity.

Only industrial policies that are aimed at structural change in the economy can contribute to the sustainable creation of new jobs. Therefore, employment-related indicators, especially those that can be used to assess the ability of the economy and manufacturing sector to generate sufficient employment for the population, provide valuable information on the efficiency of the country's industrial strategies.

Structural change within the manufacturing sector, such as transition to industries with a higher technological level, have a different degree of influence on the level of employment in the manufacturing sector, depending on the specific industries. Significant opportunities to increase the level of employment and, to a lesser extent, the amount of capital are opened through the development of the raw materials processing industry and low-tech industries. At the same time, medium-and high-tech industries have significant advantages for capital accumulation, the implementation of innovations, development of new knowledge and skills, creation of new types of industrial activities and, consequently, the expansion of employment and transition to

a new cycle of structural change.

The shift of countries towards modernization and diversification of the manufacturing sector contributes to the improvement of job quality generating the main impulses for the growth of financial and intellectual resources in the economy.

In countries with a higher level of technological modernization, there is a greater potential of employment due to the expansion of jobs in the manufacturing sector as a whole, as well as in the services sector related to industrial activities. In countries with a low level of per capita industrial potential, more extensive deployment of non-capital-intensive and labour-intensive industries makes it possible to achieve growth of employment.

It is presumed that the level of employment in the manufacturing sector is underestimated when the production base of an economy shifts to a more science-intensive content due to underreporting of all informal aspects in the manufacturing sector, especially when we consider the blurring of interfaces between the manufacturing sector and the related services sector [Manyika et al., 2012]. Sectoral functions that are carried out outside the main production activities are increasingly being outsourced, in particular, warehouse and personnel management, transport services, information technology, after-sales services, etc. Growing employment in the services sector, without a noticeable expansion of its value added, is largely attributable to such phenomena.

The analysis of the number of jobs in the manufacturing sector, based on statistical surveys of formal employment in specific production types of industrial activities only, does not gauge the entire range of jobs, including those indirectly created in related sectors and industries of the economy. Therefore, the real influence of the manufacturing sector on employment may be greater than the calculated values associated only with each particular type of activity, with an underestimation of the multiplier effect of input-output tables.

Employment in the manufacturing sector in the CIS in 2005-2014[27]

Total employment in the manufacturing sector of the nine countries of the CIS region in 2014 was 5.6 per cent of the region's total population.

At the end of the period analysed, the manufacturing sector employed 14 million people in the CIS region, amounting to 0.41 per cent of the world's working age population.

In the CIS countries with an above average national per capita income (Russia, Azerbaijan, Belarus and Kazakhstan), employment in the manufacturing sector decreased from 2005 to amount to 12 million people in 2014, exceeding the level of employment in the manufacturing sector of countries with an average national income level (Ukraine, Armenia and Moldova) 6-fold, and 51-fold of low-income countries (Kyrgyzstan and Tajikistan).

In the top-five manufacturing industries (export-oriented and high value added) in the Commonwealth, employment declined by 23 per cent from 2005 and amounted to 5.3 million people by 2014.

In the medium- and high-tech industries in the region, employment in the period from 2005 to 2014 decreased by 23 per cent and was 4.4 million, amounting to 32 per cent of total employment in the CIS region's manufacturing sector.

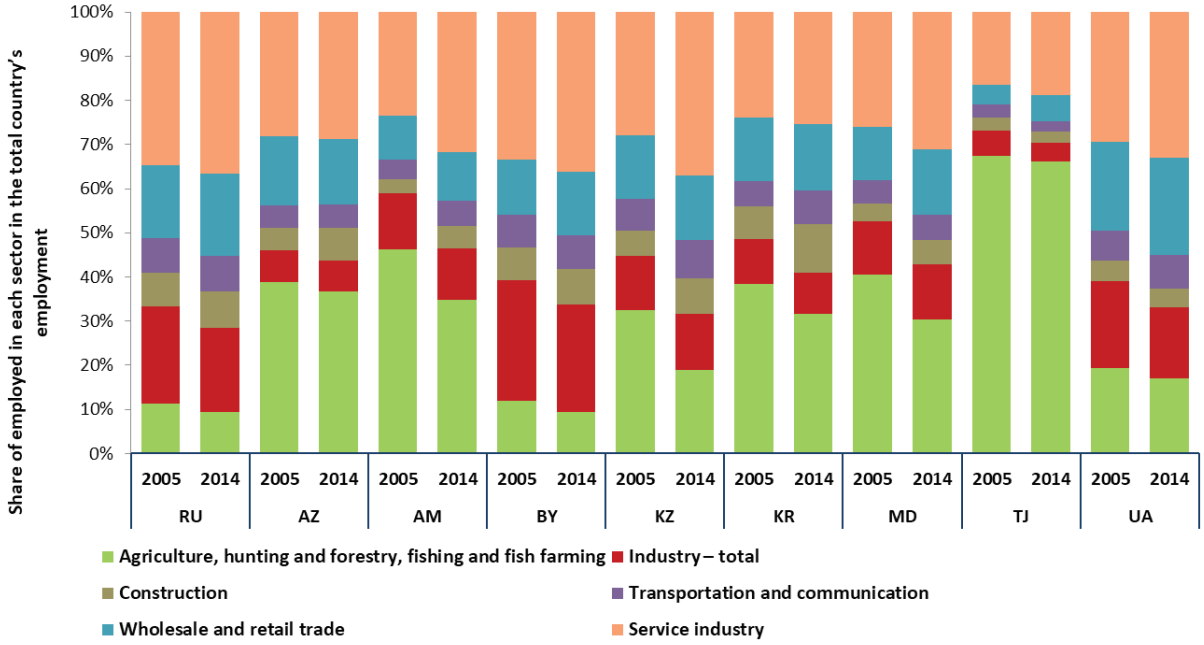
In countries with the highest industrial potential per capita (Russia, Kazakhstan and Belarus), employment in medium and high-tech industries decreased by 20 per cent since 2005 and amounted to 3.7 million people at the end of the study period, while in similar industries in other countries of the region, it was only 0.7 million people.

In countries with a dominant raw materials processing industry (Armenia, Moldova and Tajikistan), employment in this industry amounted to 81,000 at the end of the period analysed, accounting for 29 per cent of total employment in the manufacturing sectors of these countries; in countries with a substantial contribution of low-tech industries to the aggregate value added of the manufacturing sector (Russia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan and Ukraine), employment in these industries amounted to 3.2 million persons (24 per cent).

The importance of the manufacturing sector's potential for economic growth and structural change is obvious. Let us consider the specific role of certain industrial activities in the manufacturing sector in changing the employment structure in the CIS countries from 2005-2014. The key issue in this regard is how the role of structural change within the manufacturing sector changed the development of jobs in that sector in terms of the potential of industrialization and modernization of the Commonwealth region's countries.

[27] Authors' calculations.

Figure 33 – Change in employment composition by industry



Note: For Tajikistan, the latest information available was for 2013.

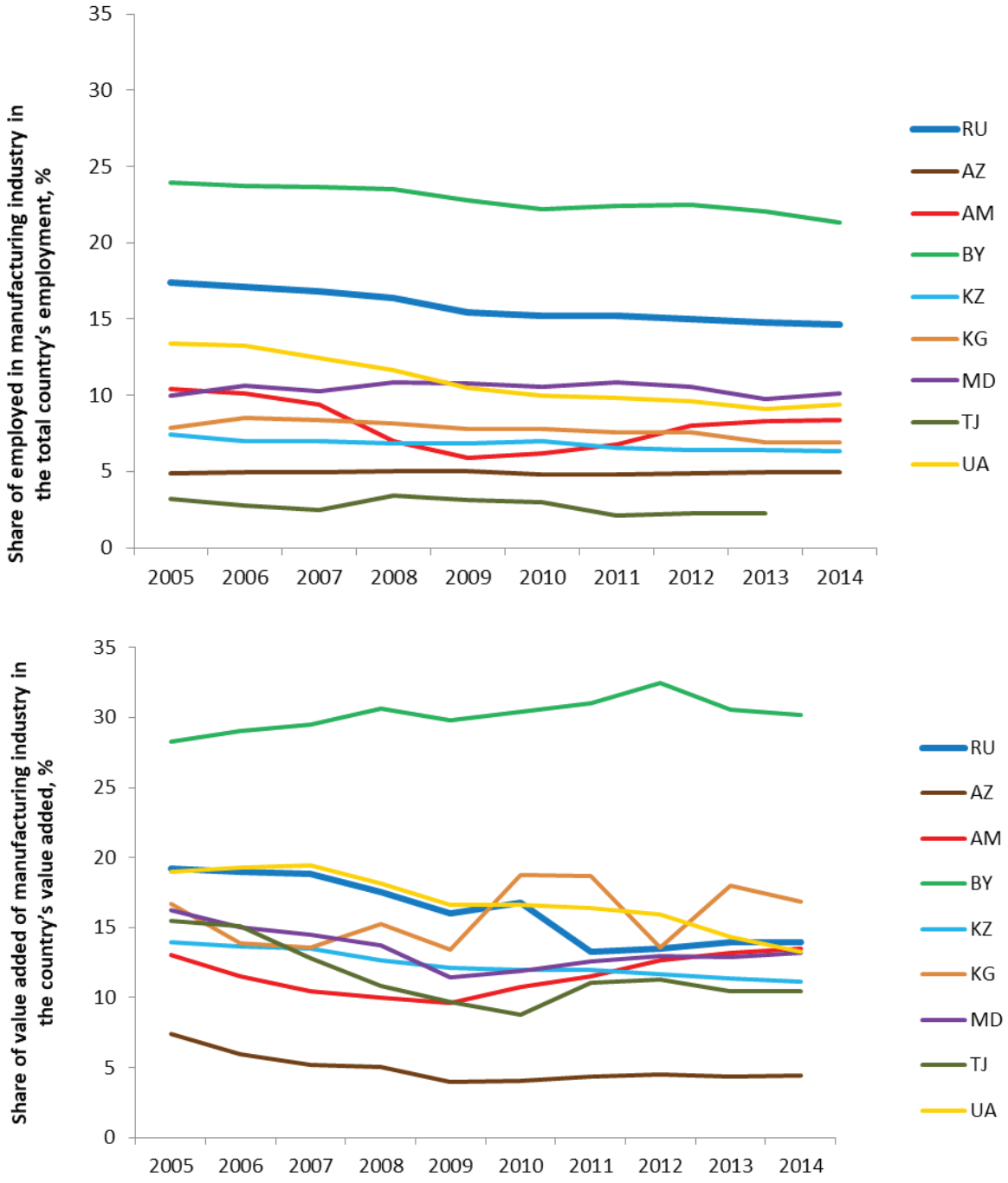
Source: Calculation is based on data from the CIS Statistical Committee (for Azerbaijan, Armenia, Kazakhstan, Kyrgyzstan, Moldova and Ukraine - on the workforce survey; for Russia, Belarus and Tajikistan - on workforce balance).

In the Commonwealth region, no significant progress was achieved between 2005 and 2014 in expanding employment in the manufacturing sector's formal sector to confirm its growing importance as a source of new jobs in the countries. This follows from the distribution of shares of existing jobs in each industry in total employment for the entire economy (see Figure 33). The main cause is the absence of noticeable structural change in the national economies in terms of significant shifts towards the creation of new production facilities and manufacturing industries with a higher value added. At the same time, there was an increase in employment in the services sector in most countries, including in industries closely related to the manufacturing sector (in particular, business services, financial intermediation, wholesale trade and transport services). This could significantly affect the growth figure of employment in the manufacturing sector; a broader approach should be taken to account for those jobs and to compensate the loss of information about them.

By the end of 2014, the trend in the region pointed towards employment reduction in the manufacturing sector, which at the same time was accompanied by a decreasing share of jobs in agriculture and an increase in services and trade. Azerbaijan was the exception, where the number of jobs in the study period remained nearly unchanged in all industries (except for construction, where the majority of the workforce had moved from the agriculture sector). Kyrgyzstan also witnessed a shift in its employment structure towards the construction industry and transport. The highest number of jobs of the working age population was found

in the agriculture sector of only one CIS country, Tajikistan, and the employment figures in the manufacturing sector were minimal compared with the rest of the region.

Figure 34 – The dynamics of structural change in value added and employment in the manufacturing sector



Source: Rosstat, CIS Statistical Committee, UNCTADstat Data Portal, authors' calculations.

If we consider regional structural change in the manufacturing sector from the perspective of employment flows, the shift of jobs to manufacturing from other sectors of the economy, and analyse the dynamics of industrial contribution to total employment, we find that the level of employment in the manufacturing sector was only high (over 18 per cent) only in Russia,

Belarus and Ukraine, an indication of real and timely industrialization in these countries between 2005 and 2014 (Figure 34). Kazakhstan indicated high industrial potential at an earlier stage of industrialization in terms of shifts of its workforce in the economy, which was largely attributable to the country's traditional economic structure which was based on agriculture. The agriculture sector's contribution to total employment began declining in 2014, primarily due to shifts of employees into the services sector. The agriculture sector also provided the majority of jobs in Tajikistan, Armenia, Azerbaijan, Kyrgyzstan and Moldova, yet significant flows of employees were absorbed by the services sector (in Armenia and Moldova) or the construction industry and transport (Kyrgyzstan) during the period analysed.

A shift of employment towards the services sector, bypassing the manufacturing stage of development, can lead an economy into the trap of a structural change process with adverse consequences of premature de-industrialization and lagging behind, even in the process of catching-up. At the same time, in the countries of the region with a high potential of modernization and industrialization, a slowdown in the dynamics of employment in the manufacturing sector could be accounted for by structural changes within the sector, in particular, which can point to a more marked concentration of production in capital-intensive industries and a general increase in capital intensity. An increase in employment (for example, in Kazakhstan) resulted from the country's industrial policy which continues to support labour-intensive industrialization, including of manufacturing industries associated with the raw materials processing industry and low-tech industries.

To what extent the expansion of the manufacturing sector generates productive employment can be determined by assessing its elasticity based on GVA; the intensity of employment growth is based on the recommendations of the International Labour Organization (ILO). In this study, the elasticity indicator is estimated from the ratio of the compound annual growth rates of industrial employment to the compound average annual growth rates of the GVA of the manufacturing sector, and determines how employment changes on average over the year as a result of a 1 per cent change in value added.

Table 17 – Intensity of change in employment and GVA of the manufacturing sector by country

	Employment (thou. persons)			GVA at constant prices (USD mln.)			Compound average annual growth rate (in %)					
							Employment			GVA		
	2005	2009	2014	2005	2009	2014	2005-2009	2009-2014	2005-2014	2005-2009	2009-2014	2005-2014
Russia	9 512	8 118	7 689	194 336	166 131	200 053	-3.1	-0.9	-2.1	-3.1	3.1	0.3
Azerbaijan	102	99	102	1 787	2 054	2 566	-0.5	0.5	-0.03	2.8	4.6	4.1
Armenia	110	77	50	676	745	992	-6.8	-8.3	0.0	2.0	5.9	4.4
Belarus	951	950	912	11 175	11 857	3 996	-0.03	-0.7	-0.4	1.2	-16.6	-9.8
Kazakhstan	402	403	375	12 630	12 455	18 497	0.1	-1.4	-0.8	-0.3	8.2	4.3
Kyrgyzstan	60	47	44	547	526	864	-4.8	-1.5	-3.5	-0.8	10.5	5.2
Moldova	106	82	…	590	499	589	-5.1	…	…	-3.3	8.6	4.7
Tajikistan	68	…	52	619	378	665	…	…	-2.5	-9.4	12.0	0.8
Ukraine	2 776	2 124	1 691	27 104	15 838	8 697	-5.2	-3.7	-5.4	-10.2	-9.5	-10.7

Note: The latest information available on employment for Azerbaijan, Armenia, Kazakhstan and Tajikistan is for 2013; for comparability, information on value added is also provided for 2013; the latest information available on employment in Moldova is for 2010.

Source: Authors' calculations based on UNIDO Data Portal.

Table 17 confirms the negative compound average annual growth rate in employment in the manufacturing sector in all countries of the region (except Azerbaijan and Armenia) from 2005, more notable in the Ukraine (-5.4 per cent annually on average) and in Kyrgyzstan (-3.5 per cent), despite the expansion of value added in all countries, except Ukraine (with a significant annual decline of -10.7 per cent on average) and Belarus (-9.8 per cent).

Table 18 – Labour intensity of the industrialization process in the CIS countries: classification of industrial activities through distribution of employment elasticity indexes based on GVA in the sector

	Employment elasticity			Compound average annual growth rate of GVA in manufacturing (in %)			Classification of industrial activity		
	2005-2009	2009-2014	2005-2014	2005-2009	2009-2014	2005-2014	2005-2009	2009-2014	2005-2014
Russia	1.0	-0.3	-7.2	-3.1	3.1	0.3	contraction of sector	growth of unemployment	growth of unemployment
Azerbaijan	-0.2	0.1	-0.01	2.8	4.6	4.1	growth of unemployment	moderate expansion of employment	growth of unemployment
Armenia	-3.5	-1.4	-0.01	2.0	5.9	4.4	growth of unemployment	growth of unemployment	growth of unemployment
Belarus	-0.02	0.04	0.04	1.2	-16.6	-9.8	growth of unemployment	contraction of sector	contraction of sector
Kazakhstan	-0.2	-0.2	-0.2	-0.3	8.2	4.3	unproductive employment growth	growth of unemployment	growth of unemployment
Kyrgyzstan	5.9	-0.1	-0.7	-0.8	10.5	5.2	contraction of sector	growth of unemployment	growth of unemployment
Moldova	1.6	...	...	-3.3	8.6	4.7	contraction of sector	...	...
Tajikistan	...	...	-3.2	-9.4	12.0	0.8	...	...	growth of unemployment
Ukraine	0.5	0.4	0.5	-10.2	-9.5	-10.7	contraction of sector	contraction of sector	contraction of sector

Note: The elasticity of employment is defined as the ratio of the compound annual growth rate of employment in the industry (sector) to similar growth rates of GVA of the industry (sector); classification of industrial activities is determined according to the conceptual apparatus proposed by Steve Kapsos [2005] for interpreting the elasticity of employment by gross value added.

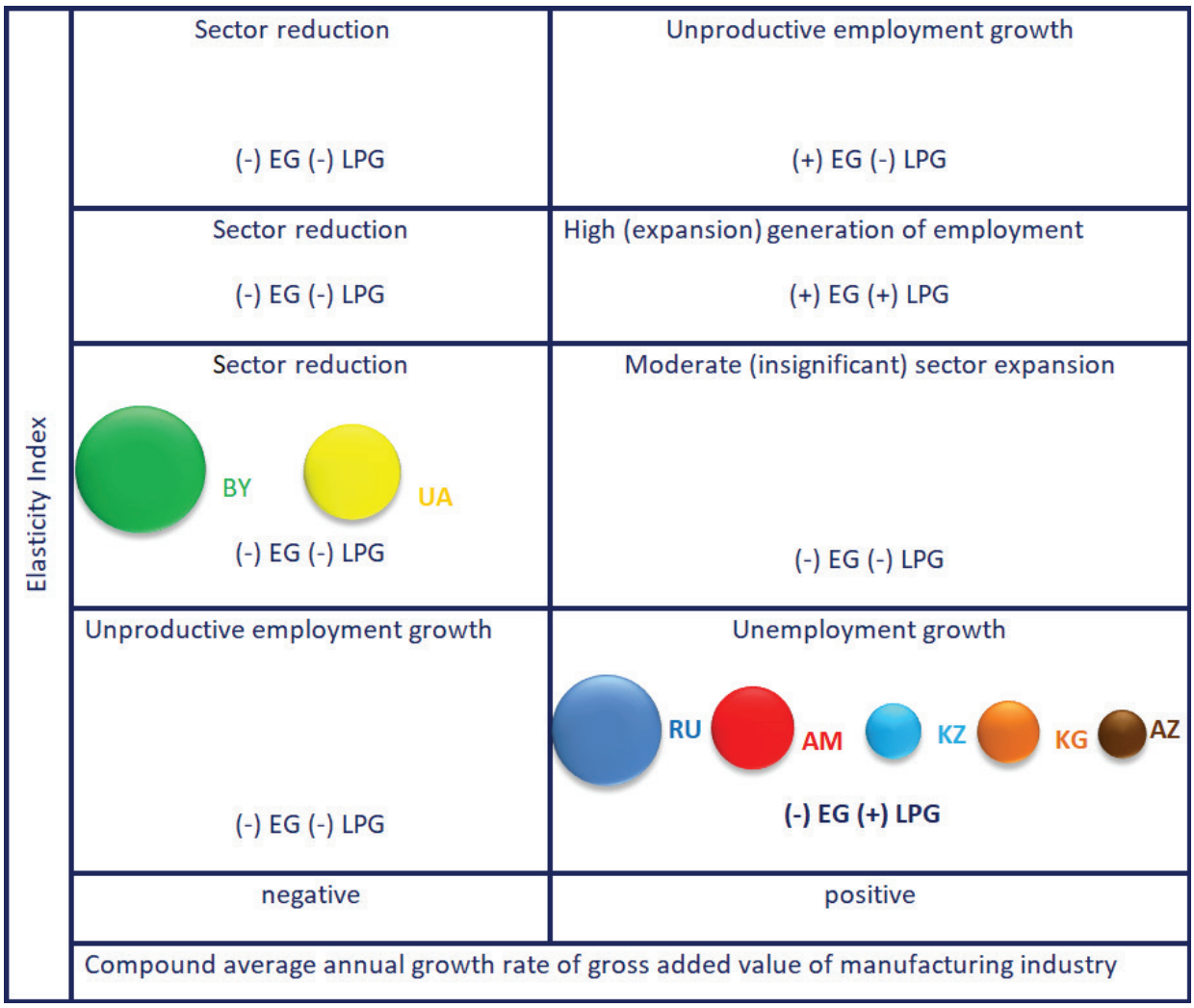
Source: Authors' calculations.

The values of employment elasticity presented in Table 18 indicate a retrospective of the average annual increment of new jobs related to the growth rates of the manufacturing sector, without reflecting the impact on the scale of employment of the establishment of technology- and capital-intensive production with significant labour savings. The logic of this indicator allows determining a high positive elasticity of employment (almost 1 and higher), testifying, in many respects, to the dominance of value added of labour-intensive manufacturing industries in the economic structure. Negative elasticity values basically reflect a situation in which the expansion of the industry is accompanied by a reduction in employment, and intensive employment growth together with a decline in GVA should be defined as unproductive. In case of a more moderate growth of employment compared to GVA, the generation of employment can be deemed moderate or low. In any case, the obtained estimates of elasticity of those employed and the classification of industrial activities provided in Table 18 are based exclusively on the dynamics of value added and employment, without taking into account the intra-industry technological level with a different capacity and labour productivity.

The diagram presented in Figure 35 allows arranging the countries according to the ratio

of possible estimates of elasticity of employees (less than 0; from 0 to 0.5; from 0.5 to 1 and above 1), and negative or positive compound annual growth rates of GVA of the manufacturing industry, an adapted and expanded illustration of the conceptual approach proposed by Kapsos [2005].

Figure 35 – Distribution of countries by groups according to the employment elasticity index and the compound average annual growth rate of GVA in the manufacturing sector



Note: EG – employment growth, LPG – labour productivity growth; the size of the country's marker is determined by the share of employees in the manufacturing sector in total employment in the country in 2014.

Source: Authors' calculations.

The main findings in terms of employment elasticity can be reduced to several explanatory statements [Kapsos, 2005]. In the basic version, the elasticity of employment makes it possible to determine how the growth of economic production and employment mutually develop over time. Elasticity in the sector is used to determine the extent to which structural economic change occurred in different regions of the world. Trends in employment elasticity are essentially primary indicators of the employment response to GDP growth from a quantitative perspective. The main prerequisite for using an indicator such as employment elasticity is that employment and

labour productivity growth occur jointly with the goal of minimizing the potential intended for the realization of the main objectives of inclusive economic development, for example, poverty reduction, regardless of differences in opinions on the relevance for economic development and the intensive expansion of jobs or labour productivity.

The scheme presented in Figure 35 illustrates the following economic events:

- In countries with a positive GVA growth, negative estimates of employment elasticity are consistent with a negative growth of employment and a positive growth of labour productivity. For example, in an economy growing at 2 per cent per year with an employment elasticity of -0.2, the average rate of employment growth is -0.4 per cent, while the average productivity growth rate is 2.4 per cent.
- In countries with a positive GVA growth rate, employment elasticity in the range of 0 to 1 corresponds to a positive growth rate in employment and labour productivity; a higher elasticity within this range corresponds to a more intensive employment growth (lower productivity). Thus, an economy growing at 2 per cent per year with an employment elasticity of 0.6 per cent experiences an average annual employment growth of about 1.2 per cent, and an average annual productivity growth rate of 0.8 per cent. This situation is an ideal one, according to which the growth in the number of jobs occurs simultaneously with the growth of productivity. In countries with a positive GDP growth, an elasticity greater than 1 corresponds to a positive growth rate in employment and a negative growth rate in productivity.
- In case of a negative GDP, the relationship between employment elasticity and employment and productivity growth is interpreted in the opposite way.

The Commonwealth economy remained one of the least dynamically developing economies in the period 2005-2014 from the perspective of an intra-sectoral redistribution of the workforce in the manufacturing sector.

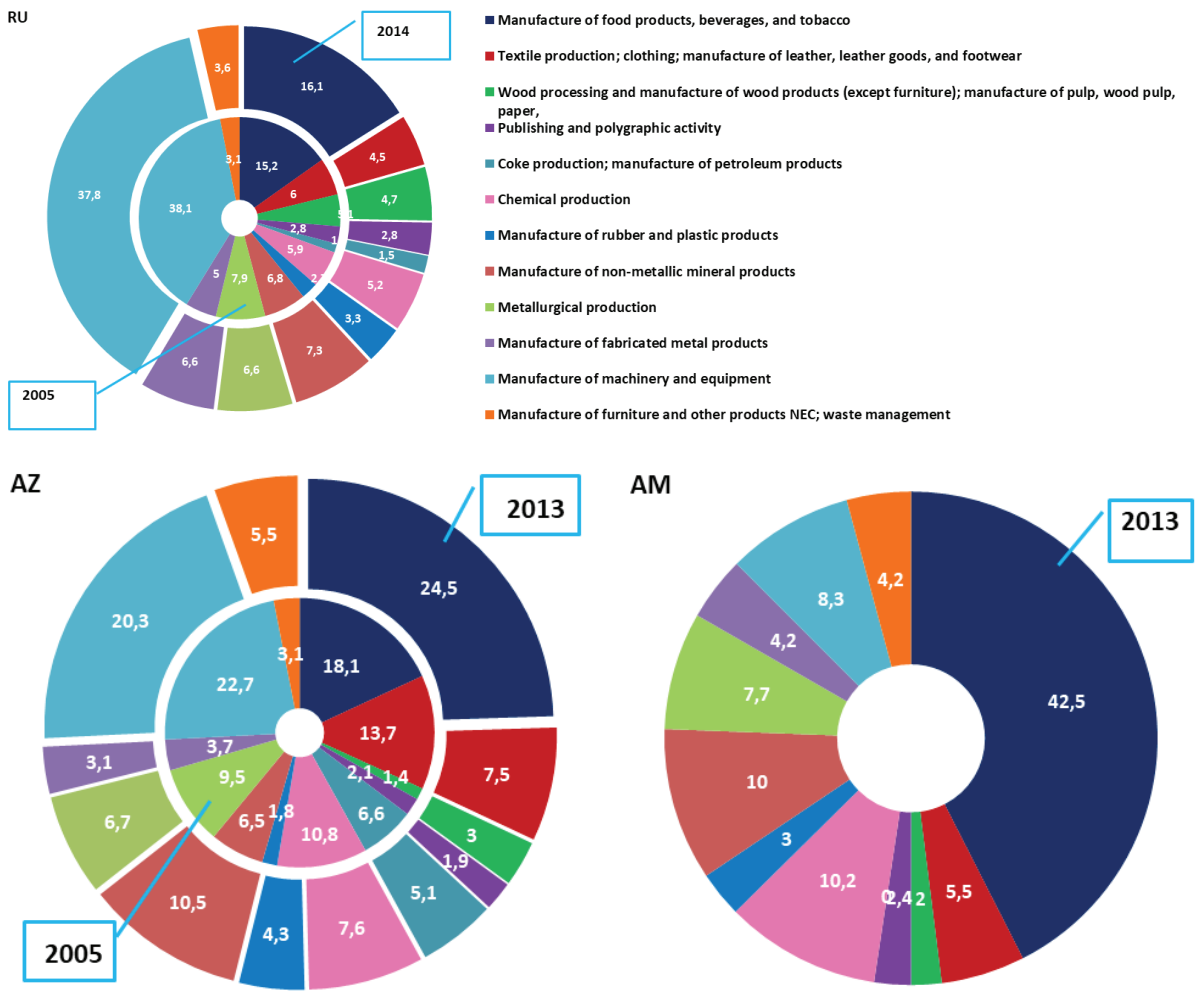
According to the ILO concept used here, low negative values of the employment elasticity index for most countries in the region with a positive average annual increase in value added, regardless of the contribution of employment in the manufacturing sector to the country's total employment in 2014, pointed to a reduction in employment, labour productivity growth, the risk of rise in unemployment with a subsequent increase in workforce redistribution to economic sectors and industries with more intensive employment.

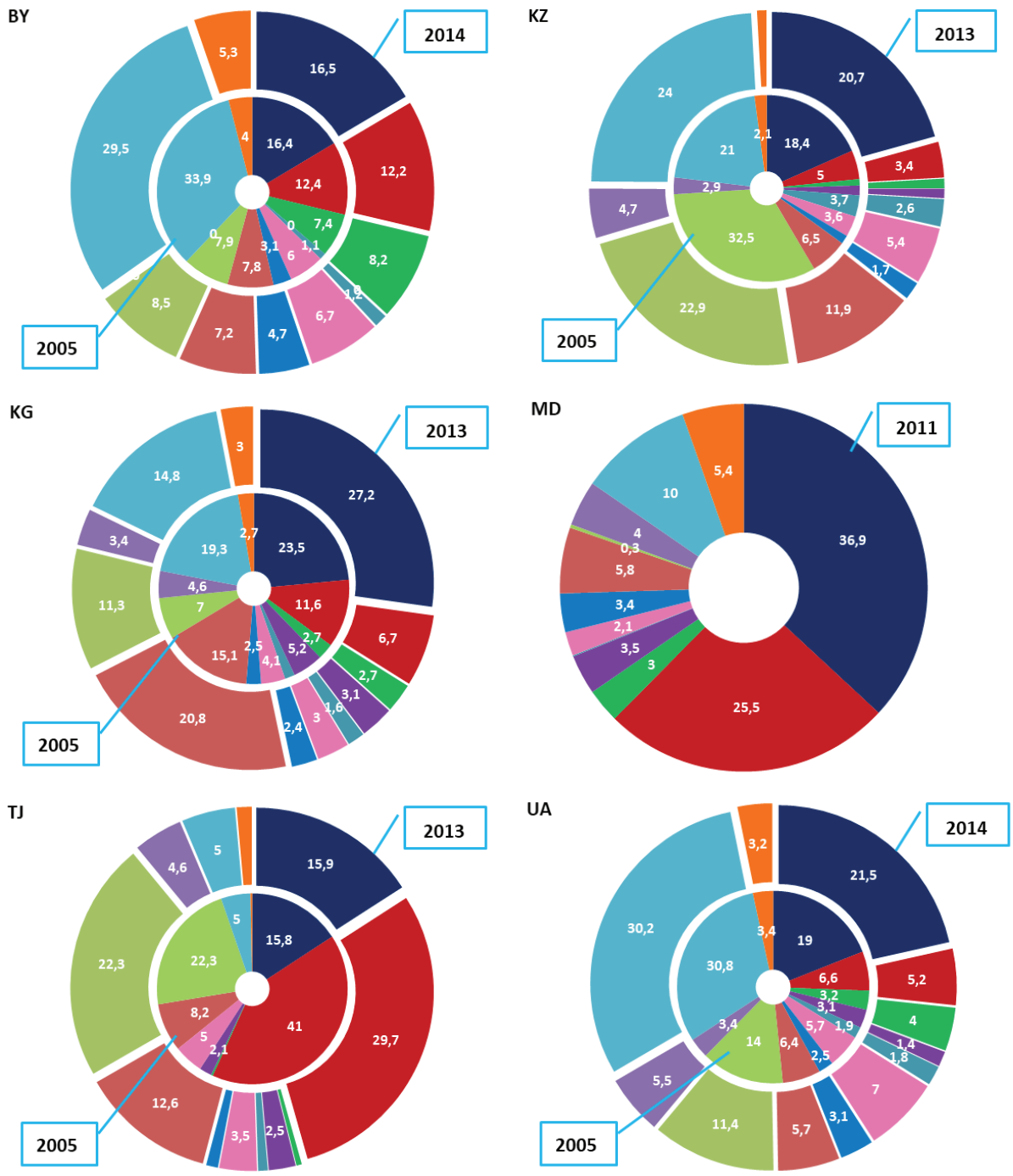
Exceptions in the period analysed were Belarus and Ukraine, where the employment elasticity indices in the manufacturing sector correlated with the interval from 0 to 1 (0.04 and 0.5, respectively) and indicated a simultaneous negative increase in employment and labour productivity. A higher elasticity for Ukraine signified a more intensive decline in employment and a very low labour productivity under an increasing tendency of a decreasing manufacturing sector.

The ideal situation the CIS economies ought to strive for when determining the objectives of their industrial strategies is to achieve continuously growing labour productivity and a high elasticity of employment, giving rise to greater possibilities for productive employment.

Let us consider the changes in employment composition in the manufacturing sector presented in Figure 36, as well as in Table 19 and Table 3.1 in Appendix 3 for all countries in the region over the period analysed in terms of the share between labour-intensive industrialization and industrialization with a rapid growth of labour productivity.

Figure 36 – Changes in the composition of employment for generalized types of manufacturing industries by country (share of employment in each industry in total employment in the manufacturing sector, %)





Source: UNIDO Data Portal, authors' calculations.

Table 19 - Intensity of changes in employment and GVA in certain types of manufacturing activity by country

	Employment (thou. persons)			GVA at constant prices (USD mln.)			Compound annual growth rate (in %)					
							of employment			GVA		
	2005	2009	2014	2005	2009	2014	2005-2009	2009-2014	2005-2014	2005-2009	2009-2014	2005-2014
Russia												
Raw materials processing	2 585	2 331	2 166	44 875	43 142	43 068	-2.0	-1.2	-1.8	-0.8	0.0	-0.4
Low-tech manufacturing	2 737	2 297	2 220	97 592	84 751	97 841	-3.5	-0.6	-2.1	-2.8	2.4	0.0
Medium- and high-tech manufacturing	4 190	3 491	3 304	51 912	38 237	59 156	-3.6	-0.9	-2.3	-5.9	7.5	1.3
Azerbaijan												
Raw materials processing	27	34	39	781	881	1 113	5.2	2.5	4.3	2.5	4.8	4.0
Low-tech manufacturing	41	37	35	846	1 035	1 183	-1.9	-1.5	-1.9	4.1	2.7	3.8
Medium- and high-tech manufacturing	34	28	28	160	137	270	-4.2	0.5	-2.0	-3.1	14.5	5.9
Belarus												
Raw materials processing	301	304	292	3 243	3 870	1 457	0.2	-0.7	-0.3	3.6	-15.0	-7.7
Low-tech manufacturing	271	294	291	4 385	4 577	1 450	1.6	-0.2	0.7	0.9	-17.4	-10.5
Medium- and high-tech manufacturing	379	352	330	3 547	3 410	1 089	-1.4	-1.1	-1.4	-0.8	-17.3	-11.1
Kazakhstan												
Raw materials processing	104	124	126	4 110	4 281	5 381	3.5	0.3	2.1	0.8	4.7	3.0
Low-tech manufacturing	199	178	139	7 675	7 397	9 280	-2.1	-4.9	-3.9	-0.7	4.6	2.1
Medium- and high-tech manufacturing	99	101	110	845	777	1 742	0.3	1.9	1.2	-1.7	17.5	8.4
Kyrgyzstan												
Raw materials processing	27.9	23.6	23.4	179.5	144.6	238.0	-3.3	-0.2	-1.9	-4.2	10.5	3.2
Low-tech manufacturing	16.4	12.8	11.1	326.9	359.8	593.1	-4.8	-2.9	-4.3	1.9	10.5	6.8
Medium- and high-tech manufacturing	14.0	9.1	7.7	41.1	21.1	25.5	-8.4	-3.1	-6.4	-12.5	3.9	-5.2
Tajikistan												
Raw materials processing	16.5		15.2	148.2	116.4	400.1	...	...	-0.9	-4.7	28.0	11.7
Low-tech manufacturing	44.6		32.8	453.0	249.4	247.5	...	...	-3.4	-11.3	-0.2	-6.5
Medium- and high-tech manufacturing	6.7		4.4	18.1	11.8	15.9	...	...	-4.6	-8.2	6.1	-1.4
Ukraine												
Raw materials processing	797	647	529	6 998	5 325	3 332	-4.1	-3.3	-4.0	-5.3	-7.5	-7.2
Low-tech manufacturing	966	733	534	13 866	7 140	3 906	-5.4	-5.2	-5.8	-12.4	-9.6	-11.9
Medium- and high-tech manufacturing	1 013	744	629	6 239	3 374	1 459	-6.0	-2.8	-4.7	-11.6	-13.0	-13.5

Note: The latest information available on employment in Azerbaijan, Armenia, Kazakhstan and Tajikistan is for 2013; for comparability, information on GVA is also given for 2013.

Source: UNIDO Data Portal (employment), Rosstat, CIS Statistical Committee, authors' calculations.

When analysing types of manufacturing activity, despite the fact that it is possible to identify industries in most countries with obviously growing volumes of GVA, the sectoral employment in the period studied indicates quite varying trends, regardless of the country's industrial potential and its level of national per capita income. Thus, in more technologically advanced industries of Russia's manufacturing sector, employment due to slowly growing value added shrank intensively. In the raw materials processing industry, the development of the average annual growth rates of GVA and employment showed a general declining trend. In Azerbaijan, the GVA of the raw materials processing industry expanded significantly along with employment growth, while the GVA of the low-tech and the medium- and high-tech industries increased with a noticeably higher intensity along with a marked reduction in employment. In Belarus, the decrease in the rate of employment was noticeably lower than the decline of GVA. In Kazakhstan's manufacturing industry, the growth of GVA in the medium- and high-tech industries was so significant that it did not entail a reduction in employment, the scope of which narrowed with the growing value added in low-tech industries only. In Kyrgyzstan, the expansion of GVA of the raw materials processing industry occurred together with a significant increase in the dynamics of employment growth, though job losses were observed in fast-growing low-tech industries. In Tajikistan, low sectoral GVA levels correlated with the employment dynamics, and the large-scale expansion of the raw materials processing industry did not contribute to its growth. The intra-sectoral reduction in value added in Ukraine manifested itself to a greater extent than the decrease in jobs.

The growth of value added and low negative elasticity in low-tech industries was most evident in Russia, Kyrgyzstan, Kazakhstan, Belarus and Azerbaijan, pointing, primarily, towards the growth of labour productivity in terms of value added, which was clearly insufficient to prevent the rise in unemployment.

High positive elasticity in case of GVA reduction in the raw materials processing industry was only recorded in the manufacturing sectors of Russia, Belarus and Ukraine, which indicated not only a reduction in employment, but also low labour productivity, a predominance of the trend towards a reduction of this production segment.

A considerable growth of GVA, together with a positive and substantial elasticity of employment in the raw materials processing industry in Azerbaijan, Kazakhstan, Kyrgyzstan and Tajikistan pointed towards a lower labour productivity, along with a non-declining employment rate.

In medium- and high-tech industries, low negative elasticity along with a growing GVA was recorded only in Russia, Azerbaijan and Belarus, largely reflecting a high level of labour productivity and, together with a reduction in employment, a possible risk of unemployment in the industry.

Growth of GVA, labour productivity and a high inertia of employment in the region were only recorded in medium- and high-tech industries in Kazakhstan, which makes it possible to characterize the industrial strategies in this segment of the manufacturing sector of the country as being the most relevant.

Thus, only the manufacturing sector, which is integrated into the national economy in accordance with production factors other than unproductive employment, low labour productivity and declining value added, can be an important driver of an inclusive trajectory of economic development.

The long-term objective of structural change in the manufacturing sector is for medium- and high-tech industries to increase the gross value added, which is essential for the industrial policy of all countries in the region and should necessarily correspond to the standard of living and the qualifications of employees in the country. Even if there are valid reasons for promoting technologically complex activities, it is necessary to form a balanced position in the arrangement of such shares between the manufacturing industries, whereby jobs will still be generated for the majority of the country's working age population, with a steady balance of supply and demand for skilled labour. Only those structural changes are positive for the country, which ensure a sustainable economic recovery, while contributing to the absorption of the released manpower.

5.3. Greening of industry: structure and dynamics of changes

Direct effects from industrial strategies aimed at technological change can have a multidirectional effect in terms of reducing the environmental impact and, thus, inclusiveness of the country's industrial development.

In countries with a peripheral level of potential industrial development, the environmental impact may not be as significant as in more developed economies due to a notable dominance in the structure of GVA of the industry with more environmental friendly production of food, textiles and other activities with a high share of value added per unit of pollutants emitted. Minor structural transformations with a significant level of concentration in certain types of activities, even with the expansion of their volumes of value added, restrain economic development towards further industrialization, but do not contribute to a growing environmental impact.

Countries with a higher level of industrial potential and an expansion of structural and technological shifts may experience widespread emergence of low-tech industries, in particular, metallurgical production, production of coke and petroleum products and other so-called sublimators of heavy industry, when the level of emissions from industry increases significantly. In such cases, when determining the industrial policy, close attention should be paid to measures to reduce negative environmental impacts.

The replacement of labour-intensive industries with more capital-intensive ones may

contribute to violations of environmental safety, especially at an early stage of industrial development, whereas shifts towards increasing technological capacity leads to a reduction in the ratio of industrial output to the volume of emissions. At this stage of structural transformation, the country's environmental safety becomes the most important condition for the efficiency of all target industrial strategies.

The main technological changes affecting the production processes and environmental sustainability are associated with the more efficient use of natural resources, especially non-renewable sources of energy and raw materials, recycling of industrial waste through technological reclamation or conversion of solid waste into energy. In addition, fluctuations in energy prices to a large extent accelerate the shift of structural transformation towards the implementation of energy-saving technologies.

At the same time, modernization of industrial production contributes to the replacement of obsolete equipment with more efficient equipment with the lowest energy consumption. Thus, the aggregate tendency is to increase production with a higher technological level that is inseparable from the general desire to reduce pollution.

Reducing the level of greenhouse gas emission is a global priority of economic growth, although it may slow it down at the early stages. Therefore, the commitments made by countries with different industrial potentials to reduce carbon concentrations in the atmosphere are much broader for countries with intensive technological transformations and a higher level of income. In this context, the role of international agreements on the coordination of activities that can simultaneously stimulate the technological process and reduce emission on a global scale has been growing, particularly in recent years since the end of the Kyoto Protocol period.

Individual actions are very costly for many countries and disproportionate with a general profitability of industrial activity. Deep inequality between countries in the region in terms of national per capita income remains a significant obstacle to the implementation of any large-scale global measures and, accordingly, compromise "emission levels - level of expenses" is made in each country, the choice of which should be made in accordance with the level of structural and technological shifts in the manufacturing sector.

Region-wide trends in the CIS[28]

The total level of industrial emission of pollutants into the atmosphere[29] in nine economies of the CIS in the period analysed decreased by 14 per cent to 25 million t.

The level of industrial emission of carbon dioxide per 1,000 sq. km of the territory of the Commonwealth decreased by 22 per cent in 2005 to 311 t; and per 1,000 population, by 23 per cent and 27 t, respectively.

For the period 2005-2014, the regional GDP per capita increased by 26 per cent to USD 8,000, and the intensity of all emissions as their ratio to GDP per capita decreased significantly and amounted to 0.03 thousand t/ USD million at the end of the decade.

The best environmentally oriented productions with the lowest industrial emissions per dollar of GVA of the manufacturing sector corresponded in the region to the economy of Moldova and Azerbaijan; the lowest environmentally oriented industrial production was recorded in Ukraine.

The expansion of GVA of the manufacturing sector by 1,000 persons in countries with an above average national income (Azerbaijan, Belarus, Kazakhstan and Russia) by 8 per cent from 2005 was accompanied by a decrease in total emission by 18 per cent per 1,000 population.

The capacity of greenhouse gas emission in the manufacturing sector of the Commonwealth as a ratio of carbon dioxide emission to the region's GDP amounted to 0.7 per cent of the global value[30] in 2014 and reached 0.003 t/ USD thou.

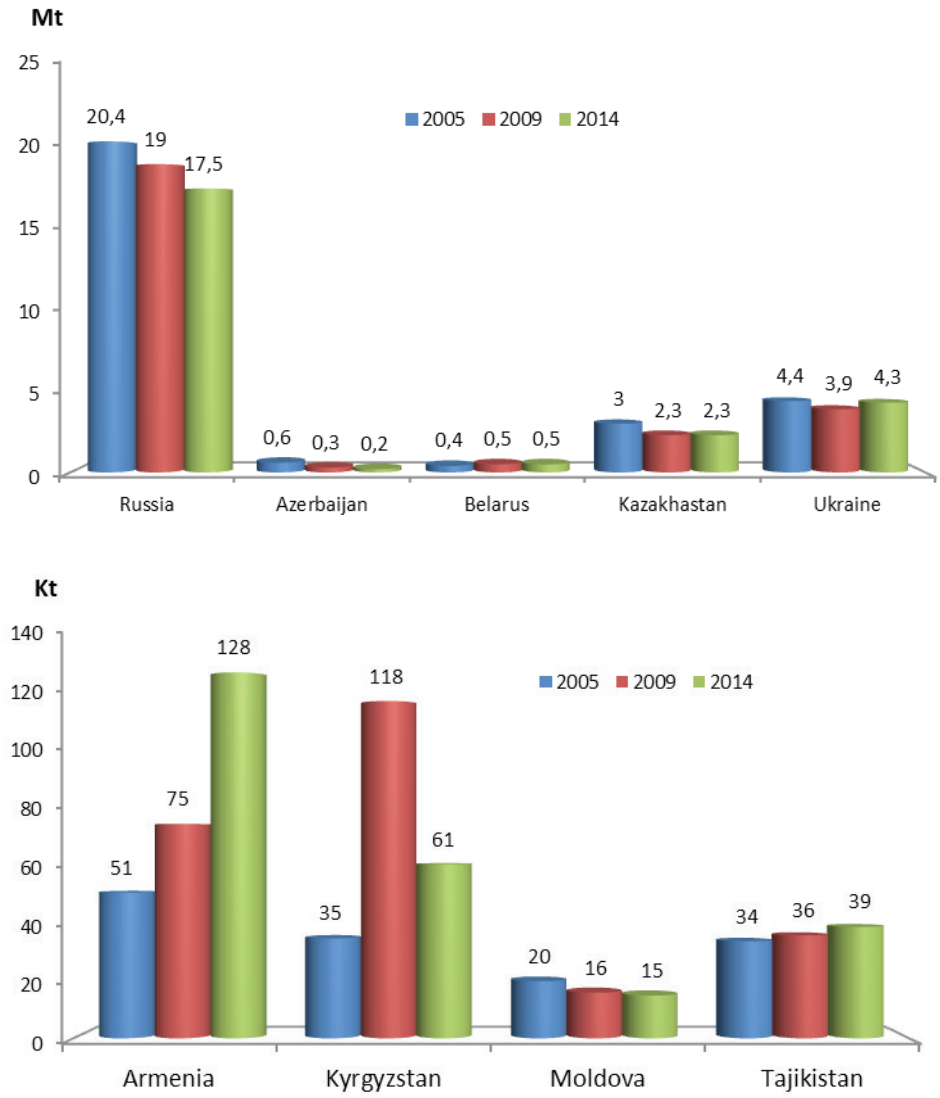
In the CIS region, countries with the highest industrial potential, presented at the top of Figure 37, had the highest intensity of industrial emission of pollutants into the atmosphere throughout the study period, the ratio of which was 2,900 t/USD per capita in 2014 to the GDP of these countries compared to 0.2 t in other countries of the Commonwealth.

[28] Author's calculations

[29] The emissions of pollutants emitted from stationary sources into the atmosphere; Data sources: Rosstat and the CIS Statistical Committee

[30] Trends in global CO2 emission: 2015 Report. PBL Netherlands Environmental Assessment Agency and European Commission's Joint Research Centre. http://edgar.jrc.ec.europa.eu/news_docs/jrc-2015-trends-in-global-co2-emissions-2015-report-98184.pdf

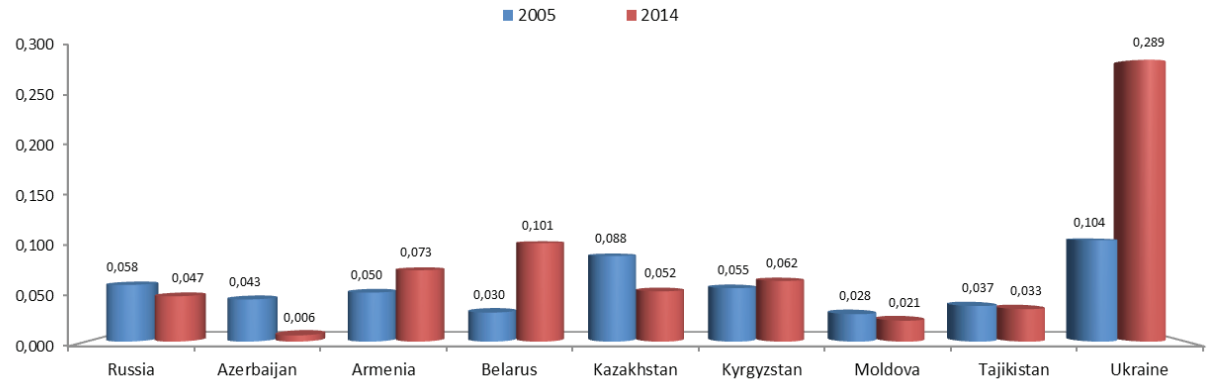
Figure 37 – Industrial emission of pollutants into the atmosphere



Source: Rosstat, CIS Statistical Committee, authors' calculations.

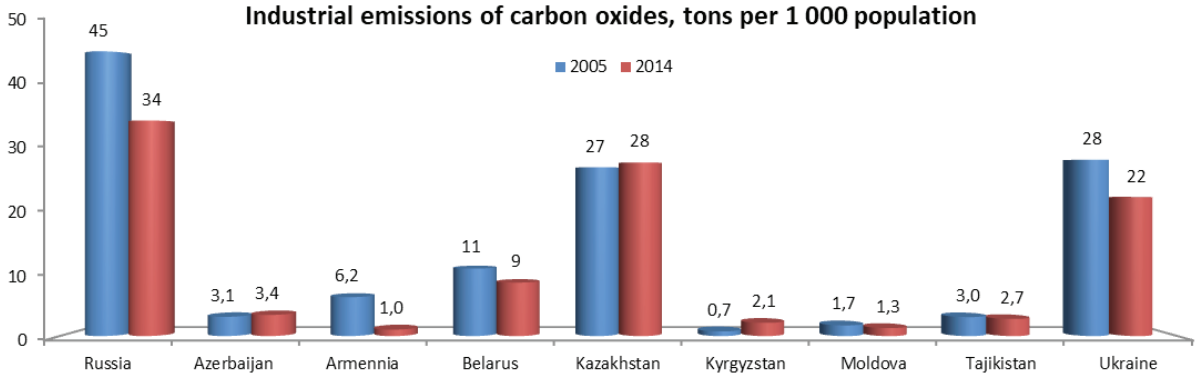
In Russia, Azerbaijan and Kazakhstan, which experienced a steady GDP growth, the level of total emissions per USD of the GVA of the manufacturing sector declined, indicating a more targeted implementation of mainly environmental friendly technologies. The level of total emissions in 2014 was 0.047 t, 0.006 t and 0.052 t/ USD thousand, respectively, compared to 0.058 t, 0.043 t and 0.088 t/ USD thousand in 2005. In Belarus and Ukraine, the level of total emissions in 2014 was 0.101 t and 0.289 t/ USD thousand compared to 0.030 t and 0.104 t/ USD thousand in 2005, respectively. In other countries, the trends differed. Industrial emission relative to the GVA of the manufacturing sector increased with a high intensity in Armenia (from 0.050 t to 0.073 t/ USD thou.) and Kyrgyzstan (from 0.055 t to 0.062 t/ USD thou.), while in Moldova, this ratio decreased by 0.028 t to 0.021 t, and in Tajikistan from 0.037 t to 0.033 t/ USD thou. (Figures 38 and 39).

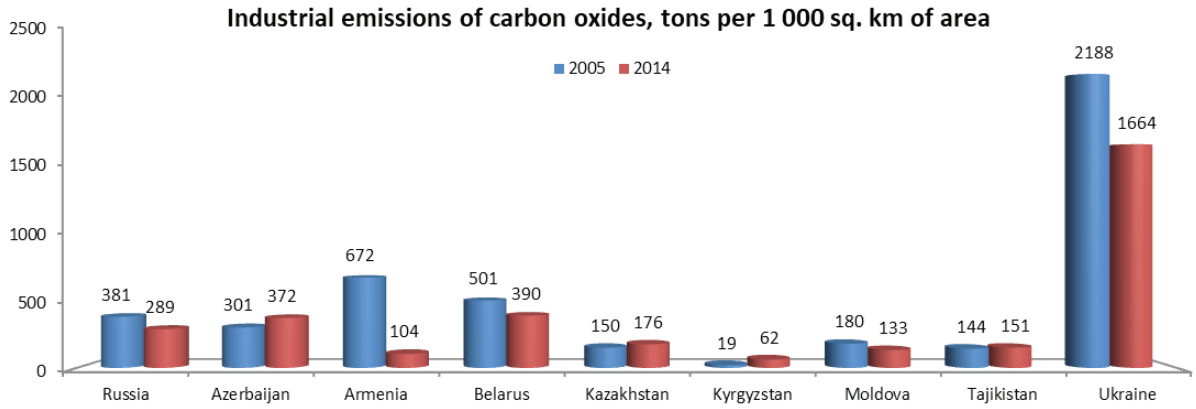
Figure 38 – Industrial emission per GVA of the manufacturing sector (t/ USD thou.)



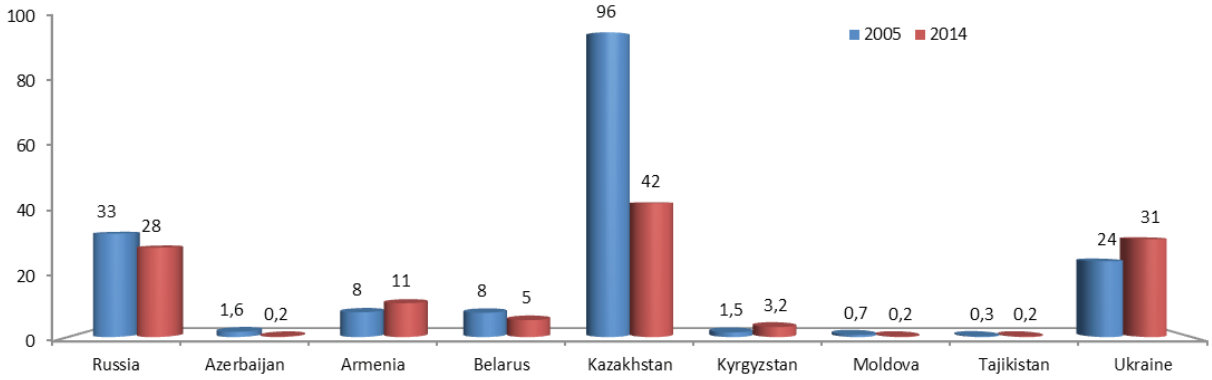
Source: Rosstat, CIS Statistical Committee, authors' calculations.

Figure 39 – Industrial emission of certain atmospheric pollutants

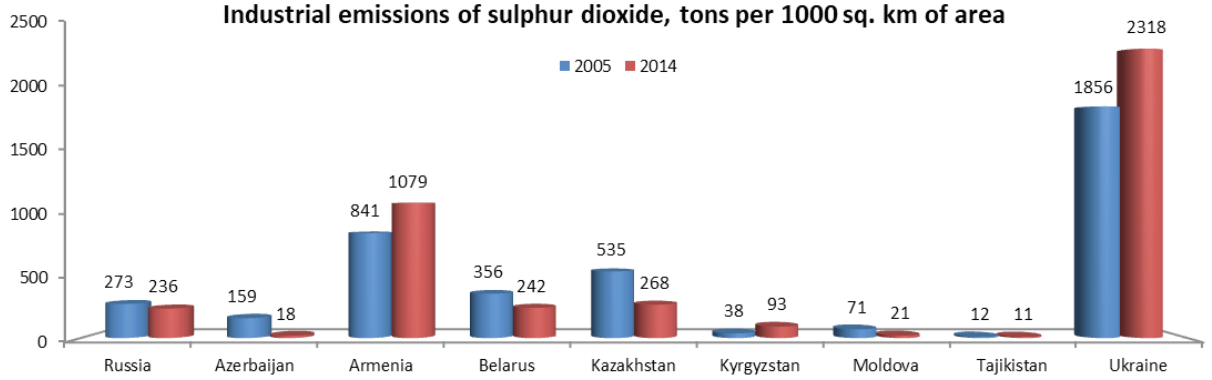




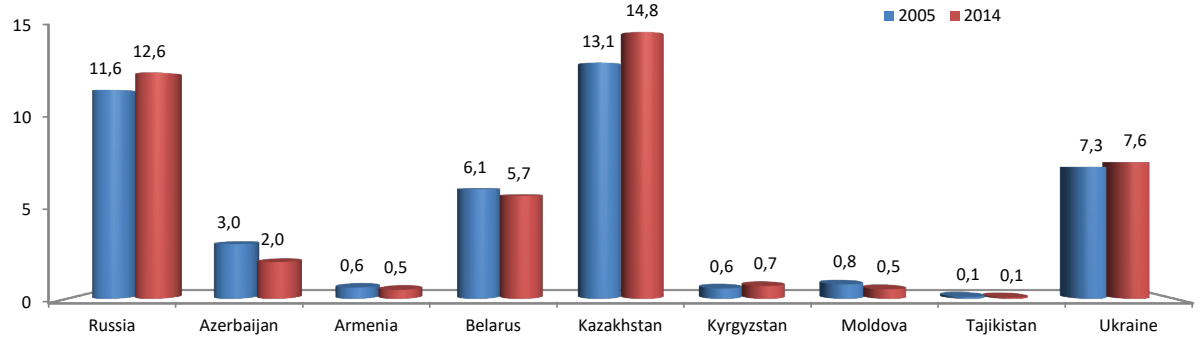
Industrial emissions of sulphur dioxide, tons per 1000 population



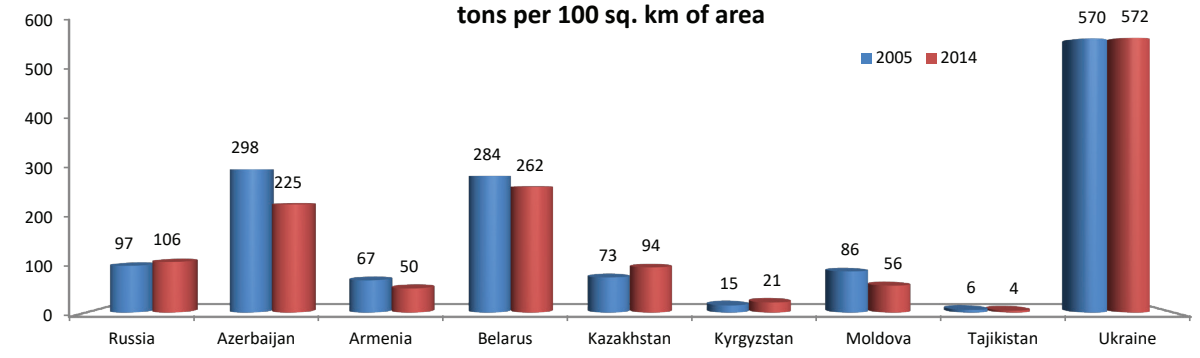
Industrial emissions of sulphur dioxide, tons per 1000 sq. km of area



Industrial emissions of Nittic oxide (calculated as NO2), tons per 1000 population



Industrial emissions of Mitric oxide (calculated as NO2), tons per 100 sq. km of area



Source: Rosstat, CIS Statistical Committee, authors' calculations.

In the study period, Russia remained the country which by a huge margin over-fulfilled its quantitative emission reduction commitments under the Kyoto Protocol on the non-surplus of 1990 emissions by 2012 (approximately 2.5 million t). At the same time, Russia was not only the frontrunner among all Commonwealth countries in terms of carbon dioxide emission per unit of GDP; its values considerably exceeded those of many fast growing economies of the world [OECD, 2014].

The most important objective of industrial strategies in the Commonwealth region was intensification of the climate policy, aimed primarily at increasing the energy efficiency of the manufacturing sector, expanding investments in innovations and environmentally clean technologies, creating environmentally friendly jobs and a general climatic resilience of the economies.

5.4. Integration trends in the region's industry: scale and dynamics of cross-border trade with Russia

Under conditions of growing globalization, the world economy is increasingly characterized by processes of regionalization, i.e. the convergence of cross-border states on the basis of their integration blocs with the goal of more effective participation in foreign markets and the strengthening of positions in global value-added chains.

The key elements of the traditional theory of economic integration were established by Jacob Viner [1950]. His theory takes the effects of expanding trade and changing trade flows into account. Trade flows between states are considered before and after integration and compared with observed flows in the world. The key assumption of Viner's prognostic model of integration is competition and a constant return to scale.

Historically, integration processes have been most widespread in Western Europe, where within the framework of an expanding common regional economic space, common reproduction conditions with a balanced regulatory mechanism were sustainably forming over a period of several decades. At the same time, the basis of the European Union was a linear dynamic integration model presented in an extensive form by Jawoodeen [2010], in which all changes in the integration association are of a very high-speed nature, along with an obligatory presence in the integration of a bloc of countries that cooperate more intensively than the rest of the participants.

The foundations of so-called "new" integration theory was proposed by B. Balassa [1961]. The dynamic model of integration in this case is based on the initial conditions of imperfect competition and increasing returns to scale of production with assessments of economies of scale, technological achievements, increasing labour productivity, impact of integration on the structure of markets and competition. However, the application area of this theory and

its spread was restrained over time by specific features of external economic developments in developing countries. The concept that under modern conditions, each newly created integration model should be based on a wider set of factors, taking into account geopolitical and economic "distances" between the countries, the scale of their economy and industrialization and their similarities and convergences, gained increasing acceptance. At the same time, the speed of convergence and the direction of the growth rates of GVA from the viewpoint of existing differences, both in case of integration of developed countries with a characteristic intra-sectoral trade and economic competitiveness, and in the integration of developing countries with the necessary emphasis on cross-sectoral trade and mutual complementarity of economies. The main macroeconomic effect anticipated from inter-country interaction is the growth of regional GDP and of GVA of the manufacturing sector both for integration in general and in roughly equal shares for the individual participants. At the same time, the most mature effect is trade integration, which covers the entire sphere of international trade. One of the clear indications of such integration is the process of reducing barriers in trade and the expansion of participation in international trade flows [WB, 2012].

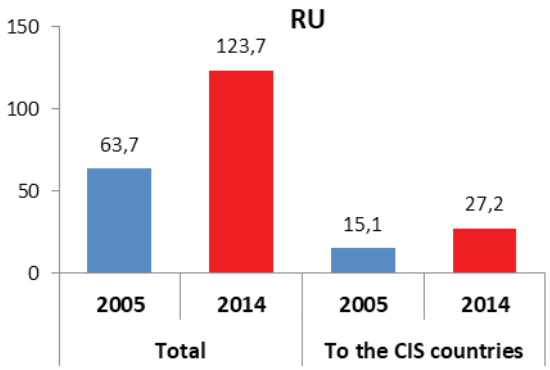
When determining the main areas of integration cooperation, including of the manufacturing sector, it is crucial to have a number of prerequisites for establishing the level of integration potential. At the same time, the potential for industrial integration in a specific group of countries, including those connected by border proximity, can be assessed as being high with a significant multiplicative effect for the economies of these countries, if there are activities with the following characteristics in industrial cooperation within the integration association: import substitution of a comparable quality; expansion and diversification of exports and support of implementation of modern technologies; competitive advantages and growth prospects of mutual trade in industrial products due to their specialization; participation or possible integration both into international chains for creating value added and into intra-integration production chains; sufficient capacity for use or implementation of modern technologies; human capital and the development of science-intensive industries, taking into account the specific features of the new technological order. And, finally, the availability of effective state participation allows achievement of a rapid economic impact due to the incorporated mechanisms of manual control in such integration processes. There are of course no economies in integration associations, in which all listed prerequisites are met simultaneously; it is important to at least have several types of industrial activities in each integrating economy with a certain potential for their integration development.

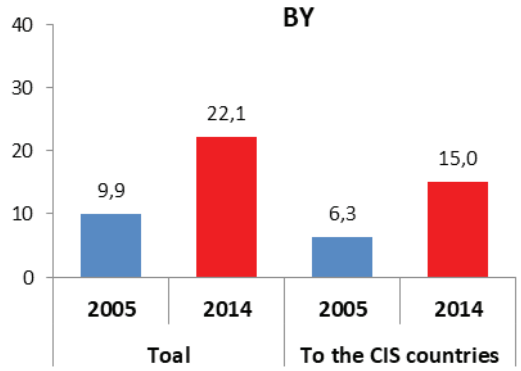
The desire of cross-border states with an emerging market to cooperate with Russia becomes primarily visible in various attempts to find forms of economic integration. The Foundation of the Commonwealth of Independent States (CIS) was one of the outcomes of such an integration association. Moreover, the CIS is treated as a free trade area in the WTO, and is defined as a geographical group in the WTO's Annual "International Trade Statistics".

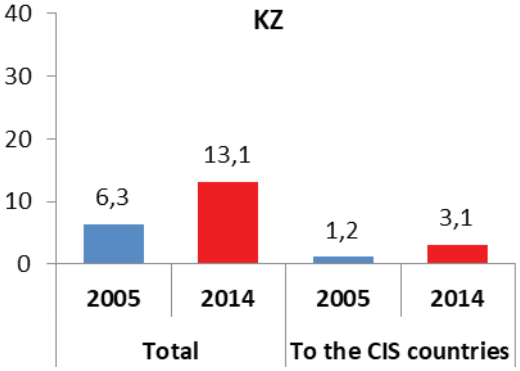
It should be noted that the Commonwealth countries per se have a high economic potential, which a priori gives them major competitive advantages in the international category of producers. The countries together cover over 16 per cent of world territory, 5 per cent of world population, 25 per cent of reserves of natural resources, 10 per cent of resource-producing goods that are in demand on global markets, including oil and natural gas, coal, timber, non-ferrous and rare metals, potassium salts and other minerals, fresh water reserves and land masses. Thirty-five per cent of global natural gas reserves are concentrated in Russia; nearly 20 per cent are concentrated in Azerbaijan, Turkmenistan, Kazakhstan and Uzbekistan. Explored oil fields in Russia account for about 15 per cent of global reserves; in Azerbaijan, it is over 10 per cent; and in Kazakhstan and Turkmenistan, it is around 10 per cent. The total production of hard and brown coal in Russia and Kazakhstan is also significant. The fourth-largest forested area on the globe is in the territories of Russia and Belarus. In Kazakhstan, there are large deposits of iron ore, bauxite and copper ore. Over 10 per cent of global energy is generated in the countries of the region; energy resources and relatively low-cost labour in most countries ensure important potentials for economic growth [Statistics Committee of the CIS, 2016].

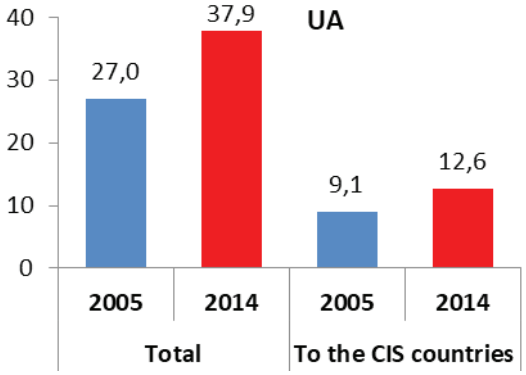
If we consider integration in the CIS region in terms of importance for individual countries of mutual trade in industrial products, the countries that considerably strengthened their cross-border links in the study period should be distinguished (Figures 40-45).

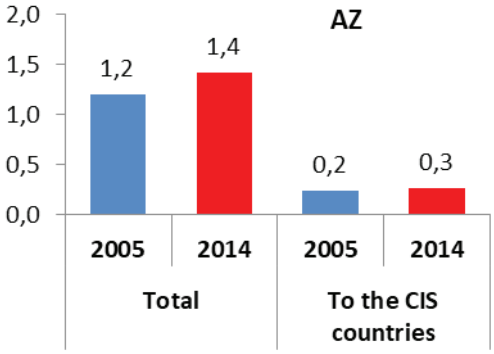
Figure 40 – Dynamics of manufacturing exports by country (US $ billion)

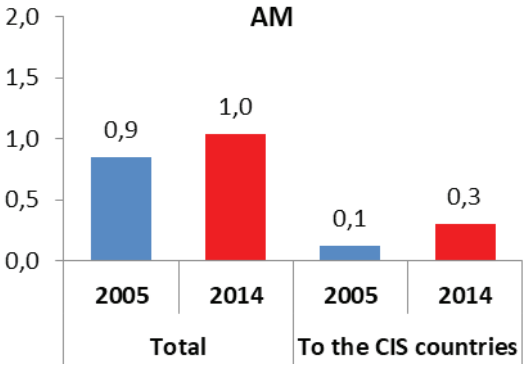


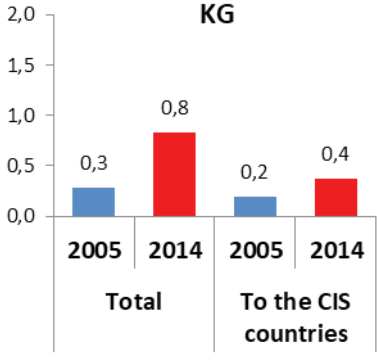


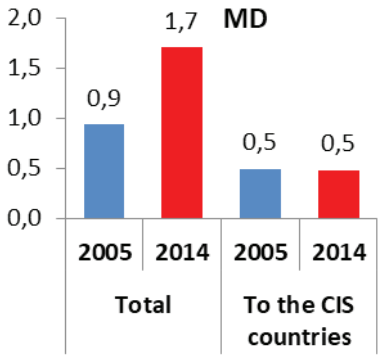


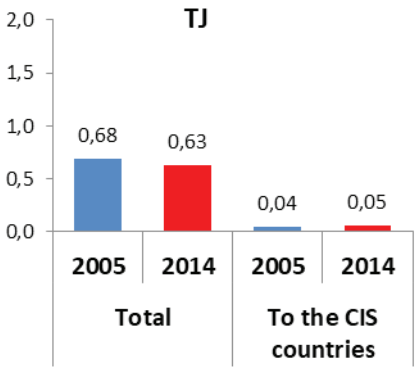






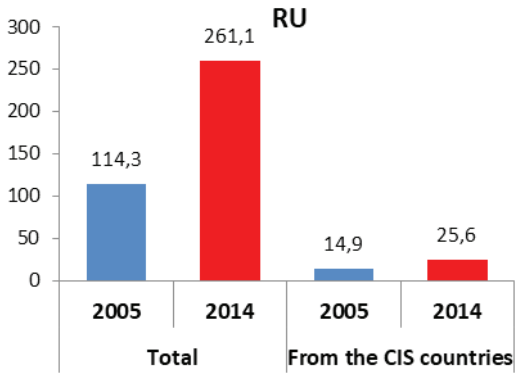


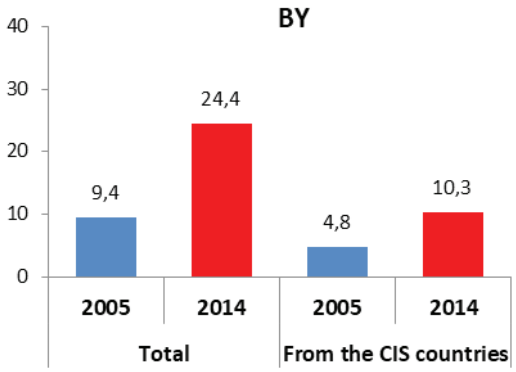


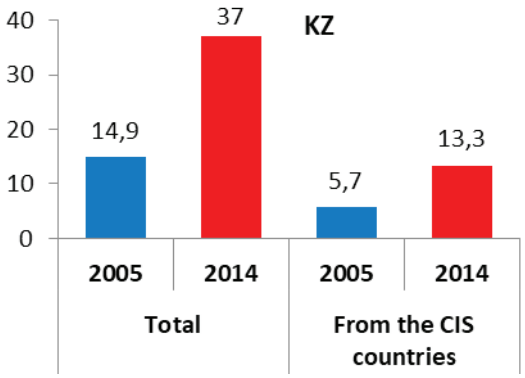


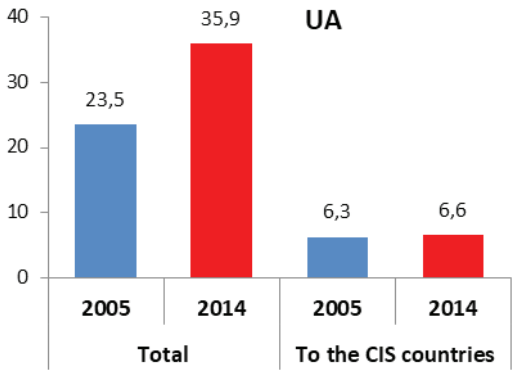
Source: UNCTADstat Data Portal, authors' calculations.

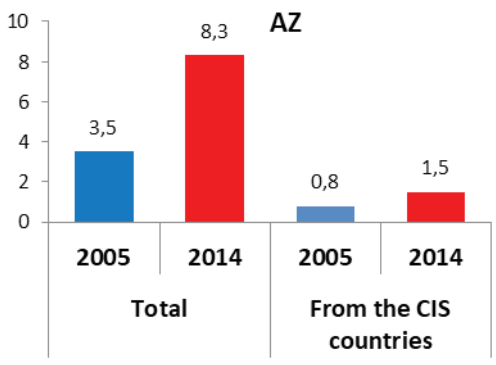
Figure 41 – Dynamics of manufacturing imports by country (USD billion)

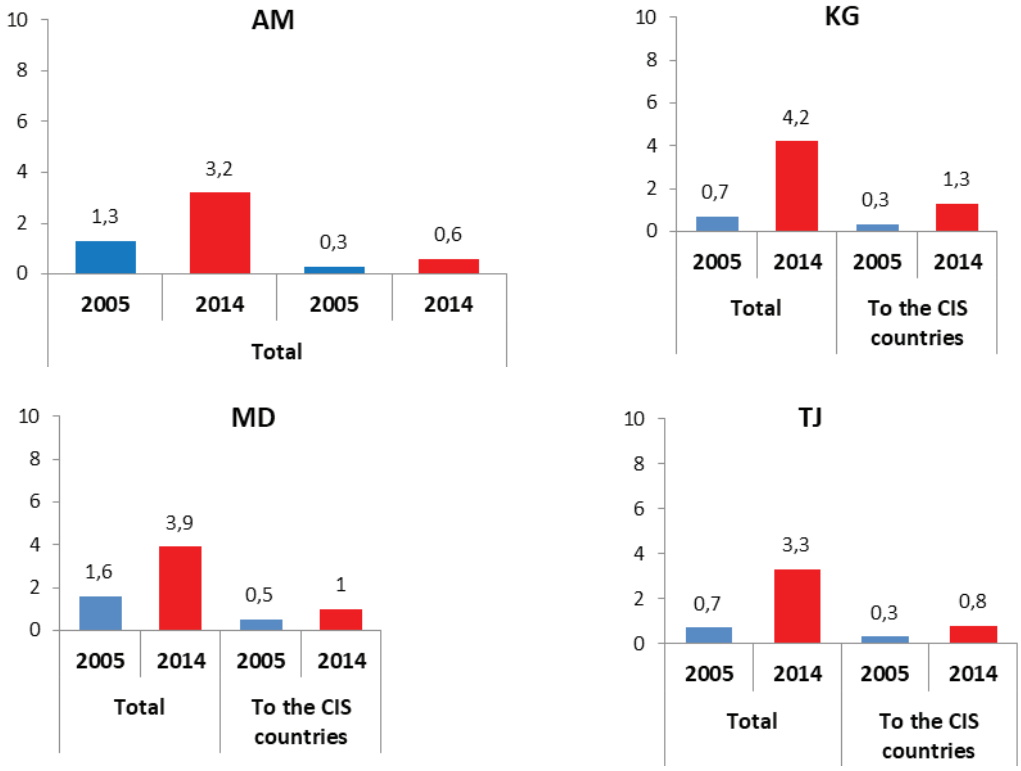






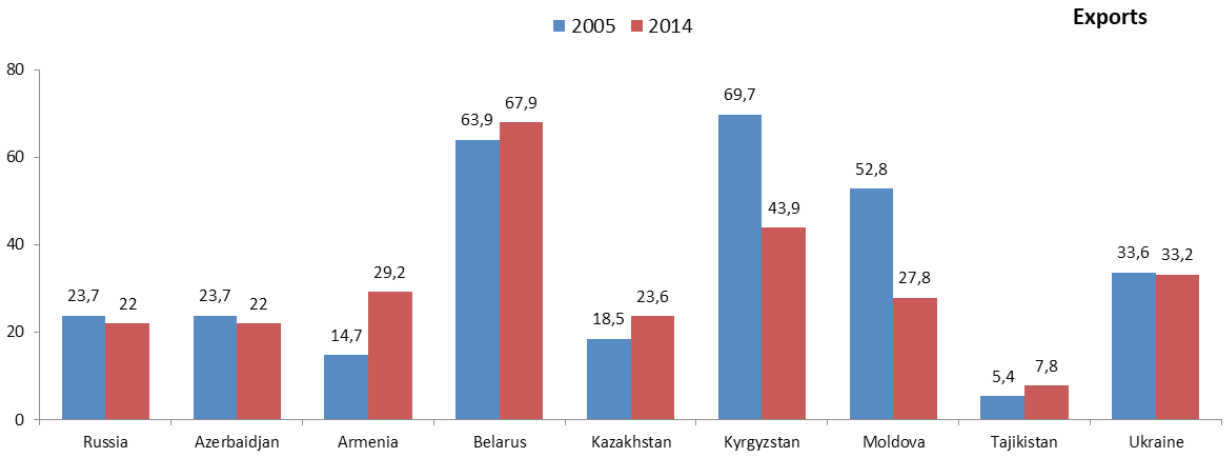






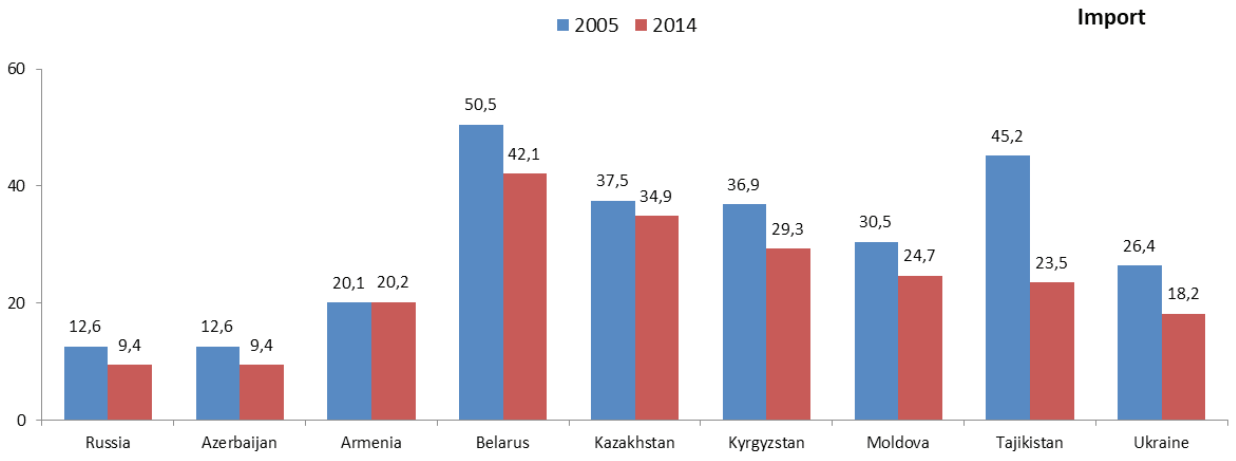
Source: UNCTADstat Data Portal, authors' calculations.

Figure 42 – Share of exports to CIS countries in total manufacturing exports of the countries (in %)



Source: UNCTADstat Data Portal, authors' calculations.

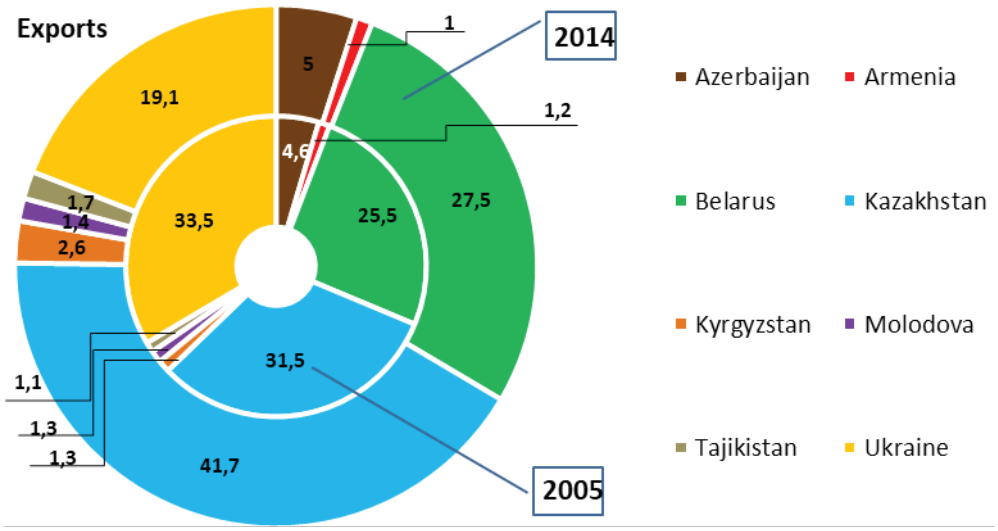
Figure 43 – Share of imports from CIS countries in total manufacturing imports by the countries (in %)



Source: UNCTADstat Data Portal, authors' calculations.

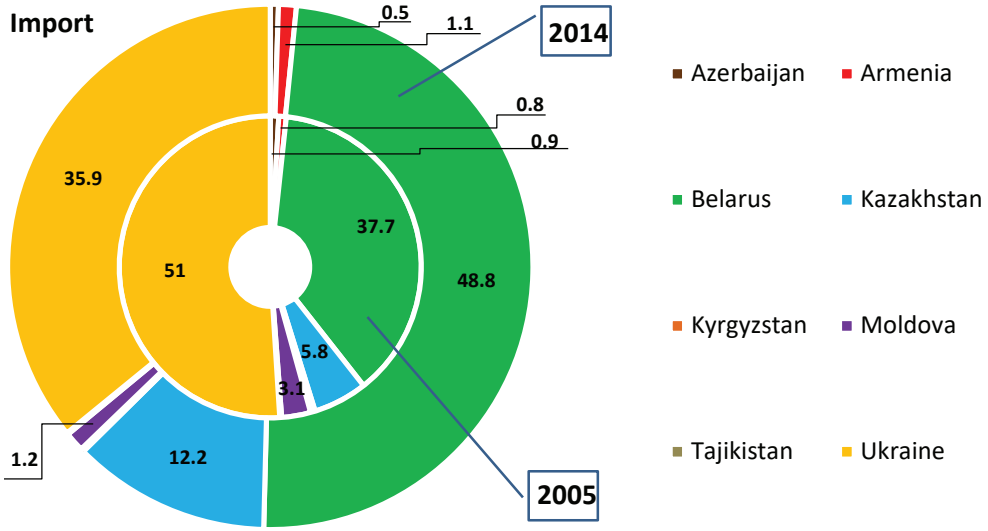
The leading position in total value of export trade flows of industrial products in the period analysed was held by Russia, Belarus and Ukraine and, by a significant margin, Kazakhstan, with the scale of imported products being most significant for Belarus, Kazakhstan, Azerbaijan, Kyrgyzstan and Moldova. The great interest of a number of regional economies in integration was attributable to various reasons, primarily, the limited access to foreign markets of many developed countries due to geographical remoteness, lack of manufacturing exports with significant competitive advantages outside the Commonwealth region and the importance of economic relationships based on investment and capital inflows from the regional base.

Figure 44 – Share of manufacturing exports from Russia to CIS countries (in %)



Source: UNCTADstat Data Portal, authors' calculations.

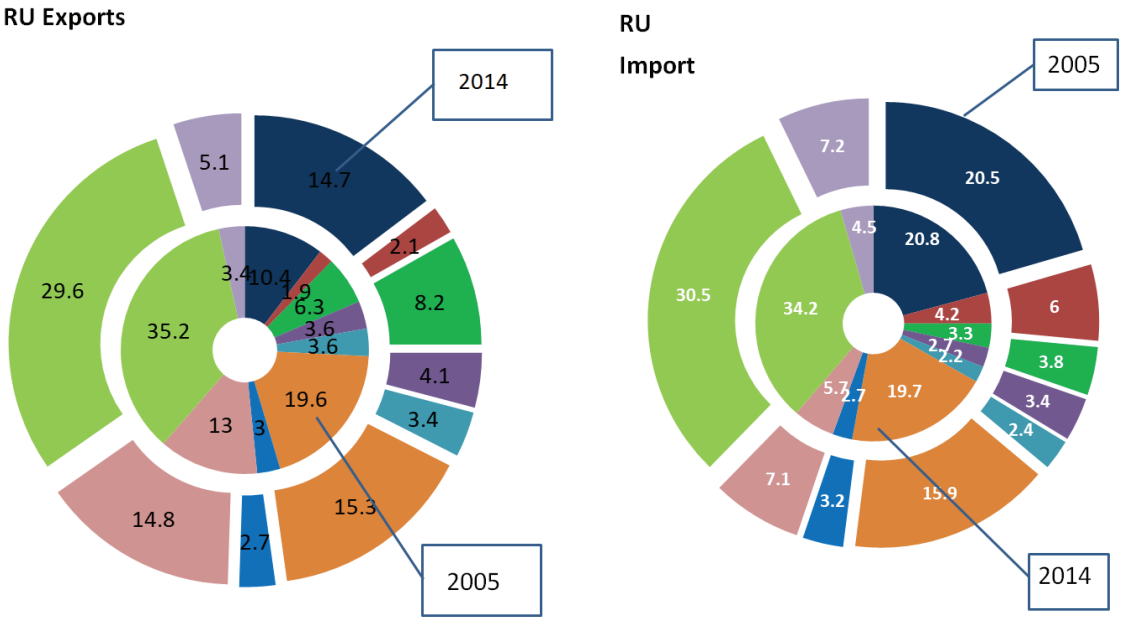
Figure 45 – Share of manufacturing imports to Russia from CIS countries (in %)



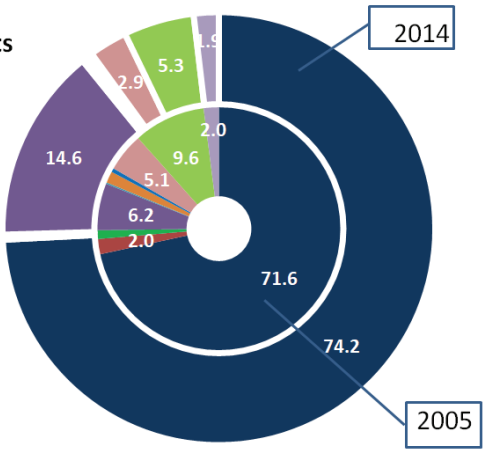
Source: UNCTADstat Data Portal, authors' calculations.

The main volume of industrial trade flows in the region from 2005 to 2014 were concentrated in Russia, Belarus, Ukraine and Kazakhstan with a huge overbalance and, to a lesser extent, in Azerbaijan and Kyrgyzstan in later years. The main trends in terms of integration and trade within the CIS were largely determined by the dynamics of change in export and import operations between these countries (Figures 46, 47).

Figure 46 – Structure of manufacturing exports and imports of countries within the CIS (in %)



AM
Exports



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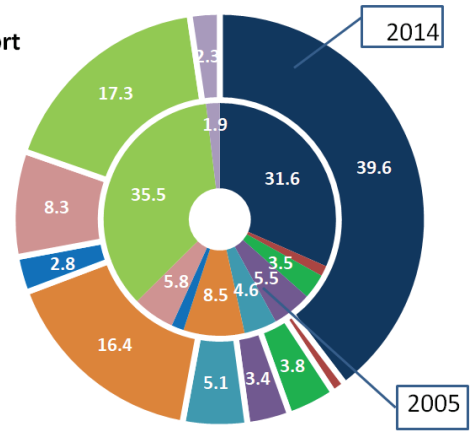

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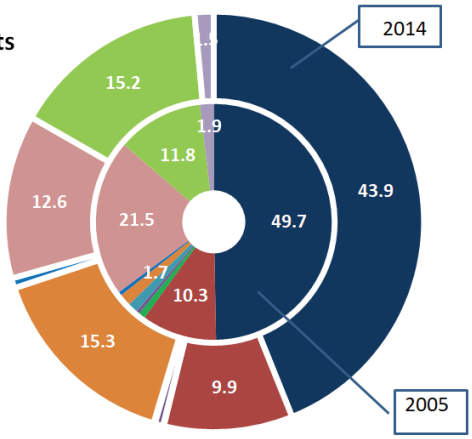

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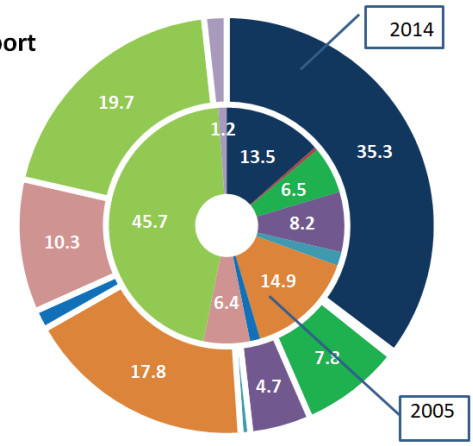

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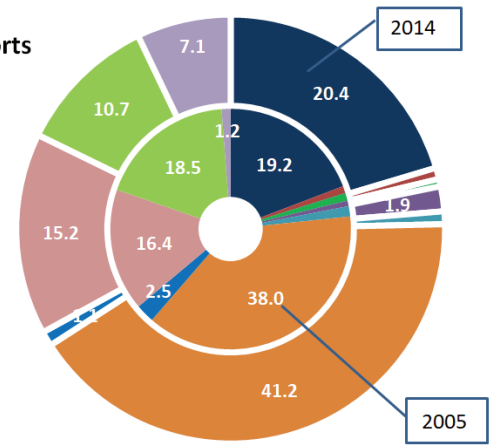

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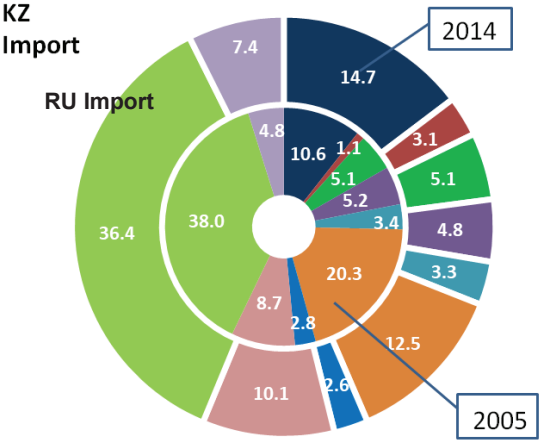
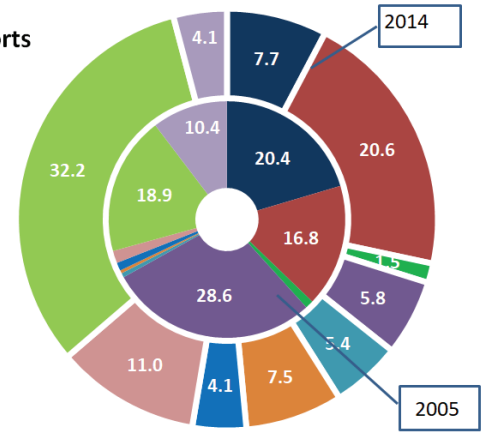


KG Exports



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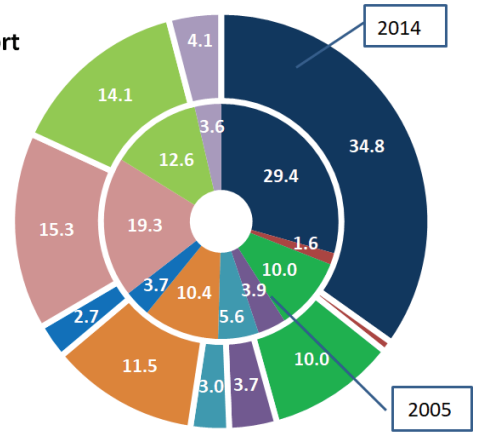
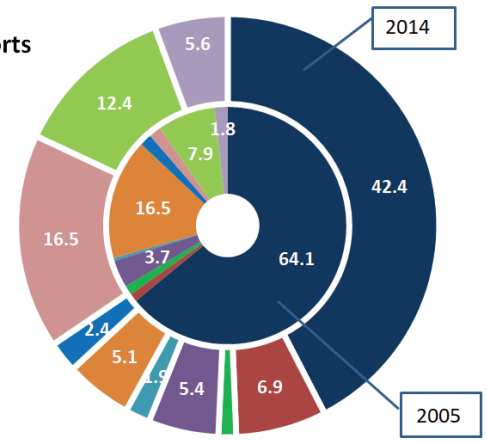


MD Exports



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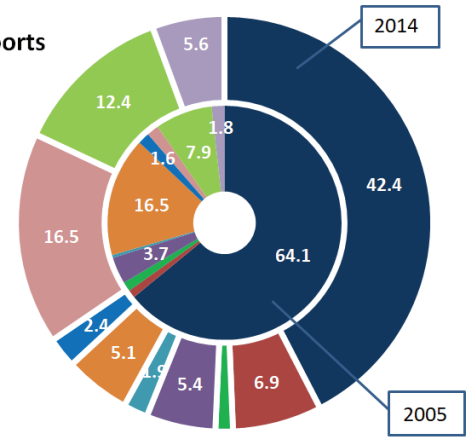
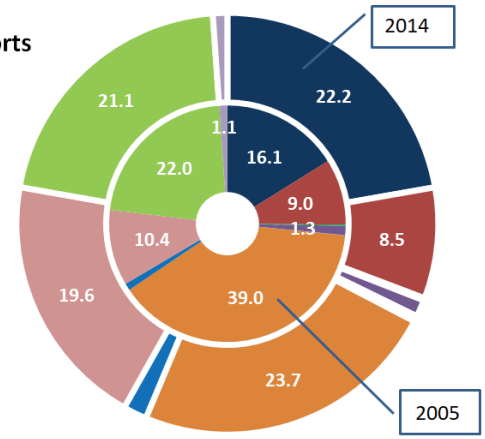


TJ Exports



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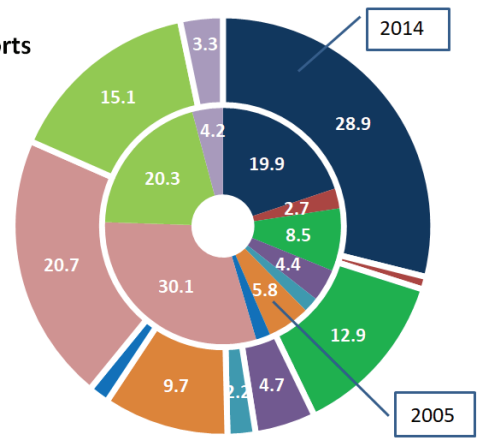
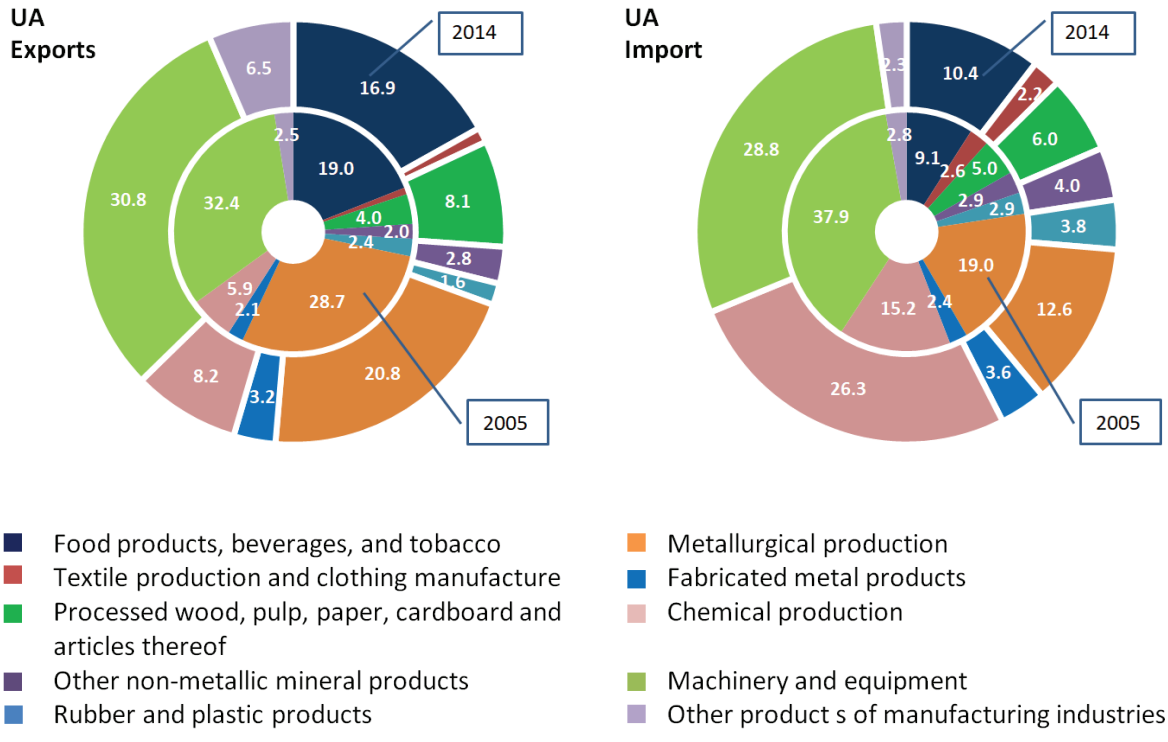
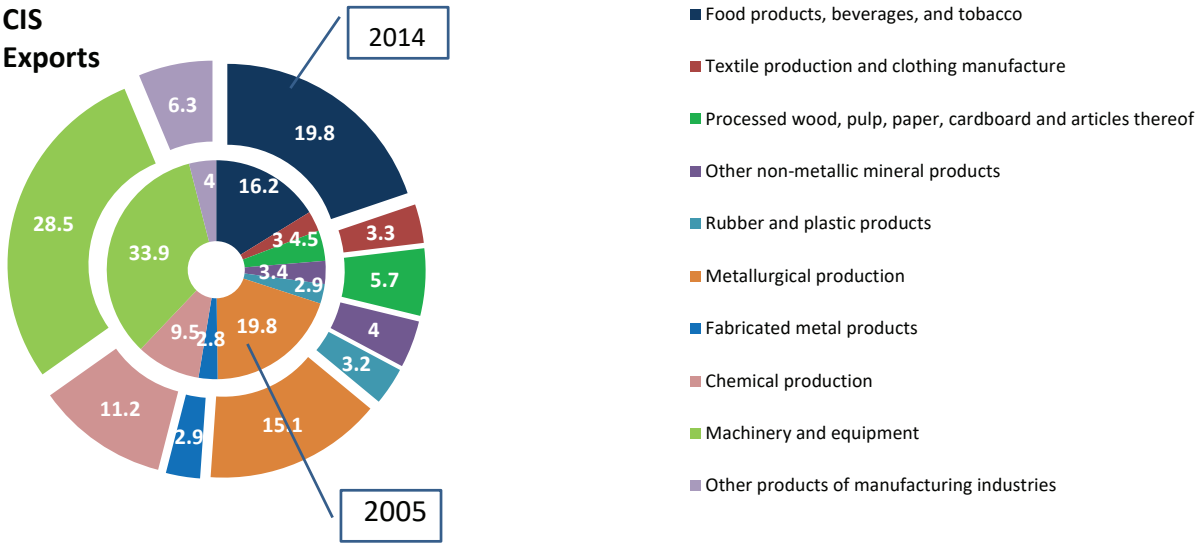
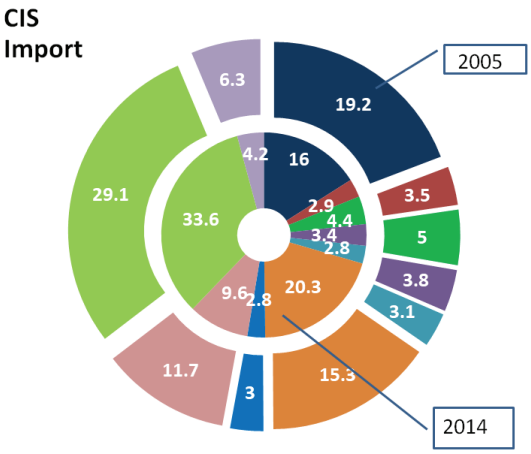




Source: UNCTADstat Data Portal, authors' calculations.

Figure 47 – Structure of manufacturing exports and imports within CIS integration (in %)





Source: UNCTADstat Data Portal, authors' calculations.

The largest intra-regional manufacturing exporter was Belarus, mainly food products, machinery and equipment, textiles and clothing and chemical products; Kyrgyzstan followed exporting mainly machines and equipment, metallurgical products, textiles and clothing; Moldova exported primarily food products, chemical products, machinery and equipment, textiles and clothing; Ukraine's exports consisted of machinery and equipment, metallurgical products, chemical products and processed wood; Armenia exported food products with a huge overbalance in the structure of its exports as well as other non-metallic mineral products. Despite a reduction of imported products in each country of the Commonwealth within the regional integration association, the most notable import flows were recorded in Belarus, which imported primarily machinery and equipment, metallurgical products, food products and chemical products; Kazakhstan's imports consisted mostly of machinery and equipment, metallurgical products, chemical products and food products; Kyrgyzstan imported machinery and equipment, food products, chemical products and processed wood.

Convergence or strengthening of borders?[31]

In the period analysed, industrial trade flows in the CIS were marked by pronounced irregularity and varying levels of diversification. A significant part of aggregate volumes of exports and imports of all countries in the region consisted of products from the top manufacturing industries with a high share of value added (metallurgical production, chemical production, food production, machinery and equipment); the share of these four commodity items in 2014 accounted for 68 per cent of all regional exports (USD 137 million) and 45 per cent (USD 172 billion) of imports.

The structure of intraregional industrial export-import flows for the period 2005-2014 practically did not change and was still quite different in the countries, including mutual trade in manufactured products of the region's countries with Russia, with various export operations in 2014 being dominated by Russia to Kazakhstan (41.7 per cent), Belarus (27.5 per cent), Ukraine (19.1 per cent), and imports of industrial products primarily from Belarus (48.8 per cent), Ukraine (35.9 per cent) and Kazakhstan (12.2 per cent).

The dynamics of change in the contribution of regional integration to total volumes of manufacturing exports and imports of all countries in the region, including trade with third countries, were characterized by multidirectional trends. With a sustainable participation of intra-regional exports in total export flows of all countries in the region (30 per cent or USD 59.3 billion in 2014), the share of imports within the region in the total volume of manufacturing imports by the CIS countries, including imports from third countries, decreased by 4 percentage points to 15.6 per cent, amounting to USD 59.5 billion by the end of the study period.

In the overall structure of manufacturing exports of the Commonwealth's cross-border integration in 2014, the most significant share was held by medium- and high-tech products (USD 23.6 billion or 40 per cent); products from the raw materials processing industry (USD 17.5 billion) and low-tech products (USD 18.2 billion) accounted for 31 per cent and 29 per cent, respectively.

In the overall structure of manufacturing imports of nine countries in the region, medium and high-tech products (USD 24.3 billion or 40.7 per cent) continued to dominate in 2014, and products from the raw materials processing industry and low-tech products were imported in volumes of USD16.6 billion and USD 18.5 billion, amounting to 32.4 per cent and 26.9 per cent, respectively.

In 2005-2014, the volume of manufacturing exports from Russia to the countries of the regional integration association with a high industrial potential (Kazakhstan and Belarus) increased 2.2-fold to USD 18.8 billion, which was 2.3 times higher than the corresponding export flows to other countries of the Commonwealth, and the total scale of manufacturing imports from these countries to Russia in 2014 exceeded 1.6 times the imports to Russia from other countries of the region, reaching USD 15 billion.

[31] Authors' calculations; source: UNCTADstat data portal.

The share of Russia's manufacturing exports to countries with an average manufacturing industry potential (Azerbaijan, Armenia and Ukraine) decreased by 6.7 percentage points by 2014, as a result of which the corresponding export volumes reached USD 6.8 billion, while total imports from those countries to Russia increased by 22 percentage points and amounted to USD 9.3 billion.

Russian manufacturing exports to countries in the region with a low industrial potential (Moldova, Tajikistan and Kyrgyzstan) increased 2.7-fold in the study period and amounted to USD 1.6 billion.

Export flows of medium- and high-tech products from Russia to all countries of the region increased with a lesser intensity during the period analysed and reached USD 1.2 billion in 2014, while regional imports of medium- and high-tech products to Russia increased to a total of USD 9.2 billion.

By the end of the study period, the structure of intra-regional manufacturing exports from the CIS was still primarily determined by the structure of Russia's regional exports, despite the fact that in 2014, only 22 per cent of the total amount of Russian manufacturing exports was accounted for by the countries of the region.

The structure of imports by Russia and other countries of the region from third countries differed in their proportions compared to the export flows. In all countries of the region (except Tajikistan), imports from third countries mostly consisted of medium- and high-tech products; volumes of such imports in 2014 were USD 145 billion in Russia; in Belarus, Kazakhstan and Ukraine such imports amounted to USD 8.9 billion, USD 14.0 billion and USD 16.6 billion, respectively; in other countries, they amounted to USD 8.4 billion. Tajikistan imported mainly low-tech products in the amount of USD 1.2 billion.

In the CIS region, the most significant trade partners for Russia in the period analysed were Belarus, Kazakhstan and Ukraine; these countries accounted for more than 80 per cent of manufacturing exports and over 90 per cent of Russia's total imports from all countries of the Commonwealth.

A low level of aggregate GDP in the region, a low share of high value added products, insufficient involvement in the international division of labour and a predominance of commodities and metallurgical exports did not favour sustainable and inclusive development of cross-border integration, settling the arising differences in the analysed decade, which was intensified by differences in the development of economic growth and intensity and the countries' potential as well as inconsistency of certain political and economic interests.

6. Main strategies of industrial development in the CIS countries

6.1. Russia

Russia's national industrial policy is aimed at creating a competitive, sustainable, structurally balanced industry, which is capable of efficient development based on integration into the global technological environment and on the development and application of advanced industrial technologies. Its principal objective, in addition to ensuring long-term economic growth, is the maintenance of social stability, employment in certain regions, monotowns and large enterprises.

In the years since the dissolution of the Soviet Union, Russia has repeatedly attempted to develop and implement an effective and balanced industrial strategy; however, these attempts have often been hampered by political factors in economic decision-making. Besides, traditionally, Russia's industrial has been associated with excessive state intervention in the economy. This is associated with the sceptical attitude towards effective implementation of industrial policy under conditions of low-quality public administration, risks of hidden lobbying interests of major players and different groups and violation of competitive conditions, which was especially characteristic of the Russian economic and political landscape in the late 1990s and early 2000s.

The change in approach to industrial policy was determined by factors such as a change in the model of the relationship between the state and business, exhaustion of the previous growth model and a changing macroeconomic environment, including external shocks. At the same time, competition between traditional vertical and scientific-technological horizontal models was maintained. The state focused mainly on traditional industrial policy, which provides tools to exert direct influence on enterprises and the possibility of "manual control". In addition, it is easier to model this type of policy, and the effects of its implementation show up faster. Over the last few years, a horizontal technological industrial policy gradually formed, which, however, retained certain "traditional" characteristics, including support for the interests of major players, low level of competition among state institutions, non-transparency of decision-making processes and assessment of results. The external challenges of recent years presume a new strengthening of the vertical policy aimed at supporting Russia's economic development and overcoming the negative consequences of changing the model of relationships with the outside world.

An analysis of Russia's industrial policy over the past decades shows that in the late 1990s to early 2000s, it was guided by the scientific and technological potential accumulated

during the Soviet era, influencing the structure of the country's economy and contributing to the development of new industries of the economy. Industrial policy frequently aimed to expand domestic production which was associated with the introduction of protectionist barriers and selective support of industries by replacing private demand with state demand. In addition, a key element was missing – a clear system for identifying sectoral and technological priorities, the range of which was continuously changing with the trend towards expansion. As a result, industrial policy could not consolidate the efforts of the state and business in certain areas.

A characteristic feature of Russian industrial policy is a focus on the distribution of financial resources rather than on institutional regulatory instruments that have long been considered ineffective. It traditionally aimed at stimulating domestic demand (including purchases for state needs) and establishing quotas and preferences for individual groups of producers. In addition, there is practically no system for assessing the results of the current policy, and its formation has proceeded despite non-transparent rules, which has significantly limited identification and dissemination of the best practices.

Several stages can be identified in the development of Russia's industrial policy of the 2000s [Simachev et al., 2014; Idrisov, 2016]. In 2000-2003, it focused mainly on preventing negative structural changes in the country's economy as well as compensating the losses of non-competitive domestic producers. The fundamental components of Russia's policy were laid down in the concept paper "The Strategy for the Development of the Russian Federation until 2010", drawn up in 2000 but not approved that year. It was based on a favourable political and economic situation in the country which would open a "window of opportunities" for solving fundamental economic problems. The strategy aimed at creating and developing market institutions, including the establishment of conditions for competition, increasing the efficiency of natural monopolies, reforming the tax and customs system and the administrative apparatus. During the first stage, the focus was on creating a legislative base to introduce and guarantee new economic conditions and to adapt state obligations in accordance with state resources; during the second stage, the priority was the implementation of economic policy based on the principle of economic deregulation, guarantees of property rights and equal conditions for competition; during the third stage, the objective was structural adjustment of the economy through the accumulation of new investments, growing external competition and the creation of more efficient mechanisms for the overflow of capital and workforce. One of the main priorities of the structural policy was growth of the share of high-tech industries and services.

The next stage of industrial policy (2004-2007) was characterized by a significant strengthening of the role of the state in the economy and a turn towards a vertical (sectoral) industrial policy aimed at building the "vertical power structure", reducing the degree of influence of big business on power, targeted design of structural change in the economy; easing the budgetary constraints; expanding the state's financial capacity; stabilization of the conditions

of economic activity; fulfilment of obligations and, as a consequence, a possibility to implement long-term projects. At this stage, strategies were designed for the development of different industries, including the metallurgical industry, forestry, chemical and petrochemical, transport engineering, electronic, shipbuilding and nuclear energy.

One of the main tools for implementing the long-term industrial strategy at this stage was the development and implementation of federally target scientific and technological programmes. However, due to the lack of clearly stated objectives in these programmes and reasonable costs for implementation, this tool proved ineffective.

The result of an imbalance between the priority tasks of economic development (diversification, support of innovations, etc.) and state tools for attaining these was the use of mechanisms of direct impact by the state on the economy. Thus, in 2006, the creation of vertically integrated structures in the public sector intensified (in particular, in defence, aircraft and shipbuilding), one of the goals being to expand the influence of the state on the development of certain industries.

Development institutions were actively shaped as vehicles of industrial policy – organizations created on the initiative or with the participation of the state, aimed at compensating "market failures" and the achievement of long-term goals, financed through one-off state contributions (Vnesheconombank, Investment Fund, Rosnano, Russian Venture Company etc.). Rosnano in particular supported the horizontal model of industrial policy (formation of nano-industry, determination of technological priorities, capitalization of new high-tech companies), and Vnesheconombank promoted the vertical model (support for major projects within the priority industries space, nuclear, electronic and shipbuilding).

Another distinctive characteristic of the industrial policy in 2004-2007 was the organization of state corporations to restructure state property, increase the competitiveness of a number of industries in the economy and consolidate state assets. Along with vertical methods, a number of horizontal methods were applied, including the ratification of the Kyoto Protocol (development of less resource-intensive and more environmentally friendly production), reduction of unified social tax rates, approval of the "Strategy for the Development of Science and Innovations in the Russian Federation for the Period until 2015" and the creation of special economic zones.

The financial and economic crisis of 2008-2009 forced the state to reconsider its priorities and move to a compensatory policy, including selective direct support and preferences for companies in certain industries, and, thus, to not target strategic but tactical tasks, even at the expense of "manual control". The priority of the structural policy was to support the most vulnerable industries of the economy and systemically important enterprises. The automotive industry, agricultural machine-building, defence, agriculture, transport and residential construction were defined as sectoral priorities. Activities of the development institutions at

this stage also aimed at resolving the anti-crisis problems.

Measures were developed to support domestic enterprises in the form of providing state guarantees, subsidizing interest rates, changing the customs and tariff policy (in particular, raising import customs duties) and restructuring the tax debt of enterprises. A list of systemically important enterprises with strategic significance was also compiled; such enterprises were provided with access to financial resources and a possibility to refinance external loans. It should be noted that in most cases, the anti-crisis measures were applied with delay (their implementation only began in 2009); besides, some of them contradicted the principles of the market economy (for example, replacement of private demand by state demand, establishment of protectionist barriers and administrative control over prices).

At this stage, programmes of a strategic nature were also developed. Thus, in 2009, a set of measures was defined to stimulate innovative development and the denationalization of the economy, as well as strategic technological priorities of industrial policy, which included information, nuclear, space and telecommunications technologies, energy and energy efficiency, pharmaceuticals, medicine and nanotechnology.

The ambiguity regarding the consequences of the crisis and the anti-crisis industrial policy determined the path of the next post-crisis phase which began in 2010. Macroeconomic conditions including the accumulation of social obligations, Russia's accession to the WTO and a slowdown in oil prices growth were important macroeconomic determinants for the development of a new policy, which led to a reduction in budgetary resources and exposed the necessity to search for new sources of growth. At that time, the need to reindustrialize the Russian economy, to redistribute priorities and rethink the role of the state in the economy was recognized. The expansion of mechanisms to stimulate innovations, improve the business climate and prioritizing the creation of new high-tech jobs allows defining this stage of industrial policy as a technological one. Horizontal policy tools applied during this period included the establishment of technological platforms, stimulation of partnerships between companies and universities, the formation of the state order for innovative products expand demand for these, designing of innovative development programmes for major companies with state participation in priority industries of the economy and support for the creation of territorial innovative clusters.

The need to design a new national industrial policy became evident[32]; a range of possible industry priorities was proposed, including pharmaceuticals, high-tech chemistry, composite and non-metallic materials, nuclear, aviation, space industry, information technology, and nanotechnologies. In 2012, two basic reference points for the long-term development of the

[32] V.V. Putin "On our economic tasks". URL: http://www.vedomosti.ru/politics/articles/2012/01/30/o_nashih_ekonomicheskih_zadachah

Russian economy were identified: a 1.3-fold increase in the share of high-tech products and of knowledge-intensive industry of the economy in GDP by 2018 relative to the level of 2011, as well as the creation and modernization of 25 million high productivity jobs by 2020.[33]

In subsequent years, the range of industrial policy priorities was continuously transformed and expanded. In the State Programme of the Russian Federation "Industry Development and Enhancing Its Competitiveness"[34], 14 priority industries of industrial policy were identified; in the new version of the document, their number increased to 18, including nearly all industries. This led to a dilution of the notion of priority proper as a tool for concentrating the industrial policy in certain areas.

In 2013, plans were approved for the development of five technological industries – 1) biotechnology and gene engineering; 2) information services; 3) engineering and industrial design; 4) production of composite materials; and 5) optoelectronic technologies and photonics, in a new format of "road maps" with activities on their practical implementation until 2018.

The current stage of the national industrial policy has largely been formed under the influence of negative external shocks for Russia – a decline in oil prices and rouble devaluation, high geopolitical tension and the impact of reciprocal sanctions between Russia and Western countries, which has limited the possibility of importing certain technologies. The policy is mainly aimed at ensuring sustainable development of the economy under conditions of partial isolation and the government has thus again returned to the use of vertical tools, including targeted subsidies for industries and the use of other selective methods to support them including methods of "manual" control.

One of the current key priorities of Russia's national industrial policy is import-substituting industrialization. This major challenge for the Russian manufacturing sector has been attributable to the impact of changes in trade conditions, the weakening of the national currency and structural problems in the Russian economy [Idrisov, 2016]. Import-substituting industrial policy is oriented at stimulating changes in the sectoral structure of the economy to gain an advantage over other countries in the production of modern high-tech products, high value added products and, in the foreseeable future, a significant export potential. The Plan of Priority Actions for Ensuring Sustainable Development of the Economy and Social Stability adopted in 2015 envisaged identification of priority industries and substitution of certain types of imported products with goods produced on the domestic market. That same year, 19 "road maps" on import substitution were adopted in the top priority industries (based on the

[33] Decree of the President of the Russian Federation of 7 May 2012 N 596 "On Long-Term State Economic Policy" URL: https://rg.ru/gazeta/rg-centr/2012/05/09.html

[34] Developed in accordance with the instructions of the Prime Minister of the Russian Federation of 30 November 2010. URL: http://pravo.gov.ru/proxy/ips/?docbody=&nd=102352828&rdk=&backlink=1

criterion of a significant share of imported products on the domestic market), which included the metallurgical industry, agriculture, machine-building, chemical industry as well as the light pharmaceutical and medical industry. It is assumed that the main import substitution projects will be implemented by 2020, while the dependence on imports will decrease from 70-90 per cent to 50-60 per cent, depending on industry. The implementation of this policy faces a number of challenges, among which the need for significant financial investments should be highlighted, under companies' limited access to global capital markets, the reduction of foreign direct investment in Russia and high interest rates on domestic loans. Substantial problems include dependence of demand for Russian products on its compliance with imported equivalents, the artificial reduction of competition on the domestic market as a result of selective support of individual enterprises and restriction of external competition as well as the difficulty of import substitution of technologically complex products with imported components. In addition, import substitution, albeit contributing to the emergence of new goods and industries in the Russian economy, is largely a forced measure and a response to the current crisis; therefore, the production of Russian equivalents of certain types of products is not always economically feasible.

Current structural industrial policy aims to maximize the effective use of competitive advantages of Russian industrial enterprises and ensure advanced development of the domestic industry. State support for industry builds on the understanding that the state budget cannot be a permanent source for financing the expenses of enterprises. Financing should be provided on a project basis for the implementation of specific development goals. In the mid-term, the share of budgetary financing should be consistently reduced in favour of extra-budgetary sources. It is expected that at a certain stage, industries that have received state support will enter a development regime based on market resources and the generation of value in efficiently operating companies. Improvement of the investment climate has been facilitated by the creation of a mechanism to support investment projects implemented in the territory of the Russian Federation on the basis of project financing to increase lending to firms in the real sector of the economy on long-term and preferential conditions[35]. As one of the most important tasks of state industrial policy, it is possible to distinguish the provision of technological development of the domestic industry by creating and implementing innovative, resource-saving, environmentally safe industrial technologies for the production of competitive science-intensive products.

The fundamental components of Russia's modern industrial policy are laid down in the above-mentioned Decree of the President of the Russian Federation "On Long-Term State Economic Policy", Federal Law of 31 December 2014 "On Industrial Policy in the Russian

[35] Decree of the Government of the Russian Federation of 11 October 2014, No. 1044 "On Approval of the Programme for Support of Investment Projects Implemented on the Territory of the Russian Federation Based on Project Financing."

Federation"[36], as well as the development strategies of certain industries. In particular, the Law defines the goals of modern national industrial policy, namely: the development of a high-tech, competitive industry to ensure the transition of the state economy from raw materials exports to innovative development; ensuring the country's defence and state security; and increasing the population's living standards.

The scope of the industrial policy objectives comprises:

- creation and development of modern industrial infrastructure, infrastructure to support industrial activities consistent with strategic goals and objectives;
- creation of competitive conditions for industrial activities comparable to the corresponding conditions in other countries;
- stimulation to implement the results of intellectual activity by industrial enterprises and mastering the production of innovative products;
- stimulation of effective use of material, financial, labour and natural resources, increase of labour productivity, implementation of import-substituting, resource-saving and environmentally safe technologies;
- growth of production output with a high share of value added and support of the export of such products;
- support of technological re-equipment of industrial enterprises, modernization of basic production assets;
- reduction of the risk of technogenic accidents at industrial infrastructure facilities;
- ensuring technological independence of the national economy.

Industrial policy is based on the following basic principles:

- programme-target method of drawing-up documents on strategic planning;
- measurability of objectives of industrial development and implementation of incentive measures;
- monitoring the efficiency of industrial policy and controlling its implementation;
- stimulation of achievement of the established target indicators;
- rational combination of forms and methods of state regulation and market economy, measures of direct and indirect stimulation;
- availability of resources and their concentration on the development of priority industries;
- informational openness of the industrial policy development process and application of incentive measures, taking into account the interests of state security;
- equal access of industrial enterprises to state support;
- integration of science, education and industry.

Budgetary financial support is provided to industrial enterprises in the form of subsidies

[36] https://rg.ru/2015/01/12/promyshlennost-dok.html

on a competitive basis, as well as in the form of tax incentives for the implementation of investment projects included in a special list. Financial support can also be provided by state funds for industrial development in any legal form, including loans, grants and contributions to authorized capital and leasing.

The state can support scientific, technological and innovative activities by:

- assigning tasks for the performance of research, development and technological work under the state defence order;
- granting subsidies to industrial enterprises for financing research, development and technological work in the framework of investment project implementation;
- stimulating demand for innovative products, including through rationing the procurement of goods, works, services for the state and municipal needs;
- providing financial support to firms that carry out innovative activities by rendering engineering services in the course of implementing projects to improve the level of environmental safety of industrial production, including through the use of the best available technologies;
- creating conditions for coordination and cooperation of enterprises in the implementation of scientific, technological and innovative activities;
- encouraging activities that use the best available technologies in industrial production.

The Law provides for a possibility to conclude a special investment contract for up to ten years, when the stability of the aggregate tax burden, regime and mandatory requirements are guaranteed to the investor, subject to setting-up or modernizing industrial production in Russia. Measures have also been determined to support industrial enterprises that export industrial products. These include assistance in advancing products to foreign markets and creating favourable customs conditions for producers (if this does not contradict Russia's international obligations); providing financial and property support to firms engaged in export credit and investment insurance against business and political risks as well as providing state guarantees for obligations.

Priority of domestic industrial products over imported equivalents is ensured by introducing conditions, prohibitions and restrictions on admission of imported goods to the domestic market (if this does not contradict the international treaties of the Russian Federation), as well as the advantage given to goods of Russian origin within the course of public procurement.

At present, a number of state programmes aimed at stimulating industrial production are being implemented in Russia, including the state programme of the Russian Federation "Development of Industry and Enhancing Its Competitiveness", which aims at joining state efforts in developing industrial potential with the creation of systematic long-term incentives to increase the competitiveness of Russian industrial companies on the domestic and global markets.

The strategic goal of the programme is to create a competitive, sustainable and structurally balanced industry in Russia, which is capable of effective self-development on the basis of integration into the global technological environment. The programme specifies the criteria for determining priority industries, according to which the activities of such industries should contribute to:

- the creation of new economically effective and environmentally safe production;
- increasing the output of high-tech products;
- growth of labour productivity through the use of advanced technologies and modern equipment and the creation of high-performance jobs;
- the establishment of conditions for the promotion of innovative Russian products and technologies to the global markets;
- improving energy efficiency and resource saving.

In accordance with these criteria, 18 industries were included as priorities and divided into three groups:

- new industries and industries oriented towards new markets, which do not yet exist or are only insignificant in volume, but will create the foundation for new industry in the long term (composites, rare and rare-earth metals, biotechnologies, industrial parks);
- traditional industries focused on the consumer market, mainly domestic (automotive, light industry, crafts, children's goods);
- traditional industries focused on investment demand on domestic and global markets (metallurgy, heavy engineering, transport engineering, power-plant engineering, machine tool industry, forest industry, agricultural machinery industry, machine building in food and processing industries, machine building of specialized industries, chemical industry).

The main objectives of the programme are defined in accordance with the system of sectoral priorities. For new industries, these priorities are to foster the creation of innovative infrastructure and the removal of regulatory barriers to introduce innovative products in the market; a gradual reduction of the amount of direct government financing for industries and stimulation of demand for industries focused on the consumer market. Industries focused on investment demand should concentrate on the following key tasks: renewal of the technological base; stimulating research and development aimed at creating new technologies and materials; ensuring equal competition conditions for Russian companies on the domestic and global markets; stimulating the export of products with high value added, taking into account the WTO restrictions; development of competition on the domestic market; coordination of programmes for the technological development of industries that can meet the demand for technological products.

The successful achievement of the tasks described above will contribute to the

achievement of the long-term goal of sustainable social and economic development of Russia, and will provide additional impetus to the modernization and diversification of the national economy, reduce its dependence on external conditions (primarily, on prices for hydrocarbon raw materials), make products from Russian industrial enterprises not only competitive and in-demand at home, but also ensure their expansion to global markets.

The implementation of the programme will create an adequate infrastructure for industries to focus on the creation of new types of innovative products (including pilot, semi-commercial, industrial enterprises, engineering companies and technology development centres), ensure localization of innovative production facilities and research centres of the leading international technology corporations in Russia to form an effective system to support the demand for products from the new industries and create new highly skilled jobs. The development of industries oriented towards the consumer market should increase the competitiveness of industrial enterprises, expand their range and considerably increase their output, achieve a tangible increase in investments to expand production capacities and a growing demand for a skilled workforce. Industries oriented towards investment demand will modernize the technological base, ensure the inflow of extra-budgetary investments in the renewal of fixed assets and increase in production capacity, further the potential to expand the presence on foreign markets and entering new markets by increasing production efficiency and energy efficiency and ensure a rise in labour productivity due to the use of advanced technologies and modern equipment.

Certain restrictions have been imposed on Russia's industrial policy with the country's accession to the World Trade Organization (WTO) and participation in the Eurasian Economic Union (EEU)[37] [Idrisov, 2016]. The former entails the fulfilment of agreements that are binding on all WTO members, reinforces competition from partner countries with a lower level of protection and introduces a number of direct restrictions on certain tools of the country's industrial policy. Horizontal WTO constraints, to a lesser extent, alter the incentives of economic agents and are focused, to a greater extent, on creating equal conditions in different countries, regardless of the type of activity or industry. At the same time, developed countries, whose products are more competitive, benefit from creating equal conditions on the markets. From this perspective, trade liberalization and restrictions on industrial policy imposed by the WTO can be disadvantageous to Russia as a country that has its own priorities in the development of certain industries.

The treaty on the EEU includes a section on industrial policy and cooperation of member countries. The main expected advantage of cooperation and coordination of industrial policies is the creation and strengthening of relationships, the use of joint technological and resource potential, as well as the development of value chains within the EEU member states. This

[37] The Treaty on the Eurasian Economic Union entered into force on 1 January 2015. Belarus, Kazakhstan, the Russian Federation, Armenia, and Kyrgyzstan became members of the Union.

reduces the negative effects of external economic shocks, increases the competitiveness of manufacturing products of these countries, and intensifies growth by increasing the efficiency of knowledge and technology sharing. The treaty on the EEU is dominated by the sectoral approach, which is more characteristic for traditional industrial policy and is oriented towards specific restrictions on different industries. Integration within the EEU framework gives countries new potential partners with their competitive advantages, a possibility to expand the already established links and create new technological chains.

In December 2016, the *Strategy for Scientific and Technological Development of the Russian Federation* was approved [The Government of the Russian Federation, 2016], which defines the principles, priorities and main directions for the development of state policy in this field. Implementation of this strategy should ensure a sustainable, dynamic and balanced development of Russia in the long term.

The current state of Russia's science and technology policy is defined in the Strategy as a stage of transition to an innovative economy and requires a significant increase in financing. At the same time, despite considerable national potential in a number of areas of fundamental scientific research, their objectives are often not up to date, and the efficiency of Russian research organizations is much lower than in the countries that are leaders in the development of modern technologies. Despite a positive experience of implementing large-scale technological projects, the economy and society are still irresponsive to innovations, which hinder the practical application of research and development results. Non-coordination of priorities and tools to support the country's scientific and technological development at the national, regional, sectoral and corporate levels does not allow the establishment of production chains for the creation of value added of high-tech products and services to ensure the greatest multiplier effect from the use of the technologies developed.

The most significant challenges for Russia's scientific and technological development at the present stage are: exhaustion of possibilities of the country's economic growth on the basis of extensive exploitation of raw material resources; the aging of the population which leads to new social and medical problems; increasing anthropogenic load on the environment; the need to ensure Russia's food sovereignty and the competitiveness of domestic products at global food markets; and qualitative change in the character of global and local energy systems. Timely responses to these major challenges are the creation of technologies, products and services, which not only meet the national interests of the Russian Federation and are necessary for a significant improvement in the quality of life of the population, but are also in global demand.

In the next 10-15 years, the priorities of Russia's scientific and technological development should be the creation of technologies that provide the basis for innovative development of the domestic market of products and services and the sustainable position of Russia on the foreign market. Such technologies will ensure the transition to advanced digital, intelligent production

technologies, robotic systems, new materials and design methods; environmentally friendly and resource-saving energy; high-tech healthcare; highly productive and environmentally friendly agriculture. They will promote the connectedness of the country's territory through the creation of intelligent transport and telecommunications systems.

The sustainable development of Russia, structural changes in the country's economy and joining the group of countries with high rates of GDP growth are only possible within the framework of the target scenario, which includes leadership in selected areas of scientific and technological development within the framework of both traditional and new markets for technology, products and services as well as building an integral national innovation system.

The scientific and technological development objectives of the Russian Federation are to ensure the independence and competitiveness of the country through the creation of an effective system of building up and making full use of the nation's intellectual potential. The main targets of implementation of the state policy in this area are:

- Personnel and human capital: creating possibilities for the development of the country's intellectual potential;
- Infrastructure and environment: creation of conditions to conduct research and development corresponding to modern principles of the organization of such activities and best Russian practices;
- Interaction and cooperation: formation of an effective communications system in science, technology and innovation, increasing the susceptibility of the economy and society to innovations, development of knowledge-based business;
- Management and investments: establishment of an effective modern management system in science, technology and innovation, increasing this sphere's investment attractiveness;
- Cooperation and integration: international scientific and technological cooperation and international integration in the field of research and technology, contributing to the protection of the Russian scientific sphere's identity and to increase its effectiveness based on mutually beneficial international interactions.

The implementation of the Strategy is likely to change the role of science and technology in the development of society, economy and the state, and contribute to the following outcomes:

- ensure the country's preparedness for major challenges on the basis of generation and application of new knowledge and effective use of human potential;
- improve the population's quality of life through the creation of the required products, goods and services;
- ensure the technological updating of Russian traditional branches of the economy and increase the share of products of new high-tech and science-intensive industries in GDP on the basis of structural change in the economy;

- ensure the advancement of Russian technologies and innovative products to new markets, the growth of revenues from exports of high-tech products, services and technology rights and consequently strengthening Russia's influence and competitiveness in the world.

During the first stage of implementation of the Strategy (2017-2019), mechanisms will be created to ensure harmonization of scientific, technological, innovative, industrial, economic and social policies; scientific projects will be launched to acquire new fundamental knowledge; projects within the country's framework of priorities of scientific and technological development will be launched; a system of sustainable reproduction and recruitment of personnel has been established; conditions have been created for the growth of investment attractiveness of scientific, technical and innovative activities.

In the second stage (2020-2025), new scientific and technological solutions in the interest of the national economy are planned based, among other things, on environmentally friendly technologies; to stimulate the transition to the stage of active commercialization of results of intellectual activity and to a large-scale creation of new products and services; and finally, to increase the volume of technology and high-tech exports.

6.2. Azerbaijan

The development of industry is one of the main priorities of Azerbaijan's economic policy. Industrialization is crucial for the country, not only economically, but also socially, scientifically and culturally and from the perspective of employment of the population, income level, urbanization, skilled workforce, research and development.

Industrialization in Azerbaijan began with the world's first commercial oil extraction in the mid-19th century. Since then, the growth in oil production has determined the development of infrastructure and industries related to oil. In the 1970s-80s, Azerbaijan experienced large-scale industrialization, including the creation of unconventional production methods, and the diversification of industry accelerated. In the late 1990s, there was a rise in industrial production, with the oil and gas industries attracting foreign investments and playing a decisive role in the country's growth; the development of the oil and gas industry directly and indirectly contributed to the revival of other industries.

In 2004, the "State Programme for the Development of the Fuel and Energy Complex of the Republic of Azerbaijan for 2005-2015" was adopted, prioritizing energy supply. During the Programme's implementation, Azerbaijan turned from importing natural gas and electricity to exporting it; the infrastructural support of industry improved significantly. The implementation of a well-elaborated oil and gas strategy contributed to the accumulation of sustainable financial resources and thus the expansion of the possibilities to make use of the available industrial potential. Along with accomplishments in the field of oil and gas production, the diversification

of industry increased; new competitive enterprises were set up in machine building, instrument production and the production of equipment and building materials.

After 2010, Azerbaijan's industry entered a new phase of development. At this stage of industrialization, the main objective was transformation of Azerbaijan into a strong regional industrial centre with more rational use of available potential. In 2012, the development concept "Azerbaijan 2020: a look into the future"[38] was adopted, and the "State Programme for the Development of Industry in the Republic of Azerbaijan for 2015-2020" was prepared[39].

The concept's main strategy is to exploit the possibilities and available resources to achieve sustainable economic growth. From an economic viewpoint, Azerbaijan should transform from a regional leader into a highly competitive participant in the international system of economic relationships. To take steps in this direction, government regulations will be introduced to promote healthy competition in the market economy, ensure efficient use of energy and the creation of high value added. At the same time, the economic structure will be improved. The following priority trends of structural policy were identified: modernization of the oil and gas industry and the petrochemical industry; the diversification and development of non-oil production facilities (regardless of the level of revenue from oil sales), increasing competitiveness and developing export possibilities. According to the development concept, the objective is for the average annual growth rate of real GDP in the non-oil sector to exceed 7 per cent.

The model of an export-oriented economy will be built on and it is presumed that the economy's growing competitiveness and improvements in its structure will stimulate non-oil exports. Along with an accelerated development of the non-oil industry, the promotion and expansion of innovative activity will create a beneficial foundation for the formation of a knowledge-based economy.

Along with the development of the country's export potential in its traditional production areas of non-oil industries (chemical, metallurgical, machine building, electrical and electronic, textiles and food industries), the creation of new competitive industries should be supported. Stimulating mechanisms will be used to attract domestic and foreign investment in non-oil industries and investment cooperation between the public and private sector will be promoted.

Particular attention will be paid to the production and processing of agricultural products, which is of crucial importance in terms of developing non-oil industries and food security, as well as stimulating the production of environmentally friendly agricultural and food products.

[38] The concept of development "Azerbaijan 2020: a look into the future" : http://www.president.az/files/future_ru.pdf

[39] The State Programme for the Development of Industry in the Republic of Azerbaijan for 2015-2020: http://azertag.az/ru/xeber/GOSUDARSTVENNAYA_PROGRAMMA_po_razvitiyu_promyshlennosti_v_Azerbaidzhanskoi_Respublike_na_2015_2020_gody-823447

According to the "State Programme for the Development of Industry in the Republic of Azerbaijan for 2015-2020", the priority areas for the development of industry at the current stage include the expansion of the production of competitive products (metallurgical, oil and gas refining, petrochemical and chemicals) based on local raw materials. The development of the metallurgy industry will improve the supply of raw materials to the new shipbuilding industry, increase its competitiveness and create the foundation for the development of the machine building industry. In addition, Azerbaijan has ample possibilities to create new production capacities with the use of advanced technologies in other branches of the manufacturing sector, namely: food, light, furniture industry and the production of building materials. In addition to the expansion of production in these industries, the establishment of new processing enterprises in chemical and metallurgical industries, in the production of machinery and equipment (in particular, alternative power plants and equipment) and the defence industry is planned. At the same time, the focus should be on the use of energy-saving technologies that meet high environmental standards. Another priority is the creation of new industries using high technologies, in particular, the production of electronic equipment and pharmaceuticals (it is recommended to limit the number of high-tech industries due to the large volume of required research activities).

The main objectives of the State Programme are: modernization of industry and improvement of its structure; increasing the export potential of non-oil industry products; expansion of competitive industrial production using energy in a rational way and creating high value added; the development of knowledge-based and innovative activities; and the training of qualified staff for the new manufacturing industries. The following tasks are included in the State Programme: expanding measures to support industrial production; strengthening the potential of traditional manufacturing industries; supporting attraction of the available natural and economic resources; improving industry infrastructure; stimulating the attraction of local and foreign investments in non-oil industry; implementing measures aimed at transfer and assimilation of advanced technologies; encouraging the application of modern management and corporate governance principles in industrial enterprises; promoting standardization and certification in industrial enterprises; strengthening industrial potential of the regions; developing cooperation between the public and private sectors with a view to enhancing non-oil industry exports; and stimulating the use of innovative technologies in industrial enterprises.

It is expected that the implementation of the State Programme will yield the following results: modernization and diversification of non-oil industries with their transformation into the main source of economic growth in terms of production and exports; increase in the share of regions involved in industrial production; increase in the share of industry in the structure of employment; growth of labour productivity in industry; professional development of employees and creation of new jobs in industry mainly due to the establishment of medium- and high-tech enterprises; increase in the number of enterprises using technological innovations; concentration

of industrial enterprises in industrial zones; and expansion of the application of international standards.

6.3. Armenia

The implementation of an active industrial policy plays a pivotal role in the programmes of the Government of the Republic of Armenia (RA). The country is currently implementing an industrial policy aimed at expanding exports together with the need to improve the economy's competitiveness and ensure sustainable economic growth. The RA's Ministry of Economy developed the "Strategy of Export-oriented Industrial Policy of the Republic of Armenia" (approved by the Armenian government on 15 December 2011)[40]. It is a set of balanced and step-by-step measures aimed at enhancing the international competitiveness of industries with export potential and increasing export diversification. This strategy defines Armenia's industrial policies at the level of individual industry (currently developed and implemented for three industries: cognac production, pharmaceuticals and biotechnology and precision engineering).

One of the long-term goals of Armenia's industrial policy is the creation of new drivers by expanding industries that are already exporting products and possess export potential. It is specifically envisaged to achieve a total volume of exports in the amount of USD 2.8-3.3 billion by 2020 and for the ratio of exports to the country's GDP to reach 19 per cent, to increase export diversification and to enhance labour productivity in the manufacturing industry.

The main objectives of Armenia's industrial policy are: cooperation with the private sector to implement development strategies for individual industries; identification of new sectors with export potential and assistance in strengthening these; attraction of transnational corporations; and development of business support structures.

To foster the development of industries, various instruments of state support are being used to increase exports and import substitution by creating favourable conditions for new investments. Reforms are being implemented in the following areas in particular: reducing tax administration and reporting; simplification, reduction and automation of export and import procedures, registration of property and obtaining construction permits; providing access to credit resources and centralizing credit information; simplification of bankruptcy procedures and liquidation of legal entities; ensuring effective protection of intellectual property, etc.

Fostering a favourable foreign trade regime and eliminating trade barriers is being pursued in the following areas: use of the most-favoured nation treatment in the WTO framework; free trade agreements with Georgia and the CIS countries (with the exception of Uzbekistan and Azerbaijan), and joining the multilateral free trade agreement within the CIS; signing of the free trade agreement with the EU (currently, Armenia has the right to join EU GSP+, which allows exports of locally

[40] Strategy of Export-oriented Industrial Policy of the Republic of Armenia: http://mineconomy.am/eng/35/gortsaruyt.html; http://www.unece.org/fileadmin/DAM/ceci/icp/Review/Studies/Industrial_policy_framework.pdf

produced goods to EU markets at zero or reduced tariffs).

Special tax and customs regimes (special treatment for exporting companies, deferral of VAT for investment goods, free economic zones) are being used as special tools; financial support and access to financial resources (subsidized loans, loan guarantees, equity financing, participation in investment funds); providing access to markets (identification of goods with export potential and partner search, representation and protection of exporters' interests through commercial representation, support for participation in exhibitions, branding of the country and specific sectors in target markets); capacity development/competitiveness increase (co-financing of programmes for requalification of the workforce, financial and technical assistance to companies in the implementation of international quality management systems, support for the transfer of technology and knowledge); assistance for research and development (creation of technoparks, industrial parks and venture funds, provision of joint research grants, etc.).

Choosing sectoral priorities in the industrial development strategy is based on the principle of an industry's contribution to the diversification of exports and availability of opportunities for cluster development, since international competitiveness of an industry depends on the degree of maturity of the cluster. In addition, when determining sectoral priorities, the following parameters are considered: volume of current exports, lack of shortage of raw materials in the medium term, potential of diaspora participation, opportunities for creating higher value added in the long term, number of companies in the industry, opportunities for attracting foreign investment and impact on employment and regional development.

This approach makes it possible to consider the manufacturing sector and related industries of the economy in the context of consistent development. Currently, the raw materials processing industry – the production of food and beverages (brandy, canned products, wine, mineral water, juices, fish, fruits and vegetables) and the mining of metals and non-metallic minerals dominate the structure of production and exports. At the next stage, labour-intensive industries will develop, such as diamond cutting, production of jewellery, watches, pharmaceuticals and textile production. Consequently, high-tech industries will receive priority development such as machine building, instrument production, electrical and optical production, information technology and biotechnology.

Priority target industries are differentiated by three time horizons:

Horizon 1. Capacity building (2011-2013) includes industries with growth potential, established export markets and the largest volumes of exports in recent years, with opportunities to increase production volumes with moderate capital investments. The policy in this area is aimed at stimulating exports and rapidly eliminating obstacles to development.

Horizon 2. The development of new production capacities (2011-2015) includes industries that have been growing dynamically in recent years, but whose export volumes do not exceed USD 10 million. The policy is aimed at attracting a larger scale of investments, solving system problems and developing production and export capacities.

Horizon 3. New drivers of growth (2011-2020) refer to new industries with fragmented potential, namely knowledge-intensive and technologically intensive ones. This will require a broader policy with an emphasis on technology transfer and promotion of innovation.

The following industries of Armenia's manufacturing sector are priorities:

Metal mining: one of the fastest growing exporters; its further development and significant capital investments are planned. The industry is strategically important in terms of job creation potential. The main challenge is environmental safety; therefore, preference is given to using the most advanced and safest technologies.

Metallurgical production: a dynamically developing industry with large capital investments and use of advanced technologies. Like the mining of metals, it is of strategic significance in terms of creating jobs and driving economic activity. Environmental safety is a key factor for the industry; in recent years, production has been modernized using the latest technology.

Food production ranks second in terms of exports and plays a crucial role in supporting agricultural production (for example, the harvesting for brandy production employs more than 8,000-10,000 workers). The main objective of state policy in this industry is effective implementation of the agricultural strategy, the provision of an international quality certification infrastructure (including bringing the system of national standards and quality control in line with international standards), implementation of quality control systems and support for access to new markets.

The production of precious stones and jewellery is one of the traditional industries with a significant share of exports. Nevertheless, the industry has faced a significant decline in production in recent years due to a decrease in demand and problems with the supply of raw materials for diamond cutting from Russia. The country has taken a number of important initiatives in this industry, for example, Armenia has joined the Kimberley process and introduced favourable customs and tax regimes. Government support in this industry includes efforts to achieve interstate agreements and attract investments from the diaspora and other sources.

The production of machinery and equipment is in need of substantial modernization, despite the potential inherited from the Soviet era (technology and expertise). The most important challenges the industry faces are outdated engineering training, inaccessibility to modern technologies, high average age of scientists and technological staff, lack of knowledge of global markets as well as certification issues. The primary areas of state support for the sector include implementation of a comprehensive strategy for developing the military-industrial complex, ensuring access to financial resources and markets, developing export potential, promoting research and development and organizing events to attract foreign direct investment.

Chemical (pharmaceutical) production is one of the fastest growing export industries in Armenia, with exports accounting for about 60 per cent of production. Government support for this industry includes assistance in the implementation of the quality certification system, quality control, access to financial resources and activities to attract transnational companies.

Textile production, a labour-intensive industry, plays an important social role, and its development can make a significant contribution to the creation of new jobs. Separate gaps in customs and tax administration, lack of knowledge of foreign markets and marketing tools and low levels of professional education are the main challenges in the industry. Tools to provide government support for the industry cover assistance in affording access to markets, developing export capacity and access to financial resources.

The production of building materials registered a significant decrease in exports (mainly cement) in 2009 following the establishment of a new plant in Georgia and the increase in energy prices in Armenia. The main challenges for the industry are high logistics costs and trade restrictions at the regional level; support is aimed at providing access to markets and developing export capacity.

In 2012, the Industrial Development Fund under the aegis of the Ministry of Economy was established to implement sectoral strategies within the framework of the Export-oriented Industrial Policy Strategy of the Republic of Armenia. The main areas of government support include: involvement of industrial transnational companies including in the free economic zone (conferences, investment forums); granting of subsidies for loans for production purposes; provision of information on the state of the market, promotion of Armenian goods in target markets; joint financing of expenses for the acquisition of international certificates; ensuring participation in international exhibitions; financing the development, organization and holding of training courses.

The evaluation of the implementation of the strategy and its results is carried out using a system of two-level (strategic and operational) target indicators. Strategic target indicators include the ratio of exports of goods and GDP; export volumes (excluding the mining of metals and diamonds); and real growth in productivity in the processing industry.

6.4. Belarus

At present, the manufacturing sector represents the foundation for the development of the country's economy and ensures its economic security. It contributes about one-third of GDP, more than 90 per cent of exports and provides jobs for a quarter of the working age population in the country. Machine building and metalworking, light as well as the food industry have been the leading industries in Belarus since the collapse of the Soviet Union, which have continued to develop since independence.

The Belarusian economy combines elements of the planned economy with free market mechanisms to preserve the country's industrial base, which is treated as state property while suppressing private initiatives. The state also interferes in economic activity. Only limited structural reforms have been implemented in Belarus since 1995, when the policy of "market socialism" was introduced in the country. Accordingly, the state controls economic operations, the entry of enterprises (both local and foreign) into the market and the prices and exchange rate. Large-scale privatization of major industrial enterprises has not been carried out; state-owned enterprises continue to play a dominant role, providing the bulk of the country's export earnings. The result of

this policy is low efficiency of the country's economy, which heavily relies on the processing and re-exporting of Russian raw materials. An analysis of the economic structure reveals inadequacy and inefficiency of industrial production and of the system of distribution and redistribution of resources, lack of stable trends in economic growth and of transparency and insufficient labour productivity growth in industry to increase the level of income. It is necessary to liberalize the conditions for doing business and to foster the industrial production of consumer goods, which would increase the manufacturing sector's contribution in the economy and the level of income in the country as well as reduce the share of the informal sector. In addition, an effective industrial support policy (including public funding) is necessary to manufacture high-tech products of the 6th technological order to enter the world market and obtain intellectual rent.

The Belarusian industrial policy is elaborated in a number of policy documents: the National Strategy for Sustainable Development of the Republic of Belarus for the period until 2020[41]; Programme of Socio-economic Development of the Republic of Belarus for 2011-2015; Programmes for the development of the industrial complex of the Republic of Belarus for 1998-2015 and for the period until 2020[42]; the National Export Development Programme of the Republic of Belarus for 2011-2015[43]; and the State Programme of Innovative Development of the Republic of Belarus for 2011-2015[44].

The National Strategy for Sustainable Development of the Republic of Belarus specifies the country's objectives and priorities of economic development. Specifically, it supports the model of social market economy, which combines the advantages of a highly efficient market economy and a significant share of the state's participation in addressing both social and economic development challenges.

In 2012, an updated Programme for the Development of the Industrial Complex of the Republic of Belarus for the period until 2020 was adopted, which sets priorities for the development of industry as the main driver of economic development and defines the objectives, stages and tools for industrial policy.

The modernization of traditional industries of the economy aims to increase the competitiveness of industrial products through internal reserves: reducing resource intensity, transforming management systems and improving products and production technologies. At the same time, one of the key tasks is the creation of fundamentally new high-tech and knowledge-intensive industries. Characteristically, the creation of high-tech industry passes on to small and medium-sized enterprises, while maintaining significant government support for traditional industries, although the experiences of post-industrial societies and success of other countries have demonstrated that tools for an innovative approach to economic development should be avoided

41 http://www.president.gov.by /press23869.html.
42 www.economy.gov.by/nfiles/001146_12850_Programma.pdf
43 http://pravo.by/main.aspx?guid=3871&p0=C21100656&p2={NRPA}.
44 http://www.economy.gov.by/ru/news/o- gosudarstvennoj -programme-inno vatsionnogo-razvitij a-respubliki-belarus-na-2011-- 2015-gody i 000000 0786.html.

[Domakur, 2012].

The country's new industrial policy is oriented towards implementing structural transformations of industry, improving the system of public administration, using the developed system of qualitative target indicators of industrial development, cooperating with industrial production in other countries and identifying points of growth and promising market niches. The development of industrial production will be socially oriented, have a resource-saving character and will occur within the capacity of the country's ecosystem.

The strategic goal of the Programme is to increase the country's overall competitiveness based on the development of the most efficient products in each industry while simultaneously aiming for technological breakthroughs in promising industrial activities.

The qualitative growth of industry should be ensured using the competitive advantages of three groups of industries: 1) traditional production oriented towards exports that are based on local raw materials (production of agricultural machinery, vehicles, machine tools, metals, rubber and plastic products, food products, woodworking, textile and clothing production); 2) fuel and energy; and 3) high-tech science-intensive products. Modernization is envisaged for all three groups based on an increase in labour productivity and aiming for labour productivity in newly created enterprises at the level of developed countries.

Among the high-tech and knowledge-intensive industries, priority is given to those that have sufficient scientific potential and their own unique products: electronics, nanophotonics, materials and nanomaterials based on metals, semiconductors and dielectrics, carbon nanostructures and textile fibres. It is intended to develop the production of industrial and automotive tractor electronics; microelectronics; systems of electronic component base at submicron level; televisions using LED technology; tablet computers and laptops; optical-mechanical, optoelectronic and laser-optical products; thermal imaging technology for special and dual purpose; nanoscale structures and coatings; nanotubes and their derivatives; means of space communication and other industries. The strategic task of developing the pharmaceutical industry is to reduce the country's dependence on the import of medicines. The main objective in the development of high-tech chemical production is the maximum use of Belarusian raw materials, the deepening of processing by introducing high technology; expansion of assortment and increase in competitiveness of manufactured products as well as an increase in their export potential. By 2020, the contribution to the economy of industries producing high-tech goods should be comparable with the contribution made by traditional industries.

Among the tools for implementing industrial policy, the following should be mentioned:

- determination of the priorities for the development of each type of industrial activity, allocation of "areas of growth" in traditional industries, and the development of high-tech industry;
- conducting coordinated sectoral industrial policy within the framework of the Common

Economic Space (CES) and the CIS to expand production cooperation; increasing the degree of localization of assembly plants;

- improving organizational and legal forms of industrial organizations through the transformation of ownership patterns, reorganizing large associations of industrial organizations into cluster-type economic societies;
- introducing an investment policy on the principles of concentration of funds in priority areas, attracting foreign capital, including foreign direct investment and capital of transnational companies;
- developing an effective system of subsidy measures in industry; creating conditions for the development of small and medium-sized businesses and their active participation in the development of high-tech industry, an innovative structure and incorporation in the technological chains of large-scale production;
- reducing all types of costs for production through the technological re-equipment and transfer of production to countries importing raw materials.

Privatization of industrial enterprises are planned; for the largest enterprises, the concept of a long privatization cycle will be applied with a careful selection of strategic investors and subsequent sale of controlling stakes owned by the state.

An important development of Belarus' industrial policy is the diversification of foreign markets. Currently, 90 per cent of Belarusian exports are concentrated in 20 countries. Insufficient geographical and commodity diversification of the country's export structure entails a high level of risk. To enhance geographical diversification, cooperation and specialization within the CES is envisaged to preserve and expand Belarus' niche in traditional markets, to ensure partnerships with EU countries to increase the capacity and quality of markets and to enhance the value added per unit of sales.

The strategy for developing national industrial brands will be their positioning in external markets as quality and relatively inexpensive products available to a wide range of consumers and adapted to the requirements of the sales region.

Moreover, the country will fully capitalize on its advantages as an "assembly shop", including its favourable geographic location, highly skilled workers and developed infrastructure.

The active implementation of industrial and innovation policies will make it possible to halve the gap in labour productivity (by value added) to European countries. By the end of 2020, the output of GVA per person employed in the manufacturing sector should reach USD 30,000. At the same time, sectoral structural change in the industrial complex will ensure an increase in the share of innovative high-tech industries in total output to 15 per cent.

The fulfilment of the proposed objectives requires achievement of a new quality of technological development in industrial production, a transition to the use of the latest achievements in the field of innovative technologies, nano- and biotechnologies, development of modern market methods of state management in the industrial complex, an increase in exports of high-tech

competitive products, preservation of the country's economic and energy security and convergence of the Belarusian industrial complex in terms of effectiveness with economically developed countries.

6.5. Kazakhstan

The development strategy of the Republic of Kazakhstan until 2030[45]—developed in 1997—describes the country's long-term development path, aimed at the country's transformation into a safe, stable, environmentally sustainable state with a dynamically developing economy. The strategy defines development priorities, including economic growth, based on an open market economy with a prominent level of foreign investment and domestic savings. The first stage of its implementation was the Strategic Development Plan of the Republic of Kazakhstan until 2010, approved in December 2001.[46]

Strategic Plan 2010 formulated the objectives for creating a diversified competitive economy and increasing industrial and agricultural production. Some of these aims have been realized or are close to implementation, largely due to the rise in export revenues in the face of rapidly rising oil and other mineral prices. Industrial production has doubled, a solid foundation for accelerated economic diversification has been created, development institutions have been developed and the necessary legislation has been prepared.

At the same time, some of the initial objectives remained relevant for the next decade. To continue the implementation of programmes to develop a competitive and diversified economy, the Strategic Development Plan of the Republic of Kazakhstan until 2020 was introduced[47]. According to this Plan, Kazakhstan will become one of the 50 most competitive countries in the world with a favourable business climate by 2020, which will attract significant foreign investment in non-primary industries. The processing industry will occupy a worthy place in the economic structure along with the mining industry. Due to the successful implementation of plans to diversify the economy, processing industries will grow faster than extractive ones.

According to the Strategic Plan-2020, the key objective for the country's economic development in 2010-2020 is acceleration of diversification through forced industrialization with the aim of a comprehensive increase in labour productivity. The following objectives to resolve the current problems include:

- development of traditional industries: oil and gas, mining and metallurgical production, nuclear and chemical, followed by a transition of raw materials industries to more advanced processing stages;
- development of industries based on the demand of national companies and the state: machine building, construction industry, defence industry, pharmaceuticals;

[45] Message of the President of the Republic of Kazakhstan to the people of Kazakhstan (Development Strategy of the Republic of Kazakhstan until 2030) http://economy.gov.kz/ru/poslanie/detail.php?ELEMENT_ID=45657
[46] http://www.carecprogram.org/uploads/docs/KAZ-Strategic-Plan-for-Development-ru.pdf
[47] http://pol1.kz/images/22/120210plan_2020_0.pdf

- development of industries that are not related to primary industries and oriented mainly towards exports: agro-industrial complex, light industry, tourism;
- development of the "future economy", which will play a dominant role in the world economy in the next 15-20 years: information, communication and space technologies, biotechnology and alternative energy.

As a major exporter of raw materials, Kazakhstan strives to ensure to establish a balance between the use of revenue from the export of raw materials and the creation of macroeconomic conditions for the growth of all economic sectors (rapid consumption of revenue from natural resources increases the exchange rate of the currency and leads to the development of services to the detriment of the agriculture sector and the processing industry). With this in mind, the mission of the National Fund of the Republic of Kazakhstan is being adapted with the strengthening of its savings function.

The industrialization of Kazakhstan is based on the principle of clear allocation of roles of the public and private sector, maximum transparency of companies and government bodies, ensuring competition as a leading factor in the growth of the quality of goods and productivity. The country's active participation in the integration processes of the CIS, including the Customs Union with Russia and Belarus from 1 January 2010, also contributes to the increase in competitiveness of the country's products and a growth of investments. In addition, Kazakhstan became a member of the WTO in 2015 on condition the country meets the priorities of economic development.

Forced diversification of the economy is being carried out in seven priority areas: the agro-industrial complex and the processing of agricultural products; the construction industry and the production of building materials; oil refining and infrastructure of the oil and gas industry; metallurgy and the production of finished metal products; chemical, pharmaceutical and defence industries; power engineering; transport and telecommunications.

These objectives as well as the development of machine building, uranium and light industry, tourism and space technologies became priorities for the State Programme on Forced Industrial and Innovative Development of the Republic of Kazakhstan for 2010-2014, approved in 2010[48]. The key mechanism for the implementation of this programme is the Kazakhstan Industrialization Map, which enables the state, together with business, to develop appropriate investment decisions and ensure the links between private sector projects with infrastructure development and the country's resource potential. Within the framework of the Industrialization Map, 237 projects were selected with the creation of over 200,000 jobs, including 54 projects in the agro-industrial complex, 37 in metallurgy, 34 in the construction industry, 27 in chemistry and pharmaceuticals, 21 in the energy industry, 19 in machine building, 18 in oil refining and 14 infrastructure projects.

Priority is given to environmental protection and the transition to a "green economy". Approved in 2013, the concept of "green economy" defines the main objectives in this area,

[48] http://economy.gov.kz/ru/strategicheskie-napravleniya/povyshenie-konkurentosposobnosti/detail.php?ELEMENT_ID=30357

including the rational use of water resources; energy saving and energy efficiency; development of a waste management system; reduction of air pollution; conservation and effective management of ecosystems. Thus, by 2020, the energy intensity of GDP is expected to decrease by 25 per cent from the level of 2008; an increase in the share of alternative electric power sources to 3 per cent; and a reduction of carbon dioxide emission in the electric power industry to the level of 2012.

The implementation of the Development Strategy of Kazakhstan until 2030 enabled the country to complete the first phase of modernization. There was an increase in the scale of industrial production; the incomes of the population rose and social indicators improved. At the end of 2012, the "Kazakhstan-2050 Strategy: a new political course of successful country"[49] was developed, and in 2014, based on that Strategy, the Concept of the entry of Kazakhstan into the list of 30 most developed countries in the world[50] was elaborated. The key message of the Strategy and Concept was the second phase of modernization of the country, namely the establishment of a knowledge-based economy associated with an increase in the contribution of knowledge and innovations to economic growth, an increase in the share of services and greening of the economy.

The main guidelines in the Strategy 2050 are an increase by the end of the period in investment volume to 30 per cent of GDP and the share of non-primary products in the country's export potential to 70 per cent; halving of the energy intensity of GDP; 5-fold growth in labour productivity to USD 126,000 and a 4.5-fold increase in GDP per capita to USD 60,000. The first phase of the Strategy covers the period until 2030, by when the modernization leap should have been made, ensuring dynamic growth of traditional industries and the creation of a strong manufacturing sector. In the second stage (2030-2050), the objective is sustainable development of the country based on a knowledge-based economy, the development of a powerful manufacturing industry, and a switch among traditional industries to output of high process stages.

6.6. Kyrgyzstan

In the first years after Kyrgyzstan gained sovereignty, major changes occurred in the country's industrial production. As part of the measures to establish a market economy, large industrial enterprises were privatized. However, privatization was carried out without adequate preparation with reference to market conditions, therefore, many specialized enterprises ceased production or redesigned manufacturing of the simplest products. Market changes in the economy helped improve the situation in the manufacturing sector to some extent; in the late 1990, the tendency was an increase in production based on significant foreign investments in non-ferrous metallurgy, fuel and food industries.

In 2002, the Kyrgyz Industry Development Programme for the Medium Term (2002-2004) and for the period until 2010 was adopted[51]. It defined specific measures for the development and

[49] Message of the President of the Republic of Kazakhstan to the people of Kazakhstan (Strategy "Kazakhstan 2050") http://economy.gov.kz/ru/strategiya/

[50] http://economy.gov.kz/ru/ministerstvo/detail.php?ELEMENT_ID=55481&sphrase_id=12181714

[51] http://cbd.minjust.gov.kg/act/view/ru-ru/53484

implementation of the country's long-term industrial policy based on the need to overcome the crisis in industry and stabilize production activities of enterprises, as well as to create new products that are in demand and to develop an optimal industrial structure on that basis. However, the Concept of Social and Economic Development of the Kyrgyz Republic until 2015[52], approved in 2007, acknowledged that the challenges of effective development of industrial production had not yet been resolved. This referred to the creation of import-substituting and export-oriented industries, effective use of investments and the implementation of technological modernization. The country was in dire need of drastic change in its industrial and a new set of priorities.

The 2013-2017 National Strategy for Sustainable Development of the Kyrgyz Republic[53], adopted in 2013, noted that the country developed without priorities in the "survival" mode for 10 years. This period was assessed as a time of "lost opportunities" despite the substantial support of donor countries and international organizations, as well as numerous sectoral development programmes that largely failed to achieve their goals. The first five years (2013-2017) covered by the Strategy were declared a "five-year period of creation"; during this period, the foundations for the successful development of the country were to be laid. It was assumed that by 2017, Kyrgyzstan could achieve sustainable economic growth and build an effectively functioning social market economy. The private sector was to play the leading role in this, and the state's task was to create favourable conditions for its development.

In 2013, the Programme for the Development of Manufacturing Industry of the Kyrgyz Republic for 2013-2015[54] was adopted. It sets forth the following main objectives: growth of production and exports of industrial products; ensuring the competitiveness of industrial products in the markets of the Customs Union; increase the share of industrial output in GDP; creation of additional jobs in industry; protection of local producers and development of the domestic market for selected industrial products; and increase of industrial and technical know-how by attracting investors.

The Programme envisaged support for the development of strategically important industries of the manufacturing sector and diversification of production. Research was to be carried out first to determine priority industries and elaborate specific programmes for their development (at the time of the adoption of the Programme, four industries of the manufacturing sector contributed to the country's economy and tax revenues: metal production, food production, textile and clothing and other non-metallic mineral products).

According to the Programme, the development of the manufacturing sector is connected with the implementation of the following measures:

- promotion of investment, export and cooperation (establishment of a favourable investment climate, including through an open trade policy and reduction of trade barriers and the

[52] http://www.carecprogram.org/uploads/docs/KGZ-Social-Economic-Development-2015-ru.pdf
[53] http://patent.kg/index.php/ru/?catid=91&id=1001&Itemid=107&option=com_content&view=article
[54] http://cbd.minjust.gov.kg/act/view/ru-ru/94327

creation of industrial zones with the necessary infrastructure);

- creation and expansion of financial development institutions that provide monetary funds for long-term use and short-term crediting of current assets of enterprises engaged in export-import operations;
- stimulating the development of local raw materials processing through a balanced tariff policy with respect to import and support of agriculture;
- staff training and implementation of social standards in the field of employment relationships;
- implementation of environmental standards (in 2003, Kyrgyzstan ratified the Kyoto Protocol to the United Nations Framework Convention on Climate Change, but has not yet developed mechanisms for its implementation);
- promoting research, development and innovation.

6.7. Moldova

Moldova's industrial sector before the early 1990s developed through the full integration into a single national economic complex of the former USSR, priority being placed on the development of the agricultural raw materials processing industry, agricultural machinery, light industry as well as electronic and instrument-making industries. In the period in which the Republic of Moldova established its sovereignty (1990-1995), the country's unfavourable political and economic situation did not contribute to the preservation and development of its industrial potential, but the prerequisites for functioning market relationships under conditions of independence were realized (introduction of national currency; establishment of constitutional and legislative basis for the development of private property institutions; launch of the process of liberalization of the export-import regime; creation of opportunities for foreign investment in the economy). In the period 1996-2000, the Republic of Moldova introduced an independent industrial policy. The Concept of Industrial Policy of the Republic of Moldova for 1996-2000 was adopted, aimed at developing a diversified high-tech and competitive industrial complex that meets European standards, ensuring stable advancement of the country's economy, the welfare of the population and integration of Moldova into the global system of economic relationships.

In 2001-2005, a number of industrial strategies and programmes was developed and implemented, including the Industrial Sector Development Strategy for 2001-2005, adjusted for 2004-2008 and programmes for the development of machine building, radio electronics, light and furniture industries.

Currently, the industrial policy of the Republic of Moldova aims to create a high-tech, knowledge-based, efficient and competitive manufacturing sector. It focuses on compliance with EU industrial policy principles set out in the European Commission's basic document "Industrial Policy in an Enlarged Europe" and the Council of Europe resolution on the implementation of the programme of action to enhance the competitiveness of the European industry.

In 2006, the Industry Development Strategy for the period until 2015[55] was approved, which sets out the basic principles, tasks and priorities of industrial development, as well as mechanisms and basic tools for their implementation. The fundamental principles of the Strategy include: ensuring an open economy; creating an enabling environment; integrated approach when formulating goals and objectives as well as their implementation; implementing "real action" as opposed to a "policy of declarations"; and continuous improvement of the legislative base in the field of industry.

The Strategy's main objective is the establishment of high-tech, science-intensive, efficient and competitive manufacturing sector based on European standards. Within the framework of this strategic goal, short-term and medium-term sub-goals have been formulated, namely increasing the share of the contribution of industry in GDP; growth of exports of industrial products, primarily to EU countries; maximum supply of the internal market with domestic goods and increase in the number of employees in the manufacturing sector. These objectives shall be achieved by tackling a set of interrelated tasks, including: modernization of traditional industries; creation and development of industrial sectors (clusters) based on the application of modern high-end technology and operating as centres for industrial integration of small and medium-sized enterprises; establishment of conditions for active innovation and strengthening of the scientific potential; increasing the efficiency of using labour, material and financial resources by applying advanced production technologies.

The growing competition in the domestic and foreign markets, increasing demand for product quality, the need to minimize the harmful impacts of industrial production on the environment and the lack of own energy resources dictate the necessity to select priority industries which will ensure that Moldova can best position itself in the international system of production specialization and division of labour. The choice of sectoral priorities is based on objective economic criteria: the amount of value added received in the production process; the volume of domestic market demand in the industry's products; the availability of local resources and raw materials; the industry's export potential; the level of efficiency in the use of labour, energy and monetary resources; the industry's readiness to absorb the latest scientific achievements and best practices as quickly as possible; the availability of human resources and the degree of influence of production on the environment.

Based on the compliance with the above criteria, the following industries were selected as priority industries:

- food products and beverages (wine industry; production of fruits and vegetables; canned food and beverages, sugar, bread and bakery products; beer and soft beverages; confectionery products);
- non-metallic products (non-metallic building materials, composite materials for construction, packaging from glass and cardboard);
- light industry (production of textiles, carpets and rugs; production of ready-made garments, knitwear, leather, leather goods and footwear);
- information technology industry (production of instruments, radio electronic equipment

[55] http://www.mec.gov.md/ru/content/promyshlennost; http://base.spinform.ru/show_doc.fwx?rgn=25263

and parts for industrial and domestic purposes; production of military-technical output manufactured by order of other countries; production of technological equipment for energy saving, including renewable energy sources; and production of medical devices and apparatus);

- machinery and equipment (agricultural machinery; units, accessories, spare parts, etc.);
- chemical industry (manufacture of chemical products and preparations; production of medicines, chemical and herbal pharmaceuticals).

The indicators for determining the Strategy's successful implementation by 2015 were as follows: the annual growth rate of industrial production in the range of 8 per cent - 10 per cent; growth in the share of the manufacturing sector in GDP to 20 per cent - 22 per cent; increase in the share of high-tech industry products in the total volume of industrial production to 2 per cent; growth in the share of employed persons in the manufacturing sector to 20 per cent of the total number of workers employed.

In the first stage of the Strategy's implementation (2006-2009), it was envisaged to accelerate structural reforms and, specifically, to restructure and privatize enterprises, improve the business climate and attract the maximum possible investment in the manufacturing sector. In the second stage (2010-2015), the focus was on the full use of all instruments to increase the competitiveness of industrial products and services, completing the development of a competitive manufacturing sector that meets European standards and ensures sustainable development of the economy.

In addition, the Concept of Cluster Development of the Industrial Sector of the Republic of Moldova was developed and approved, the purpose being the identification of needs and possibilities of an association of economic agents in "clusters" for the development of efficient and competitive industries, and the Roadmap for Enhancing Competitiveness.

6.8. Tajikistan

The country's major strategic document, defining priorities and the general direction of state policy to achieve sustainable economic growth, was the National Development Strategy of the Republic of Tajikistan for the period until 2015[56], elaborated and approved in 2007. A separate component in this strategy is the development of industries contributing to Tajikistan's economic growth: the agriculture sector, the manufacturing sector, the energy industry and infrastructure.

In the early years after gaining sovereignty (1992-1997), all of Tajikistan's efforts were aimed at achieving political stability and establishing basic market mechanisms. The country pursued a purposeful policy focused on the establishment of new economic relationships and the implementation of large-scale economic reforms. The stabilization of the socio-political situation in the country created favourable conditions for the expansion of such reforms in the second stage

[56] http://www.carecprogram.org/uploads/docs/TAJ-National-Development-Strategy-ru.pdf

(1997-1999) of development. This laid the foundation for further economic growth and poverty reduction of the population.

The effective use of Tajikistan's material resources (large reserves of hydropower resources and fresh water; various minerals; raw agricultural resources for industrial processing; development of transport and communication systems; cheap labour) can serve as a solid foundation for the development of the economy as a whole and of the manufacturing sector in particular.

At the same time, Tajikistan's manufacturing sector is affected by a number of negative factors, including remoteness from developed world economic centres, lack of own available oil and gas fields, low capacity of the domestic market, insufficient experience in market management, the dissolution of previous production links and the accumulation of complex industry problems.

Industrial imbalances are exacerbated by insufficient volumes and quality of services of the general and private infrastructure, limited electricity, gas and heat supply, rising energy prices, high energy losses and insufficient level of small business development in production. Seasonal reductions in the volume of electricity and gas supplies led to seasonality for all types of production.

Another characteristic feature of the country's economy is the weak entrepreneurial and investment climate. Low levels of investment attractiveness are partly attributable to unfavourable economic conditions and geographic location, but the main reason is excessive administrative barriers, corruption, insufficient infrastructure development and weak government action in resolving key economic problems (low labour productivity, insufficient competition, low investment level and private sector development).

The national economy's structure remains inefficient, which is manifested in the reduction of the real sector share in the GDP structure, limited export opportunities, high vulnerability of the main macro indicators to external shocks, insignificant contribution of small and medium-sized enterprises to the country's economy and low level of innovative activity.

As a national long-term development goal, the national strategy aims to strengthen social and political stability, achieve economic and social well-being of the population under conditions of the primacy of the principles of the market economy, freedom, human dignity and equal opportunities for realizing one's potential.

The country's priorities in terms of industry development include:

- development of industry as an integrated system: reorientation of sectoral policies to achieve national goals and priorities; development of competition; reduction of excessive administrative barriers; diversification and modernization of production; ensuring food security; increase of export potential; orientation towards import substitution;
- increasing the efficiency of the use of available resources: amount of electricity produced, available land, minerals, primary production assets and infrastructure; increase in labour productivity; creation of favourable conditions for the development of small and medium-

sized businesses;

- promotion of the most important investment projects, mainly within the framework of private sector initiatives;
- integration into the global partnership system: measures to ensure Tajikistan's due participation in global economic relationships through intensification of the WTO accession process and preparation of domestic producers for operation in an open market.

The industrial strategy also envisages special support for selective industrial clusters, in particular:

- the creation of effective mechanisms of public-private partnership for the restoration and development of existing large-scale production or its establishment on the basis of large industrial and industrial-energy clusters of regional importance (for deep processing of cotton, other agricultural products, aluminium, precious metals and stones) with the participation of foreign capital;
- increasing the efficiency of the existing potential of the largest enterprise in the Republic – the Tajik Aluminium Plant; in order to diversify exports, measures will be envisaged to promote investment in deep processing of primary aluminium;
- promoting the development of food and textile industries as well as small-scale pharmaceutical production;
- active attraction of private investments for the development of the mining industry.

The implementation of the programme is intended to achieve the following results:

- increase in the number of additional industrial jobs due to the processing of all cotton fibre and at least half of other agricultural goods produced as a final product, processing in goods at least 10 per cent of the produced aluminium, mined precious metals and stones, as well as development of the building materials industry;
- creation on the basis of existing productions of at least 8-10 private and public-private industrial, energy and other clusters of regional importance;
- diversification of industrial production through the support and development of small and medium-sized businesses, real improvement in the investment and business climate, reduction of the regulatory role of the state and urgent reforms in promising industries such as mining and processing of its products.

6.9. Ukraine

By the time of its independence in 1991, Ukraine had a developed and sufficiently diversified its industrial potential. In the 1990s, the economy in general and industry in particular experienced a marked decline due to the transition of market conditions, structural change, loss of traditional markets and the rupture of economic ties between enterprises of the former USSR. In the early 2000s, the manufacturing sector demonstrated positive dynamics; at the same time, a

high degree of energy dependence and the absence of cardinal structural reforms made Ukraine vulnerable to external crises.

The State Programme for the Development of Industry for 2003-2011[57] was based on the Concept of State Industrial Policy[58] approved by the Decree of the President of Ukraine on 12 February 2003. The main components of the development potential of Ukrainian industry included: significant production capacities capable of implementing modern technologies and rapidly increasing production volumes, including in machine building, instrumentation, rocket and space complex; and large-scale scientific and technological system that makes it possible to meet the needs of innovative industrial development; the presence of highly skilled workers and a system for reproduction of personnel; and natural resources sufficient for self-maintenance of closed technological cycles in industry.

The Programme aimed to create a modern industrial complex integrated into world production, able to address socio-economic development and approval of Ukraine as a high-tech state under conditions of integration and globalization. The final stage of the Programme envisaged the development of technological clusters for priority development in industry, primarily in science-intensive and high-tech industries that could drastically change the economic, scientific and technological potential of industry; broad introduction of modern technologies with improved technological and economic indicators, reduction in energy and resource intensity of production and a significant increase in labour productivity. An increase in the competitive capabilities of industrial production and expanding markets was planned at the expense of priority and most effective industries for the national economy: aerospace, shipbuilding, military equipment, transport and agricultural machinery.

The main objectives of industrial development were defined: reform of the industrial management system with the transition from belated corrections of defects of the previous development phases to more advanced ones; acceleration of institutional reforms; improvement of the structure of industrial production with accelerated development of the manufacturing industry and information technologies. The priority was to increase the volume of high-tech products, particularly technologically complex consumer goods, medical equipment, computer equipment, cars, etc., which stimulate domestic demand and increase personal final consumption. The Programme also provided for improvements in the export structure with an increase in the share of deep processing products with a relatively high share of value added due to advanced rates of high-end technology production.

Based on the conjuncture of the world and domestic market, priority industries were identified, capable of raising the level of industrial and technological processing relatively quickly and enhancing the competitiveness of products. In the engineering industry, they included the production of aviation and rocket and space equipment, instruments, ships, automobiles, railway

[57] http://zakon1.rada.gov.ua/laws/show/1174-2003-%D0%BF/page2
[58] http://search.ligazakon.ua/l_doc2.nsf/link1/U102_03.html

transport, buses, machine tools, individual production of electronic equipment and communications equipment; in the metallurgical industry, it was the production of thin automotive sheets, high-strength and water and gas pipeline coated, aluminium foil and sponge titanium, steel ropes and fittings; in the chemical and petrochemical industry, it was the production of mineral fertilizers and chemical plant protection products, high-efficiency coagulants for the purification of natural and waste water, polymers and products made of them, magnetic tapes and X-ray film, household chemical goods, automobile tires and rubber products; in the woodworking industry, it was the production of plywood, cardboard, special types of paper, wood-chip and fibreboard, furniture; in the building materials industry, it was the production of high-quality glass, chalk, facing slabs, ceramic bricks, sanitary ceramics, the latest materials for construction and repair of highways; in the light industry, it was in-depth processing of flax, hides, sewing and knitting production; in the food industry, the manufacture of food products with improved nutritional and taste properties, therapeutic and prophylactic products and preparations from vegetable raw materials, food additives, heat treatment and fast cooking products.

Taking into account Ukraine's intellectual, production, scientific and technological potential, priority innovative industrial activities were defined: the creation of information and telecommunication systems, devices for complex automation, high-performance computer equipment; information and computer technologies for various purposes; digital broadband information distribution systems; light-signal and information equipment; fibre optic cables; technologies of special (military and space) use; semiconductor materials; optical and structural single crystals; nanotechnology; ceramics and superhard instrumental materials; biocompatible materials; machines and equipment for processing and recycling of waste; environmental monitoring systems; cutting-edge technologies of antibiotics and immunobiological preparations production; medical diagnostic systems; resource-saving equipment; laser technology and equipment; energy-efficient light sources and lighting systems.

One important aspect of increasing the competitiveness of industrial production was further liberalization of the economy, the development of a full-fledged competitive environment and the creation of equal conditions for entrepreneurial activity, which became especially relevant in the context of the prospects for Ukraine to become a full-fledged member of the EU and join the WTO.

To develop a full-fledged competitive environment on commodity markets, along with the European orientation, further cooperation between Ukraine and the CIS countries was envisaged; the accelerated development of the corresponding market infrastructure and activated import substitution policies.

The implementation of the State Programme for the Development of Industry for 2003-2011 provided certain positive shifts in the technological, economic and social conditions of industry; however, insufficient consideration of the requirements for competition in world markets, trends in diversifying industrial production and exports, the rate of technological renewal and the productive

use of material and human resources obstructed the processes of structural transformation of industry.

For the development of a qualitatively new industrial policy, the concept of a national target economic programme for the development of industry for the period until 2020[59] was elaborated in 2013. It identifies the main problems of Ukrainian industry development: an insufficient level of competitiveness of products due to the use of obsolete technologies and significant depreciation of fixed assets; a significant lag in Ukraine in the use of information technology; dependence of the economy on the external conditions and the decrease in the share of high-tech industries.

To address these challenges, the following aims were identified:

- definition of national priorities in industry and the harmonization of industrial policy parameters with fiscal, tax and customs policies;
- accumulation and use in the production of scientific and technological, resource and intellectual potential;
- creation of conditions for the technological modernization of the manufacturing sector with a growth in deep processing of products and the release of innovative products for final consumption;
- activation of production and financial cooperation with foreign countries on conditions acceptable to Ukraine;
- optimization of the structure of industrial production by strengthening the domestic market role and the accelerated development of industries that can provide import substitution and export growth in competitive sectors of the economy;
- definition and legislative consolidation of a clear procedure for financing clusters and priority projects;
- implementation of an energy-saving development model with an expanded use of non-traditional and renewable energy sources, diversification of energy supply and reduction of the energy intensity of production;
- development of industrial production technologies that exclude or reduce the use of environmentally hazardous substances.

The target parameters of the strategy are as follows: growth of the industrial production index by 2 per cent to 2.2 per cent annually; increase in the share of innovative products in the volume of industrial production to 50 per cent; expansion of the share of innovative industrial enterprises to 25 per cent; increase in real wages of industrial workers by 10 per cent to 15 per cent annually; decrease in the annual growth rate of imports of industrial products to 9 per cent to 9.5 per cent and an average annual growth rate of industrial exports by at least 7 per cent to 10 per cent and a reduction in energy consumption.

[59] http://www.kmu.gov.ua/control/ru/publish/article?art_id=246658699&cat_id=244843950; http://search.ligazakon.ua/l_doc2.nsf/link1/KR130603.html

Specific measures aimed at resolving the problematic issues of development of certain types of economic activity had to be determined by the Ministry of Industrial Policy before the end of September 2014; however, well-known political events prevented this.

Currently, the Strategy for the Development of the Industrial Complex of Ukraine until 2025 is being elaborated. The document will determine the current opportunities and competitive advantages of Ukraine, its key competencies and the long-term demand factors in the domestic and foreign markets. It will formulate key directions, strategic goals and specific measures for the development of industry, as well as tools for implementing the Strategy, considering current global trends and the specifics of Ukraine's development.

The promotion and support of high-tech industries will be an integral part of the long-term process of developing a competitive innovative economy. The main high-tech areas for Ukraine, according to research, are the development of information and telecommunication technologies and their application in the agro-industrial complex, energy, transport and industry; high-tech engineering; the creation of new materials; and the development of pharmaceutical and bioengineering industries.

Conclusion

In promoting inclusive and sustainable industrialization and national competitiveness, a special role is assigned to progress in technology, efficiency of industrial production, the reduction of the country's vulnerability zones and the expansion of national participation in world industrial flows. It is the technological level, the quality and intensity of industrialization and the timely industrial strategies based on innovation that serve as the main drivers of sustainable economic growth.

For the objective assessment of the country's level of industrialization, the development of technologically capacious industries with high capital productivity and the adoption of optimal solutions at all levels of management and the quality of the national statistical system is a crucial condition: accessibility, completeness, timeliness and international comparability of statistical indicators.

UNIDO is a global forum for the establishment of acceptable international standards for industrial statistics; its international recommendations are aimed at maximizing the harmonization of national statistical systems.

This report presents the results of an analysis of UNIDO's regional project aimed at improving the statistical activities in the CIS countries, reflecting industrial development, achieving comparability of national observation procedures, indicator systems and statistical data with information counterparts from other countries in accordance with international standards for the construction of industrial statistics.

The statistical practice of most countries in the Commonwealth region, along with the clearly expressed specificity of collecting and disseminating national data, has common features that make it difficult to compare inter-country industrial development indices.

In many countries, the lack of a unified methodology for industrial statistics makes it difficult to assess the quality of data according to the criteria for their accuracy, timeliness, validity and accessibility, including in accordance with international recommendations.

The modernization of statistical observations should be carried out not only in terms of reducing the burden on reporting enterprises and closer approximation of statistical, tax and customs reporting, but also for the purpose of openness and comparability at a more detailed level of information that allows to extend diagnostics of the quality and effectiveness of industrial policy, both in a single country and in strategically important countries, participants in joint trade and geopolitical alliances. This is not about the ability to use on-site information, but about mandatory detailing of available data to the level of 4-digit industrial classification codes which are sufficient to measure and compare the development of all aspects of industrial and export potential in time, to analyse structural changes, level of diversification, competitive industry advantages, the quality and effects of regulatory impacts and segment industrial strategies, including comparisons with the global level and tendencies of industrialization.

Recent changes in the national classification of activities in accordance with the International Standard Industrial Classification (ISIC Rev. 4) adopted by the majority of CIS countries in recent years have led to the need for a large-scale conversion of virtually all available statistical information resources. At the same time, the difference in the timing of such changes, the duration of the recalculation of retrospective dynamic series of statistical indicators create certain measurement difficulties in conducting timely relevant comparisons of the rate and scale of industrialization in various countries. The persisting apparent discontinuities in the level of dynamics, the absence of a restored retrospective of data at a more detailed level, primarily at constant prices, reduce the quality of results and limit the scope of statistical methods for estimating information over long time intervals.

Incompleteness of statistical data, available and comparable in dynamics, characterizing the development of the manufacturing industry, considering the technological complexity and division of its activities into low-tech, medium- and high-tech ones, is preserved. This makes it difficult to reliably assess the modernization potential, quality and intensity of technological industrialization, competitive positions in trade flows of industries with high value added.

A considerable number of forms of reporting in industry, as well as a huge range of indicators in national statistical databases in the absence of a single questionnaire format to obtain complete information from enterprises, does not resolve the problem of missing data. In particular, in many countries there is no information on permanent female and male employment, foreign workers, payroll by gender and hours worked. There are no data items from which the income and expenditure of small and microenterprises can be derived, information about changes in the reserves and profits of such enterprises, movement of fixed assets; purchased and consumed fuel, electricity, water, raw and other materials; orders and sold industrial products, whereas in European practice, such reporting is the norm and contributes to the completeness of information on the contribution of small businesses to the country's industrial potential. There is also no information on business conditions and the business environment, despite the fact that indicators on these aspects are highly recommended and proposed in a single UNIDO questionnaire for industrial enterprises. There are no aggregate statistical measures for greening the industry, the so-called "green" industry, especially for assessing the efficiency of the use of certain types of raw and other materials and energy (in value units) at the level of industrial activities.

Part of UNIDO's international recommendations on industrial statistics is the collection of data necessary to capture key performance indicators based on productivity, structural change and competitiveness. The development of all components of such indicators, ensuring the accuracy of their calculation in the CIS countries, requires a unified form of reporting statistical units, the integration of questionnaires covering various groups of similar indicators and controlling the comparability of data to obtain qualitative aggregated information. The use of international methodologies in the collection and processing of statistical data will not only improve their reliability, but also the possibility of using them through rapid and regular monitoring in the development of industrial strategies necessary for optimizing the allocation of resources to increase aggregate factor

productivity and competitiveness.

Despite the inadequate availability of statistical information at a detailed level, the dynamics of statistical indicators accumulated in international information databases allows conducting cross-sectoral analyses of the relative effectiveness of industrial policies and the conditions for re-industrialization in such geographical integration associations as the CIS for the period 2005-2014.

Trends in the dynamics of statistical indicators in the CIS region that were observed in the period analysed were largely indicative of the prevalence of short-term cyclical factors in each country, essentially a high intercountry convergence of GDP growth cycles, and were not systemic due to any obvious structural changes in the region in the demand and supply ratio.

Many countries in the region lacked not only domestic demand sufficient to ensure the sustainable development of dynamic types of products with a built-in growth factor, but also those types of production in the manufacturing sector that require highly skilled staff and significant labour productivity, and which are in demand on foreign markets and capable of providing steadily rising national incomes and aggregate productivity. At the same time, the sectoral composition of the manufacturing sector in the national economies of the region exerted enormous pressure on competitive development and the possibilities for structural diversification due to differences in their technological level and a clear shift towards low-tech industries. Simultaneously, dependence on imports of such resources as capital and intermediate goods has increased substantially in a number of countries.

The major national trends in the manufacturing sector in this period were uneven, multidirectional and characterized by pronounced volatility. Geopolitical and industrial leaders and their interaction with other states governed the overall development of all economic processes.

Among countries with an above average national income, large-scale industrialization was observed in Russia, Kazakhstan (in terms of volume) and Azerbaijan (in terms of growth intensity) over the period analysed. The growth of the raw materials processing industries in a number of small countries in the regions (primarily Armenia, Kyrgyzstan) impressed with its intensity, but did not lead to a significant increase in their participation in internationally competitive processes. Diversity of the existing trends in the region does not allow for a clear distinction between countries in terms of their specialization in homogeneous structures. The region investigation was so caught up in the processes of early de-industrialization between 2005 and 2014 that nearly all countries with an average and low national income per capita were accompanied by stable dependence of national growth on the expansion of value added of services and trade under conditions of unstable incomes of economic entities, including households.

A significant decline in the contribution of industrialization to GDP during periods of recession, unstable growth, lack of necessary structural transformations and continued increase in the value added of services and trade were the dominant trends in the Commonwealth region in the period analysed. Low compound average annual GDP growth rates prevailed in the Commonwealth and the

significant volatility of growth over short intervals indicated the absence of signs of steady alignment in the development of individual countries in the region.

In a number of countries in the Commonwealth region, participation of countries in the production of science and technology products was limited to labour-intensive assembly processes, when the contribution to the creation of value added was determined by the low cost of inefficient and unskilled labour. Such processes did not contribute significant value added to the countries. In addition, the region was dominated by exports of resource- and labour-intensive products, the trade dynamics of which are insignificant on foreign markets and largely susceptible to external shocks. Dependence on imports of resources such as capital and intermediate goods increase substantially.

Based on the existing distributions of scale and growth rates of the technological content of value added in the region's countries, structural transformations towards urgent intensive modernization were most relevant for Russia, Belarus, Kazakhstan, Ukraine and Azerbaijan in 2014. In countries with lower manufacturing capacity and a dominant agriculture, services and trade sector, sluggish classical industrialization most clearly manifested itself in the form of premature de-industrialization, with the share of manufacturing in GDP increasing through the shift of surplus labour to the raw materials processing industry.

If we compare changes in the modernization and industrial potential as a whole over time, we observe an unambiguous relationship between them in different economies. In countries with a steady growth or a significant contribution of medium- and high-tech industries in manufacturing GVA, the value added of manufacturing industries per capita as a whole also steadily increased. In these countries, the level of industrial development is largely attributable to the potential for modernization. For example, countries of the traditional industrial centre in the Commonwealth, namely Russia, Belarus and Kazakhstan, had a significant share in the GVA of medium- and high-tech activities, while countries whose manufacturing sectors were catching-up registered a predominant expansion of more labour-intensive and low-tech industries.

At the same time, none of the countries in the Commonwealth region managed to simultaneously expand the contribution of their manufacturing sector to national GDP and substantially improve the technological content of its value added. The ratio of countries with the fastest and slowest growth rates of medium- and high-tech industries (4:5) did not allow defining the CIS as a region with a fast growth of the technological level. However, for those countries in the region in which as a result of monitoring, signs of more confident industrialization and modernization, effective industrial-export and integration policies were noted, the opportunities for continued industrial growth and technological progress are broader (namely Kazakhstan, Russia, Belarus, Ukraine and Azerbaijan).

Thus, the need to diversify the national economies and export bases, to pursue an economic policy balancing support for demand and structural reforms aimed at increasing productivity, removing barriers to the development of manufacturing industries and exporting their products to foreign markets increased in the CIS region by the end of the study period. The situation in the

region was in many respects associated with an increase in obstacles to deepening the integration of industry, intensifying the financial and budgetary vulnerabilities of various countries to different degrees as well as the presence of premature de-industrialization. The CIS countries were forced to manoeuvre quickly under conditions of high market volatility to strengthen national resistance to external shocks and the confidence of economic entities.

In this regard, Russia needs in-depth structural reforms of its economy that will ensure both sustained intensive growth of aggregate value added per capita, exit from a closed cycle of recurring crises largely conditioned by the country's dependence on commodity prices, and the reduction of negative secondary effects on the economic space of the CIS. A decrease in recent discontinuities in the industrial development of Belarus with a number of leading countries in the region will be facilitated by an improvement in the quality and structure of manufacturing products. It is important for the country to increase GVA per capita of the raw materials processing industry, maintain a reasonable balance between the industrial and the export potential of the country and use the high rates of increasing export potential in industrial activities to expand national wealth. The trend of accelerated growth of all generalized measures of industrial development in Kazakhstan was dominant in the CIS region during the period analysed. Strengthening the existing positive industrial developments should be accompanied by relevant shifts in the production and export structure of the manufacturing sector towards the expansion of industrial activities with higher value added. To overcome the main barriers in the process of expanding manufacturing industries, other countries in the region, in particular, Armenia, need to improve the structural aspect of exports and increase the competitiveness of products in the regional market. At the same time, the dynamics of generalized indicators of industrial growth in Kyrgyzstan, considering modern features of economic development, indicates stabilization of positive industrial trends; however, the volume of GDP per capita of the manufacturing sector does not allow it to become a driver of the country's GDP expansion and increase its regional participation. The national competencies of Moldova within the framework of industrial policy priorities should be to strengthen the production potential and expand the value added of manufacturing industries in the country's gross product and in foreign markets.

To achieve sustainable growth, the main developments of industrial policy in the CIS region should vary depending on the level and speed of industrialization in the countries, the opportunities for preferential development of certain technologies and innovations, but should also take consideration of the following needs: protection of property rights; setting tariffs, tax incentives and subsidies; distribution of public and private financial resources; granting loans on a competitive basis; development of enterprises with state participation and property in the sphere of natural monopolies, national security and social orientation; and the strengthening of strategically important industries. The production and export policies of all countries in the region require a reorientation of the manufacturing and export of labour-intensive products whose development limits are bound by growing competitive pressure to output with higher value added, depending on the production capabilities of each country to replace imported components with national products and expanding the use of domestic sources of growth. Regional trade agreements and reciprocal

mechanisms for access to technologies, sales markets, modernization of production, establishment of an investment regime, timely expansion of a range of manufacturing industries involved in foreign trade flows should facilitate the revival of industrial and trade processes in the countries of the Commonwealth region.

In the medium term, low entry barriers, maintaining the budgetary potential, reducing budget gaps, strengthening financial sector supervision, improving governance, property rights and financial intermediation are necessary for the region's countries with low-income and low-growth industries. The protracted nature of shocks in recent years has uncovered these countries' need for effective diversification of national economies to reduce their dependence on remittances and exports of exchange commodities. The preservation of a conservative monetary policy will further reduce inflation.

In middle-income countries, the benchmarks for increasing the efficiency and productivity of production and structural modernization became strategically important. State support for stimulating exports and investment, along with the restoration of domestic demand, will help accelerate economic growth while lowering the nominal interest rates in the credit and deposit market will stimulate economic activity.

The most crucial objectives for the further development of countries with above average incomes in the region are to improve the quality component of technological innovation and to create products and expand industrial activities related to green technologies. Reforms aimed at transforming the economy, along with the activation of investment and innovation policies, should form the basis of national development.

Only a successful implementation of all measures in the region's countries will foster achievement of a comprehensive and sustainable development aimed at raising living standards and reducing poverty.

References

Agency for Statistics under the President of the Republic of Tajikistan. Available at http://www.stat.tj/ru (In Russian). Assessed May 2016.

Aliev T. (2013) *Kazakhstan: "resource curse" or "Dutch disease"?* Issues of Economics, No.6 (In Russian).

Analytical Centre under the Government of the Russian Federation (2015) *Russia's entry into the socio-economic crisis: trends of 2015 and comparative analysis*. Analytical report. Available at: http://ac.gov.ru/files/publication/a/5491.pdf (In Russian). Assessed May 2016.

Analytical Centre under the Government of the Russian Federation (2014) *Energy saving in the mirror of industrial policy*. Analytical collection. Ed. E. Gasho. M., (In Russian).

Analytical Centre under the Government of the Russian Federation (2012) *Features of implementing resource-saving policies in the regions*. Analytical collection. M. (In Russian).

Andrianov K.N. (2013a) *Programs and directions of socio-economic and industrial development of the Russian Federation and its partners in the CU and SES*. Industrial Policy in the Russian Federation. No 10-12. Pp.26-30, in press (In Russian).

Andrianov K.N. (2013b) *Evolution and types of state industrial policy*. Industrial Policy in the Russian Federation. No 7-9. Pp.48-54 (In Russian).

Andrianov K.N. (2014) *Levels and stages of implementing state industrial policy*. Industrial Policy in the Russian Federation. No. 1-3. Pp.17-21, in press (In Russian).

Apokin A. (2013) *The role of technological factor in the long-term forecasts of the world economy*. Issues of Economics, No.1 (In Russian).

Artyukhov V.V., Martynov A.S. (2010) *Methodology for assessing environmental and energy efficiency of the Russian economy*. M., ZAO Interfax (In Russian).

Artyukhov V.V., Zabelin S.I., Martynov A.S., Mirutenko V.V., Ryzhov I.N. (2013) *The fundamental efficiency of economy and the loss of natural stability in the world*. Interfax-ERA (In Russian). Available at: http://minpromtorg.gov.ru/common/upload/files/docs/text0000000003.pdf (In Russian). Assessed February 2016.

Bainev V. (2014) *Approaches to harmonization of industrial policy in the countries of the Customs Union and the CES: neoindustrialization and vertical integration* / V. Baynev, V. Vinnik // The Economist. No 2. Pp.56-64 (In Russian).

Balandin S.A. (2014) *Conceptual framework for the development and implementation of industrial policy in Russia*. Economics and Entrepreneurship. No 1-3. Pp.95-99 (In Russian).

Baranov E.F., Bessonov V.A., Roskin A.A., Beznosik V.I. (2013) *Indices of intensity of industrial production: January 2000 – October 2013*. M.: HSE (In Russian).

Baranov E.F., Kim I.A., Piontkovsky D.I., Staritsyna E.A. (2014*) Questions of constructing "input-output" tables of Russia in the international classifiers*. Economic Journal of the Higher School of Economics. Vol. 18. No. 1. Pp.7-42 (In Russian).

Bashmakov I., Myshak A. (2014) *Costs and advantages in implementing low-carbon development strategies in Russia: prospects until 2050*. Issues of Economics, No.8 (In Russian).

Belokrylova O.S., Bochkov A.A. (2008) *Prospects for post-crisis modernization of the Russian economy*. Economic bulletin of the Russian State University. Volume 6. No 4 (In Russian).

Berezinskaya O., Vedev A. (2015) *Production dependence of Russian industry on imports and the mechanism of strategic import substitution*. Issues of Economics, No.1 (In Russian).

Blyakhman L.S. (2013) *Industrial policy, the basis for transition to a new model of economic growth*. Problems of Modern Economy. No 1. Pp.7-17 (In Russian).

Bodrova E.V. (2013) *Is Russia in need of a new state industrial policy?* Power. No 10. Pp.38-41 (In Russian).

Bodrova E.V. (2014) *Evolution of state industrial policy in the USSR and the Russian Federation*: monograph / E.V. Bodrova, M.N. Gusarova, V.V. Kalinov. – M. (In Russian).

Bodrunov S.D. (2013) *Imperatives, opportunities, and problems of re-industrialization.* Economic Revival of Russia. No.1. Pp.4-12 (In Russian).

Borisov V.N., Pochukaeva O.V. (2013) *Innovative development of machine building*. Problems of Forecasting. No.1 (In Russian).

Bulavko O.A. (2013) *Industrial and investment policy in the post-crisis modernization of Russian industry*: Abs. Dis. Dr. Econ. Sci./O.A. Bulavko. – SPb (In Russian).

Buletova N.E. (2013) *Formation of environmental ethics as a condition for building an innovative "green" economy* // Safety of Vital Activity. No.3. Pp.45-52 (In Russian).

Buletova N.E. (2013) *Perspectives of Russian legislation in the sphere of state industrial policy*. Law and Economics. No.11. Pp.4-10 (In Russian).

Campbell A., Sommers Luchs K. (2010) *Strategic Synergies*. -2nd ed. – SPb.: Piter (In Russian).

Centre for Market Research ISEHE NRU HSE (2009-2016a) *Business climate in industry*. Monthly report. Available at: http://www.hse.ru/monitoring/buscl/bl1 (In Russian). Assessed: December 2016.

Centre for Market Research ISEHE NRU HSE (2009-2016b) *Index of Economic Mood (IEM HSE)*. Quarterly report. Available at: http://www.hse.ru/monitoring/buscl/bl5 (In Russian). Assessed December 2016.

Central Bank of the Russian Federation (2014a) *Financial Stability Review*. June 2014. Available at: http://www.cbr.ru/publ/Stability/fin-stab-2013-14_4-1r.pdf (In Russian). Assessed May 2016.

Central Bank of the Russian Federation (2014b) *Financial Stability Review*. Available at: http://www.cbr.ru/publ/Stability/fin-stab-2014_2-3r.pdf (In Russian). Assessed May 2016.

Central Bank of the Russian Federation (2015a) *Principal areas of the unified state monetary policy for 2016 and the period of 2017 and 2018*. Available at: http://www.cbr.ru/publ/ondkp/on_2016%282017-2018%29.pdf (In Russian). Assessed May 2016.

Central Bank of the Russian Federation (2015b) *Financial Stability Review* No.2. Available at: http://www.cbr.ru/publ/Stability/fin-stab-2015_2-3r.pdf (In Russian). Assessed May 2016.

CIS Statistical Committee (2014b) *Review of the practice of the national statistical services of the CIS member states on the formation of positions of the nomenclature of industrial products, within the framework of which interstate exchange of information is carried out*. Statistical Bulletin No.7 (In Russian).

CIS Statistical Committee (2014a) *Methodological bases of statistical estimation of innovative processes in the CIS countries*. Statistical Bulletin No.5 (In Russian).

CIS Statistical Committee (2015d*) Industry in the countries of the Commonwealth of Independent States 2005-2014.* Available at: http://www.cisstat.com/ (In Russian). Assessed May 2016.

CIS Statistical Committee (2016) *Database.* Available at: http://www.cisstat.com/0base/index.htm (In Russian). Assessed: June 2016.

Committee on Statistics of the Ministry of Economy of the Republic of Kazakhstan (2014) *Industry of Kazakhstan and its regions, 2009-2013*. Statistical collection. Available at: http://www.stat.gov.kz/faces/wcnav_externalId/publicationsCompilations?_adf.ctrl-state=13nqgycysu_85&_afrLoop=17568279271041#%40%3F_afrLoop%3D17568279271041%26_adf.ctrl-state%3Dvf7qxei8j_127 (In Russian). Assessed February 2016.

Committee on Statistics of the Ministry of Economy of the Republic of Kazakhstan (2015) *Industry. Official statistical information*. Available at: http://www.stat.gov.kz/faces/wcnav_externalId/homeNumbersIndustry?_adf.ctrl-state=13nqgycysu_60&_afrLoop=17234003284287#%40%3F_afrLoop%3D17234003284287%26_adf.ctrl-state%3Dvf7qxei8j_21 (In Russian). Assessed February 2016.

Committee on Statistics of the Ministry of Economy of the Republic of Kazakhstan (2014) *Science and innovation activity of Kazakhstan*. Statistical collection. Available at: http://www.stat.gov.kz/faces/wcnav_externalId/publicationsCompilations?_adf.ctrl-state=13nqgycysu_85&_afrLoop=17568279271041#%40%3F_afrLoop%3D17568279271041%26_adf.ctrl-state%3Dvf7qxei8j_127 (In Russian). Assessed February 2016.

Delyagin M.G. (2013) *The strategy of a "big breakthrough"* / M.G. Delyagin, S.Yu. Glazyev, A.I. Fursov. – M. (In Russian).

Domakur O.V. (2012) *Priorities of industrial policy of the Republic of Belarus in the light of the laws of structural transformation and formation of a post-industrial society*. Bulletin of Vitebsk State Technological University. Available at: http://vestnik.vstu.by/files/6213/6326/7921/UDK_338.45.01_330.341.42_330.342.1.pdf (In Russian). Assessed: August 2016

Drobyshevsky S., Kazakova M. (2015) *Decomposition of GDP growth rates in Russia in 1999-2015*. Economic Development of Russia. No.1. Pp.45-46 (In Russian).

Dubinina N.A., Lantsman E.N. (2013) *Analysis of approaches to the formation of industrial policy*. Actual Problems of Economics and Law. No.4. Pp.144-151 (In Russian).

Faltsman V.K. (2014) *Priorities of structural policy: import dependence, import substitution, export opportunities for innovative industrial products*. ECO. No.5. Pp.162-180 (In Russian).

Fedorov K.S. (2014) *CIS countries: the main macroeconomic indicators and forecasts* // Eurasian Economic Integration. No.4 (25) (In Russian).

Fisher P. (2000) *Strategy of attracting investments in the industry of Russia*. Problems of Theory and Practice of Management. No.3 (In Russian).

Fisher P. (2004) *Attracting foreign direct investment to Russia: 5 steps to success*. Practical guidance. Flint Press (In Russian).

Forecast of scientific and technological development of Russia: 2030 (2014). Gen. Ed.: I. Agamirzyan, M.Ya. Blinkin, L.M. Gokhberg, N. Kasimov, M. Kirpichnikov, L. Ogorodova, S. Filippov, A.B. Yaroslavtsev. M.: Ministry of Education and Science of the Russian Federation (In Russian).

Forecast of scientific and technological development of Russia: 2030. Biotechnology (2014). Gen. Ed.: L.M. Gokhberg, M. Kirpichnikov. M.: NRU HSE (In Russian).

Forecast of scientific and technological development of Russia: 2030. Information and telecommunication technologies (2014). Gen. Ed.: L.M. Gokhberg, I. Anamirzyan. M.: NRU HSE (In Russian).

Forecast of scientific and technological development of Russia: 2030. New materials and nanotechnologies (2014). Gen. Ed.: L.M. Gokhberg, A.B. Yaroslavtsev. M.: National Research University "Higher School of Economics" (In Russian).

Forecast of scientific and technological development of Russia: 2030. Rational nature management (2014). Gen. Ed.: L.M. Gokhberg, N. Kasimov. M.: NRU HSE (In Russian).

Forecast of scientific and technological development of Russia: 2030. Transport and space systems (2014). Gen. Ed.: M.Ya. Blinkin, L.M. Gokhberg. M.: NRU HSE (In Russian).

Forecast of scientific and technological development of Russia: 2030. Energy efficiency and energy saving (2014). Gen. Ed.: L.M. Gokhberg, S.P. Filippov. M.: Higher School of Economics Press (In Russian).

Frenkel A.A., Volkova N.N., Sergienko Ya.V. (2014) *Quantitative assessment of the impact of foreign economic activity on the dynamics of industrial production*. Issues of Statistics, No.11, Pp.60-67 (In Russian).

Gaidar Institute (2015) *Operational monitoring of the economic situation in Russia: trends and challenges of socio-economic development*. No. 10. Available at: http://www.iep.ru/files/text/crisis_monitoring/2015-10-june.pdf (In Russian). Assessed May 2016.

Gerasin A.N., Popov O.A., Mezyakov Yu.A. (2013) *Nature of the competitive environment of Russian industry in the implementation of radical market reforms*. Business in Law. No.3. Pp.144-146 (In Russian).

Gitelman L., Ratnikov B. (2013) *Lessons of reform in the electric power industry: illusions, miscalculations, prospects*. Issues of Economics, No.12 (In Russian).

Glazyev S. (2009) *Prospects for the socio-economic development of Russia*. The Economist. No.1 (In Russian).

Glazyev S.Yu. (2013) *Modernization without myths*. The Russian Federation Today. No.8. Pp.28-30 (In Russian).

Gokhberg L.M., Kuznetsova T.E., Agamirzyan I.R., Belousov D.R., Kitova G.A., Kuznetsov E.B., Rudnik P.B., Rud V.A., Sagieva G.S., Simachev Yu.V. (2013) *From stimulating innovations to growth based on them. In: Strategy 2020: A new growth model is a new social policy. Final report on the results of expert work on topical problems of Russia's social and economic strategy for the period until 2020* / Sci. Ed.: V.A. Mau, I.I. Kuzminov. Book 1. M.: Delo, Ch. 3. Pp.92-126 (In Russian).

Goryacheva I.P., Vasilieva V.N. (2014) *Directions for the development of innovation statistics (considering international practice)*. Statistical Issues, No.9, Pp.3-11 (In Russian).

Govorun A.V., Golikova V.V., Gonchar K.R. et al. (2014) *Essays on the modernization of Russian industry: the behaviour of companies*; Ed. B.V. Kuznetsova; HSE – Nat. Res. Univ. – M. (In Russian).

Idrisov G. (2016) *Industrial policy of Russia in modern conditions* // M., Gaidar Institute Press (In Russian).

Innovative development of industry and its legislative support: materials of Parliament Hearings (2013). Com. of the State Duma on Econ. Policy, Innov. Development and Entrepreneurship (In Russian).

Inozemtsev V. (2014) *Obsessed with "superpower"*. Moscow Komsomolets. Available at: http://www.mk.ru/politics/2014/07/22/oderzhimye-sverkhderzhavnostyu.html (In Russian). Assessed February 2016.

Inshakova A.O. (2013*) Industrial policy of the RF: legal principles and support mechanisms for business entities*. Bulletin of the Russian University of Peoples' Friendship. Series: Juridical Sciences. No.3. Pp.61-65 (In Russian).

Institute "Development Centre" of the Higher School of Economics (2015) *Indices of industrial production intensity*. Monthly report. Available at: http://dcenter.hse.ru/mon/67374232.html (In Russian). Assessed March 2016.

Institute "Development Centre" of the Higher School of Economics (2015) *Indices of intensity of goods and services output by basic types of economic activity*. Monthly report. Available at: http://dcenter.hse.ru/mon/71909939.html (In Russian). Assessed March 2016.

International Monetary Fund (2015) *Prospects for the development of the world economy: uneven growth – short-term and long-term factors*. Washington (April), p. 103 (In Russian).

Ivanter V., Uzyakov M., Shirov A. (2013) *Requirements for industrial policy in the investment scenario*. The Economist. No 5. Pp.3-17 (In Russian).

Jenster Per, Hussey David (2010) *Company analysis: determining strategic capabilities*. M: Williams (In Russian).

Kislitsyn D. (2013) *The policy of state support of enterprises during the crisis of 2008-2009: criteria for referring to "system-forming"*. Issues of Economics, No.6 (In Russian).

Kitrar L.A., Lipkind T.M., Ostapkovich G.V. (2014) *Decomposition and joint analysis of growth cycles in the dynamics of the indicator of economic sentiment and the index of the physical volume of gross domestic product* // Issues of Statistics. 2014. No.9. Pp.41-46 (In Russian).

Kitrar L.A., Ostapkovich G.V. (2013a) *Problems of measuring business cycles: development of conceptual designs and basic parameters of observation*. Issues of Statistics. No.4, Pp.22-27 (In Russian).

Kitrar L.A., Ostapkovich G.V. (2013b) *Features and directions of using the indicator approach in cyclical monitoring of economic dynamics*. Issues of Statistics. No.8, Pp.42-50 (In Russian).

Kitrar L.A., Ostapkovich G.V. (2013c) *An integrated approach to the construction of composite indicators with a built-in algorithm for estimating cyclicality in the dynamics of the results of market monitoring*. Issues of Statistics. No.12, Pp.23-34 (In Russian).

Kleiner G.B. (2013) *The concept of the federal law "On Industrial Policy of the Russian Federation"*. Economic Science of Modern Russia. No.3. Pp.70-75 (In Russian).

Kondratiev V.B. (2015) *The crisis of 2014 in Russia as a result of the vices of economic policy*. Available at: http://www.perspektivy.info/rus/ekob/krizis_2014_goda_v_rossii_kak_itog_porokov_ekonomicheskoj_politiki_2015-02-04.htm (In Russian). Assessed March 2016.

Kravchenko N. (2015) *History of import substitution*. Available at: http://ecotrends.ru/images/Journals/2010-2019/2015/N09/3_Articles/Kravchenko.pdf (In Russian). Assessed June 2016.

Kuchukov R. (2013) *Neoindustrial modernization and the role of the public sector*. The Economist. No.6. Pp.16-25 (In Russian).

Kuznetsov B., Kuzyk M., Simachev U. (2014) *Industrial policy in Russia in 2000-2013: institutional features and main lessons*. Div. 6.2 in: The Russian economy in 2013. Trends and prospects. (Issue 35). – M.: Gaidar Institute, 2014, pp. 417-453 (In Russian).

Kuznetsova T., Rud V. (2013) *Competition, innovation and development strategies of Russian enterprises (results of empirical research)*. Issues of Economics, No.12 (In Russian).

Kuzyk B.N. (2004) *Strategy of innovative development of the Russian Federation for the period until 2030*. – M.: INES (In Russian).

Lebedev V. (2013) *Where to start a new industrialization*. Expert. No.12 (In Russian).

LED industry: innovative technologies, products, markets. Roadmap (2014). Gen. Ed.: L.M. Gokhberg, O.I. Karasev, A.B. Malyshev. M.: OJSC "ROSNANO", NRU HSE (In Russian).

Logachev V., Kochergin D. (2013) *The target content of the forthcoming industrialization: "post" or "neo"*? The Economist. No.11. Pp.11-19 (In Russian).

Lvov D.S. (2007) *The new industrial policy of Russia.* Econ. Science of Modern Russia. No.3 (In Russian).

Lyakin A.N. (2013) *Structural changes in Russian economy and industrial policy*. Bulletin of St. Petersburg University. Series 5, Economics. No 1. Pp.39-52 (In Russian).

Malkov S., Sadovnichiy V., Akaev A., Korotaev A. (2008) *Comprehensive modelling and forecasting of the BRICS countries development in the context of world dynamics*. "Nauka" Publishing house (In Russian).

Manturov D.V. (2014) *Dynamics of industrial production and improvement of industrial policy in the Russian Federation*: Speech by the Minister of Industry and Trade of the Russian Federation at a meeting of the State Duma on January 22. A shorthand record of the meetings. Bulletin / State Duma Feder. Assembly Rus. Federation. Bul. No. 143 (1381). Pp.35-39 (In Russian).

Maslennikova N. (2011) *Planning of innovation activity based on a growth strategy that ensures success: a strategy of repression through subversive innovation*. Management Today. No.1 (In Russian).

Matvienko V.I. (2013) *On the new industrialization of Russia*. The Economist. No.7. Pp.3-5 (In Russian).

Meadows D., Randers J., Meadows D. (2008) *Limits of growth: 30 years later*. Moscow. Akademkniga (In Russian).

Methodological recommendations on the calculation of the index of industrial production (based on the materials of the CIS Statistical Committee) (2014). Issues of Statistics, No.5, Pp.5-30 (In Russian).

Milyukova Ya., Koptyubenko D. (2014) *Ideal storm: why the Russian economy was in crisis*. Available at: http://top.rbc.ru/economics/26/12/2014/549a99ac9a794710fb26882a?utm_source=gismeteo&utm_medium=news&utm_campaign=gism_top3 (In Russian). Assessed February 2016.

Ministry of Economic Development of the Russian Federation (2010a) *Technological platforms as a tool for promoting the innovative development of the Russian economy*. Available at: http://economy.gov.ru/minec/activity/sections/innovations/formation/doc20101004_02 (In Russian). Assessed March 2016.

Ministry of Economic Development of the Russian Federation (2010b) *Draft strategy for innovative development of the Russian Federation for the period until 2020*. Available at: http://economy.gov.ru/minec/activity/sections/innovations/doc20101231_016 (In Russian). Assessed May 2016.

Ministry of Economic Development of the Russian Federation (2012) *Action Plan ("road map") "Development of competition and improvement of antimonopoly policy"*. Available at: http://economy.gov.ru/minec/activity/sections/competition/programconcur/doc20121228_011 (In Russian). Assessed March 2016.

Ministry of Economic Development of the Russian Federation (2013a) *Economic Strategy of the Russian Federation until 2030*. Available at: http://economy.gov.ru/minec/activity/sections/macro/prognoz/doc20130325_06 (In Russian). Assessed June 2016.

Ministry of Economic Development of the Russian Federation (2013b) *Information on the status of implementation of the Action Plan ("road map") items "Improving the availability of energy infrastructure"* approved by the Order of the Government of the Russian Federation of 30.06.2012 No.1144-r Available at: http://economy.gov.ru/minec/about/structure/depgostarif/doc20130319_002 (In Russian). Assessed March 2016.

Ministry of Economic Development of the Russian Federation (2014a) *On the results of the social and economic development of the Russian Federation in 2014*. Available at: http://economy.gov.ru/wps/wcm/connect/97fcd9bd-03b8-4c66-a02f-117d69e48429/%D0%98%D1%82%D0%BE%D0%B3%D0%B8_2014.pdf?MOD=AJPERES&CACHEID=97fcd9bd-03b8-4c66-a02f-117d69e48429 (In Russian). Assessed March 2016.

Ministry of Economic Development of the Russian Federation (2014b) *Forecast of the socio-economic development of the Russian Federation for 2015 and for the planning period 2016-2017*. Available at: http://economy.gov.ru/minec/activity/sections/macro/prognoz/201409261 (In Russian). Assessed April 2016.

Ministry of Economic Development of the Russian Federation (2015) *Forecast of the socio-economic development of the Russian Federation for 2015*. Available at: http://economy.gov.ru/minec/activity/sections/macro/prognoz/20150216 (In Russian). Assessed March 2016.

Ministry of Economic Development of the Russian Federation (2016) *Information server on the materials of federal targeted programs*. Available at: http://www.programs-gov.ru (In Russian). Assessed: April 2016.

Ministry of Industry and Trade of the Russian Federation (2014a) *Methodological materials on the implementation of mechanisms for supporting activities in the field of engineering and industrial design*. Available at: http://minpromtorg.gov.ru/common/upload/files/docs/MetodMaterial-press-new.pdf (In Russian). Assessed February 2016.

Ministry of Industry and Trade of the Russian Federation (2014b) *Federal Law of the Russian Federation of December 31, 2014 No. 488-FZ "On Industrial Policy in the Russian Federation".* Available at: http://www.kremlin.ru/acts/bank/39299 (In Russian). Assessed March 2016.

Mintzberg H., Ahlstrand B., Lampel J. (2009) *Schools of strategy*. Ed. N. N. Kapturevsky. SPb: Piter (In Russian).

Mironov V. (2014) *You do not need to get off the oil needle, or What is harmful in diversification of the economy*. Available at: http://www.vedomosti.ru/opinion/articles/2014/12/19/vrednaya-diversifikaciya (In Russian). Assessed: May 2016.

Mirzabekova M.Yu. (2014) *Features of modern industrial policy*. Economics and Entrepreneurship. No.4-2. Pp.181-184 (In Russian).

Musaev R., Uklein I. (2013) *On the monetary and credit preconditions for a new industrialization*. The Economist. No.5. – Pp.27-34 (In Russian).

National Bureau of Statistics of the Republic of Moldova. Available at: http://www.statistica.md/category.php?l=ru&idc=127& (In Russian). Assessed: November 2014.

National Statistical Committee of the Kyrgyz Republic (2014) *Industry of the Kyrgyz Republic in 2009-2013*. Available at: http://stat.kg/images/stories/docs/tematika/prom/Prom%202009-2013.pdf (In Russian). Assessed: December 2014.

National Statistical Committee of the Republic of Belarus (2014) *Science and innovation activity in the Republic of Belarus*. Statistical collection. Available at: http://www.belstat.gov.by/bgd/public_compilation/index_439/ (In Russian). Assessed: December 2014.

National Statistical Committee of the Republic of Belarus (2014a) *Industry of the Republic of Belarus*. Statistical collection. Available at: http://www.belstat.gov.by/bgd/public_compilation/index_447/ (In Russian). Assessed: December 2014.

National Statistical Committee of the Republic of Belarus (2014b) *Statistical yearbook of the Republic of Belarus*. Available at: http://www.belstat.gov.by/bgd/public_compilation/index_528/ (In Russian). Assessed: December 2014.

National Statistical Committee of the Republic of Belarus (2014c) *Belarus and Russia. Statistical collection*. Available at: http://www.belstat.gov.by/bgd/public_compilation/index_574/ (In Russian). Assessed: December 2014.

National Statistical Committee of the Republic of Belarus (2015) *Industry of the Republic of Belarus*. Statistical data. Available at: http://www.belstat.gov.by/ofitsialnaya-statistika/otrasli-statistiki/promyshlennost/ (In Russian). Assessed: December 2014.

National Statistical Service of the Republic of Armenia. Available at: http://www.armstat.am/ru/?nid=82 (In Russian). Assessed: November 2014.

Nekipelov A.D., Ivanter V.V., Glazyev S.Yu. (2013) *Priorities for long-term socio-economic development*: [materials from the report "Russia on the path to a modern dynamic and efficient economy"]. Economic and Social Changes: Facts, Trends, Forecast. No.6. Pp.18-31 (In Russian).

Nevskaya N.A. (2014) *Reindustrialization as a benchmark for indicative planning*. Economics and Entrepreneurship. No.4-1. Pp.104-107 (In Russian).

Novitsky N.A. (2013) *Economic prerequisites for innovative re-industrialization in Russia*. Bulletin of the Institute of Economics of the Russian Academy of Sciences. No.3. Pp.103-109 (In Russian).

OECD (2014) *Economic reviews, Russian Federation, January 2014*. Available at: http://innclub.info/wp-content/uploads/2014/01/00_Russia.pdf (In Russian). Assessed June 2016.

Orkusha M.A. (2014*) Criteria for assessing the effectiveness of industrial policy*. Bulletin of Economic Integration. No.1. Pp.59-65 (In Russian).

Ostapkovich G.V. (2016) *Russia's GDP after the summer growth again declines*. Available at: http://www.bbc.com/russian/news-37825402 (In Russian). Assessed December 2016.

Ostapkovich G.V. (2016) *The Russians entered a regime of austerity*. Available at: http://www.dw.com/ru/%D1%8D%D0%BA%D0%BE%D0%BD%D0%BE%D0%BC%D0%B8%D1%81%D1%82-%D0%B2%D1%88%D1%8D (In Russian). Assessed December 2016.

Panteleev A.A., Chalaya Yu.Yu., Baibolotova R.Sh. (2015) *Assessment of the integration potential*

of the economies of the member states of the Eurasian Economic Union: conceptual and methodological approaches // Eurasian Economic Integration, No.27. Available at: http://www.eabr.org/general/upload/CII%20-%20izdania/2015/EII-2-2015/eei_2_2015_panteleev_etc.pdf (In Russian). Assessed May 2016.

Pilot innovative territorial clusters in the Russian Federation (2013). Gen. Ed.: L.M. Gokhberg, A.E. Shadrin. M.: Higher School of Economics Press (In Russian).

Polterovich V.M. (2009) *Hypothesis on an innovation pause and modernization strategy*. Issues of Economics. No.6. Pp.4-22 (In Russian).

Radaev V. (2014) *Is it possible to save the Russian light industry*. Issues of Economics, No.4 (In Russian).

Rating of innovative development of the subjects of the Russian Federation (2014). Sci. Ed.: L.M. Gokhberg. Iss. 2. M.: NRU HSE (In Russian).

Reinert E. (2011) *How rich countries became rich, and why poor countries remain poor*. State University – Higher School of Economics Press (In Russian). ISBN 978-5-7598-0816-9 (Rus.)

Rosstat (2014) *Industry of Russia. Statistical collection*. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1139918730234 (In Russian). Assessed March 2016.

Rosstat (2015a) *Short-term economic indicators of the Russian Federation*. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_11400807653391 (In Russian). Assessed: March 2016.

Rosstat (2015b) *Socio-economic situation in Russia. Monthly report*. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1140086922125 (In Russian). Assessed March 2016.

Rosstat (2015c) *Russian statistical yearbook*. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1135087342078 (In Russian). Assessed May 2016.

Rosstat (2016) *EMISS – Unified interagency information – a statistical system*. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/databases/emiss/ (In Russian). Assessed June 2016.

Russia: the course on innovation (2013) Open expert-analytical report on the implementation of the "Strategy for innovative development of the Russian Federation for the period until 2020". Iss. 1. M., RVK (In Russian).

Ryazanov A.A. (2013) *Innovative development, the most important condition for the competitiveness of the Russian aviation industry*. Innovative Development of Russia: Conditions, Contradictions, Priorities: proceedings of the IX Internat. Sci. Conf. [28 March 2013] / The State Duma of the Feder. Assem. of the RF, the State Duma Comm. for Education, S.Yu. Witte Moscow Univ. [comp. T.V. Bart et al.; Ex. Ed. Yu.P. Rudenko, A.V. Semenov]. – Pp.135-140 (In Russian).

Rybakov F.F. (2011) *Stages of industrial policy in Russia: a retrospective analysis*. Eurasian International Scientific and Analytical Journal. No.1 (37) (In Russian).

Rybakov F.F. (2013) *Industrial policy of Russia: discussion issues*. Bulletin of St. Petersburg University. Series 5, Economics. No.1. Pp.33-38 (In Russian).

Shiyko V.G., Shiyko D.S. (2014) *Preconditions for the formation of an innovative model of economic growth based on industrial modernization*. Economics in Industry. No.1. Pp.20-24 (In Russian).

Shuisky V.P. (2014) *Reindustrialization of Russia: the possibilities of importing technologies*. The Russian Foreign Economic Bulletin. No.3. Pp.28-37 (In Russian).

Simachev Yu., Kuzyk M., Kuznetsov B., Pogrebnyak E. (2014) *Russia on the way to a new technological and industrial policy: among alluring prospects and fatal traps* // Foresight. No.4. Pp.6-23 (In Russian).

Sinelnikov-Murylev S., Drobyshevsky S., Kazakova M. (2014) *Decomposition of GDP growth rates in Russia in 1999-2014*. Economic Development of Russia. No.5. Pp.7-37 (In Russian).

Smirnov S. (2013a) *Dynamics of industrial production in the USSR and Russia. Part II. Crises and cycles, 1861-2012.* Issues of Economics, No.7 (In Russian).

Smirnov S. (2013b*) Dynamics of industrial production in the USSR and Russia. Part I. Experience of reconstruction, 1861-2012*. Issues of Economics, No.6 (In Russian).

Sobko S.V. (2013) *Industrial policy: industry prospects*. Federal directory / [Centre for Strategic Partnership]. Iss. 27. Pp.33-40 (In Russian).

State report "On the state and on the protection of the environment in the Russian Federation in 2010". Available at: http://www.mnr.gov.ru/regulatory/detail.php?ID=128153 (In Russian). Assessed: March 2016.

State Statistical Service of the Ukraine. Available at: http://www.ukrstat.gov.ua/ (In Russian). Assessed: March 2016.

State Statistics Committee of Turkmenistan. Available at: http://www.stat.gov.tm/ru/ (In Russian). Assessed: March 2016.

State Statistics Committee of Uzbekistan Available at: http://www.stat.uz/ru/index.php (In Russian). Assessed: March 2016.

Strategy of modernization of the Russian economy (2010), ed. V.M. Polterovich. M., Aleteya (In Russian).

Sukharev O.S. (2013a) *Reindustrialization of Russia: opportunities and limitations*. The Economist. No.3. Pp.6-12 (In Russian).

Sukharev O.S. (2013b) *Economic policy of Russia's reindustrialization: opportunities and limitations*. National Interests: Priorities and Security. No.24. Pp.2-24 (In Russian).

Sukharev O.S. (2014a) *Reindustrialization of the Russian economy and technological development*. National Interests: Priorities and Security. No.10. Pp.2-16 (In Russian).

Sukharev O.S. (2014b) *Structural policy in the Russian economy: conditions of formation*. National Interests: Priorities and Security. No.3 (In Russian).

Sukharev O.S. (2014c) *Structural limitations and approaches to their overcoming:* [socio-economic development of Russia based on new industrialization]. The Economist. No.1. Pp.50-55 (In Russian).

Sukharev O.S. (2014d) *Industrial policy: cooperation between Russia and Belarus*. Investments in Russia. No.4. Pp.33-36 (In Russian).

Sukharev O.S., Strizhakova E.N. (2014) *Industrial policy and development of industrial systems*. National Interests: Priorities and Security. No.15. Pp.2-21 (In Russian).

Surinov A.E. (2015) *Modernization of statistical data production in the Russian Federation*. Issues of Statistics. No.10. Pp.3-13 (In Russian).

Surinov A.E. (2017) *On the results of the activities of the Federal State Statistics Service in 2016 and the main directions for 2017 and the planning period of 2018 and 2019*. Issues of Statistics. No.2. Pp.4-17 (In Russian).

Tatuyev A.A., Stefanchuk E.N., Khokonov M.M. (2013) *A new stage in the industrial development of the Russian economy*. Economics in Industry. No.1. Pp.9-14 (In Russian).

The Government of the Russian Federation (2012) *Strategy of development of food and processing industry in the Russian Federation for the period until 2020*. Available at: https://gov.spb.ru/static/writable/ckeditor/uploads/2013/02/.../RPFR559SPP2020.doc (In Russian). Assessed June 2016

The Government of the Russian Federation (2014) *"On the approval of a set of measures to stimulate the introduction of modern efficient technologies in industry".* Order. Published in Rossiyskaya Gazeta of March 25, 2014 (In Russian).

The Government of the Russian Federation (2016) *Strategy of scientific and technological development of the Russian Federation*. Available at: http://www.kremlin.ru/acts/bank/41449/page/1 (In Russian). Assessed January 2017.

The State Program of the Russian Federation "Development of Industry and Enhancing Its Competitiveness" (2014). Available at: http://minpromtorg.gov.ru/common/upload/files/docs/GP16_obnovlenie.pdf (In Russian). Assessed January 2016.

The State Program of the Russian Federation "Development of the Aviation Industry" (2014).

The World Bank (2012) *Annual report.* Available at: http://siteresources.worldbank.org/EXTANNREP2012/Resources/8784408-1346247490784/AnnualReport2012_Ru.pdf (In Russian). Assessed March 2016.

The World Bank (2016) *Data and research*. Available at: http://www.worldbank.org/eca/russian/data/ (In Russian). Assessed June 2016

Ulyukaev A. (2014) *Interview on December 18, 2014*. RBC. http://top.rbc.ru/economics/18/12/2014/549229fc9a79475b284495db (In Russian)

UN (2005) *International standard industrial classification of all economic activities. Revised version 3.1*. Available at: http://unstats.un.org/unsd/publication/SeriesM/seriesm_4rev3_1r.pdf (In Russian). Assessed June 2016.

UN (2006) *World economic and social* survey *2006: diverging growth and development*. Available at: https://documents-dds-ny.un.org/doc/UNDOC/GEN/N06/330/63/PDF/N0633063.pdf (In Russian). Assessed July 2016.

UN (2010) *International recommendations for industrial statistics 2008*. New York: UN. Available at: http://unstats.un.org/unsd/EconStatKB/Attachment383.aspx (In Russian). Assessed March 2016.

UN (2015) *Millennium development goals: a report for 2015*. Available at: http://www.un.org/ru/millenniumgoals/mdgreport2015.pdf (In Russian). Assessed March 2016.

UNCTAD (2013) *Trade and development report*. Available at: http://unctad.org/en/PublicationsLibrary/tdr2013overview_ru.pdf (In Russian). Assessed: June 2016.

UNCTAD (2014) *Trade and development report*. Available at: http://unctad.org/en/PublicationsLibrary/tdr2014overview_ru.pdf (In Russian). Assessed: June 2016.

UNIDO (2013) *Lima Declaration. Towards inclusive and sustainable industrial development.* Available at: http://www.unido.org/fileadmin/user_media_upgrade/Who_we_are/Structure/Policymaking_Organs/Lima_Declaration_RU_web.pdf (In Russian). Assessed May 2016.

Upadhyay Sh., Vasechko O. (2013) *Measuring the production of a long production cycle in short-term indices of industrial output: international practice.* Issues of Statistics, No.1, Pp.12-22 (In Russian).

Uskova T.V. (2009) *Transition of the region's industry to an innovative way of development – the main condition for sustainable economic growth*. Regional Economy: Theory and Practice. 35(128) (In Russian).

Vinokurov E.Yu., Kulik S.A., Spartak A.N., Chernyshev S.V., Yurgens I.Yu. (2015) *Conflict between two integrations*. Moscow, LLC "Econ-Inform Press". Available at: http://www.eabr.org/general//upload/CII%20-%20izdania/2015/Conflict.pdf (In Russian). Assessed May 2016.

Zamaraev B., Kiyutsevskaya A. (2009) *Economic results of 2008: the end of the "obese" years".* Issues of Economics. No.3 (In Russian).

Abel A., Bernanke B.S. and Croushore D. (2008) *Macroeconomics.* Addison Wesley, 6th ed. – 672pp.

Balassa B. (1961). *The Theory of Economic Integration*. Homewood, IL: R.D. Irwin.

Butler R., Davies L., Pike R., Sharp J. (2010) Strategic investment decision-marking: Complexities, politics and progresses, Journal of Management studies

Bems R., Catao L., Koczan Z., Lian W., and Poplawski-Ribeiro M. (2016) *Understanding the Slowdown in Capital Flows to Emerging Markets World*. Economic Outlook 2016, pp. 63-83 Available at: http://www.imf.org/external/pubs/ft/weo/2016/01/pdf/text.pdf. Accessed: April 2016.

Blanchard O. (2000) *Macroeconomics*, 2nd ed., Prentice Hall.

De Masi (1997). *IMF Estimates of Potential Output: Theory and Practice*. Available at: http://www.imf.org/external/pubs/ft/wp/wp97177.pdf. Accessed November 2016

Diewert E. (2000). *The Challenge of Total Factor Productivity Measurement* / E. Diewert // International Productivity Monitor. – 2000. – No. 1. – P. 45–52.

Dornbush R. and S. Fisher (1994) *Macroeconomics,* 6th ed., New York, Mc-Graw-Hill Book Company.

Eurasian Development Bank (2015a) *Macromonitor CIS*.March-2015.Available at: http://www.eabr.org/general/upload/MM_CIS_March_2015_en.pdf. Accessed May 2016.

Eurasian Development Bank (2015b) *Monitoring of Mutual Investments in CIS Countries 2015* (in Russian). Centre for Integration Studies. Report No 32. Available at: http://www.eabr.org/e/research/centreCIS/projectsandreportsCIS/index.php?id_4=48979&linked_block_id=0. Accessed May 2016.

Eurasian Development Bank (2014) *System of Indicators of Eurasian Integration II.* Analytical

Summary. Centre for Integration Studies. Available at: http://www.eabr.org/general//upload/CII%20-%20izdania/2014/EDB%20Centre_Report%2022_SIEI%20II_Analytical%20summary_Eng.pdf. Accessed May 2016).

European Commission (2016a) *European Business Cycle Indicators*. Available at: https://ec.europa.eu/info/publications/european-business-cycle-indicators-4th-quarter-2016_en. Accessed February 2017.

European Commission (2016b) *Joint Harmonised EU Programme of Business and Consumer Surveys. User Guide.* Available at: https://ec.europa.eu/info/files/user-guide-joint-harmonised-eu-programme-business-and-consumer-surveys_en. Accessed February 2017.

Giorno C., Richardson P., Roserveare D. and van den Noord P. (1995). *Estimating potential output, output gaps and structural budget balances*, OECD Working Paper, No. 152.

Gokhberg L., Polyakova V. (2014) *Innovative Activities and Skills, in: The Global Innovation Index 2014. The Human Factor in Innovation.* Geneva, Fontainebleau, Ithaca, NY: Cornell University, INSEAD, and WIPO, P. 93-99.

Gokhberg L., Meissner D. (2013) *Innovation: Superpowered invention.* Nature. No. 501. P. 313-314.

Government of Nepal, UNIDO (2014*) Development of Manufacturing Industry in Nepal* – Current State and Future Challenges. Catmandu: Central Bureau of Statistics.

Government of the United Republic of Tanzania, UNIDO (2012) *Tanzania Industrial Competitiveness Report 2012*.

ILO (2013). *World of Work Report*. Available at: http://www.ilo.org/global/research/global-reports/world-of-work/2013/lang--en/index.htm. Accessed March 2016

International Monetary Fund (2016a) *Caucasus and Central Asia: Battered by External Shocks*. Regional Economic Outlook: Middle East and Central Asia. April 2016. Available at: http://www.imf.org/external/pubs/ft/reo/2016/mcd/eng/pdf/mreo0416.pdf. Accessed May 2016.

International Monetary Fund (2016b) *World Economic Outlook 2016 – Two Slow for Too Long* Available at: http://www.imf.org/external/pubs/ft/weo/2016/01/pdf/text.pdf. Accessed April 2016.

International Monetary Fund (2015) *Caucasus and Central Asia: Oil Price Decline and Regional Spillovers Darken the Outlook*. Regional Economic Outlook: Middle East and Central Asia. May 2015. Available at: http://www.imf.org/external/pubs/ft/reo/2015/mcd/eng/mreo0515.htm. Accessed April 2016.

International Monetary Fund (2014) *Country Report No 14/176: Russian Federation, Selected Issues. July 2014.* Available at: http://www.imf.org/external/pubs/ft/scr/2014/cr14176.pdf. Accessed May2016.

Jawoodeen E. (2010) *A Critical Analysis of the Linear Regional Integration Model*. Stellenbosch: tralac.

Kapsos S. (2005) *The employment intensity of growth: Trends and macroeconomic determinants. Employment Strategy Papers.* ILO publications. Available at: http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_elm/documents/publication/wcms_143163.pdf. Accessed March 2016.

Kitrar L., Upadhyaya S., Gumeniuk K., Ostapkovich G., and Lipkind T. (2016) *Industrial Development*

in the CIS: Re-industrialization Trends and Potential. UNIDO working papers. Available at: http://www.unido.org/fileadmin/user_media/Research_and_Statistics/WP__2015/working_paper_20_covers.pdf. Accessed February 2017.

Kitrar L., Lipkind T., Lola I., Ostapkovich G., and Chusovlyanov D. (2015) *The HSE ESI and short-term cycles in the Russian economy* // Papers and Studies of Research Institute for Economic Development SGH, N 97. Warsaw: Warsaw School of Economics.

Lall S. (2000) *The Technological Structure and Performance of Developing Country Manufactured Exports, 1985-1998.* Available at: http://unstats.un.org/unsd/tradekb/Knowledgebase/Technologyintensiveness. Accessed June 2016

Mankiw, N.G. (2009) *Macroeconomics*, 7th ed. Worth Publisher – 641 pp.

Mankiw G., Romer D. (1991) *New Keynesian Economics*, Cambridge, MA, MIT Press.

Manyika J, Chui M. et al. (2012). *The social economy: Unlocking value and productivity through social technologies.* McKinsey Global Institute, July.

Meissner D., Gokhberg L., Sokolov A. (2013) *The Meaning of Foresight in Science Technology and Innovation Policy, in: Science, Technology and Innovation Policy for the Future — Potentials and Limits of Foresight Studies.* Ed. by Meissner, Dirk, Gokhberg, Leonid, Sokolov, Alexander. Heidelberg/New York/Dordrecht/London: Springer. P. 1-7.

Nilsson, R. and Guidetti, E. (2008) *Predicting the Business Cycle*. Statistics Brief, OECD. No 14, p.p. 1-14.

OECD (2016) *Glossary for OECD Composite Leading Indicators and Business Tendency Surveys*. Paris: OECD. Available at: http://www.oecd.org/std/leading-indicators/glossaryforoecdcompositeleadingindicators.htm#BUSINESS. Accessed March 2016.

OECD (2012) *System of composite leading indicators.* Available: http://www.oecd.org/std/leading-indicators/41629509.pdf. Accessed December 2016.

OECD (2008) *Employment Outlook*. Available at: http://www.oecd.org/els/emp/oecdemploymentoutlook2008.htm. Accessed June 2016.

OECD (2005) *Handbook on economic Globalization Indicators.* Available at: http://www.oecd-ilibrary.org/docserver/download/9205091e.pdf?expires =1469712702& id=id&accname=oid008831&checksum=C3B7AF7F1475E8E3E4FA7E42CCFA9CBE. Accessed June 2016.

Ostapkovich G. (2016) The Corner of Russia's Economy Where Crisis Rages Unabated. Available at: http://www.bloomberg.com/news/articles/2016-06-26/the-corner-of-russian-economy-where-crisis-still-rages-unabated. Accessed December 2016.

Ostapkovich G. (2016) Why Putin's oligarchs now become farmers. Available at: http://www.welt.de/wirtschaft/article155894413/Warum-Putins-Oligarchen-jetzt-zu-Bauern-werden.html (in German). Accessed December 2016.

Ostapkovich G. (2017) La economia rusa, ante una difical encrucijada. Available at: http://www.larazon.es/damesuplementos/tueconomia/2017-02-19_TUE__/index.html#9 (in Spanish). Accessed February 2017.

Sacks J.D. and F.B. Larrain (1993) Macroeconomics in the Global Economy. Hemel Hempsted, Harvester Wheatsheaf.

Solow R. M. Technical Change and the Aggregate Production Function / R. M. Solow // Review of

Economics Oand Statistics. – 1957. – No. 3. – P. 312–320.

The Russian economy. The end of the line (2014) The Economist. Available at: http://www.economist.com/news/briefing/21633816-more-decade-oil-income-and-consumer-spending-have-delivered-growth-vladimir-putins. Accessed March 2016

Viner J. (1950) The customs union issue. Carnegie Endowment for International Peace.

Vinokurov E., Libman A. (2012) Eurasian Integration – Challenges of Transcontinental Regionalism. London: Palgrave Macmillan

UNCTAD (2016) UNCTADstat (database). Available at: http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx. Accessed June 2016

UNCTAD (2013) World Investment Report 2013. Global Value Chains: Investment and Trade for Development. Geneva.

UNCTAD (2007) Trade and Development Report: Regional Cooperation for Development. Available at: http://unctad.org/en/Docs/tdr2007_en.pdf. Accessed June 2016.

UNIDO (2016) Statistic Data Portal. Available at: http://stat.unido.org/. Accessed June 2016.

UNIDO (2015a) Report "The Role of Technology and Innovation in Inclusive and Sustainable Industrial Development". Vienna: UNIDO.

UNIDO (2015b) Seminar on industrial statistics and analysis of development trends and competitiveness of CIS countries 16-18 December, 2015.Vienna: UNIDO. Available at: http://www.unido.org/fileadmin/user_media/Publications/Statistics/Seminars/CIS_2015_12/Draft_agendaViennaIII.pdf. Accessed March 2016.

UNIDO, German Development Cooperation and German Federal Enterprise for International Cooperation, GIZ (2015) EQuIP – Enhancing the Quality of Industrial Policies. Vienna: UNIDO. Available at: http://www.equip-project.org/toolbox/. Accessed March 2016.

UNIDO (2014) ISID Operation Platform. Available at: https://isid.unido.org/index.html. Accessed December 2016.

UNIDO (2013a) Lima Declaration. Towards inclusive and sustainable industrial development. Available at: http://www.unido.org/fileadmin/Lima_Declaration.pdf. Accessed November 2016.

UNIDO (2013b) Improvement of industrial statistics and development of indicators performance for policy relevant analyses in CIS countries. Vienna: UNIDO. Available at http://www.unido.org/en/resources/statistics/regional-cis-project.html. Accessed March 2016.

UNIDO (2010) Industrial statistics: Guidelines and Methodology. Vienna: UNIDO.

Upadhyaya S., Kitrar L., Ostapkovich G., Lipkind T. (2016) The main vectors of cross-border development in the CIS industrial and economic space: Convergence, potential and cross-countries gaps. HSE working papers. Available at: https://www.hse.ru/data/2016/05/16/1128810172/60STI2016.pdf. Accessed June 2016.

WTO (2011) World Trade Report 2011. The WTO and Preferential Trade Agreements: From co-existence to Coherence. Geneva.

Appendix

Appendix 1

Table 1.1 – Contribution of main industries of the economy to aggregate GVA

	Share of industry GVA in total GVA of the country (in %)			Change (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Agriculture, hunting, and forestry						
Russia	4.7	4.6	3.8	-0.1	-0.8	-0.9
Azerbaijan	10.2	5.7	5.5	-4.6	-0.1	-4.7
Armenia	21.3	18.9	19.0	-2.4	0.1	-2.3
Belarus	10.8	10.0	9.6	-0.8	-0.4	-1.2
Kazakhstan	6.5	6.3	4.5	-0.2	-1.8	-2.0
Kyrgyzstan	31.4	28.0	16.8	-3.4	-11.2	-14.6
Moldova	13.6	10.3	11.3	-3.3	1.1	-2.2
Tajikistan	23.3	24.1	27.5	0.8	3.4	4.2
Ukraine	7.9	8.5	10.9	0.6	2.3	2.9
Fishery, fish farming						
Russia	0.23	0.20	0.20	-0.02	0.00	-0.03
Azerbaijan	0	0	0	0	0	0
Armenia	0.09	0	0	-0.09	0.00	-0.09
Belarus	0.11	0.13	0.09	0.01	-0.03	-0.02
Kazakhstan	0.09	0.06	0.00	-0.03	-0.06	-0.09
Kyrgyzstan	0.003	0.003	0.000	0.0002	-0.0030	-0.0028
Moldova	0.035	0.044	0.045	0.009	0.001	0.010
Tajikistan	0	0	0.07	0.00	0.07	0.07
Ukraine	0	0	0	0	0	0
Mining						
Russia	12.0	9.8	9.1	-2.2	-0.7	-2.9
Azerbaijan	43.7	59.3	43.6	15.6	-15.7	-0.1
Armenia	2.2	1.9	3.4	-0.3	1.6	1.3
Belarus	1.2	1.1	1.4	-0.2	0.3	0.1
Kazakhstan	21.5	21.3	17.4	-0.2	-3.9	-4.1
Kyrgyzstan	0.76	0.64	0.89	-0.12	0.25	0.13
Moldova	0.51	0.46	0.59	-0.05	0.13	0.08
Tajikistan	3.3	2.1	5.1	-1.2	3.0	1.7
Ukraine	6.3	6.4	5.8	0.0	-0.6	-0.5
Manufacturing industries						
Russia	19.2	16.0	13.9	-3.2	-2.1	-5.3
Azerbaijan	7.4	4.0	4.4	-3.4	0.4	-3.0
Armenia	13.1	9.6	13.5	-3.4	3.9	0.5
Belarus	28.3	29.8	30.2	1.6	0.4	2.0
Kazakhstan	14.0	12.1	11.1	-1.9	-1.0	-2.8
Kyrgyzstan	16.7	13.4	16.9	-3.3	3.5	0.2
Moldova	16.2	11.4	13.2	-4.8	1.7	-3.1
Tajikistan	15.5	9.7	10.4	-5.8	0.7	-5.0
Ukraine	19.0	16.6	13.3	-2.3	-3.4	-5.7

	Share of industry GVA in total GVA of the country (in %)			Change (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Production and distribution of electricity, gas and water						
Russia	3.6	3.0	3.2	-0.6	0.2	-0.4
Azerbaijan	2.6	1.1	1.4	-1.4	0.3	-1.2
Armenia	4.4	3.6	4.4	-0.8	0.8	0.0
Belarus	4.6	3.3	3.0	-1.3	-0.3	-1.6
Kazakhstan	1.9	1.8	2.0	-0.1	0.2	0.1
Kyrgyzstan	2.0	1.5	4.1	-0.5	2.5	2.1
Moldova	2.8	2.6	1.9	-0.2	-0.7	-0.9
Tajikistan	4.4	2.8	2.2	-1.7	-0.5	-2.2
Ukraine	4.6	4.1	3.8	-0.5	-0.3	-0.8
Construction						
Russia	5.5	5.8	7.4	0.3	1.6	1.9
Azerbaijan	8.1	6.3	12.5	-1.9	6.2	4.3
Armenia	21.0	20.8	13.0	-0.2	-7.8	-8.0
Belarus	7.0	11.1	10.3	4.1	-0.9	3.2
Kazakhstan	6.5	8.3	7.5	1.8	-0.8	1.0
Kyrgyzstan	4.2	7.2	9.8	3.0	2.6	5.6
Moldova	4.7	4.7	4.9	0.0	0.2	0.2
Tajikistan	10.2	9.6	8.2	-0.6	-1.4	-2.1
Ukraine	5.2	2.7	1.7	-2.5	-1.0	-3.5
Wholesale and retail trade; repair of motor vehicles, motorcycles, household goods and personal items						
Russia	17.8	20.5	17.6	2.6	-2.9	-0.3
Azerbaijan	7.1	5.8	8.1	-1.3	2.3	1.1
Armenia	13.2	14.1	15.7	0.9	1.6	2.5
Belarus	11.3	12.5	15.6	1.1	3.1	4.2
Kazakhstan	12.9	12.7	17.5	-0.2	4.8	4.6
Kyrgyzstan	16.3	18.7	20.7	2.4	2.0	4.3
Moldova	13.1	16.8	18.6	3.7	1.8	5.4
Tajikistan	18.5	22.5	16.4	4.0	-6.1	-2.1
Ukraine	12.7	14.4	13.8	1.6	-0.6	1.1
Services						
Russia	37.9	40.1	45.0	2.2	4.8	7.0
Azerbaijan	20.9	17.8	24.4	-3.1	6.6	3.5
Armenia	24.8	31.1	31.0	6.3	-0.1	6.2
Belarus	36.5	32.1	29.9	-4.5	-2.2	-6.6
Kazakhstan	36.7	37.5	40.0	0.8	2.5	3.3
Kyrgyzstan	28.6	30.5	30.9	1.9	0.4	2.3
Moldova	49.0	53.7	49.5	4.7	-4.3	0.5
Tajikistan	24.8	29.2	30.1	4.4	0.9	5.4
Ukraine	44.2	47.3	50.8	3.0	3.5	6.6

Source: Rosstat, CIS Statistical Committee, authors' calculations.

Table 1.2 – Share of industrial products in volume of exports

	Share of industry in exports (in %)			Change (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Mining						
Russia	63.1	63.6	70.7	0.5	7.1	7.5
Azerbaijan	79.1	91.8	92.8	12.8	1.0	13.7
Armenia	5.0	14.5	22.7	9.6	8.2	17.8
Belarus	35.1	37.8	33.8	2.7	-4.0	-1.3
Kazakhstan	75.6	74.9	81.3	-0.7	6.4	5.7
Kyrgyzstan	15.1	4.5	15.6	-10.6	11.2	0.5
Moldova	2.0	1.3	2.2	-0.7	0.9	0.2
Tajikistan	0.8	4.4	8.5	3.6	4.1	7.7
Ukraine	14.7	10.7	11.8	-4.0	1.1	-2.9
Manufacturing industries						
Russia	26.4	24.2	24.8	-2.2	0.7	-1.5
Azerbaijan	15.6	4.4	5.0	-11.1	0.5	-10.6
Armenia	91.2	80.6	70.2	-10.6	-10.5	-21.0
Belarus	62.1	59.2	61.3	-2.8	2.1	-0.8
Kazakhstan	22.5	23.1	16.7	0.5	-6.4	-5.9
Kyrgyzstan	41.8	35.7	51.3	-6.1	15.6	9.5
Moldova	85.5	73.3	72.8	-12.2	-0.5	-12.8
Tajikistan	76.6	73.6	59.2	-3.0	-14.5	-17.4
Ukraine	78.7	75.0	70.4	-3.7	-4.7	-8.4
Production and distribution of electricity, gas and water						
Russia	0.23	0.22	0.15	-0.01	-0.07	-0.08
Azerbaijan	0.44	0.18	0.11	-0.26	-0.07	-0.33
Armenia	2.3	0.5	4.0	-1.80	3.44	1.63
Belarus	0.13	0.00	0.10	-0.13	0.10	-0.03
Kazakhstan	0.14	0.09	0.14	-0.05	0.05	0.0004
Kyrgyzstan	3.9	3.8	3.2	-0.11	-0.60	-0.71
Moldova	0.0	0.9	0.0	0.82	-0.86	-0.04
Tajikistan	6.7	4.0	2.3	-2.72	-1.65	-4.37
Ukraine	0.5	0.6	0.9	0.06	0.32	0.38

Source: UNCTADstat data portal, authors' calculations.

Table 1.3 – Industrial potential

	Industry GVA per capita (at constant prices, USD)			Compound annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Mining						
Russia	844	709	902	-3.4	4.1	0.7
Azerbaijan	1 235	3 390	2 760	22.4	-3.4	8.4
Armenia	34.6	44.3	92.8	5.1	13.1	10.4
Belarus	50.3	44.3	19.2	-2.5	-13.0	-9.2
Kazakhstan	1 281	1 360	1 441	1.2	1.0	1.2
Kyrgyzstan	4.8	4.7	6.9	-0.7	6.6	3.5
Moldova	5.2	5.6	7.4	1.6	4.9	3.7
Tajikistan	19.8	11.1	40.6	-10.8	24.0	7.5
Ukraine	193	132	89	-7.2	-6.4	-7.4
Manufacturing industries						
Russia	1 354	1 163	1 389	-3.0	3.0	0.3
Azerbaijan	210	230	280	1.8	3.4	2.9
Armenia	210	230	367	1.8	8.1	5.7
Belarus	1 156	1 247	422	1.5	-16.5	-9.6
Kazakhstan	834	774	923	-1.5	3.0	1.0
Kyrgyzstan	106	98	130	-1.6	4.8	2.0
Moldova	165	140	166	-3.2	2.9	0.1
Tajikistan	91	51	83	-10.8	8.3	-0.9
Ukraine	578	345	203	-9.8	-8.5	-9.9
Production and distribution of electricity, gas and water						
Russia	250.6	217.9	314.9	-2.8	6.3	2.3
Azerbaijan	72.6	64.7	88.6	-2.3	5.4	2.0
Armenia	70.8	86.9	119.6	4.2	5.5	5.4
Belarus	190.1	139.9	42.1	-5.9	-18.2	-14.0
Kazakhstan	113.1	112.0	165.4	-0.2	6.7	3.9
Kyrgyzstan	12.8	11.3	31.2	-2.5	18.5	9.4
Moldova	28.3	31.3	23.4	2.0	-4.7	-1.9
Tajikistan	26.2	14.8	17.9	-10.8	3.2	-3.8
Ukraine	140.5	85.1	57.7	-9.5	-6.3	-8.5

Source: Rosstat, CIS Statistical Committee, authors' calculations.

Table 1.4 – Potential of industrial exports

	Industrial exports per capita (USD)			Compound annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Mining						
Russia	1 062	1 345	2 443	4.8	10.5	8.7
Azerbaijan	711	2 165	2 750	24.9	4.1	14.5
Armenia	14.4	30.7	112.5	16.2	24.2	22.8
Belarus	581	847	1 286	7.8	7.2	8.3
Kazakhstan	1 396	2 016	3 707	7.6	10.7	10.3
Kyrgyzstan	19.7	13.9	43.8	-6.7	21.0	8.3
Moldova	6.2	4.8	14.8	-5.0	20.7	9.1
Tajikistan	1.1	5.9	10.9	40.7	10.7	26.0
Ukraine	107	92	149	-2.9	8.2	3.3
Manufacturing industries						
Russia	444	511	859	2.8	9.1	6.8
Azerbaijan	140	105	148	-5.7	5.9	0.5
Armenia	266	170	347	-8.5	12.6	2.7
Belarus	1 026	1 327	2 335	5.3	9.9	8.6
Kazakhstan	416	621	760	8.3	3.4	6.2
Kyrgyzstan	54	111	144	15.3	4.4	10.2
Moldova	261	264	479	0.2	10.4	6.3
Tajikistan	101	100	76	-0.2	-4.4	-2.8
Ukraine	574	649	886	2.5	5.3	4.4
Production and distribution of electricity, gas and water						
Russia	3.8	4.6	5.1	3.9	1.7	2.9
Azerbaijan	3.9	4.1	3.2	1.1	-4.4	-2.2
Armenia	6.8	1.1	19.6	-30.2	61.0	11.2
Belarus	2.2	0.05	3.9	-53.8	109.8	6.0
Kazakhstan	2.7	2.5	6.6	-1.0	17.3	9.5
Kyrgyzstan	5.1	11.7	8.9	18.3	-4.5	5.8
Moldova	0.1	3.1	0.0	90.5	-70.0	-33.0
Tajikistan	8.8	5.4	3.0	-9.4	-9.4	-10.3
Ukraine	3.8	5.0	11.3	5.6	14.6	11.6

Source: UNCTADstat data portal, authors' calculations.

Table 1.5 – Gross value added of manufacturing sector

Countries	GVA (at constant prices, USD million)			Compound annual growth rate (in %)			GVA per capita (USD)			Compound annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia	194 336	166 131	200 053	-3.1	3.1	0.3	1 354	1 163	1 389	-3.0	3.0	0.3
Azerbaijan	1 787	2 054	2 671	2.8	4.5	4.1	210	230	280	1.8	3.4	2.9
Armenia	676	745	1 106	2.0	6.8	5.0	210	230	367	1.8	8.1	5.7
Belarus	11 175	11 857	3 996	1.2	-16.6	-9.8	1 156	1 247	422	1.5	-16.5	-9.6
Kazakhstan	12 630	12 455	15 955	-0.3	4.2	2.4	834	774	923	-1.5	3.0	1.0
Kyrgyzstan	547	526	757	-0.8	6.3	3.3	106	98	130	-1.6	4.8	2.0
Moldova	590	499	589	-3.3	2.8	-0.002	165	140	166	-3.2	2.9	0.1
Tajikistan	619	378	686	-9.4	10.5	1.0	91	51	83	-10.8	8.3	-0.9
Ukraine	27 104	15 838	8 697	-10.2	-9.5	-10.7	578	345	203	-9.8	-8.5	-9.9

Source: Rosstat, CIS Statistical Committee, authors' calculations.

Table 1.6 – Manufacturing exports

Countries	Manufacturing exports (USD million)			Compound annual growth rate (in %)			Manufacturing exports per capita (USD)			Compound annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia	63 694	72 904	123 664	2.7	9.2	6.9	444	511	859	2.8	9.1	6.8
Azerbaijan	1 193	938	1 412	-4.7	7.0	1.7	210	230	280	1.8	3.4	2.9
Armenia	854	551	1 046	-8.4	11.3	2.0	266	170	347	-8.5	12.6	2.7
Belarus	9 920	12 620	22 120	4.9	9.8	8.3	1 026	1 327	2 335	5.3	9.9	8.6
Kazakhstan	6 309	9 993	13 136	9.6	4.7	7.6	416	621	760	8.3	3.4	6.2
Kyrgyzstan	281	597	839	16.3	5.8	11.6	54	111	144	15.3	4.4	10.2
Moldova	933	940	1 702	0.2	10.4	6.2	261	264	479	0.2	10.4	6.3
Tajikistan	684	730	626	1.3	-2.5	-0.9	101	100	76	-0.2	-4.4	-2.8
Ukraine	26 954	29 780	37 935	2.0	4.1	3.5	574	649	886	2.5	5.3	4.4

Source: UNCTADstat data portal, authors' calculations.

Table 1.7 – Structural change in the economic development of CIS countries

	Index of absolute structural change d(x)		Index of relative structural change d_abs		Integral index of structural change d_int	
	economy	industry	economy	industry	economy	industry
Russia	2.332	2.767	0.356	0.139	0.107	0.123
Azerbaijan	2.227	1.413	0.912	0.370	0.205	0.224
Armenia	2.603	0.579	1.603	0.348	0.376	0.132
Belarus	2.385	1.245	0.577	0.142	0.130	0.129
Kazakhstan	2.243	2.340	1.329	0.080	0.368	0.090
Kyrgyzstan	3.660	0.796	4.133	1.081	0.416	0.201
Moldova	1.550	1.356	0.451	0.171	0.117	0.136
Tajikistan	2.852	2.993	-	0.623	0.391	0.251
Ukraine	2.635	2.353	0.742	0.131	0.215	0.120

Source: Rosstat, CIS Statistical Committee, authors' calculations, UNIDO recommendations [UNIDO, 2010].

Appendix 2

Table 2.1 – Classification of activity type in the manufacturing sector by technological structure

	Russia	Azerbaijan	Armenia	Belarus	Kazakhstan	Kyrgyzstan	Moldova	Tajikistan	Ukraine
Processing of raw materials									
Manufacture of food products, beverages, and tobacco	XX	XX	XX	XX	XX	XX	XX	XX	XX
Wood processing and manufacture of wood and cork products, except furniture	x	x	x	x	x	x	x	x	
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	x								
Manufacture of wood, paper products and printing				x		x		x	x
Manufacture of other non-metallic mineral products	x	x	x	x	XX	XX	XX	x	
Low-technology production									
Textile production	x	x			x		x		
Manufacture of wearing apparel; dressing and dyeing of fur	x	x			x		x		
Textile and clothing manufacture			x	x		x		x	
Manufacture of leather, leather goods, and footwear	x	x	x	x	x	x	x	x	
Textile production, production of clothing, leather, goods of leather and other materials									x
Publishing polygraphic activity, replication of recorded media	x	x	x				x		
Coke production; manufacture of petroleum products	XX	x		x	x	x			x
Manufacture of rubber and plastic products	x	x	x	x	x	x	x	x	
Manufacture of rubber and plastic products, other non-metallic mineral products									x
Metallurgical production	XX	x			XX		x		
Manufacture of fabricated metal products	x	x			x		x		
Manufacture of basic metals and fabricated metal products, except machinery and equipment			XX	x		XX		XX	XX
Manufacture of furniture and other products NEC	x								
Other products of processing industries	x	x	x	x	x	x	x	x	x
Medium- and high-tech production									
Chemical production	XX	XX	x	XX	x	x	x	x	XX
Manufacture of machinery and equipment	x			XX		x	x	x	
Manufacture of office equipment and computers	x								
Production of electronic components, equipment for radio, television, and communication	x						x		
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	x						x		
Manufacture of computers, electronic and optical equipment, production of electrical equipment				x	x	x		x	x
Manufacture of computers, electronic and optical equipment		x	x						
Manufacture of electrical machines and electrical equipment	x	x	x		x		x		
Manufacture of other machinery and equipment		x	x		x				
Manufacture of vehicles				x		x			x
Manufacture of motor vehicles, trailers, and semitrailers	x	x			x				
Manufacture of ships, aircrafts, and space vehicles, other vehicles	x								
Manufacture of other transport vehicles		x	x						

Notes:

1. Expanded representation of manufacturing activity types by country is attributable to differences in classification

according to activity type, the need to consider all possible technological manufacturing industries in all countries of the region.

2. XX indicates industries of the manufacturing sector with a high GVA.

Table 2.2 – Industry structure of GVA of the manufacturing sector

	GVA at constant prices (USD million)			Compound annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia						
Manufacture of food products, including beverages	26 245	26 804	25 489	0.4	-0.8	-0.3
Manufacture of tobacco products	1 530	1 286	1 735	-3.4	5.1	1.3
Textile production	1 361	1 085	1 136	-4.4	0.8	-1.8
Manufacture of wearing apparel; dressing and dyeing of fur	2 011	1 395	1 781	-7.1	4.2	-1.2
Manufacture of leather, leather goods, and footwear	542	547	444	0.2	-3.4	-2.0
Wood processing and manufacture of wood and cork products, except furniture	4 018	3 167	3 152	-4.6	-0.1	-2.4
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	2 294	2 537	3 625	2.0	6.1	4.7
Publishing polygraphic activity, replication of recorded media	4 750	3 706	2 849	-4.8	-4.3	-5.0
Coke production; manufacture of petroleum products	38 781	38 404	49 374	-0.2	4.3	2.4
Chemical production (excluding production of gunpowder and explosives)	17 442	15 748	15 879	-2.0	0.1	-0.9
Manufacture of rubber and plastic products	2 891	3 425	3 835	3.4	1.9	2.9
Manufacture of other non-metallic mineral products	10 789	9 347	9 067	-2.8	-0.5	-1.7
Metallurgical production	34 078	24 997	29 866	-6.0	3.0	-1.3
Manufacture of fabricated metal products	3 882	4 008	5 140	0.6	4.2	2.8
Manufacture of machinery and equipment (excluding production of weapons and ammunition)	11 183	7 470	11 055	-7.8	6.7	-0.1
Manufacture of office equipment and computers	264	266	458	0.2	9.5	5.7
Manufacture of electrical machines and electrical equipment	4 924	3 003	3 671	-9.4	3.4	-2.9
Production of electronic components, equipment for radio, television, and communication	2 555	1 378	2 832	-11.6	12.8	1.0
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	3 773	2 553	4 858	-7.5	11.3	2.6
Manufacture of cars, trailers, and semitrailers	4 023	1 934	4 893	-13.6	16.7	2.0
Manufacture of ships, aircrafts and space vehicles, other vehicles	7 747	5 886	15 510	-5.3	17.5	7.2
Manufacture of furniture and other products NEC	3 149	2 402	2 459	-5.3	0.4	-2.4
Other products of processing industries	6 146	4 781	0	-4.9	-	-
Processing of secondary raw materials	0	0	957	-	-	-
Processing of raw materials	44 875	43 142	43 068	-0.8	0.0	-0.4
Low-technology production	97 592	84 751	97 841	-2.8	2.4	0.0
Medium- and high-tech production	51 912	38 237	59 156	-5.9	7.5	1.3
Azerbaijan						
Manufacture of food products, beverages, and tobacco	696	720	944	0.7	4.6	3.1
Textile and clothing manufacture	30	26	34	-2.8	4.9	1.4

	GVA at constant prices (USD million)			Compound annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of leather, leather goods, and footwear	3	7	6	21.8	-1.9	9.1
Wood processing and manufacture of wood and cork products, except furniture	6	5	6	-4.0	6.0	1.5
Publishing polygraphic activity and replication of recorded media	13	18	11	6.4	-7.8	-1.8
Manufacture of coke and refined petroleum products	487	783	944	10.0	3.2	6.9
Manufacture of chemical products	115	56	82	-13.4	6.5	-3.4
Manufacture of rubber and plastic products	14	25	23	13.4	-1.9	5.3
Manufacture of other non-metallic mineral products	79	157	166	14.8	0.9	7.7
Manufacture of basic metals	158	38	93	-24.9	16.2	-5.2
Manufacture of fabricated metal products, except machinery and equipment	33	43	44	5.6	0.2	2.9
Manufacture of computers, electronic and optical equipment	4	15	22	29.1	5.8	17.6
Manufacture of electrical equipment	11	17	54	9.4	21.1	17.3
Manufacture of machinery and equipment NEC	19	40	92	15.7	15.1	17.0
Manufacture of cars and other vehicles	11	9	32	-3.2	22.9	11.3
Processing of raw materials	781	881	1 116	2.5	4.0	3.6
Low-technology production	846	1 035	1 274	4.1	3.5	4.2
Medium- and high-tech production	160	137	281	-3.1	12.7	5.8
Armenia						
Manufacture of food products, including beverages, and tobacco	319.3	395.6	647.9	4.4	8.6	7.3
Textile and clothing manufacture	7.1	6.9	10.3	-0.7	7.0	3.8
Manufacture of leather, leather goods, footwear	0.5	1.3	1.5	19.9	2.4	11.1
Wood processing and manufacture of wood and cork products (except furniture), wickerwork	1.9	1.3	2.0	-6.7	6.8	0.5
Publishing polygraphic activity and replication of recorded media	15.5	5.1	18.5	-20.1	24.1	1.7
Manufacture of chemical products	24.9	15.7	10.6	-8.8	-6.3	-8.2
Manufacture of rubber and plastic products	6.6	23.2	34.4	28.7	6.8	18.0
Manufacture of other non-metallic mineral products	38.3	69.9	68.7	12.8	-0.3	6.0
Manufacture of basic metals and finished metal products, except machinery and equipment	211.3	167.5	240.5	-4.5	6.2	1.3
Manufacture of computers, electronic and optical equipment, electrical equipment	14.6	11.6	13.7	-4.5	2.8	-0.6
Manufacture of machinery and equipment NEC	10.5	5.1	4.3	-13.6	-2.6	-8.6
Manufacture of other transport equipment	0.5	0.0	0.0	-54.1	3.9	-30.7
Processing of raw materials	359.5	466.8	718.6	5.4	7.5	7.2
Low-technology production	265.8	245.9	358.6	-1.5	6.5	3.0
Medium- and high-tech production	50.6	32.4	28.7	-8.5	-2.0	-5.5
Belarus						
Manufacture of food products, including beverages, and tobacco	2 247	2 716	1 055	3.9	-14.6	-7.3
Textile and clothing manufacture	514	460	134	-2.2	-18.6	-12.6
Manufacture of leather, leather goods, and footwear	111	103	36	-1.4	-16.3	-10.7
Wood processing and manufacture of wood products	245	211	88	-2.9	-13.6	-9.8
Pulp and paper industry; publishing activity	245	244	67	0.0	-19.4	-12.2

	GVA at constant prices (USD million)			Compound annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of coke, refined petroleum products and nuclear materials	2 422	2 438	724	0.1	-18.3	-11.4
Chemical production	1 121	1 130	439	0.2	-14.6	-8.9
Manufacture of rubber and plastic products	314	432	154	6.6	-15.8	-6.9
Manufacture of other non-metallic mineral products	506	698	247	6.6	-15.9	-6.9
Metallurgical production and Manufacture of fabricated metal products	755	842	285	2.2	-16.5	-9.3
Manufacture of machinery and equipment	1 196	1 251	336	0.9	-19.7	-11.9
Manufacture of electrical, electronic and optical equipment	479	477	156	-0.1	-17.0	-10.6
Manufacture of vehicles and equipment	751	553	157	-6.0	-18.9	-14.5
Processing of raw materials	3 243	3 870	1 457	3.6	-15.0	-7.7
Low-technology production	4 385	4 577	1 450	0.9	-17.4	-10.5
Medium- and high-tech production	3 547	3 410	1 089	-0.8	-17.3	-11.1
Kazakhstan						
Manufacture of food products, beverages, and tobacco products	3 309	3 470	3 773	1.0	1.4	1.3
Manufacture of textiles and clothing	240	106	147	-15.1	5.6	-4.8
Manufacture of leather, leather goods, and footwear	13	11	18	-2.4	7.8	3.3
Wood processing and manufacture of wood and cork products, except furniture	52	39	53	-5.7	5.3	0.2
Manufacture of coke and refined petroleum products	1 058	903	1 481	-3.1	8.6	3.4
Manufacture of chemical products	362	361	603	-0.1	8.9	5.2
Manufacture of rubber and plastic products	203	253	413	4.5	8.5	7.3
Manufacture of other non-metallic mineral products	749	772	1 184	0.6	7.4	4.7
Manufacture of basic metals	4 714	4 559	5 008	-0.7	1.6	0.6
Manufacture of fabricated metal products, except machinery and equipment	302	446	471	8.1	0.9	4.5
Manufacture of computers, electronic and optical equipment	85	54	97	-8.7	10.5	1.4
Manufacture of electrical equipment	121	152	222	4.6	6.5	6.2
Manufacture of machinery and equipment NEC	236	183	271	-5.0	6.8	1.4
Manufacture of motor vehicles, trailers, and semitrailers	40	27	491	-7.5	77.6	31.8
Processing of raw materials	4 110	4 281	5 010	0.8	2.7	2.0
Low-technology production	7 675	7 397	9 260	-0.7	3.8	1.9
Medium- and high-tech production	845	777	1 685	-1.7	13.8	7.1
Kyrgyzstan						
Manufacture of food products, including beverages, and tobacco	111.6	99.2	126.3	-2.3	4.1	1.2
Textile and clothing manufacture	30.9	29.2	29.2	-1.1	0.0	-0.6
Manufacture of leather, leather goods, and footwear	1.0	1.3	1.3	4.8	-0.3	2.1
Wood processing and manufacture of wood products	0.9	1.6	3.0	11.1	11.5	12.5
Pulp and paper industry; publishing activity	10.1	7.9	4.3	-4.8	-9.7	-8.2
Manufacture of petroleum products	7.6	9.0	19.9	3.7	14.1	10.2
Chemical production	7.8	3.5	6.7	-14.8	11.4	-1.5
Manufacture of rubber and plastic products	15.2	7.3	10.7	-13.8	6.6	-3.5
Manufacture of other non-metallic mineral products	56.9	35.9	82.0	-8.8	14.7	3.7

	GVA at constant prices (USD million)			Compound annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Metallurgical production and manufacture of fabricated metal products	268.4	308.9	445.0	2.9	6.3	5.2
Manufacture of machinery and equipment	15.5	6.0	1.6	-17.4	-19.8	-20.4
Manufacture of electrical, electronic and optical equipment	14.5	8.7	10.4	-9.6	2.9	-3.3
Manufacture of vehicles and equipment	3.2	2.8	4.1	-2.6	6.3	2.4
Processing of raw materials	179.5	144.6	215.6	-4.2	6.9	1.9
Low-technology production	326.9	359.8	518.4	1.9	6.3	4.7
Medium- and high-tech production	41.1	21.1	22.8	-12.5	1.3	-5.7
Moldova						
Manufacture of food products and beverages	278.1	255.2	294.0	-1.7	2.4	0.6
Manufacture of tobacco products	10.5	13.8	5.5	5.6	-14.1	-6.2
Textile production	17.7	13.5	27.4	-5.3	12.5	4.5
Manufacture of wearing apparel	22.0	22.1	29.4	0.1	4.9	2.9
Manufacture of leather, leather goods, and footwear	7.5	6.4	6.7	-3.0	0.6	-1.2
Wood processing and manufacture of wood and cork products, except furniture	3.8	4.8	3.7	5.0	-4.6	-0.3
Publishing polygraphic activity and replication of recorded media	13.1	14.1	6.5	1.5	-12.0	-6.7
Manufacture of chemical products	8.9	16.3	14.5	12.8	-1.9	5.0
Manufacture of rubber and plastic products	25.3	21.2	27.2	-3.5	4.3	0.7
Manufacture of other non-metallic mineral products	81.2	59.4	64.6	-6.1	1.4	-2.3
Manufacture of basic metals	3.3	4.1	1.5	4.6	-15.6	-7.7
Manufacture of fabricated metal products, except for machinery and equipment	16.0	13.4	18.9	-3.4	5.9	1.7
Manufacture of machinery and equipment	15.2	9.9	9.0	-8.2	-1.6	-5.1
Manufacture of electrical machinery and equipment	4.6	6.2	20.9	6.1	22.4	16.3
Manufacture of equipment and apparatus for radio, television, and communication	1.1	1.1	0.0	-0.6	-100.0	-100.0
Manufacture of medical devices, precision and optical instruments	6.5	5.1	0.0	-4.6	-100.0	-100.0
Processing of raw materials	373.6	333.3	367.8	-2.3	1.7	-0.2
Low-technology production	154.2	126.6	177.2	-3.9	5.8	1.4
Medium- and high-tech production	36.4	38.7	44.4	1.2	2.3	2.0
Tajikistan						
Manufacture of food products, including beverages, and tobacco (before 2011 – food industry)	129.6	92.5	322.0	-6.5	23.1	9.5
Textile and clothing manufacture (before 2011 - light industry)	116.5	48.0	129.7	-16.3	18.0	1.1
Manufacture of leather, leather goods, and footwear	0.0	0.0	2.2	-	-	-
Wood processing and manufacture of wood products (before 2011 – forest, woodworking, and pulp and paper industry)	1.7	1.6	5.3	-1.8	22.2	11.8
Pulp and paper industry; publishing activity	0.0	0.0	11.6	-	-	-
Manufacture of coke, refined petroleum products and nuclear materials	0.0	0.0	9.7	-	-	-
Chemical production (before 2011 - chemical and petrochemical industry)	7.8	1.4	6.2	-28.7	27.5	-2.3
Manufacture of rubber and plastic products	0.0	0.0	6.2	-	-	-

	GVA at constant prices (USD million)			Compound annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of other non-metallic mineral products (before 2011 – building materials industry)	16.8	22.2	92.9	5.7	26.9	18.6
Metallurgical production and manufacture of fabricated metal products (before 2011 – non-ferrous metallurgy)	279.1	170.8	90.2	-9.4	-10.1	-10.7
Manufacture of machinery and equipment (before 2011 – machine building and metalworking)	10.3	10.4	3.9	0.2	-15.0	-9.2
Manufacture of electrical, electronic and optical equipment	0.0	0.0	1.7	-	-	-
Processing of raw materials	148.2	116.4	431.8	-4.7	24.4	11.3
Low-technology production	453.0	249.4	242.5	-11.3	-0.5	-6.1
Medium- and high-tech production	18.1	11.8	11.8	-8.2	0.0	-4.2
Ukraine						
Manufacture of food products, beverages, and tobacco	5 827	4 519	2 910	-5.0	-7.1	-6.7
Textile production, Manufacture of wearing apparel, leather, goods of leather and other materials	382	212	110	-11.1	-10.3	-11.7
Manufacture of wood, paper products and printing	1 171	806	422	-7.2	-10.2	-9.7
Manufacture of coke and refined petroleum products	3 361	1 522	453	-14.7	-18.3	-18.2
Manufacture of chemical products	1 683	944	479	-10.9	-10.7	-11.8
Manufacture of rubber and plastic products, other non-metallic mineral products	1 653	1 109	618	-7.7	-9.3	-9.4
Manufacture of basic metals and finished metal products, except machinery and equipment	7 887	4 007	2 285	-12.7	-8.9	-11.7
Manufacture of computers, electronic and optical equipment, Manufacture of electrical equipment	1 033	694	280	-7.6	-14.0	-12.2
Manufacture of machinery and equipment NEC	1 586	969	323	-9.4	-16.8	-14.7
Manufacture of vehicles, trailers and semitrailers and other transport equipment	1 938	767	377	-16.9	-11.1	-15.1
Processing of raw materials	6 998	5 325	3 332	-5.3	-7.5	-7.2
Low-technology production	13 866	7 140	3 906	-12.4	-9.6	-11.9
Medium- and high-tech production	6 239	3 374	1 459	-11.6	-13.0	-13.5

Source: Rosstat, CIS Statistical Committee, authors' calculations.

Table 2.3 – Contribution of individual industries to GVA of the manufacturing sector

	Share of industry GVA in GVA of the manufacturing sector (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia						
Manufacture of food products, including beverages	13.5	16.1	12.7	2.6	-3.4	-0.8
Manufacture of tobacco products	0.8	0.8	0.9	0.0	0.1	0.1
Textile production	0.7	0.7	0.6	0.0	-0.1	-0.1
Manufacture of wearing apparel; dressing and dyeing of fur	1.0	0.8	0.9	-0.2	0.1	-0.1
Manufacture of leather, leather goods, and footwear	0.3	0.3	0.2	0.1	-0.1	-0.1
Wood processing and manufacture of wood and cork products, except furniture	2.1	1.9	1.6	-0.2	-0.3	-0.5
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	1.2	1.5	1.8	0.3	0.3	0.6
Publishing polygraphic activity, replication of recorded media	2.4	2.2	1.4	-0.2	-0.8	-1.0
Manufacture of coke; manufacture of petroleum products	20.0	23.1	24.7	3.2	1.5	4.7
Chemical production (excluding production of gunpowder and explosives)	9.0	9.5	7.9	0.5	-1.5	-1.0
Manufacture of rubber and plastic products	1.5	2.1	1.9	0.6	-0.1	0.4
Manufacture of other non-metallic mineral products	5.6	5.6	4.5	0.1	-1.1	-1.0
Metallurgical production	17.5	15.0	14.9	-2.5	-0.1	-2.6
Manufacture of fabricated metal products	2.0	2.4	2.6	0.4	0.2	0.6
Manufacture of machinery and equipment (excluding production of weapons and ammunition)	5.8	4.5	5.5	-1.3	1.0	-0.2
Manufacture of office equipment and computers	0.1	0.2	0.2	0.0	0.1	0.1
Manufacture of electrical machines and electrical equipment	2.5	1.8	1.8	-0.7	0.0	-0.7
Production of electronic components, equipment for radio, television, and communication	1.3	0.8	1.4	-0.5	0.6	0.1
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	1.9	1.5	2.4	-0.4	0.9	0.5
Manufacture of cars, trailers, and semitrailers	2.1	1.2	2.4	-0.9	1.3	0.4
Manufacture of ships, aircrafts and space vehicles, other vehicles and other materials and substances NEC	4.0	3.5	7.8	-0.4	4.2	3.8
Manufacture of furniture and other products NEC	1.6	1.4	1.2	-0.2	-0.2	-0.4
Other products of processing industries	3.2	2.9		-0.3	-	-
Processing of secondary raw materials			0.5	-	-	-
Azerbaijan						
Manufacture of food products, beverages, and tobacco	39.0	35.1	35.4	-3.9	0.3	-3.6
Textile and clothing manufacture	1.7	1.3	1.3	-0.4	0.0	-0.4
Manufacture of leather, leather goods, and footwear	0.2	0.4	0.2	0.2	-0.1	0.1
Wood processing and manufacture of wood and cork products, except furniture	0.3	0.2	0.2	-0.1	0.0	-0.1
Publishing polygraphic activity and replication of recorded media	0.8	0.9	0.4	0.1	-0.5	-0.3
Manufacture of coke and refined petroleum products	27.2	38.2	35.3	10.9	-2.8	8.1
Manufacture of chemical products	6.5	2.7	3.1	-3.7	0.3	-3.4
Manufacture of rubber and plastic products	0.8	1.2	0.9	0.5	-0.4	0.1
Manufacture of other non-metallic mineral products	4.4	7.6	6.2	3.2	-1.4	1.8
Manufacture of basic metals	8.9	1.8	3.5	-7.0	1.6	-5.4
Manufacture of fabricated metal products, except machinery and equipment	1.8	2.1	1.6	0.3	-0.5	-0.2
Manufacture of computers, electronic and optical equipment	0.2	0.8	0.8	0.5	0.1	0.6

Manufacture of electrical equipment	0.6	0.8	2.0	0.2	1.2	1.4
Manufacture of machinery and equipment NEC	1.1	1.9	3.5	0.9	1.5	2.4
Manufacture of cars and other vehicles	0.6	0.5	1.2	-0.2	0.7	0.6
Armenia						
Manufacture of food products, including beverages, and tobacco	47.2	53.1	58.6	5.9	5.5	11.4
Textile and clothing manufacture	1.1	0.9	0.9	-0.1	0.0	-0.1
Manufacture of leather, leather goods, footwear	0.1	0.2	0.1	0.1	0.0	0.1
Wood processing and manufacture of wood and cork products (except furniture), wickerwork	0.3	0.2	0.2	-0.1	0.0	-0.1
Publishing polygraphic activity and replication of recorded media	2.3	0.7	1.7	-1.6	1.0	-0.6
Manufacture of chemical products	3.7	2.1	1.0	-1.6	-1.2	-2.7
Manufacture of rubber and plastic products	1.0	3.1	3.1	2.1	0.0	2.1
Manufacture of other non-metallic mineral products	5.7	9.4	6.2	3.7	-3.2	0.5
Manufacture of basic metals and finished metal products, except machinery and equipment	31.3	22.5	21.8	-8.8	-0.7	-9.5
Manufacture of computers, electronic and optical equipment, electrical equipment	2.2	1.6	1.2	-0.6	-0.3	-0.9
Manufacture of machinery and equipment NEC	1.6	0.7	0.4	-0.9	-0.3	-1.2
Manufacture of other transport equipment	0.1	0.0	0.0	-0.1	0.0	-0.1
Belarus						
Manufacture of food products, including beverages, and tobacco	20.1	22.9	26.4	2.8	3.5	6.3
Textile and clothing manufacture	4.6	3.9	3.4	-0.7	-0.5	-1.2
Manufacture of leather, leather goods, and footwear	1.0	0.9	0.9	-0.1	0.0	-0.1
Wood processing and manufacture of wood products	2.2	1.8	2.2	-0.4	0.4	0.0
Pulp and paper industry; publishing activity	2.2	2.1	1.7	-0.1	-0.4	-0.5
Manufacture of coke, refined petroleum products and nuclear materials	21.7	20.6	18.1	-1.1	-2.5	-3.6
Chemical production	10.0	9.5	11.0	-0.5	1.5	1.0
Manufacture of rubber and plastic products	2.8	3.6	3.9	0.8	0.2	1.1
Manufacture of other non-metallic mineral products	4.5	5.9	6.2	1.4	0.3	1.7
Metallurgical production and Manufacture of fabricated metal products	6.8	7.1	7.1	0.3	0.0	0.4
Manufacture of machinery and equipment	10.7	10.6	8.4	-0.1	-2.1	-2.3
Manufacture of electrical, electronic and optical equipment	4.3	4.0	3.9	-0.3	-0.1	-0.4
Kazakhstan						
Manufacture of food products, beverages, and tobacco products	26.2	27.9	23.7	1.7	-4.2	-2.6
Manufacture of textiles and clothing	1.9	0.9	0.9	-1.1	0.1	-1.0
Manufacture of leather, leather goods, and footwear	0.1	0.1	0.1	-0.01	0.02	0.01
Wood processing and manufacture of wood and cork products, except furniture	0.4	0.3	0.3	-0.10	0.02	-0.08
Manufacture of coke and refined petroleum products	8.4	7.3	9.3	-1.1	2.0	0.9
Manufacture of chemical products	2.9	2.9	3.8	0.0	0.9	0.9
Manufacture of rubber and plastic products	1.6	2.0	2.6	0.4	0.6	1.0
Manufacture of other non-metallic mineral products	5.9	6.2	7.4	0.3	1.2	1.5
Manufacture of basic metals	37.3	36.6	31.4	-0.7	-5.2	-5.9
Manufacture of fabricated metal products, except machinery and equipment	2.4	3.6	3.0	1.2	-0.6	0.6
Manufacture of computers, electronic and optical equipment	0.7	0.4	0.6	-0.2	0.2	-0.1
Manufacture of electrical equipment	1.0	1.2	1.4	0.3	0.2	0.4
Manufacture of machinery and equipment NEC	1.9	1.5	1.7	-0.4	0.2	-0.2
Manufacture of motor vehicles, trailers, and semitrailers	0.3	0.2	3.1	-0.1	2.9	2.8
Kyrgyzstan						

Manufacture of food products, including beverages, and tobacco	20.4	18.9	16.7	-1.5	-2.2	-3.7
Textile and clothing manufacture	5.6	5.6	3.9	-0.1	-1.7	-1.8
Manufacture of leather, leather goods, and footwear	0.2	0.3	0.2	0.1	-0.1	0.0
Wood processing and manufacture of wood products	0.2	0.3	0.4	0.1	0.1	0.2
Pulp and paper industry; publishing activity	1.9	1.5	0.6	-0.3	-0.9	-1.3
Manufacture of petroleum products	1.4	1.7	2.6	0.3	0.9	1.3
Chemical production	1.4	0.7	0.9	-0.8	0.2	-0.5
Manufacture of rubber and plastic products	2.8	1.4	1.4	-1.4	0.0	-1.4
Manufacture of other non-metallic mineral products	10.4	6.8	10.8	-3.6	4.0	0.4
Metallurgical production and manufacture of fabricated metal products	49.0	58.8	58.8	9.8	0.0	9.8
Manufacture of machinery and equipment	2.8	1.1	0.2	-1.7	-0.9	-2.6
Manufacture of electrical, electronic and optical equipment	2.6	1.7	1.4	-1.0	-0.3	-1.3
Manufacture of vehicles and equipment	0.6	0.5	0.5	0.0	0.0	-0.1
Moldova						
Manufacture of food products and beverages	49.3	51.2	49.9	1.9	-1.3	0.6
Manufacture of tobacco products	1.9	2.8	0.9	0.9	-1.8	-0.9
Textile production	3.1	2.7	4.6	-0.4	1.9	1.5
Manufacture of wearing apparel	3.9	4.4	5.0	0.5	0.6	1.1
Manufacture of leather, leather goods, and footwear	1.3	1.3	1.1	0.0	-0.2	-0.2
Wood processing and manufacture of wood and cork products, except furniture	0.7	1.0	0.6	0.3	-0.4	-0.1
Publishing polygraphic activity and replication of recorded media	2.3	2.8	1.1	0.5	-1.7	-1.2
Manufacture of chemical products	1.6	3.3	2.5	1.7	-0.8	0.9
Manufacture of rubber and plastic products	4.5	4.3	4.6	-0.2	0.4	0.1
Manufacture of other non-metallic mineral products	14.4	11.9	11.0	-2.5	-1.0	-3.4
Manufacture of basic metals	0.6	0.8	0.3	0.2	-0.6	-0.3
Manufacture of fabricated metal products, except for machinery and equipment	2.8	2.7	3.2	-0.1	0.5	0.4
Manufacture of machinery and equipment	2.7	2.0	1.5	-0.7	-0.5	-1.2
Manufacture of electrical machinery and equipment	0.8	1.3	3.6	0.4	2.3	2.7
Manufacture of equipment and apparatus for radio, television, and communication	0.2	0.2	0.0	0.0	-0.2	-0.2
Manufacture of medical devices, precision and optical instruments	1.2	1.0	0.0	-0.1	-1.0	-1.2
Tajikistan						
Manufacture of food products, including beverages, and tobacco (before 2011 - food industry)	20.9	24.5	46.9	3.6	22.4	26.0
Textile and clothing manufacture (before 2011 - light industry)	18.8	12.7	18.9	-6.1	6.2	0.1
Manufacture of leather, leather goods, and footwear	0.0	0.0	0.3	0.0	0.3	0.3
Wood processing and manufacture of wood products (before 2011 - forest, woodworking and pulp and paper industry)	0.3	0.4	0.8	0.1	0.4	0.5
Pulp and paper industry; publishing activity	0.0	0.0	1.7	0.0	1.7	1.7
Manufacture of coke, refined petroleum products and nuclear materials	0.0	0.0	1.4	0.0	1.4	1.4
Chemical production (before 2011 - chemical and petrochemical industry)	1.3	0.4	0.9	-0.9	0.5	-0.4
Manufacture of rubber and plastic products	0.0	0.0	0.9	0.0	0.9	0.9
Manufacture of other non-metallic mineral products (before 2011 - building materials industry)	2.7	5.9	13.5	3.2	7.7	10.8
Metallurgical production and manufacture of fabricated metal products (before 2011 - non-ferrous metallurgy)	45.1	45.2	13.2	0.2	-32.1	-31.9
Manufacture of machinery and equipment (before 2011 - machine building and metalworking)	1.7	2.8	0.6	1.1	-2.2	-1.1

Manufacture of electrical, electronic and optical equipment	0.0	0.0	0.3	0.0	0.3	0.3
Ukraine						
Manufacture of food products, beverages, and tobacco	21.5	28.5	33.5	7.0	4.9	12.0
Textile production, Manufacture of wearing apparel, leather, goods of leather and other materials	1.4	1.3	1.3	-0.1	-0.1	-0.1
Manufacture of wood, paper products and printing	4.3	5.1	4.9	0.8	-0.2	0.5
Manufacture of coke and refined petroleum products	12.4	9.6	5.2	-2.8	-4.4	-7.2
Manufacture of chemical products	6.2	6.0	5.5	-0.3	-0.4	-0.7
Manufacture of rubber and plastic products, other non-metallic mineral products	6.1	7.0	7.1	0.9	0.1	1.0
Manufacture of basic metals and finished metal products, except machinery and equipment	29.1	25.3	26.3	-3.8	1.0	-2.8
Manufacture of computers, electronic and optical equipment, Manufacture of electrical equipment	3.8	4.4	3.2	0.6	-1.2	-0.6
Manufacture of machinery and equipment NEC	5.9	6.1	3.7	0.3	-2.4	-2.1
Manufacture of vehicles, trailers and semitrailers and other transport equipment	7.2	4.8	4.3	-2.3	-0.5	-2.8
Processing of raw materials						
Russia	23.1	26.0	21.5	2.9	-4.4	-1.6
Azerbaijan	43.7	42.9	41.8	-0.8	-1.1	-1.9
Armenia	53.2	62.7	65.0	9.5	2.3	11.8
Belarus	29.0	32.6	36.5	3.6	3.8	7.4
Kazakhstan	32.5	34.4	31.4	1.8	-3.0	-1.1
Kyrgyzstan	32.8	27.5	28.5	-5.3	1.0	-4.3
Moldova	66.2	66.9	62.4	0.6	-4.5	-3.8
Tajikistan	23.9	30.8	62.9	6.9	32.1	39.0
Ukraine	25.8	33.6	38.3	7.8	4.7	12.5
Low-technology production						
Russia	50.2	51.0	48.9	0.8	-2.1	-1.3
Azerbaijan	47.3	50.4	47.7	3.1	-2.7	0.4
Armenia	39.3	33.0	32.4	-6.3	-0.6	-6.9
Belarus	39.2	38.6	36.3	-0.6	-2.3	-3.0
Kazakhstan	60.8	59.4	58.0	-1.4	-1.4	-2.7
Kyrgyzstan	59.7	68.5	68.5	8.8	0.0	8.8
Moldova	27.3	25.4	30.1	-1.9	4.7	2.7
Tajikistan	73.2	66.1	35.4	-7.1	-30.7	-37.8
Ukraine	51.2	45.1	44.9	-6.1	-0.2	-6.2
Medium- and high-tech production						
Russia	26.7	23.0	29.6	-3.7	6.6	2.9
Azerbaijan	9.0	6.7	10.5	-2.3	3.8	1.5
Armenia	7.5	4.4	2.6	-3.1	-1.8	-4.9
Belarus	31.7	28.8	27.3	-3.0	-1.5	-4.5
Kazakhstan	6.7	6.2	10.6	-0.5	4.3	3.9
Kyrgyzstan	7.5	4.0	3.0	-3.5	-1.0	-4.5
Moldova	6.5	7.8	7.5	1.3	-0.2	1.1
Tajikistan	2.9	3.1	1.7	0.2	-1.4	-1.2
Ukraine	23.0	21.3	16.8	-1.7	-4.5	-6.2

Source: Rosstat, CIS Statistical Committee, authors' calculations.

Table 2.4 – Industrial structure of manufacturing exports

	Manufacturing exports by industry (in USD billions)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia						
Manufacture of food products, beverages, and tobacco	2.45	5.60	11.14	17.98	12.16	16.36
Textile production	0.45	0.26	0.50	-10.22	11.36	1.07
Manufacture of wearing apparel	0.19	0.10	0.41	-12.14	26.54	7.95
Manufacture of leather, leather goods, and footwear	0.20	0.17	0.48	-3.64	19.22	9.09
Wood processing and manufacture of wood products	2.72	3.38	5.03	4.45	6.85	6.35
Chemical production	10.96	13.39	24.73	4.09	10.77	8.48
Manufacture of rubber and plastic products	0.65	0.95	1.80	7.83	11.25	10.70
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	2.15	2.42	4.38	2.47	10.36	7.39
Publishing and printing activities	0.33	0.35	0.44	1.38	4.15	3.17
Manufacture of other non-metallic mineral products	2.30	2.14	6.72	-1.38	20.96	11.32
Metallurgical production	29.13	30.11	37.94	0.66	3.93	2.68
Manufacture of fabricated metal products	1.05	1.36	1.78	5.42	4.58	5.47
Manufacture of machinery and equipment	4.34	5.47	7.65	4.76	5.74	5.84
Manufacture of office equipment and computers	0.08	0.21	1.84	21.21	43.56	36.77
Production of electronic components, equipment for radio, television, and communication	0.47	0.83	1.81	11.99	13.87	14.40
Manufacture of electrical machines and electrical equipment	1.19	1.67	2.87	7.01	9.41	9.18
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.69	0.97	1.40	6.96	6.34	7.31
Manufacture of cars, trailers, and semitrailers	1.99	1.63	3.19	-3.91	11.87	4.85
Manufacture of ships, aircrafts and space vehicles and other vehicles	1.78	1.05	2.70	-9.91	16.97	4.28
Manufacture of furniture and other products NEC	0.60	0.85	6.86	7.32	41.59	27.63
RMP	9.61	13.54	27.26	7.10	12.37	10.99
LT	32.59	34.14	50.22	0.93	6.64	4.42
MHT	21.49	25.22	46.18	3.25	10.61	7.95
Azerbaijan						
Manufacture of food products, beverages, and tobacco	0.195	0.309	0.636	9.6	12.8	12.5
Textile production	0.027	0.035	0.039	5.8	1.5	3.8
Manufacture of wearing apparel	0.006	0.005	0.003	-4.2	-8.4	-7.1
Manufacture of leather, leather goods, and footwear	0.002	0.005	0.017	17.1	24.9	23.6
Wood processing and manufacture of wood products	0.009	0.001	0.001	-42.3	11.6	-18.8
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.004	0.002	0.006	-11.2	19.8	5.0
Manufacture of other non-metallic mineral products	0.005	0.004	0.006	-4.5	8.0	2.3
Publishing and printing activities	0.002	0.002	0.001	-6.7	-9.5	-9.0
Chemical production	0.174	0.116	0.284	-7.9	16.2	5.0
Manufacture of rubber and plastic products	0.007	0.003	0.001	-15.6	-16.0	-17.2
Metallurgical production	0.165	0.202	0.192	4.1	-0.9	1.5
Manufacture of fabricated metal products	0.006	0.007	0.006	4.9	-3.3	0.4
Manufacture of machinery and equipment	0.056	0.050	0.064	-2.4	4.2	1.3
Manufacture of office equipment and computers	0.001	0.001	0.001	6.3	1.8	4.2
Production of electronic components, equipment for radio, television, and communication	0.002	0.002	0.003	5.9	3.1	4.8
Manufacture of electrical machines and electrical equipment	0.007	0.006	0.020	-2.4	22.9	11.8
Manufacture of cars, trailers, and semitrailers	0.007	0.005	0.010	-6.9	13.3	4.0

	Manufacturing exports by industry (in USD billions)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.471	0.139	0.013	-21.7	-32.4	-30.0
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.019	0.011	0.014	-10.4	4.5	-2.8
Manufacture of furniture and other products NEC	0.027	0.034	0.094	4.5	18.4	13.1
RMP	0.214	0.316	0.649	8.15	12.76	11.77
LT	0.243	0.293	0.353	3.81	3.14	3.79
MHT	0.736	0.329	0.410	-14.86	3.70	-5.70
Armenia						
Manufacture of food products, beverages, and tobacco	0.113	0.110	0.365	-0.5	22.1	12.4
Textile production	0.004	0.004	0.000	0.5	-33.4	-21.4
Manufacture of wearing apparel	0.027	0.013	0.065	-14.1	31.5	9.2
Manufacture of leather, leather goods, and footwear	0.000	0.001	0.002	72.4	7.7	37.3
Wood processing and manufacture of wood products	0.0008	0.0003	0.0004	-16.9	2.0	-7.7
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.003	0.001	0.001	-21.1	8.1	-7.0
Manufacture of other non-metallic mineral products	0.003	0.001	0.001	-27.2	1.6	-13.9
Publishing and printing activities	0.010	0.014	0.021	8.0	6.6	8.0
Chemical production	0.001	0.001	0.002	1.1	10.5	6.8
Manufacture of rubber and plastic products	0.271	0.080	0.140	-21.6	9.7	-6.4
Metallurgical production	0.309	0.244	0.284	-4.6	2.6	-0.8
Manufacture of fabricated metal products	0.015	0.001	0.004	-41.2	26.8	-11.6
Manufacture of machinery and equipment	0.018	0.010	0.014	-11.5	6.7	-2.2
Manufacture of office equipment and computers	0.000	0.000	0.001	12.3	18.5	17.4
Production of electronic components, equipment for radio, television, and communication	0.003	0.004	0.003	7.6	-5.0	0.6
Manufacture of electrical machines and electrical equipment	0.007	0.005	0.010	-5.7	12.9	4.4
Manufacture of cars, trailers, and semitrailers	0.003	0.002	0.002	-5.0	-0.9	-3.1
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.001	0.005	0.002	30.8	-18.0	1.5
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.004	0.006	0.017	7.8	19.9	15.8
Manufacture of furniture and other products NEC	0.061	0.048	0.109	-5.0	14.9	5.9
RMP	0.388	0.192	0.507	-13.13	17.59	2.72
LT	0.421	0.313	0.468	-5.76	6.93	1.06
MHT	0.046	0.047	0.070	0.43	7.13	4.45
Belarus						
Manufacture of food products, beverages, and tobacco	1.30	2.19	4.88	10.9	14.3	14.1
Textile production	0.61	0.61	0.80	-0.1	4.7	2.8
Manufacture of wearing apparel	0.33	0.34	0.53	0.8	7.6	4.9
Manufacture of leather, leather goods, and footwear	0.10	0.06	0.13	-9.3	12.8	2.4
Wood processing and manufacture of wood products	0.15	0.06	0.21	-16.9	24.0	3.7
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.31	0.30	0.57	-0.5	11.3	6.3
Publishing and printing activities	0.04	0.05	0.05	8.3	-0.3	3.9
Chemical production	1.71	2.82	4.67	10.5	8.8	10.6
Manufacture of rubber and plastic products	0.26	0.50	0.73	14.2	6.5	10.9
Manufacture of other non-metallic mineral products	0.33	0.34	0.73	0.4	13.6	8.2

	Manufacturing exports by industry (in USD billions)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Metallurgical production	0.78	0.96	1.64	4.4	9.3	7.8
Manufacture of fabricated metal products	0.37	0.46	0.66	4.0	6.5	5.9
Manufacture of machinery and equipment	1.08	1.48	2.11	6.5	6.1	6.9
Manufacture of office equipment and computers	0.01	0.02	0.05	2.8	21.6	14.0
Production of electronic components, equipment for radio, television, and communication	0.10	0.03	0.07	-21.1	15.4	-3.2
Manufacture of electrical machines and electrical equipment	0.60	0.71	0.94	3.5	4.8	4.6
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.15	0.20	0.35	6.0	9.7	8.8
Manufacture of cars, trailers, and semitrailers	1.19	0.85	1.71	-6.5	12.4	3.7
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.01	0.01	0.07	7.9	36.8	25.3
Manufacture of furniture and other products NEC	0.50	0.64	1.19	5.0	10.8	8.9
RMP	2.09	2.88	6.39	6.65	14.19	11.83
LT	2.98	3.62	5.73	3.96	7.94	6.74
MHT	4.84	6.11	9.97	4.78	8.51	7.50
Kazakhstan						
Manufacture of food products, beverages, and tobacco	0.36	0.85	1.18	18.8	5.6	12.6
Textile production	0.04	0.03	0.02	-9.3	-1.8	-5.8
Manufacture of wearing apparel	0.01	0.01	0.03	-4.2	31.8	15.5
Manufacture of leather, leather goods, and footwear	0.25	0.32	0.04	4.9	-28.9	-16.5
Wood processing and manufacture of wood products	0.00	0.00	0.00	59.4	178.5	133.4
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.02	0.02	0.04	6.5	9.0	8.7
Publishing and printing activities	0.01	0.00	0.00	-14.0	2.4	-6.0
Chemical production	0.53	1.93	2.64	29.7	5.4	17.5
Manufacture of rubber and plastic products	0.02	0.04	0.04	16.3	-0.3	7.6
Manufacture of other non-metallic mineral products	0.01	0.02	0.08	15.3	22.6	21.4
Metallurgical production	4.27	5.48	6.73	5.1	3.5	4.7
Manufacture of fabricated metal products	0.01	0.01	0.01	-0.5	3.2	1.6
Manufacture of machinery and equipment	0.26	0.24	0.44	-1.4	10.4	5.4
Manufacture of office equipment and computers	0.00	0.01	0.09	22.0	43.3	37.0
Production of electronic components, equipment for radio, television, and communication	0.15	0.17	0.70	2.9	26.1	16.5
Manufacture of electrical machines and electrical equipment	0.04	0.05	0.11	3.9	13.5	10.0
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.02	0.02	0.03	-5.8	11.1	3.4
Manufacture of cars, trailers, and semitrailers	0.03	0.04	0.04	2.4	0.1	1.3
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.05	0.07	0.52	5.2	39.9	25.4
Manufacture of furniture and other products NEC	0.22	0.69	0.39	25.4	-9.1	5.8
RMP	0.39	0.89	1.30	18.30	6.40	12.89
LT	4.83	6.57	7.27	6.34	1.71	4.18
MHT	1.09	2.53	4.57	18.31	10.33	15.38
Kyrgyzstan						
Manufacture of food products, beverages, and tobacco	0.059	0.102	0.086	11.7	-2.8	3.9
Textile production	0.013	0.018	0.026	6.3	6.7	7.2
Manufacture of wearing apparel	0.034	0.182	0.124	40.1	-6.3	13.8

	Manufacturing exports by industry (in USD billions)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of leather, leather goods, and footwear	0.013	0.024	0.017	12.8	-5.9	2.4
Wood processing and manufacture of wood products	0.000	0.001	0.002	8.3	25.2	19.1
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.003	0.011	0.011	34.2	-1.1	15.1
Publishing and printing activities	0.000	0.001	0.000	63.2	-17.2	14.1
Chemical production	0.006	0.043	0.093	46.1	13.9	30.7
Manufacture of rubber and plastic products	0.002	0.018	0.038	61.7	13.8	37.4
Manufacture of other non-metallic mineral products	0.061	0.017	0.043	-23.0	17.1	-3.5
Metallurgical production	0.006	0.013	0.075	16.4	33.9	28.5
Manufacture of fabricated metal products	0.004	0.010	0.031	19.9	21.1	22.8
Manufacture of machinery and equipment	0.012	0.043	0.052	28.7	3.4	15.7
Manufacture of office equipment and computers	0.000	0.001	0.000	25.7	-14.8	1.8
Production of electronic components, equipment for radio, television, and communication	0.000	0.002	0.002	30.5	0.9	14.8
Manufacture of electrical machines and electrical equipment	0.029	0.045	0.038	9.1	-2.7	2.7
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.001	0.005	0.004	34.7	-4.1	13.2
Manufacture of cars, trailers, and semitrailers	0.014	0.038	0.146	21.5	25.0	26.0
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.001	0.004	0.024	31.7	33.9	36.7
Manufacture of furniture and other products NEC	0.022	0.021	0.028	-0.4	4.6	2.5
RMP	0.123	0.130	0.141	1.22	1.33	1.41
LT	0.094	0.287	0.338	25.11	2.80	13.72
MHT	0.065	0.180	0.359	22.67	12.21	18.68
Moldova						
Manufacture of food products, beverages, and tobacco	0.407	0.286	0.451	-6.8	7.9	1.0
Textile production	0.025	0.029	0.058	2.7	12.4	8.7
Manufacture of wearing apparel	0.153	0.198	0.278	5.2	5.8	6.1
Manufacture of leather, leather goods, and footwear	0.040	0.047	0.072	3.3	7.6	6.2
Wood processing and manufacture of wood products	0.001	0.001	0.003	1.7	12.5	8.2
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.008	0.005	0.015	-9.1	19.6	6.2
Publishing and printing activities	0.001	0.003	0.004	23.0	4.5	13.9
Chemical production	0.014	0.033	0.097	19.3	19.8	21.8
Manufacture of rubber and plastic products	0.003	0.007	0.011	16.8	8.2	13.3
Manufacture of other non-metallic mineral products	0.029	0.039	0.070	6.3	10.0	9.2
Metallurgical production	0.153	0.090	0.110	-10.1	3.5	-3.2
Manufacture of fabricated metal products	0.012	0.012	0.018	0.7	6.0	3.9
Manufacture of machinery and equipment	0.032	0.057	0.055	12.4	-0.5	5.7
Manufacture of office equipment and computers	0.001	0.002	0.001	25.2	-9.8	5.2
Production of electronic components, equipment for radio, television, and communication	0.002	0.002	0.003	2.7	6.6	5.3
Manufacture of electrical machines and electrical equipment	0.012	0.059	0.259	38.0	27.9	36.1
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.006	0.009	0.029	8.4	21.5	17.0
Manufacture of cars, trailers, and semitrailers	0.006	0.008	0.012	8.1	5.8	7.5
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.003	0.002	0.010	-5.1	25.9	11.8

	Manufacturing exports by industry (in USD billions)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of furniture and other products NEC	0.027	0.054	0.148	15.0	18.2	18.6
RMP	0.446	0.333	0.540	-5.69	8.40	1.93
LT	0.415	0.440	0.700	1.19	8.04	5.37
MHT	0.074	0.172	0.465	18.32	17.98	20.12
Tajikistan						
Manufacture of food products, beverages, and tobacco	0.008	0.199	0.044	88.2	-22.2	18.0
Textile production	0.026	0.016	0.034	-9.6	13.8	2.7
Manufacture of wearing apparel	0.010	0.027	0.027	22.0	0.3	10.7
Manufacture of leather, leather goods, and footwear	0.0004	0.0003	0.0056	-3.1	59.1	30.0
Wood processing and manufacture of wood products	0.00005	0.00003	0.00004	-7.1	1.6	-2.7
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.0001	0.0002	0.0004	22.9	8.6	16.5
Publishing and printing activities	0.0000	0.0001	0.0006	33.2	38.1	40.1
Chemical production	0.019	0.138	0.022	49.1	-26.3	1.7
Manufacture of rubber and plastic products	0.001	0.011	0.004	83.7	-15.8	22.2
Manufacture of other non-metallic mineral products	0.002	0.014	0.003	56.6	-23.6	6.5
Metallurgical production	0.555	0.246	0.390	-15.0	8.0	-3.5
Manufacture of fabricated metal products	0.001	0.004	0.001	35.9	-15.8	5.2
Manufacture of machinery and equipment	0.002	0.010	0.014	42.1	6.6	23.9
Manufacture of office equipment and computers	0.007	0.004	0.004	-9.5	-0.6	-5.2
Production of electronic components, equipment for radio, television, and communication	0.003	0.000	0.004	-34.8	51.2	3.5
Manufacture of electrical machines and electrical equipment	0.002	0.006	0.003	26.6	-11.2	4.8
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.00005	0.0003	0.0040	44.7	54.1	55.9
Manufacture of cars, trailers, and semitrailers	0.010	0.039	0.013	30.7	-16.9	2.3
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.007	0.005	0.009	-7.6	10.6	2.1
Manufacture of furniture and other products NEC	0.031	0.011	0.043	-19.0	25.5	3.1
RMP	0.010	0.213	0.048	84.10	-22.15	16.76
LT	0.624	0.315	0.506	-12.79	8.24	-2.07
MHT	0.050	0.202	0.073	32.35	-15.60	3.91
Ukraine						
Manufacture of food products, beverages, and tobacco	2.68	4.58	8.13	11.3	10.0	11.7
Textile production	0.22	0.16	0.21	-6.0	4.3	-0.6
Manufacture of wearing apparel	0.69	0.55	0.57	-4.4	0.5	-1.9
Manufacture of leather, leather goods, and footwear	0.24	0.29	0.30	4.1	0.4	2.3
Wood processing and manufacture of wood products	0.24	0.21	0.38	-3.1	10.6	4.5
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.53	0.94	1.41	12.2	6.9	10.3
Publishing and printing activities	0.05	0.12	0.15	18.4	3.9	11.4
Chemical production	2.99	2.30	2.66	-5.0	2.4	-1.2
Manufacture of rubber and plastic products	0.31	0.32	0.30	0.8	-1.3	-0.4
Manufacture of other non-metallic mineral products	0.32	0.32	0.48	-0.2	7.0	4.1
Metallurgical production	13.36	12.12	14.35	-1.9	2.9	0.7
Manufacture of fabricated metal products	0.38	0.48	0.58	5.0	3.2	4.4
Manufacture of machinery and equipment	1.89	2.83	3.07	8.4	1.4	5.0
Manufacture of office equipment and computers	0.07	0.04	0.04	-8.3	-0.1	-4.3

	Manufacturing exports by industry (in USD billions)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Production of electronic components, equipment for radio, television, and communication	0.10	0.39	0.51	32.7	4.6	18.3
Manufacture of electrical machines and electrical equipment	0.83	1.75	2.05	16.0	2.7	9.4
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.14	0.26	0.21	13.5	-3.2	4.5
Manufacture of cars, trailers, and semitrailers	0.32	0.37	0.25	2.9	-6.4	-2.5
Manufacture of ships, aircrafts and space vehicles and other vehicles	1.27	1.21	1.17	-1.0	-0.5	-0.8
Manufacture of furniture and other products NEC	0.33	0.53	1.12	9.8	13.2	12.9
RMP	3.77	6.05	10.40	9.91	9.44	10.67
LT	15.58	14.58	17.57	-1.31	3.16	1.21
MHT	7.60	9.15	9.96	3.78	1.43	2.75

Table 2.5 – Contribution of individual industries to total manufacturing exports

	Share of products from certain industries in manufacturing exports (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia						
Manufacture of food products, beverages, and tobacco	3.84	7.68	9.01	3.8	1.3	5.2
Textile production	0.70	0.36	0.40	-0.3	0.0	-0.3
Manufacture of wearing apparel	0.30	0.14	0.33	-0.2	0.2	0.0
Manufacture of leather, leather goods, and footwear	0.32	0.23	0.39	-0.1	0.2	0.1
Wood processing and manufacture of wood products	4.27	4.63	4.06	0.4	-0.6	-0.2
Chemical production	17.21	18.37	20.00	1.2	1.6	2.8
Manufacture of rubber and plastic products	1.02	1.30	1.45	0.3	0.2	0.4
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	3.37	3.32	3.54	0.0	0.2	0.2
Publishing and printing activities,	0.51	0.48	0.36	0.0	-0.1	-0.2
Manufacture of other non-metallic mineral products	3.61	2.94	5.43	-0.7	2.5	1.8
Metallurgical production	45.74	41.29	30.68	-4.4	-10.6	-15.1
Manufacture of fabricated metal products	1.64	1.87	1.44	0.2	-0.4	-0.2
Manufacture of machinery and equipment	6.81	7.50	6.18	0.7	-1.3	-0.6
Manufacture of office equipment and computers	0.13	0.29	1.49	0.2	1.2	1.4
Production of electronic components, equipment for radio, television, and communication	0.74	1.14	1.46	0.4	0.3	0.7
Manufacture of electrical machines and electrical equipment	1.87	2.29	2.32	0.4	0.0	0.4
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	1.08	1.32	1.13	0.2	-0.2	0.0
Manufacture of cars, trailers, and semitrailers	3.12	2.23	2.58	-0.9	0.3	-0.5
Manufacture of ships, aircrafts and space vehicles and other vehicles	2.79	1.45	2.18	-1.3	0.7	-0.6
Manufacture of furniture and other products NEC	0.94	1.17	5.55	0.2	4.4	4.6
RMP	15.1	18.6	22.0	3.5	3.5	7.0
LT	51.2	46.8	40.6	-4.3	-6.2	-10.6
MHT	33.7	34.6	37.3	0.8	2.8	3.6
Azerbaijan						

	Share of products from certain industries in manufacturing exports (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of food products, beverages, and tobacco	16.38	32.96	45.04	16.6	12.1	28.7
Textile production	2.24	3.77	2.74	1.5	-1.0	0.5
Manufacture of wearing apparel	0.52	0.53	0.21	0.0	-0.3	-0.3
Manufacture of leather, leather goods, and footwear	0.17	0.49	1.23	0.3	0.7	1.1
Wood processing and manufacture of wood products	0.79	0.06	0.08	-0.7	0.0	-0.7
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.33	0.23	0.46	-0.1	0.2	0.1
Manufacture of other non-metallic mineral products	0.41	0.41	0.43	0.0	0.0	0.0
Publishing and printing activities	0.19	0.17	0.06	0.0	-0.1	-0.1
Chemical production	14.59	12.32	20.11	-2.3	7.8	5.5
Manufacture of rubber and plastic products	0.63	0.34	0.08	-0.3	-0.3	-0.5
Metallurgical production	13.86	21.53	13.59	7.7	-7.9	-0.3
Manufacture of fabricated metal products	0.47	0.76	0.41	0.3	-0.3	-0.1
Manufacture of machinery and equipment	4.73	5.32	4.54	0.6	-0.8	-0.2
Manufacture of office equipment and computers	0.06	0.10	0.08	0.0	0.0	0.0
Production of electronic components, equipment for radio, television, and communication	0.15	0.25	0.20	0.1	-0.1	0.1
Manufacture of electrical machines and electrical equipment	0.55	0.62	1.41	0.1	0.8	0.9
Manufacture of cars, trailers, and semitrailers	0.57	0.51	0.71	-0.1	0.2	0.1
Manufacture of ships, aircrafts and space vehicles and other vehicles	39.46	14.80	0.94	-24.7	-13.9	-38.5
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	1.62	1.19	1.03	-0.4	-0.2	-0.6
Manufacture of furniture and other products NEC	2.29	3.63	6.65	1.3	3.0	4.4
RMP	17.90	33.67	46.01	15.8	12.3	28.1
LT	20.4	31.2	25.0	10.9	-6.2	4.6
MHT	61.7	35.1	29.0	-26.6	-6.1	-32.7
Armenia						
Manufacture of food products, beverages, and tobacco	13.24	20.02	34.95	6.8	14.9	21.7
Textile production	0.50	0.79	0.04	0.3	-0.8	-0.5
Manufacture of wearing apparel	3.14	2.27	6.19	-0.9	3.9	3.1
Manufacture of leather, leather goods, and footwear	0.01	0.25	0.21	0.2	0.0	0.2
Wood processing and manufacture of wood products	0.09	0.06	0.03	0.0	0.0	-0.1
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.36	0.17	0.14	-0.2	0.0	-0.2
Publishing and printing activities	0.37	0.12	0.07	-0.3	0.0	-0.3
Chemical production	1.14	2.59	2.01	1.5	-0.6	0.9
Manufacture of rubber and plastic products	0.11	0.19	0.18	0.1	0.0	0.1
Manufacture of other non-metallic mineral products	31.73	14.56	13.41	-17.2	-1.2	-18.3
Metallurgical production	36.21	44.30	27.18	8.1	-17.1	-9.0
Manufacture of fabricated metal products	1.71	0.19	0.41	-1.5	0.2	-1.3
Manufacture of machinery and equipment	2.11	1.78	1.39	-0.3	-0.4	-0.7
Manufacture of office equipment and computers	0.02	0.05	0.08	0.0	0.0	0.1
Production of electronic components, equipment for radio, television, and communication	0.36	0.81	0.31	0.4	-0.5	0.0
Manufacture of electrical machines and electrical equipment	0.80	0.92	1.00	0.1	0.1	0.2
Manufacture of cars, trailers, and semitrailers	0.30	0.35	0.18	0.1	-0.2	-0.1

	Share of products from certain industries in manufacturing exports (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.15	0.90	0.14	0.7	-0.8	0.0
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.46	1.04	1.63	0.6	0.6	1.2
Manufacture of furniture and other products NEC	7.18	8.63	10.46	1.4	1.8	3.3
RMP	45.4	34.8	48.5	-10.6	13.7	3.1
LT	49.2	56.7	44.7	7.5	-12.0	-4.5
MHT	5.34	8.45	6.74	3.1	-1.7	1.4
Belarus						
Manufacture of food products, beverages, and tobacco	13.15	17.32	22.09	4.2	4.8	8.9
Textile production	6.14	4.81	3.62	-1.3	-1.2	-2.5
Manufacture of wearing apparel	3.33	2.73	2.42	-0.6	-0.3	-0.9
Manufacture of leather, leather goods, and footwear	1.00	0.48	0.57	-0.5	0.1	-0.4
Wood processing and manufacture of wood products	1.47	0.46	0.95	-1.0	0.5	-0.5
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	3.10	2.37	2.57	-0.7	0.2	-0.5
Publishing and printing activities,	0.36	0.42	0.24	0.1	-0.2	-0.1
Chemical production	17.22	22.33	21.16	5.1	-1.2	3.9
Manufacture of rubber and plastic products	2.59	3.95	3.29	1.4	-0.7	0.7
Manufacture of other non-metallic mineral products	3.36	2.69	3.31	-0.7	0.6	0.0
Metallurgical production	7.83	7.63	7.43	-0.2	-0.2	-0.4
Manufacture of fabricated metal products	3.77	3.61	3.01	-0.2	-0.6	-0.8
Manufacture of machinery and equipment	10.87	11.71	9.54	0.8	-2.2	-1.3
Manufacture of office equipment and computers	0.14	0.13	0.24	0.0	0.1	0.1
Production of electronic components, equipment for radio, television, and communication	1.00	0.24	0.32	-0.8	0.1	-0.7
Manufacture of electrical machines and electrical equipment	6.02	5.61	4.25	-0.4	-1.4	-1.8
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	1.51	1.59	1.58	0.1	0.0	0.1
Manufacture of cars, trailers, and semitrailers	11.97	6.73	7.73	-5.2	1.0	-4.2
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.07	0.09	0.32	0.0	0.2	0.2
Manufacture of furniture and other products NEC	5.08	5.10	5.37	0.0	0.3	0.3
RMP	21.1	22.8	28.9	1.8	6.1	7.8
LT	30.1	28.7	25.9	-1.4	-2.8	-4.2
MHT	48.8	48.4	45.1	-0.4	-3.3	-3.7
Kazakhstan						
Manufacture of food products, beverages, and tobacco	5.68	8.49	8.98	2.8	0.5	3.3
Textile production	0.68	0.26	0.18	-0.4	-0.1	-0.5
Manufacture of wearing apparel	0.10	0.05	0.21	-0.1	0.2	0.1
Manufacture of leather, leather goods, and footwear	3.98	3.19	0.31	-0.8	-2.9	-3.7
Wood processing and manufacture of wood products	0.00	0.00	0.02	0.0	0.0	0.0
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.25	0.21	0.27	0.0	0.1	0.0
Publishing and printing activities,	0.14	0.04	0.04	-0.1	0.0	-0.1
Chemical production	8.36	19.34	20.12	11.0	0.8	11.8
Manufacture of rubber and plastic products	0.30	0.40	0.30	0.1	-0.1	0.0

	Share of products from certain industries in manufacturing exports (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of other non-metallic mineral products	0.18	0.23	0.59	0.1	0.4	0.4
Metallurgical production	67.68	54.80	51.26	-12.9	-3.5	-16.4
Manufacture of fabricated metal products	0.20	0.12	0.11	-0.1	0.0	-0.1
Manufacture of machinery and equipment	4.10	2.41	3.32	-1.7	0.9	-0.8
Manufacture of office equipment and computers	0.06	0.10	0.66	0.0	0.6	0.6
Production of electronic components, equipment for radio, television, and communication	2.40	1.75	5.33	-0.7	3.6	2.9
Manufacture of electrical machines and electrical equipment	0.67	0.51	0.83	-0.2	0.3	0.2
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.34	0.16	0.23	-0.2	0.1	-0.1
Manufacture of cars, trailers, and semitrailers	0.53	0.38	0.29	-0.2	-0.1	-0.2
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.86	0.70	3.99	-0.2	3.3	3.1
Manufacture of furniture and other products NEC	3.51	6.86	2.95	3.4	-3.9	-0.6
RMP	6.11	8.93	9.86	2.8	0.9	3.8
LT	76.6	65.7	55.4	-10.8	-10.4	-21.2
MHT	17.3	25.3	34.8	8.0	9.4	17.5
Kyrgyzstan						
Manufacture of food products, beverages, and tobacco	20.89	17.08	10.22	-3.8	-6.9	-10.7
Textile production	4.68	2.99	3.14	-1.7	0.1	-1.5
Manufacture of wearing apparel	12.03	30.50	14.73	18.5	-15.8	2.7
Manufacture of leather, leather goods, and footwear	4.64	4.00	1.98	-0.6	-2.0	-2.7
Wood processing and manufacture of wood products	0.13	0.09	0.25	0.0	0.2	0.1
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.92	1.90	1.26	1.0	-0.6	0.3
Publishing and printing activities,	0.04	0.21	0.05	0.2	-0.2	0.0
Chemical production	2.28	7.15	11.10	4.9	4.0	8.8
Manufacture of rubber and plastic products	0.56	2.94	4.53	2.4	1.6	4.0
Manufacture of other non-metallic mineral products	21.72	2.77	5.09	-18.9	2.3	-16.6
Metallurgical production	2.16	2.17	8.91	0.0	6.7	6.8
Manufacture of fabricated metal products	1.41	1.65	3.70	0.2	2.0	2.3
Manufacture of machinery and equipment	4.29	7.12	6.19	2.8	-0.9	1.9
Manufacture of office equipment and computers	0.11	0.16	0.04	0.1	-0.1	-0.1
Production of electronic components, equipment for radio, television, and communication	0.17	0.30	0.23	0.1	-0.1	0.1
Manufacture of electrical machines and electrical equipment	10.30	7.49	4.51	-2.8	-3.0	-5.8
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.37	0.78	0.43	0.4	-0.3	0.1
Manufacture of cars, trailers, and semitrailers	5.16	6.44	17.46	1.3	11.0	12.3
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.37	0.69	2.84	0.3	2.1	2.5
Manufacture of furniture and other products NEC	7.77	3.58	3.33	-4.2	-0.2	-4.4
RMP	43.7	21.8	16.8	-21.8	-5.0	-26.8
LT	33.3	48.0	40.4	14.7	-7.7	7.1
MHT	23.0	30.1	42.8	7.1	12.7	19.8
Moldova						
Manufacture of food products, beverages, and tobacco	43.54	30.32	26.50	-13.2	-3.8	-17.0

	Share of products from certain industries in manufacturing exports (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Textile production	2.72	3.07	3.43	0.4	0.4	0.7
Manufacture of wearing apparel	16.42	20.91	16.29	4.5	-4.6	-0.1
Manufacture of leather, leather goods, and footwear	4.24	4.94	4.25	0.7	-0.7	0.0
Wood processing and manufacture of wood products	0.13	0.14	0.16	0.0	0.0	0.0
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.90	0.56	0.90	-0.3	0.3	0.0
Publishing and printing activities,	0.11	0.31	0.22	0.2	-0.1	0.1
Chemical production	1.45	3.46	5.68	2.0	2.2	4.2
Manufacture of rubber and plastic products	0.34	0.74	0.66	0.4	-0.1	0.3
Manufacture of other non-metallic mineral products	3.11	4.18	4.10	1.1	-0.1	1.0
Metallurgical production	16.35	9.52	6.47	-6.8	-3.1	-9.9
Manufacture of fabricated metal products	1.28	1.31	1.03	0.0	-0.3	-0.2
Manufacture of machinery and equipment	3.37	5.98	3.21	2.6	-2.8	-0.2
Manufacture of office equipment and computers	0.07	0.23	0.07	0.2	-0.2	0.0
Production of electronic components, equipment for radio, television, and communication	0.21	0.24	0.20	0.0	0.0	0.0
Manufacture of electrical machines and electrical equipment	1.26	6.25	15.17	5.0	8.9	13.9
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.63	0.94	1.67	0.3	0.7	1.0
Manufacture of cars, trailers, and semitrailers	0.60	0.87	0.68	0.3	-0.2	0.1
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.34	0.26	0.58	-0.1	0.3	0.2
Manufacture of furniture and other products NEC	2.89	5.76	8.71	2.9	3.0	5.8
RMP	47.7	35.2	31.7	-12.5	-3.5	-16.0
LT	44.4	46.6	41.1	2.2	-5.5	-3.3
MHT	7.95	18.23	27.27	10.3	9.0	19.3
Tajikistan						
Manufacture of food products, beverages, and tobacco	1.23	27.21	7.06	26.0	-20.2	5.8
Textile production	3.82	2.16	5.46	-1.7	3.3	1.6
Manufacture of wearing apparel	1.44	3.65	4.34	2.2	0.7	2.9
Manufacture of leather, leather goods, and footwear	0.06	0.05	0.90	0.0	0.9	0.8
Wood processing and manufacture of wood products	0.01	0.00	0.01	0.0	0.0	0.0
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.01	0.03	0.06	0.0	0.0	0.1
Publishing and printing activities,	0.00	0.01	0.09	0.0	0.1	0.1
Chemical production	2.73	18.87	3.53	16.1	-15.3	0.8
Manufacture of rubber and plastic products	0.08	1.52	0.63	1.4	-0.9	0.6
Manufacture of other non-metallic mineral products	0.22	1.99	0.46	1.8	-1.5	0.2
Metallurgical production	81.15	33.68	62.32	-47.5	28.6	-18.8
Manufacture of fabricated metal products	0.12	0.51	0.21	0.4	-0.3	0.1
Manufacture of machinery and equipment	0.24	1.31	2.24	1.1	0.9	2.0
Manufacture of office equipment and computers	1.08	0.61	0.69	-0.5	0.1	-0.4
Production of electronic components, equipment for radio, television, and communication	0.40	0.04	0.62	-0.4	0.6	0.2
Manufacture of electrical machines and electrical equipment	0.29	0.88	0.50	0.6	-0.4	0.2
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.01	0.04	0.64	0.0	0.6	0.6

	Share of products from certain industries in manufacturing exports (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of cars, trailers, and semitrailers	1.48	5.28	2.03	3.8	-3.3	0.6
Manufacture of ships, aircrafts and space vehicles and other vehicles	1.05	0.66	1.42	-0.4	0.8	0.4
Manufacture of furniture and other products NEC	4.57	1.49	6.79	-3.1	5.3	2.2
RMP	1.48	29.23	7.59	27.8	-21.6	6.1
LT	91.2	43.1	80.7	-48.2	37.7	-10.5
MHT	7.3	27.7	11.7	20.4	-16.0	4.4
Ukraine						
Manufacture of food products, beverages, and tobacco	9.94	15.39	21.43	5.5	6.0	11.5
Textile production	0.82	0.55	0.55	-0.3	0.0	-0.3
Manufacture of wearing apparel	2.56	1.85	1.50	-0.7	-0.4	-1.1
Manufacture of leather, leather goods, and footwear	0.89	0.98	0.79	0.1	-0.2	-0.1
Wood processing and manufacture of wood products	0.91	0.70	1.00	-0.2	0.3	0.1
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	1.97	3.17	3.72	1.2	0.6	1.7
Publishing and printing activities,	0.19	0.40	0.40	0.2	0.0	0.2
Chemical production	11.08	7.74	7.00	-3.3	-0.7	-4.1
Manufacture of rubber and plastic products	1.15	1.08	0.79	-0.1	-0.3	-0.4
Manufacture of other non-metallic mineral products	1.19	1.06	1.25	-0.1	0.2	0.1
Metallurgical production	49.57	40.71	37.83	-8.9	-2.9	-11.7
Manufacture of fabricated metal products	1.39	1.61	1.53	0.2	-0.1	0.1
Manufacture of machinery and equipment	7.03	9.51	8.10	2.5	-1.4	1.1
Manufacture of office equipment and computers	0.25	0.15	0.11	-0.1	0.0	-0.1
Production of electronic components, equipment for radio, television, and communication	0.35	1.31	1.35	1.0	0.0	1.0
Manufacture of electrical machines and electrical equipment	3.08	5.86	5.40	2.8	-0.5	2.3
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.50	0.86	0.56	0.4	-0.3	0.1
Manufacture of cars, trailers, and semitrailers	1.18	1.23	0.65	0.1	-0.6	-0.5
Manufacture of ships, aircrafts and space vehicles and other vehicles	4.71	4.06	3.10	-0.7	-1.0	-1.6
Manufacture of furniture and other products NEC	1.23	1.78	2.94	0.5	1.2	1.7
RMP	14.0	20.3	27.4	6.3	7.1	13.4
LT	57.8	49.0	46.3	-8.8	-2.6	-11.5
MHT	28.2	30.7	26.3	2.5	-4.5	-1.9

Source: UNCTADstat data portal, authors' calculations.

Table 2.6 – Production potential of manufacturing sector

	GVA per capita (USD)			Compound average annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia						
Manufacture of food products, including beverages	182.9	187.7	177.0	0.5	-1.0	-0.3
Manufacture of tobacco products	10.7	9.0	12.1	-3.3	5.0	1.2
Textile production	9.5	7.6	7.9	-4.3	0.6	-1.8
Manufacture of wearing apparel; dressing and dyeing of fur	14.0	9.8	12.4	-7.0	4.0	-1.2
Manufacture of leather, leather goods, and footwear	3.8	3.8	3.1	0.3	-3.5	-2.0
Wood processing and manufacture of wood and cork products, except furniture	28.0	22.2	21.9	-4.5	-0.2	-2.4
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	16.0	17.8	25.2	2.1	6.0	4.6
Publishing polygraphic activity, replication of recorded media	33.1	26.0	19.8	-4.7	-4.4	-5.0
Coke production; manufacture of petroleum products	270.2	269.0	342.9	-0.1	4.1	2.4
Chemical production (excluding production of gunpowder and explosives)	121.5	110.3	110.3	-1.9	0.0	-1.0
Manufacture of rubber and plastic products	20.1	24.0	26.6	3.6	1.8	2.8
Manufacture of other non-metallic mineral products	75.2	65.5	63.0	-2.7	-0.6	-1.8
Metallurgical production	237.4	175.1	207.4	-5.9	2.9	-1.3
Manufacture of fabricated metal products	27.1	28.1	35.7	0.7	4.1	2.8
Manufacture of machinery and equipment (excluding production of weapons and ammunition)	77.9	52.3	76.8	-7.7	6.6	-0.1
Manufacture of office equipment and computers	1.8	1.9	3.2	0.3	9.3	5.6
Manufacture of electrical machines and electrical equipment	34.3	21.0	25.5	-9.3	3.3	-2.9
Production of electronic components, equipment for radio, television, and communication	17.8	9.6	19.7	-11.5	12.6	1.0
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	26.3	17.9	33.7	-7.4	11.2	2.5
Manufacture of cars, trailers, and semitrailers	28.0	13.5	34.0	-13.5	16.6	1.9
Manufacture of ships, aircrafts and space vehicles, other vehicles and other materials and substances NEC	54.0	41.2	107.7	-5.3	17.4	7.2
Manufacture of furniture and other products NEC	21.9	16.8	17.1	-5.2	0.2	-2.5
Other products of processing industries	42.8	33.5		-4.8		
Processing of secondary raw materials			6.6			
RMP	312.7	302.1	299.1	-0.7	-0.2	-0.4
LT	680.0	593.6	679.5	-2.7	2.3	0.0
MHT	361.7	267.8	410.8	-5.8	7.4	1.3
HGVA	812.1	742.0	837.5	-1.8	2.0	0.3
Azerbaijan						
Manufacture of food products, beverages, and tobacco	81.9	80.4	99.0	-0.4	3.5	1.9
Textile and clothing manufacture	3.5	2.9	3.6	-3.8	3.8	0.3
Manufacture of leather, leather goods, and footwear	0.3	0.8	0.7	20.6	-2.9	7.9
Wood processing and manufacture of wood and cork products, except furniture	0.7	0.5	0.7	-5.0	4.9	0.3
Publishing polygraphic activity and replication of recorded media	1.6	2.0	1.2	5.3	-8.8	-2.9
Manufacture of coke and refined petroleum products	57.2	87.6	99.0	8.9	2.1	5.6
Manufacture of chemical products	13.6	6.3	8.6	-14.3	5.4	-4.5

	GVA per capita (USD)			Compound average annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of rubber and plastic products	1.6	2.8	2.4	12.2	-2.9	4.1
Manufacture of other non-metallic mineral products	9.3	17.5	17.4	13.6	-0.2	6.5
Manufacture of basic metals	18.6	4.2	9.7	-25.7	15.0	-6.3
Manufacture of fabricated metal products, except machinery and equipment	3.8	4.8	4.6	4.5	-0.8	1.7
Manufacture of computers, electronic and optical equipment	0.5	1.7	2.3	27.8	4.7	16.2
Manufacture of electrical equipment	1.3	1.9	5.6	8.2	19.8	15.9
Manufacture of machinery and equipment NEC	2.2	4.4	9.7	14.5	13.9	15.7
Manufacture of cars and other vehicles	1.3	1.0	3.3	-4.2	21.6	10.0
RMP	91.8	98.5	117.1	1.4	2.9	2.5
LT	99.5	115.7	133.6	3.1	2.4	3.0
MHT	18.9	15.4	29.5	-4.0	11.5	4.6
HGVA	152.7	174.3	206.6	2.7	2.9	3.1
Armenia						
Manufacture of food products, including beverages, and tobacco	99.2	121.9	215.0	4.2	9.9	8.0
Textile and clothing manufacture	2.2	2.1	3.4	-0.9	8.3	4.5
Manufacture of leather, leather goods, footwear	0.2	0.4	0.5	19.7	3.7	11.8
Wood processing and manufacture of wood and cork products (except furniture), wickerwork	0.6	0.4	0.7	-6.8	8.1	1.2
Publishing polygraphic activity and replication of recorded media	4.8	1.6	6.1	-20.2	25.6	2.4
Manufacture of chemical products	7.8	4.8	3.5	-9.0	-5.2	-7.6
Manufacture of rubber and plastic products	2.0	7.1	11.4	28.5	8.1	18.8
Manufacture of other non-metallic mineral products	11.9	21.5	22.8	12.6	0.9	6.7
Manufacture of basic metals and finished metal products, except machinery and equipment	65.7	51.6	79.8	-4.7	7.5	2.0
Manufacture of computers, electronic and optical equipment, electrical equipment	4.5	3.6	4.5	-4.6	4.1	0.0
Manufacture of machinery and equipment NEC	3.3	1.6	1.4	-13.8	-1.4	-8.0
Manufacture of other transport equipment	0.1	0.0	0.0	-54.1	5.2	-30.2
RMP	111.7	143.9	238.4	5.2	8.8	7.9
LT	82.6	75.8	119.0	-1.7	7.8	3.7
MHT	15.7	10.0	9.5	-8.6	-0.8	-4.9
HGVA	164.9	173.6	294.8	1.0	9.2	6.0
Belarus						
Manufacture of food products, including beverages, and tobacco	232.5	285.7	111.4	4.2	-14.5	-7.1
Textile and clothing manufacture	53.2	48.4	14.2	-1.9	-18.5	-12.4
Manufacture of leather, leather goods, and footwear	11.4	10.9	3.8	-1.1	-16.2	-10.6
Wood processing and manufacture of wood products	25.3	22.2	9.2	-2.6	-13.6	-9.6
Pulp and paper industry; publishing activity	25.3	25.7	7.0	0.3	-19.4	-12.0
Manufacture of coke, refined petroleum products and nuclear materials	250.6	256.4	76.4	0.5	-18.3	-11.2
Chemical production	116.0	118.9	46.4	0.5	-14.5	-8.8
Manufacture of rubber and plastic products	32.5	45.4	16.3	6.9	-15.7	-6.7
Manufacture of other non-metallic mineral products	52.4	73.5	26.1	7.0	-15.8	-6.7
Metallurgical production and manufacture of fabricated metal products	78.2	88.5	30.1	2.5	-16.5	-9.1

	GVA per capita (USD)			Compound average annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of machinery and equipment	123.7	131.6	35.5	1.2	-19.6	-11.7
Manufacture of electrical, electronic and optical equipment	49.6	50.1	16.5	0.2	-17.0	-10.5
manufacture of vehicles and equipment	77.7	58.1	16.6	-5.6	-18.8	-14.3
RMP	335.6	407.1	153.8	3.9	-15.0	-7.5
LT	453.7	481.4	153.1	1.2	-17.4	-10.3
MHT	367.0	358.7	114.9	-0.5	-17.3	-11.0
HGVA	722.8	792.6	269.7	1.9	-16.4	-9.4
Kazakhstan						
Manufacture of food products, beverages, and tobacco products	218.5	215.6	218.3	-0.3	0.2	0.0
Manufacture of textiles and clothing	15.8	6.6	8.5	-16.1	4.3	-6.0
Manufacture of leather, leather goods, and footwear	0.8	0.7	1.0	-3.5	6.5	2.0
Wood processing and manufacture of wood and cork products, except furniture	3.4	2.4	3.0	-6.8	4.1	-1.1
Manufacture of coke and refined petroleum products	69.9	56.1	85.6	-4.3	7.3	2.1
Manufacture of chemical products	23.9	22.4	34.9	-1.3	7.6	3.8
Manufacture of rubber and plastic products	13.4	15.7	23.9	3.2	7.2	5.9
Manufacture of other non-metallic mineral products	49.4	48.0	68.5	-0.6	6.1	3.3
Manufacture of basic metals	311.2	283.3	289.7	-1.9	0.4	-0.7
Manufacture of fabricated metal products, except machinery and equipment	19.9	27.7	27.2	6.8	-0.3	3.2
Manufacture of computers, electronic and optical equipment	5.6	3.3	5.6	-9.8	9.2	0.1
Manufacture of electrical equipment	8.0	9.4	12.8	3.4	5.2	4.8
Manufacture of machinery and equipment NEC	15.6	11.4	15.7	-6.1	5.5	0.1
Manufacture of motor vehicles, trailers, and semitrailers	2.7	1.7	28.4	-8.6	59.9	26.7
RMP	271.3	266.0	289.8	-0.4	1.4	0.7
LT	506.7	459.6	535.6	-1.9	2.6	0.6
MHT	55.8	48.3	97.5	-2.8	12.4	5.7
HGVA	529.7	498.9	507.9	-1.2	0.3	-0.4
Kyrgyzstan						
Manufacture of food products, including beverages, and tobacco	21.6	18.4	21.6	-3.1	2.7	0.0
Textile and clothing manufacture	6.0	5.4	5.0	-1.9	-1.3	-1.8
Manufacture of leather, leather goods, and footwear	0.2	0.2	0.2	3.9	-1.7	0.9
Wood processing and manufacture of wood products	0.2	0.3	0.5	10.2	10.0	11.1
Pulp and paper industry; publishing activity	2.0	1.5	0.7	-5.6	-10.9	-9.3
Manufacture of petroleum products	1.5	1.7	3.4	2.8	12.5	8.8
Chemical production	1.5	0.7	1.2	-15.5	9.9	-2.7
Manufacture of rubber and plastic products	2.9	1.3	1.8	-14.5	5.2	-4.7
Manufacture of other non-metallic mineral products	11.0	6.7	14.0	-9.5	13.2	2.5
Metallurgical production and manufacture of fabricated metal products	52.0	57.4	76.3	2.0	4.9	3.9
Manufacture of machinery and equipment	3.0	1.1	0.3	-18.1	-20.9	-21.4
Manufacture of electrical, electronic and optical equipment	2.8	1.6	1.8	-10.4	1.5	-4.4
Manufacture of vehicles and equipment	0.6	0.5	0.7	-3.4	4.8	1.1
RMP	34.8	26.9	36.9	-5.0	5.5	0.6
LT	63.3	66.8	88.8	1.1	4.9	3.4

	GVA per capita (USD)			Compound average annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
MHT	8.0	3.9	3.9	-13.2	0.0	-6.9
HGVA	84.6	82.5	111.9	-0.5	5.2	2.8
Moldova						
Manufacture of food products and beverages	77.7	71.6	82.7	-1.6	2.4	0.6
Manufacture of tobacco products	2.9	3.9	1.6	5.7	-14.0	-6.1
Textile production	4.9	3.8	7.7	-5.2	12.6	4.5
Manufacture of wearing apparel	6.1	6.2	8.3	0.2	4.9	3.0
Manufacture of leather, leather goods, and footwear	2.1	1.8	1.9	-3.0	0.6	-1.1
Wood processing and manufacture of wood and cork products, except furniture	1.1	1.4	1.0	5.1	-4.5	-0.3
Publishing polygraphic activity and replication of recorded media	3.7	4.0	1.8	1.6	-12.0	-6.6
Manufacture of chemical products	2.5	4.6	4.1	12.9	-1.9	5.1
Manufacture of rubber and plastic products	7.1	5.9	7.7	-3.4	4.3	0.8
Manufacture of other non-metallic mineral products	22.7	16.7	18.2	-6.0	1.4	-2.2
Manufacture of basic metals	0.9	1.1	0.4	4.6	-15.6	-7.6
Manufacture of fabricated metal products, except for machinery and equipment	4.5	3.8	5.3	-3.4	5.9	1.7
Manufacture of machinery and equipment	4.3	2.8	2.5	-8.1	-1.5	-5.0
Manufacture of electrical machinery and equipment	1.3	1.7	5.9	6.2	22.4	16.4
Manufacture of equipment and apparatus for radio, television, and communication	0.3	0.3		-0.5		
Manufacture of medical devices, precision and optical instruments	1.8	1.4		-4.5		
RMP	104.4	93.5	103.4	-2.2	1.7	-0.1
LT	43.1	35.5	49.8	-3.8	5.8	1.5
MHT	10.2	10.8	12.5	1.3	2.4	2.1
HGVA	100.4	88.3	100.8	-2.5	2.2	0.05
Tajikistan						
Manufacture of food products, including beverages, and tobacco (before 2011 - food industry)	19.1	12.6	39.0	-8.0	20.7	7.4
Textile and clothing manufacture (before 2011 - light industry)	17.2	6.5	15.7	-17.6	15.7	-0.9
Manufacture of leather, leather goods, and footwear			0.3			
Wood processing and manufacture of wood products (before 2011 - forest, woodworking and pulp and paper industry)	0.3	0.2	0.6	-3.3	19.8	9.6
Pulp and paper industry; publishing activity			1.4			
Manufacture of coke, refined petroleum products and nuclear materials			1.2			
Chemical production (before 2011 - chemical and petrochemical industry)	1.2	0.2	0.7	-29.8	25.0	-4.2
Manufacture of rubber and plastic products			0.7			
Manufacture of other non-metallic mineral products (before 2011 - building materials industry)	2.5	3.0	11.3	4.1	24.4	16.3
Metallurgical production and manufacture of fabricated metal products (before 2011 - non-ferrous metallurgy)	41.2	23.3	10.9	-10.8	-11.8	-12.4
Manufacture of machinery and equipment (before 2011 - machine building and metalworking)	1.5	1.4	0.5	-1.4	-16.7	-11.0
Manufacture of electrical, electronic and optical equipment			0.2			
RMP	21.9	15.9	52.3	-6.2	22.0	9.1

	GVA per capita (USD)			Compound average annual growth rate (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
LT	66.8	34.0	29.4	-12.6	-2.4	-7.9
MHT	2.7	1.6	1.4	-9.6	-2.0	-6.0
HGVA	60.3	35.9	49.9	-9.8	5.6	-1.9
Ukraine						
Manufacture of food products, beverages, and tobacco	124.2	98.5	67.9	-4.5	-6.0	-5.9
Textile production, manufacture of wearing apparel, leather, goods of leather and other materials	8.1	4.6	2.6	-10.7	-9.3	-10.9
manufacture of wood, paper products and printing	25.0	17.6	9.8	-6.8	-9.2	-8.9
Manufacture of coke and refined petroleum products	71.6	33.2	10.6	-14.3	-17.3	-17.4
Manufacture of chemical products	35.9	20.6	11.2	-10.5	-9.7	-11.0
Manufacture of rubber and plastic products, other non-metallic mineral products	35.2	24.2	14.4	-7.3	-8.2	-8.5
Manufacture of basic metals and finished metal products, except machinery and equipment	168.1	87.4	53.3	-12.3	-7.9	-10.8
Manufacture of computers, electronic and optical equipment, manufacture of electrical equipment	22.0	15.1	6.5	-7.2	-13.0	-11.4
Manufacture of machinery and equipment NEC	33.8	21.1	7.5	-9.0	-15.8	-13.9
Manufacture of vehicles, trailers and semitrailers and other transport equipment	41.3	16.7	8.8	-16.6	-10.1	-14.3
RMP	149.1	116.1	77.8	-4.9	-6.5	-6.3
LT	295.5	155.6	91.2	-12.0	-8.5	-11.1
MHT	133.0	73.5	34.1	-11.2	-12.0	-12.7
HGVA	399.8	239.6	143.0	-9.7	-8.2	-9.8

Source: Rosstat, CIS Statistical Committee, authors' calculations.

Table 2.7 – Export potential of manufacturing sector

	Exports from manufacturing sector per capita (USD)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Russia						
Manufacture of food products, beverages, and tobacco	17.1	39.2	77.4	18.10	12.00	16.32
Textile production	3.1	1.8	3.5	-10.13	11.21	1.04
Manufacture of wearing apparel	1.3	0.7	2.8	-12.05	26.36	7.91
Manufacture of leather, leather goods, and footwear	1.4	1.2	3.4	-3.54	19.05	9.05
Wood processing and manufacture of wood products	18.9	23.7	34.9	4.55	6.70	6.31
Chemical production	76.4	93.8	171.8	4.19	10.61	8.44
Manufacture of rubber and plastic products	4.5	6.6	12.5	7.94	11.10	10.66
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	14.9	17.0	30.4	2.57	10.20	7.36
Publishing and printing activities	2.3	2.4	3.1	1.48	4.00	3.14
Manufacture of other non-metallic mineral products	16.0	15.0	46.7	-1.28	20.79	11.28
Metallurgical production	203.0	210.8	263.5	0.76	3.78	2.64
Manufacture of fabricated metal products	7.3	9.5	12.4	5.53	4.44	5.44
Manufacture of machinery and equipment	30.2	38.3	53.1	4.86	5.59	5.80
Manufacture of office equipment and computers	0.6	1.5	12.8	21.33	43.35	36.72

	Exports from manufacturing sector per capita (USD)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Production of electronic components, equipment for radio, television, and communication	3.3	5.8	12.5	12.10	13.70	14.36
Manufacture of electrical machines and electrical equipment	8.3	11.7	19.9	7.12	9.26	9.15
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	4.8	6.8	9.7	7.07	6.19	7.27
Manufacture of cars, trailers, and semitrailers	13.9	11.4	22.2	-3.81	11.71	4.82
Manufacture of ships, aircrafts and space vehicles and other vehicles	12.4	7.4	18.8	-9.82	16.81	4.24
Manufacture of furniture and other products NEC	4.2	6.0	47.7	7.43	41.39	27.59
RMP	67.0	94.8	189.3	7.21	12.21	10.95
LT	227.1	239.1	348.7	1.04	6.49	4.38
MHT	149.7	176.6	320.7	3.36	10.45	7.91
HGVA	296.4	343.8	512.6	3.01	6.88	5.63
Azerbaijan						
Manufacture of food products, beverages, and tobacco	22.98	34.56	66.67	8.5	11.6	11.2
Textile production	3.14	3.96	4.06	4.8	0.4	2.6
Manufacture of wearing apparel	0.72	0.55	0.31	-5.2	-9.4	-8.2
Manufacture of leather, leather goods, and footwear	0.24	0.51	1.82	15.9	23.6	22.2
Wood processing and manufacture of wood products	1.10	0.07	0.12	-42.8	10.4	-19.8
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.47	0.25	0.68	-12.1	18.5	3.8
Manufacture of other non-metallic mineral products	0.57	0.43	0.64	-5.5	6.9	1.2
Publishing and printing activities	0.26	0.18	0.09	-7.7	-10.4	-10.1
Chemical production	20.47	12.92	29.77	-8.8	14.9	3.8
Manufacture of rubber and plastic products	0.88	0.36	0.12	-16.4	-16.8	-18.2
Metallurgical production	19.45	22.58	20.11	3.0	-1.9	0.3
Manufacture of fabricated metal products	0.66	0.79	0.61	3.8	-4.3	-0.8
Manufacture of machinery and equipment	6.64	5.58	6.71	-3.4	3.1	0.1
Manufacture of office equipment and computers	0.08	0.11	0.11	5.3	0.7	3.0
Production of electronic components, equipment for radio, television, and communication	0.21	0.26	0.29	4.8	2.0	3.6
Manufacture of electrical machines and electrical equipment	0.77	0.65	2.09	-3.4	21.6	10.5
Manufacture of cars, trailers, and semitrailers	0.80	0.53	1.06	-7.9	12.1	2.8
Manufacture of ships, aircrafts and space vehicles and other vehicles	55.37	15.52	1.39	-22.5	-33.1	-30.8
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	2.27	1.24	1.52	-11.3	3.4	-3.9
Manufacture of furniture and other products NEC	3.22	3.81	9.85	3.4	17.2	11.8
RMP	25.1	35.3	68.1	7.04	11.57	10.49
LT	28.6	32.7	37.0	2.75	2.05	2.61
MHT	86.6	36.8	43.0	-15.73	2.60	-6.77
HGVA	43.5	47.5	96.4	1.79	12.53	8.30
Armenia						
Manufacture of food products, beverages, and tobacco	35.17	34.04	121.26	-0.7	23.6	13.2
Textile production	1.32	1.35	0.13	0.4	-32.5	-20.9
Manufacture of wearing apparel	8.33	3.86	21.48	-14.3	33.1	9.9
Manufacture of leather, leather goods, and footwear	0.03	0.43	0.73	72.1	9.0	38.2
Wood processing and manufacture of wood products	0.25	0.10	0.12	-17.0	3.3	-7.1

	Exports from manufacturing sector per capita (USD)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.95	0.29	0.49	-21.3	9.4	-6.4
Manufacture of other non-metallic mineral products	0.99	0.20	0.24	-27.3	2.9	-13.3
Publishing and printing activities	3.02	4.41	6.97	7.9	7.9	8.7
Chemical production	0.30	0.32	0.62	1.0	11.9	7.5
Manufacture of rubber and plastic products	84.25	24.76	46.50	-21.7	11.1	-5.8
Metallurgical production	96.17	75.29	94.29	-4.8	3.8	-0.2
Manufacture of fabricated metal products	4.54	0.32	1.41	-41.3	28.4	-11.0
Manufacture of machinery and equipment	5.61	3.02	4.81	-11.6	8.0	-1.5
Manufacture of office equipment and computers	0.05	0.09	0.27	12.1	20.0	18.1
Production of electronic components, equipment for radio, television, and communication	0.96	1.38	1.09	7.4	-3.8	1.3
Manufacture of electrical machines and electrical equipment	2.11	1.56	3.48	-5.9	14.3	5.1
Manufacture of cars, trailers, and semitrailers	0.79	0.60	0.61	-5.2	0.3	-2.4
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.40	1.53	0.50	30.6	-17.0	2.2
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	1.23	1.77	5.66	7.6	21.4	16.5
Manufacture of furniture and other products NEC	19.08	14.67	36.27	-5.1	16.3	6.6
RMP	120.6	59.2	168.4	-13.27	19.04	3.39
LT	130.8	96.4	155.2	-5.91	8.25	1.73
MHT	14.2	14.4	23.4	0.27	8.46	5.13
HGVA	131.3	109.3	215.6	-3.60	11.98	5.08
Belarus						
Manufacture of food products, beverages, and tobacco	134.83	229.85	515.07	11.3	14.4	14.3
Textile production	63.01	63.84	84.38	0.3	4.8	3.0
Manufacture of wearing apparel	34.18	36.21	56.45	1.2	7.7	5.1
Manufacture of leather, leather goods, and footwear	10.25	6.41	13.29	-9.0	12.9	2.6
Wood processing and manufacture of wood products	15.05	6.06	22.08	-16.6	24.0	3.9
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	31.83	31.51	60.02	-0.2	11.3	6.5
Publishing and printing activities	3.71	5.61	5.52	8.7	-0.3	4.1
Chemical production	176.61	296.34	493.35	10.9	8.9	10.8
Manufacture of rubber and plastic products	26.60	52.42	76.64	14.5	6.5	11.2
Manufacture of other non-metallic mineral products	34.41	35.65	77.08	0.7	13.7	8.4
Metallurgical production	80.29	101.22	173.26	4.7	9.4	8.0
Manufacture of fabricated metal products	38.66	47.87	70.12	4.4	6.6	6.1
Manufacture of machinery and equipment	111.45	155.40	222.53	6.9	6.2	7.2
Manufacture of office equipment and computers	1.46	1.70	5.52	3.1	21.6	14.2
Production of electronic components, equipment for radio, television, and communication	10.25	3.20	7.56	-20.8	15.4	-3.0
Manufacture of electrical machines and electrical equipment	61.76	74.48	99.16	3.8	4.9	4.8
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	15.52	21.09	36.80	6.3	9.7	9.0
Manufacture of cars, trailers, and semitrailers	122.76	89.27	180.24	-6.2	12.4	3.9
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.76	1.13	7.47	8.2	36.9	25.6
Manufacture of furniture and other products NEC	52.14	67.61	125.32	5.3	10.8	9.2

	Exports from manufacturing sector per capita (USD)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
RMP	216.1	303.1	674.2	7.00	14.26	12.05
LT	308.8	381.2	605.0	4.30	8.00	6.96
MHT	500.6	642.6	1052.6	5.12	8.57	7.72
HGVA	422.9	681.6	1230.9	10.02	10.35	11.28
Kazakhstan						
Manufacture of food products, beverages, and tobacco	23.67	52.73	68.20	17.4	4.4	11.2
Textile production	2.82	1.63	1.36	-10.4	-2.9	-7.0
Manufacture of wearing apparel	0.43	0.33	1.61	-5.3	30.2	14.0
Manufacture of leather, leather goods, and footwear	16.56	19.83	2.39	3.7	-29.7	-17.6
Wood processing and manufacture of wood products	0.00	0.00	0.15	57.5	175.2	130.4
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	1.03	1.33	2.08	5.2	7.7	7.2
Publishing and printing activities	0.57	0.25	0.27	-15.1	1.2	-7.2
Chemical production	34.80	120.07	152.89	28.1	4.1	16.0
Manufacture of rubber and plastic products	1.24	2.48	2.26	14.9	-1.5	6.2
Manufacture of other non-metallic mineral products	0.74	1.41	4.48	13.9	21.2	19.8
Metallurgical production	281.88	340.27	389.49	3.8	2.3	3.3
Manufacture of fabricated metal products	0.82	0.76	0.85	-1.7	1.9	0.3
Manufacture of machinery and equipment	17.07	14.98	25.24	-2.6	9.1	4.0
Manufacture of office equipment and computers	0.25	0.62	5.03	20.5	41.6	35.2
Production of electronic components, equipment for radio, television, and communication	10.00	10.84	40.51	1.6	24.6	15.0
Manufacture of electrical machines and electrical equipment	2.78	3.17	6.30	2.6	12.1	8.5
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	1.43	1.00	1.75	-6.9	9.8	2.0
Manufacture of cars, trailers, and semitrailers	2.21	2.34	2.19	1.2	-1.1	-0.1
Manufacture of ships, aircrafts and space vehicles and other vehicles	3.58	4.34	30.28	3.9	38.3	23.8
Manufacture of furniture and other products NEC	14.60	42.59	22.43	23.9	-10.1	4.4
RMP	25.4	55.5	74.9	16.88	5.13	11.40
LT	318.9	408.1	420.7	5.06	0.51	2.81
MHT	72.1	157.3	264.2	16.89	9.02	13.86
HGVA	305.5	393.0	457.7	5.16	2.57	4.12
Kyrgyzstan						
Manufacture of food products, beverages, and tobacco	11.37	18.94	14.69	10.7	-4.1	2.6
Textile production	2.55	3.32	4.51	5.4	5.2	5.9
Manufacture of wearing apparel	6.54	33.82	21.16	38.9	-7.5	12.5
Manufacture of leather, leather goods, and footwear	2.53	4.43	2.85	11.9	-7.1	1.2
Wood processing and manufacture of wood products	0.07	0.10	0.36	7.4	23.5	17.7
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.50	2.10	1.81	33.1	-2.4	13.7
Publishing and printing activities	0.02	0.24	0.07	61.8	-18.3	12.7
Chemical production	1.24	7.93	15.95	44.9	12.4	29.1
Manufacture of rubber and plastic products	0.31	3.26	6.52	60.4	12.2	35.7
Manufacture of other non-metallic mineral products	11.82	3.07	7.32	-23.6	15.6	-4.7
Metallurgical production	1.18	2.40	12.81	15.4	32.2	27.0
Manufacture of fabricated metal products	0.77	1.83	5.31	18.9	19.5	21.3
Manufacture of machinery and equipment	2.33	7.90	8.89	27.6	2.0	14.3

	Exports from manufacturing sector per capita (USD)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of office equipment and computers	0.06	0.17	0.06	24.7	-16.0	0.6
Production of electronic components, equipment for radio, television, and communication	0.09	0.34	0.33	29.4	-0.5	13.4
Manufacture of electrical machines and electrical equipment	5.60	8.30	6.48	8.2	-4.0	1.5
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.20	0.87	0.62	33.5	-5.4	11.8
Manufacture of cars, trailers, and semitrailers	2.81	7.14	25.09	20.5	23.3	24.5
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.20	0.77	4.07	30.6	32.1	35.0
Manufacture of furniture and other products NEC	4.23	3.96	4.78	-1.3	3.2	1.2
RMP	23.8	24.2	24.2	0.38	-0.02	0.18
LT	18.1	53.3	58.0	24.07	1.43	12.34
MHT	12.5	33.4	61.5	21.64	10.71	17.23
HGVA	24.4	24.4	34.8	0.04	6.09	3.63
Moldova						
Manufacture of food products, beverages, and tobacco	113.67	80.35	126.94	-6.7	7.9	1.1
Textile production	7.11	8.15	16.43	2.8	12.4	8.7
Manufacture of wearing apparel	42.87	55.41	78.06	5.3	5.9	6.2
Manufacture of leather, leather goods, and footwear	11.08	13.10	20.36	3.4	7.6	6.3
Wood processing and manufacture of wood products	0.35	0.38	0.78	1.8	12.6	8.3
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	2.36	1.47	4.33	-9.0	19.7	6.3
Publishing and printing activities	0.29	0.82	1.07	23.1	4.5	13.9
Chemical production	3.78	9.17	27.24	19.4	19.9	21.8
Manufacture of rubber and plastic products	0.90	1.96	3.15	16.9	8.3	13.4
Manufacture of other non-metallic mineral products	8.11	11.07	19.66	6.4	10.1	9.3
Metallurgical production	42.69	25.23	31.01	-10.0	3.5	-3.1
Manufacture of fabricated metal products	3.33	3.46	4.93	0.8	6.1	4.0
Manufacture of machinery and equipment	8.81	15.86	15.40	12.5	-0.5	5.7
Manufacture of office equipment and computers	0.20	0.60	0.33	25.3	-9.7	5.3
Production of electronic components, equipment for radio, television, and communication	0.56	0.64	0.94	2.8	6.6	5.3
Manufacture of electrical machines and electrical equipment	3.30	16.56	72.69	38.1	28.0	36.2
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	1.65	2.48	8.02	8.4	21.6	17.1
Manufacture of cars, trailers, and semitrailers	1.56	2.31	3.25	8.2	5.9	7.6
Manufacture of ships, aircrafts and space vehicles and other vehicles	0.90	0.70	2.78	-5.0	26.0	11.9
Manufacture of furniture and other products NEC	7.55	15.25	41.73	15.1	18.3	18.6
RMP	124.5	93.3	151.7	-5.61	8.45	2.00
LT	115.8	123.4	196.8	1.27	8.09	5.44
MHT	20.7	48.3	130.6	18.42	18.03	20.20
HGVA	121.8	91.4	146.6	-5.57	8.19	1.87
Tajikistan						
Manufacture of food products, beverages, and tobacco	1.24	27.09	5.35	85.2	-23.7	15.7
Textile production	3.85	2.15	4.14	-11.0	11.6	0.7
Manufacture of wearing apparel	1.45	3.64	3.29	20.1	-1.6	8.5
Manufacture of leather, leather goods, and footwear	0.06	0.05	0.68	-4.6	56.0	27.5

	Exports from manufacturing sector per capita (USD)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Wood processing and manufacture of wood products	0.01	0.00	0.00	-8.5	-0.4	-4.6
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	0.01	0.03	0.05	21.0	6.5	14.2
Publishing and printing activities	0.00	0.01	0.07	31.1	35.3	37.3
Chemical production	2.75	18.79	2.68	46.8	-27.7	-0.3
Manufacture of rubber and plastic products	0.08	1.52	0.48	80.8	-17.5	19.8
Manufacture of other non-metallic mineral products	0.23	1.98	0.35	54.2	-25.1	4.4
Metallurgical production	81.81	33.54	47.28	-16.3	5.9	-5.3
Manufacture of fabricated metal products	0.12	0.50	0.16	33.8	-17.4	3.1
Manufacture of machinery and equipment	0.24	1.30	1.70	39.9	4.5	21.5
Manufacture of office equipment and computers	1.09	0.61	0.52	-10.9	-2.5	-7.1
Production of electronic components, equipment for radio, television, and communication	0.41	0.04	0.47	-35.8	48.2	1.5
Manufacture of electrical machines and electrical equipment	0.29	0.87	0.38	24.6	-12.9	2.8
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	0.01	0.04	0.48	42.5	51.0	52.9
Manufacture of cars, trailers, and semitrailers	1.49	5.26	1.54	28.7	-18.5	0.3
Manufacture of ships, aircrafts and space vehicles and other vehicles	1.06	0.66	1.07	-9.1	8.4	0.1
Manufacture of furniture and other products NEC	4.60	1.49	5.15	-20.2	23.0	1.1
RMP	1.5	29.1	5.8	81.23	-23.67	14.48
LT	92.0	42.9	61.3	-14.15	6.12	-3.98
MHT	7.3	27.6	8.9	30.29	-17.26	1.88
HGVA	83.0	60.6	52.6	-6.10	-2.33	-4.46
Ukraine						
Manufacture of food products, beverages, and tobacco	57.07	99.90	189.81	11.8	11.3	12.8
Textile production	4.73	3.55	4.90	-5.6	5.5	0.4
Manufacture of wearing apparel	14.68	12.01	13.26	-3.9	1.7	-1.0
Manufacture of leather, leather goods, and footwear	5.10	6.39	7.00	4.6	1.6	3.2
Wood processing and manufacture of wood products	5.22	4.55	8.90	-2.7	11.8	5.5
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	11.33	20.58	32.95	12.7	8.2	11.3
Publishing and printing activities	1.10	2.62	3.54	18.9	5.1	12.4
Chemical production	63.63	50.24	62.00	-4.6	3.6	-0.3
Manufacture of rubber and plastic products	6.60	7.02	6.97	1.2	-0.1	0.5
Manufacture of other non-metallic mineral products	6.81	6.90	11.10	0.3	8.3	5.0
Metallurgical production	284.66	264.26	335.08	-1.5	4.0	1.6
Manufacture of fabricated metal products	8.01	10.43	13.52	5.4	4.4	5.4
Manufacture of machinery and equipment	40.34	61.72	71.74	8.9	2.5	5.9
Manufacture of office equipment and computers	1.42	0.94	1.00	-7.8	1.0	-3.4
Production of electronic components, equipment for radio, television, and communication	2.03	8.52	11.91	33.3	5.8	19.4
Manufacture of electrical machines and electrical equipment	17.71	38.04	47.79	16.5	3.9	10.4
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	2.89	5.57	4.92	14.1	-2.1	5.5
Manufacture of cars, trailers, and semitrailers	6.80	8.02	5.79	3.3	-5.3	-1.6
Manufacture of ships, aircrafts and space vehicles and other vehicles	27.06	26.32	27.43	-0.6	0.7	0.1

	Exports from manufacturing sector per capita (USD)			Compound average growth rates (in %)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Manufacture of furniture and other products NEC	7.08	11.56	26.05	10.3	14.5	13.9
RMP	80.4	131.9	242.8	10.40	10.70	11.68
LT	332.0	317.8	410.3	-0.87	4.35	2.14
MHT	161.9	199.4	232.6	4.26	2.60	3.69
HGVA	405.4	414.4	586.9	0.44	5.97	3.77

Source: UNCTADstat data portal, authors' calculations.

Table 2.8 – Influence of countries on regional GVA of the manufacturing sectir

	Share of GVA of generalized industries of the manufacturing sector in total GVA of these industries in the CIS region (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Processing of raw materials						
Russia	73.48	73.67	77.30	0.19	3.63	3.81
Azerbaijan	1.28	1.50	2.00	0.23	0.50	0.73
Armenia	0.59	0.80	1.29	0.21	0.49	0.70
Belarus	5.31	6.61	2.62	1.30	-3.99	-2.70
Kazakhstan	6.73	7.31	8.99	0.58	1.68	2.26
Kyrgyzstan	0.29	0.25	0.39	-0.05	0.14	0.09
Moldova	0.61	0.57	0.66	-0.04	0.09	0.05
Tajikistan	0.24	0.20	0.77	-0.04	0.58	0.53
Ukraine	11.46	9.09	5.98	-2.37	-3.11	-5.48
Low-technology production						
Russia	77.72	80.04	85.06	2.32	5.01	7.34
Azerbaijan	0.67	0.98	1.11	0.30	0.13	0.43
Armenia	0.21	0.23	0.31	0.02	0.08	0.10
Belarus	3.49	4.32	1.26	0.83	-3.06	-2.23
Kazakhstan	6.11	6.99	8.05	0.87	1.06	1.94
Kyrgyzstan	0.26	0.34	0.45	0.08	0.11	0.19
Moldova	0.12	0.12	0.15	0.00	0.03	0.03
Tajikistan	0.36	0.24	0.21	-0.13	-0.02	-0.15
Ukraine	11.04	6.74	3.40	-4.30	-3.35	-7.65
Medium- and high-tech production						
Russia	82.60	83.05	92.75	0.46	9.70	10.16
Azerbaijan	0.26	0.30	0.44	0.04	0.14	0.19
Armenia	0.08	0.07	0.04	-0.01	-0.03	-0.04
Belarus	5.64	7.41	1.71	1.76	-5.70	-3.94
Kazakhstan	1.34	1.69	2.64	0.34	0.95	1.30
Kyrgyzstan	0.07	0.05	0.04	-0.02	-0.01	-0.03
Moldova	0.06	0.08	0.07	0.03	-0.01	0.01
Tajikistan	0.03	0.03	0.02	0.00	-0.01	-0.01
Ukraine	9.93	7.33	2.29	-2.60	-5.04	-7.64

Source: Rosstat, CIS Statistical Committee, authors' calculations.

Table 2.9 – Influence of countries on regional manufacturing exports

	Share of exports from generalized branches of the country's manufacturing industry in total exports of these industries in the CIS region (in %)			Changes (in percentage points)		
	2005	2009	2014	2005-2009	2009-2014	2005-2014
Processing of raw materials						
Russia	56.40	55.15	57.72	-1.25	2.57	1.32
Azerbaijan	1.25	1.29	1.38	0.03	0.09	0.12
Armenia	2.28	0.78	1.07	-1.50	0.29	-1.20
Belarus	12.26	11.74	13.53	-0.52	1.79	1.27
Kazakhstan	2.26	3.64	2.74	1.37	-0.89	0.48
Kyrgyzstan	0.72	0.53	0.30	-0.19	-0.23	-0.42
Moldova	2.62	1.35	1.14	-1.26	-0.21	-1.47
Tajikistan	0.06	0.87	0.10	0.81	-0.77	0.04
Ukraine	22.15	24.65	22.02	2.50	-2.63	-0.13
Low-technology production						
Russia	56.41	56.38	60.39	-0.03	4.01	3.98
Azerbaijan	0.42	0.48	0.42	0.06	-0.06	0.00
Armenia	0.73	0.52	0.56	-0.21	0.05	-0.17
Belarus	5.17	5.98	6.89	0.82	0.91	1.73
Kazakhstan	8.36	10.85	8.75	2.48	-2.10	0.38
Kyrgyzstan	0.16	0.47	0.41	0.31	-0.07	0.25
Moldova	0.72	0.73	0.84	0.01	0.12	0.12
Tajikistan	1.08	0.52	0.61	-0.56	0.09	-0.47
Ukraine	26.96	24.07	21.13	-2.88	-2.94	-5.83
Medium- and high-tech production						
Russia	59.72	57.40	64.09	-2.32	6.69	4.37
Azerbaijan	2.05	0.75	0.57	-1.30	-0.18	-1.48
Armenia	0.13	0.11	0.10	-0.02	-0.01	-0.03
Belarus	13.44	13.90	13.84	0.46	-0.06	0.40
Kazakhstan	3.04	5.76	6.34	2.73	0.58	3.30
Kyrgyzstan	0.18	0.41	0.50	0.23	0.09	0.32
Moldova	0.21	0.39	0.64	0.19	0.25	0.44
Tajikistan	0.14	0.46	0.10	0.32	-0.36	-0.04
Ukraine	21.11	20.82	13.82	-0.29	-6.99	-7.28

Source: UNCTADstat data portal, authors' calculations.

Appendix 3

Table 3.1 – Intensity of changes in employment and GVA in the manufacturing sector; elasticity of employment

	Employment (thousand people)			GVA at constant prices (in USD million)			Compound annual growth rate of employment (in %)			Compound annual growth rate of GVA (in %)			Elasticity of employment		
	2005	2009	2014	2005	2009	2014	2005-2009	2009-2014	2005-2014	2005-2009	2009-2014	2005-2014	2005-2009	2009-2014	2005-2014
Russia															
Manufacture of food products, including beverages	1 432	1 332	1 233	26 245	26 804	25 489	-1.4	-1.3	-1.5	0.4	-0.8	-0.3	-3.4	1.5	5.1
Manufacture of tobacco products	15	12	9	1 530	1 286	1 735	-4.8	-4.0	-4.8	-3.4	5.1	1.3	1.4	-0.8	-3.8
Textile production	249	147	105	1 361	1 085	1 136	-10.0	-5.5	-8.3	-4.4	0.8	-1.8	2.3	-7.2	4.6
Manufacture of wearing apparel; dressing and dyeing of fur	246	190	194	2 011	1 395	1 781	-5.1	0.4	-2.4	-7.1	4.2	-1.2	0.7	0.1	2.0
Manufacture of leather, leather goods, and footwear	70	58	51	542	547	444	-3.6	-2.0	-3.0	0.2	-3.4	-2.0	-21.0	0.6	1.5
Wood processing and manufacture of wood and cork products, except furniture	358	276	250	4 018	3 167	3 152	-5.0	-1.6	-3.5	-4.6	-0.1	-2.4	1.1	20.6	1.5
Manufacture of pulp, wood pulp, paper, cardboard and articles thereof	131	115	111	2 294	2 537	3 625	-2.6	-0.6	-1.7	2.0	6.1	4.7	-1.3	-0.1	-0.4
Publishing polygraphic activity, replication of recorded media	262	247	215	4 750	3 706	2 849	-1.2	-2.3	-2.0	-4.8	-4.3	-5.0	0.2	0.5	0.4
Coke production; manufacture of petroleum products	136	112	116	38 781	38 404	49 374	-3.9	0.6	-1.6	-0.2	4.3	2.4	20.0	0.1	-0.7
Chemical production (excluding production of gunpowder and explosives)	563	441	398	17 442	15 748	15 879	-4.8	-1.7	-3.4	-2.0	0.1	-0.9	2.4	-12.2	3.6
Manufacture of rubber and plastic products	257	259	253	2 891	3 425	3 835	0.2	-0.4	-0.2	3.4	1.9	2.9	0.1	-0.2	-0.1
Manufacture of other non-metallic mineral products	649	596	563	10 789	9 347	9 067	-1.7	-1.0	-1.4	-2.8	-0.5	-1.7	0.6	1.9	0.8
Metallurgical production	749	528	508	34 078	24 997	29 866	-6.7	-0.6	-3.8	-6.0	3.0	-1.3	1.1	-0.2	2.9
Manufacture of fabricated metal products	471	470	505	3 882	4 008	5 140	0.0	1.2	0.7	0.6	4.2	2.8	-0.1	0.3	0.2
Manufacture of machinery and equipment (excluding production of weapons and ammunition)	1 205	901	809	11 183	7 470	11 055	-5.6	-1.8	-3.9	-7.8	6.7	-0.1	0.7	-0.3	33.8
Manufacture of office equipment and computers	19	20	21	264	266	458	1.4	0.9	1.2	0.2	9.5	5.7	8.7	0.1	0.2

Manufacture of electrical machines and electrical equipment	382	346	311	4 924	3 003	3 671	-2.0	-1.8	-2.0	-9.4	3.4	-2.9	0.2	-0.5	0.7
Production of electronic components, equipment for radio, television, and communication	1 041	898	845	2 555	1 378	2 832	-2.9	-1.0	-2.1	-11.6	12.8	1.0	0.2	-0.1	-2.0
Manufacture of medical products; measuring instruments, monitoring, control and testing; optical devices, photo and cinematographic equipment; watches	287	286	302	3 773	2 553	4 858	-0.1	0.9	0.5	-7.5	11.3	2.6	0.02	0.1	0.2
Manufacture of cars, trailers, and semitrailers	507	391	364	4 023	1 934	4 893	-5.0	-1.2	-3.3	-13.6	16.7	2.0	0.4	-0.1	-1.6
Manufacture of ships, aircrafts and space vehicles, other vehicles	186	207	252	7 747	5 886	15 510	2.2	3.3	3.1	-5.3	17.5	7.2	-0.4	0.2	0.4
Manufacture of furniture and other products NEC	233	236	222	3 149	2 402	2 459	0.2	-1.0	-0.5	-5.3	0.4	-2.4	-0.04	-2.5	0.2
Processing of raw materials	2 585	2 331	2 166	44 875	43 142	43 068	-2.0	-1.2	-1.8	-0.8	-0.03	-0.4	2.6	41.9	4.3
Low-technology production	2 737	2 297	2 220	97 592	84 751	97 841	-3.5	-0.6	-2.1	-2.8	2.4	0.03	1.2	-0.2	-81.4
Medium- and high-tech production	4 190	3 491	3 304	51 912	38 237	59 156	-3.6	-0.9	-2.3	-5.9	7.5	1.3	0.6	-0.1	-1.8
Azerbaijan															
Manufacture of food products, beverages, and tobacco	19	23	25	696	720	969	4.7	1.3	3.4	0.7	6.1	3.7	7.1	0.2	0.9
Textile and clothing manufacture	13	7	6	30	26	32	-11.3	-2.1	-7.5	-2.8	4.7	1.0	4.0	-0.4	-7.8
Manufacture of leather, leather goods, and footwear	1.0	0.6	1.2	3	7	7	-9.7	14.9	2.0	21.8	0.7	12.0	-0.4	21.5	0.2
Wood processing and manufacture of wood and cork products, except furniture	1.5	2.4	3.0	6	5	5	9.9	4.6	8.0	-4.0	3.6	-0.3	-2.5	1.3	-26.0
Publishing polygraphic activity and replication of recorded media	2	3	2	13	18	17	5.9	-6.5	-0.5	6.4	-1.5	2.6	0.9	4.3	-0.2
Manufacture of coke and refined petroleum products	7	6	5	487	783	862	-3.5	-1.5	-2.8	10.0	1.9	6.6	-0.4	-0.8	-0.4
Manufacture of chemical products	11	9	8	115	56	71	-3.9	-2.8	-3.7	-13.4	4.9	-5.2	0.3	-0.6	0.7
Manufacture of rubber and plastic products	2	4	4	14	25	26	14.2	4.7	10.4	13.4	0.5	7.6	1.1	8.6	1.4
Manufacture of other non-metallic mineral products	7	9	11	79	157	138	5.2	4.7	5.5	14.8	-2.5	6.4	0.4	-1.9	0.9
Manufacture of basic metals	10	9	7	158	38	108	-2.6	-4.6	-4.0	-24.9	23.4	-4.1	0.1	-0.2	1.0
Manufacture of fabricated metal products, except machinery and equipment	4	5	3	33	43	37	5.3	-8.4	-1.9	5.6	-3.1	1.3	1.0	2.7	-1.5

Manufacture of computers, electronic and optical equipment	3	2	2	4	15	38	-3.2	-5.9	-5.0	29.1	19.6	27.3	-0.1	-0.3	-0.2
Manufacture of electrical equipment	2	2	6	11	17	64	-3.6	29.7	13.2	9.4	30.2	21.7	-0.4	1.0	0.6
Manufacture of machinery and equipment NEC	9	6	10	19	40	91	-8.9	12.8	1.5	15.7	18.1	18.9	-0.6	0.7	0.1
Manufacture of cars and other vehicles	10	9	3	11	9	6	-0.9	-19.9	-12.0	-3.2	-7.8	-6.1	0.3	2.6	2.0
Processing of raw materials	27	34	39	781	881	1 113	5.2	2.5	4.3	2.5	4.8	4.0	2.1	0.5	1.1
Low-technology production	41	37	35	846	1 035	1 183	-1.9	-1.5	-1.9	4.1	2.7	3.8	-0.5	-0.6	-0.5
Medium- and high-tech production	34	28	28	160	137	270	-4.2	0.5	-2.0	-3.1	14.5	5.9	1.4	0.04	-0.3
Belarus															
Manufacture of food products, including beverages, and tobacco	156	149	151	2 247	2 716	1 055	-0.9	0.2	-0.4	3.9	-14.6	-7.3	-0.2	-0.01	0.05
Textile and clothing manufacture	100	107	95	514	460	134	1.4	-1.9	-0.5	-2.2	-18.6	-12.6	-0.6	0.1	0.04
Manufacture of leather, leather goods, and footwear	18	17	17	111	103	36	-1.5	-0.2	-0.9	-1.4	-16.3	-10.7	1.1	0.01	0.1
Wood processing and manufacture of wood products	43	50	45	245	211	88	3.3	-1.9	0.4	-2.9	-13.6	-9.8	-1.1	0.1	-0.04
Pulp and paper industry; publishing activity	28	32	30	245	244	67	3.0	-1.1	0.8	0.0	-19.4	-12.2	-76.0	0.1	-0.1
Manufacture of coke, refined petroleum products and nuclear materials	10	10	11	2 422	2 438	724	-0.8	1.6	0.6	0.1	-18.3	-11.4	-5.9	-0.1	-0.1
Chemical production	57	57	61	1 121	1 130	439	0.0	1.2	0.7	0.2	-14.6	-8.9	-0.1	-0.1	-0.1
Manufacture of rubber and plastic products	30	41	43	314	432	154	6.6	0.7	3.7	6.6	-15.8	-6.9	1.0	-0.04	-0.5
Manufacture of other non-metallic mineral products	74	72	66	506	698	247	-0.6	-1.5	-1.2	6.6	-15.9	-6.9	-0.1	0.1	0.2
Metallurgical production and manufacture of fabricated metal products	75	72	77	755	842	285	-0.8	1.2	0.3	2.2	-16.5	-9.3	-0.4	-0.1	0.0
Manufacture of machinery and equipment	171	151	146	1 196	1 251	336	-2.5	-0.6	-1.6	0.9	-19.7	-11.9	-2.8	0.03	0.1
Manufacture of electrical, electronic and optical equipment	75	74	66	479	477	156	-0.3	-1.9	-1.3	-0.1	-17.0	-10.6	2.5	0.1	0.1
Manufacture of vehicles and equipment	75	71	57	751	553	157	-1.3	-3.6	-2.8	-6.0	-18.9	-14.5	0.2	0.2	0.2
Processing of raw materials	301	304	292	3 243	3 870	1 457	0.2	-0.7	-0.3	3.6	-15.0	-7.7	0.05	0.05	0.04
Low-technology production	271	294	291	4 385	4 577	1 450	1.6	-0.2	0.7	0.9	-17.4	-10.5	1.9	0.01	-0.1
Medium- and high-tech production	379	352	330	3 547	3 410	1 089	-1.4	-1.1	-1.4	-0.8	-17.3	-11.1	1.8	0.1	0.1
Kazakhstan															

Manufacture of food products, beverages, and tobacco products	74	82	78	3 309	3 470	4 060	2.0	-0.9	0.5	1.0	3.2	2.3	2.0	-0.3	0.2
Manufacture of textiles and clothing	19	12	12	240	106	192	-8.0	-1.2	-5.2	-15.1	12.7	-2.4	0.5	-0.1	2.1
Manufacture of leather, leather goods, and footwear	1.4	1.1	1.3	13	11	13	-5.1	4.3	-0.5	-2.4	2.9	0.3	2.2	1.5	-1.9
Wood processing and manufacture of wood and cork products, except furniture	2.0	1.4	1.3	52	39	50	-7.0	-1.8	-4.9	-5.7	5.3	-0.4	1.2	-0.3	12.1
Manufacture of coke and refined petroleum products	15	8	10	1 058	903	2 521	-10.8	2.7	-4.8	-3.1	22.8	10.1	3.5	0.1	-0.5
Manufacture of chemical products	15	18	20	362	361	588	4.2	2.6	3.8	-0.1	10.2	5.5	-59.5	0.3	0.7
Manufacture of rubber and plastic products	6	5	6	203	253	459	-6.1	6.6	0.1	4.5	12.7	9.5	-1.4	0.5	0.0
Manufacture of other non-metallic mineral products	26	39	45	749	772	1 271	8.2	3.0	6.2	0.6	10.5	6.1	13.4	0.3	1.0
Manufacture of basic metals	131	131	86	4 714	4 559	5 538	0.0	-8.1	-4.5	-0.7	4.0	1.8	-0.1	-2.0	-2.5
Manufacture of fabricated metal products, except machinery and equipment	12	15	17	302	446	557	5.1	3.2	4.6	8.1	4.5	7.0	0.6	0.7	0.7
Manufacture of computers, electronic and optical equipment	4.3	3.1	1.6	85	54	105	-6.4	-12.1	-10.3	-8.7	14.5	2.5	0.7	-0.8	-4.2
Manufacture of electrical equipment	7.6	4.6	7.3	121	152	246	-9.5	9.7	-0.4	4.6	10.1	8.2	-2.1	1.0	-0.05
Manufacture of machinery and equipment NEC	32	73	75	236	183	307	17.9	0.5	9.9	-5.0	10.9	3.0	-3.6	0.05	3.3
Manufacture of motor vehicles, trailers, and semitrailers	41	2	7	40	27	496	-43.9	23.8	-18.3	-7.5	78.4	32.1	5.9	0.3	-0.6
Processing of raw materials	104	124	126	4 110	4 281	5 381	3.5	0.3	2.1	0.8	4.7	3.0	4.3	0.1	0.7
Low-technology production	199	178	139	7 675	7 397	9 280	-2.1	-4.9	-3.9	-0.7	4.6	2.1	2.9	-1.0	-1.8
Medium- and high-tech production	99	101	110	845	777	1 742	0.3	1.9	1.2	-1.7	17.5	8.4	-0.2	0.1	0.1
Kyrgyzstan															
Manufacture of food products, including beverages, and tobacco	14.1	12.1	11.8	111.6	99.2	137.4	-3.0	-0.4	-1.9	-2.3	6.7	2.3	1.3	-0.1	-0.8
Textile and clothing manufacture	6.7	3.9	2.6	30.9	29.2	51.0	-10.1	-7.9	-9.9	-1.1	11.8	5.7	9.2	-0.7	-1.7
Manufacture of leather, leather goods, and footwear	0.3	0.3	0.3	1.0	1.3	1.6	1.6	1.0	1.4	4.8	3.6	4.6	0.3	0.3	0.3
Wood processing and manufacture of wood products	1.1	0.6	0.5	0.9	1.6	1.9	-9.7	-5.1	-8.2	11.1	3.9	8.3	-0.9	-1.3	-1.0
Pulp and paper industry; publishing activity	3.7	3.4	2.0	10.1	7.9	5.7	-2.1	-9.5	-6.5	-4.8	-6.3	-6.1	0.4	1.5	1.1

Manufacture of petroleum products	1.0	1.2	0.7	7.6	9.0	5.3	3.0	-10.0	-4.1	3.7	-10.1	-3.9	0.8	1.0	1.1
Chemical production	2.5	1.8	1.3	7.8	3.5	7.2	-6.3	-6.0	-6.8	-14.8	15.4	-0.9	0.4	-0.4	7.6
Manufacture of rubber and plastic products	1.5	1.4	1.0	15.2	7.3	13.1	-1.4	-5.3	-3.7	-13.8	12.6	-1.6	0.1	-0.4	2.3
Manufacture of other non-metallic mineral products	9.1	7.6	9.0	56.9	35.9	93.0	-3.5	3.6	0.0	-8.8	20.9	5.6	0.4	0.2	-0.01
Metallurgical production and manufacture of fabricated metal products	7.0	6.0	6.4	268.4	308.9	522.0	-2.8	1.1	-1.0	2.9	11.1	7.7	-1.0	0.1	-0.1
Manufacture of machinery and equipment	4.8	3.0	1.9	15.5	6.0	2.1	-8.9	-8.7	-9.7	-17.4	-19.0	-20.0	0.5	0.5	0.5
Manufacture of electrical, electronic and optical equipment	6.1	3.6	3.8	14.5	8.7	9.9	-9.7	0.8	-5.1	-9.6	2.6	-4.1	1.0	0.3	1.2
Manufacture of vehicles and equipment	0.7	0.6	0.7	3.2	2.8	6.3	-2.9	3.6	0.3	-2.6	17.1	7.6	1.1	0.2	0.04
Processing of raw materials	27.9	23.6	23.4	179.5	144.6	238.0	-3.3	-0.2	-1.9	-4.2	10.5	3.2	0.8	-0.02	-0.6
Low-technology production	16.4	12.8	11.1	326.9	359.8	593.1	-4.8	-2.9	-4.3	1.9	10.5	6.8	-2.5	-0.3	-0.6
Medium- and high-tech production	14.0	9.1	7.7	41.1	21.1	25.5	-8.4	-3.1	-6.4	-12.5	3.9	-5.2	0.7	-0.8	1.2
Tajikistan															
Manufacture of food products, including beverages, and tobacco (before 2011 - food industry)	10.7	…	8.3	129.6	92.5	345.5	…	…	-2.8	-6.5	30.1	11.5	…	…	-0.2
Textile and clothing manufacture (before 2011 - light industry)	27.3	…	15.2	116.5	48.0	131.1	…	…	-6.3	-16.3	22.3	1.3	…	…	-4.8
Manufacture of leather, leather goods, and footwear	0.5	…	0.4	0	0	1.7	…	…	-2.9	…	…	…	…	…	…
Wood processing and manufacture of wood products (before 2011 - forest, woodworking and pulp and paper industry)	0.2	…	0.1	1.7	1.6	4.2	…	…	-2.2	-1.8	21.5	10.3	…	…	-0.2
Pulp and paper industry; publishing activity	1.4	…	1.4	…	…	8.1	…	…	-0.05	…	…	…	…	…	…
Manufacture of coke, refined petroleum products and nuclear materials	…	…	0.5	…	…	10.5	…	…	…	…	…	…	…	…	…
Chemical production (before 2011 - chemical and petrochemical industry)	3.4	…	1.8	7.8	1.4	4.8	…	…	-6.7	-28.7	27.3	-5.3	…	…	1.3
Manufacture of rubber and plastic products	…	…	0.6	…	…	4.5	…	…	…	…	…	…	…	…	…
Manufacture of other non-metallic mineral products (before 2011 - building materials industry)	5.6	…	6.6	16.8	22.2	42.3	…	…	1.9	5.7	13.7	10.8	…	…	0.2

Metallurgical production and manufacture of fabricated metal products (before 2011 - non-ferrous metallurgy)	15.2	…	14.1	279.1	170.8	99.6	…	…	-0.8	-9.4	-10.2	-10.8	…	…		0.1
Manufacture of machinery and equipment (before 2011 - machine building and metalworking)	2.3	…	1.3	10.3	10.4	3.4	…	…	-5.8	0.2	-20.0	-11.6	…	…		0.5
Manufacture of electrical, electronic and optical equipment	0.5	…	0.9	…	…	7.7	…	…	6.2	…	…	…	…	…		…
Processing of raw materials	16.5		15.2	148.2	116.4	400.1	…	…	-0.9	-4.7	28.0	11.7				-0.1
Low-technology production	44.6		32.8	453.0	249.4	247.5	…	…	-3.4	-11.3	-0.2	-6.5				0.5
Medium- and high-tech production	6.7		4.4	18.1	11.8	15.9	…	…	-4.6	-8.2	6.1	-1.4				3.3
Ukraine																
Manufacture of food products, beverages, and tobacco	528	436	365	5 827	4 519	2 910	-3.8	-2.9	-3.6	-5.0	-7.1	-6.7	0.8	0.4	0.5	
Textile production, Manufacture of wearing apparel, leather, goods of leather and other materials	183	112	88	382	212	110	-9.4	-4.0	-7.1	-11.1	-10.3	-11.7	0.8	0.4	0.6	
Manufacture of wood, paper products and printing	176	142	91	1 171	806	422	-4.2	-7.2	-6.4	-7.2	-10.2	-9.7	0.6	0.7	0.7	
Manufacture of coke and refined petroleum products	52	40	31	3 361	1 522	453	-5.4	-4.1	-5.2	-14.7	-18.3	-18.2	0.4	0.2	0.3	
Manufacture of chemical products	159	115	118	1 683	944	479	-6.3	0.4	-3.0	-10.9	-10.7	-11.8	0.6	-0.04	0.3	
Manufacture of rubber and plastic products, other non-metallic mineral products	248	202	149	1 653	1 109	618	-4.0	-4.9	-5.0	-7.7	-9.3	-9.4	0.5	0.5	0.5	
manufacture of basic metals and finished Metal products, except machinery and equipment	481	380	285	7 887	4 007	2 285	-4.6	-4.7	-5.1	-12.7	-8.9	-11.7	0.4	0.5	0.4	
Manufacture of computers, electronic and optical equipment, Manufacture of electrical equipment	211	165	105	1 033	694	280	-4.8	-7.2	-6.7	-7.6	-14.0	-12.2	0.6	0.5	0.6	
Manufacture of machinery and equipment NEC	377	276	227	1 586	969	323	-6.1	-3.2	-5.0	-9.4	-16.8	-14.7	0.6	0.2	0.3	
Manufacture of vehicles, trailers and semitrailers and other transport equipment	266	188	180	1 938	767	377	-6.7	-0.8	-3.8	-16.9	-11.1	-15.1	0.4	0.1	0.3	
Processing of raw materials	797	647	529	6 998	5 325	3 332	-4.1	-3.3	-4.0	-5.3	-7.5	-7.2	0.8	0.4	0.6	
Low-technology production	966	733	534	13 866	7 140	3 906	-5.4	-5.2	-5.8	-12.4	-9.6	-11.9	0.4	0.5	0.5	

Medium- and high-tech production	1 013	744	629	6 239	3 374	1 459	-6.0	-2.8	-4.7	-11.6	-13.0	-13.5	0.5	0.2	0.3

Note: The latest available data on employment for Azerbaijan, Kazakhstan, Kyrgyzstan and Tajikistan was for 2013; for comparability, the GVA of these countries is also given for 2013; for Armenia and Moldova, there are no long-term employment dynamics in the UNIDO data portal, which makes it impossible to calculate growth rates.

Source: UNIDO data portal (employment), Rosstat, CIS Statistical Committee (GVA), authors' calculations.

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Vienna International Centre · P.O. Box 300 9 · 1400 Vienna · Austria
Tel.: (+43-1) 26026-0 · E-mail: info@unido.org
www.unido.org