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Transportation systems of main commodities on the Japan-Russia trade

日本ーロシア間の主要な物資の輸送システムに関する研究

Ruslan Sviridenko (Graduate School at Tokyo University of Marine Science and Technology)
Hirohito Kuse (Tokyo University of Marine Science and Technology)
ルスラン　スビリデンコ　（東京海洋大学大学院）、苦瀬博仁　（東京海洋大学）

Abstract

Transportation systems vary upon the type of commodity, origin point, final destination, different modes, nodes and links that can be used for transportation of cargo between countries. This paper aims to describe the current economic, trade and transport situation on exports and imports of main items to determine the optimal transport mode and node choice system in future research. It focuses on the transportation of timber from Russia and machinery from Japan.

Japanese

国際輸送において、物資の種類や発着地により選択される輸送システム（モード、ノード、リンク）が変わる。よって、国際輸送システムの選択モデルを構築する必要があると考えられる。その一環として、本研究では、日本とロシアの経済、貿易、輸送の現状を明らかにする。さらに、木材と機械に着目し、二国間における輸送システムを明らかにする。

1. Introduction

Trade and economic relations between Japan and Russia are at the stage of expansion in recent years. Trade turnover is growing in exports and imports. Cargo turnover also grows showing extremely high results on some items. Since the collapse of the Soviet Union, the trading volume as well as the trading commodity composition have been changing dramatically. At present, the situation of commodity composition is asymmetrical. Most exports to Russia is composed of motor vehicles including automobiles whereas imports from Russia are mainly natural resources.

This paper tackles the following: (1) a short overview of the economy, trade and transport situation between Japan and Russia is made, (2) the commodity composition of trade is defined, and (3) the current situation of transporting motor vehicles as an export cargo from Japan to Russia and timber as an import cargo is described (Figure 1).

Due to continuous changes occurring on trade and transportation between Japan and Russia, researches that were made years ago are not so actual at present. Recent researches are mainly focused on container transportation, the Trans-Siberian Railway, energy projects and trade. This paper presents a short outlook of trade and transportation between the two countries to clarify the current situation. It is a first

step of future research which aims to identify the optimal transport mode and node choice system by taking the case of transportation of timber from Russia and machinery from Japan. The research selects non-container cargoes because a variety of modes and nodes can be used to transport them. They also take a big share of import and export with relatively high growth rates and recent researches do not focused on them.

2. Purpose and Methodology

2.1 Purpose

The purpose of this paper is to describe the current situation on economy, trade composition and transportation of motor vehicles as an export cargo from Japan to Russia and timber as an import cargo between Japan and Russia. This paper is a first step for future research.

2.2 Methodology

As shown in this study (Figure 1), this paper outlines the current situation that influence the volume and commodity composition of trade. It is important to survey the economic situation, trade relations and transportation methods and patterns. We then analyze the commodity composition of trade by identifying items which have large share of total imports or exports. Different nodes, modes and links can be used for the transport of main imports and exports. Determination of optimal combination of modes and nodes to transport cargo from the origin to the final point of destination considering the differences in cost, time, service and safety levels will be researched in future papers.

This paper also briefly discusses the main present nodes and modes used for the transportation of major imports and exports.

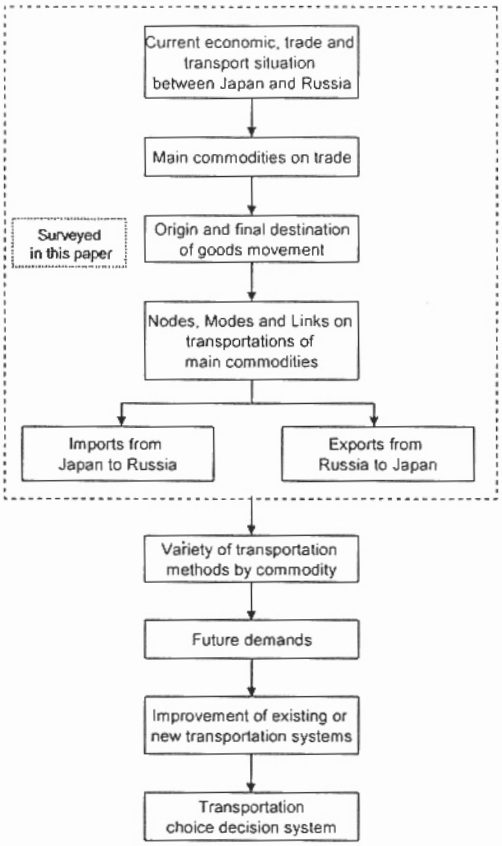


Figure 1. Methodology of the paper

3. Current Economic, Trade, Transport situation between Japan and Russia

3.1 Current Economic situation

Russia achieved macroeconomic stability with annual average real GDP growth rate of 6.5%. Also, inflation has been cut drastically, and public expenditure has been brought under control.

High oil prices on the international market and strong oil export earnings have allowed Russia to increase its foreign reserves to $120 billion at yearend 2004. (Table 1)

Over the last five years, real fixed capital investments have averaged gains greater than 10%, and real personal incomes have realized average increases over 12%. International financial position of Russia has also improved since the 1998 financial crisis with its foreign debt declining from 90% of

GDP to around 28%.

Japan is the second most technologically-powerful economy in the world after the US and is the third-largest economy after the US and China, measured on a purchasing power parity (PPP) basis.

Japanese exports remain at a high level, and domestic demand is firm. The main component of domestic demand, which is personal consumption, has been boosted by improved employment conditions and consumer confidence. Capital investment is also showing a healthy increase, supported by higher corporate revenues.

Table 1. Real GDP growth (% of previous year)

	2000	2001	2002	2003	2004	2005
World	4.6	2.5	3.0	4.0	5.1	4.3
Russia	10.0	5.1	4.7	7.3	7.1	5.9
Japan	2.4	0.2	–0.3	1.4	2.6	2.1

3.2 Current Trade situation

Since the fall of the Soviet Union, trading volume and trading commodity composition have changed dramatically. In recent years, positive trends are observed in the growth of total trade turnover between Japan and Russia both on import as well as on export sides.

However, commercial and economic relations between Japan and Russia are still considered low if compared from the economic potential of both countries.

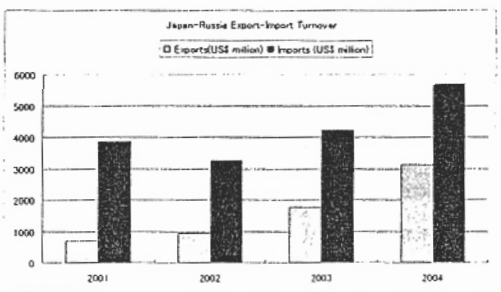


Figure 2 Japan-Russia Export-Import Turnover 2001-2004.

According to statistics, the total amount of Japan-Russia trade for 2004 was 8,804,382,000 USD, which exceeded that of previous year by 47.2%. While import from Russia showed relatively high growth of 35% and amounted to 5,693,772,000 USD, export to Russia went up by 76.3% and reached 3,110,610,000 USD. (Figure 2)

The present structure of Japan's export to Russia shows that there is a single item accounting for more than 60% of the trade. Automobiles are the most powerful driving force of export. In 2004, the amount of motor vehicle export increased 2.16 times from the previous year in dollar terms.

The growth in import from Japan of machinery for building or mining as well as iron & steel products like tubes & pipes was entailed by a boom in the Russian oil & gas sector.

The structure of imports from Russia seems to be stable but not much diversified. It is mainly resource oriented. All of traditional items for import from Russia e.g. (fish, timber, coal, and non-ferrous metals) showed stable growth. But the growth of mineral fuel import showed extremely high results for the last two years. In 2003, it was 105.1% and in 2004, 67.1%.

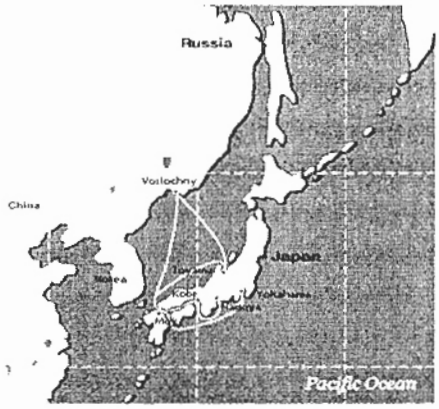
3.3 Current Transport situation

1. Container cargo

The share of container cargo in total cargo turnover is relatively small. There is only 1 line and 1 small vessel that carries containers from ports of Japan to the Russian port Vostochny. But container cargoes bound for the western part of Russia go also by water to European ports, after which they are transported by vessels or by trucks to final destinations.

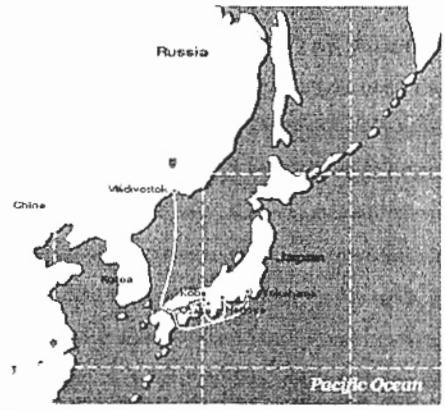
Japan Trans Siberian Line (JTSL) is a joint Line of FESCO and Mitsui O.S.K Lines. It provides a service every ten days to Kobe, Nagoya, Yokohama, Moji and Toyama, operated by vessel - Primorye Maru.

Map 1. JTSL Line (FESCO and MOL)



JTSL - Japan Trans Siberian Line

Map 2. FESCO Ro-Ro Service



Ro-Ro Service from Japan to Russia Far East Ports

Also, container cargo carried by this line includes bilateral as well as transit cargo by Trans-Siberian Railway (TSR). (Map1)

Container transportation inside Russia is mainly by railway because of long distances, comparatively high costs for transportation by trucks, and undeveloped road network in some parts of Russia. Transportation of containers is mainly done by trucks in Japan.

2. Ro-Ro cargo

This type of cargo is the main export item from Japan to Russia. The volume of Ro-Ro cargo is increasing year by year. There are different regular services from Japan to far-eastern ports of Russia. Main carriers on that route are FESCO and TOYOFUJI. (Map 2)

Transportation of automobiles inside of Japan to the ports is traditionally done by trailers. There is a variety of companies that offer such a service. The biggest company which operates such cargo in Japan is Zero.

The cargo shipped to far-eastern ports is transported to final destinations in Russia by rail, by trailers and by driving. The last is used by some traders because of high railway rates and long waiting time for some destinations. Also, transportation by trailers take a small share of transportation of vehicles from far-eastern ports. The main reasons are the lack of development of trailer operating companies, extreme climate conditions (e.g. snow season) and lower safety levels as compared with rail transport.

On the other hand, transportation of vehicles to the western part of Russia is done by Ro-Ro shipping lines which go by water route from Japan through Newcastle (England) or ports of Germany to Hanko (Finland) (e.g. HUAL and "K" Line). Afterward, vehicles are transported by trailers or by driving.

3. Bulk cargo

Japan mainly imports from Russia cargo that goes by bulk. Bulk vessels are operated by small shipping companies and sometimes by one vessel company. These ships are mainly used in tramp shipping and they usually do not have fixed schedules. Rather big companies like FESCO and IINO lines are also operating on these lines. Because there is no bulk cargo on the way back from Japan, vessels are loaded with machinery and automobiles. In Japan, bulk vessels call at different ports including small ports where port rates are cheap because unloading takes a long time. Bulk ships also call at Hokkaido and Kyushu in Japan and Kamchatka, Magadan in Russia.

In Russia, bulk cargo is transported by rail and by trucks if cargo goes from points that are not from ports.

4. Export from Japan to Russia

4.1 Trade

Export from Japan to Russia grows every year and the strongest driving force is automobile and machinery trade, which takes more than 60% of all exports. Growth rates of export by commodity show positive tendencies on all main items. (Figures 3, 4)

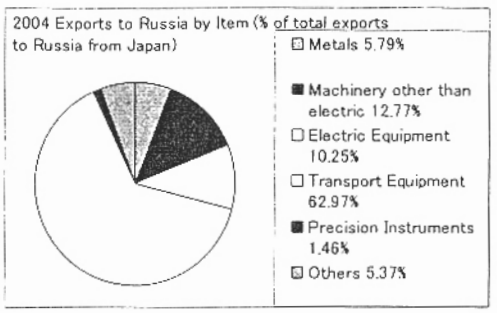


Figure 3. 2004 Exports to Russia by Item (% of total export to Russia from Japan).

(60.70% of Exports are Motor Vehicles)

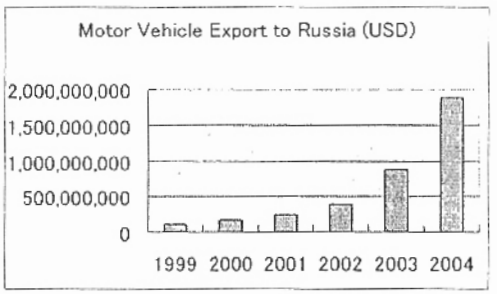
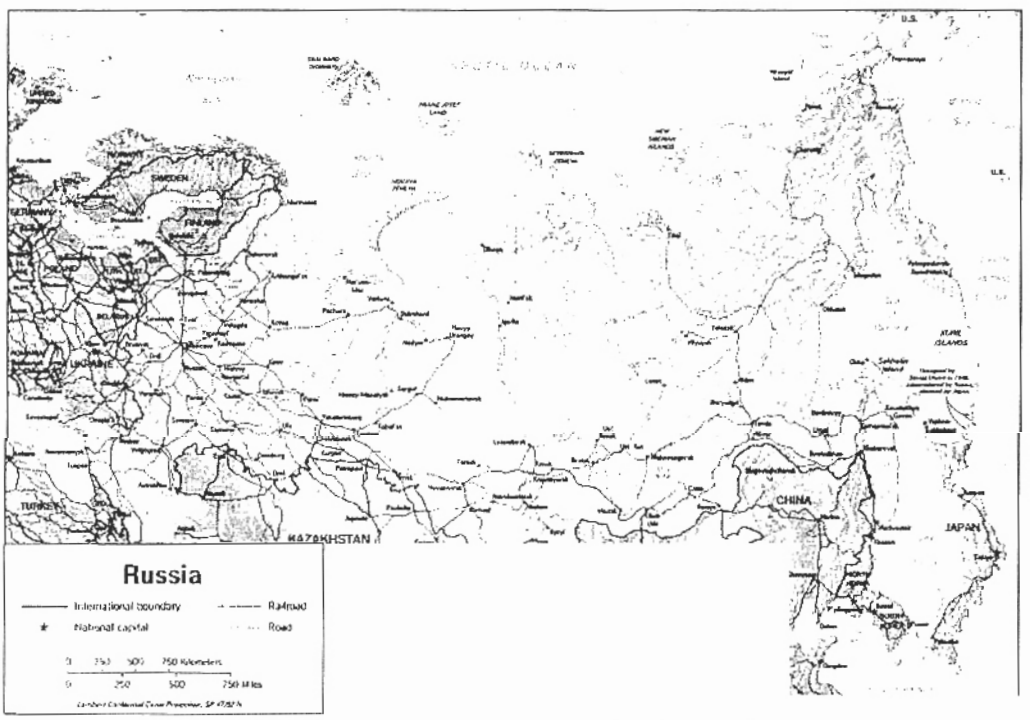


Figure 4. Motor Vehicle Export to Russia 1999-2004

4.2 Transportation of motor vehicles

The main export cargo is motor vehicles. Most are used cars, used trucks and construction machinery. Such goods are mostly purchased from Japanese automobile auctions. Mostly, they are situated at Honshu island.

Inland delivery from the auction is made by trucking companies. There is a variety of rates



Map 3. Russian main railway and road network

offered by companies. As the most part of vehicles from the auctions are for export, trucking rates for the nearest ports are cheap because of big cargo flow. Afterwards, the pick up from auction goods are delivered to the forwarding company (Otsunaka) yard at the port.

There is also a variety of rates from Otsunaka at each port. The rates vary from different factors, especially from the "booking power" of the company. The cargo is shipped by 3 types of vessels: Ro-Ro, Container and Bulk.

The main shipping ports that calling by Ro-Ro vessels are Osaka, Kobe, Nagoya, Yokohama, Toyama and Niigata. The Ro-Ro shipping lines to Vladivostok are FESCO and TOYOFUJI.

The Ro-Ro shipping lines through Newcastle (England) or port of Germany to Hanko (Finland) are HUAL and "K" Line.

Japan Trans Siberian Line (JTSL) container service is a joint line of FESCO and Mitsui O.S.K Lines, which every ten days call at Kobe, Nagoya, Yokohama, Moji, Toyama and the Russian port Vostochny.

By water route, containers can be shipped to Novorossiysk, St.Peterburg through European ports from Osaka, Nagoya and Yokohama.

Bulk ships usually works in tramp without a specific schedule. They are operated by many small companies. But rather big companies like FESCO and IINO lines are also operating on these lines.

Ships call at different ports of Japan including Hokkaido and Kyushu, depending on the cargo availability although the biggest number of ships are calling at Toyama (Fushiki) and Niigata. From Japanese ports they carry motor vehicles to Russian far-east ports (e.g. Vladivostok, Nakhodka, Vostochniy, Slavyanka, Zarubino, Vanino also Kamchatka and Magadan, etc.)

The cargo can be shipped from Japan to Russia by two main routes: 1)through far-eastern Russian ports and 2)through European ports because there is no direct service to Russian ports in European part.

From the Japanese ports to the Russian port of Vladivostok, motor vehicles are shipped by Ro-Ro and bulk vessels. To Nakhodka – Ro-Ro, Bulk. To Vostochniy – Container, Bulk. To Vanino, Zarubino, Slavyanka, etc. – Bulk.

From Japanese ports to Russian ports in the European part like Novorossiysk and St.Peterburg containers are shipped through European ports.

In case of transportation through Russian far-eastern ports, after unloading, the cargo can be transported to the final destination by railway in containers or by railway in car carrier wagons or by trailers. (Map 3)

The routes used for transportation to Russia vary upon the final destination point. For example, it is reasonable to use shipping through Europe if the final point is in Moskow, St.Peterburg or in the western part of Russia. In case of the eastern part of Russia, it is reasonable to transport goods through Russian far-eastern ports and then by rail or trailer.

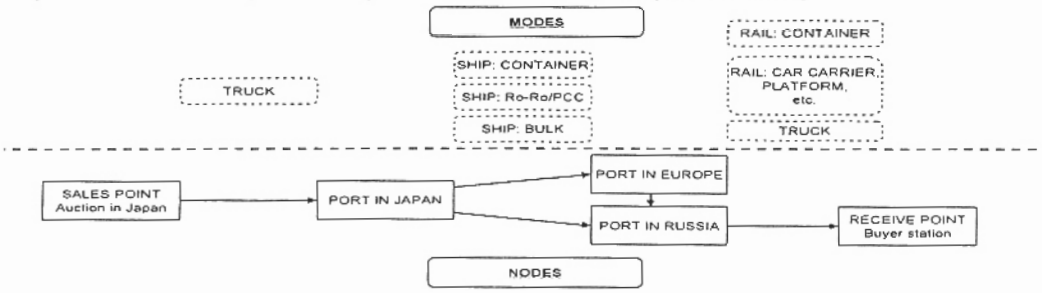


Figure 5. Transportation Modes and Nodes of motor vehicles from Japan to Russia.

5. Imports from Russia to Japan

5.1 Trade

Export from Russia to Japan is oriented on natural recourses. In 2004, the growth rate of mineral fuel exports was 67.1%, metal 35.1% and other raw materials including timber 47.3%. (Figure 6)

Even though the share of timber in trade is not the biggest, we selected it for our research. Transportation of this cargo is not so specific in comparison with fuel. Export of metal and fuel is mainly done by several big companies which have already established their logistics network. Such companies are shareholders of ports and transportation companies and they work under long term contracts with the Japanese side. But export of timber is usually done by rather small enterprises situated in different parts of Russia, and they transport timber using different modes and nodes.

Trade with fish and marine products is done by many companies and some times it is difficult to define their actual volumes because of smuggling. Also, export of fish is done by shipping and does not include railway. Sometimes after fishing this cargo is reloaded at sea without calling at Russian ports.

Due to the positive situation of the Russian economy in recent years, the growth of production of timber materials is observed. Most timber movement in Russia (almost 56%) is for export. About 70% of timber export is round timber. (Figure 7) The growth in export of timber will continue as Russia has a great potential in this resource and the share of round timber export will gradually decline.

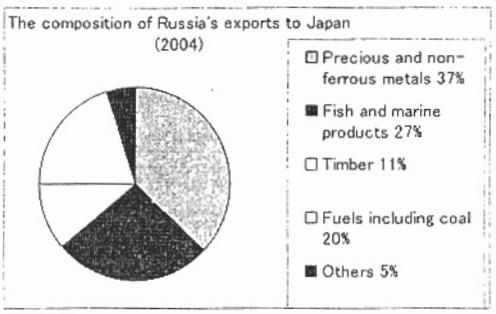


Figure 6. The composition of Russia's exports to Japan (2004)

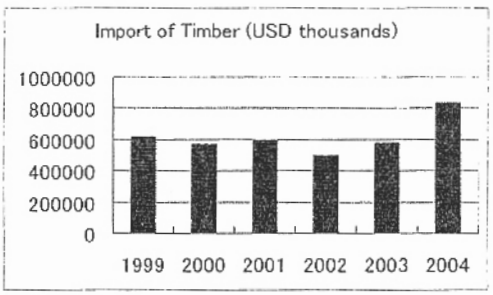


Figure 7. Japan's Import of Timber from Russia (1999-2004)

5.2 Transportation of timber

The port of Nakhodka has the largest share of total export of round timber and woods. In 2004, one and a half million tons were exported from this port. The second largest share is by the port of Vanino with 1.4 million tons. The port of Novorossiysk handled 0.96 million tons. It is difficult to define the share of each Russian region in total export of timber to Japan. But main exporters are Russian Irkutsk, Khabarovsk and Angarsk.

Transportation of timber from Russian manufacturing/sales points to the ports for export is usually done by rail. However, sometimes if it is short distance like from far-eastern region, then by trucks. In Japan, transportation of timber is done by trucks.

Shipping is usually done by bulk. As the most part of wood export is round timber, it is shipped by timber vessels and general cargo vessels. Bulk vessels usually work without specific schedule in tramp shipping and call at different ports in Japan and Russian far-east depending on cargo availability. Bulk ships are also calling at Hokkaido and Kyushu in Japan and Kamchatka, Magadan in Russia They try to call at small Japanese ports where port rates are cheap because unloading takes long time. On the way

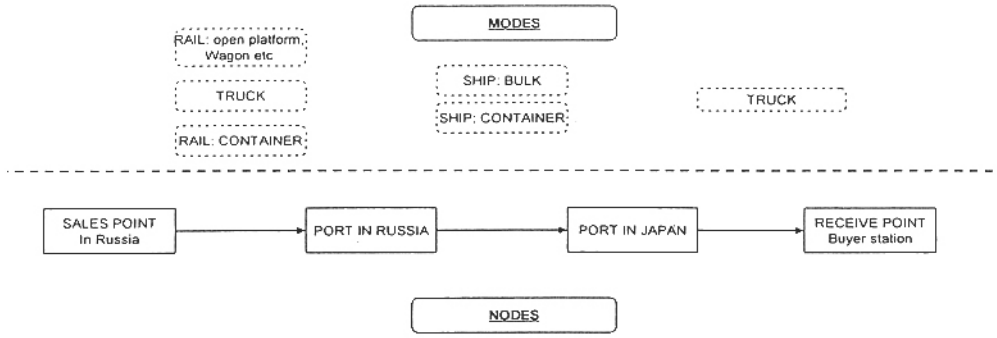


Figure 8. Transportation Modes and Nodes of timber from Russia to Japan

to Japan carrying timber, they usually are loaded with motor vehicles on the way back to Russia.

Most part of these bulk vessels are operated by small shipping companies, sometimes one vessel companies. But timber is also carried by rather big companies like FESCO and IINO lines. Carved woods and timber made products are sometimes transported in containers. In this case, goods go through Vostochny port in Russia to Yokohama, Kobe, Nagoya, Modzi and shipped by JTSL. (Figure 8)

7. Conclusions and future research

1. There is positive growth of trade volumes in exports and imports on all main items. Trade and economic relations between Japan and Russia are developing every year. The total trade turnover for 2004 showed 47.2% growth rate from the previous year, and exceeded 8,804 million USD. Imports from Russia showed relatively high growth of 35% while export to Russia went up by 76.3%.

2. By analyzing the commodity composition of trade, the main items of exports and imports are identified. For 2004, the main export item from Japan to Russia was motor vehicles with 60.7% share of total exports to Russia. Main imports from Russia are metals 36%, mineral fuels 26%, foodstuffs 19%, and raw materials 16% including timber.

3. There are 3 main types of cargo (e.g. Container, Ro-Ro and Bulk) in the current transportation on the Japan-Russia trade.

4. The main modes and nodes used for transportation of machinery from Japan and timber from Russia were defined. Figures 5 and 8 showed which modes and nodes are used for transportation of motor vehicles and timber in exports and imports.

7.2Future research

To achieve the goal of our research, we will analyze more deeply the transportations of timber to Japan and motor vehicles to Russia and will try to forecast future demands. Finally, we are planning to build up the optimal transport mode and node choice system on international transportation between Japan and Russia. The result can help find the optimal combination of modes and nodes to transport the cargo from the origin point in one country to the final destination in another considering the differences in costs, time, service and safety levels. All of these will be done in future research.

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