

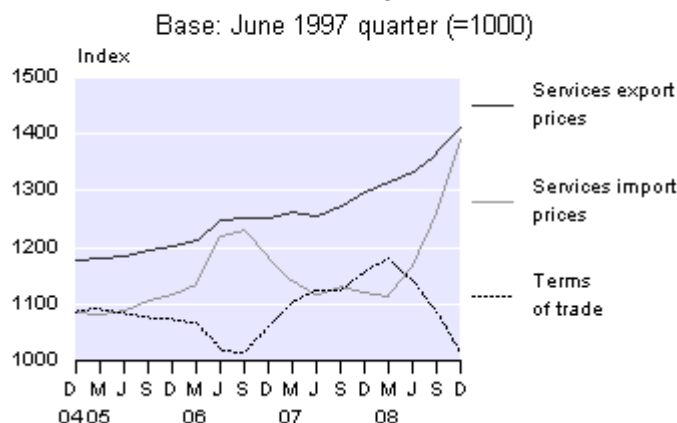
Embargoed until 10:45am – 11 March 2009

## Overseas Trade Indexes (Prices): December 2008 quarter (provisional)

### Highlights

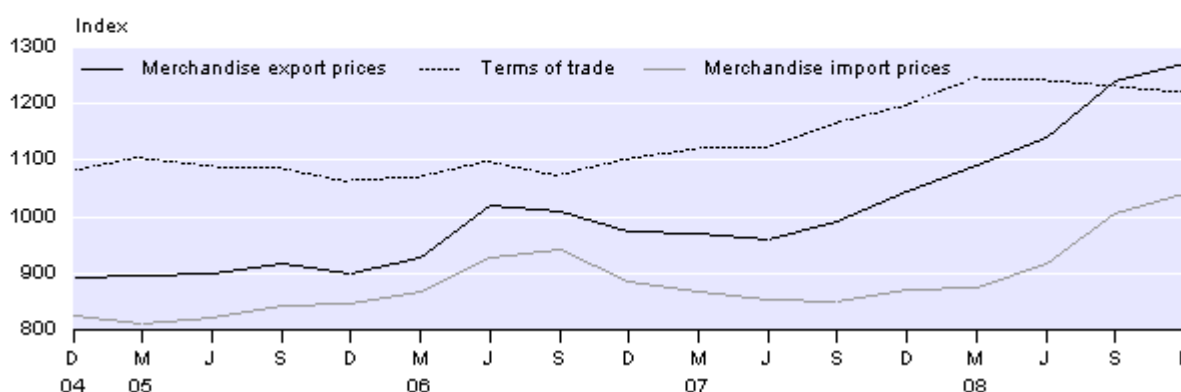
- The merchandise terms of trade fell 0.9 percent.
- Merchandise export prices rose 2.5 percent and imports rose 3.4 percent.
- The services terms of trade fell 6.5 percent.
- Services export prices rose 3.1 percent and import prices rose 10.2 percent.

### Services Price and Terms of Trade Indexes Quarterly



### Merchandise Price and Terms of Trade Indexes Quarterly

Base: June 2002 quarter (=1000)



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11 March 2009  
ISSN 1178-0339

See also [Overseas Trade Indexes: December 2008 quarter \(provisional\)](#) – Media release.

# Commentary

## Terms of trade

In the December 2008 quarter, the merchandise terms of trade fell 0.9 percent. This was due to import prices (up 3.4 percent) rising more than export prices (up 2.5 percent). This quarter's fall was the third consecutive fall, including a 0.9 percent fall in the September 2008 quarter. Despite the quarterly fall, in the year to the December 2008 quarter, the merchandise terms of trade index increased 1.9 percent. This increase followed an 8.8 percent increase in the year to the December 2007 quarter.

The latest fall in the merchandise terms of trade means that in the December 2008 quarter, 0.9 percent less merchandise imports could be funded by a fixed quantity of merchandise exports than in the September 2008 quarter.

The terms of trade for services fell 6.5 percent in the December 2008 quarter, which was the largest fall since the series began in the June 1997 quarter. The latest fall followed falls of 4.9 percent and 3.4 percent in the September 2008 and June 2008 quarters, respectively. The fall in the latest quarter was due to services import prices (up 10.2 percent) rising more than export prices (up 3.1 percent). On an annual basis, in the year to the December 2008 quarter, the services terms of trade decreased 12.2 percent, compared with an increase of 8.9 percent in the year to the December 2007 quarter. The latest annual movement was the largest decrease since the series began.

## Merchandise export prices

The merchandise export price index rose 2.5 percent in the December 2008 quarter. This followed rises of 8.6 percent and 4.5 percent in the September 2008 and June 2008 quarters, respectively. In the December 2008 quarter, all published export indexes recorded rises, except aluminium. The depreciation of the New Zealand dollar against major trading partners' currencies was the main driver of the overall rise in export prices. The Reserve Bank's trade weighted index (TWI) fell 11.8 percent for the December 2008 quarter.

In the December 2008 quarter, the most significant contribution to the overall rise in merchandise export prices came from a 6.5 percent rise in food and beverages. This latest rise was the sixth consecutive quarterly rise, following a rise of 8.4 percent in the September 2008 quarter. Driving up food and beverages were rises in dairy product prices (up 5.8 percent) and meat prices (up 4.9 percent). Prices for lamb, hogget and mutton (up 11.6 percent) significantly contributed to the rise in the meat price index which was offset by a fall in beef and veal (down 2.2 percent). In the year to the December 2008 quarter, the food and beverages index increased 28.2 percent, compared with increases of 15.6 percent in the year to the December 2007 quarter, and 4.9 percent in the year to the December 2006 quarter.

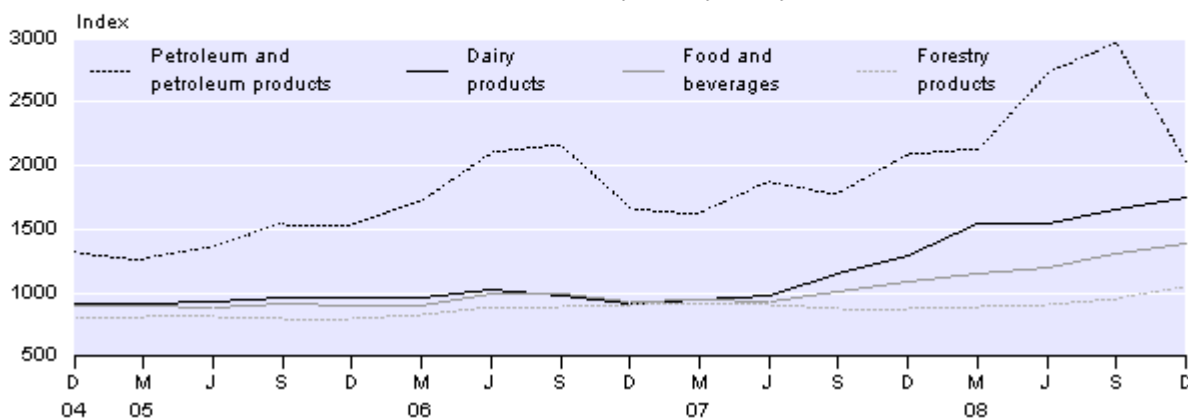
The dairy products index rose 5.8 percent in the December 2008 quarter, following a rise of 7.4 percent in the September 2008 quarter and a slight fall of 0.2 percent in the June 2008 quarter. Prices for cheese (up 10.4 percent), butter (up 9.3 percent), and skim milk powder (up 8.9 percent) were the main drivers of the rise in dairy product prices. These rises were partly offset by a fall in whole milk powder prices (down 2.6 percent). On an annual basis, the dairy products index increased 35.7 percent in the year to the December 2008 quarter, following an increase of 40.4 percent in the year to the December 2007 quarter and a decrease of 4.1 percent in the year to the December 2006 quarter.

Prices for forestry products (up 11.2 percent) rose in the December 2008 quarter, significantly contributing to the overall rise in export prices. This was the largest quarterly rise since a rise of 14.8 percent in the June 1993 quarter. Higher prices for pinus radiata logs and chips were the main drivers of the latest quarterly rise, while lower prices for chemical wood pulp had an offset influence. In the year to the December 2008 quarter, forestry product prices increased 20.0 percent, compared with a decrease of 2.3 percent in the year to the December 2007 quarter.

### Selected Merchandise Export Price Indexes

Quarterly

Base: June 2002 quarter (=1000)



The petroleum and petroleum products index (down 31.6 percent) made the most significant downward contribution to the overall rise in export prices in the December 2008 quarter. This fall was the largest quarterly fall since a fall of 45.7 percent in the June 1986 quarter. The latest fall compared with rises of 8.5 percent and 28.8 percent in the September 2008 and June 2008 quarters, respectively. The fall in the latest quarter was driven by lower export prices for crude oil. In the year to the December 2008 quarter, the petroleum and petroleum products index fell 2.4 percent, compared with rises of 23.9 percent and 10.0 percent in the years to the December 2007 and 2006 quarters, respectively.

On an annual basis, the merchandise export price index increased 21.4 percent in the year to the December 2008 quarter, compared with increases of 7.3 percent in the year to the December 2007 quarter, and 8.3 percent in the year to the December 2006 quarter.

### Merchandise import prices

The merchandise import price index rose 3.4 percent in the December 2008 quarter, following rises of 9.6 percent in the September 2008 quarter and 4.9 percent in the June 2008 quarter. The rise in the import price index in the latest quarter was partly driven by higher prices for mechanical machinery. The depreciation of the New Zealand dollar made a significant contribution to the rise in total import prices this quarter. However, the fall in prices for petroleum and petroleum products (down 22.4 percent) largely offset this rise.

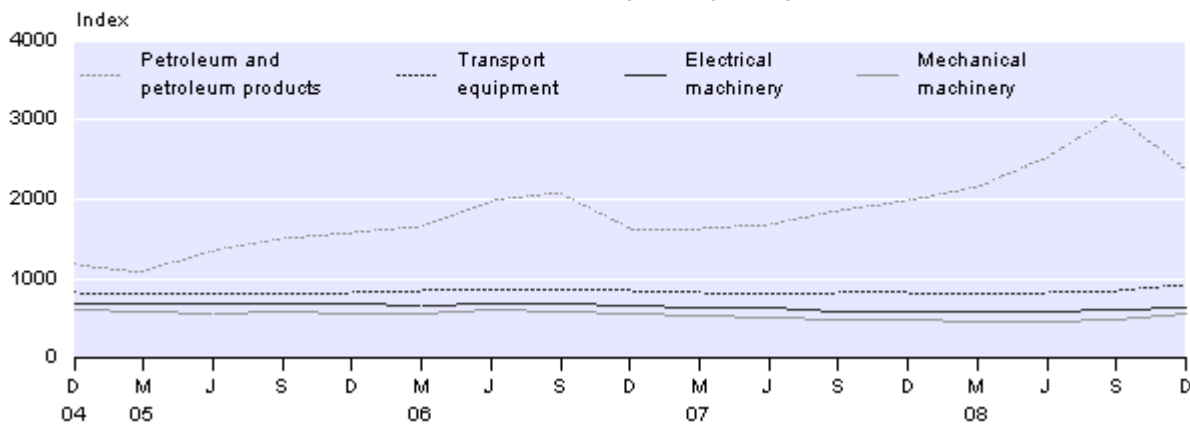
The most significant contributor to the latest quarterly rise in import prices was the mechanical machinery index (up 18.3 percent), following a rise of 5.9 percent in the September 2008 quarter and a fall of 1.0 percent in the June 2008 quarter. The latest rise was the largest quarterly rise for this index since the series began in the March 1971 quarter. Price rises for computers and machinery parts contributed to this increase. (The method used to measure price change for imported computers is to use United States computer-related producer price indexes as a proxy. The United States indexes are exchange-rate adjusted, and the depreciation of the New Zealand dollar against the United States dollar in the December 2008 quarter impacted significantly on the rise in computer prices.) In the year to the December 2008 quarter, the mechanical machinery index increased 18.4 percent, compared with a decrease of 13.3 percent in the year to the December 2007 quarter and a decrease of 1.8 percent in the year to the December 2006 quarter.

Another significant contributor to the rise in import prices was the transport equipment index, which rose by 8.7 percent in the December 2008 quarter. This rise is the largest quarterly rise for this index since a 9.3 percent rise in the December 1991 quarter. The latest quarterly rise follows a 2.8 percent rise in the September 2008 quarter and a 0.1 percent fall in the June 2008 quarter. Price rises for aircraft and motor vehicles contributed to this rise. In the year to the December 2008 quarter, the transportation equipment index increased 9.7 percent, compared with a 2.9 percent decrease in the year to the December 2007 quarter, and a 5.2 percent increase in the year to the December 2006 quarter. The latest annual increase was also the largest increase for this index since a 10.0 percent increase in the year to the September 2000 quarter.

### Selected Merchandise Import Price Indexes

Quarterly

Base: June 2002 quarter (=1000)



The electrical machinery index rose 8.0 percent in the December 2008 quarter, following a 3.3 percent rise in the September 2008 quarter and a 0.6 percent rise in the June 2008 quarter. The latest rise was the largest for the electrical machinery index since the March 2000 quarter. Price rises for TV sets contributed to the rise for this index. In the year to the December 2008 quarter, the electrical machinery index increased 8.3 percent, compared with a 10.2 percent decrease in the year to the December 2007 quarter and a 3.2 percent decrease in the year to the December 2006 quarter. The latest annual increase is the largest since a 13.6 percent increase in the year to the December 2000 quarter.

After six consecutive quarterly rises since the June 2007 quarter, the petroleum and petroleum products index fell 22.4 percent in the December 2008 quarter. This is the largest fall since a 25.9 percent fall in the June 1986 quarter. The latest quarterly fall follows rises of 21.0 percent in the September 2008 quarter and 17.8 percent in the June 2008 quarter. The fall in the latest quarter was largely driven by a drop in prices for crude oil (down 29.3 percent), along with significant drops for automotive diesel, petrol and kerosene-type jet fuel. In the year to the December 2008 quarter, the petroleum and petroleum products index increased 19.7 percent, compared with a 20.1 percent increase in the year to the December 2007 quarter and a 4.7 percent increase in the year to the December 2006 quarter.

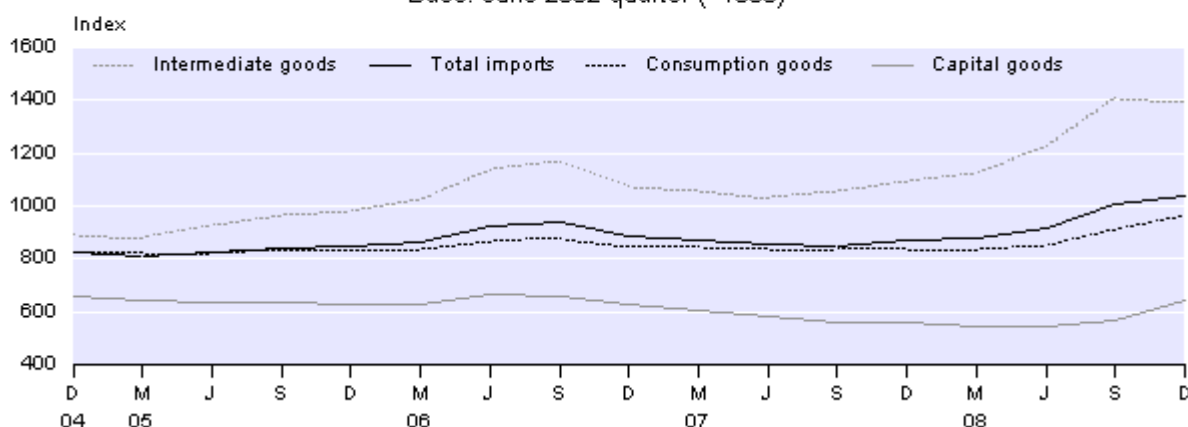
When petroleum and petroleum products are excluded from the total imports index, the movement in the December 2008 quarter is a rise of 9.7 percent.

In the year to the December 2008 quarter, the total imports price index increased 19.2 percent, compared with a 1.4 percent decrease in the year to the December 2007 quarter, and a 4.4 percent increase in the year to the December 2006 quarter.

### Import Prices by Broad Economic Category

Quarterly

Base: June 2002 quarter (=1000)



In the December 2008 quarter, two of the three main broad economic categories showed price rises. The capital goods index made the largest contribution to the overall 3.4 percent rise in total import prices this quarter.

The capital goods index rose 13.7 percent in the December 2008 quarter, following a rise of 4.7 percent and a fall of 0.6 percent in the September 2008 and June 2008 quarters, respectively. The latest rise is the largest quarterly rise for this index since the series began in the September 1989 quarter. The main contribution to the capital goods index came from the non-transport equipment sub-index (up 13.8 percent), which was mainly driven up by the prices of computers and mechanical shovels.

The consumption goods index (up 5.9 percent in the December 2008 quarter) also contributed to the overall rise in import prices. This followed a 7.0 percent rise in the September 2008 quarter and a 1.9 percent rise in the June 2008 quarter. The major driver of this rise was the semi-durable consumer goods sub-index (up 14.6 percent).

The intermediate goods index fell 1.0 percent in the December 2008 quarter, following a 14.5 percent rise in the September 2008 quarter and a 9.8 percent rise in the June 2008 quarter. The largest contribution to this latest fall came from the primary fuels and lubricants subgroup, which fell 29.1 percent. This was mainly driven by lower crude oil prices. The processed industrial supplies sub-index (up 9.3 percent) made an offset contribution to the fall in the intermediate goods index. Fertilisers had a major contribution to the rise in this sub-index.

## **Services export prices**

Services export prices rose 3.1 percent in the December 2008 quarter, the highest quarterly rise since a 4.8 percent increase in the December 2000 quarter. The latest rise follows rises of 2.6 percent and 1.3 percent in the September 2008 and June 2008 quarters, respectively. Three of four published services export indexes rose in the latest quarter. The transportation index (up 8.9 percent) was the largest contributor to the increase in the export services index. The rise in the transportation index was primarily driven by the air transportation sub-index, with respondents citing increased fuel costs, change in seasons and the depreciation of the New Zealand dollar.

In the year to the December 2008 quarter, the services export price index increased 8.6 percent, compared with an increase of 3.5 percent in the year to the December 2007 quarter. The latest annual movement was the largest increase since the series began in the June 1997 quarter.

## **Services import prices**

In the December 2008 quarter, services import prices rose 10.2 percent, following rises of 7.9 percent and 4.9 percent in the September 2008 and June 2008 quarters, respectively. The rise in the latest quarter was the largest recorded since the series began in the June 1997 quarter. All the published services import indexes rose in the latest quarter. The transportation index (up 13.7 percent) made the most significant contribution to the overall rise in services import prices. This rise was mainly influenced by the sea transportation sub-index, as a result of rising sea freight prices.

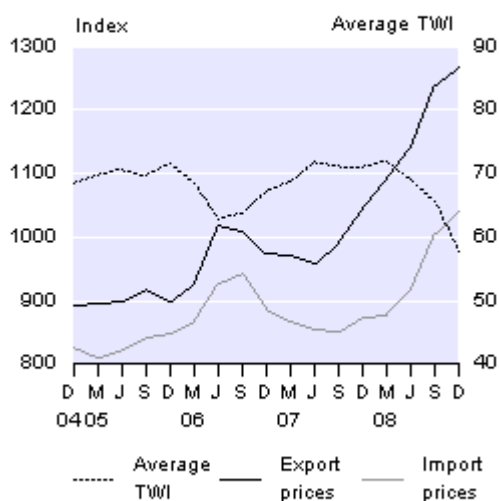
In the year from the December 2007 quarter to the December 2008 quarter, the services import price index increased 23.7 percent, compared with a decrease of 4.9 percent in the year to the December 2007 quarter. The latest annual increase was the largest recorded since the series began.

## **Exchange rate movements**

According to the exchange rates published by the Reserve Bank of New Zealand, the trade weighted index (TWI) of the New Zealand dollar fell 11.8 percent in the December 2008 quarter. In this quarter, the New Zealand dollar depreciated against all major trading partners' currencies excluding the Australian dollar, but the greatest depreciation was against the Japanese yen (down 27.2 percent).

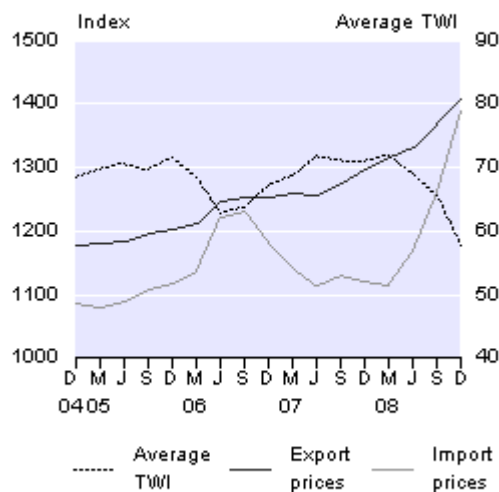
Exchange rates used in the calculation of merchandise import values differ from the weekly exchange rates used in the calculation of merchandise export values. Import values are converted from foreign currencies using exchange rates set by the New Zealand Customs Service (NZCS) every two weeks. These exchange rates are prepared 11 days before the effective date and are then applied for two weeks. Therefore, the NZCS rates of exchange lag from 11 to 25 days compared with exchange rates published by the Reserve Bank.

**Average Trade Weighted Index<sup>(1)</sup>  
and Merchandise Trade Indexes<sup>(2)</sup>**  
*Quarterly*



(1) Base: June 1979 month (=100).  
(2) Base: June 2002 quarter (=1000).

**Average Trade Weighted Index<sup>(1)</sup>  
and Services Trade Indexes<sup>(2)</sup>**  
*Quarterly*



(1) Base: June 1979 quarter (=100).  
(2) Base: June 1997 month (=1000).

For the December 2008 quarter, the NZCS TWI recorded an 8.8 percent fall, with the New Zealand dollar falling against four of the five major currencies traded, except the Australian dollar. The depreciation of the New Zealand dollar against key currencies has an upward influence on both import and export prices in New Zealand dollars. The impact on the terms of trade depends on the relative mix of exports and imports for each currency.

<b>Exchange Rates</b> <i>New Zealand Customs Service</i>					
	USA (NZ\$:US\$)	UK (NZ\$:pound)	Australia (NZ\$:A\$)	Japan (NZ\$:yen)	EU (NZ\$:euro)
Change from September 2008 quarter (%)	-18.3	-3.5	7.0	-24.6	-6.2

## Updates to previously published material

The overseas merchandise trade indexes are provisional for one quarter to allow for receipt and editing of late and amended trade documentation.

<b>September 2008 Quarter Overseas Trade Indexes (Prices)</b> <i>Merchandise</i>			
	Export price index	Import price index	Terms of trade index
<i>Series ref: OTPQ</i>	<i>SEO1E95</i>	<i>SIO1I95</i>	<i>STTZZ5</i>
Published on 10 December 2008			
Provisional Sep 08	1238	1020	1214
Published on 11 March 2009			
Final Sep 08	1238	1006	1230

For the September 2008 quarter, the final merchandise import price index number was 14 index points lower than the provisional index number. This was due to a change in price movement for crude oil (up 38.4 percent in the provisional to up 20.5 percent in the final). The September 2008 quarter final increase was calculated using crude oil imports from a greater range of countries than was used for the provisional index.

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### Next release ...

*Overseas Trade Indexes (Prices): March 2009 quarter (provisional)*  
and

*Overseas Trade Indexes (Volumes): March 2009 quarter (provisional)*  
will both be released on 10 June 2009.

# Technical notes

## Definitions

capital goods	Produced assets used repeatedly or continuously (for longer than one year) in industrial production processes. Examples are machinery, trucks and aircraft.
consumption goods	Goods used (without further transformation in industrial production processes) by households, government, or non-profit institutions serving households. – durables have an expected usage of three years or more, eg appliances, furniture. – semi-durables have an expected usage of one or two years, eg linen, shoes, toys. – non-durables have an expected usage of less than a year, eg soap, yarns, books.
fob	Free on board (the value of goods at New Zealand ports before export, which includes the cost of the goods plus the cost (including loading charges) of putting them on a vessel or aircraft).
government services (exports)	Includes sales of capital assets excluding land, estimated expenditure of foreign embassies in New Zealand, the portion of the government's international aid spent in New Zealand, and the government's receipts from immigration fees.
government services (imports)	The operational expenses of New Zealand's embassies overseas, and the costs of the New Zealand defence forces stationed overseas.
intermediate goods	Goods used up or transformed in industrial production processes.
merchandise trade	Exports or imports of goods that increase or decrease the stock of material resources in New Zealand. Includes goods leased for a year or more.
other services	Services other than transportation, travel, and government services. Examples are insurance, royalties and licence fees, banking and financial services, computer and information services, telecommunications, and personal, cultural and recreational services.
re-exports	Exported goods that were earlier imported into New Zealand and include less than 50 percent New Zealand content by value.
transportation	The international carriage of goods and passengers. Includes freight, airfares, port services, and stevedoring.
travel (exports)	The expenditure of overseas visitors while travelling in New Zealand, and the expenditure by international students in New Zealand.
travel (imports)	The expenditure of New Zealanders while travelling overseas.
vfd	Value for duty (the value of imports before insurance and freight costs are added).

## What the price indexes measure

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

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

Price measurement relates to the decomposition of transaction values in current prices into their price 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.

## Time of recording

The merchandise price indexes in this release are calculated from the same data as that used in the *Overseas Merchandise Trade: January 2009* Hot Off The Press published on 26 February 2009. Updates published after these dates are not included.

Merchandise price indexes are provisional for one quarter, to allow for the inclusion of late data and amendments to the merchandise trade source data. Merchandise figures in this release that relate to the September 2008 quarter are based on later data than that which was available for the previous overseas trade indexes release (for the September 2008 quarter), published on 10 December 2008.

The price indexes for services are final figures (unlike the merchandise series, which are first published as provisional figures). The services indexes are revised only for significant errors. An exception is when lagged prices are used in new indexes and are later replaced by current prices. Revisions are notified by an R beside the revised number in the release table.

## 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 New Zealand Customs Service (NZCS) by exporters, importers and their agents.

Data is classified using the Harmonised System (HS) classification for processing 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 being 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 an ongoing one and is part of the 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 (for example, public transport equipment), imported to one-off specifications (for example, telephonic and telegraphic apparatus), and technically complex goods subject to rapid quality change (for example, 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 following table lists the main goods for which international price indexes are currently used in the import indexes.

<b>Goods Using International Price Indexes</b>		
<b>HS chapter</b>	<b>Goods</b>	<b>International price index</b>
84	<b>Mechanical machinery</b>	
	Printing machinery	US producer price index
	Computer equipment	US producer price index
	Computer and office equipment parts and accessories	US producer price index
85	<b>Non-electrical machinery</b>	
	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 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 gross domestic product.

## **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 (used cars) and make of car (new cars), 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 of new frontal impact standards on the age distribution of used-car imports. The new standards 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 items displaying reliable unit-value behaviour, those items for which prices are collected directly from importers or exporters, and those items for which international price indexes are used as price indicators. Remaining items have imputed to them price movements of items that are more reliable indicators of a similar type. 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) index	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 2008 quarter, there was a base annual imputation rate of 20.7 percent for exports and 35.6 percent for imports.

## Source of information – services trade

Value data used in calculating the weights for the service indexes is derived from Statistics NZ's balance of payments data, which is in turn processed from various surveys operated by the Balance of Payments business unit. New weights were implemented in the September 2008 quarter, using balance of payments data for the year ended June 2008.

Pricing information used for calculating the indexes is obtained from Statistics NZ's Commodity Price Survey. The Commodity Price Survey collects prices for approximately 13,000 individual items. The prices are collected by postal survey from about 3,000 respondents and from international price indexes. Prices are generally collected each quarter, with the price on the 15th of the middle month of the quarter measured for domestic prices. Prices may be obtained quarterly or annually depending on the nature of the item. For the import services indexes, much of the pricing is from international price indexes. The collection of these prices (index numbers) depends on the frequency and timeliness of their publication. If they are published monthly, the middle month of the quarter is used; however, in some cases the prices are lagged a month or a quarter if the value for the relevant period is not available in time.

## **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 vfd values (the value of goods excluding the cost of freight and insurance). Prior to the September 2003 quarter, the merchandise import indexes used 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. The vfd valuation for imports is recommended in the System of National Accounts 1993 and is used in the New Zealand national accounts.

Vfd values are converted from foreign currencies when import documents are processed by NZCS. The NZCS exchange rates 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 indexes are not directly affected by changes in the rates of duty payable on imported goods, as vfd 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.

The services price indexes use New Zealand dollar values for both exports and imports. Exchange rates used in the calculation of the services indexes differ from those used for the merchandise indexes. Prices collected in foreign currencies are converted using the exchange rate supplied by Westpac Bank for the 15th day of the middle month of the quarter for the relevant currencies. The foreign currencies used in the services indexes are the US dollar, Australian dollar, Fijian dollar, Japanese yen, and the United Kingdom pound.

## **Index coverage**

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

The System of National Accounts 1993 provides the conceptual base for the services indexes. It establishes the range of services that should be included in the indexes, and key practices, for example the treatment of insurance.

## 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 (that is, 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 goods New Zealand exports and imports change.

### Services trade

The services indexes are an annually chain-linked Laspeyres price index series. The weights are determined by the relative importance of services and businesses within the service industry. Information from various surveys, censuses and other sources is used to determine the weights.

## Expression base

The merchandise index series expression base is the quarter ended June 2002 (=1000).  
The merchandise terms of trade index expression base is the quarter ended June 2002 (=1000).  
The services price indexes expression base is the quarter ended June 1997 (=1000).  
The services terms of trade index expression base is the quarter ended June 1997 (=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.

## **What the overseas terms of trade index measures**

The overseas terms of trade index measures the changing volume of merchandise imports that can be funded by a fixed volume of New Zealand's merchandise exports.

## **How the terms of trade are calculated**

The merchandise terms of trade index is calculated as the ratio of the total export price index to the total import price index, and then presented on an expression base of the quarter ended June 2002 (=1000).

The services terms of trade index is calculated as the ratio of the total services export price index to the total services import price index, with the June 1997 quarter used as the expression base.

An index value above (or below) 1000 indicates that the terms of trade are more (or less) favourable than in the base period.

An increase in the terms of trade index indicates that the real purchasing power of exports has increased, while a decrease indicates a drop in the purchasing power of exports.

## **Effect of exchange rate movements on terms of trade**

A decline in the value of the New Zealand dollar has an upward influence on both export and import price levels, and a strengthening of the dollar has a downward impact on prices of both exports and imports. This means that any effect on the terms of trade in either case is likely to be minor and limited to situations where the New Zealand dollar has weakened or strengthened against a particular currency. It is also limited to where there is a significant imbalance in the values of exports and imports transacted in, or with prices determined by, that currency.

## Broad economic categories (BEC)

BEC categories are arranged, as far as practicable, to align with the System of National Accounts' three basic classes; namely capital goods, intermediate goods and consumption goods. Commodities in BEC 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.

## When latest results are released

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

Only final data is released for the services indexes. This data is available at the same time as the provisional merchandise trade indexes.

## Further information

A wider range of index series than is presented in this release is available on Infoshare, Statistics NZ's free online database, or can be provided in other media on request. There are currently 57 export and 55 import merchandise index groupings. There are five export and five import service index groupings available on Infoshare.

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

To access the overseas trade indexes (OTI) time series, click on **Browse**, then choose: Subject category: **Imports and exports**, then choose: **Overseas Trade Indexes – Prices**

More information about infoshare can be found on our website at <http://www.stats.govt.nz/about-infoshare>.

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 (Volumes)* ISSN 1178-0347
- *Overseas Merchandise Trade* ISSN 1178-0320
- *Overseas Cargo Statistics* ISSN 1178-2838
- *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 New Zealand 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 trade price and terms of trade indexes
- 1.02 Overseas merchandise trade price and terms of trade indexes
- 2 Merchandise export price indexes
- 3 Merchandise import price indexes
- 4.01 Merchandise imports by broad economic category, price indexes
- 4.02 Merchandise imports by broad economic category, price index percentage change from previous period
- 5 Overseas trade in services price indexes
- 6 Exchange rates, Reserve Bank of New Zealand