

# Seaports and Their Impact on the Regional Economy: the Current State and Development Prospects

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**Abstract.** The functioning of the seaports of Vanino and Sovetskaya Gavan is analyzed as a pole of economic growth of the region. The branches of industrial production have been studied and promising industries have been identified, which are estimated as the driver of the economic growth of the Khabarovsk Krai. An assessment of the interrelationships between the activities of the seaports and the economy of the Khabarovsk Territory was carried out. The emphasis is on assessing the volume of cargo produced in the Khabarovsk Krai. On the basis of the author's method, the cost and natural ratio of the transport and economic interrelationships between the seaports of Vanino and Sovetskaya Gavan with industries and regions are determined. The grouping of cargoes into four main categories (raw materials, materials, semi-finished products and equipment), which allows to separate raw materials and materials from goods with added value. Effects estimates for the economy of the Khabarovsk Krai, generated by the seaports, are obtained. The conditions for the formation of a port transportation and infrastructure complex as the poles of Khabarovsk Krai's economic growth for the future are determined. In this vein, economic effects are determined for Khabarovsk Krai on three levels: the port area, the port region and other regions. The forecasted estimation of economic effects on three variants for the Khabarovsk Krai is made. The results show that not always economic benefits from a well-functioning seaport are localized in the port region, while negative impacts are spreading in the port region itself.

## Introduction

One of the actively discussed topics in the development of the Russian economy is the "new eastern policy", which arose in 1998–1999. At the same time, large-scale state investments in transport infrastructure went to the economy of the Far East only after 2006, when the APEC summit in Vladivostok was announced [1]. Among the regions

which is the rate is the territory of the Southern zone of the Far East of Russia, where the main economic potential is concentrated. In the Khabarovsk Krai, the seaports of Vanino and Sovetskaya Gavan serve as a growth pole.

To date, as part of the implementation of the new development strategy in the port of Vanino, major projects are being implemented to transship coal cargo. In the future, the volume of coal cargo will increase by another 40 million tons. How effective will be the coal projects for the economy of the Khabarovsk Krai, hard to say. But already there are some risks. One of them is the new environmental policy of China, according to which the demand for export coal will gradually decrease [2]. In this case, the coal specialization of the ports will be at risk.

It is known that economic benefits from a well-functioning port allow to reduce costs for trade, produce value added and employment, and also involve certain sectors of the economy. For example, it is known that on average one ton of cargo in a seaport brings 100 dollars of added value, and an increase of one million tons of cargo in the port on average creates an additional 300 jobs in the short term [3].



But not always economic benefits settle in the port region. Often they spread to other territories, while negative impacts are localized in the most port region. This is mainly due to the environment, land use, traffic congestion [4, 5].

In addition, there is the problem of quantitative assessments of the effects of the functioning of the seaport, localized at different territorial levels. The reason for this is the lack of high-quality data that would determine the impact of the seaport on the economy of the region [6]. However, such studies, especially at the regional level, have not yet been carried out sufficiently, which determines the relevance and timeliness of this study.

In this regard, it is necessary to determine whether there are real prerequisites for interaction between the port complex and the region's economy, which are objectively capable of producing the desired result for the economy of the Khabarovsk Krai.

### **1 Assessment of the current situation of the ports of Vanino and Sovetskaya Gavan**

The seaports of Vanino and Sovetskaya Gavan act as the main ports of the Khabarovsk Krai. They provide communication with the territories of the Far East and take an active part in the transshipment of foreign trade goods. Together, they form a single transport hub that plays a key role in the distribution, accumulation and transport of goods within the country and for its boundaries. Their share in the total transshipment of Far East cargo in 2015 was 16%.

As a result of the implementation of the new strategy, the volume of cargo handled by ports has increased 2.7 times since 2005 and amounted to 29.5 million tons in 2015. Simultaneously with intensive cargo growth, the following significant trends are noted:

- The volume of coal cargo in the total volume of transshipment increased from 4% to 78%;
- The volume of cabotage cargo has decreased from 15% to 8%;
- The number of interacting regions within the country decreased over long distances and the number of interacting regions increased by short distances.

It was planned that a new strategy for the development of ports would ensure the development of the port region, but there was a situation in which: the ecology of the seaport territory deteriorated; a transport collapse occurred at the entrance to the seaports; with an increase in the number of ships calling at the port, a deficit of fresh water for local residents was formed. The unfavorable situation on the labor market, the tense ecological situation, as well as the shortcomings in the development of the social infrastructure, stimulated the migration outflow of the population from the Sovetskaya Gavan and Vanino regions [7]. This created a negative background in attracting new labor resources for the development of the ports.

### **Assessment of the relationship between the ports of Vanino and Sovetskaya Gavan with the economy of the Khabarovsk Krai**

The results obtained showed the following:

- In kind, the share of regional cargo decreased from 33% to 6% (1.4 million tonnes), and in value terms – from 10.8% to 8.9% [8]. At the same time, the potential volume of products produced by the enterprises of the Khabarovsk Krai, and which can be processed in the ports of Vanino and Sovetskaya Gavan, is in the range of 9–12 million tons. In fact, this means that the level ports development as a center of "marine industries" is low ;

- In the structure of the region's cargoes sent through the ports, the range of products is narrowed (from 9 to 5 names out of 200 existing ones). From this it follows that the internal growth potential of the Khabarovsk Krai cargoes processed in the ports is large, but it is used poorly;

- As sustainable links between the economy of the Khabarovsk Krai and seaports, woodworking products, oil products and metal products are involved. Their annual supplies guarantee the loading of the seaports and provide a stable income from transshipment (2005: 27%, 2013: 9%);

– The intensive growth of cargo handling in ports (2.7 times) did not create a similar increase in tax revenues (1.9 times). Consequently, the construction of a coal terminal ensured a stable loading of the port, but did not create the expected economic effect for the economy of the Khabarovsk Krai.

Thus, it can be noted that the relationship between the seaports and the economy of the Khabarovsk Krai is declining. The obtained result confirms that the economic benefits from the development of the port extend to other regions, while negative impacts are localized in the port region itself.

## **2 Assessment of the prospects for the development of the ports of Vanino and Sovetskaya Gavan**

The parameters for the development of transshipment of cargoes of the seaports of Vanino and Sovetskaya Gavan for the future depend on the scale of activities for the development of infrastructure facilities.

In this vein, the dynamics of the aggregate demand of the APR countries for goods in the long term up to 2030 has been studied. It has been established that the trends in the development of the APR countries in foreign trade indicate a stable growth in demand for coal, oil, grain, metals, iron ore, mineral fertilizers, which in the future will increase steadily. By 2030, the volume of demand for goods of the APR countries will increase by approximately 17% and will be about 4.5 billion tons. The greatest increase will be for iron ore (growth rate of 2% per year). The smallest increase will be for coal (growth rate 0.3% per year).

The dynamics of the aggregate supply of cargo gravitating to the ports of Vanino and Sovetskaya Gavan is studied. It is established that the volume of potential cargoes to the seaports of Vanino and Sovetskaya Gavan by 2030 may increase by 68 million tons. At the same time, the share of cargo in the Khabarovsk Krai will be 19%, Eastern Siberia 81%, of which 66% – coal. The forecast structure of cargoes is practically comparable to the cargo structure of the seaports of Vanino and Sovetskaya Gavan in 2015. This means that the situation will continue where the seaports of Vanino and Sovetskaya Gavan can continue to lose their significance in the economy of the Khabarovsk Krai.

### **The conditions are determined, the fulfillment of which can contribute to solving the problem of forming the growth pole on the basis of the ports of Vanino and Sovetskaya Gavan**

An approach is proposed for identifying it as a growth pole, which is based on the notion that:

Firstly, the fulfillment of a number of prerequisites testifies to the availability of a growth pole on the basis of the existing seaport, the formation of which will lead to an increase in the volumes of cargo transshipment, the number of employees, the volumes of goods with high added value, the volume of tax revenues to budgets. To do this, the grouping of cargoes ports into four groups: raw materials, materials, semi-finished products and equipment.

Secondly, the localization of the effects of the functioning of the seaports of Vanino and Sovetskaya Gavan occurs at three territorial levels for a number of indicators for each of them:

- The first level is the port area, ie, the territory where the seaports are located;
- The second level is the port region, i.e. the region to which the port territory belongs (Khabarovsk Krai);
- The third level – the remaining regions (Eastern Siberia and the Far East).

As a result, estimates will be obtained of the impact of the seaports on the degree of their localization. In view of the presented conditions, three variants are formed. Each option assumes its own cargo structure:

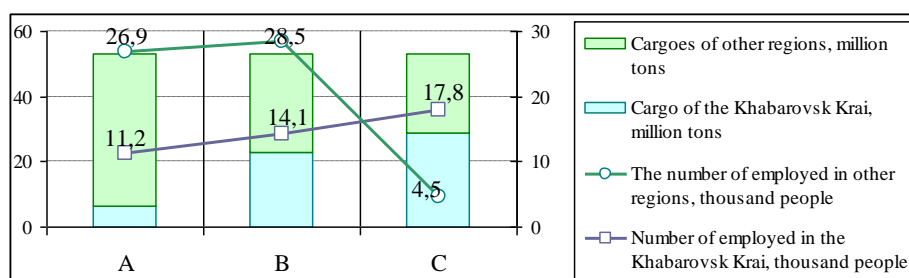
Variant A assumes that with the total volume of transshipment of goods at 53 million tons, the structure will remain unchanged in relation to 2015 (raw materials – 82%, materials – 12%, semi-finished products – 5%, equipment – 1%).

Variant B assumes that the structure of transshipment of goods will approximate the structure of 2005: raw materials – 36% (of which coal – 4%), materials – 44%, semi-finished products – 19% and equipment – 1%, since then were achieved the best performance of seaports. However, given the fact

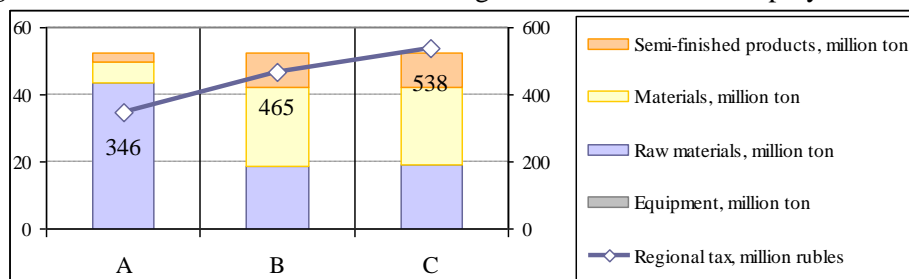
that a coal terminal with a total capacity of 12 million tons was put into operation in 2008, it will be possible to change the structure of cargo in accordance with the structure of 2005 only partially. In this regard, the structure of cargo transshipment will take the following form: raw materials – 35% (of which coal – 33%), materials – 45%, semi-finished products – 19% and equipment – 1%.

Variant C implies that the structure of cargo transshipment of the ports will strictly correspond to the structure of 2005: raw materials will account for 36% (of which only 4% will be coal, a specialized coal terminal will be liquidated), materials – 44%, semi-finished products – 19% and equipment – 1%.

Under the conditions of variant A, the seaports will mainly provide transshipment of goods from Eastern Siberia. As a result, the share of cargo in the Khabarovsk Krai will drop by 12% (see Fig.1). Volume of regional tax will be 346 million rubles (see Fig.2). For the forecasted volume of cargoes, it will be necessary to build additional terminals. Approximately the total amount of investments will make 42.6 billion rubles, and the number of employees in Khabarovsk Krai is 11.2 thousand people (in seaports 1.6 thousand people).



**Fig. 1.** The ratio between the volume of cargo and the number of employees in 2030.



**Fig. 2.** The ratio between the volume of cargo and the volume of income tax in 2030.

Variant B. The volume of the received income of ports from cargo handling will make 8.6 billion rubles, and the volume of the regional tax – 465 million rubles (see Fig.2). The share of regional cargo from the total volume of transshipment will be 44%, and the number of employed in the economy of the Khabarovsk Krai will amount to 14.1 thousand people, of which 4.2 thousand in seaports, and 9.9 thousand in associated industries (see Fig.1).

Variant C. The volume of the received income of ports from cargo handling will make 9.9 billion rubles, and the volume of the regional tax – 538 million rubles (see Fig.2). The share of regional cargo from the total volume of transshipment will increase to 55%, and the number of employed in the economy of the Khabarovsk Krai will amount to 17.8 thousand people, of which 4.4 thousand in seaports, and 13.4 thousand in associated industries (see Fig.1). At the same time, variant C is unrealistic, it will be necessary to "liquidate" the coal terminal.

Comparing the results of the assessment for the economy of the Khabarovsk Krai, the most favorable variant B.

### Conclusion

From the point of view of the consideration of the seaports Vanino and Sovetskaya Gavan as the locomotive of the economic growth of the Khabarovsk Krai, there are indirect evidence that it is not the locomotive of economic growth. Because the main bulk cargo is formed in the areas of Eastern Siberia, the ports do not affect the production chains of the Khabarovsk Krai. Also, the number of people employed decreases with the technological development of seaports.

Of all the options considered, it follows that the development of the ports of Vanino and Sovetskaya Gavan does not guarantee the development as a pole of the region's growth. This is due to the fact that the seaports will process the cargo of Eastern Siberia. The obtained result confirms the opinion of domestic and foreign researchers in the fact that "Often the economic benefits from the development of the port extend to other regions, while negative impacts are localized in the most port region. This is mainly due to the environment, land use and traffic congestion" [4, 5].

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