Export transportability of Mongolia and Russia-Mongolia relations in the commodity markets

L A Bezrukov¹, A N Fartyshev¹ and S Enkh-Amgalan²

¹V B Sochava Institute of Geography, SB RAS, Irkutsk, 664033 Russia
²Institute of Geography and Geoecology, MAS, Ulaanbaatar, 15170 Mongolia

E-mail: bezrukov@irigs.irk.ru

Abstract. The commodity and geographical structure of Mongolia’s exports, dynamics and features of Mongolia’s foreign trade with Russia are considered. The tendency of weakening of foreign trade interaction of Mongolia with the Eastern regions of Russia is revealed. Using the original author’s method, an assessment of the distribution of Mongolian export goods was carried out, taking into account their transportability in sales markets and areas of remoteness. A pattern has been revealed for the export of low-transportable mineral raw materials, which is almost exclusively directed to neighbouring countries, mainly to China, while more expensive types of Mongolian products (wool, yarn, clothing, gold, etc.) are exported to distant countries. It has been established that the value of Mongolian exports for a number of mineral and raw materials exceeds the Russia’s and have strong growth prospects. The conclusion is drawn that the competition between exporters of Mongolia and the Eastern regions of Russia for foreign markets of mineral commodities, primarily for the Chinese market, will intensify in the near future.

1. Introduction

One of the most important factors in the economic growth of Russia’s eastern regions is active international cooperation. Such cooperation with neighbouring countries plays a particularly positive role. Meanwhile, the situation with Mongolia, Russia’s direct neighbour with a long history of friendly interaction, suggests that there are serious problems in this regard. The fact is that since the beginning of the 1990s, for a number of reasons, Russian-Mongolian relations have weakened significantly, and this primarily affected Siberia and the Far East.

At present, the Russian political, business and academic community’s perceptions of the opportunities and risks of cooperation with Mongolia are rather unclear and contradictory. For instance, the latest version of the Russian Foreign Policy Concept 2016 only states that Russia intends to strengthen its traditionally friendly ties with Mongolia [1]. The attitude of business circles to business in Mongolia is clear from the fact that in 2016, Rostec State Corporation sold Russian stakes in two major joint companies – the Erdenet mining and processing company and the Mongolrostsvetmet association – as well as from the longstanding passivity in the modernisation of the TransMongolian Railway, which is managed by the joint Russian-Mongolian company Ulaanbaatar Railways [2].

The degree of interest in Mongolia among academic expert circles speaks for itself – there is almost a complete of any information about it in most monographs on East Asian countries [3–6].
At the same time, some aspects of Mongolia’s foreign trade have been reviewed in recent years in academic journals [2, 7–9]. Foreign sources focus on the unilateral development of the export-oriented mining industry and the related threat of the “resource curse” for the Mongolian economy [10–12].

The lack of interest in Mongolia is partly explained by the widespread belief among domestic experts that Mongolia is not of serious importance for Russia (in contrast to the USSR) in terms of its military-strategic position, political ties, and trade and economic cooperation [9]. As a result of its obvious underestimation of Mongolia's potential and importance, the Russian scholarly community has not yet formed an adequate understanding of the fact that Mongolia has quietly become Russia’s strongest competitor in a number of mineral commodities, especially in China.

In this regard, the main research issues are to analyse the features of Mongolia’s foreign trade and its interaction with the eastern regions of Russia, assess the transportability of Mongolian exported goods and their distribution by remoteness zones, clarify the competitiveness of Mongolian and Russian (Siberian and Far Eastern) mineral commodities on foreign markets.

2. Models and Methods

The purpose of this study is to identify the opportunities and risks of Russia-Mongolia cooperation in external mineral and raw materials markets. The main tasks include the following: 1) to analyse the commodity and geographical structure of Mongolia’s exports and the specifics of its interaction with the eastern regions of Russia; 2) on the basis of the concept of “transportability” to assess the distribution of export goods of Mongolia by sales markets and areas of remoteness; 3) to clarify the competitiveness of Mongolian and Russian (Siberian and Far Eastern) goods in external mineral and raw materials markets.

A certain methodological novelty is the concept of “transportability of goods”, which means the relative possibilities of overcoming the distance, expressed in terms of the price (value) of a unit of weight (mass). According to our scheme for grouping types of goods according to the transportability [13], all of them, based on prices per unit mass, are divided into the following six categories: very high transportability (over 1000 thousand dollars/tonne), high (100-1000), increased (10–100), medium (1-10), decreased (0.1-1), low (below 0.1 thousand dollars/tonne). Expensive types of goods (with a high price per unit mass) can be transported over long distances, while cheap goods – over relatively shorter distances, since transportation costs become comparable to their production prices. When transporting cheap goods (raw materials) with low transportability, average overland distances are inevitably limited, accompanied by tight localisation of the respective commodity markets.

Taking into account the average export prices in 2019, the main types of exported goods of Mongolia are distributed in accordance with the proposed scheme as follows: the category of low transportability includes coal and iron ore; decreased – oil and fluorspar; medium – copper, zinc, lead, molybdenum and tungsten concentrates, refined copper, wool and meat; increased – cashmere; high – cashmere clothes; very high – gold. A general pattern can be noted: the higher the degree of processing of products (with the exception of gold) and readiness for final consumption, the better the economic possibilities of its transportation (higher transportability).

According to our method of distributing Mongolian exported goods by sales markets and areas of remoteness, the shortest real distances along the railway and sea routes (from the capital of Mongolia, Ulaanbaatar, to the capitals or main ports of the importing countries according to the current transport schemes) were to be measured. Since it is not the distances themselves that are important, but the amount of costs required to overcome them, further, in the calculations, the “economic” distances were determined. For this purpose, a reduction correction factor (0.25) has been introduced for sea routes, taking into account the reduction in the cost of sea transportation compared to rail transportation per unit distance. The ratio between the cost of rail and sea transport, equal to 4, is obtained from the analysis of modern evidence.
All countries-importers of Mongolian goods are grouped according to the “economic” distance to Ulaanbaatar in four zones of remoteness. The following gradations of the remoteness of the zones were adopted: the first zone – 0-2,000 km, the second one – 2,000-4,000, the third – 4,000-6,000, the fourth – over 6,000 km.

Various sources were used to collect the required information. First of all, the data of the official statistics of Mongolia [14] and the information system of its main customs department [15] were used. Foreign trade data for Russia has been adjusted according to the materials of its Federal Customs Service [16].

Certain difficulties arose under the influence of the following factors. First, there is some error in the data of foreign trade statistics and a high degree of inter-annual variability of these data. Secondly, due to the lack of information, there are difficulties in calculating the distribution of Mongolia’s exports by zones of remoteness within such large countries as China. However, these limitations were eventually overcome without having a decisive influence on the validity of the results.

3. Results and Discussion
Over the past three decades, export growth has largely determined Mongolia’s economic growth. Due to the sharp increase in the volume of exports of mineral raw materials in the 2000s-2010s, high rates of GDP growth were observed. In 2011–2013, Mongolia was one of the five most dynamically developing countries in the world, as a result of which, by analogy with the “East Asian tigers”, they began to call it the “Central Asian wolf”. However, in the context of the existing narrow specialization in the mining industry and the small size of the domestic market, the dynamics of the Mongolian economy is very strongly dependent on the export of mineral raw materials.

Mongolia’s export volume in 2019 reached $7.6 billion. Among the landlocked developing countries, Mongolia in terms of per capita export – $2.2 thousand – takes advantageous positions, outstripping by several times and tens of times all other inland Asian countries (for excluding oil-producing Kazakhstan and Azerbaijan) and Africa (excluding diamond-mining Botswana).

In the commodity structure of Mongolia’s exports, 89.9% are dominated by minerals, where the main contribution is made by coal (40.5%), copper concentrate (23.6%), iron ore (7.6%), gold (5.5%), oil (4.8%), fluorspar (2.7%), and zinc concentrate (2.5%). Lead, molybdenum, tungsten and tin concentrates and refined copper are of lesser importance in the export of mineral raw materials. The geographic structure of Mongolia’s exports is very specific: 89.3% of its volume goes to China, 5.8% to Western Europe, 2.3% to Southeast Asia, 0.7% to East Asia, 0.5% to Australia, 0.4% to Russia, less 1% – to other countries.

Analysis of the dynamics over the past 30 years of the share of Mongolia’s largest counterparties in foreign trade turnover shows the strongest degree of dependence of the Mongolian economy on the USSR (by 78.2% in 1990), then on both its immediate neighbours – Russia and China (by 77.1% in 2019). This clearly reveals the influence of the key features of Mongolia's geographical position – the lack of access to the sea, and the fact that it is sandwiched between two major powers: Russia and China. While Russia’s share of trade with Mongolia fell to 12.8% in 2019, China’s is growing steadily to 64.3%.

After the collapse of the USSR in the early 1990s, there was a sharp decline in Russian-Mongolian foreign trade ties. Whereas the USSR accounted for 83.5% of Mongolia’s exports in 1980, its share fell to 14.6% in 1995 and 0.4% in 2019. As a result, Mongolia’s share of Russia’s imports is extremely low, ranking it 100th among Russia’s partners.

Mongolia’s imports from Russia have been less affected. In 1980, the share of the USSR in Mongolia’s imports was 87.1%, in 1995, the share of Russia – 50.1%, in 2019 – 28.2%. Mongolia’s share in Russian exports is small – 41st among Russia’s partners.

Mongolia imports to Russia (2019) scarce fluorspar (77.7%); clothes and footwear (10.7%); wool, hair, yarn and hides (2.4%); meat and meat products (0.8%). Since the main product of Mongolian exports to Russia is fluorspar, which is mainly used in the metallurgical and chemical industries, the overall distribution of exports across the country correlates in general with the location of these
industries. As a result, more than half of Mongolia's exports – 50.3% – go to the Volga region and the Urals with developed metallurgy and chemistry, while the share of Siberia and the Far East is much smaller – 21.9 and 1.8%, respectively.

The range of goods imported by Mongolia from Russia is much wider. They are based on petroleum products (65.4%), food products and agricultural raw materials (11.0%), mechanical engineering (8.9%) and chemical products (6.3%), metals and metal products (5.3%), electricity (1.6%). More recently, Mongolia’s strongest ties have been with Eastern Siberia. The Volga and Urals region (54.0%) has now taken the lead in Mongolia’s imports of Russian goods, leaving behind Siberia (25.9%) and even less so the Far East (1.7%).

Thus, the role of the eastern regions of Russia in foreign trade cooperation with Mongolia has sharply decreased in recent years. Meanwhile, there is a tendency towards a further decrease in their participation in this interaction. First, the completion of construction in Mongolia of its own oil refinery based on its own oil is expected, which will completely cover the country’s need for oil products; secondly, it is planned to develop its own hydropower and heat energy, which will mean a reduction or complete cessation of the export of Russian electricity [2].

When assessing the distribution of Mongolia’s export goods by sales markets and zones of remoteness, the first zone included the nearest regions of China and Russia, as well as the Republic of Korea and North Korea. The second zone includes the countries of East, Southeast and South Asia, part of Kazakhstan, other regions of China, part of the Siberian and Far Eastern regions of Russia. The third zone includes the more remote states of Southwest and Central Asia, Australia and Oceania, North America, Southern Europe, North and East Africa, as well as the overwhelming part of the regions of European Russia. The fourth zone includes the countries of Northern and Eastern Europe, South America and most of Africa, and the extreme western regions of Russia.

For each zone, the volumes of export deliveries from Mongolia in physical and value terms have been determined. As follows from the calculations, the largest part of the products by weight (95.7%) is exported to neighbouring countries, i.e. those in the first zone, while its share in the value of exports is significantly less – 71.7%. In the more distant 2nd-4th zones, on the contrary, the specific weights of the value of exports dominate over the weights in kind, exceeding them by 6.5-7.3 times. It turns out that Mongolian commodity producers strive to export the most large-tonnage raw materials to neighbouring countries, while more expensive types of products (wool, yarn, clothing, gold, etc.) go to distant countries. This is mainly due to the influence of significant transport costs on the transportation of low-transportable mineral raw materials, which limits their movement over long distances due to a noticeable decrease in the profitability of exports.

The concentration of exports by countries of the world in physical terms is much stronger than in terms of value. Based on the weight of goods, 98.0% of exports go to China, 1.7% in aggregate to Singapore, Great Britain and Russia, only 0.3% to all other countries.

The overwhelming majority of exported mineral commodities are consumed by China: 100% of iron ore, oil, copper, zinc and lead concentrate, over 98% of coal, 65-85% of refined copper, fluorspar and molybdenum concentrate. At the same time, the types of mineral raw materials supplied to China with the lowest transportability settle in the near first zone. So, the share of the autonomous region of Inner Mongolia of China immediately adjacent to Mongolia accounts for more than 2/3 of Mongolian exports to China in value, including almost the entire volume of coal, iron ore and oil, the overwhelming part of copper, zinc and lead concentrate.

Supplies of relatively cheap bulk mineral raw materials – coal and iron ore (export prices less than 0.1 thousand dollars per ton), oil (slightly more than 0.4 thousand dollars per ton), as well as copper, zinc and lead concentrate (1.2–2.3 thousand dollars per ton) – are therefore limited almost exclusively to China. At the same time, more expensive and, accordingly, transportable types of raw materials – molybdenum, tungsten and tin concentrates (8.5-15 thousand dollars per ton), as well as gold (46 million dollars per ton) – are exported, except for China, over long distances to other countries.
Molybdenum concentrate is supplied to Vietnam, the Republic of Korea, Thailand and Hong Kong; tungsten – to the USA, Austria and Russia. Tin concentrate is fully exported to Thailand, while gold is exported to Singapore, UK and Switzerland.

Thus, the further importing countries are away from Mongolia, the greater is the share of export there of such products that have passed certain stages of processing, which leads to a decrease in transport costs in the final price of products. Mineral raw materials, as the least transportable products, are almost entirely sent to neighbouring countries (mainly to China).

The development of the mining sector in the foreseeable future will continue to determine the growth of the Mongolian economy. Already, the value of Mongolian exports for a number of mineral and raw materials exceeds Russian ones: for fluorspar – 70 times, molybdenum ores and concentrates – 50 times, copper – 8 times [17]. The Mongolian and Russian values of the export of zinc ores and concentrates are close to each other. Mongolian exports of iron ore, tungsten ores and concentrates, and coal are not so much inferior to Russian exports. For example, exporting 36.5 million tons of coal to foreign markets (2019), Mongolia is one of its largest exporters, second only to Indonesia, Australia, Russia, the United States, South Africa and Colombia.

Mongolia mines and exports on a large scale primarily coal and copper concentrate. This is due to the development of the world’s largest “strategic” deposits in the south of the country near the border with China – coal ones (Tavan-Tolgoi and Nariin-Suhait) and copper-gold ones (Oyu-Tolgoi). In the coming years, with the completion of the construction of railways to the Tavan-Tolgoi and Nariin-Suhait deposits, the volume of Mongolian coal exports to China should increase several times. But the problem lies in the demand in potential sales markets and the necessary transport infrastructure.

The possibilities for increasing the export of coal and copper by exporters of the eastern regions of Russia look no less impressive, and for these types of mineral raw materials, in the near future, competition for foreign markets with exporters of Mongolia may intensify. This is confirmed by the latest events, when, in connection with China’s ban on coal exports from Australia at the end of 2020, Mongolia reacted faster than anyone, becoming the main contender for the position of the leader exporter to the Chinese coal market [18].

Comparison of the competitiveness of Mongolia and Russia in external raw materials markets shows that the weak side of Russia is a much longer and, accordingly, costly access of mineral raw materials to foreign markets. For Mongolia, the distance to the key Chinese port on the Yellow Sea – Tianjin – from Ulaanbaatar by rail is just over 1.5 thousand km, from the Tavan-Tolgoi and Oyu-Tolgoi fields – less than 1.5 thousand km. At the same time, the distance for transportation of Russian coal from Kuzbass to Russian Far Eastern seaports is 3.7-4 times longer – 5.5-6 thousand km. The difference in the distance of transportation of Russian copper from Udokan to the port of Vanino (more than 2.5 thousand km) and Mongolian copper from Oyu-Tolgoi to Tianjin (1.5 thousand km) is 1.7 times. The Elga field has a smaller transport shoulder (2 thousand km to Vanino), but the ports of the Primorsky and even more so the Khabarovsk Territories of Russia are located farther from the countries of East and Southeast Asia than the ports of the Yellow Sea of China.

In addition, almost all of Mongolian coal and copper concentrate are exported to nearby regions of China, primarily to Inner Mongolia region. Transportation distances are therefore relatively short: transportation of Tavan-Tolgoi coal and Oyu-Tolgoi copper to the main industrial centre of Inner Mongolia Baotou is only 400-450 km, which gives enormous economic advantages to their export due to minimization of transport costs. With the completion of the access lines from the deposits to China’s rail network, transport costs will drop sharply and export opportunities will increase even more. Meanwhile, because of the unprecedented distances of export, Russian coking coal has more than 30-40% of transport costs in price, energy – more than 50-60% [19, 20]. It is believed [21] that the competitiveness of Mongolian coal in the Chinese market will be much higher than that of Russia.

A review of previous studies has shown that the problem of increased competition between Mongolia and Russia in foreign markets for mineral raw materials is mentioned in the scientific periodicals [20] and the media [18, 19, 21] very fragmentarily. At the same time, it should be noted that there are almost no significant scientific publications devoted to the analysis of this problem.
4. Conclusion
The main results of the research are summarized as follows. According to research Task 1, complete dominance of minerals and raw materials in the commodity structure of Mongolia’s exports and China – in the geographical structure were established, while the share of Russia and its eastern regions in Mongolia’s exports is currently insignificant and tends to further decrease. An assessment of the distribution by sales markets and zones of remoteness of Mongolian export goods, taking into account their transportability (research Task 2), showed that hardly transportable mineral commodities are exported almost exclusively to neighbouring countries, mainly to China, while more expensive types of Mongolian goods are exported to distant countries. According to research Task 3, it was determined that the values of Mongolian exports for a number of mineral and raw materials exceed Russian ones and have serious growth prospects. It was also concluded that in the near future the competition between exporters of Mongolia and the eastern regions of Russia for foreign markets of mineral raw materials, primarily for the Chinese market, where, based on transport costs, the competitiveness of Mongolian types of products will be much higher than Russian ones, is drawn.

The practical significance of the study lies in the fact that the results obtained can become the initial basis for substantiating the optimal strategy of Russian-Mongolian trade and economic cooperation, including for the development of such areas of export specialization of Mongolia and the eastern regions of Russia, which would complement each other, and not compete among themselves in the markets of mineral commodities.

Research prospects are in the development of measures to reduce the severity of competition between Mongolia and Russia in the external markets of mineral raw materials. The highest priority seems to be the direction of increasing the depth of processing of mineral raw materials into semi-finished products or finished products. In this case, cost-effective transportation distances increase many times, and the size of sales markets expands, which makes it possible to eliminate the rigid attachment of raw materials exports to neighbouring countries and regions, and to weaken the severity of international competition.

Acknowledgments
The reported study was funded by RFBR and MECSS, project number 20-55-44023.

References
[1] Foreign policy concept of the Russian Federation 2016 https://www.mid.ru/foreign_policy/official_documents/-/asset_publisher/CptICkB6BZ29/content/id/2542248 (accessed 20 May 2021)
[2] Makarov A V, Makarova E V and Mikheeva A S 2019 Foreign Economic Relations of Mongolia: Current Situation and Development Problems ECO 6 62-82 DOI: 10.30680/ESO031-7652-2019-6-62-8211
[3] East Asia: Between Regionalism and Globalism 2004 ed G I Chufrin (Moscow: Nauka) p 282
[4] Countries of North-East Asia at the beginning of the XXI century (scientific reference edition) 2011 (Vladovostok: Dal’nauka) p 245
[5] Turn to the East: the development of Siberia and the Far East in the context of the strengthening of the Asian vector of Russia’s foreign policy 2016 ed I A Makarov (Moscow: International Relations) p 448
[6] Arapova E Ya 2021 Economic integration in the East Asian region (Moscow: Prospekt) p 208
[7] Demina Ya V 2018 Foreign economic relations of Mongolia: changing a key partner World economy and International Relations 8 104-9 DOI: 10.20542/0131-2227-2018-62-8-104-109
[8] Makarov A V, Makarova E V and Andreev A B 2020 The Mongolian Corridor: Problems and Prospects of Mongolian Transport Network Development ECO 10 34-48 DOI: 10.30680/ESO031-7652-2020-10-34-49
[9] Shurubovich A V and Pylin A G 2021 The role of Russia in the economy and foreign economic relations of Mongolia under present-day conditions *ECO* 4 172-92 DOI: 10/30680/ECO0131-7652-2021-4-172-192

[10] Jackson S, Dear D 2016 Resource extraction and national anxieties: China’s economic presence in Mongolia *Eurasian Geography and Economics* 57(3) 343-73 DOI: 10.1080/15387216.2016.1243065

[11] Lagrange M 2016 Makro- und mikroökonomische Folgen des Rohstoffbooms in der Mongolei *Zeitschrift Für Wirtschaftsgeographie* 60(1-2) 72-80 DOI: 10.1515/zfw-2016-0004

[12] Narankhuu B 2018 Are natural resources a curse or a blessing for Mongolia? *Mineral Economics* 31(1-2) 171-7 DOI:10.1007/s13563-018-0144-0

[13] Bezrukov L A 2008 *Continental-oceanic dichotomy in international and regional development* (Novosibirsk: Geo) p 396

[14] *Mongolian Statistical Yearbook* 2019 (accessed 20 May 2021) https://www.1212.mn/BookLibraryDownload.ashx?url=Yearbook-2019.pdf&ln=En

[15] *Statistical Information System of the General Customs Directorate of Mongolia* https://www.customs.gov.mn/statistics/index.php (accessed 20 May 2021)

[16] *Statistical Information of Russian Customs Agency* https://customs.gov.ru/statistic (accessed 20 May 2021)

[17] World export/import of goods *TrendEconomy* https://trendeconomy.ru/data/commodity_h2?commodity=2701&indicator=tv_wrld_share,TV&trade_flow=Export,Import&time_period=2019 (accessed 20 May 2021)

[18] Kudiyarov S 2021 Ban of Koala: a chance for the Russian coal *Expert* 7 22-6

[19] Markova V and Churashev V 2013 The path of coal *Expert-Syberia* 22 10-5

[20] Fridman Yu A, Loginova E Yu and Rechko G N 2014 Will Kuzbass coal withstand competition on world markets? *ECO* 7 116-32

[21] Coal and coke do not hope to rise? 2013 Part I *IA Metaltorg.ru* https://www.metaltorg.ru/analytics/ores/?id=566 (accessed 20 May 2021)