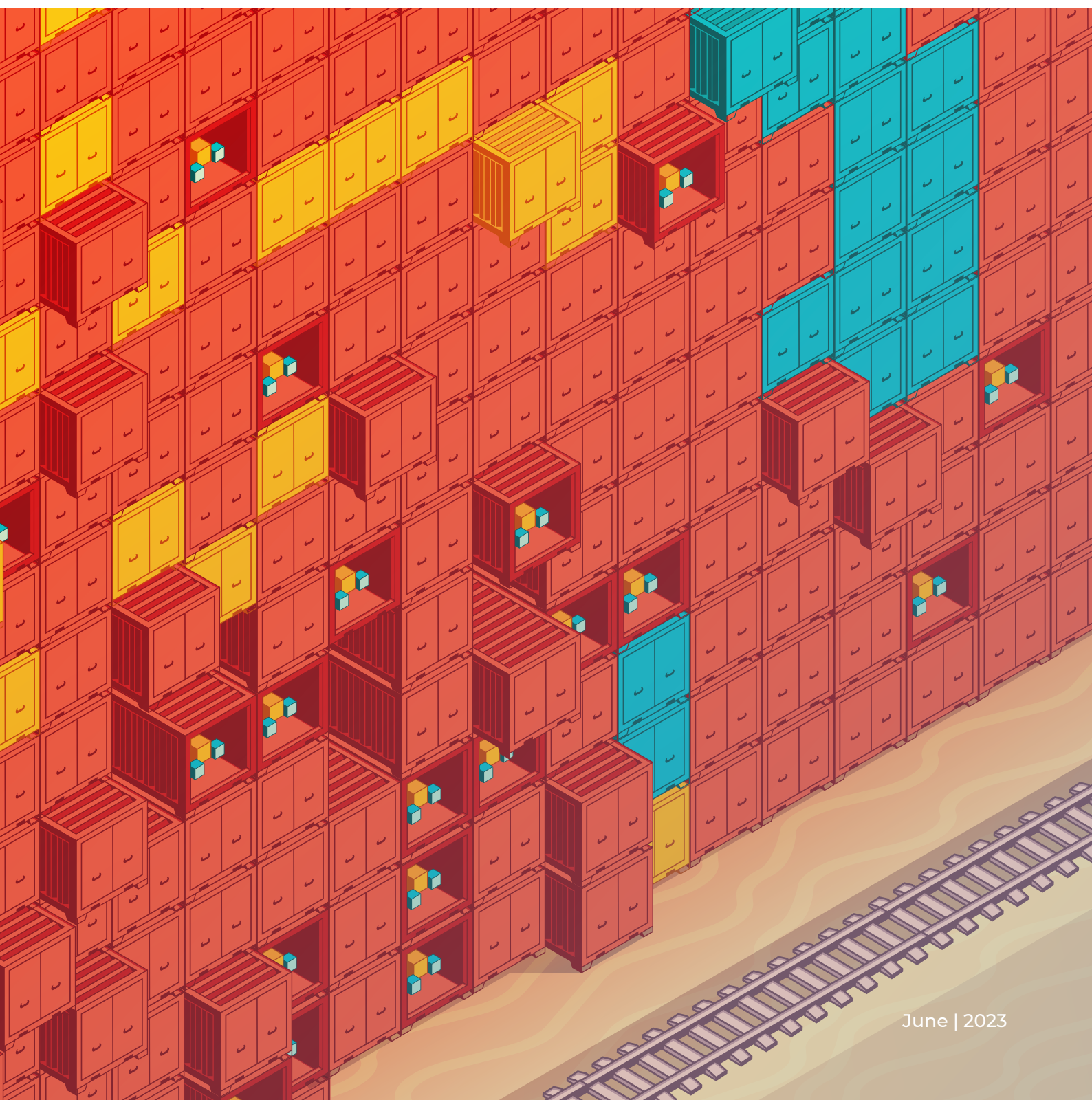

THE ERAI INDEX AS AN INDICATOR OF THE STATE OF TRANSIT RAILWAY CONTAINER TRAFFIC IN THE EAEU SPACE



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TRANSPORT AND LOGISTICS INDICES AS AN ANALYTICAL AND MARKETING TOOL

Transport and logistics indices are the most important indicators of the state of transportation for various directions, modes of transport and other parameters. However, first of all, any index is an economic indicator which is used by shippers to make decisions. Indices are of paramount importance for analysts who evaluate different modes of delivery of goods, creating the basis for decisions which are made in the field of cargo logistics. The creation and use of transport and logistics indices has the following advantages.

- 1.** Indices act as a single indicator of the state of the transport and logistics corridor for all market participants.

Transport and logistics indices as their base unit have indicators in the form of the cost of transporting a certain amount of cargo. The quantity indicator, as a rule, is twenty-foot (TEU) or forty-foot (FEU) containers. In the case of air transport, other measures are used — so-called ULD, or loading units, but for ease of comparison with all other transport, the indices are published in dollars per kilogram. Due to their standardization and application all over the world, regardless of the location of the cargo, its characteristics, and methods of transportation, such indices can be directly compared with each other, which gives the participants in the transportation market the opportunity to always have up-to-date information and choose the most optimal transportation method.

- 2.** Indices increase the transparency and openness of the market.

In the freight container market, there is a mutual interest shared by shippers and carriers in building an open market mode of operation. This is achieved due to the fact that among the participants in the freight transportation market, there is competition for customers, for which the speed of delivery, compliance with cargo safety conditions and the optimal cost of transportation are important. This need has given rise to a request for unified market assessment methods in the form of indices. In turn, the penetration of indices into the practical activities of transport and logistics companies increases the level of openness of the industry and the transparency of pricing.

3. The index is a decision-making tool.

Indices are formed using a set of data, which include the cost of transportation, insurance, the level of supply and demand, etc. In this regard, they act as a complex indicator that characterizes not only the state of the route, but sometimes the state of the freight transportation industry as a whole — in the context of transport modes and regions. Thus, the indices, due to their complexity, can be used in determining the cost of contracts for the provision of transport and logistics services, as well as forward contracts, and act as an indicator of the state of the industry for regulators and business circles. That is, the index turns into a decision-making tool.

The base index reflects the cost of transportation in a particular direction by one or another mode of transport. However, fluctuations in its performance may indicate changes in the state of the route. These variables include changes in traffic volumes, en-route restrictions (for example, to combat the spread of COVID-19), force majeure (container ship accident in the Suez Canal), lack of logistics capacity, or any other restrictions. The list of reasons for quote fluctuations can be quite extensive, and it is for this reason that they require high-quality accompanying analytics.

THE MAIN INDICES OF TRANS-EURASIAN CARGO TRANSPORTATION: WCI, SCFI, FBX, BAI

The rise of China as one of the world's largest economies and the new «workshop of the world» has radically changed the country's position in trade and logistics chains. To date, China is the world's main producer of a number of product ranges, above all — electronics. If in 1995, China accounted for 4% of the world's gross production of goods, now it is about 20%. Despite the movement of the country's economy from the «world assembly line» and a center for cheap final assembly to the production of highly processed goods, China continues to be a key point of global logistics flows, along with the US and the EU. That is why the most used indices are those that link the three production centers of the global economy: China, the US and the EU.

Since the bulk of world trade follows maritime transport, maritime indices have historically been the main transport and logistics economic indicators. In this regard, the main world transport and logistics indices, as a rule, evaluate the cost of sea freight. At the same time, container indices are the most important, since it is containerized cargo that underscores the global division of labor; it is containers that carry most of the non-commodity goods. In terms of global transport logistics related to China, the following maritime indices are the most used: World Container Index (WCI) from Drewry, Shanghai Containerized Freight Index (SCFI) and China Containerized Freight Index (CCFI), Freightos Baltic Index (FBX) — a joint project of the international company Freightos and the Baltic Stock Exchange, as well as the Baltic Air Freight Index (BAI).

WCI Index

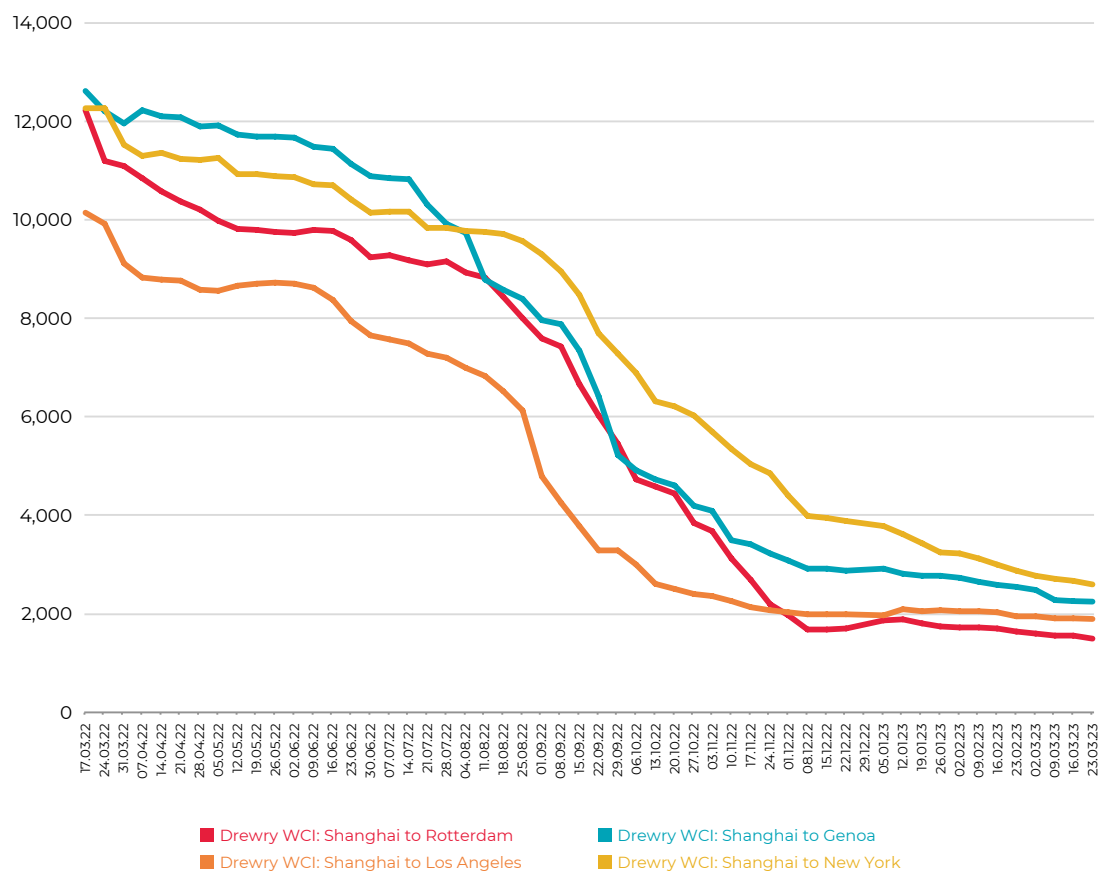
The WCI index shows the sea freight rate for transporting one FEU in the spot market. The index was launched in 2006 by Drewry, founded in London in 1970, to analyze the global shipping market. The WCI index is updated weekly and reflects comparable rates for the eight most used sea routes between East and West:

- Shanghai — Rotterdam
- Rotterdam — Shanghai
- Shanghai — Genoa
- Shanghai — Los Angeles
- Los Angeles — Shanghai

- Shanghai — New York
- New York — Rotterdam
- Rotterdam — New York

Based on these routes, Drewry calculates a composite index that illustrates the overall state of containerized sea freight. In addition to the container index, Drewry also produces more nuanced indexes for the cost of fuel oil, port traffic, and idle capacity to transport. It is important to note that the WCI index shows the spot rate, which may differ from the cost of transporting a container under permanent contracts, especially during periods of volatility. The basis for determining the rate is a survey of about thirty freight forwarders and transportation operators.

DREWRY WCI: TRADE ROUTES FROM SHANGHAI (US\$/40FT)



Source: Drewry Supply Chain Advisors

The advantage of the WCI index is its desire to cover all major sea freight container routes. Drewry was one of the first companies to understand the need to analyze containerized maritime freight traffic comprehensively, using benchmarking and preparing analytics based on the data received.

CCFI and SCFI Indexes

The [China \(Export\) Containerized Freight Index \(CCFI\)](#) is an index that reflects market trends in shipping containers from China. The index reflects the overall level of container traffic in China (including spot and long-term), which is comprehensive and macroeconomic. It was developed by the Ministry of Transport of China.

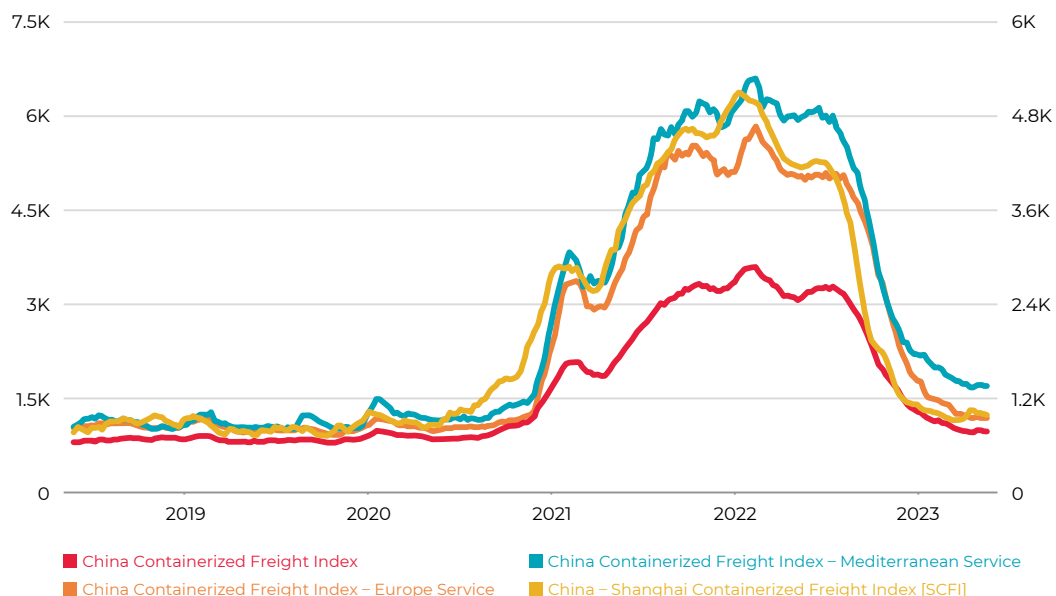
The index uses the base period of January 1, 1998, which has a value of 1,000 points, and is calculated taking into account twelve directions, based on data from the largest logistics operators. Specific methods of counting are not disclosed.

The second one, the [SCFI \(Shanghai Containerized Freight Index\)](#), reflects traffic levels in the spot market for export container shipping in Shanghai. It is more narrowly focused and sensitive than the above index. It is important to note that the SCFI spot rate fluctuates not based on real-time rates, but on what carriers intend to charge.

The index reflects maritime freight rates in thirteen directions. The European and Mediterranean directions make up 20% and 10% of the total index value, respectively. Rates are displayed in dollars per TEU (in dollars per FEU for both coasts of the United States). The data for the index is provided by experts who work on the CCFI. The data source is the world's shipping companies, shippers and freight forwarders.

The calculation is made on the basis of sea freight only on the terms of payment for the carriage of goods from the seller to the port of destination (CIF / CY-CY), taking into account changes in the cost of fuel, fees for channels and straits, seasonality, exchange rates, port loading, etc. What is not taken into account by the index (in comparison with CCFI) is things such as the cost of domestic transportation, surcharge for origin from South China, US customs duties, port charges, etc.

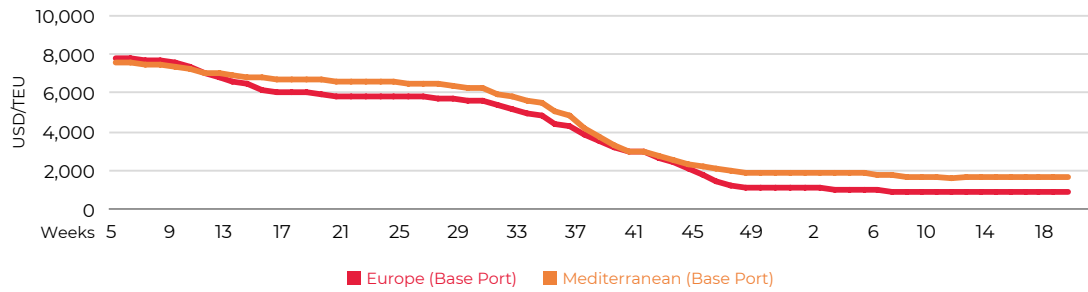
COMPARISON OF CHINA CONTAINERIZED FREIGHT INDEX ROUTES



Source: Drewry Supply Chain Advisors

The graph above shows the five-year dynamics of the composite CCFI index and its components in the direction of Europe and the Mediterranean Sea, as well as the composite SCFI index. A breakdown of the latest index by direction for 2022-2023 is shown in the chart below.

SHANGHAI CONTAINERIZED FREIGHT INDEX (SCFI) 2022-2023



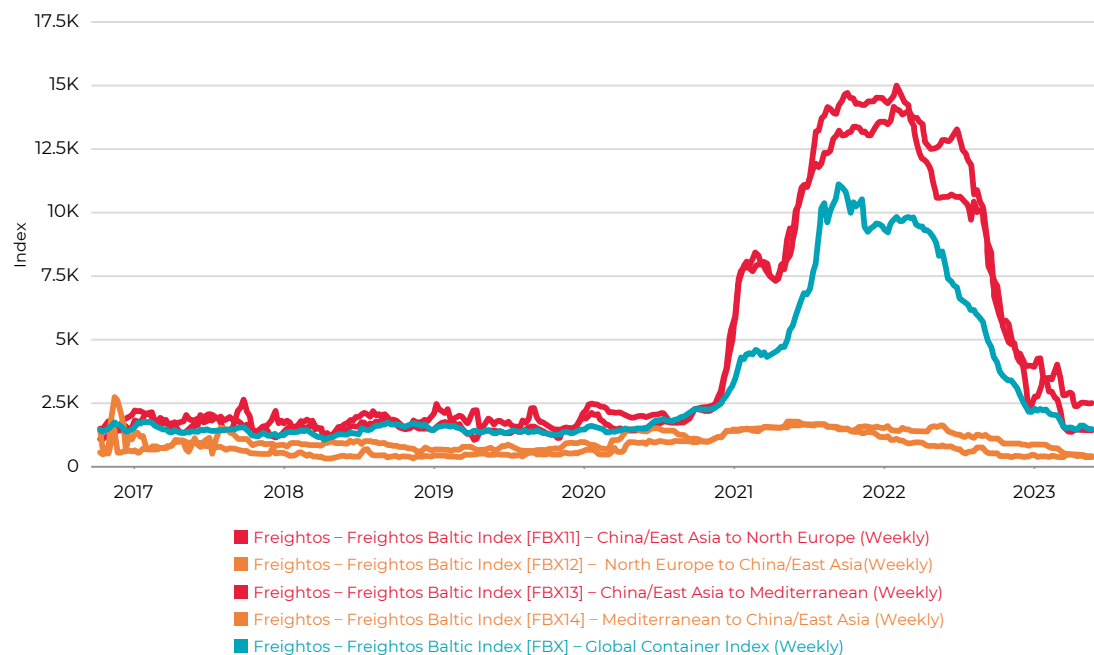
Source: Shanghai Shipping Exchange

Index FBX

The [Freightos Baltic Index](#) (FBX) is an international index of spot sea freight rates for forty-foot (FEU) containers across twelve destinations. It was developed by the [Baltic Exchange](#) in cooperation with the Freightos platform.

The prices used in the index are moving short-term spot rates for all types of cargo and associated surcharges between carriers, freight forwarders and high-volume shippers. The calculation is made using the median and taking into account the volume of carriers' activities. All this allows for the index to be published on a daily basis.

COMPARISON OF FREIGHTOS BALTIC INDEX ROUTES



Source: MacroMicro

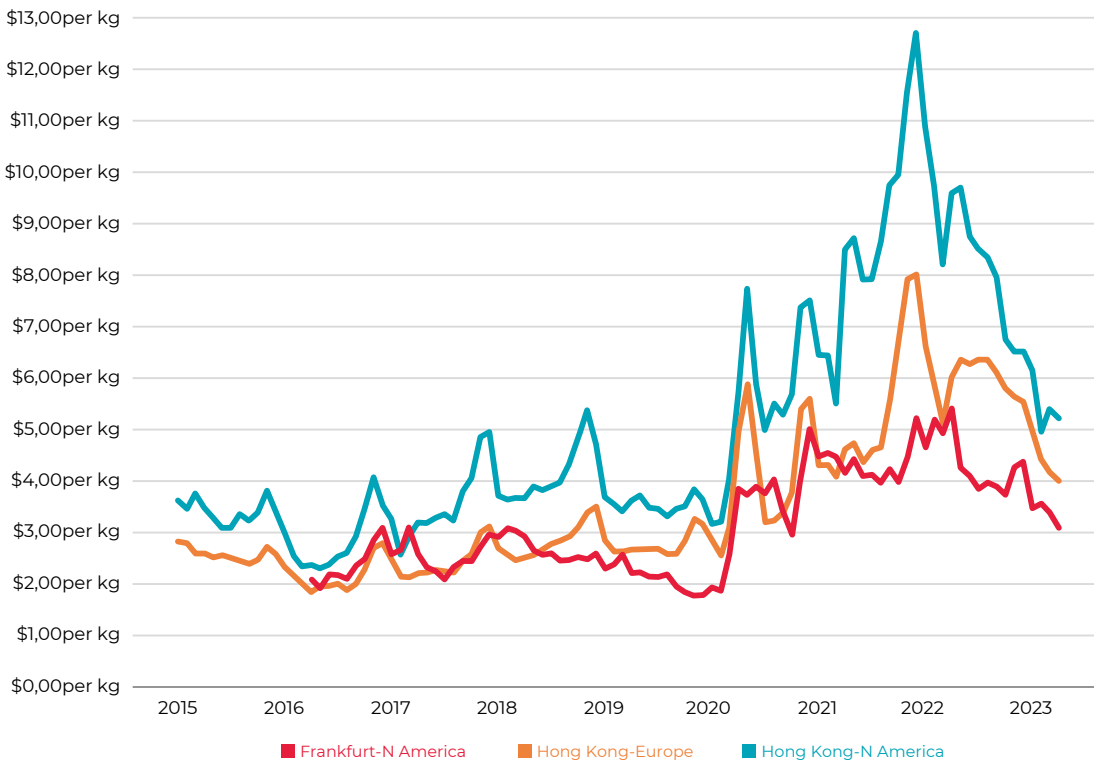
The chart above clearly shows the picture that emerged during the container crisis of 2021-2022, when the volume of exports of goods that can be transported in containers greatly exceeded the volume of imports. This led to a shortage of containers and, accordingly, to an increase in the cost of freight from China. In the direction of China, on the contrary, the cost of freight remained practically unchanged — this is confirmed by the green lines on the chart, displaying indices from Europe and the Mediterranean.

Index BAI

Baltic Air Freight Index (BAI) reflects weekly rates for the carriage of general cargo. It is measured in dollars per kilogram.

The BAI index provides average estimates of cargo across seventeen major air trade routes and is based on transaction data provided by global freight forwarders. It was launched in 2016 and is widely known in the air cargo market. During this time, it has established itself as a reliable and independent source of market freight rates.

BALTIC AIR FREIGHT INDEX ROUTES



Source: Baltic Air Freight Indices

Among the strengths of the BAI Index, one can single out the frequency of updates, which allows users to more accurately track changes in the market conditions and helps to increase the degree of market transparency. In addition, the index plays a role in price standardization, thereby making it easier for customers to compare prices and choose the most advantageous delivery method. Among the shortcomings, one can single out the limited data, since it is collected from a certain circle of airlines and cargo agencies, which may not fully correlate with the state of affairs in the market. In addition, it takes into account only air transportation, which means it is limited within its scope.

Despite these shortcomings, the BAI Index is an important tool for monitoring air freight price developments and ensuring market transparency.

As for the railway, the specifics of the formation of the railway network and geographical restrictions make this mode of transport more regional, which makes it difficult to conduct a global assessment and formulate composite indices. Nevertheless, one of the first such indices was ERAI, a composite indicator of the cost of transit container transportation via the Eurasian railway corridor through the territory of the EAEU, which dealt with China-EU and EU-China traffic.

THE HISTORY OF THE EMERGENCE AND DEVELOPMENT OF THE ERAI INDEX

Since its inception, the ERAI index has become an important tool for raising awareness of the trans-Eurasian rail container transportation market. A particularly important advantage of this indicator is its ability to compare the cost of transportation by rail and sea between cargo consolidation points at opposite ends of Eurasia, thus providing market players with information on the most optimal method of transportation in each individual case.

According to the developed concept, the transit rail traffic index (ERAI) is a composite indicator of the cost of transit container traffic in the Eurasian railway corridor through the territory of the EAEU, pertaining to China-Europe and Europe-China traffic.

At the end of 2019, in order to promote the index, as well as provide market participants with comprehensive and visual news and analytical information, the www.index1520.com portal was created, which hosts cost data on trans-Eurasian transportation, delivery times, types and volumes of transported products for the reporting period of interest, period statistics on the carbon footprint by mode of transport, as well as up-to-date analytical reviews and news. Since 2021, the statistics and the index itself have been updated on a weekly basis.

At the moment, the ERAI index has become widespread on international transport platforms. Index data is included in the reviews of the international analytical agency Drewry.

The number of participants in the market of rail transit container traffic across the territory of Russia, Kazakhstan, and Belarus is growing. Shippers, consignees and freight forwarders need regular access to up-to-date market information.

For this reason, in addition to the composite index, sub-indices have been created that reflect the indicative cost of transporting a container in directions, particularly West-East (ERAI East) and East-West (ERAI West).

In order to correlate the cost of cargo transportation by rail with the cost of sea transport in containers from the countries of Southeast Asia to Europe, the ERAI index portal presents the indicators of the World Container Index (WCI), calculated by the international analytical agency Drewry.

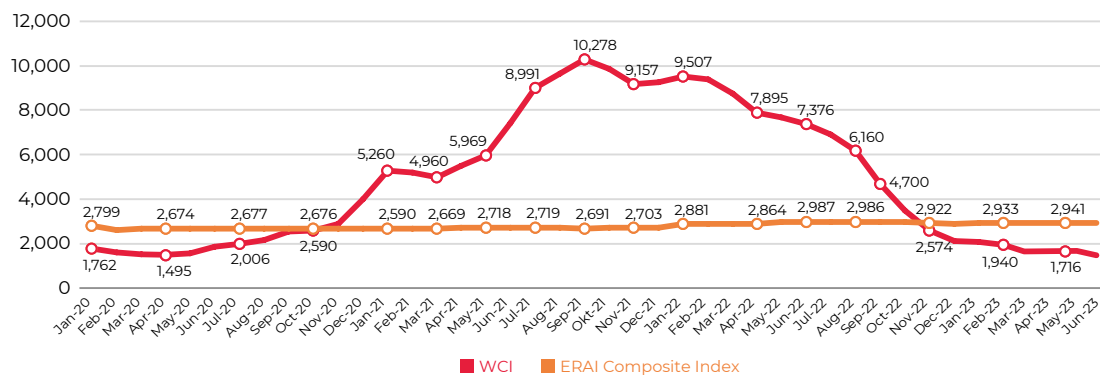
The value of the ERAI index depends on many factors:

- tariffs of JSC Russian Railways, JSC NC Kazakhstan Temir Zholy and GO Belarusian Railways;
- cost of using fitting platforms;
- cost of terminal services;
- speed and travel time;
- congestion of infrastructure, etc.

Thus, shippers who receive information on the ERAI value on a regular basis have a sufficient amount of up-to-date updated data to decide upon a delivery method and know the cost of shipping containerized cargo in Asia-Europe-Asia traffic.

The Eurasian Rail Alliance Index reflects the indicative weighted average cost of transporting one SPV along all routes of the corridor «China border — EU border.» The cost of container transportation diversifies depending on the geography of the route and its direction (from Asia to Europe or from Europe to Asia).

DYNAMICS OF INDICATORS OF THE ERAI AND WCI INDEX IN THE PERIOD JANUARY 2020 — JUNE 2023



Source: authors' calculations based on Index1520 data

Against the backdrop of external shocks, such as the COVID-19 pandemic, quarantine restrictions, accidents like the blocking of the Suez Canal by the container ship Ever Given, and the complication of the international political situation, Eurasian rail transportation has demonstrated stability. In this regard, the low volatility of the ERAI index is a reflection of the reliability of continental modes of transportation and the Eurasian railway route.

Between November 2020 and November 2022, there was an extraordinary state of affairs in the transportation market, when the cost of sending a container between cargo consolidation points in China and Europe by rail was lower than by sea, which at that time showed significant volatility. At the same time, the price of transportation by rail remained stable. For example, the change in the ERAI index between May and September 2021 was \$22, while the increase in the WCI index in the comparable period was \$5,318, with a more than two-fold drop just a year later.

Thus, the indicators of the Eurasian railway container traffic, having passed a kind of stress test, have proven their stability and predictability. This quality is important for building long-term agreements, increases the attractiveness of the industry among investors, gives shippers an additional opportunity to protect themselves from external force majeure circumstances, and opens up prospects for the further systematic development of container traffic in the 1520 space.

DIRECTIONS FOR THE DEVELOPMENT OF THE ERAI INDEX

In recent years, the ERAI index has undergone a number of changes related to the expansion of the content and functionality of the portal. The decarbonization and sustainability agenda, one of the transport megatrends of recent years, provides additional environmental benefits to those who choose rail transport. In this regard, a [CO₂ counter](#) was launched on the ERAI portal, which displays the amount of emissions produced during the transportation of goods into the atmosphere. The meter automatically calculates the value of emissions from the same volume of cargo transported by sea, road and air, thus making it possible to compare these figures.

Another direction of development was analytics and content filling the portal, including the provided statistical data. To date, the ERAI index is the only railway freight index in the EAEU space, which not only provides the current rate of container transportation from border to border, but also provides the user with detailed statistics regarding cargo transported along the Eurasian route. Work was carried out to refine the statistics, reduce the number of errors and update the directories, taking into account the updates of the TN VED and GNG catalog from 2022. In the future, it is planned to improve the interface and functionality of the section to make it a more convenient tool for analytical work and decision-making by shippers.

The «Analytics» section of the ERAI portal continues to reflect the current trends in the development of trans-Eurasian cargo transportation. The analytical section intended for professionals is regularly updated with new articles, mainly from foreign sources, as well as the ERAI's own unique reviews with a focus on trade and transport topics. The advantage of the portal is the fact that information is provided in three languages: Russian, English and Chinese. This allows you to convey relevant information to users from various parts of Eurasia, from Rotterdam to Shanghai, from St. Petersburg to Almaty. Thus, the analytical contour of ERAI contains the basic information for effective immersion in the transport and logistics sphere of the EAEU space in one place with a convenient thematic division. Work on deepening and expanding the content of the portal will continue.

With all the innovations, the core of the portal remains the ERAI index itself, which has already established itself as a convenient tool and a showcase for the rapidly developing Eurasian railway transit route. However, further development of the index will entail the involvement of transport and logistics companies operating in the door-to-door segment and on alternative routes. Inclusion in the index of the shipment distance from the EAEU border to the final destination in Europe or China and vice versa will lead to the formation of a complex index that is unique in rail transportation, and equal to the best maritime indices in terms of the information provided. At the same time, the expansion of the index to the northern routes, using the Trans-Siberian Railway for transportation, will make it possible to transform the ERAI index into a flagship indicator of the state of trans-Eurasian cargo transportation from border to border.

The expansion of the ERAI index itself, coupled with the improvement of the functionality of the portal, and the active promotion of the index to a Chinese and European audience is the main focus of development for the coming years. However, the practical implementation of such a project requires the commitment of all participants in the Eurasian rail container transportation market to increase market transparency and joint efforts to attract international shippers.

The Eurasian railway route has become unique and successful, a true integration project of the railways of Belarus, Russia and Kazakhstan. Therefore, the development of the ERAI index as the embodiment of this project is a common good for all companies involved in the cooperation. Common positioning and information exchange for the formation of a comprehensive ERAI + index will be a significant help in attracting new shippers and will provide a synergy effect for the transport and logistics industry of the EAEU and related industries.