Interindustry Relations of Metallurgy and Metal Consumption in the Russian Economy

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1.

Russia's place among the leading metal consuming countries

Why is it necessary to analyze metal consumption trends?

Main reasons:

- The dynamics of metal consumption characterizes the stages of economic development of the countries (pre-industrial, industrial, post-industrial)
- The volume of metal production is important. But the quality of metal products and the directions of its use in the national economy are more important
- Economic growth cannot be achieved without attracting material resources, including metals

Source: Budanov, I.A. & Ustinov, V.S. Stud. Russ. Econ. Dev. (2018) 29: 533. https://doi.org/10.1134/S1075700718050027

The dynamics of metal consumption in leading metal consuming countries

Apparent steel use (finished steel products), million metric tons

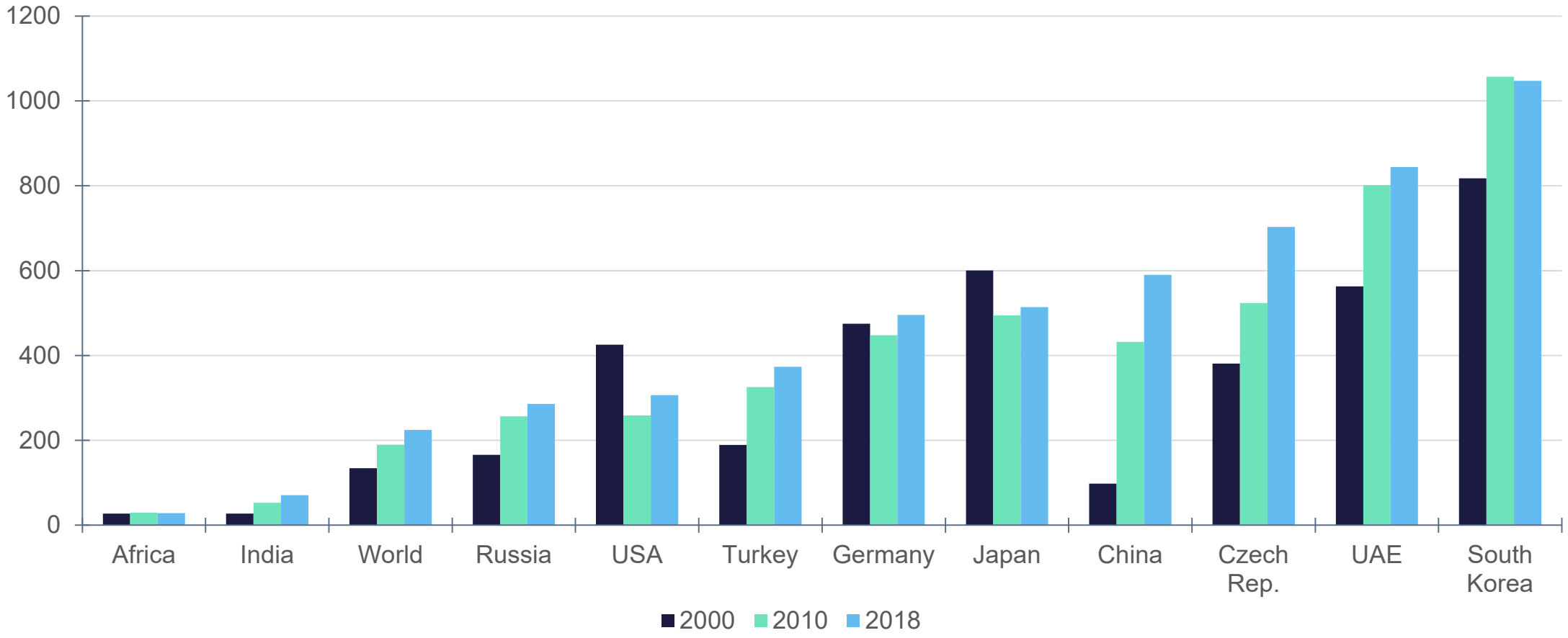
Rank	Country	2000	2010	2018	Growth rate, times	Share of world consumption in 2018, %
1	China	124,3	587,6	835,0	6,72	48,8
2	USA	120,0	79,9	100,2	0,84	5,9
3	India	27,6	64,9	96,0	3,48	5,6
4	Japan	76,1	63,6	65,4	0,86	3,8
5	South Korea	38,3	52,4	53,6	1,40	3,1
6	**Russia**	**24,4**	**36,7**	**41,2**	**1,69**	**2,4**
7	Germany	39,0	36,2	40,8	1,05	2,4
8	Turkey	12,7	23,6	30,6	2,41	1,8
	Total 8 leading countries	462,4	944,9	1262,8	2,73	73,8
	World	760,7	1 316,6	1712,1	2,25	100,0

Apparent steel use = Steel production – Export of steel + Import of steel

Source: World Steel Association

Steel consumption per capita

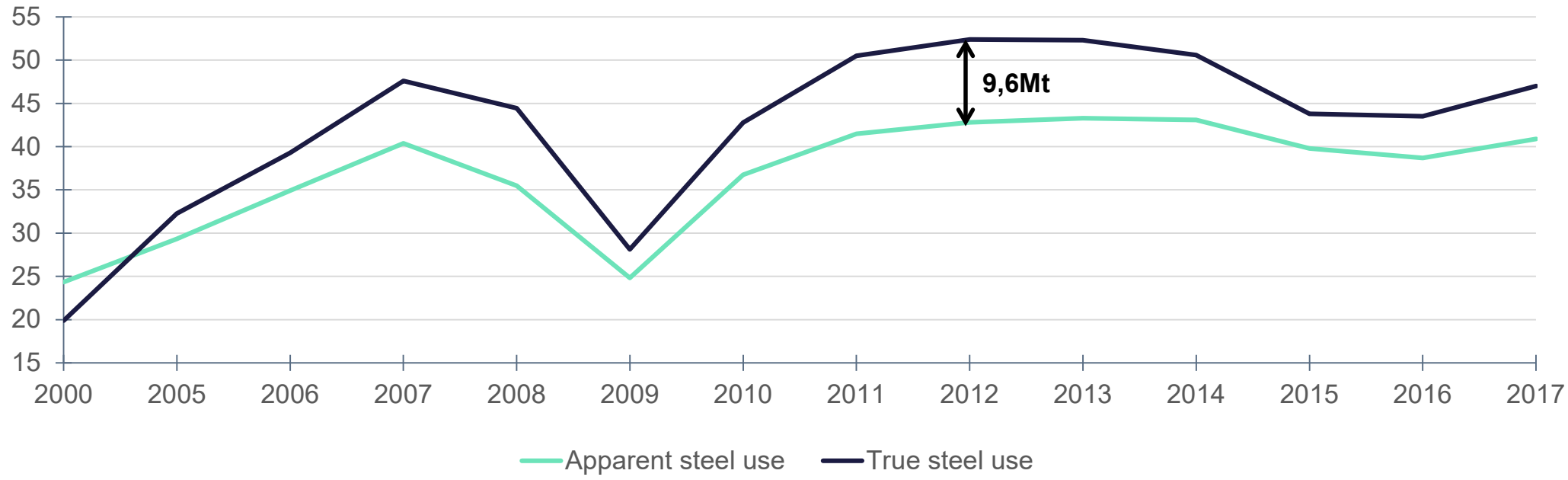
Apparent steel use per capita (finished steel products), kg



Source: World Steel Association

True steel use as the most relevant indicator of steel consumption

Difference between apparent steel use and true steel use in Russian economy, million metric tons



True steel use = Apparent steel use – Indirect export of steel + Indirect import of steel

Indirect trade in steel takes place through exports and imports of steel containing goods and is expressed in finished steel equivalent of products used

Source: World Steel Association

Russia as one of the biggest net indirect importers of steel

Major net indirect IMPORTERS of steel in 2012 and 2017, million metric tons

Rank	Country	2012	2017	Absolute increase
1	USA	15,3	24,4	9,1
2	**Russia**	**9,6**	**6,2**	**-3,4**
3	United Kingdom	3,7	5,9	2,2
4	Canada	7,0	5,1	-1,9
5	Australia	5,4	5,0	-0,4

Major net indirect EXPORTERS of steel in 2012 and 2017, million metric tons

Rank	Country	2012	2017	Absolute increase
1	China	56,7	67,6	**10,9**
2	South Korea	18,9	14,6	-4,3
3	Japan	20,1	14,1	-6,0
4	Germany	8,9	11,4	**2,5**
5	Italy	6,1	5,4	-0,7

Conclusions:

- Russia is #2 (after USA) in the ranking of net indirect importers of steel
- There are disproportions in development of metallurgy and mechanical engineering industry in the Russian economy
- Restoration of interindustry relations between metallurgy and mechanical engineering should be one of the priorities of industrial policy in the Russian Federation
- It is advisable to consider the experience of the mechanical engineering development in the countries leading in the net indirect export of steel

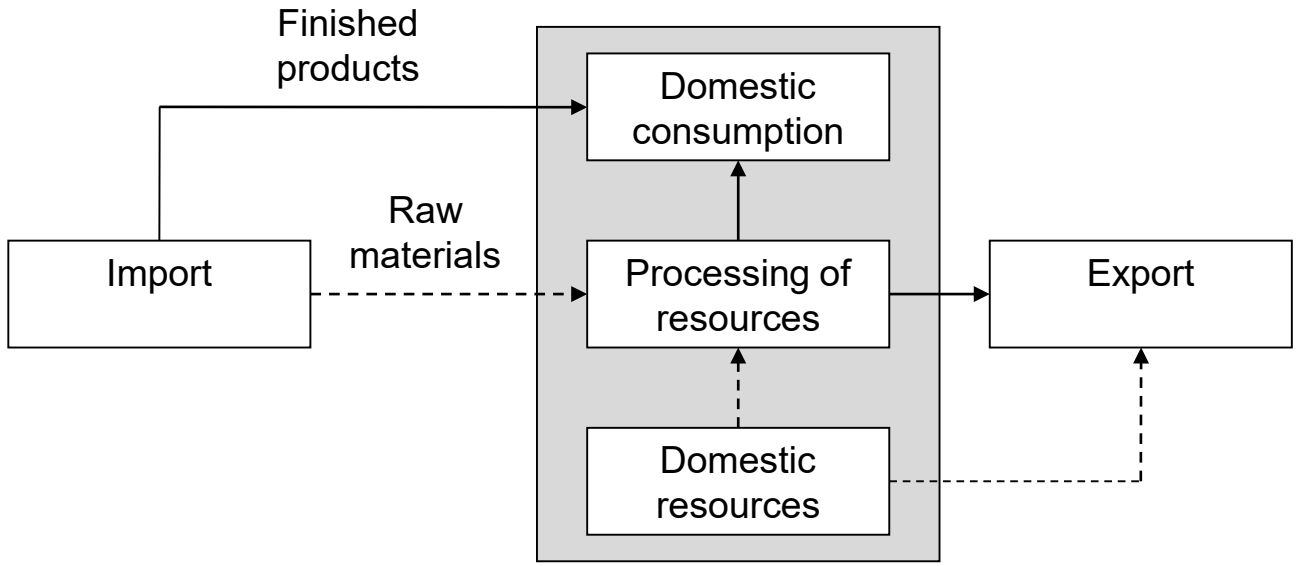
Source: World Steel Association

2.

System of metal turnover in Russia

General approach to the system of metal turnover analysis

National economy as a “Black box”



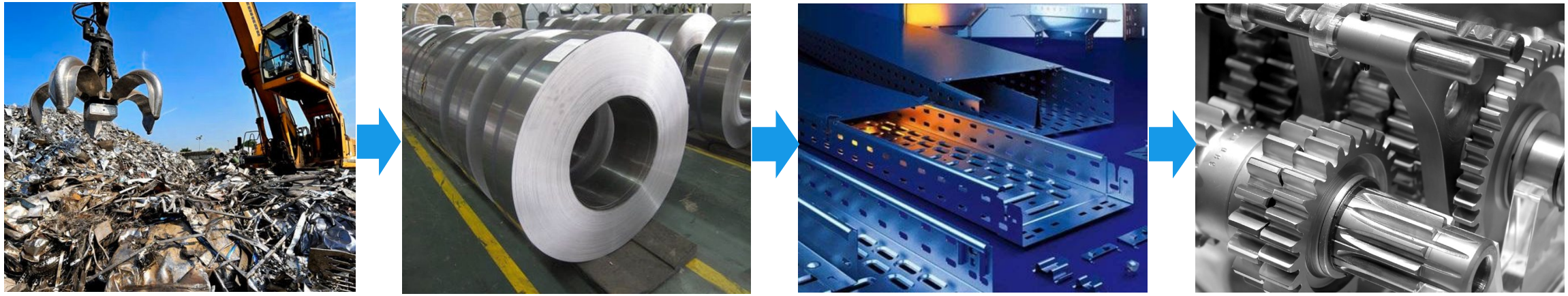
The national **system of metal turnover** is interpreted as a complex of interconnected industries that form the value chain from extraction of raw materials used in metallurgy, to production of the finished products, which contain metal

Source: Ustinov V.S. Forecasting of the Russian Metal Turnover System Based on Cross-Country Analysis of Foreign Trade Flows. Scientific Articles – Institute of Economic Forecasting RAS, Moscow, 2014, pp. 185-204. ISSN 2076-3182 (in Russian)

General approach to the system of metal turnover analysis

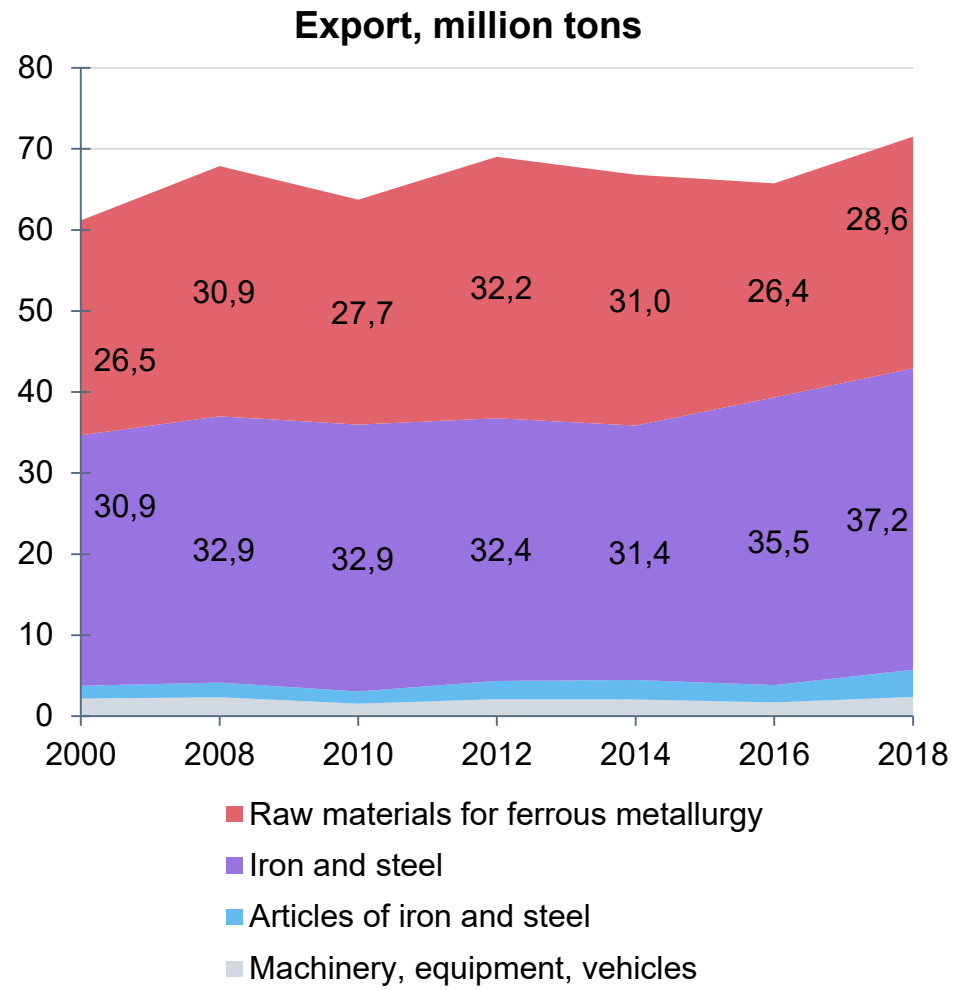
The following main blocks can be distinguished in the system of metal turnover:

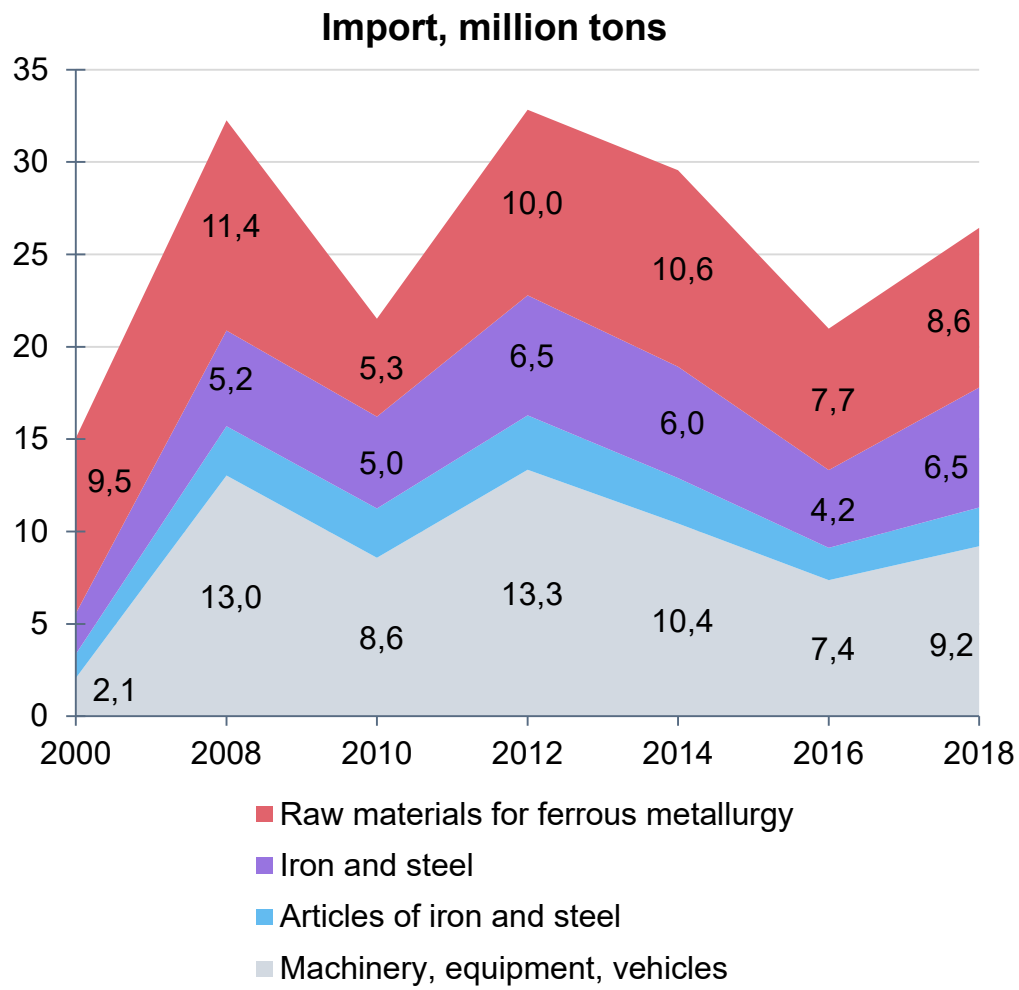
1. Primary and secondary raw materials (metal ores and scrap)
2. Basic metal products (pig iron, steel, semi-finished products, rolled metal)
3. Products of deep processing (pipes, wire products, fabricated metal products)
4. Metal-containing products (machinery, equipment, vehicles)



Source: Ustinov V.S. Forecasting of the Russian Metal Turnover System Based on Cross-Country Analysis of Foreign Trade Flows. Scientific Articles – Institute of Economic Forecasting RAS, Moscow, 2014, pp. 185-204. ISSN 2076-3182 (in Russian)

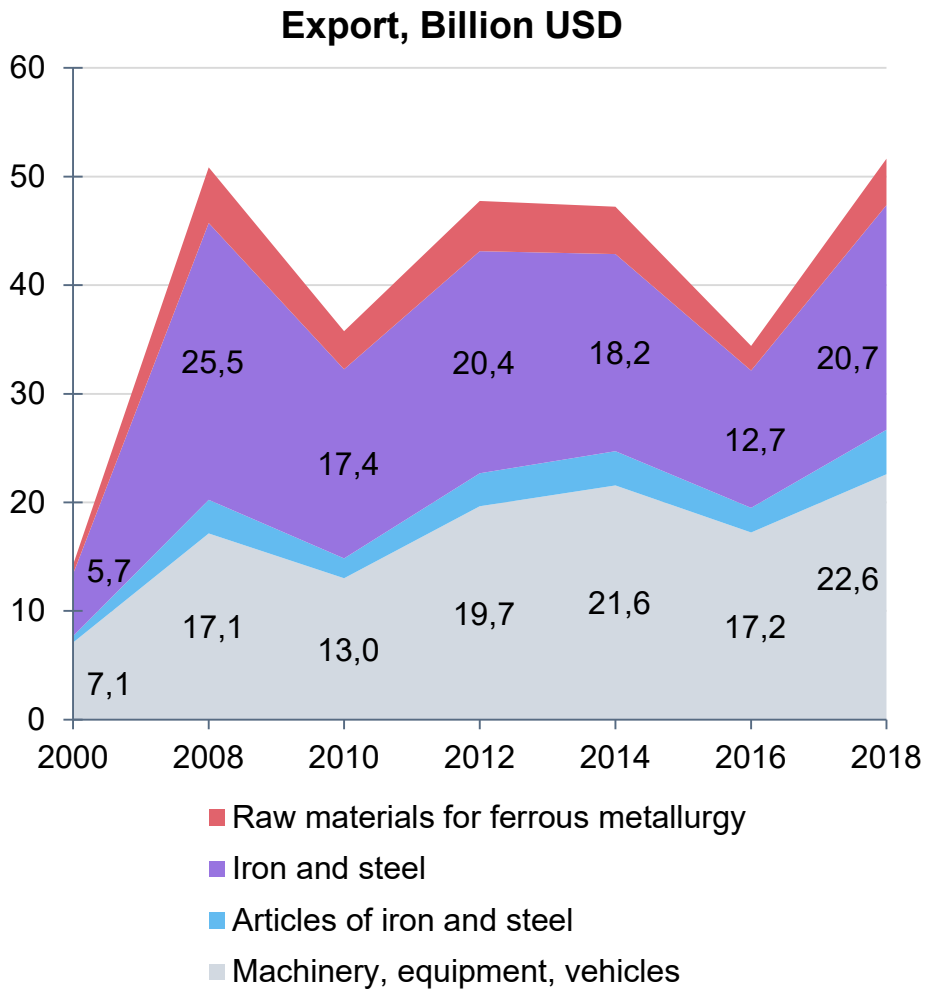
Characteristics of the Russian metal turnover system (physical volume)

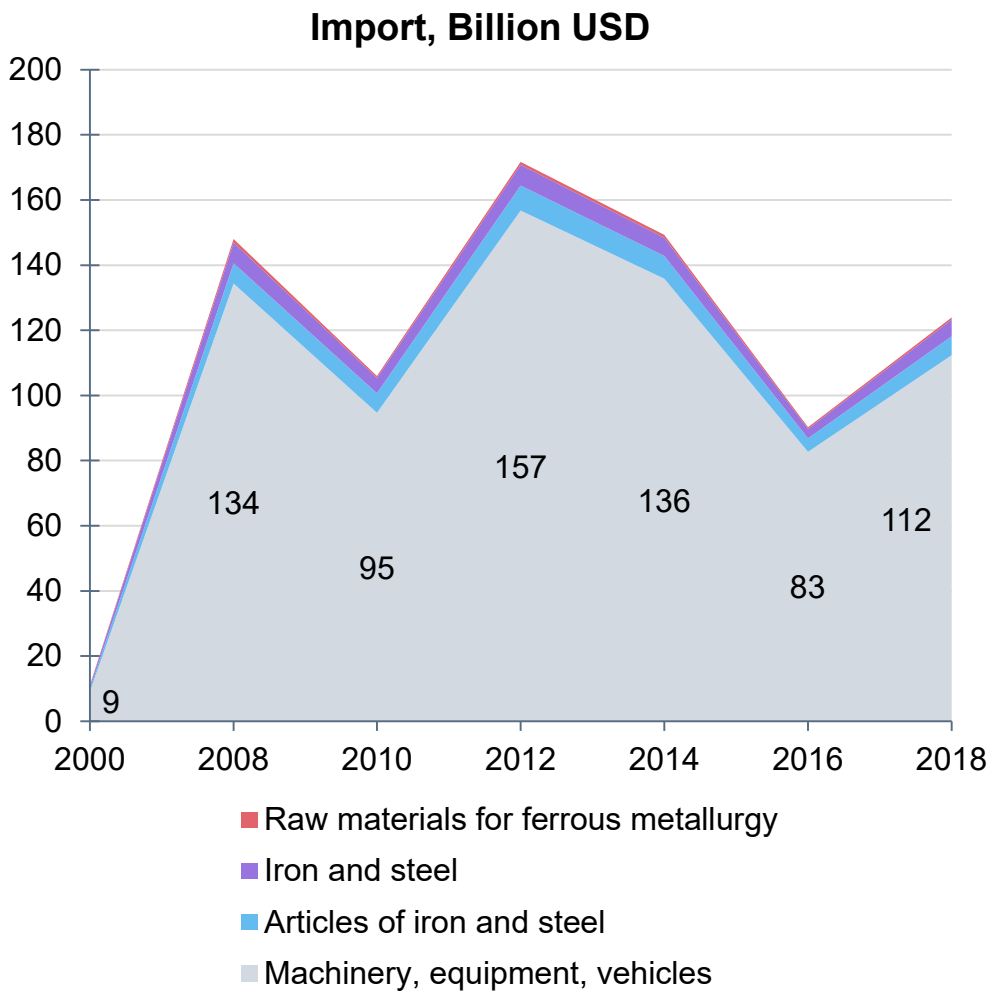




Source: UN Comtrade, IEF RAS

Characteristics of the Russian metal turnover system (cost volume)





Source: UN Comtrade, IEF RAS

National system of metal turnover: Germany vs. Russia

Export and import prices in the system of metal turnover in Germany and Russia

Indicators	Russia		Germany		Germany / Russia	
	2000	2018	2000	2018	2000	2018
Export prices, $ /ton						
Raw materials for ferrous metallurgy	32	149	148	471	4,6	3,2
Iron and steel	186	556	481	1042	2,6	1,9
Articles of iron and steel	366	1217	1672	3780	4,6	3,1
Machinery, equipment, vehicles	3276	9524	14113	19725	4,3	2,1
Average for system of metal turnover	233	722	5666	10728	24,3	14,9
Import prices, $ /ton						
Raw materials for ferrous metallurgy	27	73	36	117	1,3	1,6
Iron and steel	365	788	470	1109	1,3	1,4
Articles of iron and steel	702	2783	1284	2816	1,8	1,0
Machinery, equipment, vehicles	4435	12201	13493	18262	3,0	1,5
Average for system of metal turnover	737	4687	2339	5212	3,2	1,1
Export price / Import price						
Raw materials for ferrous metallurgy	1,19	2,04	4,11	4,03	3,5	2,0
Iron and steel	0,51	0,71	1,02	0,94	2,0	1,3
Articles of iron and steel	0,52	0,44	1,30	1,34	2,5	3,1
Machinery, equipment, vehicles	0,74	0,78	1,05	1,08	1,4	1,4
Average for system of metal turnover	**0,32**	**0,15**	**2,42**	**2,06**	**7,7**	**13,4**

As an integral indicator of metals processing efficiency in the national economy it is possible to use the **ratio of price of one ton of exported and one ton of imported products related to the turnover of the metals**

Source: UN Comtrade, IEF RAS

National system of metal turnover: Germany vs. Russia

The foreign trade balance for system of metal turnover in Germany and Russia

The foreign trade balance (Export – Import), billion U.S. dollars	Russia		Germany	
	2000	2018	2000	2018
Raw materials for ferrous metallurgy	0,6	3,6	-0,8	-1,3
Iron and steel	4,9	15,6	1,4	-4,6
Articles of iron and steel	-0,3	-1,7	2,5	8,8
Machinery, equipment, vehicles	-1,5	-89,7	98,9	318,7
Total for system of metal turnover	**3,7**	**-72,3**	**102,0**	**321,6**

- 76 billion USD

+ 219.6 billion USD

Conclusions:

- In Russia the main export revenues in the system of metal turnover are generated from deliveries of iron and steel
- Investment needs of Russian economy are not provided by the products of domestic mechanical engineering, as evidenced by the negative balance of foreign trade in machinery, equipment and vehicles (-89.7 billion dollars in 2018)
- In modern conditions the global competitiveness of separate industries (such as metallurgy) is significantly less important than the integral competitiveness of large industrial complexes (like metallurgical-engineering complex)

Source: UN Comtrade, IEF RAS

Thank you

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