ASSESSMENT OF THE INVESTMENT RISK

(Following the example of the comparative analysis between Russian and Transnational Steel Companies)

Valery Valerievich Smirnov, Anton Yurievich Antyukhov
Denis Aleksandrovich Soloviev
Financial University under the Government of the Russian Federation [1]
Kairat Bolatovich Koishibekov
Burgas Free University

ОЦЕНКА НА ИНВЕСТИЦИОННИЯ РИСК

(по примера на съпоставителния анализ между руски и транснационални стоманодобивни компании)

Валерий Валериевич Смирнов, Антон Юриевич Антюхов
Денис Александрович Соловьов
Финансов университет към правителството на Руската федерация
Кайрат Болатович Койшибеков - докторант
Бургаски свободен университет

Резюме: *Инвестициите на фондовия пазар стават все по-привлекателни на фона на намаляване на ключовия лихвен процент. Откриват се нови възможности за руските инвеститори да увеличат капитала си и един от тях е да инвестират в акции на големи международни и руски компании. В процеса на диверсификация на портфейла е необходимо да се вземат предвид компании от различни сектори на икономиката. Тази статия е посветена на оценката на рисковете от инвестиране в стоманодобивни компании: колко рисковано е да се инвестира в руски стоманодобивни гиганти, в сравнение с международните корпорации.*
Ключови думи*: инвестиции, рискове, металургия, Северстал, CHTPZ, Норилски никел, рентабилност, NLMK, инвестиционна стратегия.*
JEL Codes: *F23, G34, L61, M11*.

Abstract: *Investments in the stock market are becoming increasingly attractive when taking the key rate reduction into consideration. New opportunities are opening up for Russian investors to increase their capital, and one of those ways is to invest in shares of major international and Russian companies. Throughout the process of portfolio diversification, it is necessary to take into account conglomerates from various economic sectors. This article is devoted to assessing the investment risk of steel companies: how risky it is to invest in Russian steel enterprises in contrast to international corporations.*
Key words: *investments, risks, metallurgy, Severstal, CHTPZ, Norilsk Nickel, profitability, NLMK, investment strategy.*
JEL Codes: *F23, G34, L61, M11*.

[1] Associate professor Smirnov Valery Valerievich, Ph. D. - team leader, Antyukhov Anton Yurievich, Soloviev Denis Aleksandrovich, Koishibekov Kairat Bolatovich - Ph.D. student.

Introduction

Steel is one of the most popular metal alloys in modern industry. Its main components are iron and carbon. The unique balance of hardness and ductility made the steel suitable for manufacturing a wide range of different products, and the large amount of iron ore available for mining allowed the steel to become widely used due to its relatively low cost.

Global steel production in 2019 reached 1.87 billion tons, of which Asian countries accounted for 1.34 billion tons. The main player in the global steel market today is China, where about 53% of the world's total metal production is concentrated. Japan and India are leading by a large margin, while the United States, Russia and South Korea are located below.

In Russia, the steel sector is doing well due to increased demand from the construction sector. However, analysts admit that the expected downturn in the economy will affect it. Despite the downturn in the steel industry, in 2019, leading Russian steel producers presented their updated strategies for the period up to 2023, which marked the beginning of a new investment cycle. Companies, in particular, expect to increase capital expenditures for expanding and upgrading steelmaking facilities, as well as increase the range of rolled products, which makes them more attractive to potential investors.

The study places emphasis on the concept of risk management, developed for the transnational group Alfabank, discussed by Prof. Sava Dimov, from Bulgaria. [2]

The purpose of this work is to study the risks and assess the investment attractiveness of the steel industry.

The object of study is steel groups: both Russian and international.

1. Macroeconomic analysis of the steel market (overview, dynamics, statistics, prospects)

Steel is one of the key resources of our society. As a permanent material that can be recycled over and over again without losing its properties, steel is also fundamental to a successful circular economy. From transportation systems, infrastructure, and housing to manufacturing, agriculture, or energy, the industry continues to expand its offering of advanced high-strength steels that reduce product weight and encourage circular economy practices. For society, these benefits include durable goods, local jobs, reduced emissions, and the preservation of raw materials for future generations. Table 1 shows global crude steel production (million tons) and annual growth (in %). Since 2000, the volume of crude steel production has increased by more than 2 times and by 2019 amounted to 1,869 million tons. Since 2017, growth in global steel production has slowed (in 2017, growth was 6.32%, and in 2019 – 3.03%). China ranks first in global crude production (996.3 million tons). This is followed by India (111.2 million tons), Japan (99.3 million tons), the United States (87.8 million tons), Russia (71.9 million tons), South Korea (71.4 million tons), Germany (39.7 million tons), Turkey (33.7 million tons), Brazil (32.2 million tons), Iran (25.6 million tons) – (table 1).

[2] Dimov, S. (2005) Management of risk with the help hedging (Researching the experience and practice of Alfabank, Russian Federation). Collection of reports Firs Applied Conference with International Participation Education, Science, Economics and Technologies in the Global World. Volume 1, Book 2. House-press University „Prof. Dr Assen Zlatarov", Bourgas, ISSN 1312 6121, p. 112-116

Table 1. *Crude steel production*

Crude steel production		
Year	Volume, mln ton	Growth
2000	850	-
2001	852	0.24%
2002	905	6.22%
2003	971	7.29%
2004	1063	9.47%
2005	1148	8.00%
2006	1250	8.89%
2007	1348	7.84%
2008	1343	-0.37%
2009	1239	-7.74%
2010	1433	15.66%
2011	1538	7.33%
2012	1560	1.43%
2013	1650	5.77%
2014	1671	1.27%
2015	1621	-2.99%
2016	1629	0.49%
2017	1732	6.32%
2018	1814	4.73%
2019	1869	3.03%

Table 2 shows the distribution of crude steel production by region in 2019. The absolute leader is Asia (1341.1 million tons). The largest steel production centers after Asia are the European Union (158.8 million tons), NAFTA (119.1 million tons) and the CIS (100.7 million tons).

Table 2. *Crude steel production by process, 2019*

Crude steel production by process, 2019	
Country	volume, mln tonnes
European Union	158.8
Other Europe	39
CIS	100.7
NAFTA	119.1
Central and South America	41.8
Africa	16.7
Middle East	44.2
Asia	1341.1
Australia	5.5
New Zealand	0.7
Total	1867.6

Table 3 illustrates the production of finished steel products by region for the period from 2017 to 2019. Asia remains the leader in production, with its volume growing steadily and reaching 1,247.1 million tons by 2019. Production in the EU by 2019 fell from 168 to 158.7 million tons, WHILE the Nafta organization's indicators decreased from 140.6 million tons in 2018 to 135 million tons in 2019. In the CIS, there is a slight increase from 55.7 to 58.8 million tons. Global production of steel products is growing and reached 1767.5 million tons by 2019.

Table 3. *Apparent steel products use*

Apparent steel products use			
Country	volume, mln tonnes		
	2017	2018	2019
European Union	164	168	158.7
Other Europe	42.4	37.4	33.9
CIS	54.4	55.7	58.8
NAFTA	138.3	140.6	135
Central and South America	42.3	44	42.3
Africa	34.6	36.3	36.4
Middle East	53.2	49.8	48.7
Asia	1097.8	1170.1	1247.1
Oceania	6.6	6.6	6.6
Total	1633.6	1708.5	1767.5

Table 4 shows the production volumes of the key resource for steel production - iron ore by region. The global volume of ore production is 2262.4 million tons. The leader in ore production is Australia, which produces 901.1 million tons of iron, 887.4 million tons of this number are exported. Central and South America is second, producing 477.4 million tons and exporting 423 million tons. Total ore production in Asia is 369.1 million tons. The CIS produces 180.4 million tons of iron. The main importer is Asia, which supplies 1349.8 million tons.

Table 4. *Iron ore production, 2019*

Iron ore production, 2019				
Country	volume, mln tonnes			
	Production	Exports	Improts	Apparent consumption
European Union	34.4	45.6	146.7	135.5
Other Europe	43.9	48.2	159.7	155.4
CIS	180.4	67.5	8.3	121.2
NAFTA	115	61.1	19.1	73
Central and South America	477.4	423	5.4	59.8
Africa	82.6	80.1	7.7	10.2
Middle East	55	32	35.6	58.6
Asia	369.1	66.4	1349.8	1652.5
Australia	901.1	887.4	0.8	14.5
New Zealand and Other Oceania	3.5	2.5	0	1
Total	2262.4	1713.8	1733.1	2281.7

Table 5 shows the export-import ratios of countries for 2019. According to the data, almost all of Australia's iron ore exports go to Asian countries, a huge share to China, which is the world's leading steel producer. This suggests that China depends on the supply of ore from Australia. In addition, China produces only 145.8 million tons of iron ore, while consuming 1199.3 million tons. 236.6 million tons of ore is supplied to the world's leading steel producer from Central and South America.

Table 5. *World trade in iron ore by area, 2019*

World trade in iron ore by area, 2019									
Destination \ Exporting region	European Union	Other Europe	CIS	NAFTA	Other America	Africa and Middle East	Asia	Oceania	Total Imports
European Union	**33.7**	2.3	25.5	23.7	33	18.1	0.5	0.3	137.2
Other Europe	1.3	**0.1**	3.4	1	6.3	0.6	3.2	-	16
CIS	0	0	**15**	-	-	0	-	-	15
NAFTA	0.7	0	0.5	**9.9**	4.5	1.6	0	0.1	17.2
Other America	0	-	0.3	0.9	**6**	0.7	1.3	-	9.2
Africa and Middle East	7.1	0.5	0.9	2.5	24.4	**19**	1	0	55.4
China	1.5	0.3	26.5	12.4	236.6	68.5	**42.8**	682	1070.6
Japan	0.2	-	1.7	9.4	32.2	4.5	**3**	68.6	119.6
Other Asia	0.4	0	1.7	5	17.8	7.3	**42.7**	136.3	211.1
Oceania	0	-	0	0	0	0.4	0	**0**	0.4
Total exports	44.9	3.2	75.5	64.8	360.8	120.7	94.5	887.3	1651.7

2. Current state of the market, industry problems, risks, impact of COVID-19

Let's now consider the current state of the market. To begin with, it is worth noting the dynamics of the stock market, which directly reflects the mood of investors on the economy of certain countries. And at the moment, the entire market is based on the stages of development of the COVID-19 vaccine, as well as on the decisions of the authorities regarding the introduction of restrictions that may affect the business and economic activity of the population. This relationship can be traced, for example, to the price increases of companies developing the vaccine and the market as a whole. On November 9, the American pharmaceutical giant Pfizer made an announcement that the coronavirus vaccine is 90% effective. After that, global stock markets rapidly went up, shares of traditional companies began to add 10-20%. When we talk about traditional companies, we primarily mean companies of the „old economy": companies that are focused on the daily needs of both people and companies. Travel-related stocks rose the most. So, in the US pre-market, shares rose on the news about the effectiveness of the joint Pfizer and Biontech vaccine, which fell the most due to COVID-19:

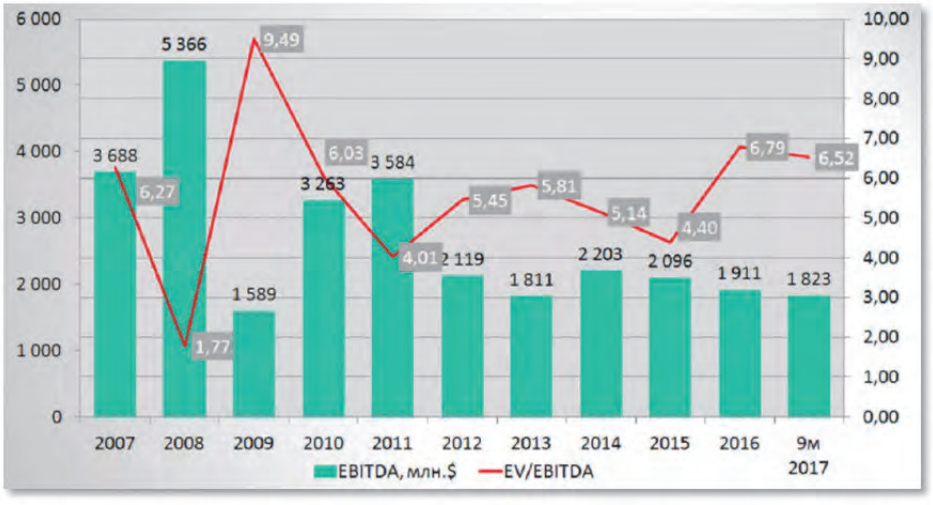
- Carnival Corp +30,39%;
- Norwegian Cruise Line +26,10%;
- American Airlines +25,92%;
- Royal Carribbean Cruises +22,08%;
- TripAdvisor +18,37.

At the same time, competitors also developing the vaccine fell the most, such as Biogen, which fell 27.94%, Zoom Video by 13.22%, Hologic by 12.95% – a medical technology company focusing on women's health and Netflix by 5.58%. As you can see, traditional sectors of the economy reacted positively to Pfizer's statements. However, the same cannot be said for steel companies. For example, chart 1 shows that PJSC Severstal fell by 0.66% that day, which indicates that there is not a strong correlation between news about vaccines and the company's own securities.

Figure 1. *Company share prices PJSC Severtal*

Diagram 1 shows the status of PAO Severstal EBITDA and multiple EV / EBITDA for the period 2007-2017.

Diagram 1. *PAO Severstal EBITDA and multiple EV / EBITDA*



EBITDA, or earnings before interest, taxes, depreciation, and amortization, is a measure of a company's overall financial performance. The EBITDA multiple is a financial ratio that compares a company's Enterprise Value to its annual EBITDA (which can be either a historical figure or a forecast/estimate). This multiple is used to determine the value of a company and compare it to the value of other, similar businesses.

A company's EBITDA multiple provides a normalized ratio for differences in capital structure, taxation, fixed assets, and for comparing disparities of operations in various companies. The ratio takes a company's enterprise value (which represents market capitalization plus net debt) and compares it to the Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA) for a given period.

EBITDA Multiple = Enterprise Value / EBITDA

Determine the Enterprise Value and EBITDA:

Enterprise Value = (market capitalization + value of debt + minority interest + preferred shares) – (cash and cash equivalents);

EBITDA = Earnings Before Tax + Interest + Depreciation + Amortization. [3]

Regarding the multiples and the company's position in the industry, I will compare it with the following competitors: NLMK, MMK, RusAl. The situation unfolds in a very interesting way, because based on the multipliers, we can draw several interesting conclusions:

[3] EBITDA Multiple. The standard multiple for valuation. Available from: *https://corporatefinanceinstitute.com/resources/knowledge/valuation/ebitda-multiple/* [Accessed 03th December 2020]

First, The company's profitability is very high, which makes it more attractive among competitors;

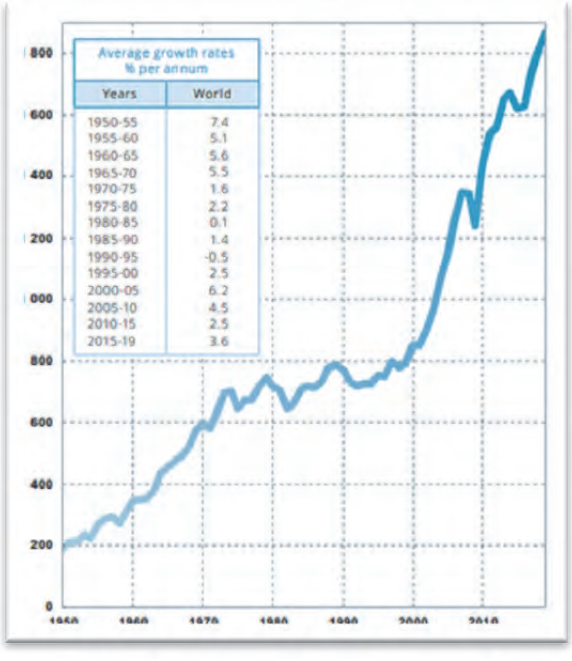
Second, The debt load, although acceptable, but given the company's div. Policy, its growth is quite unpleasant for investors, because it reduces FCF, and therefore dividend payments;

Third, The company's P / E is low, but this is balanced by high P / B and P / S, which, together with ROE, indicates a high-margin, but not very broad business of the company. However, in the case of scaling and entering new markets, we can see much faster growth than competing companies.

One of the main advantages of PJSC Severstal is a rather long history of high dividend payments at about 11% per year. However, it is important to understand that according to the dividend policy, 100% of FCF (free cash flow) is used for their payment, provided ND / EBITDA < 1.0. It is important to monitor this indicator, because if in the last few years, it was kept in the region of 0.3-0.5, now it has grown significantly and is 0.86.

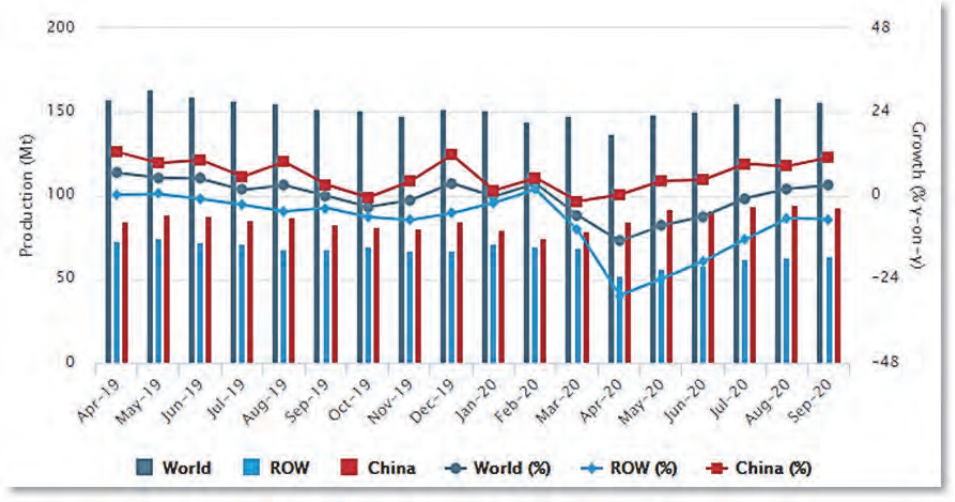
However, The World Steel Association said the steel industry is still struggling with the effects of COVID-19. The decline in global steel demand in the first half of 2020 was expected, as in many other industries, but more painful as it came after a slower-than-expected decline in growth in 2019 due to the ongoing manufacturing recession in developed countries. However, it is possible that the impact on steel demand in the medium term may be less severe than that observed during the global financial crisis of 2008/9. Despite this, in quiet times, the steel market has grown, and over the past 5 years has increased its average growth rate by 0.9% (figure 2).

Figure 2. *Crude steel production*



World crude steel production was 1,347.4 Mt in the first nine months of 2020, down by 3.2% compared to the same period in 2019. Asia produced 1,001.7 Mt of crude steel in the first nine months of 2020, an increase of 0.2% over the same period of 2019. The EU produced 99.4 Mt of crude steel in the first nine months of 2020, down by 17.9% compared to the same period in 2019. Crude steel production in the C.I.S. was 74.3 Mt in the first nine months of 2020, down 2.5% compared to the same period in 2019. North America's crude steel production in the first nine months of 2020 was 74.0 Mt, a decrease of 18.2% compared to the same period in 2019. (diagram 2)

Diagram 2. *Production of crude steel by the World Steel Association (worldsteel)* [4]



The following trends are taken into account, namely:

(a) China produced 92.6 Mt of crude steel in September 2020, an increase of 10.9% compared to September 2019. India produced 8.5 Mt of crude steel in September 2020, down 2.9% on September 2019. Japan produced 6.5 Mt of crude steel in September 2020, down 19.3% on September 2019. South Korea's crude steel production for September 2020 was 5.8 Mt, up by 2.1% on September 2019;

(b) Germany produced 3.0 Mt of crude steel in September 2020, down 9.7% on September 2019. Italy produced 1.8 Mt of crude steel in September 2020, down 18.7% on September 2019. France produced 1.0 Mt of crude steel in September 2020, down 20.1% on September 2019. Spain produced 0.9 Mt of crude steel in September 2020, down 20.7% on September 2019;

(c) Production in the C.I.S. is estimated to be 8.2 Mt in September 2020, down 0.3% on September 2019. Ukraine produced 1.7 Mt of crude steel in September 2020, down 5.4% on September 2019.

(d) The United States produced 5.7 Mt of crude steel in September 2020, a decrease of 18.5% compared to September 2019;

[4] Based in Brussels. Belgium, worldsteel has grown to become one of the largest industry associations, with over 180 members in more than 50 countries. The Chairman of ISSF is a member of the worldsteel Board. For more information about worldsteel please consult their website – worldsteel.org

(e) Turkey's crude steel production for September 2020 was 3.2 Mt, up by 18.0% on September 2019;

(f) Brazil produced 2.6 Mt of crude steel in September 2020, up 7.5% on September 2019. [5]

Despite the ongoing second wave of coronavirus, demand for many sectors of the economy is beginning to recover. For steel groups, the most important industries that provide demand for their products are: construction and development, automotive, and infrastructure projects. According to experts, China was the least affected, which was able to cope with the pandemic faster than anyone else, and by the end of the year, China will be the only country with a positive GDP growth (+2.2%) according to the Fitch rating Agency (table 6).

Table 6. *Forecasts*

KEY FORECASTS			
Real GDP Growth, % chg y-o-y	**2019e**	**2020f**	**2021f**
Global	2.6	-4.2	4.1
Developed markets	1.7	-5.9	3.8
Emerging markets	3.8	-1.7	4.6
China	6.1	2.2	5.8
US	2.3	-5.1	3.7

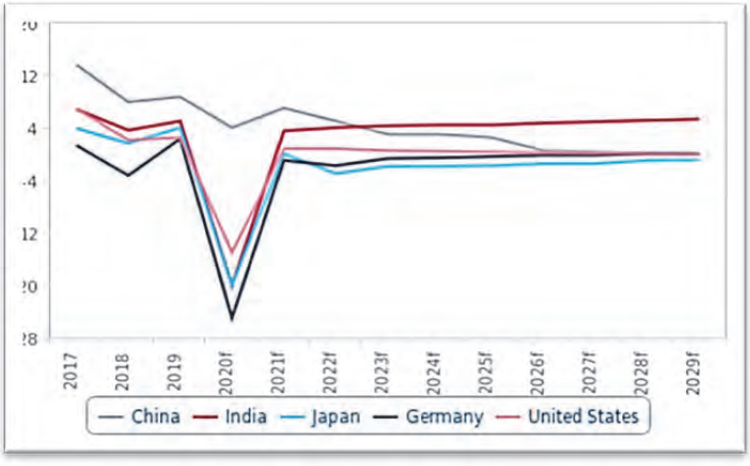
e/f = estimate/forecast. Source: Fitch Solutions. Last updated: August 24 2020

It is also worth noting that steel demand in China has only slightly declined during the height of the pandemic and is expected to have a comparative advantage in 2021, as in 2020 and 2021, steel consumption in the country will grow by 4.0% and 7.0%, respectively, against the background of high demand from infrastructure due to targeted government incentives. China will remain the driving force behind global steel consumption. In March 2020, 25 major cities and provinces published investment plans and major infrastructure projects totaling 49.6 trillion yuan, of which approximately 7.6 trillion yuan is likely to be implemented in 2020. These projects are centered around high-tech sectors such as 5G networks, large data centers, electric vehicle charging stations and industrial Internet, modern transportation such as urban metro and intercity high-speed rail, and ultra-high-voltage power transmission projects.

Even so, in the long run, China's demand for steel will be the smallest; over the next few years, demand will gradually fall, while its closest neighbor, India, will need it most. This is clearly seen in the chart provided by the World Steel Association (figure 3).

[5] SEPTEMBER 2020 CRUDE STEEL PRODUCTION. 23 October 2020 Brussels, Belgium. Available from: *https://www.worldsteel.org/media-centre/press-releases/2020/ September-2020-crude-steel-production.html* [Accessed 09th December 2020]

Figure 3. *Bifurcation of steel demand outlook*



As a result of Covid-19, the same Fitch experts expect global steel production to grow by -0.7% in 2020, and then grow to 4.4% in 2021. As domestic industry is willing to buy less metals due to slowing activity, this will put pressure on metal producers within the country. In particular, this could lead to a steady drop in domestic metal prices, which would negatively affect profitability and force firms to reduce production to compensate for lower demand. While broad announcements of smelter closures have been minimal, we are seeing this trend emerge specifically in the steel industry. For example, on March 31, ArcelorMittal announced that It would begin reducing production and temporarily shutting down factories in accordance with regional demand for its products in each country; in early April, local news reported the closure of the ArcelorMittal plant in Cleveland, Ohio. Another vertically integrated steel producer, Cleveland Cliffs, is also reported to be idle at a steel plant in Detroit due to weakening demand. In this regard, it is expected -15% of steel production by the end of 2020. And the price of steel will increase by the end of 2021, and then the decline will begin from year to year, which will naturally affect the profits of steel companies (table 7).

Table 7. *Steel price forecast*

STEEL PRICE FORECAST	Spot	2017	2018	2019	2020f	2021f	2022f	2023f	2024f
teel Price, USD/tonne, ave	563	603	671	589	560	600	580	530	520
teel Price, ave, % chg y-o-y	-	26.2	11.3	-12.2	-4.9	7.1	-3.3	-8.6	-1.9

The main driving factor for Russian companies in this sector remains the rebound in prices for some metal products across the country in 2018. On average, the price of a cast iron producer increased by 14%, the price of copper on the LME increased by 7.6%, and the average prices of Nickel and aluminum on the LME increased by 28.5% and 8.7%, respectively (according to EMIS). As a result, the financial and operational performance of Russian Metalworking companies improved significantly, which allowed them to receive additional funds for further development of investments in expanding production capacity.

The Russian construction industry is expected to grow rapidly in the coming years due to the ongoing modernization of state infrastructure, state construction programs, and the growth of housing construction. This, coupled with the growth of investment in fixed capital of Russian enterprises is fueling domestic consumption of metals. The process of urbanization in developing countries, along with the continued development of advanced economies, continues to be the strongest driver of demand for steel and other metal products, despite the COVID-19 pandemic.

Another driving factor is the fact that foreign companies cannot directly participate in the development of minerals, but must establish partnerships with domestic companies if they want to enter the Metalworking sector. This, together with the tripling of fines for negative environmental impacts in 2016, creates additional barriers for those who want to enter the sector. The steel industry does not have subsidies or government financing schemes, unlike in Russia, so companies rely on their own funds, private investors and Bank financing to operate and expand their business. Some segments of metal processing, such as extraction and processing of aluminium and Nickel, have a high degree of concentration. In Russia, there is only one aluminum company - UC Rusal, and only two companies in the Nickel production segment – and one of them - Norilsk Nickel, accounts for more than 90% of all Russian Nickel production.

Next, let's look at the largest Russian and foreign steel producers and compare their financial indicators for the 1st half of 2020. To begin with, we will display the balance values of five Russian steel giants: NLMK, MMK, Evraz, Severstal and Norilsk Nickel for clarity of using different multipliers (table 8 and 9).

Table 8. *Financial results 1*

Company/ indicators	**MMK**		**EVRAZ**		**NLMK**	
	2019H	**2020H**	**2019H**	**2020H**	**2019H**	**2020H**
Current assets	3 078.00	2 395.00	3 767.00	3 474.00	716.00	3 911.00
Cash	907.00	477.00	876.00	1 364.00	1 142.00	421.00
Accounts recievable	845.00	604.00	813.00	471.00	1 446.00	1 256.00
Total assets	8 140.00	7 141.00	9 826.00	9 003.00	11 034.00	10 378.00
Current liabilities	1 536.00	1 126.00	2 255.00	3 028.00	2 439.00	1 846.00
Non-current liabilities	1 131.00	1 146.00	5 279.00	4 842.00	2 645.00	2 697.00
Total liabilities	2 667.00	2 272.00	7 534.00	7 870.00	5 084.00	4 543.00
Total equity	5 473.00	4 869.00	2 292.00	1 133.00	5 950.00	5 835.00
Depreciation and amortisation	103.00	104.00	282.00	278.00	91.00	82.00
Revenue	3 835.00	2 978.00	6 140.00	4 983.00	2 576.00	2 174.00
Operating income	696.00	373.00	913.00	891.00	512.00	437.00
Net income	497.00	189.00	344.00	513.00	344.00	77.00

Table 9. *Financial results 2*

Company/ indicators	Severstal		Nornickel	
	2019H	**2020H**	**2019H**	**2020H**
Current assets	2 709.00	2 272.00	6 929.00	8 206.00
Cash	345.00	584.00	3 488.00	4 840.00
Acc rec	684.00	488.00	327.00	410.00
Total assets	7 056.00	7 233.00	18 956.00	20 401.00
Current liabilities	1 528.00	1 060.00	4 332.00	5 798.00
Non-current liabilities	2 273.00	3 260.00	9 693.00	12 007.00
Total liabilities	3 801.00	4 320.00	14 039.00	17 805.00
Total equity	3 255.00	2 913.00	4 917.00	2 596.00
Depreciation and amortisation	230.00	228.00	443.00	473.00
Revenue	4 208.00	3 367.00	6 292.00	6 711.00
Operating income	1 180.00	807.00	3 271.00	1 375.00
Net income	903.00	463.00	2 997.00	45.00

From the table above, we took the values for calculating the comparative indicators presented in the table below (table 10 and 11).

Table 10. *Financial ratios 1*

Company/ indicators	MMK		EVRAZ		NLMK	
	2019H	**2020H**	**2019H**	**2020H**	**2019H**	**2020H**
Net debt	1 822.00	1 668.00	6 721.00	7 399.00	3 638.00	3 287.00
EBITDA	799.00	477.00	1 195.00	1 169.00	603.00	519.00
Current ratio	1.14	0.96	0.75	0.61	0.98	0.62
Quick ratio	0.38	0.34	0.38	0.39	0.43	0.38
Debt to assets ratio	32.76%	31.82%	76.67%	87.42%	46.08%	43.78%
Growth of revenue	-	-22.35%	-	-18.84%	-	-15.61%
Net debt / EBITDA	2.28	3.50	5.62	6.33	6.03	6.33
ROA (Return on assets)	8.55%	5.22%	9.29%	9.90%	4.64%	4.21%
ROE (Return on Equity)	9.08%	3.88%	45.28%	15.01%	5.78%	1.32%

Table 11. *Financial ratios 2*

Company/ indicators	Severstal		Nornickel	
	2019H	**2020H**	**2019H**	**2020H**
Net debt	3 117.00	3 832.00	13 698.00	17 395.00
EBITDA	1 410.00	1 035.00	3 714.00	1 848.00
Current ratio	0.67	0.64	0.88	0.91
Quick ratio	0.38	0.31	0.37	0.40
Debt to assets ratio	53.87%	59.73%	74.06%	87.28%
Growth of revenue	-	-19.99%	-	6.66%
Net debt / EBITDA	2.21	3.70	3.69	9.41
ROA	16.72%	11.16%	17.26%	6.74%
ROE	27.74%	15.89%	60.95%	1.73%

First, let's look at the indicators of current and fast liquidity. Norilsk Nickel performed best (an increase of 0.03 p.p. in both indicators) and Evraz (an increase of 0.01 p. p. only for current liquidity). The rest of the company lost its liquidity in the period of the pandemic. Rapid liquidity indicators suffered the most, as companies had to spend more on staff payments rather than increase them when production was partially stopped at the very beginning of the self-isolation regime. NLMK suffered the most, with its rapid liquidity ratio falling by 36%.

At the same time, Norilsk Nickel's net debt increased more than others (by more than 26%). MMK and NLMK, on the contrary, saw their net debt fall. Taking into account the liquidity indicators, the last two companies did not increase their funds, but reduced their credit obligations. This is also indicated by the indicator of total debt to assets and the multiplier Net debt to EBITDA. The latter shows how many years the company will be able to pay off its loans and borrowings. NLMK, Evraz and Norilsk Nickel are doing critically well. For the first two, the indicator reached 6x. While at NorNickel the multiplier reached the value of 9x. This is due to both an increase in net debt and a decrease in EBITDA. Such high figures at Norilsk Nickel are partly explained by the allocation of funds to eliminate the environmental accident that occurred at CHPP-3. It is also expected that by the end of the year, NORILSK Nickel's EBITDA will decrease even more due to the payment of a fine imposed by Rosprirodnadzor of 21.4 billion rubles.

Next, let's look at revenue growth. Nickel remained the most popular metal, with Norilsk Nickel's revenue growing by 6.66% against the decline of all other steel giants, which decreased by an average of 18.5%. This is largely due to the loss of demand and stagnation of production in the spring due to the coronavirus.

Asset utilization has also fallen. Despite a small increase in the assets themselves, the ROA of all but Evraz decreased. The main trigger here was a significant decrease in operating profit. Capital efficiency has been reduced to a minimum for everyone except Severstal and Evraz. It is worth saying that Norilsk Nickel was the easiest to bear the pandemic, despite the decline in profitability, followed by Severstal and Evraz. MMK and

NLMK were the hardest hit by the pandemic, as they lost liquidity and reduced their return on assets and capital to a minimum.

Next, two of the most famous steel companies in Europe and the United States were selected for comparison: Arcelor, a company from Luxembourg, and Nucor, a steel giant in the United States. To begin with, we have displayed the balance sheet data in the table (table 12).

Table 12. *Financial results 3*

Company/ indicators	**Arcelor**		**Nucor**	
	2019H	**2020H**	**2019H**	**2020H**
Current assets	29 101.00	31 428.96	8 467.20	8 684.29
Cash	2 260.00	3 099.58	1 431.79	1 686.37
Acc rec	5 012.00	4 838.62	2 399.24	2 312.37
Total assets	87 963.00	86 963.67	18 126.48	18 506.27
Current liabilities	23 009.00	22 713.18	2 380.41	2 585.99
Non-current liabilities	22 263.00	21 915.40	5 048.06	5 059.24
Total liabilities	45 272.00	44 628.58	7 428.47	7 645.23
Total equity	42 691.00	42 335.19	10 698.01	10 861.03
Depreciation and amortisation	693.00	747.15	364.73	391.86
Revenue	14 523.00	17 709.73	5 464.50	4 327.31
Operating income	1 204.00	1 234.17	380.34	181.06
Net income	680.00	1 038.65	293.59	133.15

Table 13 shows the same coefficients and multipliers that were calculated for Russian companies.

Table 13. *Financial ratios 3*

Company/ indicators	**Arcelor**		**Nucor**	
	2019H	**2020H**	**2019H**	**2020H**
Net debt	21 880.00	41 529.00	5 029.23	5 332.87
EBITDA	1 897.00	1 981.32	745.07	572.91
Current ratio	1.26	1.38	1.61	1.55
Quick ratio	0.32	0.35	0.47	0.47
Debt to assets ratio	51.47%	51.32%	40.98%	41.31%
Growth of revenue	-	21.94%	-	-20.81%
Net debt / EBITDA	11.53	20.96	6.75	9.31
ROA	1.37%	1.42%	2.10%	0.98%
ROE	1.59%	2.45%	2.74%	1.23%

Arcelor's net debt has almost doubled, while the US company's change is negligible. At the same time, EBITDA also increased for the European competitor than for the American company.

A good result for the duration of the pandemic is an increase in the current liquidity of the Luxembourg company and a slight decrease in the us company. The rapid liquidity indicator also increased slightly for the first company and remained at the level of 1H 2019 for the second company.

The debt ratio for the year remained almost unchanged, while the ratio of net debt to EBITDA increased by 2 times to 20x for Arcelor, which looks extremely alarming. For Nucor, this indicator increased by 1.5 times to 9x, which also raises concerns about the risks of investing in the company.

The return on assets and capital was extremely low for both companies, and the pandemic did not significantly change this situation. Companies continue to use their capital assets inefficiently to generate company profits.

Further in the summary table, we compared all the coefficients obtained in order to select the least risky companies, in our opinion, which survived the pandemic well and before it was a successful enterprise that consistently generates profits and effectively uses its existing assets (table 14).

Table 14. *Summary financial ratios*

Company/ indicators	ARCELOR	MMK	EVRAZ	NLMK	NUCOR	Severstal	Nornickel
Current ratio	1.38	0.34	0.39	0.38	0.47	0.31	0.40
Quick ratio	0.35	0.96	0.61	0.62	1.55	1.01	0.91
Debt to assets ratio	51.32%	31.82%	87.42%	43.78%	41.31%	59.73%	87.28%
Growth of revenue	21.94%	-22.35%	-18.84%	-15.61%	-20.81%	-19.99%	6.66%
Net debt / EBITDA	20.96	3.50	6.33	6.33	9.31	3.70	9.41
ROA	1.42%	5.22%	9.90%	4.21%	0.98%	11.16%	6.74%
ROE	2.45%	3.88%	45.28%	1.32%	1.23%	15.89%	1.73%

After that, we decided to assign a rating to select companies with the lowest risk for investment.

1) In the „Current ratio“ column, 1 point was given for a result that is equal to or greater than 1. 0.5 was given for a result that is close to 1.
2) In the „Quick ratio“ column, 1 point was given for a result that is equal to or greater than 1. 0.5 was given for a result that is close to 1.
3) In the „Debt to assets ratio“ column, 1 point was awarded to the company with the lowest score.
4) In the „Growth of revenue“ column, 1 point was given for a positive result.
5) In the „Net debt / EBITDA“ column, 0 was set for a result greater than 4; 0.5 was set for a result that is in the range from 2 to 4.
6) In the column „ROA“ and „ROE“ 1 point was given for the highest result, 0.5 for results close to the best.

Excessively high results were rated at 0 points, as this indicates the instability of the company. The points are distributed as follows in table 15.

Table 15. *Result table*

Company/ indicators	**ARCELOR**	**MMK**	**EVRAZ**	**NLMK**	**NUCOR**	**Severstal**	**Nornickel**
Current ratio	1	0	0	0	0	0	0
Quick ratio	0	0.5	0	0	1	1	0.5
Debt to assets ratio	0	1	0	0	0	0	0
Growth of revenue	1	0	0	0	0	0	1
Net debt / EBITDA	0	0.5	0	0	0	0.5	0
ROA	0	0.5	1	0.5	0	1	0.5
ROE	0.5	1	0	0	0	0	0
Total	2.5	3.5	1	0.5	1	2.5	2

According to the results of the analysis, MMK is the most attractive company for investment in terms of financial analysis of indicators (3.5 points). Next are Arcelor and Severstal, which scored 2.5 points each.

These companies are identified as the most attractive for investment from the point of view of minimizing risks (we are talking about investing for a period of more than 1 year). These three companies were able to maintain or minimally lose a few points in various multipliers during the pandemic, which was the main trigger for the loss of demand for the first half of 2020.

Conclusion

The study showed that steel groups lost liquidity and reduced revenue. However, profitability remained at the same low level. The main investment risk is the demand for various types of steel, which is highly sensitive to changes in the overall market trend (with the exception of Nickel). However, with the news about the effectiveness of coronavirus vaccines, markets have started to go up, including traditional industries, which means a gradual recovery of global economies, including the Russian one. The scenario of a complete closure of economies even with the onset of new waves is also unlikely, which also strengthens faith in the recovery of the market and demand for steel, which is used as the main material for the construction of many infrastructure projects, in particular, the construction of which remains in the budget of many countries and companies, which means that a sharp reduction in demand is not expected.

Bibliography

1] RUSSIA METAL PROCESSING SECTOR REPORT 2020/2021. An EMIS Insights Industry Report EMIS is an ISI Emerging Markets Group Company. Date: April 2020, Pages: 74, Available in: English

2] Edwin Basson. 2020 World Steel in Figures. World Steel Association. Data finalised 30 April 2020

3] Абилова М. Г., Рыжкова О. А. (2017) Современные подходы к формированию системы управления рисками промышленного предприятия. eLIBRARY ID: 30737178. Номер: 4 (12), УДК: 336, ISSN: 2413-0176, с. 31-50

4] Голубятникова Ю. Ю. (2013) Оценка риска потери платежеспособности предприятия. Вестник БГТУ им. В.Г. Шухова, №1, с. 93-95

5] Евлахова А. Н., Сыроижко В. В., Фокина О. М. (2020) Доходность и риск в оценке эффективности инвестиций в ценные бумаги предприятия. ТЕНДЕНЦИИ РАЗВИТИЯ НАУКИ И ОБРАЗОВАНИЯ. Номер: 61-6, eLIBRARY ID: 43079182, DOI: 10.18411/lj-05-2020-127, с. 73-77

6] Солодов, А. К. (2018) Основы финансового риск-менеджмента: учебник и учебное пособие / А. К. Солодов; Финуниверситет. Москва: Издание Александра К. Солодова, ISBN 978-5-9907435-1-9. – с. 286.

7] Е. Г. Князева, Л. И. Юзвович, Р. Ю. Луговцов, В. В. Фоменко. (2015) Финансово экономические риски Учебное пособие. Екатеринбург Издательство Уральского университета. ISBN 978-5-7996-1459-1. – с. 112

8] Караваев Е. П. (2016) Развитие мер господдержки инвестиций в металлургию. ООО „УК Мечел-Сталь“, Номер: 5, Учредители: ООО „Интермет Инжиниринг“ (Москва). ISSN: 0038-920X, с. 64-67

9] Корнеева Д. В. Задачи и инструменты конкурентной политики в российской металлургии за прошедшие четверть века. ВЕСТН. МОСК. УН-ТА. СЕР. 6. ЭКОНОМИКА. 2016. № 3, ISSN: 0130-0105 (Print), с. 35-67

10] Назарова, А. Н. (2017) Анализ в оценке риска потери платежеспособности организации / А. Н. Назарова, А. Г. Хан. - Текст: непосредственный // Международный научный журнал Молодой ученый. № 2 (136). ISSN 2072-0297, с. 461-465

11] Поварова А. И. (2015) Регионы-металлурги: основные тенденции и проблемы социально-экономического развития. ПРОБЛЕМЫ РАЗВИТИЯ ТЕРРИТОРИИ • ВЫП. 6 (80), ISSN: 2076-8915, eISSN: 2409-9007, с. 37-50

12] Развадовская Ю. В., Шевченко И. К. (2014) Роль прямых иностранных инвестиций и транснациональных корпораций в развитии металлургического комплекса России. TERRA ECONOMICUS. Учредители: Южный федеральный университет (Ростов-на-Дону), ISSN: 2073-6606, eISSN: 2410-4531, с. 82-87

13] Скрипичников Е. И. (2019) Эконометрическая оценка влияния странового риска на приток прямых иностранных инвестиций. ЭБ БГУ: ОБЩЕСТВЕННЫЕ НАУКИ: Экономика и экономические науки. ISBN: 978-985-566-808-5; 978-985-566-812-2 (ч. 2), с. 442-445

14] Сергеев, А. А. КОНКУРЕНТОСПОСОБНОСТЬ организаций в кризисных условиях. Монография. Москва, Отпечатано в ООП Финакадемии. ISBN 978-5-7942-0679-1

15] Уханова С. Г., Семернина Ю. В. (2019) Оценка риска потери финансовой устойчивости организации. МАТЕМАТИЧЕСКОЕ И КОМПЬЮТЕРНОЕ МОДЕЛИРОВАНИЕ В ЭКОНОМИКЕ, СТРАХОВАНИИ И УПРАВЛЕНИИ РИСКАМИ. Учредители: Саратовский национальный исследовательский государственный университет имени Н. Г. Чернышевского (Саратов). eISSN: 2686-9659, с. 202-206

16] Четверикова А. С. (2015) Взаимные прямые инвестиции России и ЕС в металлургии. МИРОВАЯ ЭКОНОМИКА И МЕЖДУНАРОДНЫЕ ОТНОШЕНИЯ. № 4, Национальный исследовательский институт мировой экономики и международных отношений им. Е. М. Примакова РАН Российская академия наук. ISSN печатной версии: 0131-2227, с. 49-57

17] Шайбакова Л. Ф., Новоселов С. В. (2017) Тенденции, особенности и проблемы развития черной металлургии России. УПРАВЛЕНЕЦ № 5/69/. ISSN печатной версии: 2218-5003, с. 40-49

18] Шмулевич Т. В., Чернова В. Э. (2017) Об оценке риска неплатежеспособности предприятий в современных условиях. ИННОВАЦИОННАЯ ЭКОНОМИКА: ПЕРСПЕКТИВЫ РАЗВИТИЯ И СОВЕРШЕНСТВОВАНИЯ, №8 (26), ISSN печатной версии 2311-410X, с.160-165

19] Dimov, S. (2005) Management of risk with the help hedging (Researching the experience and practice of Alfabank, Russian Federation). Collection of reports Firs Applied Conference with International Participation Education, Science, Economics and Technologies in the Global World. Volume 1, Book 2. House-press University „Prof. Dr Assen Zlatarov", Bourgas, ISSN 1312 6121

20] EBITDA Multiple. The standard multiple for valuation. Available from: *https://corporatefinanceinstitute.com/resources/knowledge/valuation/ebitda-multiple/* [Accessed 03th December 2020]

21] SEPTEMBER 2020 CRUDE STEEL PRODUCTION. 23 October 2020 Brussels, Belgium. Available from: *https://www.worldsteel.org/media-centre/press-releases/2020/September-2020-crude-steel-production.html* [Accessed 09th December 2020]

22] Steel Industry Executive Summary: August 2020. U.S. Department of Commerce | International Trade Administration. Washington, DC 20230. Available from: *https://enforcement.trade.gov/steel/license/documents/execsumm.pdf* [Accessed 09th December 2020]