



# **Information Paper Series**

## **Rebasing of Cargo Handling Price Index and Warehousing & Storage Price Index (Base Year 2021)**

information paper  
on  
prices statistics

**REBASING OF  
CARGO HANDLING PRICE INDEX (CHPI) AND  
WAREHOUSING & STORAGE PRICE INDEX (WSPI)  
(Base Year 2021)**

Singapore Department of Statistics

June 2022

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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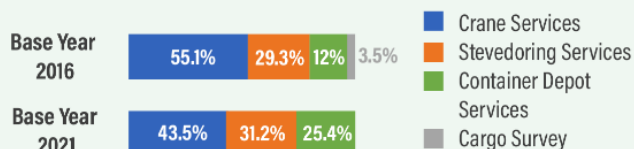
# REBASING OF CARGO HANDLING PRICE INDEX (CHPI)

The CHPI measures changes in the prices of services provided by Singapore-registered cargo handling companies.



## Weights Distribution

Crane Services continued to contribute the largest weight share in the 2021-based CHPI.



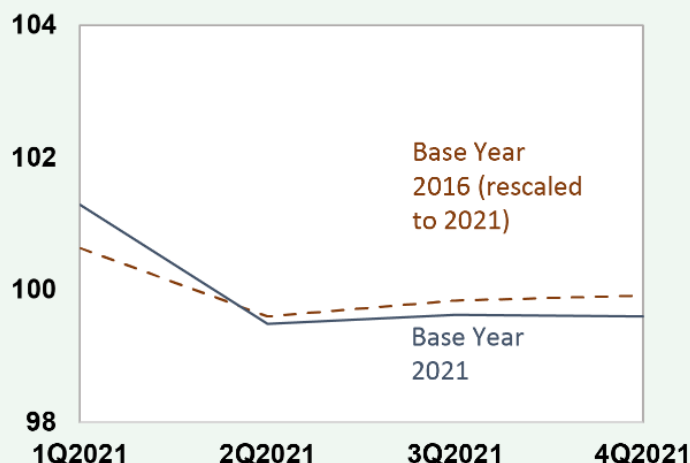
## Sample of Companies and Products

The reduction in number of companies and service products was due mainly to the exclusion of Cargo Survey companies and the change in coverage for Container Depot Services.



## Price Trend

The overall CHPI for both base years generally moved in tandem with slight differences in magnitude, following closely the price movements of the higher weighted Crane Services sub-index.



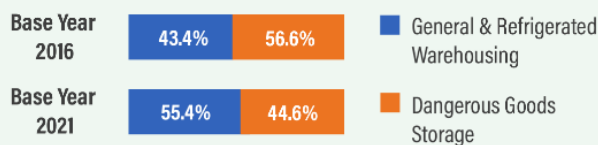
# REBASING OF WAREHOUSING & STORAGE PRICE INDEX (WSPI)

The WSPI measures changes in the prices of services provided by Singapore-registered warehousing and storage companies.



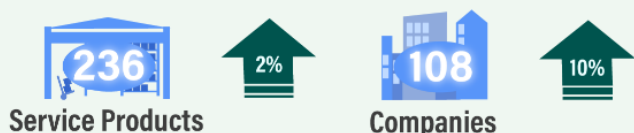
## Weights Distribution

In the 2021-based WSPI, General & Refrigerated Warehousing displaced Dangerous Goods Storage as the more important weight contributor, in contrast to the 2016-based WSPI.



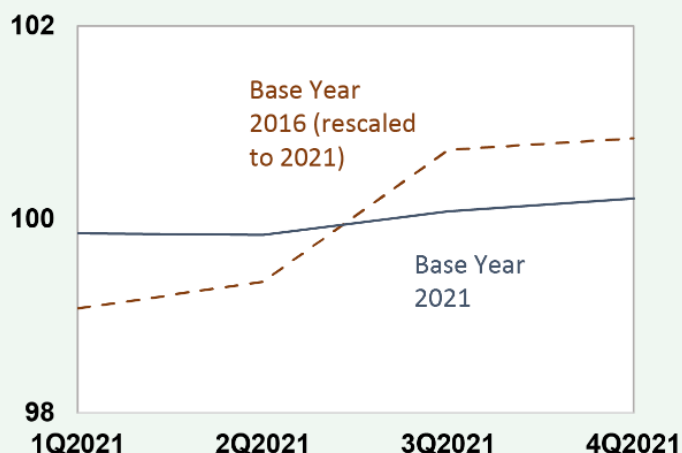
## Sample of Companies and Products

Compared to the 2016-based WSPI, the updated sampling frame for the 2021-based WSPI reflected slight increases in the number of companies and service products.



## Price Trend

The 2021-based and 2016-based WSPI generally moved in the same direction but with slight differences in magnitude, mainly attributed to the changes in the composition of companies and products in the Dangerous Goods Storage sub-index.



# **REBASING OF CARGO HANDLING PRICE INDEX (CHPI) AND WAREHOUSING & STORAGE PRICE INDEX (WSPI) (Base Year 2021)**

## **I INTRODUCTION**

The Department of Statistics (DOS) has rebased both the Cargo Handling Price Index (CHPI) and Warehousing & Storage Price Index (WSPI) from the base year of 2016 to 2021. 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 Both the CHPI and WSPI are services producer price indices that measure changes in the prices of services provided by Singapore-registered cargo handling companies and warehousing & storage companies respectively. The indices are used to monitor price trends and as inputs to estimate the real growth of the respective industries.

3 This information paper provides details on the 2021-based CHPI and WSPI, and includes key changes from the rebasing, such as the weight comparison and price movement between the new 2021-based and the 2016-based price series.

## II DESCRIPTION OF 2021-BASED CHPI AND WSPI

### Index Coverage and Structure

4 The CHPI and WSPI cover local companies classified under the following Singapore Standard Industrial Classification (SSIC) 2020<sup>1</sup> codes:

CHPI	WSPI
<ul style="list-style-type: none"><li>• 52241 – Container Depot Services (e.g., empty container storage, cleaning and repair of containers)</li><li>• 52242 – Crane services, excl. construction (e.g., lorry crane services with operator)</li><li>• 52243 – Stevedoring services (e.g., loading of containers, bulk cargo)</li></ul>	<ul style="list-style-type: none"><li>• 52101 – General Warehousing (e.g., storage of general merchandise, base metals etc)</li><li>• 52102 – Refrigerated Warehousing (e.g., blast freezing, tempering and modified atmosphere storage services)</li><li>• 52103 – Dangerous Goods Storage (e.g., storage of explosives, flammable materials)</li><li>• 52109 – Specialised storage n.e.c (e.g., document storage, wine storage)</li></ul>

5 Activities involving the operation of own terminal facilities (i.e., harbours and piers), cargo surveying services or handling services consequential to bundled warehousing and freight forwarding services are excluded in the CHPI. On the other hand, while the primary activity in the warehousing & storage industry is the operation of warehousing and storage facilities for all kinds of goods such as general merchandise, refrigerated products and dangerous goods, activities such as parking facilities for motor vehicles, operation of self-storage facilities and renting of vacant space are excluded in the WSPI.

6 The index structures for CHPI and WSPI are presented in Figure 1. Within the CHPI, there are three sub-indices, namely Container Depot Services<sup>2</sup>, Crane Services and Stevedoring Services. The WSPI is made up of two sub-indices, namely General & Refrigerated Warehousing as well as Dangerous Goods Storage<sup>3</sup>. Within these sub-indices are the prices of individual service products.

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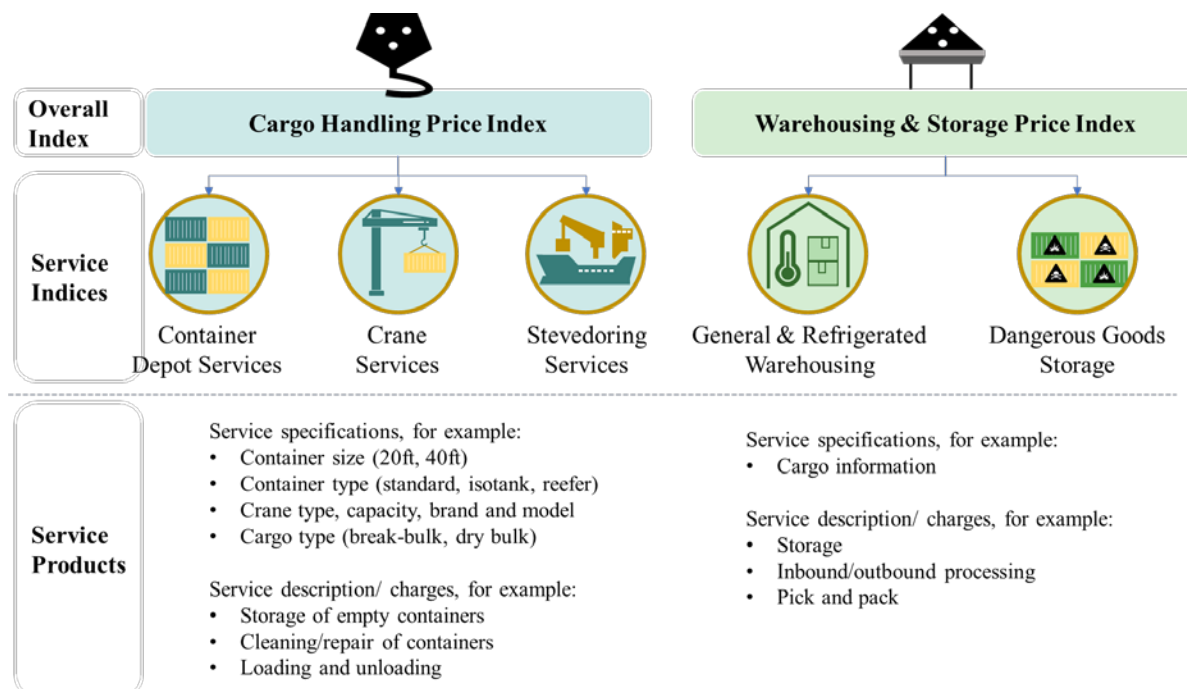
<sup>1</sup> The SSIC 2020 publication is available at: <https://go.gov.sg/ssicreport>

<sup>2</sup> Previously termed as Container Services in the 2016-based CHPI. The sub-index was renamed with slight changes in coverage in the 2021-based CHPI to align with the SSIC 2020.

<sup>3</sup> Previously termed as General Warehousing & Cold Storage and Class Cargo Storage in the 2016-based WSPI. The sub-indices were renamed in the 2021-based WSPI to align with the SSIC 2020.



**Figure 1: Index Structure**



## Index Computation

7 Both the CHPI and WSPI adopt the weighted arithmetic mean (AM) Modified Laspeyres formula where the weight reference period of 2019 preceded the price reference period of 2021. Price relatives of the service products, together with their respective weights, are aggregated to form the service indices, followed by the overall index. More details on the index computation are available in Appendix I.

## Weights

8 The weights of the service indices are derived from the 2019 operating revenue of the cargo handling as well as warehousing & storage companies from DOS's surveys<sup>4</sup> and supplemented with administrative data. Within a service index, the weights are further distributed to the service products based on the companies' revenue contribution. If a company provides more than one service product, its assigned weight is distributed evenly.

<sup>4</sup> Source: Department of Statistics' Annual Survey of Services 2019 and Survey of Logistics & Supply Chain Services Industry 2019

## **Data Collection**

9 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 have been selected for pricing. In cases where actual transacted prices are not available, the revenue and volume of the relevant services are collected to derive the unit value prices.

10 Monthly prices for both the CHPI and WSPI are obtained from companies through price surveys conducted on a quarterly basis. The prices captured reflect the amount received by a producer, exclusive of any taxes. Companies responding to the surveys are required to replace the service products which have been discontinued.

11 A total of 35 and 108 companies were selected for pricing in the 2021-based CHPI and WSPI surveys respectively, covering 86 cargo handling service products and 236 warehousing & storage service products.

## **III KEY CHANGES IN THE 2021-BASED CHPI AND WSPI**

### **Improved Coverage of Services**

12 In line with SSIC 2020, cargo surveying services which were classified under SSIC code 52291, was excluded from the CHPI. In addition, the scope for container-related services was refined to include only companies whose main business is the operations of container depot(s). Companies that expanded to specialise in other services or switched their service offerings were excluded. The detailed scope and coverage of activities under the service indices for CHPI are indicated in Appendix II.

### **New Sample of Companies and Service Products**

13 During the rebasing, the sampling frames for both indices were 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 adequately.

14 Subsequently, the in-scope products were reviewed along with the existing products from the 2016-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 for both indices were representative of the current activities and market share of both the cargo handling as well as warehousing & storage industries.

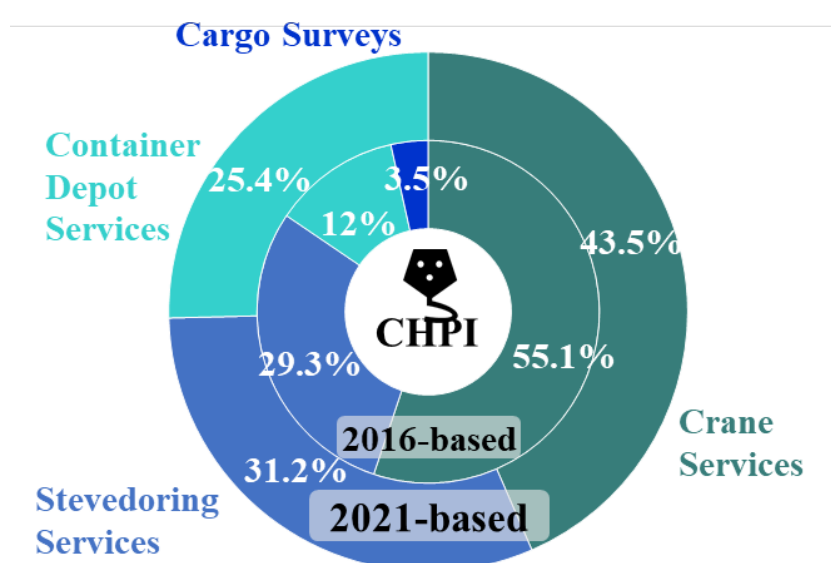
15 For the CHPI, the total number of companies and service products selected was slightly less than half that of the 2016-based index, due mainly to the exclusion of cargo surveying companies and the refined coverage for container depot services. For the WSPI, the total number of companies and service products increased marginally from that of the 2016-based index to better track price changes.

### Comparison of Weighting Patterns

16 Figures 2 and 3 compare the weights of the 2021-based and 2016-based CHPI and WSPI respectively.

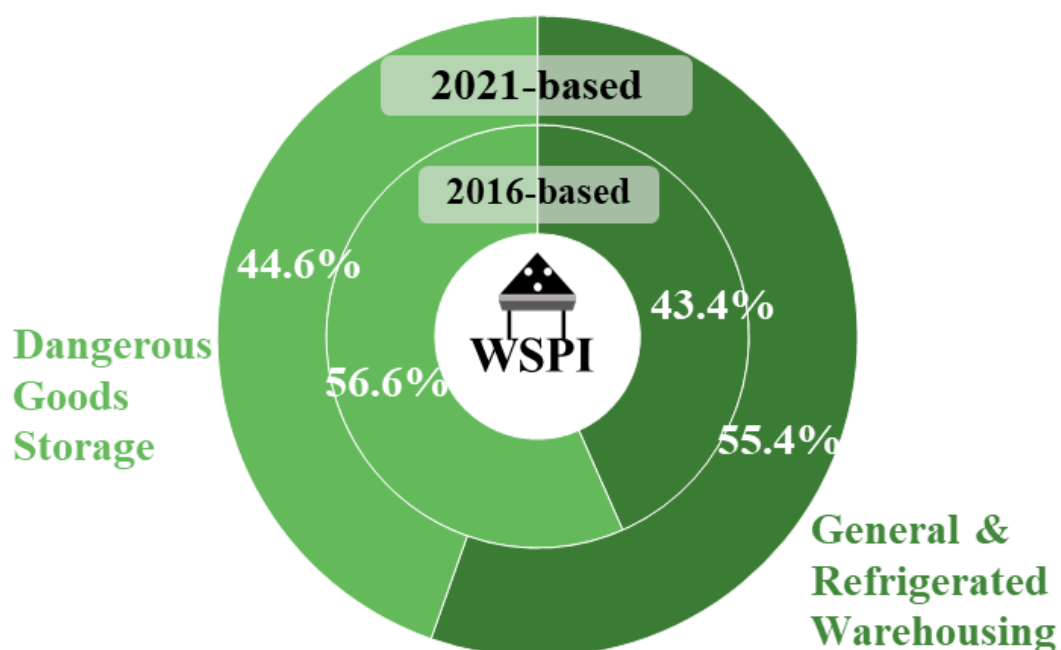
17 In the 2021-based CHPI, Crane Services continued to be the largest weight contributor at 43.5 per cent, although its weight share was reduced from 55.1 per cent in the 2016-based CHPI. This is followed by Stevedoring Services (31.2 per cent) and Container Depot Services (25.4 per cent). The weight share of Stevedoring Services was relatively similar across both base years, increasing slightly from 29.3 per cent to 31.2 percent. Although Container Depot Services remained the lowest weight contributor (after excluding Cargo Surveys) across both base years, its weight share had more than doubled from 12.0 per cent to 25.4 per cent.

**Figure 2: Weights of 2021-based and 2016-based CHPI**



18 In the 2021-based WSPI, General & Refrigerated Warehousing displaced Dangerous Goods Storage as the more important weight contributor, in contrast to the 2016-based WSPI. The weight share for General & Refrigerated Warehousing increased from 43.4 per cent to 55.4 per cent, accounting for more than half of the total weights in the 2021-based WSPI. On the other hand, the weight contribution for Dangerous Goods Storage declined to 44.6 per cent in the 2021-based WSPI from 56.6 per cent five years ago. The shift in weights share could be partly attributed to the increase in the number of companies providing general & refrigerated warehousing services and the demand for such services, given the industry's lower barriers to entry.

**Figure 3: Weights of 2021-based and 2016-based WSPI**

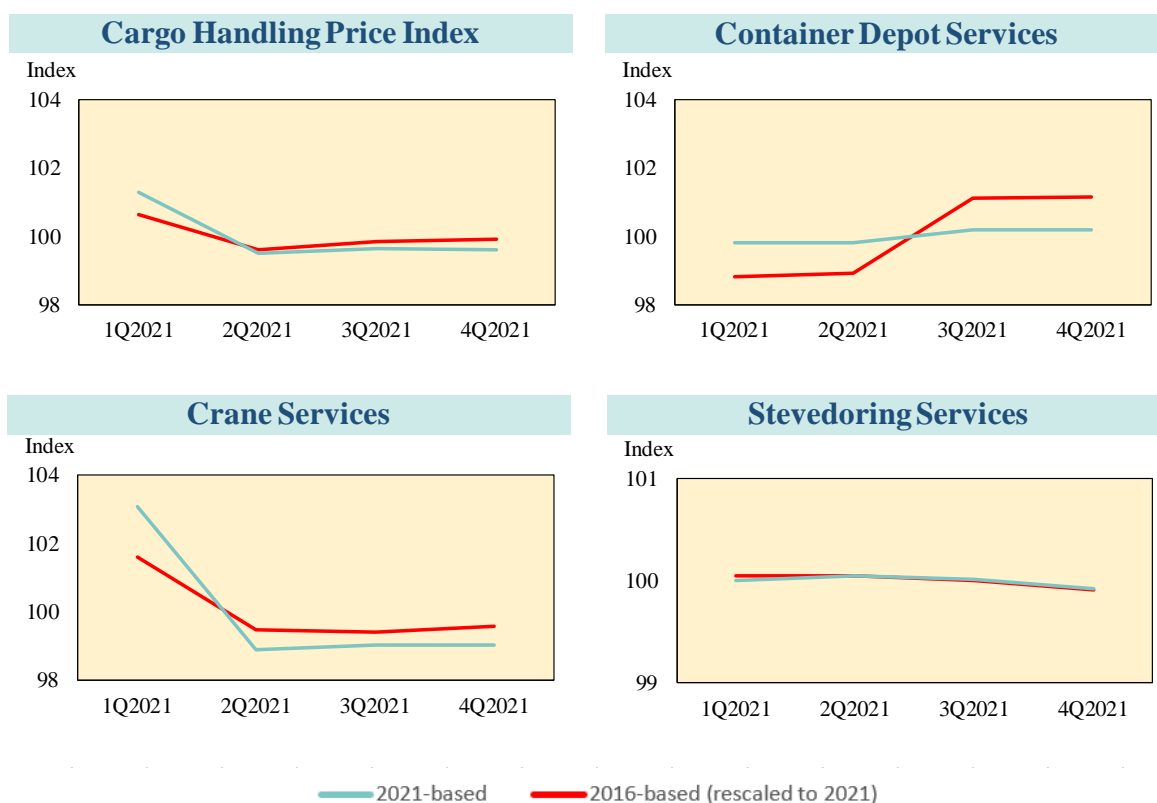


## Comparison of Price Trends

19 Figures 4 and 5 compare the price trends of the 2021-based and 2016-based CHPI and WSPI respectively over the four quarters in 2021, which is the overlapped period between the two base years. More information on the weights and indices of the 2021-based CHPI and WSPI are available in Appendix III.

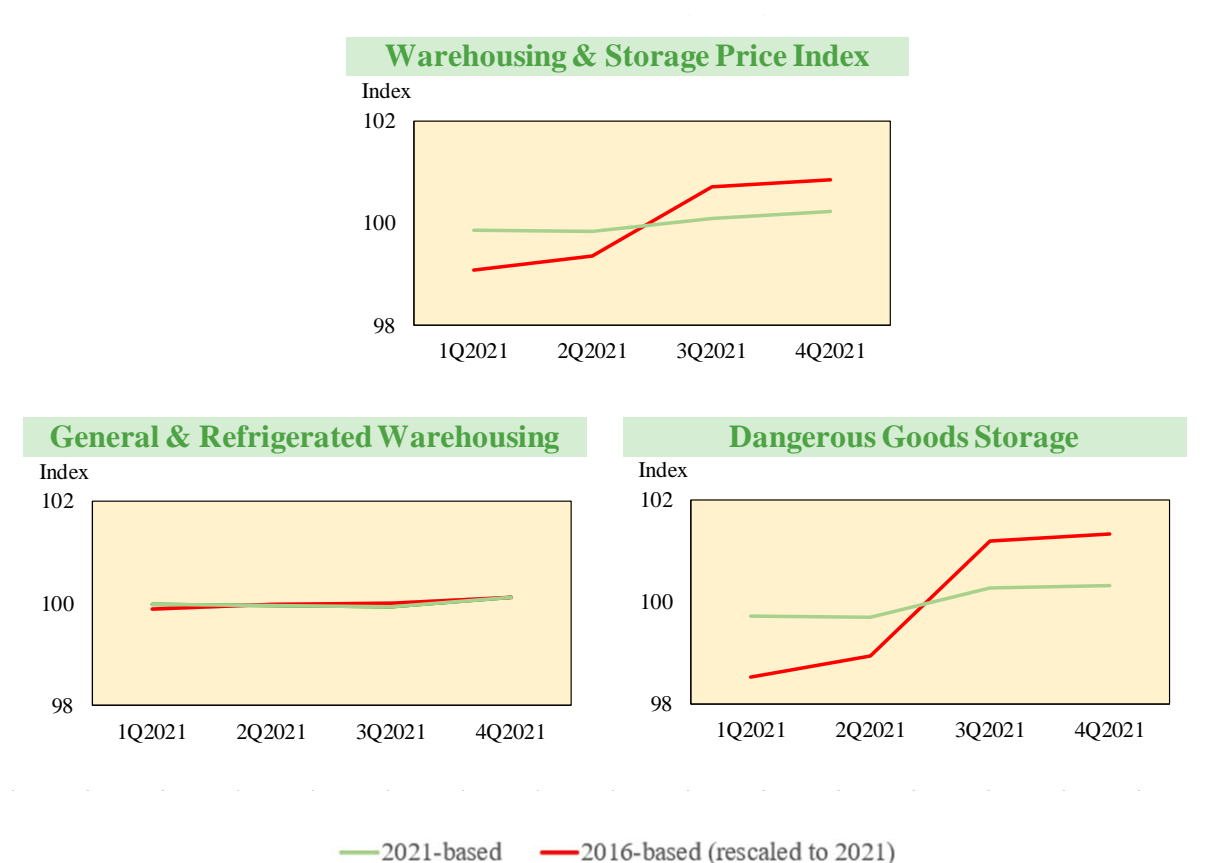
20 The price trends of the overall CHPI for both base years generally moved in tandem which closely mirrored the price trend of Crane Services due to its relatively higher weight share to overall CHPI in both base years. The 2016-based Container Depot Services sub-index moved in the same direction as the 2021-based series, although with higher increase observed in 3Q2021. This was mainly a result of changes in the composition of companies and service product mix. On the other hand, the price index for Stevedoring Services was generally stable, due partly to the presence of price regulations for certain services in the sector.

**Figure 4: 2021-based and 2016-based CHPI for First to Fourth Quarter 2021**



21 The 2021-based and 2016-based WSPI generally moved in the same direction but with slight differences in magnitude. This was attributed to the moderation in the price movement of the Dangerous Goods Storage sub-index by the relatively stable General & Refrigerated Warehousing sub-index across both base years. The change in the Dangerous Goods Storage price movements was mainly due to changes in the composition of companies and service product mix.

**Figure 5: 2021-based and 2016-based (rescaled to 2021) WSPI for First to Fourth Quarter 2021**



## IV LINKING OF HISTORICAL SERIES

22 To facilitate comparison of price changes over time, the price indices prior to 2021 are linked to the new series by re-scaling them to the new base year 2021 level. The linking is obtained through the following mathematical procedure:

$$\text{Linked (2021-based) Index} = \text{2016-based Index} \times \text{Linked Coefficient}$$

where the Linked Coefficient is the ratio of the annual 2021-based index in 2021 to the annual 2016-based index in 2021.

## V DISSEMINATION OF DATA

23 Data on the overall CHPI and WSPI are released in the quarterly Services Producer Price Indices (SPPI) report, on the 25<sup>th</sup> day of the 3<sup>rd</sup> 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  
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# **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 CHPI and WSPI

Both CHPI and WSPI use the weighted arithmetic mean Modified Laspeyres formula where the weight reference period of 2019 preceded the price reference period of 2021.

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 Service Type 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  $k^{th}$  service type  
 $w_j$  = 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: Detailed Scope and Coverage of Activities for CHPI**

### **Container Depot Services**

Operation of container depots and/or container yards. Includes services such as empty container storage, inspection, modification, cleaning and repair of containers as well as inland trucking of empty containers.

Excludes:

- Port operators
- Cargo surveying
- Crane services
- Stevedoring services
- Container haulage by road
- Operation of terminal facilities
- Rental of containers

### **Crane Services**

Provision of cranes services with operator for all industries except construction

Excludes:

- Crane services with operators for construction industry (e.g., tower crane)
- Container depot services
- Stevedoring services
- Rental of cranes without operators
- Rental of tower crane without operators
- Operations of terminal facilities
- Cargo surveying

### **Stevedoring Services**

Provision of stevedoring services (ie. Loading and unloading of freight on and off shore while they are in port)

Excludes:

- Operations of terminal facilities
- Cargo surveying
- Container depot services
- Crane services

### APPENDIX III: Weights and Sub-indices of 2021-based CHPI and WSPI

Price Index	WEIGHTS	2021			
		1Q	2Q	3Q	4Q
<b>CARGO HANDLING</b>	<b>10,000</b>	<b>101.3</b>	<b>99.5</b>	<b>99.6</b>	<b>99.6</b>
CONTAINER DEPOT SERVICES	2,536	99.8	99.8	100.2	100.2
CRANE SERVICES	4,347	103.1	98.9	99.0	99.0
STEVEDORING SERVICES	3,117	100.0	100.1	100.0	99.9
<b>WAREHOUSING &amp; STORAGE</b>	<b>10,000</b>	<b>99.9</b>	<b>99.8</b>	<b>100.1</b>	<b>100.2</b>
GENERAL & REFRIGERATED WAREHOUSING	5,538	100.0	100.0	99.9	100.1
DANGEROUS GOODS STORAGE	4,462	99.7	99.7	100.3	100.3

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