

Embargoed until 10:45am – 10 March 2010

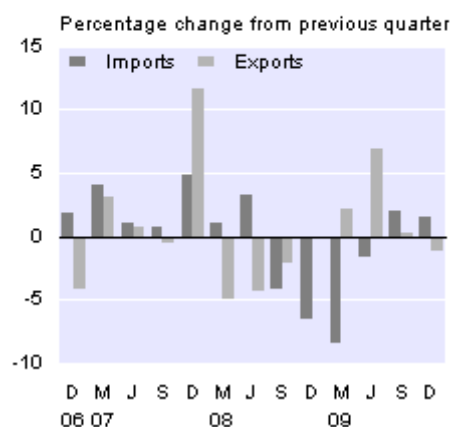
## Overseas Trade Indexes (Volumes): December 2009 quarter (provisional)

### Highlights

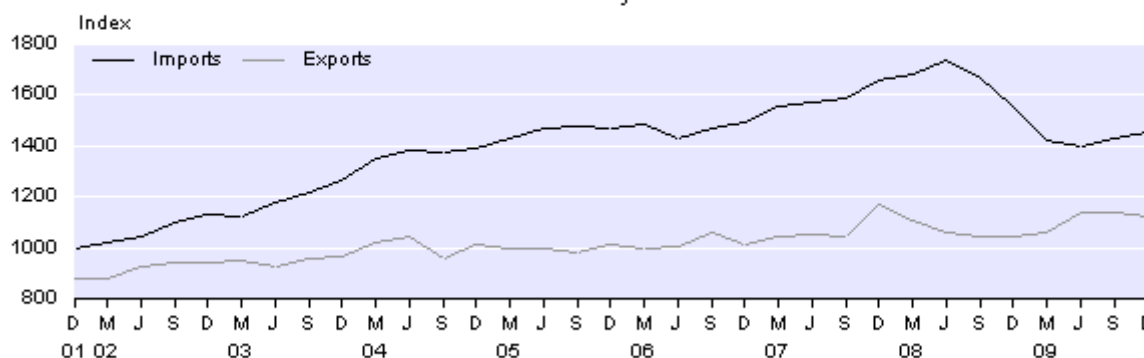
All references are to seasonally adjusted series and compared with the September 2009 quarter unless otherwise stated.

- Merchandise export volumes fell 1.2 percent.
- Petroleum and petroleum products (down 18.3 percent, largely due to crude oil), and dairy products (down 4.0 percent), were the main contributors to the fall in total export volumes.
- Partly offsetting the fall in export volumes was a rise in meat (up 12.3 percent).
- Merchandise import volumes rose 1.6 percent.
- Capital goods (up 8.2 percent) and passenger motor cars (up 32.2 percent) contributed the most to the overall rise in import volumes.

**Volume Indexes**  
Seasonally adjusted<sup>(1)</sup>  
Quarterly



**Merchandise Export and Import Volume Indexes**  
Seasonally adjusted<sup>(1)</sup>  
Quarterly



(1) Calculated from unadjusted series based at the June 2002 quarter (=1000).

Geoff Bascand  
Government Statistician

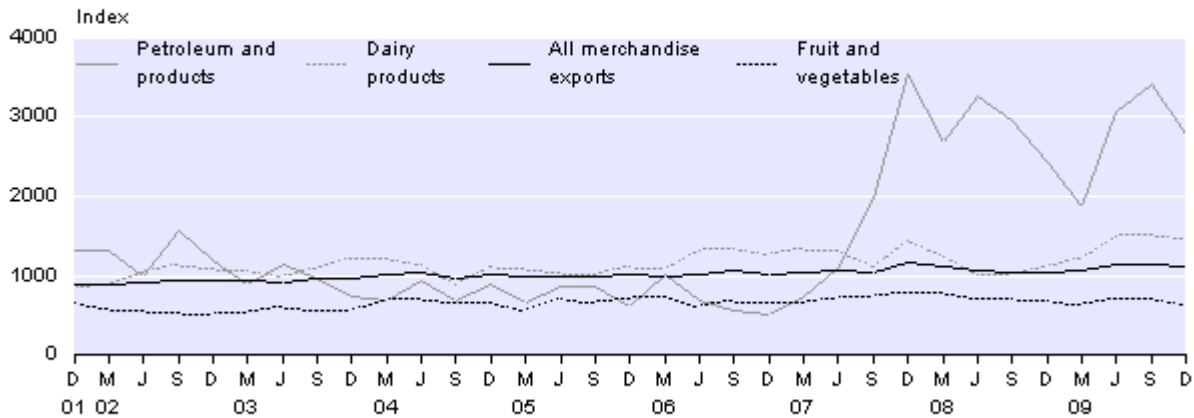
10 March 2010  
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# Commentary

## Merchandise export volumes

Seasonally adjusted export volumes decreased 1.2 percent in the December 2009 quarter, the first decrease since the September 2008 quarter. Petroleum and petroleum products, dairy products, and fruit and vegetables (fresh or prepared) were the major contributors to the decrease in volumes in the December 2009 quarter. Meat volumes increased in the quarter, partly offsetting the overall volume decrease.

**Selected Merchandise Export Volume Indexes**  
*Seasonally adjusted <sup>(1)</sup>*  
Quarterly



(1) Calculated from unadjusted series based at the June 2002 quarter (=1000).

Petroleum and petroleum products, which decreased 18.3 percent in the December 2009 quarter, contributed the most to the overall fall in export volumes. The decrease was largely due to a decrease in crude oil export volumes. Petroleum and petroleum products are not seasonally adjusted.

The next largest contributor to the overall decrease was dairy product volumes (down 4.0 percent). This decrease follows four consecutive quarterly increases. This decrease was mainly due to a 13.3 percent fall in the volume of milk powder exported for the December 2009 quarter. Also contributing to this decrease was a 15.8 percent fall in butter volumes. Exported cheese volumes partly offset these decreases, with an increase of 46.1 percent for the quarter. Cheese sub-category is not seasonally adjusted.

Fruit and vegetables (fresh or prepared) also contributed significantly to the decrease in export volumes, declining 14.9 percent in the December 2009 quarter. This decrease was the result of a decline in volumes for fresh kiwifruit, fresh or prepared vegetables, and fresh apples. The kiwifruit sub-index is not seasonally adjusted.

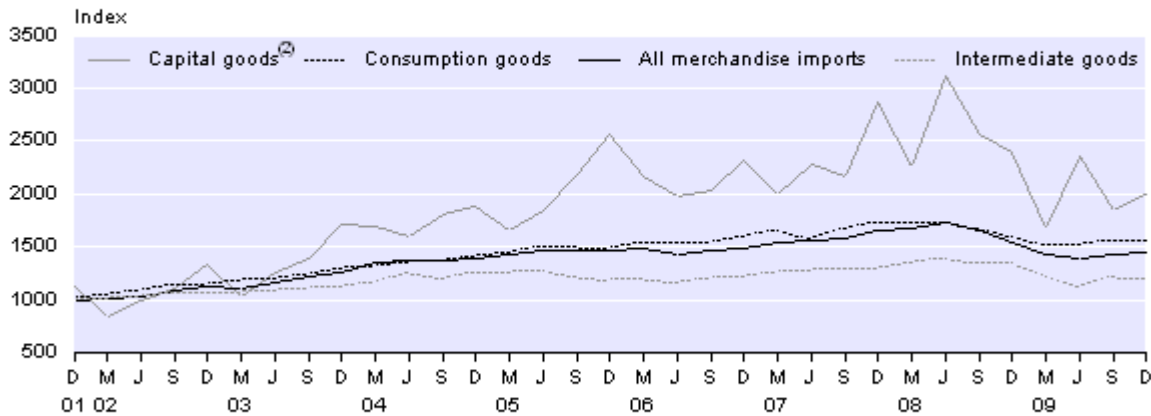
Partly offsetting the overall decrease in export volumes was an increase in meat volumes (up 12.3 percent) in the December 2009 quarter. All the meat sub-indexes increased in the December 2009 quarter, with lamb, hogget, and mutton (up 18.6 percent) contributing the most to the overall increase in meat. This quarter's increase in meat volumes reverses the decrease shown in the previous quarter, with the level now the same as the June 2009 quarter.

## Merchandise import volumes

Seasonally adjusted import volumes rose 1.6 percent in the December 2009 quarter, the second consecutive rise, following a 2.0 percent rise in the September 2009 quarter. Capital goods and passenger motor cars were the main contributors to the rise. Intermediate goods was the only major broad economic category to record a decrease in the current quarter.

### Selected Merchandise Import Volume Indexes

Seasonally adjusted <sup>(1)</sup>  
Quarterly



(1) Calculated from unadjusted series based at the June 2002 quarter (=1000).

(2) This series is not seasonally adjusted because it does not have stable seasonality.

Capital goods rose 8.2 percent in the December 2009 quarter and were the largest contributor to the overall rise in import volumes. The major contributor to the increase was capital machinery and plant (not transport equipment), which rose 4.3 percent, led by mobile phones. The volatile capital transport equipment sub-index fell 22.6 percent due to fewer imports of aircraft.

Passenger motor car volumes rose 32.2 percent in the December 2009 quarter. This is the third consecutive quarterly increase, and volumes are now more than double the low of the March 2009 quarter, but are still 21.6 percent lower than the peak in the December 2007 quarter. Used petrol cars with cylinder capacities between 1500 and 3000cc led the increase in the latest quarter.

Motor spirit volumes rose 37.9 percent in the December 2009 quarter, following a fall of 16.6 percent in the September 2009 quarter. Regular petrol was the main contributor to the rise in the latest quarter. Petroleum imports shipments can be irregular, which may give rise to large fluctuations in quantities and values.

Consumption goods volumes rose 1.1 percent in the December 2009 quarter, with increases recorded in all but the primary food and beverages for household sub-category. Although this is the third consecutive quarterly increase for consumption goods, they are still 9.7 percent lower than the high in June 2008 quarter. Durable goods (up 5.4 percent) were the main contributor to the rise in consumption goods.

Intermediate goods volumes, which fell 1.3 percent in the December 2009 quarter, were the only major broad economic category to record a decrease. Parts and accessories of capital and transport equipment (down 15.3 percent) was the largest contributor, mainly due to a fall in aircraft parts imported. Processed fuels and lubricants (down 19.2 percent) was the next largest contributor due to a decline in partly-refined petroleum. Partly offsetting the overall decrease in

intermediate goods were processed industrial supplies (up 8.0 percent) and primary fuels and lubricants (up 13.2 percent).

## Updates to previously published data

The overseas trade indexes are provisional for one quarter to allow for the receipt and editing of late and amended trade documentation. The following table shows updates to unadjusted indexes and values.

<b>September 2009 Quarter Overseas Trade Indexes (unadjusted)</b>				
	Volumes		Values	
	Exports	Imports	Exports	Imports
Infoshare series	OTVQ.SEA2E91	OTVQ.SIA2I91	OTVQ.SEA3E91	OTVQ.SIA3I91
	Index number		\$(million)	
	<b>Published 10 December 2009</b>			
Provisional	1047	1467	8,290	9,689
	<b>Published 10 March 2010</b>			
Final	1049	1466	8,285	9,683

The import and export merchandise series in this release are calculated from the same data as used in the Overseas Merchandise Trade: January 2010 monthly release published on 26 February 2010. Updates published after this date will be included in subsequent overseas trade index (volumes) releases.

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## Next releases ...

*Overseas Trade Indexes (Prices): March 2010 quarter (provisional)*  
and  
*Overseas Trade Indexes (Volumes): March 2010 quarter (provisional)*  
will both be released on 10 June 2010.

## Technical notes

### Definitions

merchandise trade	Exports or imports of goods which increase or decrease the stock of material resources in New Zealand. Includes goods leased for a year or more.
re-exports	Exported goods which were earlier imported into New Zealand and which include less than 50 percent New Zealand content by value.
capital goods	Produced assets used repeatedly or continuously for longer than one year in industrial production processes. Examples are machinery, trucks, and aircraft.
intermediate goods	Goods used up or transformed in industrial production processes.
consumption goods	Goods used (without further transformation in industrial production processes) by households, government, or non-profit institutions serving households. <ul style="list-style-type: none"><li>• Durables have an expected usage of three years or more, eg appliances, furniture.</li><li>• Semi-durables have an expected usage of one or two years, eg linen, shoes, toys.</li><li>• Non-durables have an expected usage of less than a year, eg soap, yarns, books.</li></ul>
fob	Free on board (the value of goods at New Zealand ports before export).
vfd	Value for duty (the value of imports before insurance and freight costs are added).
cif	Cost of goods, including insurance and freight to New Zealand.

### What the volume indexes measure

These indexes are numerical series that indicate how a set of volumes has changed between time periods. Each index measures changes in the level of volumes rather than the actual quantities. It is the change between two index numbers that is important. An individual index number has no meaning.

The overseas merchandise trade volume indexes measure changes in the levels of volumes of exports and imports of merchandise trade to and from New Zealand, on both a quarterly and an annual basis.

Price and volume measurement relates to the decomposition of transaction values in current prices into their price and volume components. In principle, the price components should include changes arising solely from price changes, while all other changes (relating to quantity, quality, and compositional changes) should be included in the volume components. The aim is to analyse which changes in aggregates are due to price movements, and which to volume changes. This is also referred to as 'constant price' measurement, implying the analysis of economic transactions valued at certain fixed prices.

## **Time of recording**

The exports and imports merchandise series in this release are calculated from the same data as used in the Overseas Merchandise Trade: January 2010 monthly release published on 26 February 2010.

Overseas merchandise trade statistics are provisional for the three most recent months, which means the statistics are subject to amendment in the three months following initial publication.

## **Source of information – merchandise trade**

Value and quantity data used for calculating the merchandise price indexes are derived from Statistics New Zealand's overseas merchandise trade statistics, which are in turn processed from export and import entry documents lodged with the New Zealand Customs Services (NZCS) by exporters, importers and their agents.

Data is classified using the Harmonised System (HS) classification for processing the NZCS entries and publishing overseas trade statistics. There are over 18,600 10-digit items in the HS classification.

HS 10-digit item-by-country unit values are derived from Statistics NZ's overseas trade statistics. Quarterly item-by-country unit values are calculated by dividing the total value of an HS item exported or imported during the quarter by the total quantity of the item exported or imported during the quarter. These unit values are then extensively edited, with outliers removed before the values are used in trade index calculations.

For basic, homogeneous commodities not subject to ongoing quality change, unit values provide suitable indicators of price change. However, unit values do not provide good indicators of price change for heterogeneous goods such as elaborately transformed goods, technically complex goods or goods subject to rapid quality change. Unit values have been selectively supplemented with prices collected directly from importers and exporters, and by international price indexes.

### **Directly surveyed prices**

Prices are collected directly from importers and exporters for selected goods that are regularly imported or exported in the same form to the same or similar specification. These items may not have a specified unit of quantity or may fall under an HS code with a heterogeneous description. Directly surveyed prices are collected from importers and exporters via the existing commodity price survey used for the producers price index.

Directly surveyed prices were first collected in the June 2002 quarter, so they contribute to movements for the September 2002 and subsequent quarters.

The process of adding to the pool of directly surveyed prices is ongoing and is part of the ongoing overseas merchandise trade index quality assurance programme.

### **International price indexes**

International price indexes are used selectively as a proxy to measure price change faced by importers for goods that are irregularly imported (eg public transport equipment) or imported to one-off specifications (eg telephonic and telegraphic apparatus), and for technically complex goods subject to rapid quality change (eg computer equipment).

The following table lists the areas of the HS classification where international price indexes have been used, and the type of index selected as a proxy for change in prices faced by New Zealand importers. Most use has been made of the US producer price index (PPI), with some use of the US HS export price index (EPI). In both cases, monthly international price index numbers have been converted to quarterly index numbers and then exchange-rate adjusted using the NZCS rates of exchange.

The table lists the main goods for which international price indexes are currently used in the import indexes.

### International price index

HS chapter	Goods	International price index
84	Mechanical machinery	
	Printing machinery	US producer price index
	Computer equipment	US producer price index
	Computer and office equipment parts and accessories	US producer price index
85	Non-electrical machinery	
	Telephonic and telegraphic apparatus	US HS export price index
	Cellular phones	US producer price index
	Radio-telephonic parts	US HS export price index
86	Railway equipment	US producer price index
87	Vehicles other than railway equipment	Minor use of US HS export price index
88	Aircraft	US producer price index
89	Ships	US producer price index

The US PPI indexes used for computer equipment, parts and accessories are compiled using hedonic quality adjustment techniques designed to remove the effect of quality improvements and to isolate pure price change. The US PPI indexes for computer equipment, parts and accessories used in the imports price index are lagged one quarter, to reflect a potential delay from the time new technology is available domestically in the US to the time it is imported into New Zealand. The US computer indexes used in the merchandise imports price index and the one-quarter lag are both broadly in line with the approach that has been used for some time for quarterly constant price imports in GDP.

### Adjustment to unit values for imported cars

The calculation of price movements for the main HS 10-digit item codes for cars differs from the unit value calculation used for other items in the overseas trade indexes. The used car codes have previous June quarter and current quarter unit values calculated for each year of manufacture and the new car codes have unit values calculated for each of the main makes of car recorded under the codes. Movements in these unit values are weighted by the value of cars imported for each year of manufacture and make of car, respectively, to give Paasche, Laspeyres, and Fisher indexes at the HS 10-digit item-by-country level.

The method was introduced in the June 2002 quarter to reduce the effect on the age distribution of used car imports of new frontal impact standards, which reduced the number of pre-1996 used cars being imported.

The dollar value of the car items treated in this way accounted for 8.9 percent of the total dollar value of imports in the year to June 2003.

## Imputation

Explicitly priced items are defined as those displaying reliable unit-value behaviour, those for which prices are collected directly from importers or exporters, and those for which international price indexes are used as price indicators. Price movements of items that are more reliable indicators of similar type are imputed to the remaining items. As Fisher Ideal indexes are calculated at the country grouping level (for the European Union (EU) and the 'Rest of World' (ZZ)), and the HS 10-digit item level for all countries, imputation occurs at up to four levels, as shown in the following table.

### Imputation Procedures

Type of index	First level	Second level	Third level	Fourth level
HS10 country grouping (EU, ZZ)	Remainder of index			
HS10 item	HS10 country grouping (EU, ZZ)	Remainder of index		
HS2 chapter	HS10 country grouping (EU, ZZ)	HS10 item	Remainder of index	
Standard or broad economic category (BEC) index	HS10 country grouping (EU, ZZ)	HS10 item	HS chapter or part chapter	Remainder of index

'Base annual imputation rates' represent the dollar value in the previous June year of the index's imputed items as a percentage of the index's total dollar value for the previous June year. For the December 2009 quarter, there was a base annual imputation rate of 21.9 percent for exports and 37.8 percent for imports.

## Basis of valuation

The merchandise export indexes are calculated using New Zealand dollar free on board (fob) values. Export fob values represent actual or estimated transaction prices of goods, including costs incurred in delivering goods on board ships and aircraft at New Zealand ports of export. Values given in foreign currencies are converted by Statistics NZ into New Zealand dollars using weekly exchange rates when the statistics are compiled. This means that any hedging will generally not be reflected in the merchandise import and export price indexes.

The merchandise import indexes use New Zealand dollar value for duty (vfd) values. Prior to the September 2003 quarter, the merchandise import indexes used cost, insurance, and freight (cif) values, which represented the value of goods plus the insurance and freight costs associated with bringing the goods to New Zealand ports of entry. Import vfd values represent the value of goods excluding the cost of freight and insurance. The vfd valuation for imports is recommended in the System of National Accounts 1993 (SNA 93) and is used in the New Zealand national accounts.

Vfd values are converted from foreign currencies when import documents are processed by the NZCS. The NZCS rates of exchange are prepared 11 days prior to the effective date and are then applied for two weeks. Therefore, the exchange rate used in the imports prices will be 11 to 25 days old when it is used in imports documentation. This means that the NZCS exchange rate, and therefore the imports prices, will be slower to show the impact of changes in the exchange rate than the Reserve Bank rates and the export prices.

Merchandise import price and volume indexes are not directly affected by changes in the rates of duty payable on imported goods, as cif values do not include duty. Therefore, the phased reduction in tariffs that has occurred in recent years has not had a direct downward influence on the import price indexes.

## **Index coverage**

The merchandise trade indexes include all commodities classified as merchandise trade, although the export indexes exclude re-exports, bunkering, ships' stores, and passengers' effects.

## **Index type and calculation – merchandise trade**

The merchandise index series are of the chain-linked Fisher Ideal type. The calculation of a Fisher Ideal index involves first calculating two indexes. One, the Laspeyres, is base-weighted and uses expenditures from an earlier period to weight price or volume movements. The other, the Paasche, is current-weighted and uses expenditures from a current period to weight price or volume movements. The Laspeyres and Paasche indexes are then averaged by calculating the geometric mean (ie the square root) of the two indexes to give the Fisher Ideal index. In the majority of situations covered by index numbers, price and quantity changes are negatively correlated. In such cases, Laspeyres indexes tend systematically to record greater increases than Paasche indexes, with the gap between them tending to widen over time.

The merchandise index series have a June quarter price reference period, and are linked to the index for the June quarter of each year. There are annual expenditure weight reference periods for both the Laspeyres (previous June year) and Paasche (year to each quarter) components of the index.

The price index methodology involves:

1. calculating Laspeyres and Paasche price indexes for the current quarter on the previous June quarter
2. calculating Fisher Ideal price indexes for the current quarter on the previous June quarter (as the geometric mean, or square root, of the Laspeyres and Paasche price indexes calculated in step 1)
3. linking the Fisher Ideal price index for the current quarter (calculated in step 2) to the index for the previous June quarter, to provide a continuous quarterly time series.

The Laspeyres and Paasche volume indexes for the current quarter based on the previous June quarter are calculated by deflating the change in dollar value from the previous June quarter to the current quarter by the Paasche and Laspeyres price indexes, respectively (calculated in step 1 above). Steps 2 and 3 are repeated as above, using volume (rather than price) indexes.

The annual price indexes are calculated as volume index-weighted averages of the four component quarter price indexes, and the annual volume indexes as the simple average of the four component quarterly volume indexes.

Expenditure weights are assigned at the HS 10-digit item-by-country level. Item and index weights are not fixed. They vary from quarter to quarter and from year to year as the relative values of the goods that New Zealand exports and imports change.

## **Expression base**

The merchandise trade index series are expressed on base: quarter ended June 2002 (=1000).

## **Trend estimates – merchandise trade**

Time series can be split into trend, seasonal, and irregular components. Seasonal adjustment removes the seasonal component, while trend estimation removes the seasonal and irregular components. Trend estimates reveal the underlying direction of movement in a series and are used to identify turning points.

The merchandise terms of trade trend series is calculated using X-12-ARIMA, which adjusts for outlying values and uses a centred moving average. The length of the centred moving average is selected automatically and can be 9, 13, or 23 months, depending on the relative variability of the irregular component compared with the trend. A long moving average has the effect of smoothing the trend series but slowing the response to underlying changes in growth rates, while a short moving average produces a trend series that is less smooth but quicker to identify turning points.

Trend estimates are recalculated each quarter. The use of new quarterly data means that previously published trend estimates are subject to revision. Revisions can be particularly large if an observation is treated as an outlier in one quarter but is found to be part of the underlying trend as further observations are added to the series. Typically, only the estimates for the most recent quarters will be subject to substantial revisions.

## **Seasonally adjusted estimates – merchandise trade**

The X-12-ARIMA package has been used to produce the seasonally adjusted estimates referred to in the media release, highlights, commentary, and tables. Seasonal adjustment aims to eliminate the impact of regular seasonal events (such as lambing, harvesting, etc) on time series. This makes the data for adjacent quarters more comparable.

The most recent seasonally adjusted figures are subject to revision each quarter. This enables the seasonal component to be better estimated and removed from the series. The largest revisions will occur in the quarter prior to the current quarter.

## **Broad economic categories**

Broad economic categories (BECs) are arranged, as far as practicable, to align with the System of National Accounts' three basic classes: capital goods, intermediate goods, and consumption goods. Commodities in BECs are categorised on the basis of their main end use. This means, for example, that all video recorders are treated as consumption goods even though some are used in business.

## **Release of latest results**

Merchandise trade provisional indexes are available within 10 weeks of the end of the reference period. Final indexes are released within 24 weeks of the end of the reference period.

## Further information

A wider range of index series than is presented in this release is available on [Infoshare](#), Statistics New Zealand's publicly accessible online database, or can be provided in other media on request. There are currently 57 export and 55 import merchandise index groupings.

For each of the merchandise trade volume indexes, there are also related quarterly and annual price indexes and dollar-value series available.

More detailed explanatory notes and a full list of available indexes and related dollar-value series are available on request.

Related Hot Off The Press releases are:

- *Overseas Trade Indexes (Prices)* ISSN 1178-0339
- *Overseas Merchandise Trade* ISSN 1178-0320
- *Balance of Payments (Quarterly)* ISSN 1178-0215
- *Balance of Payments (Annual)* ISSN 1178-0223

## More information

For more information, follow the [link](#) from the technical notes of this release on the Statistics NZ website.

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## Timing

Timed statistical releases are delivered using postal and electronic services provided by third parties. Delivery of these releases may be delayed by circumstances outside the control of Statistics NZ. Statistics NZ accepts no responsibility for any such delays.

## Tables

The following tables are printed with this Hot Off The Press and can also be downloaded from the Statistics New Zealand website in Excel format. If you do not have access to Excel, you may use the [Excel file viewer](#) to view, print, and export the contents of the file.

- 1.01 Overseas merchandise trade, seasonally adjusted volumes and values
- 1.02 Merchandise exports and imports, values, price indexes and volume indexes
- 2.01 Merchandise export volume indexes and values
- 2.02 Seasonally adjusted merchandise export volume indexes
- 2.03 Seasonally adjusted merchandise export values
- 3.01 Merchandise import volume indexes and values
- 3.02 Seasonally adjusted merchandise import volume indexes
- 3.03 Seasonally adjusted merchandise import values
- 4.01 Merchandise imports by broad economic category, volume indexes
- 4.02 Seasonally adjusted merchandise imports by broad economic category, volume indexes
- 4.03 Seasonally adjusted merchandise imports by broad economic category, volume index percentage change from preceding period
- 5.01 Related series, quantities