Guide to Freightos Baltic Global Container Index™ (FBX™)

Version 2 – October 2020

1. Introduction

The Freightos Baltic Global Container Index™ ("FBX") is a set of indexes that reflect ocean container transport spot freight rates across 12 global tradelanes. It is jointly created by Freightos and the Baltic Exchange.

This Guide reflects recent developments in the markets, and it ensures compliance with the *Principles for Financial Benchmarks* issued by the International Organisation of Securities Commissions (IOSCO), and the *European Benchmark Regulation* issued by the European Securities and Markets Authority (ESMA).

The Baltic Exchange has thirty years of experience in the field of benchmarking and is the preeminent provider of global freight benchmarks that are widely used as settlement mechanisms in derivatives and physical markets for billions of dollars worth of ocean bulk freight transactions. The Baltic Exchange as a Benchmark Administrator ensures that its market benchmarks used to settle financial transactions are produced in accordance with rules which ensure their accuracy, integrity, continuity and reliability. The Baltic has recognised the importance of all these aims from the inception of its activity in this field since 1985. By offering its robust governance and auditing methodology to the FBX, the Baltic Exchange safeguards the accuracy, robustness and integrity of the FBX and the FBX determination process.

Freightos AcceleRate™ rate management, automated pricing, powers international freight sales and freight quote management for over one thousand logistics providers. Through its Freightos AcceleRate™ services, Freightos has a global database of multimodal freight rates, providing accuracy and reliability of data underlying the FBX.

In accordance with the Principles for Financial Benchmarks and the European Benchmark Regulation, Freightos is the Calculating Partner of the FBX ("Calculating Partner") and the Baltic Exchange is the Benchmark Administrator of the FBX ("Administrator"). Freightos and the Baltic Exchange duly authorise the Baltic FBX Council ("Council") as the oversight function which is responsible for providing independent oversight of the overall functioning of the FBX, in line with the Principles for Financial Benchmarks and European Benchmark Regulation.

2. FBX Methodology

The Freightos Baltic Global Container Index™ ("FBX") is a set of indexes that reflect ocean container transport spot freight rates across 12 global tradelanes. FBX tradelanes are the median all-in price, port to port, for a standard forty-foot, non-refrigerated container, based on carriers' rolling tariffs and related surcharges.

2.1. Port to Port spot freight rates

Port to Port prices include all charges for a container yard to container yard (CY-CY) service. This includes ocean freight and any applicable seaborne surcharges, they do not include origin or destination port charges or import customs.
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Included charges (where applicable are):
- BAF - Bunker Adjustment Factor
- FAF - Fuel Adjustment Factor
- LSS - Low Sulphur Surcharge
- EBS - Emergency Bunker Surcharge
- EBA - Emergency Bunker Additional
- CAF - Currency Adjustment Factor
- PSS - Peak Season Surcharge
- WRS - War Risk Surcharge
- PCS - Port Congestion Surcharge
- SCF/SCS - Suez Canal Fee / Surcharge / Transit Fee
- PCC/PTF - Panama Canal Charge / Transit Fee

2.2. Container Freight Rates

FBX is calculated using 'Freight All Kinds' (FAK), including commodities that are clearly translations or equivalent to FAK or rates where no commodity is specified.

2.3. Tradelane index calculation

FBX indices are calculated from spot buy rates for relevant port pairs offered by Ocean Carriers (Carrier) to International Freight Forwarders (IFF), or Non Vessel Owning Common Carriers (NVOCC) who are using the Freightos Applications. FBX will not normally publish a tradelane where there are less than five carriers contributing.

Relevant data consists of buy rates that have been created or modified within the last three months of publication day and are valid on the day of publication. In the event there are fewer than ten valid rates for a tradelane, additional rates will contribute in accordance with the waterfall methodology[1].

- Tradelane indices are calculated from the relevant data
- Tradelane indices are calculated using the applicable region and corresponding ports[2].

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[1] Appendix E
[2] Appendix B

- A median value is calculated for each carrier on the tradelane, if there are more than five carriers on a tradelane then a sixth carrier will be created containing all remaining carriers.
- A weighted average by carrier is calculated for each tradelane; the weighting reflecting each carrier's volume on that tradelane.
- Carrier volume is the carrier's annual committed container capacity between the tradelane relevant origin and destination regions.

Given a tradelane L serviced by carriers C1, C2, … , Cn in descending order of carrier volume on the tradelane V1, V2, …, Vn. And given Median (L, Ci,…,Cj) being the median price for Carriers Ci,…,Cj on the tradelane L, then value for tradelane L is calculated as:

$$\frac{\sum_{i=1}^{n}(Median(L, Ci) \times Vi)}{\sum_{i=1}^{n} Vi}$$

The resultant numbers are rounded to the nearest integer.

2.4. FBX Global index calculation

The FBX Global Container Index (FBX) reflects global trends in ocean freight prices. It is a weighted average of the tradelane indices; the weighting[3] for each tradelane being based on that tradelane's share of carrier volume.

Given the index values of the 12 regional tradelanes (I1,I2,…,I12) and their respective volumes (V1, V2,…,V12) as listed in Appendix B, the global FBX index value is calculated as:

$$\frac{\sum_{i=1}^{12} Ii \times Vi}{\sum_{i=1}^{12} Vi}$$

The resultant number is rounded to the nearest integer.

2.5 Verification & Validation

The Calculating Partner shall run daily checks on the data entered to produce the index to identify and address any anomalies. The Calculating Partner shall have in place an adequate due diligence process to be undertaken to ensure the data entered is valid on daily basis.

The Calculating Partner shall have in place appropriate reporting lines and designated individuals at the appropriate level of seniority, who are responsible for the oversight of daily calculations.

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[3] Appendix C

On daily basis, the production reports are checked for anomalies and an error free rate highlighting correct execution of the outlier handling process is produced.

On weekly basis, the Calculating Partner determines if any changes need to be made. The team involved constitutes of a data scientist, a senior project manager and the vice president of indices and markets.

The dataset is monitored by the Benchmark Administrator prior to publication, with descriptive statistical evaluation of the number of datapoints, and sellers, carriers, tariffs, and the calculated values. The distribution of the data on all tradelanes is assessed for anomalies and the impact of outliers is tested to ensure it falls within defined thresholds.

On a quarterly basis, the Benchmark Administrator selects random dates to be audited and the Calculating Partner makes selected parts of the dataset available for verification.

2.6 Calculating Partner internal audits (or self-assessment):

The Calculating Partner shall perform an internal audit process that will cover all aspects of the Guide at least once a year. The results of the audit shall be shared with the Benchmark Administrator. Areas of the audit include but not limited to:
- Compliance with the methodology outlined in this Guide
- Conflict of Interest arising in relation to itself and/or such contributors of the Input Data

3. Governance Framework

3.1. Roles and responsibilities the Baltic Exchange as Benchmark Administrator

The Administrator is responsible for maintaining the governance framework which includes core decision making functions related to the creation, management and distribution of the FBX. The purpose is to ensure that the FBX is produced in a fashion that is in line with stated methodologies, policies and procedures. It also reviews the Calculating Partner's internal controls for the identification, disclosure, prevention and management of conflicts of interest and to mitigate general risks associated with the FBX and the FBX determination process.

3.2. Key areas pertinent to Benchmark Administration

3.2.1 Control Framework. The Administrator shall ensure that a control framework and standard operating procedures of the Calculating Partner (in so far as standing operating procedures are relevant and raised to the Administrator for attention) are in place that support the calculation and maintenance of indices on an ongoing basis, as well as reviewing the incidents and exceptions register and setting recommendations for control improvements.

3.2.2 Sufficiency of Inputs. The Administrator shall review the adequacy of data inputs periodically and, as and when required, recommend a course of action to ensure that the FBX is reliably representative of the underlying market and that the FBX is not unduly impacted by the possibility of a lack of data in any way.

3.2.3 Review Key Judgments in Index Determination. In the event of potential interruption to index determination, the Administrator and Calculating Partner may have limited time to take action depending on its analysis of the circumstances pertaining at that time. Such events may include, but are not limited to, insufficient data during times of market stress, or critical infrastructure failure, or where the FBX methodology and criteria is not appropriate in addressing particular scenarios adequately, or where the prescriptive application of rules may be disruptive to the market. The Administrator and Calculating Partner shall review and agree on any key judgments, including possible course of action through policy change, to be made in such events.

3.2.4 Complaints Register. The Administrator shall review the complaints register, as required, and ensure it is in line with the terms of the FBX Complaints Handling Policy[4].

3.2.5 Index Methodology Review. The Administrator shall conduct a formal review of the relevance of the FBX methodology on an annual basis with the Baltic FBX Council and sign off on any proposed changes to index methodology. The Calculating Partner will be responsible for providing items for the methodology review, which will include but may not be limited to such items as index management feedback and feedback from external index stakeholders. Further to the methodology review of existing indices, the Administrator will also review new methodologies which will be presented by the Calculating Partner. Prior to the launch of any new indices, the Calculating Partner will present the rationale for any new proposed index methodology, including any supporting documentation from a market consultation. The Administrator may choose to instruct the Calculating Partner to consider further alternatives for consideration before a formal sign-off is granted.

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[4] Appendix A

3.2.6 Third Party Risk Assessment. Periodic review of third-party vendors that are involved in the benchmark determination process with reference to documented risk assessment for third parties, where any issues and items for follow-up are then to be resolved by the Administrator and the Calculating Partner.

3.2.7 Management of conflicts of interests. All conflicts of interest, including any operational and technical issues concerning determination or provision of the FBX shall be reported to the Administrator. The Administrator shall investigate all reported cases of conflicts of interest and decide on suitable mitigation actions if and when necessary.

3.2.8 Audits & Quality control

The Calculating Partner shall grant both the Administrator and Relevant Regulators effective access to its records, systems and premises (including the Platform and the Input Data) for the purposes of auditing the Calculation Partner's compliance with the Guide in accordance with the terms thereof, to the degree that they are not under confidentiality and/or contractual restrictions. Baltic Exchange Information Services Limited (BEISL) shall perform audits on the Calculating Partner to ensure the index production process is aligned with the Guide. The audit will have regard to the following:

- Daily: Error Free Rate assessing correct outlier handling, by indicating that the impact of any outliers on the published average was correctly measured for each index, and either assessed as falling within a defined threshold, or investigated.
- Weekly and Monthly: Data analysis by assessing index trending and the variations of all the metrics related to an index production such as tariffs, carrier volumes, and data points
- Quarterly: A sampling audit from the entire data set of a quarter to ensure the outlier handling and weightings methodologies are carried out accurately
- Staffing levels: ensure sufficient and qualified data scientist(s) or Quality Assurance Engineer(s) are available to carry out the full end-to-end process

BEISL shall appoint a major accounting firm to conduct independent reviews of the calculation of the benchmarks determined by the computer system. It inputs the raw data into a separate system and uses that to make the same calculation. Such a review is also carried out whenever there is a change to the index weightings or adjustment factors.

3.3. Roles and Responsibilities of Baltic FBX Council as oversight function

In line with the Principles for Financial Benchmarks and European Benchmark Regulation, Freightos and the Baltic Exchange duly authorises the Baltic FBX Council ("Council") as the oversight function responsible for independently reviewing the overall functioning of the FBX and the FBX determination process. The Council shall consist of a balanced representation of stakeholders. As such, the Council is functionally separate from the Administrator.

FBX Complaints Handling Policy

1. Introduction

This document is designed to set out the Administrator's compliance pursuant to Article 9 of the European Benchmark Regulation ("BMR") and Principle 16 of the International Organisation of Securities Commissions ("IOSCO") principles for Financial Benchmarks.

2. Scope of the Benchmark Complaints Handling Policy

The Administrator takes all queries, informal comments and a formal complaint seriously whilst striving to resolve them satisfactorily and as quickly as possible. This document sets out the procedure the Administrator shall follow in the event of an informal comment or formal complaint being received in relation to the determination of the FBX.

The Benchmark Complaints Handling Policy is designed to set out:

   a.   Submission process for an informal comment;

   b.   Receiving and investigating an informal comment;

   c.   Submission process for a formal complaint;

   d.   Receiving and investigating a formal complaint; and

   e.   Record keeping of Complaints

The purpose of the Benchmark Complaints Handling Policy is to:

   a.   Provide a written summary of the procedures by which Complainants may submit complaints; and

   b.   Document and make available information as to how the Administrator's internal procedures are designed to achieve a reasonable and prompt handling of Complaints together with the Administrator's obligations to handle and seek to resolve relevant Complaints whilst ensuring compliance with the BMR and IOSCO principles for financial benchmarks.

3. Submission process for an informal comment

Informal comments or queries may be handled more efficiently by liaising with the Administrator by emailing to complaint@balticexchange.com. Such informal comments or queries will be resolved pursuant to Section 4 below.

4. Receiving and investigating an informal comment

Upon receiving an informal comment or query, the Administrator will consider the nature of the comment and assess the merit fairly and if necessary, liaise with the Council for assistance. The Administrator will provide a response and shall endeavour to do so in a timely manner. They will also consider if an escalation of the informal comment is required.

If the informal comment is not addressed to the satisfaction of the Complainant then the Complainant will be provided with information setting out how to initiate a formal complaint pursuant to Section 5 below, should the Complainant find it necessary to do so.

5. Submission process for a formal complaint

Although a formal complaint can be made by any reasonable means, the Administrator notes that a formal complaint should be addressed to "The Baltic Exchange Compliance Department", clearly marked "complaint" on the communication, and delivered:

    a.   By email to <u>complaints@balticexchange.com</u> ; or

    b.   By post to: The Baltic Exchange Limited
                      Complaints
                      38 St Mary Axe
                      London EC3A 8BH

A formal complaint shall include:

    a.   The contact details of the Complainant (including full name, address, telephone number and a valid email address);

    b.   The company name of the Complainant;

    c.   The nature of the formal complaint;

    d.   A detailed description of the issue or concern;

    e.   Whether the formal complaint refers to the Baltic Exchange's role as the Administrator;

    f.   The details of the relevant index/benchmark;

    g.   The date of the incident if applicable; and

    h.   The date of the formal complaint.

If any of the information required above is missing, the Administrator may not be able to fully assess a formal complaint. In such circumstances, the Administrator may contact the Complainant to request further information. If the Administrator does not deem a submitted query or dispute to rise to the level of a formal complaint, the Administrator may contact the Complainant to discuss the matter.

6. Obligations to the Complainant submitting a formal complaint

A formal complaint may relate to any aspect of the FBX determination process. The Administrator shall ensure:

    a.   All investigations of a formal complaint made by a Complainant to the Administrator shall be handled in a fair and timely manner;

b. The investigation of a formal complaint shall be conducted by parties independent of those involved in the subject of the complaint;

c. Resolution of the formal complaint shall be communicated to the Complainant, once the Administrator's decision has been made; and

d. No formal complaint shall be closed without the Complainant confirming that it has been properly addressed in accordance with the FBX Complaints Handling Policy.

7. Procedure for receiving and investigating a formal complaint

Upon receiving a formal complaint, the compliance department of the Administrator will address the formal complaint and shall investigate, assess fairly, consistently, and promptly:

a. The subject matter of a formal complaint;

b. Whether the formal complaint should be upheld; and

c. The final resolution determined.

When making the above assessments, the Administrator shall take into account all relevant factors including but not limited to:

a. All evidence available and the particular circumstances of the formal complaint;

b. Similarities with any other formal complaint received by the Administrator; and

c. Relevant guidance published by any relevant Regulatory Authority.

The resolution time for a formal complaint will vary according to the nature of the issue and the level of investigation it may require. In the Administrator receiving and investigating a formal complaint, the Administrator shall:

a. Investigate the complaint competently, diligently and impartially, obtaining all additional information as deemed necessary;

b. Send the Complainant a prompt written acknowledgment of receipt of a formal complaint; and

c. Provide regular updates as to the status of the issue and anticipated timescale to resolution; and

d. Provide the Complainant a final or other response within the anticipated timescale.

Following an investigation of a formal complaint, the Administrator shall:

a. Explain in writing to the Complainant promptly and, in a way that is fair, clear and not misleading, the Administrator's assessment of the formal complaint and its decision on the formal complaint; and

b.   Contact the Complainant to ensure that they have understood the assessment and are satisfied that the formal complaint has been investigated and properly addressed in accordance to this policy.

8.   Escalation of a formal complaint

In the event that the Complainant disagrees with the decision, the issue will be escalated to the Baltic FBX Council for investigation. The decision of Baltic FBX Council shall be final and the Complainant shall be notified of the outcome.

When the nature of the Complainant's formal complaint relates to the Administrator, then the following shall apply:

a.   A formal complaint in relation to the Administrator shall be reviewed by the Baltic FBX Council;

b.   The Administrator's compliance department, if required, shall be consulted and along with the Baltic FBX Council seek to resolve a formal complaint in relation to the Administrator, as soon as reasonably practicable; and

c.   The Complainant shall be advised of the outcome of its investigations within a reasonable time period unless such contribution shall be contrary to BMR.

9.   Record Keeping of Complaints

The Administrator shall keep all records and correspondence relating to Complaints for a period of five years.

FBX Indices

Ticker	Short Name	Long Name	Weight in FBX
FBX	FBX Global	Freightos Baltic Global weighted average	N/A
Tradelanes			
FBX01	China/East Asia - USA West Coast 40' (CEA-NAW)	Freightos Baltic China/East Asia to North America West Coast 40' container index	20.30%
FBX02	USA West Coast - China/East Asia 40' (NAW-CEA)	Freightos Baltic North America West Coast to China/East Asia 40' container index	9.76%
FBX03	China/East Asia - USA East Coast 40' (CEA-NAE)	Freightos Baltic China/East Asia to North America East Coast 40' container index	10.46%
FBX04	USA East Coast - China/East Asia 40' (NAE-CEA)	Freightos Baltic North America East Coast to China/East Asia 40' container index	5.03%
FBX11	China/East Asia - North Europe 40' (CEA-EUR)	Freightos Baltic China/East Asia to North Europe 40' container index	17.26%
FBX12	North Europe - China/East Asia 40' (EUR-CEA)	Freightos Baltic North Europe to China/East Asia 40' container index	10.16%
FBX13	China/East Asia - Mediterranean 40' (CEA-EUR)	Freightos Baltic China/East Asia to Mediterranean 40' container index	9.02%
FBX14	Mediterranean - China/East Asia 40' (EUR-CEA)	Freightos Baltic Mediterranean to China/East Asia 40' container index	5.31%
FBX21	USA East Coast - Europe 40' (NAE-EUR)	Freightos Baltic North America East Coast to Europe 40' container index	2.67%
FBX22	Europe - USA East Coast 40' (EUR-NAE)	Freightos Baltic Europe to North America East Coast 40' container index	5.50%
FBX24	Europe - South American East Coast 40' (EUR-SAE)	Freightos Baltic Europe to South America East Coast 40' container index	1.77%
FBX26	Europe – South American West Coast 40' (EUR-SAW)	Freightos Baltic Europe to South America West Coast 40' container index	2.76%

Appendix C

Regions

Code	Region	Ports
CEA	China / East Asia	CNSHA (Shanghai) CNNGB (Ningbo) CNYTN (Yantian) HKHKG (Hong Kong) TWKHH (Kaohsiung) KRPUS (Pusan) JPUKB (Kobe) VNVUT (Vung Tau) SGSIN (Singapore)
NAW	North America West Coast	USLGB - Port of Long Beach USLAX - Port of Los Angeles USTIW - Port of Tacoma USSEA - Port of Seattle USOAK - Port of Oakland CAVAN - Vancouver
NAE	North America East Coast	USEWR (Newark) USNYC (New York) USSAV (Savannah) USCHS (Charleston) USORF (Norfolk / Virginia) USBAL (Baltimore) USHOU (Houston)
EUR	Europe	DEHAM (Hamburg) DEBRE (Bremen) NLRTM (Rotterdam) FRLEH (Le Havre) GBLGP (London Gateway) BEANR (Antwerp) ESALG (Algeciras)
SAE	South America East Coast	BRSSZ (Santos) BRPNG (Paranaguá) ARBUE (Buenos Aires) UYMVD (Montevideo) COCTG (Cartagena) PAMIT (Manzanillo)
SAW	South America West Coast	ECGYE (Guayaquil) CLSAI (San Antonio) PECLL (Callao) COBUN (Buenaventura) PEPAI (Paita)

MED	Mediterranean	ESVLC (Valencia)
		ESALG (Algeciras)
		ESBCN (Barcelona)
		EGPSD (Port Said)
		GRPIR (Piraeus)
		TRAMR (Ambarli)
		TRIZT (Izmit)
		MTMAR (Malta Freeport)
		ITGIT (Gioia Tauro)
		ITGOA (Genova)
		ITSPE (La Spezia)
		ILASH (Ashdod)
		FRFOS (Fos Sur Mer / Marseilles)

FBX Outlier Detection Methodology

FBX uses an outlier detection method called Double Median Absolute Deviation (Double MAD). This method has been developed to address specific challenges in the distribution of FBX data.

The most widely used methods of finding outliers in one-dimensional data are Standard Deviation (SD), Percentiles and Median Absolute Deviation (MAD).

The SD method removes any point that is more than two standard deviations from the mean. However, the presence of outliers is likely to have a strong effect on the mean and the standard deviation, making this technique unreliable in small samples with extreme outliers.

The Percentile method removes a specific high/low percentile. This is good when the distribution can be roughly divided into three groups. When the distribution is just one bulk of points, the percentile method will cut off valid values.

MAD is a robust measure of variability and is often used to detect outliers. For a given set of data D = {d1, …, dn}, the deviations are the difference between each value and median(D). The MAD is then the median of the absolute values of all the deviations.

Container box freight pricing distribution is neither normal or symmetric, this will cause both SD and MAD strategies to fail; to address this a double MAD methodology is used.

Double MAD Methodology

FBX combines two different MADs to create upper and lower cutoff points:

1. The MAD from the median of all points less than or equal to the median. This is used to calculate the distance from the median of all points less than or equal to the median.

2. The MAD from the median of all points greater than or equal to the median. This is used to calculate that distance for points that are greater than the median.

If more than 50% of data have identical values, the MAD is zero. All points in dataset except those that equal the median will then be flagged as outliers, regardless of the outlier cutoff. In this case only the median value is kept.

Waterfall Methodology

In the event of a tradelane having less than ten valid rates on publication day the following steps will be taken in sequence until a total of ten valid rates has been achieved

1. Rate refresh: The Calculating Partner will alert IFF(s) that their rates are expiring without a replacement and request that they refresh the rate(s)

2. Validity extension: The time to expiry of the relevant data will be extended by seven days, or until ten rates are valid, whichever is the soonest.

3. Manual pricing: The most active IFF, using the Freightos applications, on the tradelane will be contacted and requested to quote a rate. If the IFF cannot provide a quote, the next most active will be contacted until a rate is provided or no more IFFs are available.

4. Validity final extension: The time to expiry of the relevant data will be extended until ten data points are valid