The Role of Manufacturing in Economic Development

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Relevance

Industrialization

Industrial revolutions:

1) Steam, water
2) Electricity, mass production
3) Electronics, IT, automated production
4) Cyber-physical systems

Reindustrialization 2010s - present

Transfer of production to developing countries

Increasing importance of the service sector 90s XXth century – the driver of economic development

Deindustrialization 1980s

Nowadays

- **China**: Industrial policy aimed at becoming a world leader;
- **Germany**: Industrial policy is deeply rooted in local structures;
- **USA**: Industrial policy supported by federal funding
- **Singapore:** Manufacturing is considered a strategic industry;
- **Japan, South Korea:** The development of high-tech industries is essential for economic modernization;
- **Finland**: Industrial policy is being restructured by financing innovation.

"Since the industrial revolution, no country has become a major economy without becoming an industrial power"
(Acharya, 2007)

Rodrik (2016) : since high sustained growth in early industrializers has been driven by manufacturing—a technologically dynamic sector—developing countries today could miss out on this opportunity to industrialize and sustain growth.

Due to the fact that manufacturing activities are much more susceptible to mechanization and chemical processing than other types of economic activities, the manufacturing sector has historically been the main source of technological productivity growth.

Industrial Renaissance

"The real question about industrial policy is not whether it should be practiced, but how",

- Rodrik (2010)

Objectives

Aim

To study the dynamics and structure of the manufacturing industry, its significance in the country's economic development, analyze contemporary approaches to industrial policy implementation, and identify the main challenges and development prospects for the manufacturing industry in the Republic of Armenia.

01
Retrospective Analysis

To examine the role of manufacturing in economic development.

02
Global Trends

To assess the current development stage of manufacturing in advanced countries.

03
Reindustrialization

To study the phenomenon of reindustrialization in developed economies since the 2010s of the 21st century.

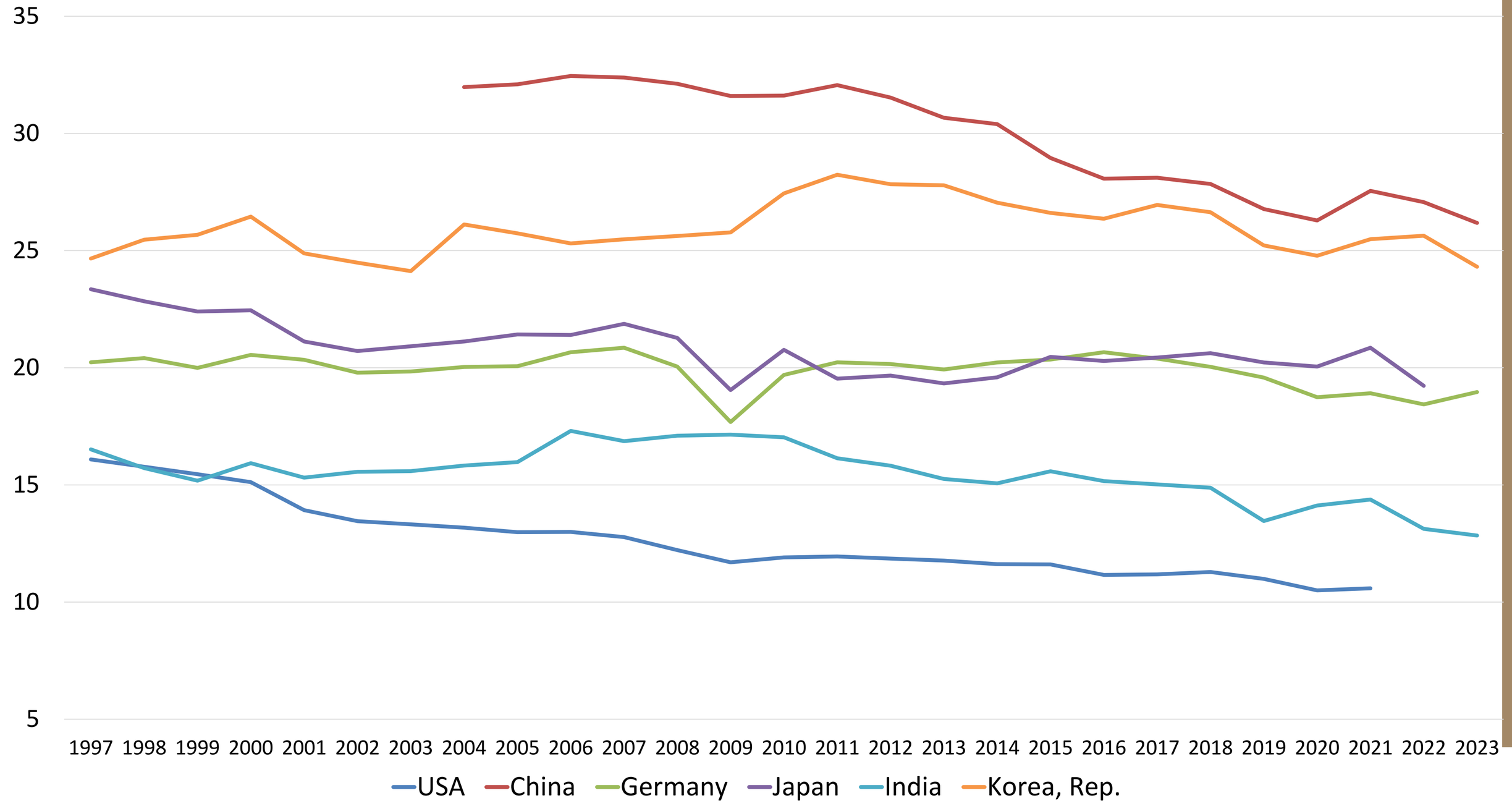
04
Contextual Analysis of the Republic of Armenia

To analyze the dynamics and structure o manufacturing in the Republic of Armenia.

05
Production Expansion of RA

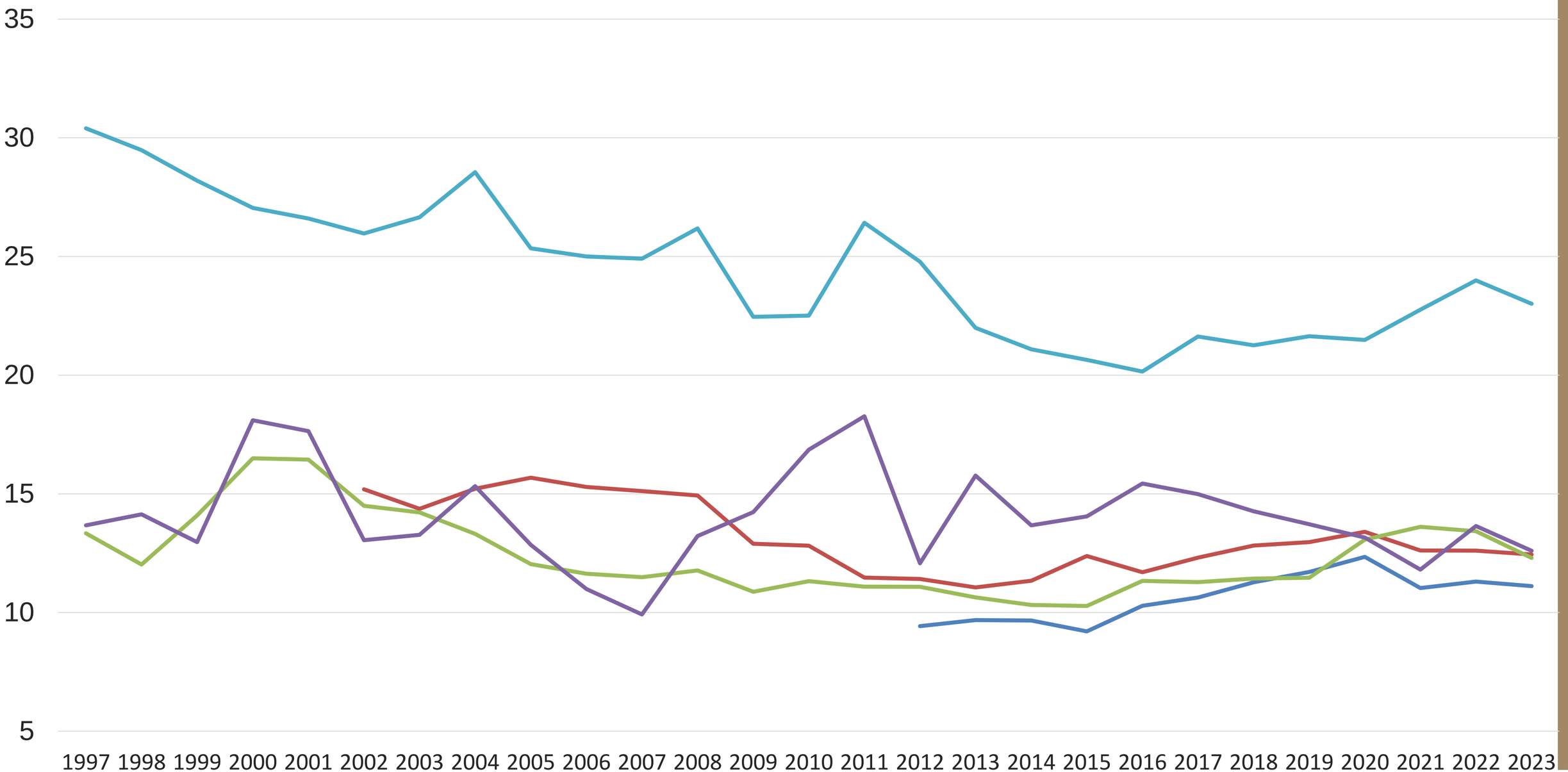
To explore the prospects for the production and export of manufacturing products from the Republic of Armenia in international and Eurasian markets.

Manufacturing, value added, % of GDP



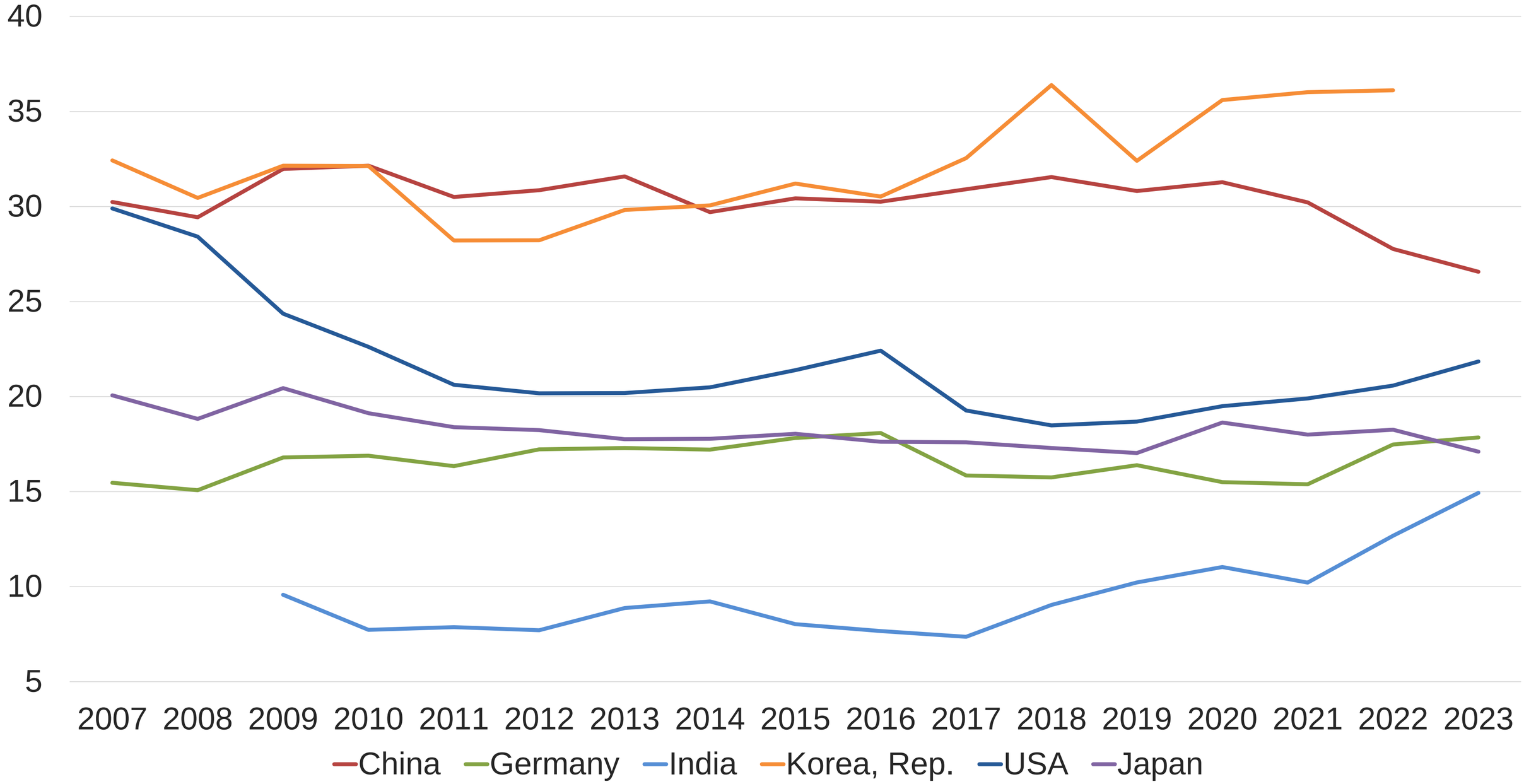
Source: WorldBank

Manufacturing, value added, % of GDP, EAEU



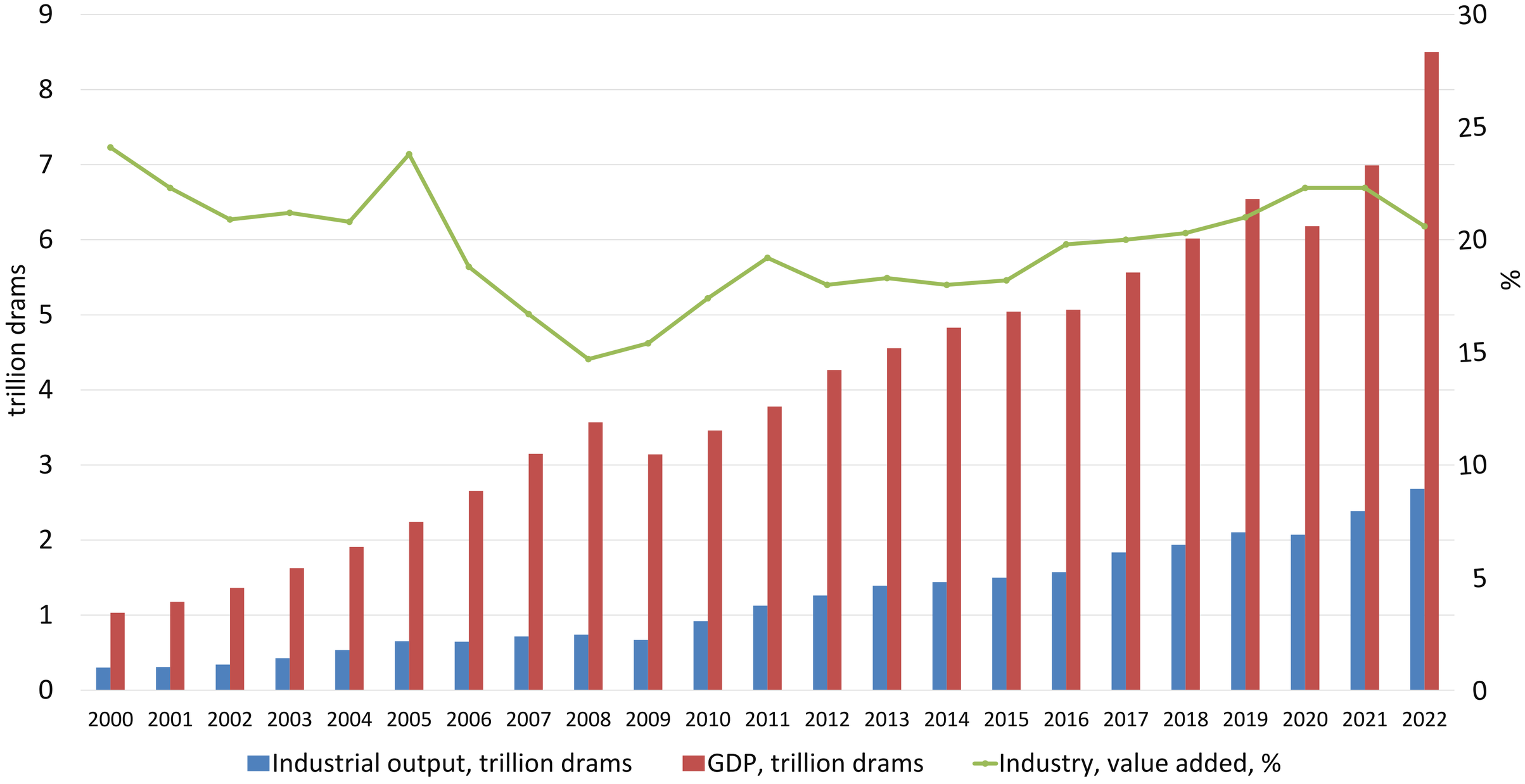
Source: WorldBank

High-technology exports, % of manufactured exports



Source: WorldBank

Industrial production of RA



Source: calculated by the author based on Armstat data

Classification of manufacturing industries by technological intensity

Based on the statistical classification of economic activities in the European Economic Community - NACE Rev. 2.3

Referring to the study by Богачев Ю.С., «Технологичная структура обрабатывающей промышленности — фактор устойчивого развития экономики России» 2017

High - Tech	• Pharmaceuticals; • Computer, electronic and optical products; • Aircraft, spacecraft, and parts thereof
Upper Medium-Tech	• Chemicals and chemical products; • Weapons and ammunition; • Electrical equipment; • Machinery and equipment; • Motor vehicles, trailers and semi-trailers; • Other transport equipment except ships and boats; • Medical and dental instruments
Lower Medium-Tech	• Printing and reproduction of recorded media; • Coke and refined petroleum products; • Rubber and plastics products; • Other non-metallic mineral products; • Basic metals; • Fabricated metal product; • Repair and installation of machinery and equipment, ships and boats
Low-Tech	• Food products and beverages; • Tobacco products; • Textiles; • Wearing apparel; • Leather and related products; • Wood and products of wood and cork; • Paper and paper products; • Furniture and other manufacturing n.e.c.

Share of **high-tech sector** production in the total volume of the manufacturing in the Republic of Armenia

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total	1.5%	1.3%	1.3%	1.5%	1.3%	1.5%	1.7%	1.5%	1.4%	1.4%	1.6%	1.5%	0.9%
Pharmaceuticals	0.6%	0.5%	0.6%	0.7%	0.7%	0.9%	0.9%	0.8%	0.7%	0.7%	0.9%	0.8%	0.6%
Computer, electronic and optical products	0.9%	0.8%	0.8%	0.8%	0.6%	0.6%	0.7%	0.6%	0.7%	0.7%	0.8%	0.7%	0.4%
Aircraft, spacecraft, and parts thereof	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: calculated by the author based on Armstat data

Share of **upper medium-tech** production in the total volume of the manufacturing in the Republic of Armenia

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total	2.8%	2.5%	2.6%	2.2%	2.0%	2.1%	2.3%	2.8%	2.8%	2.9%	3.5%	3.3%	3.0%
Chemicals and chemical products	1.6%	1.2%	1.1%	1.0%	1.0%	1.1%	1.0%	1.0%	1.2%	1.3%	1.6%	1.0%	1.1%
Electrical equipment	0.8%	0.9%	0.8%	0.7%	0.6%	0.6%	0.8%	1.5%	1.1%	1.2%	1.6%	1.6%	0.9%
Machinery and equipment	0.4%	0.4%	0.7%	0.5%	0.4%	0.5%	0.4%	0.3%	0.4%	0.4%	0.4%	0.7%	1.1%
Motor vehicles, trailers and semi-trailers	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other transport equipment except ships and boats	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Source: calculated by the author based on Armstat data

Share of **lower medium-tech** production in the total volume of the manufacturing in the Republic of Armenia

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total	38%	37%	35%	32%	31%	28%	25%	22%	21%	20%	23%	22%	28%
Coke and refined petroleum products	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.01
Rubber and plastics products	2.8%	2.9%	3.0%	2.6%	3.1%	3.1%	3.1%	2.6%	2.7%	2.6%	2.5%	3.1%	2.6%
Other non-metallic mineral products	9.2%	7.3%	6.8%	7.0%	6.2%	5.2%	3.9%	3.7%	4.6%	4.7%	5.4%	6.4%	12.9%
Metallurgy	24.8%	24.9%	23.5%	20.5%	20.3%	18.2%	17.2%	14.5%	12.8%	11.5%	13.5%	12.1%	10.4%
Fabricated metal product	1.2%	1.6%	1.7%	1.7%	1.5%	1.3%	1.2%	1.0%	1.1%	1.3%	1.4%	0.9%	1.2%
Repair and installation of ships and boats	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: calculated by the author based on Armstat data

Share of **low-tech** production in the total volume of the manufacturing in the Republic of Armenia

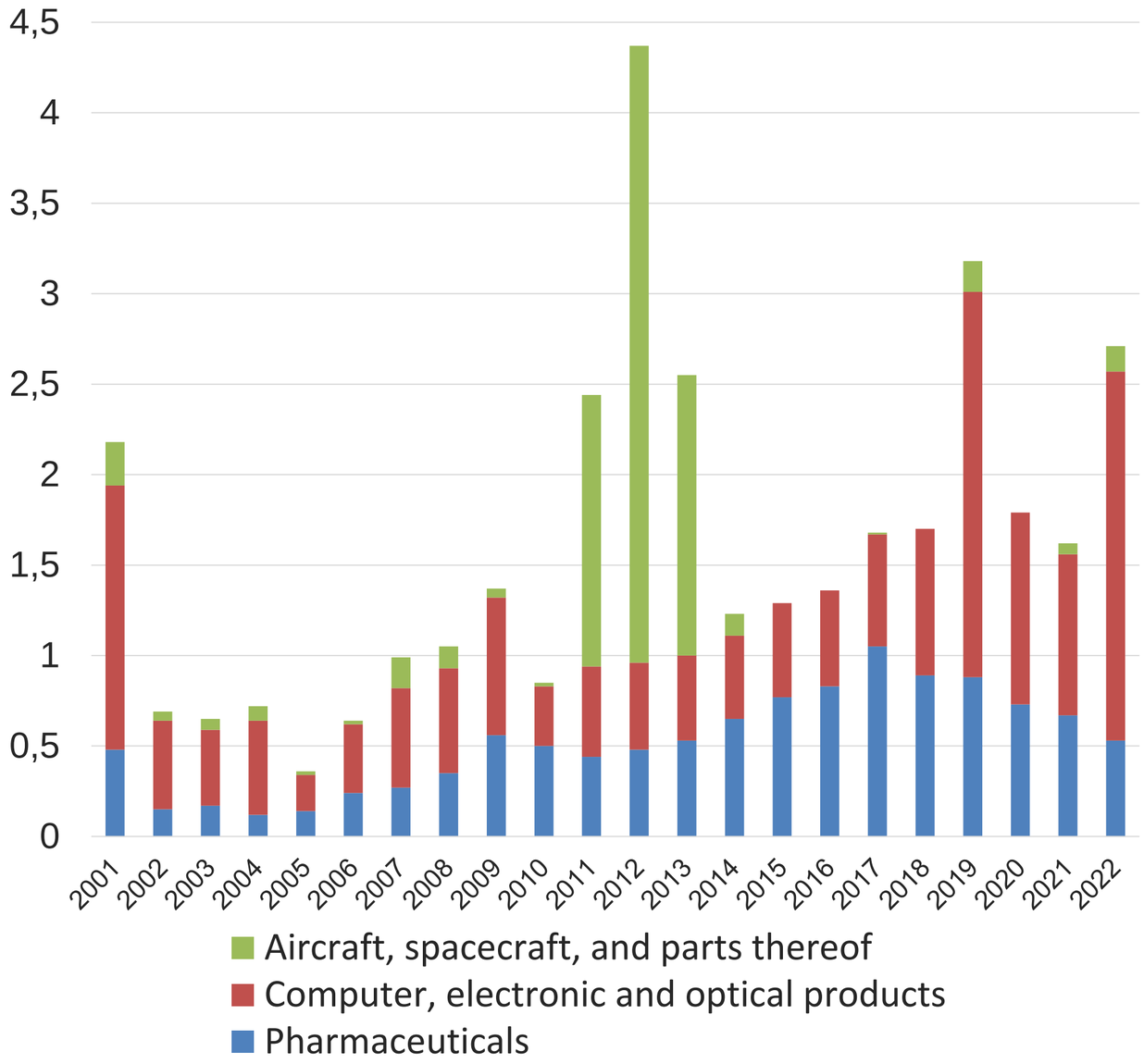
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total	57.1%	59.1%	60.6%	64.1%	65.3%	68.3%	70.5%	73.6%	73.7%	74.3%	71.7%	71.5%	68.1%
Food products and beverages	47.4%	50.3%	50.3%	51.6%	51.1%	46.6%	44.9%	50.9%	50.1%	50.4%	50.6%	52.3%	49.4%
Tobacco products	3.7%	2.5%	3.6%	4.9%	7.4%	13.3%	15.3%	13.0%	13.2%	13.5%	10.9%	9.0%	7.7%
Textiles	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.3%
Wearing apparel	0.6%	0.9%	0.7%	0.8%	0.9%	1.1%	1.3%	1.4%	1.7%	1.9%	2.3%	2.8%	2.3%
Leather and related products	0.2%	0.2%	0.2%	0.2%	0.1%	0.2%	0.2%	0.2%	0.1%	0.2%	0.2%	0.2%	0.3%
Wood and products of wood and cork	0.3%	0.2%	0.2%	0.1%	0.2%	0.2%	0.2%	0.1%	0.1%	0.2%	0.1%	0.1%	0.2%
Paper and paper products	0.9%	0.9%	1.1%	1.5%	1.9%	2.4%	2.4%	2.2%	2.6%	2.7%	2.4%	2.4%	1.8%
Products of the printing industry	1.7%	1.6%	1.5%	1.8%	1.7%	1.7%	1.5%	1.3%	1.4%	1.6%	1.3%	1.4%	2.1%
Furniture and other manufacturing n.e.c.	2.3%	2.4%	2.8%	3.1%	1.8%	2.8%	4.6%	4.5%	4.3%	3.9%	3.8%	3.0%	4.0%

Source: calculated by the author based on Armstat data

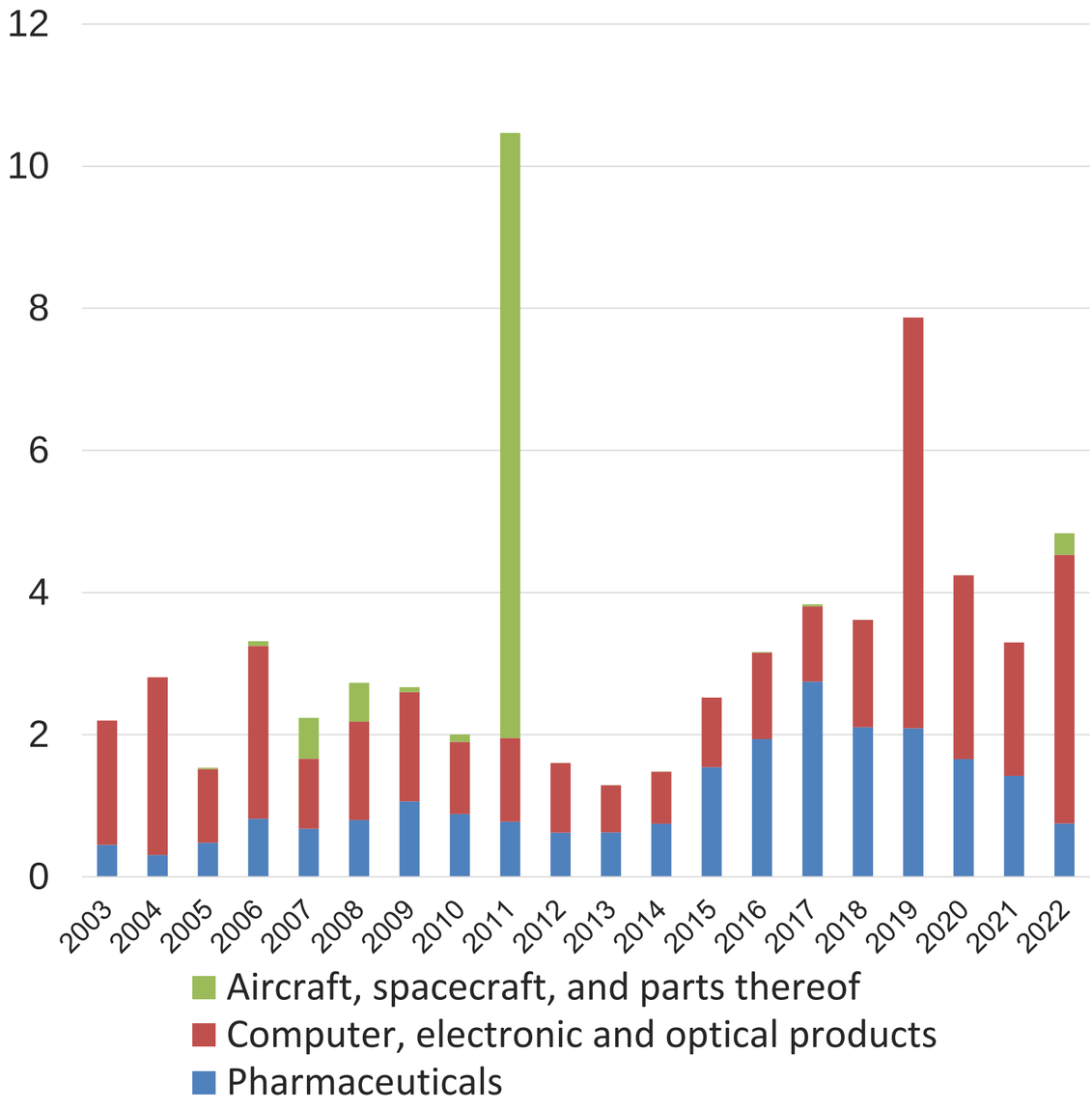
Technological structure of manufacturing of the RA

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
High - Tech	1.5%	1.3%	1.3%	1.5%	1.3%	1.5%	1.7%	1.5%	1.4%	1.4%	1.6%	1.5%	0.9%
Upper Medium-Tech	2.8%	2.5%	2.6%	2.2%	2.0%	2.1%	2.3%	2.8%	2.8%	2.9%	3.5%	3.3%	3.0%
Lower Medium-Tech	38%	37%	35%	32%	31%	28%	25%	22%	21%	20%	23%	22%	28%
Low-Tech	57.1%	59.1%	60.6%	64.1%	65.3%	68.3%	70.5%	73.6%	73.7%	74.3%	71.7%	71.5%	68.1%

Share of high-tech products **in the total exports of RA**, %



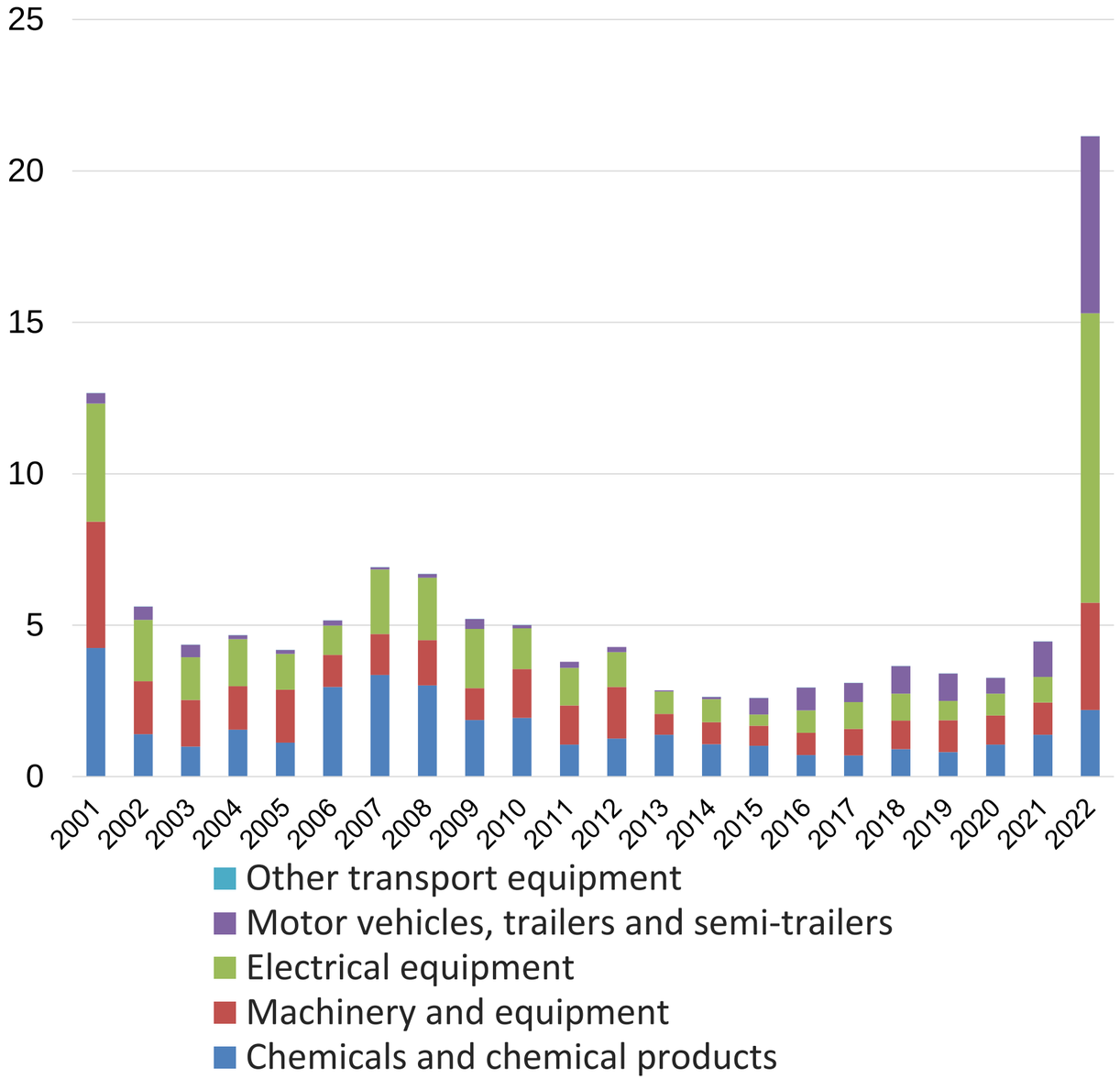
Share of high-tech products **in RA exports to the EAEU countries**, %



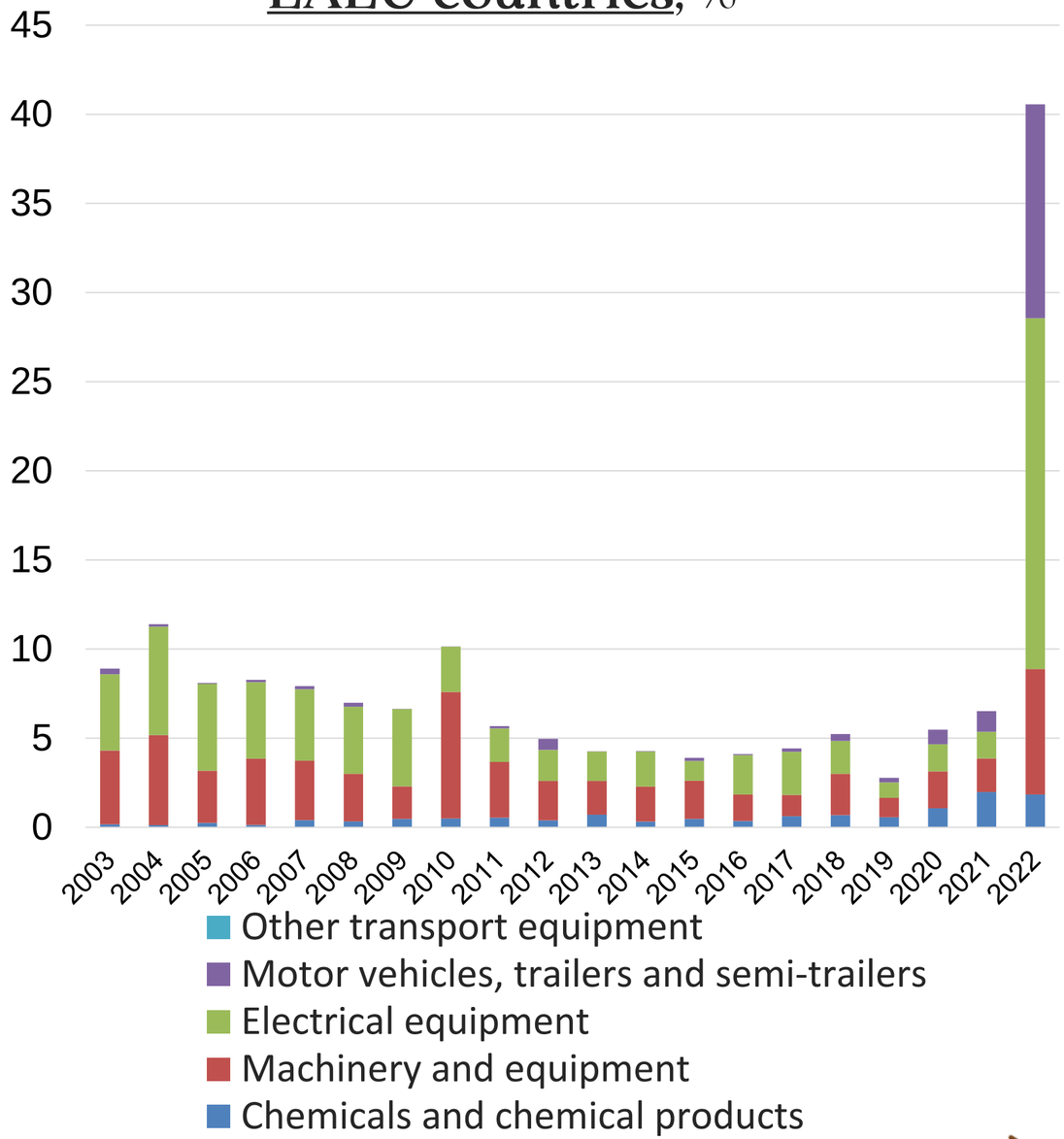
**the commodity group "computer, electronic and optical products" also includes photographic, cinematographic, measuring, control, precision, medical and surgical apparatus*

Source: calculated by the author based on Trade Map data

Share of upper medium-tech products **in the total exports of RA**, %



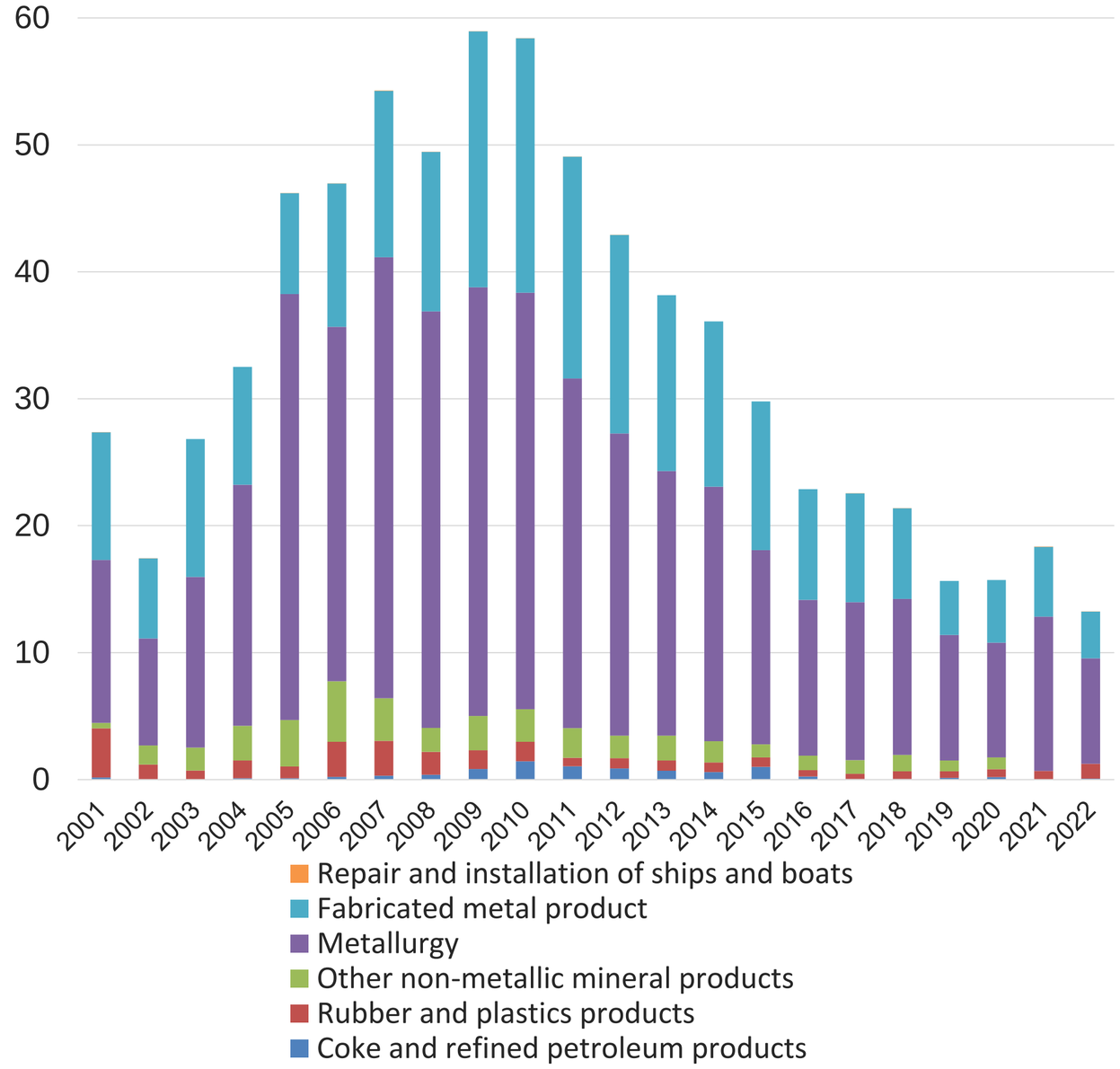
Share of upper medium-tech products **in RA exports to the EAEU countries**, %



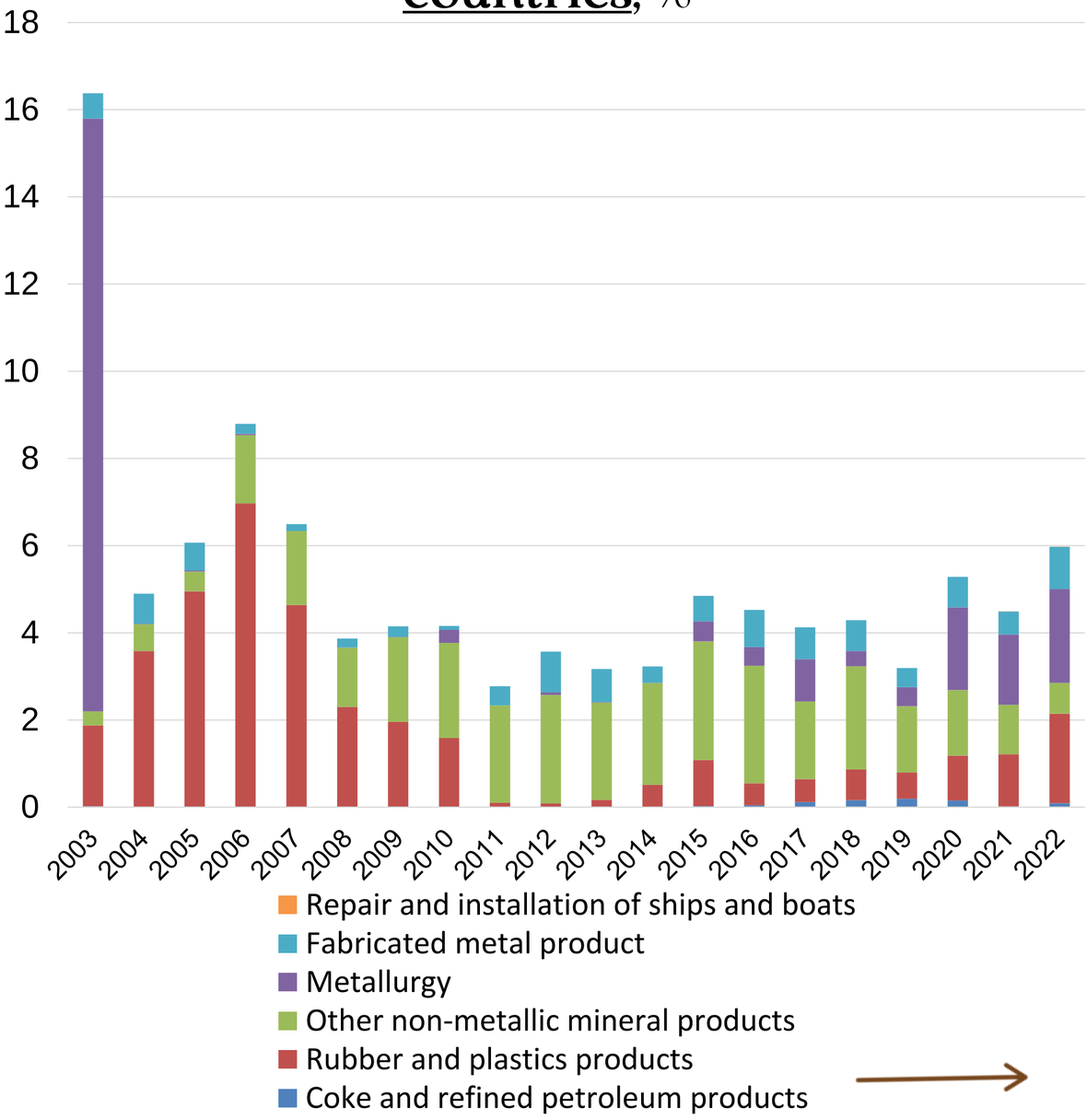
**the group "electrical equipment" also includes sound recording and sound reproducing equipment, their parts and accessories*

Source:calculated by the author based on Trade Map data

Share of lower medium-tech products **in the total exports of RA**, %

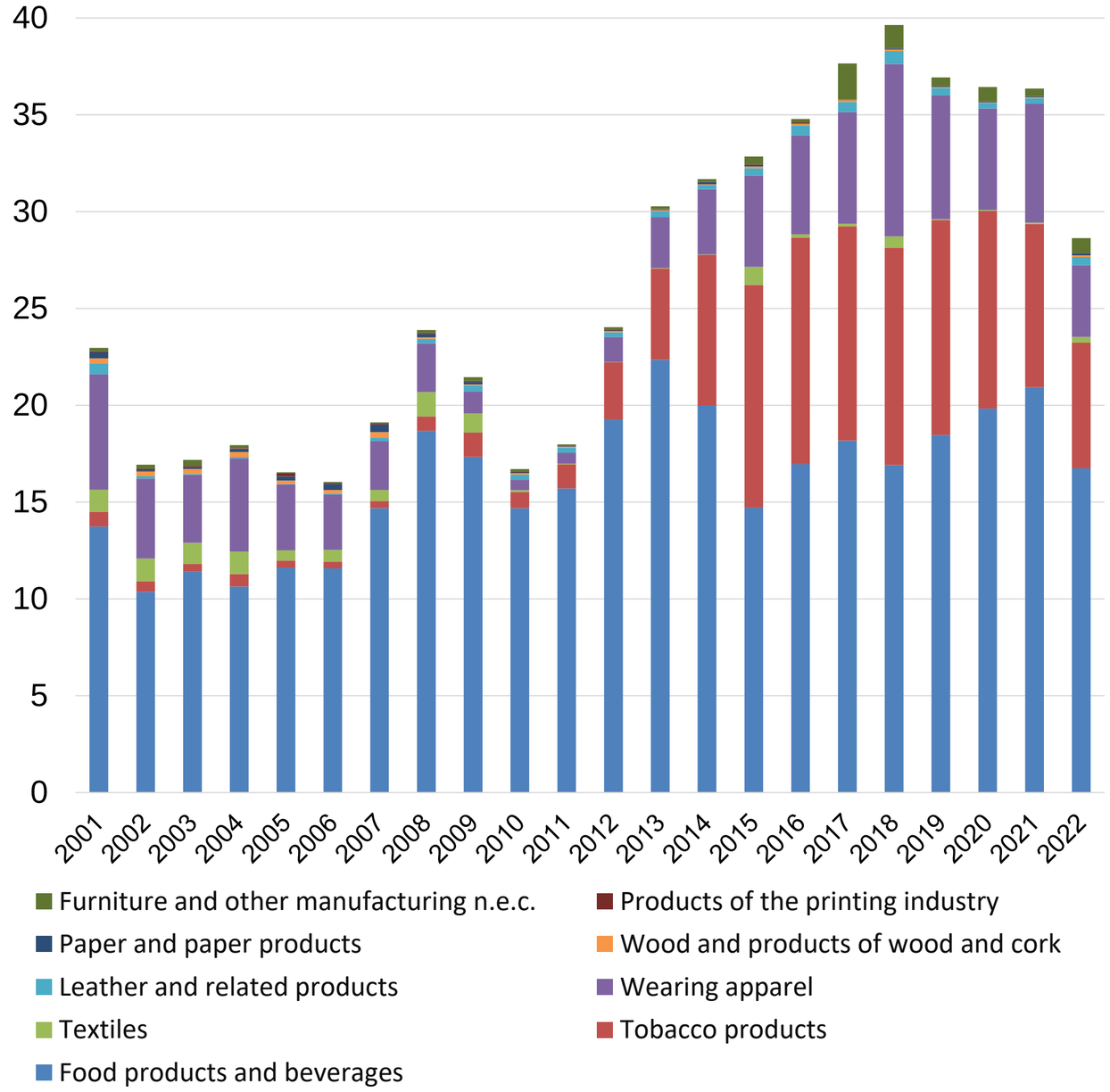


Share of lower medium-tech products **in RA exports to the EAEU countries**, %



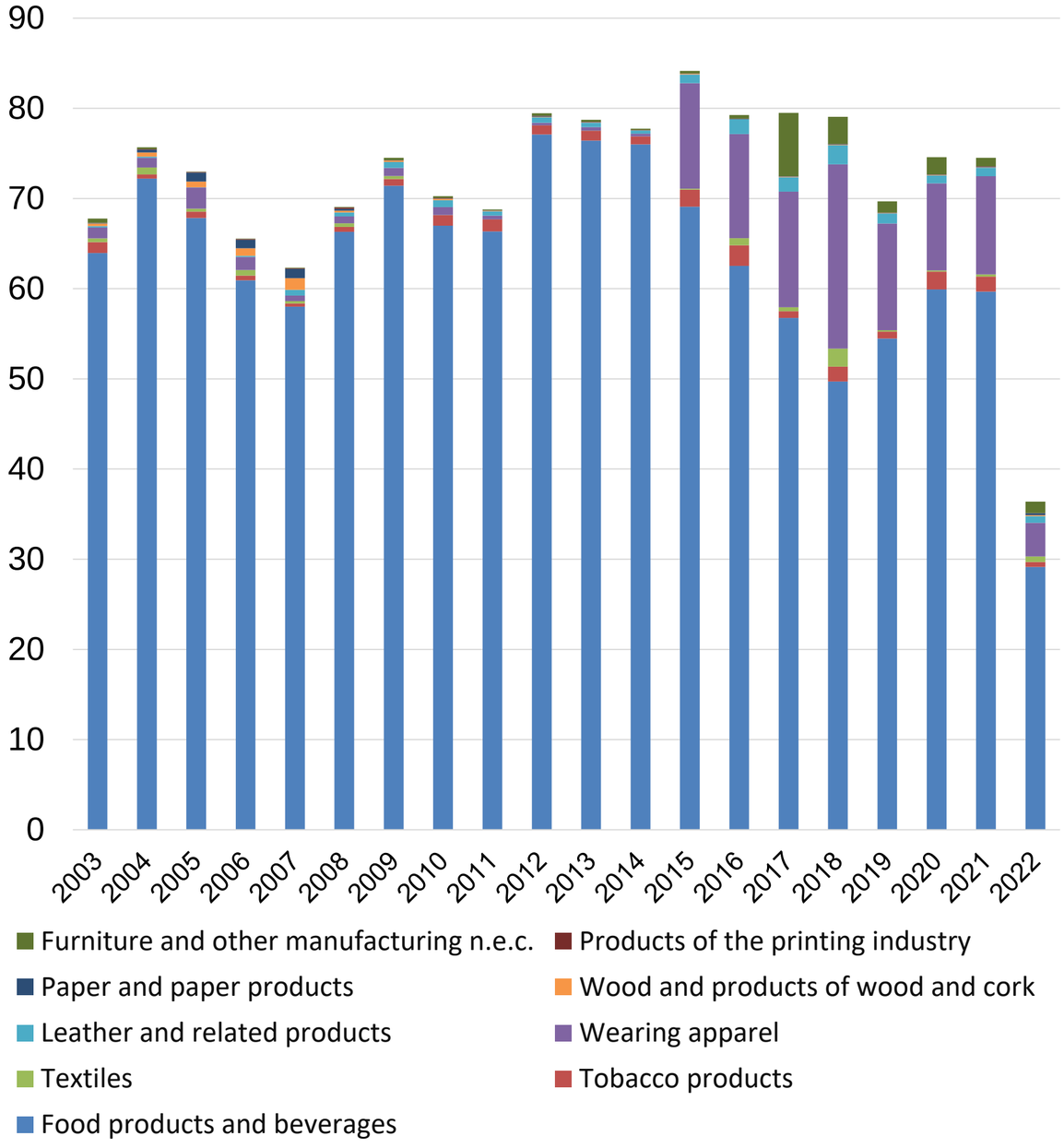
Source: calculated by the author based on Trade Map data

Share of low-tech products **in the total exports of RA**, %



**the group «products of the printing industry» also includes the reproduction of recorded media*

Share of low-tech products **in RA exports to the EAEU countries**, %



Source: calculated by the author based on Trade Map data

Industrial Policy

India	«Make in India», import substitution industrialization
Indonesia	2025–45 National Long-Term Development Plan: ban on nickel ore and other mineral exports
Malaysia	the New Industrial Master Plan 2030 : o build more competitive industries and ‘advance economic complexity’
South Korea	Heavy - Chemical Industry Initiative 1973-1979
Europe	the European Green Deal, Horizon 2020, The Strategic Forum for Important Projects of Common European Interest (IPCEI)
USA	Infrastructure Investment and Jobs Act (IIJA), Inflation Reduction Act (IRA), The CHIPS and Science Act
China	Made in China 2025, Belt and Road Initiative. To lead the country towards innovative production of more valuable goods and services.

The RA Law "On Industrial Policy" of 2014 and the amendments made in 2023.

The Ministry of High-Tech Industry of the Republic of Armenia

The Government Program of the Republic of Armenia (2021–2026)

Industrial Cooperation within the EAEU

The EAEU Strategy-2025

The "Symbols of Eurasian Integration" Contest

Industrial Policy of the RA

Armenia could benefit from the modernization and expansion of its manufacturing, while improving the technological structure of its manufacturing sector.

Manufacturing, % of Fixed Capital Investments

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
EAEU	15.2	15.6	14.2	14.2	14.1	13.7	14.4	14.6	13.2	13.8
Belarus	26.9	26.3	21.6	22.1	22.5	22.7	23.7	21.1	18.1	18.9
Russia	15.0	15.6	14.3	14.3	14.1	14.0	14.6	14.8	13.4	14.2
Kazakhstan	11.1	11.7	11.3	10.9	11.1	8.1	8.8	11.7	10.4	9.2
Kyrgyz Republic	10.5	14.3	7.1	5.6	6.7	4.8	2.8	2.2	3.5	2.6
Armenia	9.6	2.1	2.8	2.4	3.9	5.4	2.1	1.3	2.8	1.5

Source: calculated according to data from the Eurasian Economic Commission

Conclusion

01

For centuries, the manufacturing industry has been and remains an important source of achieving economic growth

02

Many initiatives have been identified that confirm the phenomenon of reindustrialization of the economies of developed countries

03

A predominance of low-tech and medium-low-tech/ lower medium-tech sectors has been identified in both manufacturing and exports of the Republic of Armenia

04

Economic development can be facilitated by qualitative improvement of manufacturing through the expansion of high-tech production and exports

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Thank You!