

Information Paper Series

Rebasing of Freight Forwarding Price Index (Base Year 2022)

information paper
on
prices statistics

**REBASING OF
FREIGHT FORWARDING PRICE INDEX (FFPI)
(Base Year 2022)**

Singapore Department of Statistics

June 2023

Papers in this Information Paper Series are intended to inform and clarify conceptual and methodological changes and improvements in official statistics. The views expressed are based on the latest methodological developments in the international statistical community. Statistical estimates presented in the papers are based on new or revised official statistics compiled from the best available data. Comments and suggestions are welcome.

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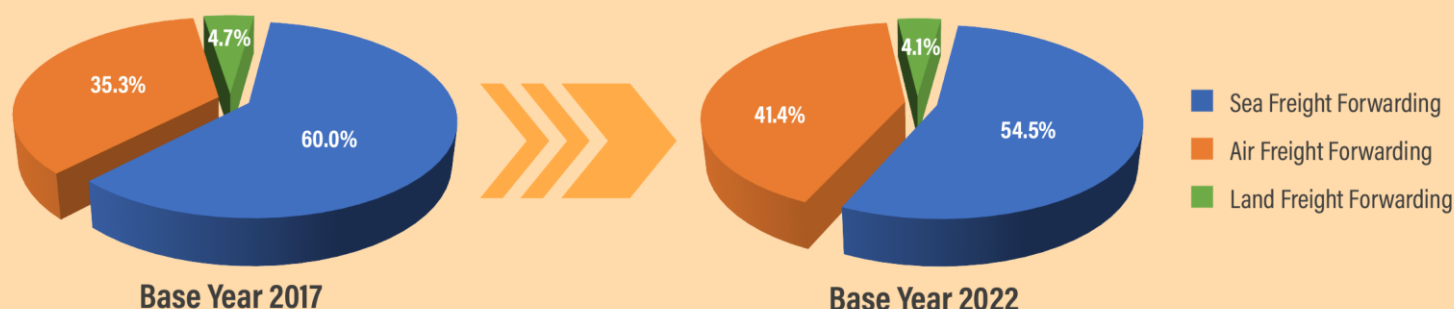
REBASING OF FREIGHT FORWARDING PRICE INDEX (FFPI)



The FFPI measures changes in the prices of services provided by Singapore-registered freight forwarding companies and non-vessel operating common carriers.

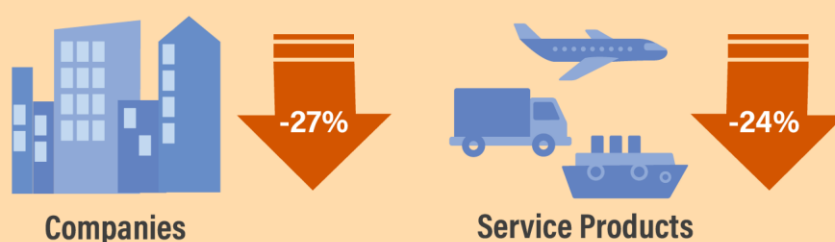
Weighting Pattern

The weight shares across the different freight forwarding modes, i.e sea, air and land remain relatively similar across both base years. Sea Freight Forwarding Services continued to be the largest weight contributor at 54.5 per cent in base year 2022.



Sample of Companies and Products

The sampling frame was refreshed to rotate out existing firms and include new companies to better represent the current activities and market share of the freight forwarding industry. Overall, the number of companies and service products were reduced.



Key Trends

The price trends of the overall FFPI for both base years generally move in tandem, with differences due to changes in the composition of companies and basket of service products.



REBASING OF FREIGHT FORWARDING PRICE INDEX (FFPI) (Base Year 2022)

I INTRODUCTION

The Department of Statistics (DOS) has rebased the Freight Forwarding Price Index (FFPI) from the base year of 2017 to 2022. The rebasing exercise is conducted periodically to ensure that the coverage of service products and the weighting structure of the index are representative of the current activities and market share of the industry.

2 The FFPI is a services producer price index that measures changes in the prices of services provided by Singapore-registered freight forwarding companies and non-vessel operating common carriers. The index is used to monitor price trends and as inputs to estimate the real growth of the freight forwarding industry.

3 This information paper provides details on the 2022-based FFPI and includes key changes from the rebasing, such as the weight comparison and price movement between the new 2022-based and the 2017-based price series.

II DESCRIPTION OF 2022-BASED FFPI

Index Coverage and Structure

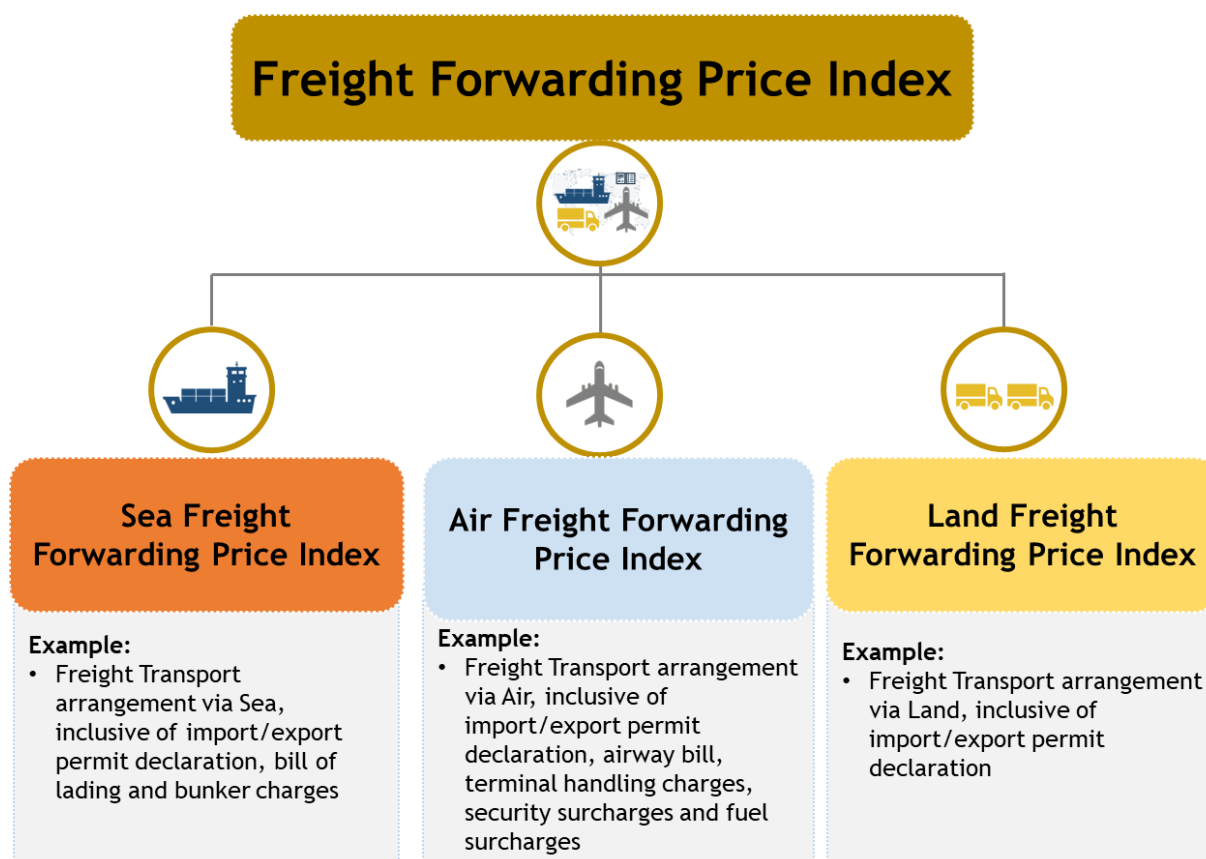
4 The FFPI covers Singapore-registered freight forwarding companies and non-vessel operating common carriers listed under the Singapore Standard Industrial Classification (SSIC) 2020¹ code 52292 on freight transport arrangement. Companies under SSIC 52292 primarily arrange cargo transportation on behalf of a shipper via air, sea and land transportation modes.

5 Exclusions from the scope of the index include courier activities (SSIC 5320), provision of motor, marine, aviation and transport insurance (SSIC 6512), and activities of travel agencies and tour operators (SSIC 7910).

¹ The SSIC 2020 publication is available at <https://www.singstat.gov.sg/standards/standards-and-classifications/ssic>

6 The index structure of FFPI is presented in **Figure 1**. The FFPI comprises major sub-indices according to the mode of freight forwarding transport, i.e. sea, air and land. Within each main index are prices of individual service products.

Figure 1: Index Structure



Index Computation

7 The FFPI uses the weighted arithmetic mean (AM) Modified Laspeyres formula where the weight reference period of 2019 preceded the price reference period of 2022. Within each transport mode, the price relatives of the service products together with their respective weights are aggregated to form the indices at the transport mode level. The weighted arithmetic means of all transport mode indices are then aggregated to derive the overall FFPI price index. More details on the index computation are available in **Appendix I**.

Weights

8 The FFPI weights are derived using the 2019 operating revenue of freight forwarding services providers from DOS's surveys² and supplemented with administrative data. Within the transport mode indices, the weights are further distributed to the service products based on each company's operating revenue contribution. The weights for the non-selected freight forwarding services providers are distributed across the appropriate transport modes. When more than one service product is provided by a company, the assigned weight is evenly distributed.

Data Collection

9 During the initial price survey, respondents were asked to provide a few service products and its service specifications (e.g., freight content, pricing tier, country of loading and discharge, etc.). Prices were requested from the respondents for the freight charges, as well as additional components such as declaration of import and export permits, terminal handling charges, fuel surcharges, etc., where possible. The main pricing method used is the direct use of prices of repeated services. Survey respondents provide actual transacted prices of the service products which are selected for pricing. Whenever any service product is discontinued, respondents had to replace it with another service product of similar specifications.

10 Subsequently, monthly prices are collected from a representative sample of Singapore-registered freight forwarding services providers via a quarterly price survey. The survey collects price information for the reference quarter as well as revision to prices for the previous quarter.

11 The 2022-based FFPI covers 119 companies providing prices for 325 freight forwarding service products.

² Sources: Department of Statistics' Annual Survey of Services 2019, Survey of Logistics & Supply Chain Services Industry 2020 and Freight Forwarding Price Survey 2022.

III KEY CHANGES IN THE 2022-BASED FFPI

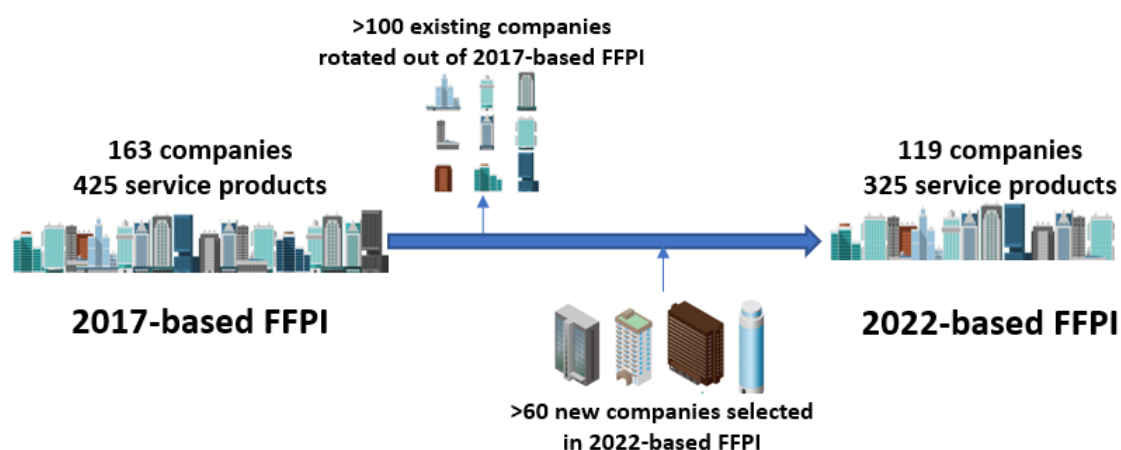
New Sample of Companies and Service Products

12 During the rebasing, the sampling frame for FFPI was refreshed to include new companies from DOS's business register. Companies were asked to select a sample of their representative service products and provide relevant service specifications and monthly transacted prices. These service products and prices were monitored throughout the base period, and clarifications with the respondents were made where necessary to ensure that the price changes can be captured appropriately.

13 As the freight forwarding rates fluctuated significantly during the COVID-19 pandemic³, the collection of base prices was extended for another year from 2021 to 2022. Subsequently, the in-scope products were reviewed along with the existing products from the 2017-based indices to determine the final frame for the rebased indices. The sampling frame was reviewed to ensure that the surveyed companies and service products were representative of the current activities and market share of the freight forwarding industry.

14 **Figure 2** compares the firm and service count of the 2022-based and 2017-based FFPI. The total number of companies and service products selected was reduced from 163 firms and 425 services in the 2017-based index to 119 firms and 325 services in the 2022-based index to reduce respondent burden. More than half of the companies in the 2022-based index are new to the index, while the remaining companies are representative firms carried over from the 2017-based FFPI.

Figure 2: Firm and Service Count of 2022-based and 2017-based FFPI

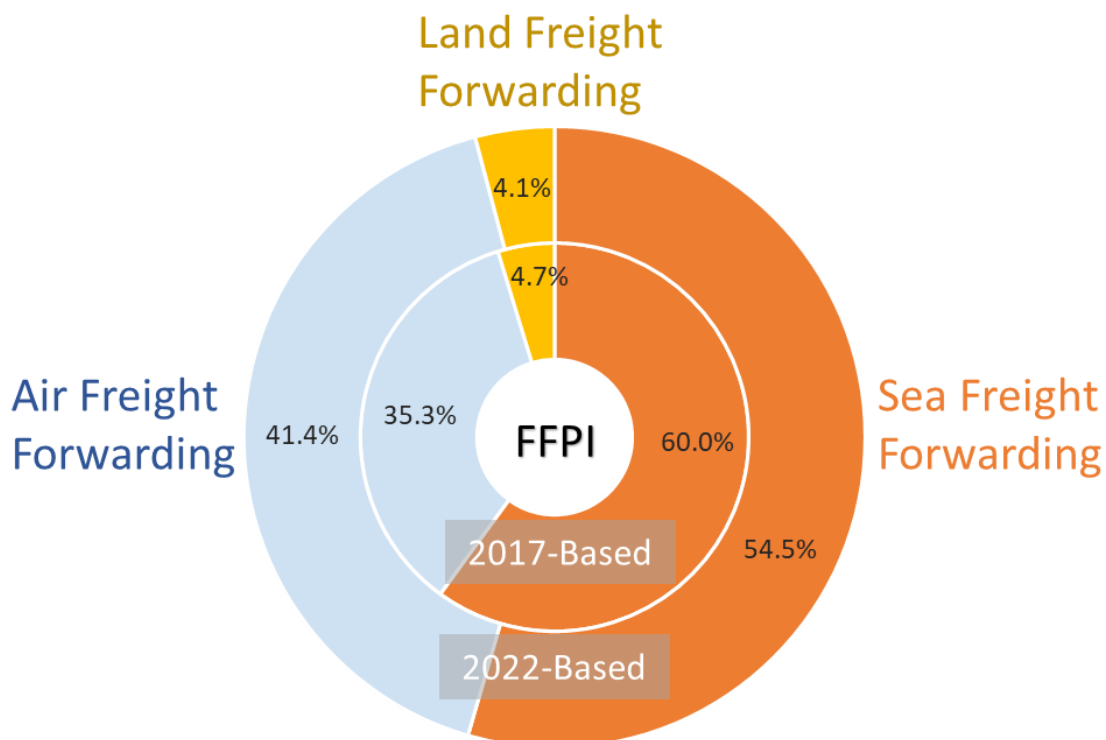


³ A related article on the "Impact of COVID-19 on the Sea Freight Transport and Freight Forwarding Price Indices" was published by DOS in the Statistics Singapore Newsletter Issue 2, 2021. Link to article: <https://www.singstat.gov.sg/-/media/files/publications/economy/ssn221-pg7-10.ashx>

Comparison of Weighting Patterns

15 **Figure 3** shows the weights distribution for the 2022-based and 2017-based FFPI.

Figure 3: Weights Distribution for 2022-based and 2017-based FFPI



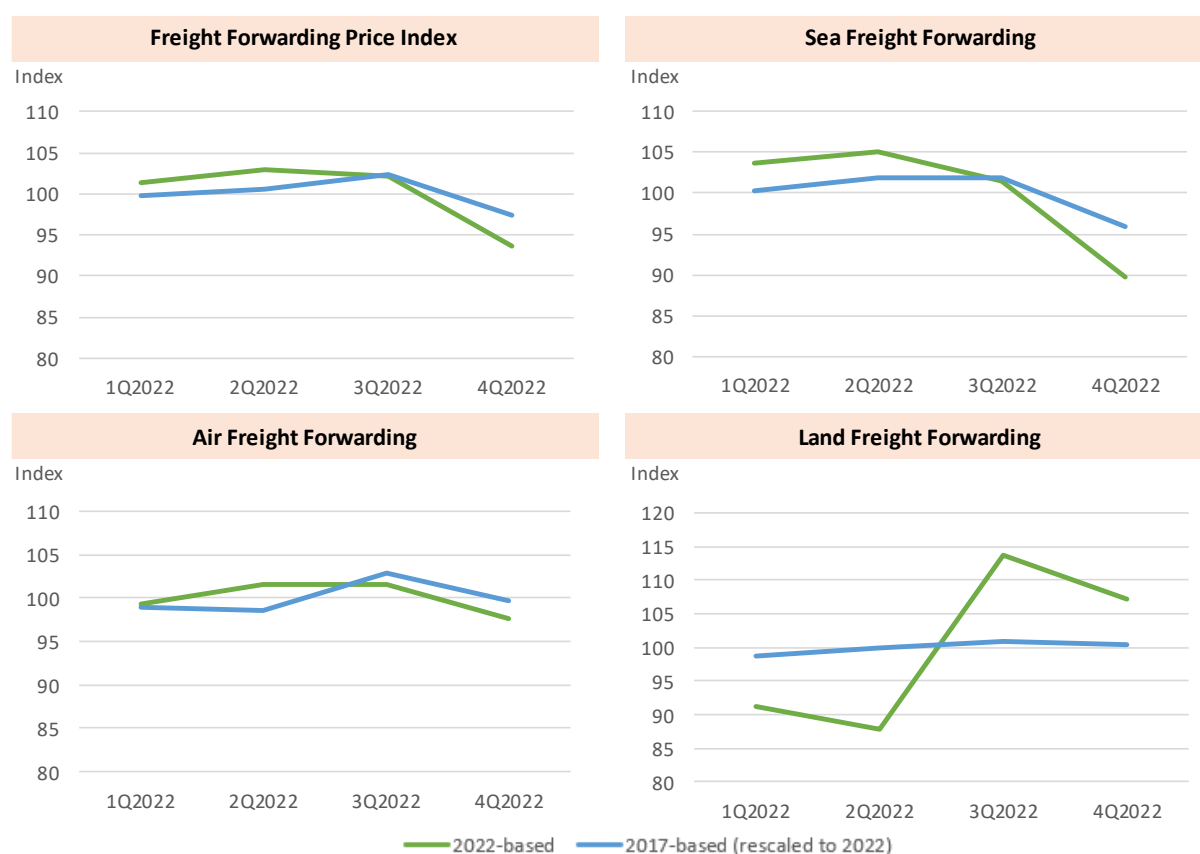
16 The rank order of the freight forwarding transport mode remained the same across the two base years with Sea Freight Forwarding being the largest weight contributor, followed by Air Freight Forwarding and Land Freight Forwarding. In the 2022-based FFPI, the weight share for Air Freight Forwarding increased 6.1 percentage points, rising from 35.3 percent to 41.4 percent. In contrast, the Sea Freight Forwarding and Land Freight Forwarding weights share declined 5.5 percentage points and 0.6 percentage points respectively.

Comparison of Price Trends

17 **Figure 4** compares the price trends of the 2022-based and 2017-based FFPI over the four quarters in 2022, which is the overlapping period between the two base years. More information on the weights and indices of the 2022-based FFPI is available in Appendix II.

18 The price trends of the overall FFPI for both base years generally moved in tandem and closely mirrored the price trend of the Sea Freight Forwarding price index due to its relatively higher weight share in both base years. The 2022-based main indices for sea, air and land generally trended in the same direction as their respective 2017-based series, with a higher increase observed in 3Q2022 for the Land Freight Forwarding price index. This was mainly a result of changes in the composition of companies and service product mix.

Figure 4: 2022-based and 2017-based FFPI (rescaled to 2022) for First to Fourth Quarter 2022



IV LINKING OF HISTORICAL SERIES

19 To facilitate comparison of price changes over time, the price indices prior to 2022 are linked to the new series by re-scaling them to the new base year 2022 level. The linking is obtained through the following mathematical procedure:

$$\text{Linked (2022-based) Index} = \text{2017-based Index} \times \text{Linked Coefficient}$$

where the Linked Coefficient is the ratio of the annual 2022-based index in 2022 to the annual 2017-based index in 2022.

V DISSEMINATION OF DATA

20 Data on the overall FFPI is released in the quarterly Services Producer Price Indices (SPPI) report, on the 25th day of the 3rd month after the reference quarter, or the next working day if it falls on a Saturday, Sunday or Public Holiday. The report can be accessed on the SingStat Website (<https://go.gov.sg/report-spqi>) or through the QR code appended below. The indices can also be downloaded via the SingStat Table Builder (<https://www.singstat.gov.sg/tablebuilder>).



Singapore Department of Statistics
June 2023

GLOSSARY

GLOSSARY OF TERMS AND DEFINITIONS

Base Year:

Also known as the price reference year, that is, the period whose prices appear in the denominators of the price relatives used to calculate the index. It is also understood to be the year which the index is set equal to 100.

Direct Use of Prices of Repeated Services:

A pricing method that represents the ideal of using real transacted prices, or less preferably list prices, of the same service product in successive survey periods.

Laspeyres Price Index:

A price index defined as a fixed-weight index that uses the basket of products of the base year.

Linked Coefficient:

A ratio that is applied to a new index series to form a continuous series with an old index series (or vice versa).

Linking:

The technique used to join two consecutive sequences of price indices that overlap in one or more periods to form one continuous series.

Pricing Method:

A procedure solely concerned with data relating to prices that is put in place by index compilers to make price data suitable for use in index compilation. Carried out prior to compiling the lowest level indices, the selection of the appropriate pricing method for a service product or industry is largely determined by the pricing mechanism employed for that product or industry.

Price Relative:

The ratio of the price of an individual service product in one period to the price of that same service product in another period.

Rebasing Exercise:

A series of activities undertaken to update the weighting structure and basket of products in an index to a new base year. It involves studying the industry changes, obtaining the latest available weighting information (either from administrative sources and/or survey data), and sampling new companies on top of the routine price surveys to determine the final basket of products that is representative of the current market structure. The rebasing exercise starts before the base year and typically requires at least fifteen months to complete.

Services Producer Price Indices:

The services producer price indices (SPPIs) are designed to trace price movements that reflect the supply and demand conditions in the service markets, with a view to facilitate the analyses of macro-economic conditions and monitor inflationary pressures. SPPIs are also used as deflators in national accounts.

Service Specifications:

A detailed list of the characteristics that identify an individual sampled service product. Its purpose is to ensure that a consistent price is collected from period to period relating to a consistent service product with the same terms of sale in each period.

Weights:

A set of numbers used to weight price relatives. Weights and price relatives are averaged to obtain higher level price indices.

Weight Reference Period:

The period in which the detailed weights were determined for the index.

APPENDICES

APPENDIX I: Index Computation of FFPI

FFPI uses the weighted arithmetic mean Modified Laspeyres formula where the weight reference period of 2019 preceded the price reference period of 2022.

At the most detailed level, a price relative is derived for each service product by taking the ratio of the current quarter's price to its corresponding base period price. The price relatives of the service products together with their respective weights are aggregated to form the price indices at the service level, and consequently the overall index. The formula used for index computation is presented below:

Price Index at Overall Level:

$$I_t = \sum W_k \times I_{kt}$$

where, I_t = price index in period t
 W_k = the relative weight of the k^{th} service type
 $\sum W_k = 1$

Price Index at Freight Forwarding Mode Level:

$$I_{kt} = \sum_{j=1}^{n_k} w_j \times PR_{jt}$$

where, I_{kt} = price index of the k^{th} service type in period t
 PR_{jt} = price relative of j^{th} service product in period t
 n_k = number of service products within k^{th} Freight Forwarding Mode
 w_j = relative weight of the j^{th} service product
 $\sum w_j = W_k$

Price Relative at Service Product Level:

$$PR_{jt} = \frac{P_{jt}}{P_{j0}} \times 100$$

where, PR_{jt} = price relative of j^{th} service product in period t relative to base period
 P_{jt} = price of j^{th} service product in period t
 P_{j0} = price of j^{th} service product in the base period

APPENDIX II: Weights and Sub-Indices of 2022-based FFPI

Price Index	Weights	2022			
		1Q	2Q	3Q	4Q
Freight Forwarding	10,000	101.3	103.0	102.1	93.7
Sea Freight Forwarding	5,450	103.6	105.2	101.6	89.7
Air Freight Forwarding	4,138	99.2	101.6	101.5	97.6
Land Freight Forwarding	412	91.2	87.9	113.8	107.2

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