

Quarterly gross domestic product: Sources and methods

Fifth edition





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1 Purpose and introduction

Purpose

Gross domestic product: Sources and methods is a guide to the concepts and methods used to compile gross domestic product (GDP) in New Zealand. It also gives an overview of the range of data sources used. We briefly discuss the various techniques used, as well as the relationship between quarterly and annual national accounts.

Information about the data sources we use and how we compile GDP is essential for users to understand the data. New Zealand adheres to international standards on the compilation of GDP statistics, the 2008 System of National Accounts (2008 SNA; United Nations, 2013). The international standards are designed to allow cross-country comparability, but they also allow for countries to measure things in different ways, according to what data is available. The first edition of the quarterly GDP sources and methods was published in 1996. The second edition, published in 2008, covered significant changes to compilation methods and data sources, such as chain-linking, a new industry classification, and rebasing the accounts. The third edition, published in 2013, covered the transition to the Australian and New Zealand Standard Industrial Classification 2006 (ANZSIC06) and updates to source data and methodology. The fourth edition, published in 2014, covered the rebase of volume series used in national accounts, the implementation of the 2008 SNA, and updated methodology for household consumption and expenditure.

[See *Quarterly gross domestic product: Sources and methods \(second edition\)*](#) for detailed explanations of some of the concepts referred to in the current edition.

What's new in the fifth edition

The fifth edition captures all the changes and updates to GDP sources and methods since 2014. These include updates to the method of seasonal adjustment applied to a number of components, and updates to the sources and methods used in the production approach to calculating GDP.

What GDP measures

GDP is a core macroeconomic statistic that measures New Zealand's economic performance. It is an important tool that helps a range of users, including policy makers, to understand and manage the New Zealand economy.

GDP measures the goods and services produced by an economy during a given period. It also shows how those goods and services are used, whether consumed, exported, or stored in inventories for sale in future quarters. GDP is not a measure of welfare. For measures of welfare a broad range of indicators including social and environmental statistics need to be looked at in addition to economic measures such as GDP.

Why changes to GDP sources and methods are necessary

We have a programme of statistical work to ensure that GDP estimates are always accurate and relevant, so that we can tell New Zealand's economic story. This edition captures all the changes and updates to GDP sources and methods since 2014.

Approaches to calculating GDP

Three different approaches can be taken to calculate GDP – the production approach, the expenditure approach, and the income approach. The production and expenditure approaches are used to calculate New Zealand's GDP on a quarterly basis. The production approach is available on a chain-volume basis, while the expenditure approach is on a chain-volume basis, and in current prices. Chain-volume estimates have the effect of price change (inflation) removed from them.

GDP(P) The **production approach** to GDP measures the total value of goods and services produced in New Zealand, after deducting the cost of goods and services used in the production process. This is also known as the value-added approach.

GDP(E) The **expenditure approach** to GDP (also known as GDE) measures the final purchases of goods and services produced in the New Zealand domestic territory. Exports are added to domestic consumption, as they represent goods and services produced in New Zealand, while imports are subtracted. Imports represent goods and services produced by other economies.

GDP(I) The **income approach** to GDP directly measures the incomes received by the owners of the factors of production. These represent the returns to the labour and capital employed such as wages, salaries and profits. The income approach is not currently calculated on a quarterly basis because of the lack of appropriate information.

Conceptually, both the production-based and expenditure-based GDP series should produce the same growth rates, because what is produced by an economy should equal what is used. However, as each series uses independent data and estimation techniques, some differences between the alternative measures arise. The expenditure-based series has historically shown more quarterly volatility and is more likely to be subject to timing and valuation problems. For these reasons, the production-based measure is the preferred measure for quarter-on-quarter and annual changes. For the quarterly measure, the headline GDP production series is also seasonally adjusted.

The availability of annual and quarterly GDP (current price and chain-volume measures) is summarised in table 1.

Table 1

Availability of GDP series by method

	Current price series	Chain-volume series
Annual	<ul style="list-style-type: none"> • Production • Income • Expenditure 	<ul style="list-style-type: none"> • Production • Expenditure
Quarterly	<ul style="list-style-type: none"> • Expenditure 	<ul style="list-style-type: none"> • Production • Expenditure

2 Overview of methods

Here is an overview of the methods we use to calculate quarterly GDP.

Current price and chain-volume methods

Nominal or current price series can be calculated as the sum of transactions in quantities of goods and services, expressed in the price at the time the transaction took place. Real or constant price series use these quantities but express them in the price that would have applied had the transactions all occurred in one base period. Constant price estimates expressed in dollar terms show changes in the underlying quantities because the prices have been held constant.

$$\text{Current price} = \text{Price} \times \text{volume}$$

$$\text{Constant price} = \text{Base year price} \times \text{volume}$$

Constant price estimates usually become less accurate the further the current period is from the base year. This is a consequence of the price relativities of goods and services changing.

A solution to overcome the changing in price relatives is to regularly update the base period that is used to aggregate the underlying volumes. This is referred to as chain-linking. The quarterly volume aggregates are all chain-linked annually giving chain volume series.

[See overview of chaining](#) for more information on chain-linking.

Expressing GDP in chain-volume measures involves revaluing a current-price time series of goods and services in the prices of a chosen base period. This allows observation of the real changes in volumes in the New Zealand economy.

Both the quarterly production and expenditure-based GDP series are available as chain-volume measures.

Methods for deriving constant prices

There are three methods of deriving the constant price series:

- **Quantity revaluation** – In this method, the price in the current period is replaced with the price in the base period, so that the quantity is valued in the base period price. This method is usually adopted where there is an extensive range of quantity and price data available. Quantity revaluation is currently used in measuring the value added of agricultural industries.
- **Price deflation** – This method uses a price index, which measures the change in prices over time, to separate out the price movement from the current price series. The current price series is divided by the price index, with the resulting series only reflecting the change in quantity, or volumes.
- **Volume extrapolation** – In this method, a volume index is used to reflect the change in quantity over time. This volume index is used to multiply the base period value. This results in a constant price series, whose movements reflect the movements in the volume index over time.

Which of these methods is used for each series depends on a number of things, including data availability and the methodology used to develop the current price accounts.

Value added for the production approach

Value added is the additional income generated in the production of goods and services. There are two basic approaches to estimating value added by industry before chain linking: double and single (indicator) deflation. Each of the three methods outlined above can be used in the double or single deflation approach.

Value added is measured as the difference between gross output and intermediate consumption. Gross output is the value of all goods and services produced during a period, irrespective of whether they are produced for sale or for own use. Intermediate consumption consists of the value of goods and services consumed as inputs (transformed or used up) by a process of production.

$$\text{value added} = \text{gross output} - \text{intermediate consumption}$$

When deriving constant price value added series using the double deflation approach, both the constant price gross output, and constant price intermediate consumption series would be derived from the current price series using one of the basic methods described above.

Conceptually, this is the ideal approach because it accounts for changes in the volumes of both inputs and outputs during the production period. Double price deflation is the most common double deflation method used. In this method, the current price gross output series and current price intermediate consumption series would both be separately deflated by an appropriate price index, resulting in constant price series. The constant price value added would then be derived by subtracting the constant price intermediate consumption from the constant price gross output.

The single deflation approach differs from the double deflation approach because, instead of deriving both gross output and intermediate consumption in constant prices, it only derives value added in constant prices. For example, in the case of single price deflation, only the current price value added series would be deflated to give constant price value added.

Although double deflation is the preferred approach, it is not always possible due to limited information. If double deflation is not possible, the single indicator approach is used to calculate value added in constant prices.

Methods for deriving GDP in the expenditure approach

All output from production is destined for either intermediate or final consumption. Since the national accounts aims to measure the unduplicated value of production, this is equivalent to examining the value of all final uses or demands. By summing the components of final demand, expenditure on GDP is obtained.

In the economy, the categories of final demand are:

- final consumption expenditure of households and private non-profit institutions serving households
- government final consumption expenditure
- net purchases and additions of fixed assets
- changes in inventories

- net exports to the rest of the world.

When calculating GDP by this method, the value of imports must be deducted since they are implicitly included in the final sales and represent foreign rather than New Zealand production.

3 Incorporating annual balanced data into the quarterly series

This chapter briefly explains how, and why, we incorporate annual data into our quarterly series for GDP.

Reconciling quarterly constant price series to balanced annual series is an integral process in compiling national accounts. Annual data is balanced in a supply and use framework, so that the supply of all goods and services in the economy (goods and services produced by the New Zealand economy and imports from overseas) is equal to the use of these goods and services (final consumption by households and government, investment and exports).

The annual supply and use process uses much more data and more detail than is available to compile quarterly GDP. The annual balancing process is done in current prices, with the resulting values converted into the volume series by the quarterly accounts team using various internationally accepted practices. When the current prices are converted into the volume estimate, they are used to update the weights used in chaining. This will be explained in more detail in chapter 4.

The reconciliation process resolves the problem of combining high-frequency but less detailed data (quarterly) with low-frequency but highly detailed data (annual).

The reconciliation process maintains the relevance and coherence of national accounts statistics. It is the main opportunity to enhance the quality of volume estimates and to align the production and expenditure measures of GDP.

The new annual data is incorporated into the quarterly accounts once a year for the September quarter information release, published in December.

See [Annual national accounts sources and methods](#) for more details on how we calculate the annual balanced data.

4 Overview of chaining

This chapter gives an overview of the chaining process we use to calculate the chain-volume series.

The key production and expenditure aggregate components of GDP are chain-volume series. More specifically, they are compiled as annually reweighted chained Laspeyres volume measure series. Chain-linked series are used because current-price measures contain changes in both volumes and prices. The removal of price effects makes the measures more meaningful to the compilation of GDP.

The chain-volume measures of GDP and GDE are constructed by:

1. compiling a Laspeyres volume index of the component in question, using the previous year's prices as weights
2. chaining the sequence of annual movements to produce a continuous time series.

These chain-linked series are then expressed in average 2009/10 prices. This method has the advantage of showing the relative size of each component. However, when it gets further away from the base year, this becomes more difficult. We have recently done some work to update the expression year, which has reduced these issues for recent periods.

Many industry-level series are also chained from lower-level series. This means that changes that occur within an industry are captured in the chain-linked measure. At lower levels, the series are compiled as constant price series. These are free of price effects, but are single-year base-weighted using 2009/10 prices. These are not chained as they are a single series in their own right, or are fixed-weight series comprising many sub-components. This means the weights used in the base year are held constant. Therefore, the estimates can become less accurate the further the current period is from the base year. Chaining is not used in this case because annual weights are not available at that level, or the relative price changes are not significant. To lessen this impact, we have removed some of the fixed-weights as part of the rebase project.

The chain-volume production measure of GDP is a result of a chain-linked aggregation of each ANZSIC06 working industry. Because the latest balanced annual production accounts are usually some time behind the latest quarter (currently 2012), the price weights of the most recent balanced current price annual national accounts are used for all future periods' chain-volume measures. This fixed base-weighted aggregation for the later periods is referred to as the Laspeyres tail.

Chain linking does, however, have some disadvantages. It causes the loss of additivity – that is, the underlying 'elemental' series will not sum to the value of the chain-linked series. Also, comparisons between non-adjacent periods become more difficult to interpret.

The current base year is 2009/10. It has been updated as part of the rebase of national accounts which was implemented in December 2014. The expression year (the prices the series are expressed in) has also been updated (see chapter 7 for more information).

[See Quarterly Gross Domestic Product: Sources and methods \(second edition\)](#), pages 14, 15, and 22–24, for more details on chaining.

5 Seasonal adjustment

Here is an explanation of seasonal adjustment, with tables that show which method of seasonal adjustment we use for each component of GDP.

Why we make seasonal adjustments

Seasonal variations occur in many quarterly series. These may be caused by several factors, such as the effect of Christmas on household spending patterns, or the influence of seasons on stock building in the dairy industry. The extent and nature of seasonality varies markedly between series. Not all seasonal influences are regular, strong, or of sufficient duration to permit reliable seasonal adjustment.

Seasonal adjustment attempts to remove seasonal variation from a series allowing the remaining sources of change (trend and irregular components) to be more easily observed.

Direct and indirect seasonal adjustment

The level at which a series is seasonally adjusted is important since it has the potential to affect its quality.

The individual component series of the main economic variables can be seasonally adjusted and then summed to derive totals. This is called an indirect seasonal adjustment. Alternatively, the main economic variables can be seasonally adjusted at the total level, independently of the seasonal adjustment of their components. The adjustment of the total of an aggregate series is called a direct seasonal adjustment. The indirect approach has the advantage of retaining additivity, but this applies only to the current price series. While the indirect approach conceptually also provides additivity for volume series, additivity is lost by chain-linking.

The direct approach will often give better results if the component series show similar seasonal patterns. At the most detailed level, the irregular factor may be large compared with the seasonal factor and therefore may make it difficult to perform a proper seasonal adjustment. In a small country like New Zealand, irregular events can have a strong impact on particular data. However, if the component series show the same seasonal pattern, aggregation often reduces the impact of the irregular factors in the component series. This is relevant for New Zealand, where seasonal fluctuations in the primary industries affect economic series.

We analysed both direct and indirect approaches for the two quarterly GDP aggregates: production and expenditure on GDP. We prefer to use the direct approach because the resulting series are smoother and more stable.

The residual between the seasonally adjusted components and the aggregates is referred to as the balancing item. The balancing item will often show significant seasonal variations. This is expected, as it captures the undetected seasonality in the component series.

The level at which seasonal adjustment is applied to quarterly GDP series may differ from other Stats NZ surveys (eg the Economic Survey of Manufacturing and the Wholesale Trade Survey). These may contribute to differences in the aggregate seasonally adjusted series.

Tables 2 and 3 show which method of seasonal adjustment we use for each component of GDP.

Table 2

Seasonal adjustment methods – production

Production component	Seasonal adjustment method
Agriculture, forestry, and fishing	Direct
Mining	Direct
Manufacturing	Indirect
Electricity, gas, water, and waste services	Indirect
Construction	Direct
Wholesale trade	Indirect
Retail trade and accommodation	Indirect
Transport, postal, and warehousing	Direct
Information media and telecommunications	Direct
Finance and insurance services	Not adjusted
Rental, hiring, and real estate services	Not adjusted
Owner-occupied dwellings	Not adjusted
Professional, scientific, technical, administrative, and support services	Direct
Central government administration, defence, and public safety	Indirect
Local government administration	Direct
Education and training	Not adjusted
Health care and social assistance	Indirect
Arts, recreation, and other services	Direct
Unallocated	Indirect
Gross domestic product	Direct

Table 3**Seasonal adjustment methods – expenditure**

Expenditure component	Current price	Chain-volume
Household consumption expenditure	Indirect	Indirect
Private final consumption expenditure	Indirect	Indirect
Government final consumption expenditure	Indirect	Indirect
Central government	Indirect	Indirect
Local government	Direct	Direct
Changes in inventories	Direct	Direct
Gross fixed capital formation	Direct	Direct
Gross national expenditure	Direct	Direct
Exports of goods and services	Indirect	Direct
Exports of goods	Direct	Direct
Exports of services	Direct	Direct
Imports of goods and services	Indirect	Direct
Imports of goods	Direct	Direct
Imports of services	Direct	Direct
Expenditure on gross domestic product	Direct	Direct

6 Developments of national accounts

We have an ongoing programme to improve New Zealand's national accounts.

Here are some of the developments we have been working on over the 2012–14 period, and what we will be working on over the next few years. These developments are part of a wider statistical maintenance programme that aims to improve the coherence and relevance of the national accounts by reviewing systems, methodologies, and data sources.

Future improvements to the volume series

We use different data sources for the production and expenditure measures of GDP volumes. This means that quarterly volumes do not always match. We address these differences for annual nominal values of GDP through balancing the supply and use of products in New Zealand. Currently, we don't have a suitable reconciliation method for volumes. However, we are working on developing a tool to do this and will inform you on how these developments may affect GDP volumes in future.

7 General methodology

We present four tables, showing the methods used in the production and expenditure approaches for GDP. The annual methods shown in the tables use post-balanced years data.

Tables 4 and 5 list the methods used to calculate GDP for production and expenditure:

- 4, Methods used in the production approach for GDP, by industry
- 5, Methods used in the expenditure approach for GDP, by component
- 6, Methods used in the measurement of Household Consumption Expenditure, by durables, non-durables and services

View and download them as Excel files from:

[Quarterly gross domestic product: Sources and methods \(fifth edition\).](#)

Tables 7 and 8 on the following pages give more details of the methods used in the production and expenditure approaches see:

- [7, Details of methods used in the production approach for GDP, by industry](#)
- [8, Details of methods used in the expenditure approach for GDP, by component](#)

Table 7**Details of methods used in the production approach for GDP, by industry**

Industry	Quarterly method	Annual method
AA Agriculture, forestry, and fishing		
AA1 Agriculture		
AA1 Total agriculture	Quarterly agriculture value added is reconciled with annual agriculture value added using quarterly gross output as an indicator.	Double indicator. Gross output is calculated using quantity revaluation. Intermediate consumption is deflated by sub-indexes of the farm expenses price index (FEPI), other than sales and purchases of livestock which use quantity revaluation. Beyond the provisional years, value added is derived by extrapolation using gross output as an indicator.
AA111 – Horticulture and fruit growing	Output is calculated by interpolation of the annual with no indicator.	Output is calculated by quantity revaluation using annual tonnes of production.
AA121 – Sheep, beef cattle, and grain farming	Output is calculated by volume extrapolation using births, live exports, inter-farm sales, and slaughter data.	Output is calculated using annual sales and inventory change derived by quantity revaluation.
AA131 – Dairy cattle farming	Output is calculated by quantity revaluation, using volumes of milk solids and town milk produced.	Sum of the quarters.
AA141 – Poultry, deer, and other livestock farming	Output is calculated by interpolation of the annual with no indicator.	Output is calculated by using annual sales and inventory change derived from quantity revaluation.
AA2 Forestry and logging		
AA211 – Forestry and logging	Extrapolation by an output volume index. The volume index is based on roundwood removal volumes and growing timber inventory change. Data is provided by the Ministry for Primary Industries.	Sum of the quarters.
AA3 Fishing, aquaculture and agriculture, forestry, and fishing support services		
AA311 – Aquaculture	Extrapolation by an output volume index. The index is based on quarterly catch volume statistics from FishServe.	Single deflation. Deflation of value added by an implicit price index. The implied deflator is based on the current price annual output from the balanced national accounts and the annualised quarterly catch volume statistics from FishServe.
AA312 – Fishing		
AA321 – Hunting and trapping	Extrapolation by an employment indicator. The indicator is based	Extrapolation by output volume index. The index is based on

Industry	Quarterly method	Annual method
AA322 – Agriculture, forestry, and fishing support services	on quarterly total jobs from Linked Employer-Employee Data.	annual gross output deflated by an annualised version of the quarterly producers price index.
BB1 Mining		
BB1 Mining		
BB111 – Coal mining	Extrapolation by an output volume index. The index is derived using quarterly tonnes of coal produced. This is sourced from the Ministry of Business, Innovation and Employment.	Extrapolation by an output volume index. The index is derived using annual tonnes of coal produced. This is sourced from the Ministry of Business, Innovation and Employment.
BB112 – Oil and gas extraction	Extrapolation by an output volume index. The index is derived using monthly oil and gas products produced data.	Sum of the quarters.
BB113 – Metal ore mining and non-metallic mineral mining and quarrying	Interpolation of the annual with no indicator.	Extrapolation by an output volume index. The index is based on annual tonnes of mineral production data provided by Ministry of Business, Innovation and Employment.
BB114 – Exploration and other mining support services	<p>Exploration (BB1141) is calculated by extrapolation by an output volume index. The index is based on monthly offshore and onshore metres drilled data.</p> <p>Services (BB1142) is calculated by extrapolation by an output volume index made up of volume value added for all mining industries.</p> <p>Exploration and services are then chain-linked together to get total Exploration and Other Mining Support Services.</p>	Exploration and other mining support services is calculated by double deflation up to the latest balanced year. Beyond the balanced year it is calculated by sum of the quarters.

Industry	Quarterly method	Annual method
CC Manufacturing		
CC1 Food, beverage, and tobacco product manufacturing		
CC111 – Meat and meat product manufacturing	Extrapolation by an output volume index using volume of meat killed and meat production data.	Sum of the quarters.
CC121 – Seafood processing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC131 – Dairy product manufacturing	Extrapolation by an output volume index. The index is based on volumes of final dairy products processed including fresh milk supply.	Sum of the quarters.
CC141 – Fruit, oil, cereal, and other food product manufacturing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC151 – Beverage and tobacco product manufacturing	Extrapolation by an output volume index. The quarterly index is compiled in two parts. The first uses sales and finished goods change in inventories from the Quarterly Manufacturing Survey and are deflated by sub-indexes of the producers price index. The second consists of constant price excise duties, which use volumes produced of wine, beer and spirits and deflated sales of tobacco.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.

Industry	Quarterly method	Annual method
CC2 Textile, leather, clothing, and footwear manufacturing		
CC211 – Textile and leather manufacturing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC212 –Clothing, knitted products, and footwear manufacturing		
CC3 Wood and paper products manufacturing		
CC311 – Wood product manufacturing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC321 – Pulp, paper, and converted paper product manufacturing		
CC4 Printing		
CC411 – Printing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC5 Petroleum, chemical, polymer, and rubber product manufacturing		
CC511 – Petroleum and coal product manufacturing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index. Some large companies are extrapolated separately with direct volume indicators.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC521 – Basic chemical and basic polymer manufacturing		
CC522 – Fertiliser and pesticide manufacturing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC523 Pharmaceutical, cleaning, and other chemical manufacturing		
CC531 – Polymer product and rubber product manufacturing		

Industry	Quarterly method	Annual method
CC6 Non-metallic mineral product manufacturing		
CC611 – Non-metallic mineral product manufacturing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC7 Metal product manufacturing		
CC711 – Primary metal and metal product manufacturing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index. Some large companies are extrapolated separately with direct volume indicators.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index. For those large companies that are extrapolated separately in the quarterly method the annual method is sum of quarters.
CC721 – Fabricated metal product manufacturing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC8 Transport equipment, machinery, and equipment manufacturing		
CC811 – Transport equipment manufacturing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC821 – Electronic and electrical equipment manufacturing		
CC822 – Machinery manufacturing		
CC9 Furniture and other manufacturing		
CC911 – Furniture manufacturing	Extrapolation by an output volume index. Sales and finished goods change in inventories from the Quarterly Manufacturing Survey are deflated by sub-indexes of the producers price index.	Extrapolation by an output volume index. Sales and inventories from the balanced national accounts are deflated by annualised sub-indexes of the quarterly producers price index.
CC912 – Other manufacturing		

Industry	Quarterly method	Annual method
DD Electricity, gas, water, and waste services		
DD1 Electricity, gas, water, and waste services		
DD111 – Electricity generation and on-selling	<p>Output less own account capital formation is extrapolated by a quarterly volume indicator. This indicator is based on quarterly total electricity generated.</p> <p>Intermediate consumption is extrapolated by a quarterly volume indicator using the volume of electricity from thermal generation for fuel inputs, and total electricity generated for the remainder. Thermal electricity generation excludes wind and hydro generation. All totals for electricity generated are net of own use by generators.</p> <p>Own account capital formation is calculated by interpolation of the annual with no indicator.</p>	<p>Double indicator. Output less own account capital formation is extrapolated by an output volume index, which is the average of the movement of electricity generation and of electricity consumption.</p> <p>Intermediate consumption is split into two components: fuel inputs and other inputs. Fuel inputs are extrapolated by a volume index using electricity generated by coal and electricity generated by gas. Other inputs are extrapolated by a volume index, which is the average of the movement of electricity generation and of electricity consumption.</p> <p>Own account capital formation is deflated using sub-indexes of the Capital Goods Price Index.</p>
DD112 – Electricity transmission and distribution	<p>Output less own account capital formation is extrapolated by a quarterly volume indicator. This indicator is based on quarterly total electricity generated.</p> <p>Own account capital formation is calculated by interpolation with no indicator.</p>	<p>Value added less own account capital formation is extrapolated by an output volume index using annual total electricity generated and electricity consumed.</p> <p>Own account capital formation is deflated using sub-indexes of the capital goods price Index.</p>
DD113 – Gas supply	<p>Extrapolation by an output volume index. The index is based on volumes of gas deliveries.</p>	<p>Double indicator. Output is extrapolated by an output volume index. The index uses volumes of gas sold, except for own account capital formation, which is deflated by sub-indexes of the labour cost index and the capital goods price index.</p> <p>Intermediate consumption is deflated by sub-indexes of the producers price index except for gas purchased, which is extrapolated by a volume index using volumes of gas purchased.</p>
Industry	Quarterly method	Annual method

DD121 – Water supply	Extrapolation using a quarterly population indicator.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
DD122 – Sewerage and drainage services	Extrapolation by an employment index. The index is based on quarterly number of filled jobs from Linked Employee Employer Data.	Sum of the quarters.
DD123 – Waste collection, treatment, and disposable services	Extrapolation by an employment indicator. The indicator is based on quarterly number of filled jobs from LEED.	Extrapolation by an output volume index. Output is deflated by an annualised sub-index of the quarterly producers price index.
EE Construction		
EE1 Construction		
EE111 – Owner-builder construction	Extrapolation by an output volume indicator. The indicator is based on residential building work from the Quarterly Building Activity Survey.	Single deflation. Deflation of current price value added by an annualised version of the quarterly producers price index for residential building construction.
EE112 – Residential building construction	Extrapolation by an output volume indicator. The indicator is based on residential building work from the Quarterly Building Activity Survey.	Single deflation. Deflation of current price value added by an annualised version of the quarterly producers price index for residential building construction.
EE113 – Non-residential building construction	Extrapolation by an output volume indicator. The indicator is based on non-residential building work from the Quarterly Building Activity Survey.	Single deflation. Deflation of current price value added by an annualised version of the quarterly producers price index for non-residential building construction.
EE121 – Heavy and civil engineering construction	<p>Private sector: Extrapolation by an output volume indicator. The indicator is quarterly gross fixed capital formation for other construction.</p> <p>Public sector: Extrapolation by an employment indicator. The indicator uses number of hours worked for the local government construction industry from the Quarterly Employment Survey.</p>	<p>Private sector: Single deflation. Deflation of current price value added by an annualised version of the quarterly producers price index for the industry.</p> <p>Public sector: Extrapolation by an employment indicator. The indicator uses salaries and wages deflated by a sub-index of the labour cost index.</p>
Industry	Quarterly method	Annual method

EE131 – Construction services	Extrapolation by an output volume index. The index is based on quarterly movements of residential and non-residential building construction value added.	Single deflation. Deflation of current price value added by an annualised version of the quarterly producers price index for construction services.
FF Wholesale trade		
FF1 Wholesale trade		
FF111 – Basic material wholesaling	Extrapolation by an output volume index. The index is based on the quarterly sales from the quarterly Wholesale Trade Survey deflated by sub-indexes of the producers price index.	Sum of the quarters.
FF112 – Machinery and equipment wholesaling		
FF113 – Motor vehicle and motor vehicle parts wholesaling		
FF114 – Grocery, liquor, and tobacco product wholesaling		
FF115 – Other goods wholesaling		
FF116 – Commission-based wholesaling		
GH Retail trade and accommodation		
GH1 Retail trade		
GH111 – Motor vehicle parts retailing	Extrapolation by an output volume index. The index is based on quarterly constant price sales from the Retail Trade Survey.	Sum of the quarters.
GH112 – Fuel retailing		
GH121 – Supermarket and grocery stores		
GH122 – Specialised food retailing		

Industry	Quarterly method	Annual method
GH131 – Furniture, electrical, and hardware retailing	Extrapolation by an output volume index. The index is based on quarterly constant price sales from the Retail Trade Survey.	Sum of the quarters.
GH132 – Recreational, clothing, footwear, and personal accessory retailing		
GH133 – Department stores		
GH134 – Pharmaceutical and other store-based retailing		
GH135 – Non-store and commission-based retailing		
GH2 Accommodation and food services		
GH211 – Accommodation	Extrapolation by an output volume index. The index is based on quarterly constant price sales from the Retail Trade Survey.	Sum of the quarters.
GH212 – Food and beverage services		
II Transport, postal, and warehousing		
II1 Transport, postal, and warehousing		
II111 – Road transport	Extrapolation using an output indicator. The indicator is based on road user charges.	Single deflation. The current price balanced value added from the national accounts is deflated by an annualised version of the quarterly producers price index.
II121 – Rail transport	Extrapolation by a volume index using rail freight volumes and rail passenger revenues.	Sum of the quarters.

Industry	Quarterly method	Annual method
II122 – Water transport	Ferry transport: Extrapolation by a volume index using ferry passengers, cars, commercial vehicles and freight. Other transport: Interpolation of the annual with no indicator.	Ferry transport: Sum of the quarters. Other transport: Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
II123 – Air and space transport	Extrapolation by an output volume index. The index is compiled using domestic and international air passenger revenue kilometres and domestic and international air freight revenue kilometres.	Sum of the quarters.
II124 – Scenic and sightseeing transport	Extrapolation by a volume index using total visitor arrivals.	Sum of the quarters.
II125 – Other transport	Interpolation of the annual with no indicator.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index. Beyond the latest balanced year the previous annual is carried forward.
II131 – Postal and courier pick-up and delivery	Central government sector: Extrapolation by an output volume index using the number of posted items. Private and local government sectors: Interpolation of the annual with no indicator.	Central government sector: Sum of the quarters. Private and local government sectors: Current price balanced value added from the national accounts is deflated by a derived gross output implicit price deflator from the central government sector part. Beyond the latest balanced year the previous annual is carried forward.
II132 – Transport support services	Extrapolation by an output volume indicator. The indicator is based on cargo loaded and unloaded, volumes of aircraft movements, and constant price value added for other transport industries.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.

<p>II133 – Warehousing and storage services</p>	<p>Interpolation of the annual with no indicator.</p>	<p>Extrapolation by an output volume index. The index is calculated by deflating annual current price balanced gross output by an annualised producers price index to give annual constant price gross output. Beyond the latest balanced year the previous annual is carried forward.</p>
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Industry	Quarterly method	Annual method
JJ Information media and telecommunications		
JJ1 Information media and telecommunications		
JJ111 – Publishing (except Internet and music publishing)	Extrapolation with an employment indicator. The indicator is based on filled jobs from the Quarterly Employment Survey.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
JJ112 – Motion picture and sound recording activities	Extrapolation with an employment indicator. The indicator is based on quarterly gross earnings from tax data deflated by a sub-index of the labour cost index.	Extrapolation by an output volume index. The index is based on output deflated by an annualised version of the producers price index.
JJ113 – Broadcasting and Internet publishing	Extrapolation with an employment indicator. The indicator is based on quarterly gross earnings from tax data deflated by a sub-index of the labour cost index.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
JJ121 – Telecommunications services	Extrapolation with an output indicator. Current price quarterly sales data based on goods and services tax (GST) is deflated by the relevant producer price indexes.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
JJ122 – Internet service providers, web search portals, and data processing services		
JJ123 – Library and other information services	Local government sector: Interpolation of the annual with no indicator.	Local government sector: Extrapolation by an output volume index. The index is compiled from two components added together. The first component is annual constant price consumption of fixed capital. The second component is annual salaries and wages from the national account deflated by annualised versions of the quarterly labour cost index.

Industry	Quarterly method	Annual method
JJ123 – Library and other information services	Central government sector: Extrapolation using an employment indicator. The indicator is based on salaries and wages sourced from the Crown Financial Information System deflated by a sub-index of the labour cost index.	Central government sector: Extrapolation by an output volume index. The index is compiled of two components added together. The first component is annual constant price consumption of fixed capital. The second component is annual salaries and wages from the national account deflated by annualised versions of the quarterly labour cost index.
KK Financial and insurance services		
KK1 Financial and insurance services		
KK111 – Banking and financing	Reserve Bank: Interpolation of the annual with no indicator. Other banking and financing: Extrapolation by an output volume index. The index is calculated in two parts. The first part uses the financial intermediation services indirectly measured indicator, which is deflated by sub-indexes of the producers price index and the consumers price index. The second part, which calculates other income, uses bank transactions data sourced from Payments NZ Ltd.	Reserve Bank: Extrapolation by an employment volume index. This is based on the number of full-time equivalent employees at the Reserve Bank of New Zealand. Annuals beyond the latest actual data are based on the average annual movement for the last five years. Other banking and financing: Sum of the quarters.
KK112 – Financial asset investing	Extrapolation by an output volume index. The index is based on constant price value added for the banking and financing industry (KK111).	Sum of the quarters.
KK121 – Life insurance	Extrapolation using an output indicator. The indicator is quarterly annuity and life insurance premiums paid data, sourced from the Financial Services Council, deflated by the relevant producers price index.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.

Industry	Quarterly method	Annual method
KK122 – Health and general insurance	Extrapolation using an output indicator. The indicator is quarterly general insurance premiums data, sourced from the Insurance Council of New Zealand, and annual health insurance premiums from Southern Cross interpolated with no indicator. The two quarterly series are deflated separately by the relevant sub-indexes of the producers price index.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
KK123 – Superannuation funds	Interpolation of annual superannuation with no indicator.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly price index. For years beyond the latest balanced year: Extrapolation by an output volume index. The index is based on superannuation contribution data sourced from the Government Actuary deflated by the annualised version of the quarterly producer price index.
KK131 – Auxiliary finance and insurance services	Extrapolation by an output volume index. The index is based on the combined quarterly constant price value added for all finance and insurance industries.	Sum of the quarters.
LL Rental, hiring, and real estate services		
LL1 Rental, hiring, and real estate services		
LL111 – Rental and hiring services (except real estate)	Interpolation of the annual with no indicator.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index. Annual benchmarks beyond the balanced years are derived by using an annual constant price net capital stock series from the capital stock model.

Industry	Quarterly method	Annual method
LL112 – Non-financial asset leasing	Extrapolation of the annual constant price value added using quarterly gross employee earnings, which are deflated by a sub-index of the labour cost index.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
LL121 – Residential property operators	Extrapolation by output volume index. The index is based on the average count of rented permanent private dwellings.	Sum of the quarters.
LL122 – Non-residential property operators	Interpolation of the deflated annual output, with no quarterly indicator.	<p>Single deflation. The current price balanced output from the national accounts are deflated by annualised version of the quarterly producers price index.</p> <p>Annual benchmarks beyond the balanced years are derived by using an annual constant price net capital stock series from the capital stock model.</p>
LL123 – Real estate services	Extrapolation by output volume index. The index is based on the quarterly number of property sales.	Sum of the quarters.
LL211 – Owner-occupied property operation	Extrapolation by output volume index. The index is based on quarterly estimates of the number of owner-occupied dwellings.	Double deflation. The current price balanced intermediate consumption and output from the national accounts is deflated by annualised versions of the quarterly producers price index.

Industry	Quarterly method	Annual method
MN Professional, scientific, technical, administrative, and support services		
MN1 Professional, scientific, and technical services		
MN111 – Scientific, architectural, and engineering services	Non-market: Extrapolation by a factor of production indicator. The indicator is compiled in two parts.	Non-market: Sum of quarters.
MN112 – Legal and accounting services	The first part is based on salary and wages sourced from the Central Government Enterprise Survey and the Crown Financial Information System deflated by a sub-index of the labour cost index. The second part uses quarterly constant price consumption of fixed capital.	Market: Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
MN113 – Advertising, market research, and management services		
MN114 – Veterinary and other professional services	Market: Extrapolation using different volume indicators. The indicators for MN111, MN112, and MN114 are based on quarterly current price sales data deflated by sub-indexes of the producer price index. The indicators for MN113 and MN115 are based on hours worked by employees and number of working proprietors from the Quarterly Employment Survey.	
MN115 – Computer system design and related services		
MN2 Administrative and support services		
MN211 – Travel agency and tour arrangement services	Extrapolation using an indicator. The indicator is based on hours worked by employees and number of working proprietors from the Quarterly Employment Survey.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
MN212 – Employment and other administrative services		
MN213 – Building cleaning, pest control, and other support services		

Industry	Quarterly method	Annual method
OO Public administration and safety		
OO1 Local government administration		
OO111 – Local government administration	Extrapolation by a factor of production indicator. The indicator is compiled in two parts. The first part is based on employee costs sourced from the Quarterly Local Authority Survey deflated by a sub-index of the labour cost index. The second part uses quarterly constant price consumption of fixed capital.	Sum of the quarters.
OO2 Central government administration, defence, and public safety		
OO211 – Central government administration and justice	Extrapolation by an employment volume indicator. The indicator is based on salaries and wages sourced from the Central Government Enterprise Survey and the Crown Financial Information System deflated by a sub-index of the labour cost index.	Sum of the quarters.
OO212 – Defence	Extrapolation by an employment volume indicator. The indicator is based on salaries and wages sourced from the Central Government Enterprise Survey and the Crown Financial Information System deflated by a sub-index of the labour cost index.	Sum of the quarters.

Industry	Quarterly method	Annual method
OO213 – Public order, safety, and regulatory services	<p>Local government sector: Interpolation of the annual with no indicator</p> <p>Central government sector: Extrapolation by an employment volume indicator. The indicator is based on salaries and wages sourced from the Central Government Enterprise Survey and the Crown Financial Information System deflated by a sub-index of the labour cost index.</p> <p>Private sector: Extrapolation by an employment volume indicator. The indicator is based on quarterly gross employee earnings from based on tax data deflated by a sub-index of the labour cost index.</p>	<p>Local government sector: Extrapolation by an employment volume index. The index is based on annual current price compensation of employees deflated using an annualised version of the labour cost index.</p> <p>Central government sector: Sum of the quarters.</p> <p>Private sector: Sum of the quarters.</p>
PP Education and training		
PP1 Education and training		
PP111 – Preschool education	Interpolation of the annual with no indicator.	Extrapolation by an output volume index. The index is a measure of cost weighted equivalent full-time students.
PP112 – School education		
PP113 – Tertiary education		
PP114 – Adult, community, and other education		

Industry	Quarterly method	Annual method
QQ Health care and social assistance		
QQ1 Health care and social assistance		
QQ111 – Hospitals	Private sector: Extrapolation using an indicator.	Private sector: Hospitals; and medical and other health care services: Extrapolation by an output volume index. The index is based on annual output from the national accounts, which are deflated by annualised sub-indexes of the quarterly consumers price index.
QQ112 – Medical and other health care services	Central government sector: Extrapolation using an indicator. The indicator is based on salaries and wages sourced from the District Health Boards deflated by a sub-index of the labour cost index.	Residential care services and social assistance: Sum of the quarters.
QQ113 – Residential care services and social assistance		Central government sector: Double indicator. Output volumes are based on the number of medical services delivered weighted by cost. Current price balanced intermediate consumption from the national accounts is deflated by annualised versions of the quarterly producers price index.
RS Arts, recreation, and other services		
RS1 Arts and recreation services		
RS111 – Heritage and artistic activities	Market: Extrapolation using an employment volume indicator. The indicator is based on total hours paid sourced from the Quarterly Employment Survey.	Market: Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
RS112 – Sport and recreation activities	Non-market: Extrapolation of the annual using an employment volume indicator. The indicator is based on total hours paid sourced from the Quarterly Employment Survey.	Non-market: Extrapolation by a factor of production indicator. The indicator is compiled in two parts. The first part is based on compensation of employees sourced from the national accounts deflated by a sub-index of the labour cost index. The second part uses quarterly

		constant price consumption of fixed capital.
Industry	Quarterly method	Annual method
RS113 – Gambling activities	Extrapolation using an employment volume indicator. The indicator is based on total hours paid sourced from the Quarterly Employment Survey.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
RS2 Other services		
RS211 – Repair and maintenance	Extrapolation using an output volume indicator. The indicator is based on quarterly current price sales sourced from the Selected Services Survey deflated by a sub-index of the producers price index.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
RS212 – Personal care, funeral, and other personal services	Extrapolation using an output volume indicator. The indicator is based on quarterly current price sales sourced from the Selected Services Survey deflated by a sub-index of the producers price index.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.
RS213 – Religious services	Extrapolation using an employment volume indicator. The indicator is based on total hours paid sourced from the Quarterly Employment Survey.	Extrapolation by a factor of production indicator. The indicator is compiled in two parts. The first part is based on compensation of employees sourced from the national accounts deflated by a sub-index of the labour cost index. The second part uses quarterly constant price consumption of fixed capital.
RS214 – Civil, professional, and other interest groups	<p>Market: Extrapolation using an employment volume indicator. The indicator is based on total hours paid sourced from the Quarterly Employment Survey.</p> <p>Non-market: Extrapolation using an employment volume indicator. The indicator is based on total hours paid sourced from the Quarterly Employment Survey.</p>	<p>Market: Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.</p> <p>Non-market: Extrapolation by a factor of production indicator. The indicator is compiled in two parts. The first part is based on compensation of employees sourced from the national accounts deflated by a sub-index of the labour cost index. The second part uses quarterly constant price consumption of fixed capital.</p>

RS215 – Private households employing staff	Extrapolation using an output volume indicator. The indicator is based on quarterly estimated resident population.	Double deflation. The current price balanced intermediate consumption and output from the national accounts are deflated by annualised versions of the quarterly producers price index.

Table 8

Details of methods used in the expenditure approach for GDP, by component

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Private final consumption expenditure				
Household consumption expenditure				
Food and non-alcoholic beverages	Retail Trade Survey data.	Sum of the quarters.	Retail Trade Survey data deflated using sub-indexes of the CPI.	Sum of the quarters.
Alcoholic beverages, tobacco, and illicit drugs	Retail Trade Survey data.	Sum of the quarters.	Deflation using sub-indexes of the CPI.	Sum of the quarters.
Clothing and footwear	Retail Trade Survey data and Selected Services Survey data.	Sum of the quarters.	Deflation using sub-indexes of the CPI.	Sum of the quarters.
Housing and household utilities	Direct measurement using dwelling numbers, gas consumption data from Ministry of Business, Innovation and Employment, and interpolation from annual values	Sum of the quarters, direct measurement using census data, and gas consumption data, direct measurement using HES data.	Deflation using sub-indexes of the CPI and PPI, direct measurement using dwelling numbers, and gas consumption data.	Sum of the quarters.
Household contents and services	Retail Trade Survey data, selected services survey data, interpolation from annual values.	Sum of the quarters, direct measurement using HES data.	Deflation using sub-indexes of the CPI.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Health	Retail Trade Survey data, reflation of volume indicators using sub-indexes of the CPI.	Sum of the quarters, direct measurement using HES data.	Deflation using sub-indexes of the CPI, direct measurement using QES data.	Sum of the quarters.
Transport	Retail Trade Survey data, Selected Services Survey data, direct measurement using passenger revenue data and tax data, reflation of volume indicators using sub-indexes of the CPI, interpolation from an annual value with no quarterly indicator.	Sum of the quarters, direct measurement using HES data, tax data, insurance claims data, QES data, CPI data, International Visitors Survey data, passenger numbers data and fuel consumption data.	Deflation using sub-indexes of the CPI, direct measurement using vehicle registrations data.	Sum of the quarters.
Communication	Retail Trade Survey data, GST sales data, and reflation of volume indicators using sub-indexes of the CPI.	Sum of the quarters, direct measurement using HES data.	Deflation using sub-indexes of the CPI, direct measurement using communication volume data.	Sum of the quarters.
Recreation and culture	Retail Trade Survey data, Selected Services Survey data, reflation of volume indicators using sub-indexes of the CPI, expenditure by New Zealand residents' overseas, TAB data, and interpolation from an annual value with no quarterly indicator.	Sum of the quarters, direct measurement using HES data, tax data, TAB data, and Vet Council of New Zealand data, gambling data from Department of Internal Affairs, reflation of volume indicators using sub-indexes of the CPI.	Deflation using sub-indexes of the CPI and PPI, direct measurement using QES data.	Sum of the quarters.
Education	Interpolation from an annual value with no quarterly indicator.	Direct measurement using HES data.	Deflation using sub-indexes of the CPI.	Sum of the quarters.
Restaurants and hotels	Retail Trade Survey data.	Sum of the quarters.	Deflation using sub-indexes of the CPI.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Miscellaneous goods and services	Retail Trade Survey data, Selected Services Survey data, interest rate data, insurance premium data, household claims data from Reserve Bank, QES data, and interpolation from an annual value with no quarterly indicator.	Sum of the quarters, direct measurement using HES data, industry account data, and tax data.	Deflation using sub-indexes of the CPI.	Sum of the quarters.
Private non-profit institutions serving households				
Final consumption expenditure equals intermediate consumption, compensation of employees, taxes, and consumption of fixed capital (CFK) by the institutions, less sales.	Interpolated from the annual benchmark.	Estimates from the balanced national accounts. Annual data for provisional years are derived rating forward from the latest balanced year.	Interpolated from the annual benchmark.	Deflated at industry level, for each component of final consumption expenditure. Annualised sub-indexes of the PPI, CPI, LCI, CGPI, and Retail Trade Survey are used. CFK is sourced directly from the capital stock system (PIM) and annual benchmarks are derived rating forward the most recent movements from the PIM.
Central government final consumption expenditure				
Professional, scientific, and technical services				
Intermediate consumption plus taxes on production and imports	Direct measurement using data from Central Government Enterprise Survey and Crown Financial Information System (CFIS) as indicators. This is then benchmarked to the annual series using interpolation.	Estimated from the Central Government Enterprise Survey, CFIS and annual reports.	Current expenditure is deflated by sub-indexes of the PPI.	Current expenditure is deflated by sub-indexes of the PPI.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Compensation of employees	Direct measurement using data from Central Government Enterprise Survey and CFIS as indicators. This is then benchmarked to the annual series using interpolation.	Estimated from the Central Government Enterprise Survey, CFIS, and annual reports.	Current employment expenditure is deflated by sub-indexes of the LCI.	Sum of the quarters.
Sales	Direct measurement using data from Central Government Enterprise Survey and CFIS as indicators. This is then benchmarked to the annual series using interpolation.	Estimated from the Central Government Enterprise Survey, CFIS, and annual reports.	Sales are deflated by sub-indexes of the PPI.	Sales are deflated by sub-indexes of the PPI. Deflation is done separately for some departments.
Public administration				
Intermediate consumption plus taxes on production and imports	Direct measurement using data from Central Government Enterprise Survey and CFIS and direct enquiries as indicators.	Estimated from the Central Government Enterprise Survey, CFIS, and annual reports.	Current expenditure is deflated by sub-indexes of the PPI.	Current expenditure is deflated by sub-indexes of the PPI.
Compensation of Employees	Direct measurement using data from Central Government Enterprise Survey and CFIS and direct enquiries as indicators.	Estimated from the Central Government Enterprise Survey, CFIS, and annual reports.	Current employment expenditure is deflated by sub-indexes of the LCI.	Sum of the quarters.
Sales	Direct measurement using data from Central Government Enterprise Survey and CFIS and direct enquiries as indicators.	Estimated from the Central Government Enterprise Survey, CFIS, and annual reports.	Sales are deflated by sub-indexes of the PPI.	Sales are deflated by sub-indexes of the PPI.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Public order, safety, and regulatory services				
Intermediate consumption plus taxes on production and imports	Direct measurement using data from Central Government Enterprise Survey and CFIS as indicators.	Estimated from the Central Government Enterprise Survey, CFIS, and annual reports.	Current expenditure is deflated by sub-indexes of the PPI.	Current expenditure is deflated by sub-indexes of the PPI.
Compensation of Employees	Direct measurement using data from Central Government Enterprise Survey and CFIS as indicators.	Estimated from the Central Government Enterprise Survey, CFIS, and annual reports.	Current employment expenditure is deflated by sub-indexes of the LCI.	Sum of the quarters.
Sales	Direct measurement using data from Central Government Enterprise Survey and CFIS as indicators.	Estimated from the Central Government Enterprise Survey, CFIS, and annual reports.	Sales are deflated by sub-indexes of the PPI.	Sales are deflated by sub-indexes of the PPI.
Defence				
Intermediate consumption plus taxes on production and imports	Ships and aircraft: Direct measurement from imports data or New Zealand Defence Force, where separately available, otherwise estimated from CFIS. Remainder: Direct measurement using data using CFIS as an indicator.	Ships and aircraft: Sum of the quarters. Remainder: Estimated from CFIS.	Ships and aircraft: Current expenditure is deflated by sub-indexes of the PPI. Remainder: Current expenditure is deflated by sub-indexes of the PPI.	Ships and aircraft: Current expenditure is deflated by overseas price indexes. The indexes are those applying in the country of origin of the imports. Remainder: Current expenditure is deflated by sub-indexes of the PPI.
Compensation of employees	Direct measurement using data using CFIS as an indicator.	Estimated from CFIS.	Current employment expenditure is deflated by sub-indexes of the LCI.	Sum of the quarters.
Sales	Direct measurement using CFIS data as an indicator.	Estimated from CFIS.	Sales are deflated by sub-indexes of the PPI.	Sales are deflated by sub-indexes of the PPI.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Education and training				
Intermediate consumption plus taxes on production and imports	Direct measurement using CFIS funding payments to schools, tertiary institutions, etc, as indicators.	Estimated from CFIS and Ministry of Education financial data (schools) and annual reports.	Current expenditure is deflated by education sub-indexes of the PPI.	Current expenditure is deflated by education sub-indexes of the PPI.
Compensation of employees	Direct measurement using CFIS funding payments to schools, tertiary institutions, etc, as indicators.	Estimated from CFIS and Ministry of Education financial data (schools) and annual reports.	Current employment expenditure is deflated by education sub-indexes of the LCI.	Sum of the quarters.
Sales	Interpolation and extrapolation of the annual value with no indicator.	Estimated from CFIS and Ministry of Education financial data (schools) and annual reports.	Interpolation of the annual value with no indicator.	Sales are deflated by education sub-indexes of the PPI.
Health care and social assistance				
Intermediate consumption plus taxes on production and imports	Direct measurement using Ministry of Health financial data as an indicator.	Estimated from Ministry of Health financial data.	Current expenditure is deflated by health sub-indexes of the PPI.	Current expenditure is deflated by health sub-indexes of the PPI.
Compensation of employees	Direct measurement using Ministry of Health financial data as an indicator.	Estimated from Ministry of Health financial data.	Current employment expenditure is deflated by health sub-indexes of the LCI.	Sum of the quarters.
Sales	Direct measurement using Ministry of Health financial data as an indicator.	Estimated from Ministry of Health financial data.	Sales are deflated by health sub-indexes of the PPI.	Sales are deflated by health sub-indexes of the PPI.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Arts, recreation, and other services				
Intermediate consumption plus taxes on production and imports	Direct measurement using CFIS data as an indicator.	Estimated from CFIS and annual reports.	Current expenditure is deflated by sub-indexes of the PPI.	Current expenditure is deflated by sub-indexes of the PPI.
Compensation of employees	Direct measurement using CFIS data as an indicator.	Estimated from CFIS and annual reports.	Current employment expenditure is deflated by health sub-indexes of the LCI.	Sum of the quarters.
Sales	Direct measurement using CFIS data as an indicator.	Estimated from CFIS and annual reports.	Sales are deflated by sub-indexes of the PPI.	Sales are deflated by sub-indexes of the PPI.
Consumption of fixed capital				
	Interpolation of the annual value with no indicator.	Estimated from the capital stock series using a perpetual inventory model (PIM).	Interpolation of the annual value with no indicator.	Estimated from the capital stock series using a perpetual inventory model (PIM).
Social benefits in kind				
	Interpolation of the annual value with no indicator. Except for health – direct measurement using CFIS as an indicator for health.	Estimated from CFIS and annual reports.	Interpolation of the annual value with no indicator. Except for health – deflated by CPI for health.	Sales are deflated by sub-indexes of the CPI.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Local government				
Intermediate consumption plus taxes on production and imports	Extrapolation by a volume indicator. The indicator uses intermediate consumption data from the Quarterly Local Authority Survey.	Current expenditure excluding employment expenses from the Local Authority Census. Where this information is not available for the latest years, the Quarterly Local Authority Survey (sum of the quarters) is used as an indicator.	Current expenditure is deflated by the local government services inputs sub-index of the PPI.	Sum of the quarters
Compensation of employees	Extrapolation by a volume indicator. The indicator uses salaries and wages from the Quarterly Local Authority Survey.	Estimates from the current price annual which are derived from the Local Authority Census.	Employment expenses are deflated by a sub-index of the LCI.	Sum of the quarters.
Sales	Extrapolation by a volume indicator. The indicator uses sales data from the Quarterly Local Authority Survey.	Current income for all activities, from the current price annual which are derived from the Local Authority Census.	Sales are deflated by the local government services sub-index of the CPI.	Sum of the quarters.
Consumption of fixed capital	Interpolation from the annual value with no indicator.	Estimated from the capital stock series using a perpetual inventory model (PIM).	Interpolation of the annual value with no indicator.	Current price estimates are deflated using annual implicit price deflators.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Inventories				
Change in inventories				
AA1 Agriculture	<p>Quantity revaluation. Calculated by measuring growth and deducting slaughter. Growth is estimated using a forecast of the number of lambs grown for slaughter. This is then valued using average meat schedule prices.</p> <p>Pigs and goats are interpolated with no quarterly indicator.</p>	Sum of the quarters	<p>Quantity revaluation – same as current price method except using base year average prices.</p> <p>Pigs and goats are interpolated with no quarterly indicator.</p>	Sum of the quarters
AA2 Forestry and logging	<p>Finished goods: Quantity revaluation. Quarterly levels are estimated using a weighted quarterly price from a sample of valuations of commercial forestry plantations</p> <p>Raw materials: Interpolation of the annual value with no indicator.</p>	<p>Finished goods: Quantity revaluation. The annual volume (m³) of standing timber is calculated using the current annual recoverable increment in growth, provided by the Ministry of Primary Industries.</p> <p>Raw materials: Price reflation. Book value inventories data is from AES. Sub-indexes of the PPI are used for revaluation.</p>	<p>Finished goods: As for the current price series except base year average prices are used.</p> <p>Raw materials: Interpolation and extrapolation of the annual value with no indicator.</p>	<p>Finished goods: Sum of the quarters.</p> <p>Raw materials: As for the current price series except values are expressed in base year prices.</p>

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
CC Manufacturing	Price reflation. Quarterly inventories levels are from the Economic Survey of Manufacturing are reconciled to AES industry data. This is carried out at the industry level using sub-indexes of the PPI.	Price reflation. Book value inventories data is from AES. Revaluation is carried out at the industry level using sub-index of PPI. For post-balanced years, this is the sum of the quarters.	As for the current price series except the chain-volume quarterly inventories level series are reconciled to their annual counterparts.	As for the current price series except values are expressed in base year prices.
Distribution				
FF Wholesale	Price reflation using the sub-indexes of the PPI. Book value inventories are from the wholesale trade survey.	Sum of the quarters.	Price reflation. As for the current price series except values are expressed in base year average prices.	Sum of the quarters.
GH1 Retail trade (finished goods)	Price reflation. Book value inventories data is calculated by rating forward 1996 inter-industry levels using movements in retail trade survey levels. The resulting series of inventories levels is revalued at the store type level to average prices of the quarter using retail trade deflators.	Sum of the quarters.	Price reflation. As for the current price series except values are expressed in base year average prices.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
GH2 Hotels and restaurants (raw materials)	Price reflation. Book value inventories data is calculated by rating forward 1996 inter-industry levels using movements in retail trade survey levels. The resulting series of inventories levels is revalued at the store type level to average prices of the quarter using retail trade deflators.	Sum of the quarters.	Price reflation. As for the current price series except values are expressed in base year average prices.	Sum of the quarters.
Other	Interpolation and extrapolation of the annual with no indicator	Price reflation. Book value inventories data is from the AES. Sub-indexes of the PPI are used.	Interpolation and extrapolation of the annual with no indicator.	Price reflation. As for the current price series except values are expressed in base year average prices.
Gross fixed capital formation				
Residential buildings				
Private including transfer costs	Direct measurement using all sector work put in place from the quarterly Value of Building Work Put in Place Survey Less: estimates for total government (local and central government; refer to separate methods following) Plus: transfer costs and GST.	Estimated using Annual Enterprise Survey data. Post-balanced years annual benchmarks are derived by applying a moving average.	Current expenditure is deflated by the capital goods price index (CGPI) for residential buildings.	Sum of the quarters.
Local government	Direct measurement using work put in place.	Estimated using the Local Authority Census for non-market units and the Annual Enterprise Survey for market units.	Current expenditure is deflated by the CGPI for residential buildings.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
<p>Central government: Market units include State-owned enterprises and government corporations such as Housing New Zealand.</p> <p>Non-market units include government departments, offices of Parliament, ministries, and Crown entities</p>	<p>Market: Purchases are measured using direct enquiries and the Value of Building Work Put in Place Survey. Sales are interpolated from the annual value using work put in place as an indicator.</p> <p>Non-market: Direct measurement of purchases less sales based on the Central Government Enterprise Survey and the Crown Health Enterprise Survey.</p>	<p>Market: Purchases less sales based on financial accounts of Housing New Zealand and other market enterprises.</p> <p>Non-market: Purchases less sales based on Central Government Enterprise Survey, the Crown Health Enterprise Survey, and department accounts.</p>	<p>Current expenditure (purchases less sales) is deflated by the CGPI for market and non-market residential buildings.</p>	<p>Sum of the quarters.</p>

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Non-residential buildings				
Private, including transfer costs	Direct measurement using work put in place from the Value of Building Work Put in Place Survey. Total private sector includes private producer enterprises, producer boards, private financial intermediaries, non-profit institutions serving households and households.	Estimated using Annual Enterprise Survey data.	Current expenditure is deflated by sub-indexes of the CGPI: <ul style="list-style-type: none"> • Shops and offices • Non-residential buildings • Hospitals and rest homes • Education buildings. 	Sum of the quarters.
Local government	Direct measurement using work put in place from the Value of Building Work Put in Place Survey.	Estimated using the Local Authority Census for non-market units and AES for market units.	Current expenditure is deflated by sub-indexes of the CGPI: <ul style="list-style-type: none"> • Shops and offices • Non-residential buildings • Hospitals and rest homes • Education buildings. 	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
<p>Central government: Market units include State-owned enterprises such as Housing New Zealand.</p> <p>Non-market units include government departments, offices of Parliament, ministries, and Crown entities.</p>	<p>Market: Direct measurement using work put in place from the Value of Building Work Put in Place Survey.</p> <p>Non-market: Direct measurement of purchases from CFIS, except for health.</p> <p>Health: Direct measurement using data from the Ministry of Health.</p>	<p>Market: Purchases less sales based on AES and the Value of Building Work Put in Place Survey supplemented by financial accounts of State-owned enterprises.</p> <p>Non-market: Purchases less sales from the Crown Financial Information System and departmental annual reports, except for health.</p> <p>Health: Purchases less sales from Ministry of Health data.</p>	<p>Current expenditure is deflated by sub-indexes of the CGPI:</p> <ul style="list-style-type: none"> • education buildings • hospitals and rest homes • non-residential buildings • shops and offices. 	<p>Sum of the quarters.</p>

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Other construction				
Private including transfer costs.	Interpolation and extrapolation of an annual value with indicators for major projects. These projects are measured by way of direct enquiries.	Purchases are estimated from survey sources including AES, tax return data for agriculture related industries, Economic Survey of Manufacturing, and quarterly surveys of major purchasers (particularly 'major projects').	Current expenditure by sub-asset type is deflated by sub-indexes of the CGPI: <ul style="list-style-type: none"> • civil construction • railways • other works and telecommunications • transmission lines • pipelines • roads • bridges. 	Sum of the quarters.
Local government	Interpolation and extrapolation from the annual value with no indicator.	Purchases derived from the Local Authority Census for non-market units and AES for market units.	Current expenditure is deflated by sub-indexes of the CGPI.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
<p>Central government: Enterprises that used to be government but are now private were initially included in central government.</p> <p>Non-market units include government departments, offices of Parliament, ministries, and Crown entities.</p>	<p>Market: Interpolation and extrapolation of the annual value with no indicator.</p> <p>Non-market: Interpolation and extrapolation of the annual value with no indicator.</p>	<p>Market: Estimated from annual accounts or quarterly surveys of major projects such as power projects and transmission lines, and railways.</p> <p>Non-market: Estimated from the Central Government Enterprise Survey and departmental annual reports, eg, Transit NZ's expenditure on roads.</p>	<p>Current expenditure is deflated by sub-indexes of the CGPI:</p> <ul style="list-style-type: none"> • transport ways • electrical works • earth-moving and other site works • tanks, reservoirs, other work and telecommunication • other construction and transportable containers. <p>The major projects are deflated separately using sub-indexes of the CGPI.</p>	Sum of the quarters.
Land improvements				
Private including transfer costs.	Interpolation of the annual value with no indicator.	Expenditure is derived from the annual Agriculture Production Survey and AES.	Current expenditure is deflated by a sub-index of the CGPI.	Sum of the quarters.
Local government	Interpolation of the annual value with no indicator.	Expenditure derived from the Local Authority Census for non-market units and AES for market units.	Current expenditure is deflated by a sub-index of the CGPI.	Sum of the quarters.
Central government	Not calculated.	Not calculated.	Not calculated.	Not calculated.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Transport equipment				
Transport equipment is calculated and sorted in two ways. The first is to derive estimates for ships, road vehicles, rolling stock, aircraft, and buses. Secondly, estimates are derived by sector of ownership, such as private, local government, or central government.				
Ships	Private: Direct measurement using net imports data and sales from the Economic Survey of Manufacturing. Central and local government: Interpolation of the annual value with no indicator.	All sectors: Estimated using AES data, sales from the Economic Survey of Manufacturing and net import data.	Current expenditure is deflated by a sub-index of the CGPI, and US and Japanese ship price indexes, adjusted for exchange rate changes.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Road vehicles	<p>All sectors: Direct measurement. New passenger and commercial vehicle registrations by private and government organisations, multiplied by an average price. Pricing is by type of vehicle and is extrapolated using movements in the new car components of the CGPI.</p> <p>Used commercial: Estimated using commercial vehicle sales by category as indicator.</p> <p>Used passenger: Net sales of passenger vehicles by businesses to household based on change of ownership data multiplied by an average price.</p>	<p>All sectors: Sum of the quarters.</p>	<p>All sectors: Extrapolation by a volume indicator using the number of new vehicle registrations.</p>	<p>All sectors: Sum of the quarters.</p>

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Road vehicles continued	<p>Central and local government: Interpolation and extrapolation of the annual value with no indicator.</p> <p>Private: Derived as a residual (all sectors less central and local government).</p>	<p>Central government: Estimated using CFIS data.</p> <p>Local government: Estimated using the Local Authority Census.</p> <p>Private: Estimated using AES data.</p>	<p>Central and local government: Interpolation and extrapolation of the annual value with no indicator.</p> <p>Private: Derived as a residual.</p>	<p>Central and local government: Current expenditure is deflated by the CGPI for road vehicles.</p> <p>Private: Derived as a residual.</p>
Rail	<p>Estimated using quarterly additions to rolling stock (referred to as workshop) and net imports.</p>	<p>Direct measurement from annual reports data.</p>	<p>The two components (net imports and workshops components) are deflated separately and re-added to give total rolling stock.</p> <p>Deflators used are the Japan transport deflator, adjusted for exchange rate changes, for imports and the producers price index (PPI) for the workshop components.</p>	<p>Sum of the quarters.</p>
Buses	<p>Bus registrations reflat then reconciled to annual.</p>	<p>Estimated from AES, Local Authority Census, and CFIS data. For post-balanced years sum of the quarters is used.</p>	<p>Current expenditure series are deflated then added together.</p>	<p>Sum of the quarters.</p>

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Aircraft	<p>Private: Private net imports are the residual of total net aircraft imports less net imports for central government. Domestic production is estimated using sales data from the Economic Survey of Manufacturing.</p> <p>Local government: Interpolation of the annual value with no indicator.</p> <p>Central government: Direct measurement using net imports of aircraft.</p>	<p>All sectors: Estimated from AES data for domestic demand, Economic Survey of Manufacturing data for domestic production, and trade data for net imports.</p>	<p>Current expenditure is deflated by a sub-index of the CGPI, and US and Japanese aircraft price indexes, adjusted for exchange rate changes.</p>	<p>All sectors: Sum of the quarters.</p>
Weapons systems				
Total	<p>Direct measurement using Ministry of Defence data.</p>	<p>Sum of the quarters.</p>	<p>Current price expenditure is deflated using GFKF transport equipment deflators and overseas trade price indexes.</p>	<p>Sum of the quarters.</p>

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Plant, machinery, and equipment (PME)				
PME is calculated and sorted in two ways. The first is by various types of goods, the second by sector of ownership. PME estimates are derived by adding domestic production, net imports, and import duty and deducting changes in inventories. Estimates for the private sector are derived as residual.				
All sector supply total	<p>Domestic production: Direct measurement using sales from the Economic Survey of Manufacturing.</p> <p>Net imports: Direct measurement using external trade data, including import duties.</p> <p>Changes in inventories: Price reflation. The book value inventories levels are from the Wholesale Trade survey. Reflation is carried out using the PME sub-index of the PPI.</p>	<p>Domestic production: Sales of capital goods by manufacturing industries. Total sales are separated between capital and other goods using commodity data from the 1995/96 inter-industry study.</p> <p>Net imports: Sum of the quarters.</p> <p>Changes in inventories: Price reflation.</p>	<p>Domestic production: Current expenditure is deflated by a total domestic PME deflator. The relevant sub-indexes of the CGPI are weighted together.</p> <p>Net imports: Current expenditure by sub-asset type is deflated by sub-indexes of the CGPI and a computer price index sourced from the US. Import duty is deflated using the import implicit price deflator multiplied by a base rate.</p> <p>Changes in inventories: As for the current price series except values are expressed in base year average prices.</p>	All sectors: Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Central government: Market units include State-owned enterprises. Non-market units include government departments, offices of Parliament, ministries, and Crown entities.	Market: Interpolation of the annual value, with no quarterly indicator. Non-market: Interpolation and reconciliation to the annual value, using a quarterly indicator from quarterly government finance statistics.	Market: Calculated by the Perpetual Inventory Model (PIM) by 5 asset types. Non-market: Calculated by the PIM, by 5 asset types.	Market: Quarterly current price series is deflated by a price index which is a weighted aggregate of the relevant sub-indexes of the CGPI. Non-market: Quarterly current price series is deflated by a price index which is a weighted aggregate of the relevant sub-indexes of the CGPI.	Market and non-market: Sum of the quarters
Local government	Interpolation of the annual value with no indicator.	Calculated by the PIM, 5 asset types.	Quarterly current price series is deflated by a price index which is a weighted aggregate of the relevant sub-indexes of the CGPI.	Sum of the quarters.
Transfer costs				
Residential buildings Non-residential buildings Other construction Land improvements	Direct measurement. Real estate agents' and conveyance fees are derived using the number of sales (by type of asset) as reported by Quotable Value New Zealand multiplied by the average sale price and rate of fees.	Sum of the quarters.	Extrapolation by a volume indicator using the number of transactions by type of asset.	Sum of the quarters.
Component	Current price series		Chain-volume series	

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
	Quarterly method	Annual method	Quarterly method	Annual method
Intangibles				
Private	<p>Oil and gas exploration: Estimated using onshore and off-shore metres drilled as an indicator.</p> <p>Software: Software is divided into three parts, with each one having its own private annual benchmark and indicator for interpolation:</p> <p>Off-the-shelf: Import data.</p> <p>Customised: GST sales data.</p> <p>Own account: No quarterly indicator.</p>	<p>Oil and gas exploration: Mineral and other exploration data comes from the Ministry of Business, Innovation and Employment.</p> <p>Software: The supply side information comes from the Information and Communication Technology Supply Survey, Overseas Trade Survey, population census, and business demographic statistics for market and non-market units.</p> <p>There are three types of software components:</p> <ul style="list-style-type: none"> • off-the-shelf • customised • own account. 	<p>Oil and gas exploration: Current expenditure is deflated by the oil and gas exploration sub-index of the PPI.</p> <p>Software: Each software type has its own deflator:</p> <p>Off-the-shelf: An exchange rate adjusted price index from the US Bureau of Economic Activity as an annual benchmark, and quarterly movements from the US Bureau of Labor Statistics.</p> <p>Customised: A weighted average of off-the-shelf and own account.</p> <p>Own account: Uses the labour cost index, adjusted to take account of labour productivity gains.</p>	<p>All: Sum of the quarters.</p>

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Central and local government (software only)	Same as for the private sector outlined above, except an annual government figure is used as a benchmark for interpolation.	Same as for the private sector outlined above.	Same as for the private sector outlined above.	Sum of the quarters.
Research and development	Employment data for research and development intensive industries is used as a quarterly indicator.	<p>For balanced years, the sum of labour, intermediate consumption, and capital inputs is used.</p> <p>Labour and intermediate consumption inputs from the Research and Development Survey, and indicators of annual change at broad sector level.</p> <p>Capital inputs are consumption of fixed capital from PIM and net return to capital (market sector).</p> <p>For provisional years, an indicator of annual change at broad sector level sourced from BOS, CGES, and the Tertiary Education Commission is used when available. Otherwise sum of the quarters.</p>	Quarterly current price series is deflated by a sub-index of the CGPI based on relevant input costs.	Sum of the quarters.
Imports and exports				
Imports of goods				

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
	The base source in all cases is merchandise trade imports data. Imports of merchandise are valued at value for duty (VFD). Conceptual adjustments to the trade data are made where indicated.		Generally price deflation is by the relevant overseas trade price index.	
Capital equipment: <ul style="list-style-type: none"> • Machinery and plant • Transport equipment (includes aircraft, ships and other industry transport equipment) 	Direct measurement using the merchandise trade VFD value. An adjustment is made for capital goods using Balance of Payments (BOP) quarterly survey.	Sum of the quarters.	Machinery and plant: Imports deflated using the overseas trade index (OTI) for machinery and plant Transport Equipment: All sub-components are deflated using the relevant OTI.	All: Sum of the quarters.
Intermediate goods: <ul style="list-style-type: none"> • Primary food and beverages mainly for industry • Processed food and beverages mainly for industry • Primary industry supplies not elsewhere specified (nes) • Processed industry supplies nes • Primary fuel and lubricant • Processed fuel and lubricant, other than motor spirit. • Parts and accessories of capital goods 	Direct measurement using the merchandise trade VFD value. An adjustment is made for intermediate goods using BOP quarterly survey.	Sum of the quarters.	All sub-components are deflated using the relevant OTI.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Passenger motor cars	Direct measurement using the merchandise trade VFD value. An adjustment is made for passenger motor cars using BOP quarterly survey.	Sum of the quarters.	Imports are deflated using the passenger motor cars OTI.	Sum of the quarters.
Consumption goods: <ul style="list-style-type: none"> • Primary food and beverages mainly for household consumption • Processed food and beverages mainly for household consumption • Non-industrial transport equipment other than passenger motor cars • Durable consumer goods nes • Semi-durable consumer goods nes • Non-durable consumer goods nes 	Direct measurement using the merchandise trade VFD value. An adjustment is made for consumption goods using BOP quarterly survey.	Sum of the quarters.	Imports are deflated using the relevant OTI.	Sum of the quarters.
Motor spirit	Direct measurement using the merchandise trade VFD value. An adjustment is made for motor spirit using BOP quarterly survey.	Sum of the quarters.	Imports are deflated using the motor spirit overseas trade price index.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Military and other goods	Direct measurement using the merchandise trade VFD value. An adjustment is made for military and other goods using the BOP quarterly survey.	Sum of the quarters.	Imports are deflated using the OTI for military and other goods.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Imports of services				
Sea and air freight, air passenger transport, port services	Direct measurement. Part of the transportation item from the quarterly BOP current account is used.	Sum of the quarters.	Imports are deflated using the relevant OTI.	Sum of the quarters.
Travel services	Direct measurement. The travel item from the quarterly BOP current account is used. The travel item measures expenditure on commodities by NZ residents overseas.	Sum of the quarters.	Imports are deflated using the OTI for travel services.	Sum of the quarters.
Insurance services	Direct measurement. The insurance item from the quarterly BOP current account is used. It measures the value of insurance services purchased by NZ residents from foreign resident insurers.	Sum of the quarters.	Imports are deflated using the OTI for insurance services.	Sum of the quarters.
Government services	Direct measurement. The government item from the quarterly BOP current account is used. This includes expenditure on commodities by NZ embassies and consulates overseas.	Sum of the quarters.	Imports are deflated using the OTI for government services.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Miscellaneous services	Direct measurement. The miscellaneous item from the quarterly BOP current account is used. This includes labour income, advertising and communication services, and rent other than operational leases on transport equipment.	Sum of the quarters.	Imports are deflated using the OTI.	Sum of the quarters.
Exports of goods				
	The base source in all cases is merchandise trade export free on board (FOB) values. Conceptual adjustments to the trade data are made where indicated.		Generally price deflation is by the relevant overseas trade price index.	
Agriculture, fishing & forestry products, primary products, coal, crude petrol, mineral & gas	Direct measurement using the merchandise trade FOB value. An adjustment is made for goods on consignment.	Sum of the quarters.	Exports are deflated using the relevant OTI.	Sum of the quarters.
Meat products and dairy products	Direct measurement using the merchandise trade FOB value.	Sum of the quarters.	Exports are deflated using the relevant OTI for meat and meat goods/ dairy and dairy goods.	Sum of the quarters.
Other food, beverages and tobacco, textiles, apparel and leather products, wood and paper products, metal products, machinery and equipment	Direct measurement using the merchandise trade FOB value.	Sum of the quarters.	Exports are deflated by components using the relevant OTI.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Chemical rubber, plastic and other non-metal products	Direct measurement using the merchandise trade FOB value.	Sum of the quarters.	Exports, except furniture, other transportable goods nec are deflated by components using the relevant OTI. Furniture and other transportable goods are deflated using the producers price index (PPI) for other manufactured goods.	Sum of the quarters.
Exports of services				
Sea and air freight, air passenger transport, port services	Direct measurement. Part of the transportation item from the quarterly BOP current account is used.	Sum of the quarters.	Exports are deflated using the relevant OTI.	Sum of the quarters.
Travel services	Direct measurement. The travel item from the quarterly BOP current account is used. This includes expenditure in NZ by tourists and business visitors.	Sum of the quarters.	Exports are deflated using the OTI for travel services.	Sum of the quarters.

Component	Current price series		Chain-volume series	
	Quarterly method	Annual method	Quarterly method	Annual method
Insurance services	Direct measurement. The insurance item from the quarterly BOP current account is used. The insurance item is the value of insurance services provided by NZ resident insurers to foreign residents. An adjustment is made for resident insurance services on imports using the BOP survey of insurance underwriters and brokers.	Sum of the quarters.	Exports are deflated using the OTI for insurance services.	Sum of the quarters.
Royalties	Direct measurement from the quarterly BOP current account.	Sum of the quarters.	Exports are deflated using the OTI for royalties.	Sum of the quarters.
Government services	Direct measurement. The government item from the quarterly BOP current account is used. This includes expenditure on commodities by foreign embassies and consulates within NZ.	Sum of the quarters.	Exports are deflated using the OTI for government services.	Sum of the quarters.
Miscellaneous services	The miscellaneous item from the quarterly BOP current account is used. It includes labour income, advertising and communication services, and rent other than operational leases on transport equipment.	Sum of the quarters.	Exports are deflated using the OTI for total other services.	Sum of the quarters.

8 References

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9 List of acronyms

2008 SNA — 2008 System of National Accounts

AES – Annual Enterprise Survey

ANZSIC06 – Australia and New Zealand Standard Industrial Classification 2006

ANZSIC96 – Australia and New Zealand Standard Industrial Classification 1996

BOP – balance of payments

CFIS – Crown Financial Information System

CFK – consumption of fixed capital

CGES – Central Government Enterprise Survey

CGPI – capital goods price index

CPI – consumer price index

FOB – free on board

GDE – gross domestic expenditure

GDP – gross domestic product

HES – Household Expenditure Survey

LCI – labour cost index

LEED – linked employee-employer data

OTI – overseas trade index

PIM – Perpetual Inventory Model (capital stock model)

PME – plant, machinery, and equipment

PPI – producers price index

QBAS – Quarterly Building Activity Survey

QES – Quarterly Employment Survey

QMS – Quarterly Manufacturing Survey

RTS – Retail Trade Survey

VFD – value for duty

WTS – Wholesale Trade Survey