

Embargoed until 10:45am – 08 June 2010

Economic Survey of Manufacturing: March 2010 quarter

Highlights

Sales (seasonally adjusted) for the March 2010 quarter compared with the December 2009 quarter:

Volumes

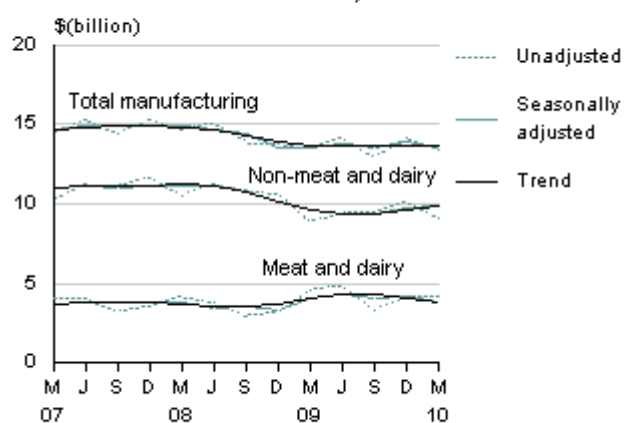
- Manufacturing fell 2.7 percent.
- Excluding meat and dairy product manufacturing, sales rose 1.3 percent.
- Meat and dairy product manufacturing fell 10.1 percent.

Values

- Manufacturing rose 0.9 percent.
- Excluding meat and dairy product manufacturing, sales rose 1.8 percent.
- Meat and dairy product manufacturing rose 1.0 percent.

Manufacturing sales volumes

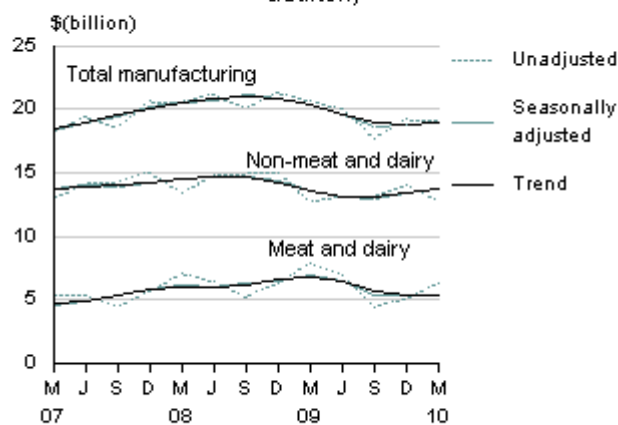
At December 1997 quarter prices
Quarterly



Source: Statistics New Zealand

Manufacturing sales values

At current prices
Quarterly



Source: Statistics New Zealand

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Commentary

All references to sales movements are seasonally adjusted unless otherwise stated.

All manufacturing industries

The volume of manufacturing sales fell 2.7 percent in the March 2010 quarter. This reverses the rise of 2.7 percent in the December 2009 quarter and takes the series to its lowest point in almost 10 years.

Most of the fall in the latest quarter is attributable to the meat and dairy product manufacturing industry which accounts for over a quarter of manufacturing output. Excluding the meat and dairy industry, the other manufacturing industries rose 1.3 percent in volume in the March 2010 quarter.

Five industries showed falls while ten showed rises. The main contributors to the quarterly volume movement were:

- meat and dairy product manufacturing, **down** 10.1 percent
- other food manufacturing, **down** 9.0 percent
- basic metal manufacturing, **up** 14.3 percent
- petroleum and industrial chemical manufacturing, **up** 8.4 percent.

Volumes are calculated by removing the effect of price changes from values.



1. Constant dollar series (volumes) are at December 1997 quarter prices.

Source: Statistics New Zealand

The value of sales rose 0.9 percent (\$171 million) in the March 2010 quarter, following a rise of 1.3 percent in the previous quarter. The latest rise in value, despite a fall in volume, is the result of increased prices, particularly for dairy products (up 29.6 percent). Overall manufacturing output prices, as measured by the producers price index, rose 4.0 percent in the March 2010 quarter.

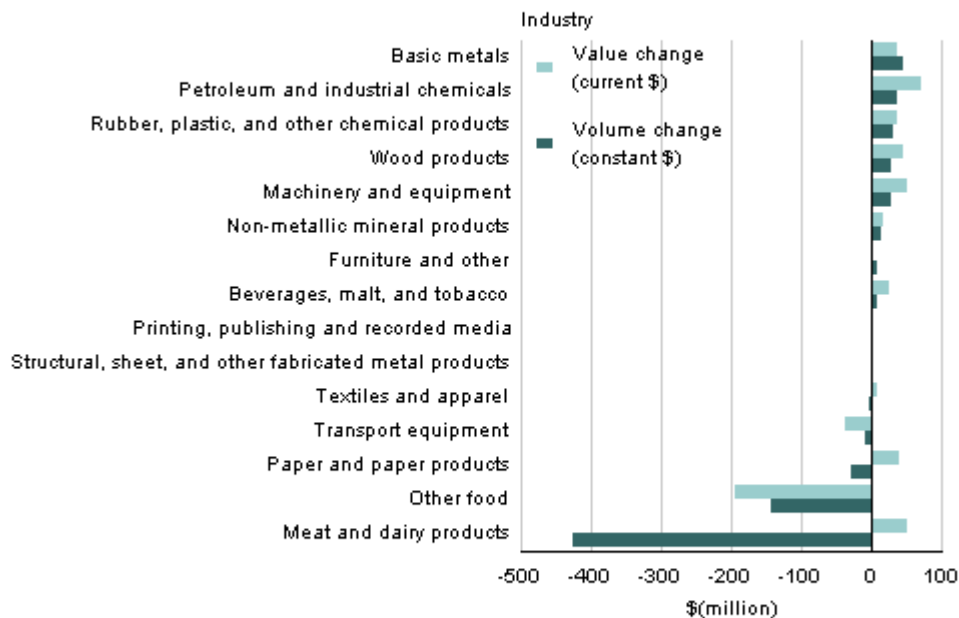
Thirteen industries show rises in value for the latest quarter, while two show falls. The main industry contributors were:

- other food manufacturing, **down** 8.4 percent (\$194 million)
- petroleum and industrial chemical manufacturing, **up** 10.3 percent (\$71 million)
- machinery and equipment manufacturing, **up** 3.2 percent (\$52 million)
- meat and dairy product manufacturing, **up** 1.0 percent (\$52 million).

Changes in seasonally adjusted manufacturing sales

Current and constant dollars⁽¹⁾

December 2009 quarter to March 2010 quarter



1. Constant dollar series (volumes) are at December 1997 quarter prices.

Source: Statistics New Zealand

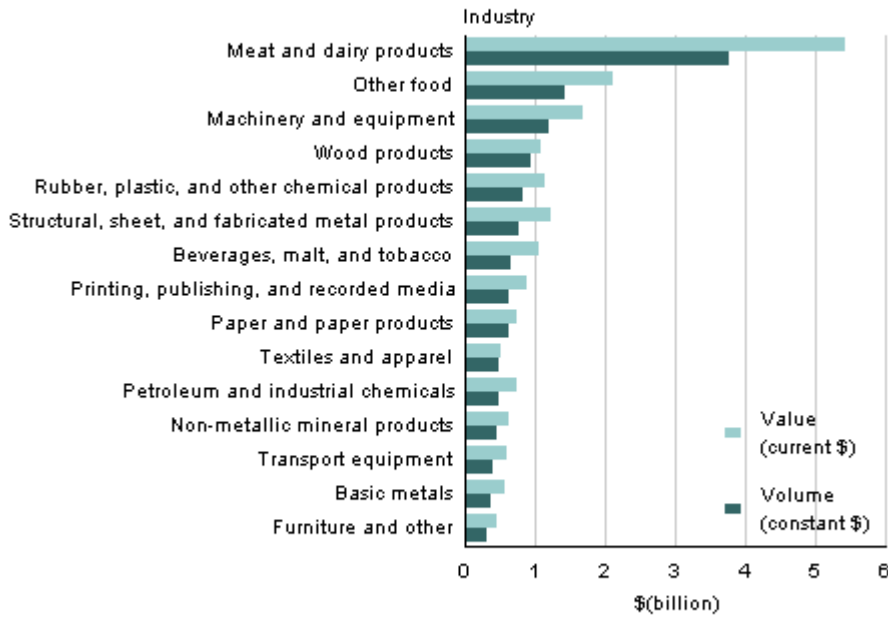
The trend for the sales volume is flatter than indicated in the previous release and now shows little change for the latest four quarters. The trend for the sales value appears to have stopped falling. Trend movements are subject to revision when data becomes available for later time periods.

As can be seen from the 'Changes in manufacturing stocks' graph below, stocks of finished goods (which are not seasonally adjusted) are overwhelmingly down from a year earlier, with transport equipment manufacturing being the only industry to show a clear increase. Volumes are down 7.2 percent for the March 2010 quarter compared with the March 2009 quarter. Stock values, at \$8.8 billion, are down 8.6 percent (\$0.8 billion).

Seasonally adjusted manufacturing sales

Current and constant dollars ⁽¹⁾

March 2010 quarter



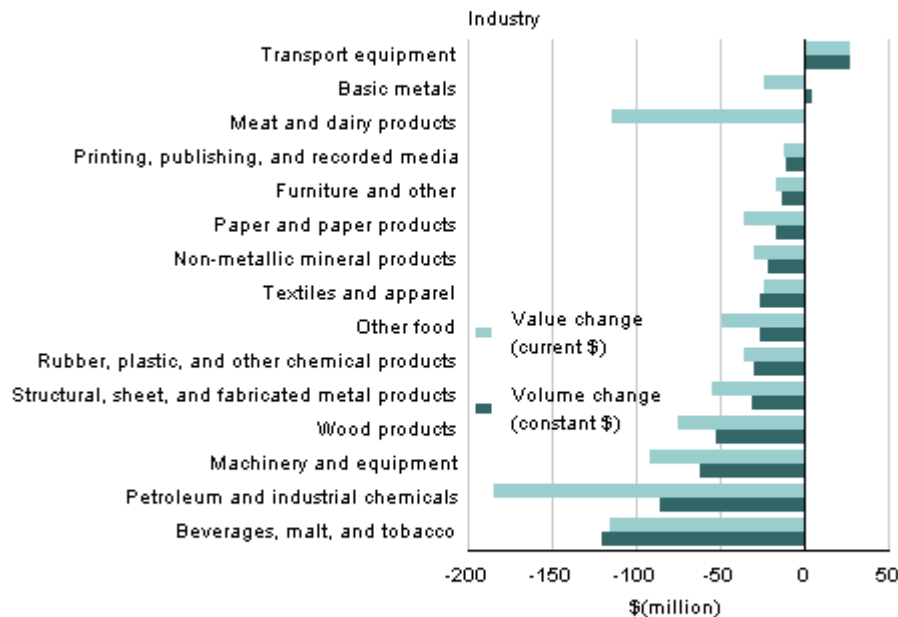
1. Constant dollar series (volumes) are at December 1997 quarter prices.

Source: Statistics New Zealand

Changes in manufacturing stocks ⁽¹⁾

In current and constant dollars ⁽²⁾

March 2009 quarter to March 2010 quarter



1. Closing stocks of finished goods.

2. Constant dollar series (volumes) are at December 1997 quarter prices.

Source: Statistics New Zealand

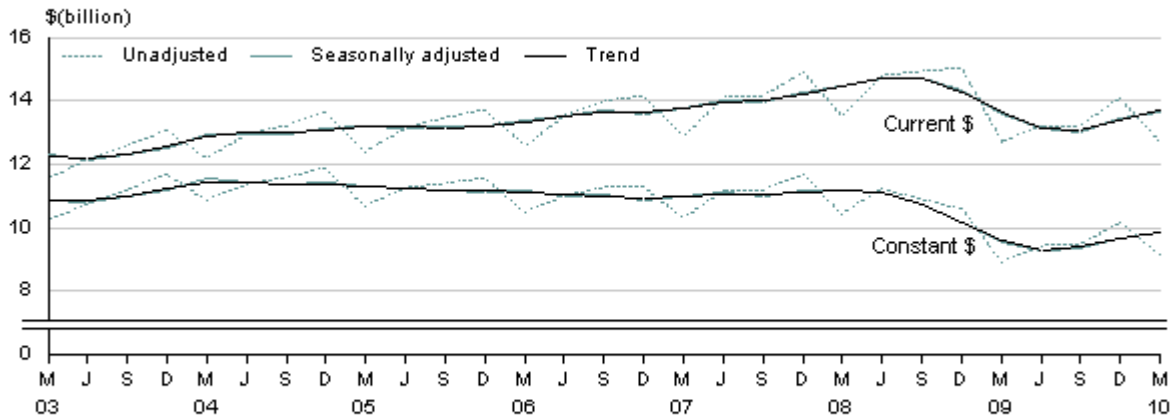
All manufacturing excluding meat and dairy product manufacturing

The volume of sales, excluding meat and dairy product manufacturing, rose 1.3 percent in the March 2010 quarter. As detailed in the 'All manufacturing industries' section, most industries show rises for the latest quarter. Basic metal manufacturing; petroleum and industrial chemical manufacturing; and rubber, plastic, and other chemical product manufacturing were the main contributors to the latest rise, while other food manufacturing showed the largest fall.

Manufacturing sales excluding meat and dairy product manufacturing

Current and constant dollars ⁽¹⁾

Quarterly



1. Constant dollar series (volumes) are at December 1997 quarter prices.

Source: Statistics New Zealand

With comparatively small price changes in the March 2010 quarter, volume was the main driver of the 1.8 percent (\$242 million) rise in sales value. This follows a rise of 3.1 percent in the previous quarter and five consecutive quarterly falls before that. As detailed in the 'All manufacturing industries' section, the largest rises in sales value for the latest quarter were for petroleum and industrial chemical manufacturing, and machinery and equipment manufacturing, while the largest fall was for other food manufacturing.

As can be seen from the graph above, the trend series for the sales volume and sales value are both rising.

The volume of finished goods stocks, which is not seasonally adjusted, is down 11.8 percent for the March 2010 quarter compared with the March 2009 quarter. The value, at \$4.8 billion, is down 12.9 percent.

Meat and dairy product manufacturing

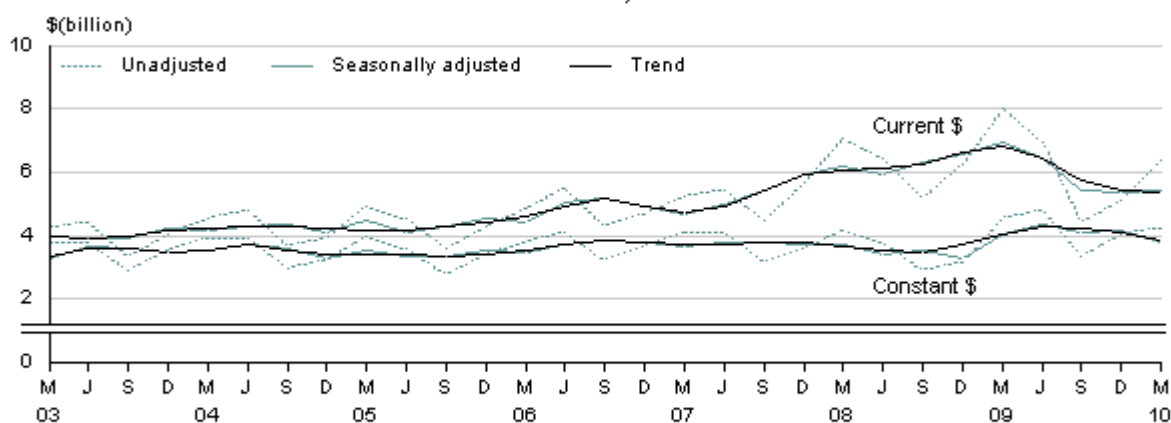
Dairy industry values are mainly compiled on a non-standard quarter that is lagged by one month. This means, for example, that the March quarter includes values for the months of December, January, and February. Later this year there should be sufficient monthly data to enable removal of the lag.

The volume of sales for the meat and dairy product manufacturing industry fell 10.1 percent in the March 2010 quarter (following a rise of 2.8 percent in the previous quarter) and was the main driver of the overall fall. Milk powder, butter, and cheese export quantities fell 1.7 percent in the March 2010 quarter, while meat and edible offal export quantities rose 3.8 percent, as published in the [Overseas Merchandise Trade: March 2010](#) release. Over half of meat and dairy production is exported but timing and valuation differences between sales volumes and export quantities can impact on comparisons of movements.

Meat and dairy product manufacturing sales

Current and constant dollars ⁽¹⁾

Quarterly



1. Constant dollar series (volumes) are at December 1997 quarter prices.

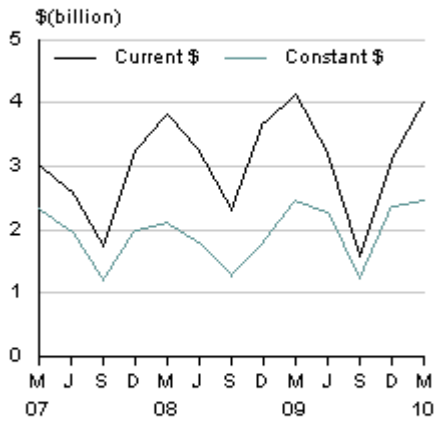
Source: Statistics New Zealand

Despite the 10.1 percent fall in volume, the value of sales rose 1.0 percent in the March 2010 quarter because of overall price increases. Dairy product prices, as measured by the [producers price index](#), rose 29.6 percent in the March 2010 quarter, while meat and meat product prices rose 4.9 percent. The latest rise in sales value follows three quarters of falls totalling 22.0 percent.

As can be seen from the graph above, the trend series for the sales volume and sales value are both declining.

The volume of finished goods stocks, which is not seasonally adjusted, is up just 0.1 percent for the March 2010 quarter compared with the March 2009 quarter. The value, at \$4.0 billion, is down 2.8 percent.

Meat and dairy product manufacturing stocks⁽¹⁾
 Current and constant dollars⁽²⁾
 Quarterly



1. Closing stocks of finished goods.
2. Constant dollar series (volumes) are at December 1997 quarter prices.

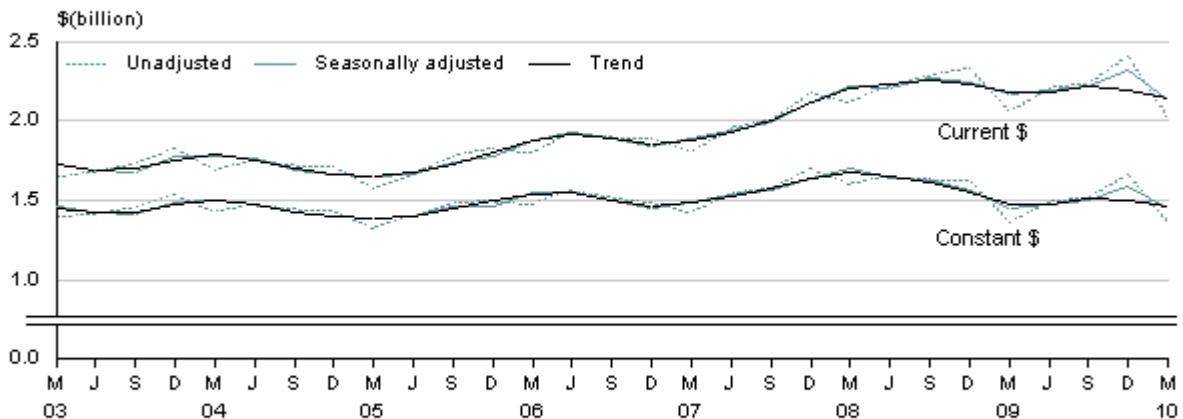
Source: Statistics New Zealand

Other food manufacturing

This industry includes the processing or production of seafood, fruit and vegetables, animal and bird feed, bread, cereals and baking mixes, cakes and pastry, oils and fats, flour, confectionery, biscuits, and sugar.

The volume of sales for this industry fell 9.0 percent in the March 2010 quarter, following rises in the previous three quarters.

Other food manufacturing sales
 Current and constant dollars⁽¹⁾
 Quarterly



1. Constant dollar series (volumes) are at December 1997 quarter prices.

Source: Statistics New Zealand

The value of sales fell 8.4 percent in the March 2010 quarter, following rises in the previous three quarters. The fall in the latest quarter was driven by the large drop in volume, with price movement, up 2.7 percent as measured by the producers price index, providing a small offset.

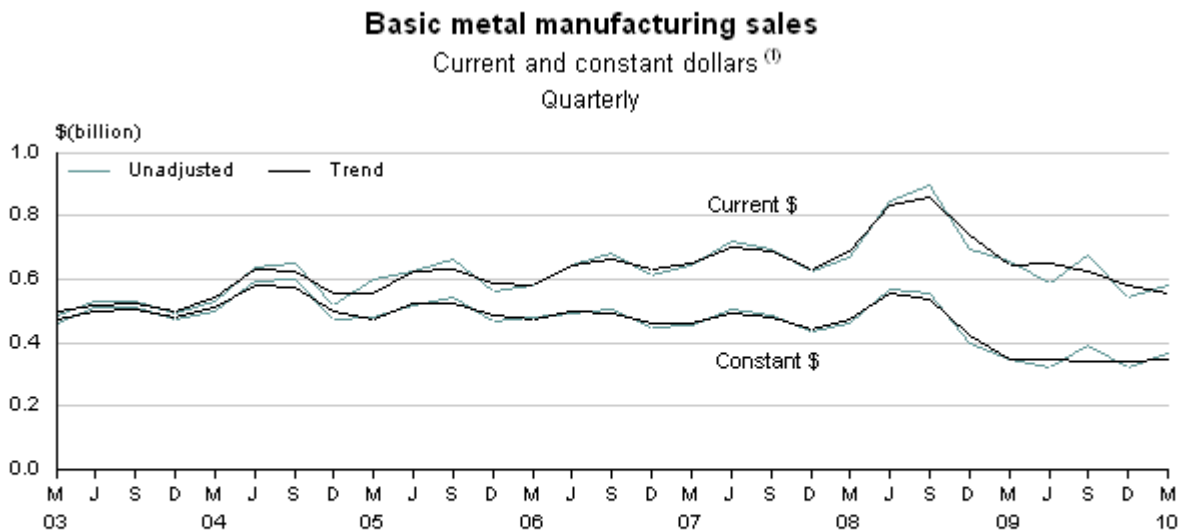
The trend series for both the sales volume and the sales value now show falls for the latest two quarters. However, trend estimates are subject to revision when data becomes available for later quarters.

The volume of finished goods stocks, which is not seasonally adjusted, is down 4.7 percent for the March 2010 quarter compared with the March 2009 quarter. The value, at \$802 million, is down 5.8 percent.

Basic metal manufacturing

The basic metal manufacturing industry includes the manufacture of iron and steel, basic non-ferrous metals, and non-ferrous basic metal products. Sales for this industry have an unstable seasonal pattern, so are not seasonally adjusted.

The (unadjusted) volume of sales rose 14.3 percent in the March 2010 quarter, following a historic low level in the December 2009 quarter. This industry provided the largest positive offset to the overall fall in total manufacturing volume.



1. Constant dollar series (volumes) are at December 1997 quarter prices.

Source: Statistics New Zealand

The (unadjusted) value of sales rose 7.1 percent in the March 2010 quarter, following a fall of 19.1 percent in the previous quarter. Output prices for this industry, as measured by the producers price index, decreased 6.3 percent in the March 2010 quarter, confirming that the rise in sales value was volume-driven.

The trend series for the sales volume appears to have stopped falling, while the trend series for the sales value shows a decline for the latest three quarters. However, trend estimates are subject to revision when data becomes available for later quarters.

The volume of finished goods stocks, which is not seasonally adjusted, is up 4.4 percent for the March 2010 quarter compared with the March 2009 quarter. The value, at \$174 million, is down 12.0 percent.

Revisions

Amended data received from respondents has resulted in revisions for the following industries for the December 2009 quarter:

- other food manufacturing
- non-metallic mineral product manufacturing
- machinery and equipment manufacturing
- beverage, malt and tobacco manufacturing
- basic metal manufacturing.

The main changes to unadjusted sales values are in the following table.

Changes to sales, purchases, and stocks of finished goods					
Manufacturing industry	Variable	Series MANQ.	Period (quarter)	Published 8 Mar 2010	Published 8 Jun 2010
				\$(million)	\$(million)
Non-metallic mineral products	Sales	SNMC12A	Mar 2009	658	643
Non-metallic mineral products	Sales	SNMC12A	Jun 2009	642	627
All manufacturing	Sales	SNMCZZA	Sep 2009	17,596	17,608
All manufacturing excluding meat and dairy	Sales	SNMCZ3A	Sep 2009	13,168	13,179
Machinery and equipment	Sales	SNMC16A	Sep 2009	1,660	1,665

Measurement errors

The Economic Survey of Manufacturing applies imputation methods for estimating values for small firms and non-response, and, like all statistical surveys, is subject to measurement errors, including sample errors and non-sample errors. These measurement errors affect the accuracy of the published statistics. For more information on measurement errors, please refer to the ['Technical notes'](#) of this release.

Sample errors

The Economic Survey of Manufacturing is primarily a postal survey and is designed to give statistics at the following levels of accuracy (at the 95 percent confidence interval limit):

- 5 percent for sales, salaries and wages, and value added at the total manufacturing level
- 10 percent for sales, salaries and wages, and value added at the published industry level, where value added is calculated as follows:

$$\text{value added} = \text{sales} - \text{purchases} + \text{stock change}$$

This means, for example, that there is a 95 percent chance that the true value of total manufacturing sales lies within 5 percent of the published estimate.

Sample errors, at the 95 percent confidence interval limit, are calculated each quarter for absolute values and for changes in value from the previous quarter.

Sample errors for sales in the March 2010 quarter		
Industry	Sample error for sales value	Sample error for change in sales
	Percent	
Meat and dairy product manufacturing	0.0	0.0
Other food manufacturing	10.8	10.1
Beverage, malt, and tobacco manufacturing	0.0	0.0
Textile and apparel manufacturing	7.5	7.0
Wood product manufacturing	4.8	4.6
Paper and paper product manufacturing	0.0	0.0
Printing, publishing, and recorded media	7.3	2.9
Petroleum and industrial chemical manufacturing	0.0	0.0
Rubber, plastic, and other chemical product manufacturing	11.0	3.6
Non-metallic mineral product manufacturing	5.7	0.9
Basic metal manufacturing	0.0	0.0
Structural, sheet, and fabricated metal product manufacturing	5.6	2.9
Transport equipment manufacturing	5.2	1.8
Machinery and equipment manufacturing	4.5	2.8
Furniture and other manufacturing	5.2	2.0
Total manufacturing	1.5	1.5

Industries with zero sample error are full-coverage industries. In these industries, all large firms are surveyed and all small to medium-sized firms are modelled using administrative data from Inland Revenue.

Imputation

Small firms

Small to medium-sized firms are generally not surveyed. Their variables are instead modelled from administrative data from Inland Revenue. Ratios calculated from the postal sample responses are applied to the administrative data to provide estimated values.

Non-response imputation

Although attempts are made to achieve a 100 percent response rate, in practice this does not occur. Values for non-responding businesses are estimated using a range of methods, including:

- regression imputation
- historic imputation
- mean imputation.

Regression imputation involves estimating the variable of interest from the unit's administrative data (GST sales), based on the relationship shown by similar businesses. Historic imputation involves multiplying their response in the previous period by a non-response factor. The non-response factor is the average movement over the quarter of similar businesses. Mean imputation involves estimating a value for a unit by using the average value for a set of similar businesses.

Imputed values as a percentage of sales in the March 2010 quarter		
Industry	Non-response	Tax modelled
	Percentage of sales	
Meat and dairy product manufacturing	0.2	2.8
Other food manufacturing	6.1	5.1
Beverage, malt, and tobacco manufacturing	1.7	7.0
Textile and apparel manufacturing	13.4	17.7
Wood product manufacturing	10.8	8.5
Paper and paper product manufacturing	3.7	0.9
Printing, publishing, and recorded media	12.2	10.5
Petroleum and industrial chemical manufacturing	8.1	5.1
Rubber, plastic, and other chemical product manufacturing	6.5	7.9
Non-metallic mineral product manufacturing	7.0	7.8
Basic metal manufacturing	3.6	4.3
Structural, sheet, and fabricated metal product manufacturing	17.1	10.2
Transport equipment manufacturing	18.6	8.9
Machinery and equipment manufacturing	13.4	11.4
Furniture and other manufacturing	15.6	23.3
Total manufacturing	6.4	6.6

Response rate

The response rate applies to the postal sample and gives the proportion of sales obtained from survey responses (compared with being imputed). The Economic Survey of Manufacturing has a target response rate of 85 percent. The response rate achieved for the March 2010 quarter was 93 percent.

For technical information contact:
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Next release ...

Economic Survey of Manufacturing: June 2010 quarter will be released on 8 September 2010.

Technical notes

For explanation of terms, see the definitions section below.

Background to the survey

The Economic Survey of Manufacturing (ESM) provides short-term economic indicators for the manufacturing sector. The data is also used to compile the manufacturing sector component of the quarterly national accounts. Published values exclude GST.

Population

The target population for this survey is all manufacturing businesses operating in New Zealand. This is as specified on Statistics New Zealand's Business Frame using the 1996 Australian and New Zealand Standard Industrial Classification (ANZSIC) for Division C at the kind-of-activity business unit.

Sample design

The survey population is split into ANZIND working industries and stratified according to size (based on GST sales and rolling mean employment numbers). All units that are large enough to be in the top strata are included in the postal survey, together with sampled units from the middle strata. All manufacturing units belonging to a selected enterprise are included. For units in the bottom strata, data is obtained via modelling of administrative data (GST and Employee Monthly Survey) from Inland Revenue.

About 1,500 units are selected each quarter for the postal survey while about 17,500 units have their data modelled from administrative data.

Sample maintenance

Sample maintenance is the process that keeps the sample up to date by taking account of business start-ups, close-downs, and other structural changes recorded on the Business Frame. Information for the Business Frame comes from a variety of sources, including GST registrations and respondent contact.

New enterprises are identified from GST registrations and may be selected into the postal sample. When an enterprise ceases trading, its manufacturing units are removed from the survey.

Enterprises can also enter or leave the survey sample if they are reclassified to or from the manufacturing sector. Reclassifications occur when an enterprise changes its main form of activity (eg from wholesale trade to manufacturing). These changes are usually obtained from the Annual Frame Update Survey conducted each February.

Sample reselection

The survey sample is reselected each quarter to ensure that it reflects changes in the manufacturing population.

Industry classification

From the September 2001 quarter, ESM values are published on an ANZIND working industry basis. ANZIND industries are defined groupings of ANZSIC industries. The 1996 version of ANZSIC is currently used but in 2011 will be superseded by the 2006 version.

Measurement errors

Errors in the survey are divided into two classes:

Non-sampling error

Non-sampling error includes errors arising from biases in the patterns of response and non-response, inaccuracies in reporting by respondents, and errors in the recording and coding of data. The magnitude of these errors is difficult to quantify. Statistics are subject to revision when errors are corrected.

Sampling error

Sampling error is a measure of the variability that occurs by chance because a sample, rather than an entire population, is surveyed.

Definitions

ANZIND

An ANZSIC-based classification that groups industries for publication.

ANZSIC

Australian and New Zealand Standard Industrial Classification.

Business Frame

A register of all economically significant businesses that operate in New Zealand. The population of the ESM is drawn from the Business Frame.

Enterprise

A business entity operating in New Zealand either as a legally constituted body such as a company, partnership, trust, local or central government trading organisation, or as a self-employed individual.

Kind-of-activity unit

A subdivision of an enterprise engaged in predominantly one activity and for which a single set of accounting records is available.

Rolling mean employment

A 12-month moving average of the monthly employee count.

Sales / operating income

Current sales may include goods or services produced or supplied in other quarters.

Included:

- sales of goods (whether manufactured, processed, or traded)
- sales of services (including repair services)
- manufacturing, processing, and management fees
- rental and leasing income
- royalties and patent fees.

Excluded:

- interest, dividends, donations, bad debts, and insurance claims
- excise duty, government grants, and subsidies
- extraordinary items (eg exchange rate gains, gains on sales of fixed assets).

Purchases and operating expenditure

Current payments may include goods or services obtained in other quarters.

Included:

- purchases of goods, fuels and materials (whether for production or resale)
- general expenses (eg advertising, freight, insurance, motor vehicle, rates, rent, repairs, utilities)
- management fees and payments to other businesses or divisions
- payments to welfare and superannuation schemes (eg ACC, KiwiSaver)
- royalties and patent fees.

Excluded:

- interest, dividends, donations, and bad debts
- excise duty, fringe benefit tax, and road user charges
- extraordinary items (eg exchange rate losses, losses on sales of fixed assets)
- depreciation.

Salaries and wages

Included:

- gross salary, wage, bonus, and redundancy payments to employees.

Excluded:

- drawings
- salaries and wages paid to working proprietors
- payments to welfare and superannuation schemes (eg ACC, KiwiSaver).

Stocks of raw materials

Closing stocks of raw materials for use in production. Includes materials, fuels, and livestock.

Stocks of finished goods

Closing stocks of finished goods, trading goods and work in progress.

Additions to fixed assets

Purchases of fixed assets (including land) plus capital works by own employees. Revaluations are excluded.

Disposals of fixed assets

Sales of fixed assets (including land) at selling prices. Devaluations are excluded.

Volume series

These are value series that have been adjusted (divided by price indexes) to remove the effect of price changes. They provide a measure of quantity change and are currently expressed in December 1997 quarter dollars. The price indexes used are from the Producers Price Index and are available on Infoshare.

Seasonally adjusted and trend series

For any series, the survey estimates can be broken down into three components: trend, seasonal and irregular. While seasonally adjusted series have had the seasonal component removed, trend series have had both the seasonal and irregular components removed. This reveals turning points and the underlying direction of quarterly movement.

Seasonally adjusted and trend values are re-estimated quarterly when each new quarter's data becomes available. Figures are therefore subject to revision, with the largest changes normally occurring in the latest quarters. Estimates are produced by the X-12-ARIMA seasonal adjustment program, developed at the U.S. Census Bureau.

Further information about [seasonal adjustment and trend estimation](http://www.stats.govt.nz) is on the Statistics New Zealand website (www.stats.govt.nz).

Seasonally adjusted series

Seasonal adjustment removes the estimated impact of regular seasonal events, such as annual cycles in agricultural production, pre-Christmas shopping, and summer holidays, from statistical series. This makes figures for adjacent periods more comparable.

For the ESM, the removal of the purchasing monopoly in the dairy industry in mid-2002 caused an abrupt change to seasonal variation in the meat and dairy industry. In response, the calculation method for total sales was changed from direct to indirect (whereby component industries are individually adjusted before being summed). Direct and indirect adjustment methods are both used, according to appropriateness.

Trend series

Trend estimation removes the estimated impact of regular seasonal events and irregular short-term variation from statistical series. Trend estimates reveal the underlying direction of movement in a series, and are likely to indicate turning points more accurately than are seasonally adjusted estimates.

Use in national accounts

A key use of the ESM is in the quarterly Gross Domestic Product (GDP for calculating manufacturing 'value added' (value of output after the cost of input materials and services has been deducted). GDP base-year manufacturing value added is moved forward using volume indexes that are calculated from ESM sales and finished good stock changes (deflated by sub-indexes of the [Producers Price Index](#)).

ESM volumes are supplemented with quantity production data for the following industries:

- meat and dairy product manufacturing
- petroleum and industrial chemical manufacturing
- basic metal manufacturing.

The ESM is also used in the expenditure measure of GDP for compiling stock change values at current and constant prices.

More information

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

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Tables

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

List of tables

1. All manufacturing, ANZSIC division C
2. All manufacturing excluding meat and dairy product manufacturing, ANZSIC division C (excluding ANZSIC C211–C212)
3. Meat and dairy product manufacturing, ANZSIC C211–C212
4. Other food manufacturing, ANZSIC C213–C217
5. Beverage, malt and tobacco manufacturing, ANZSIC C218–C219
6. Textile and apparel manufacturing, ANZSIC C22
7. Wood product manufacturing, ANZSIC C231–C232
8. Paper and paper product manufacturing, ANZSIC C233
9. Printing, publishing, and recorded media manufacturing, ANZSIC C24
10. Petroleum and industrial chemical manufacturing, ANZSIC C251–C253
11. Rubber, plastic and other chemical product manufacturing, ANZSIC C254–C256
12. Non-metallic mineral product manufacturing, ANZSIC C26
13. Basic metal manufacturing, ANZSIC C271–C273
14. Structural, sheet and fabricated metal product manufacturing, ANZSIC C274–C276
15. Transport equipment manufacturing, ANZSIC C281–C282
16. Machinery and equipment manufacturing, ANZSIC C283–C286
17. Furniture and other manufacturing, ANZSIC C29
18. Purchases and operating expenditure, by industry
19. Salaries and wages, by industry
20. Additions and disposals of fixed assets, by industry

Statistics for the Economic Survey of Manufacturing are also available from our online database [Infoshare](#).