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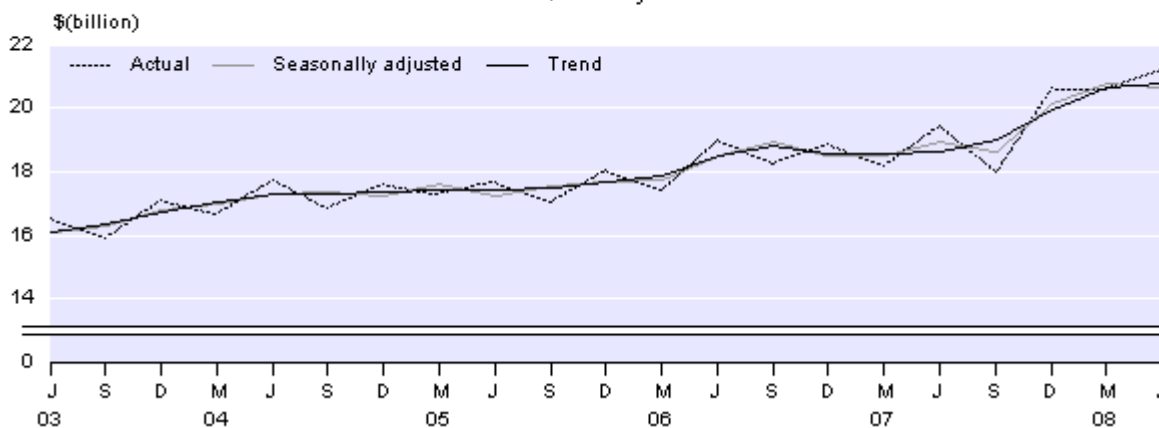
Economic Survey of Manufacturing: June 2008 quarter

Highlights

For the June 2008 quarter compared with the March 2008 quarter (on a seasonally adjusted basis):

- Manufacturing sales volumes decreased 1.0 percent.
- Excluding meat and dairy product manufacturing, volumes increased 1.8 percent.
- Manufacturing sales were relatively flat, down 0.6 percent.
- Excluding meat and dairy product manufacturing, sales rose 3.1 percent.
- Meat and dairy industry sales fell 8.9 percent while basic metal industry sales rose 27 percent.

Total Manufacturing Sales
Quarterly



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See also [Economic Survey of Manufacturing: June 2008 quarter – Media release](#).

Commentary

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

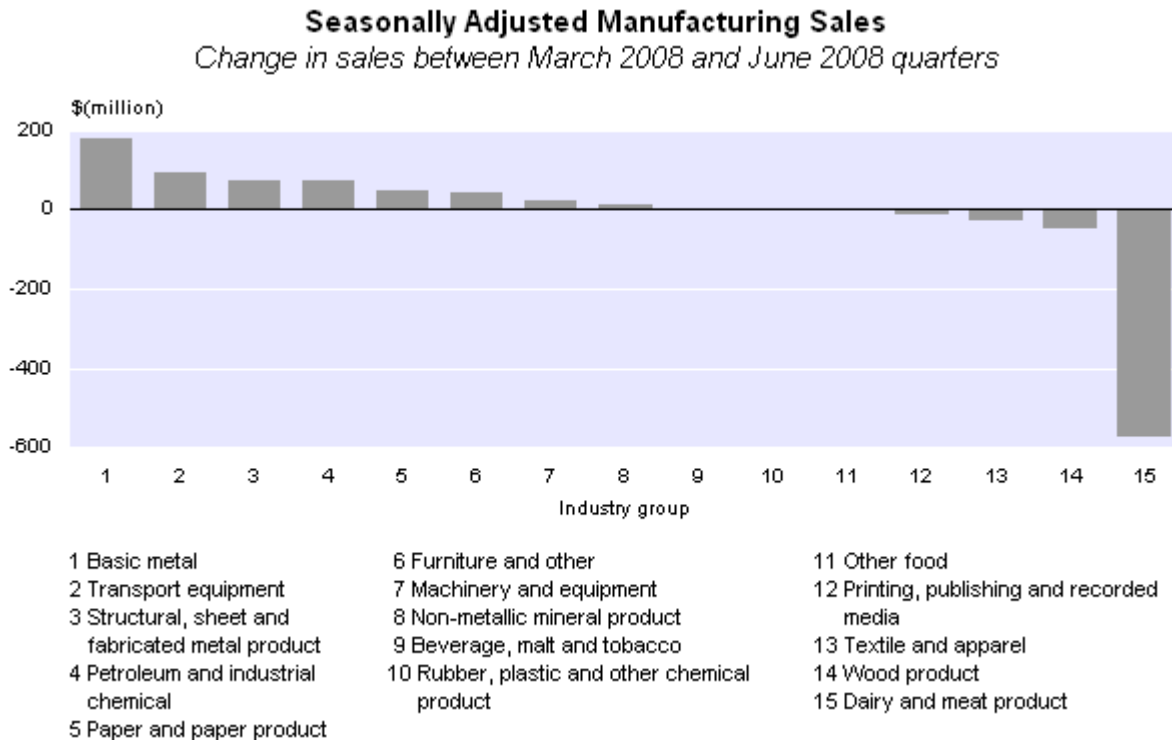
Total sales

Total manufacturing sales decreased 0.6 percent (\$132 million) in the June 2008 quarter, following increases in the previous two quarters. These changes reflect rises and falls in the meat and dairy product manufacturing industry. This industry accounts for over one-quarter of total manufacturing sales and showed a fall in the latest quarter, following a record two-quarter rise.

Decreases in sales values occurred in six of the 15 published industries in the June 2008 quarter. The largest decrease was in the meat and dairy product manufacturing industry, down 8.9 percent (\$572 million), followed by the wood product manufacturing industry, down 4.5 percent (\$51 million).

Increases in sales values occurred in nine published industries in the June 2008 quarter. The largest increase was in the basic metal manufacturing industry, up 27 percent (\$177 million), followed by the transport equipment manufacturing industry, up 14 percent (\$94 million).

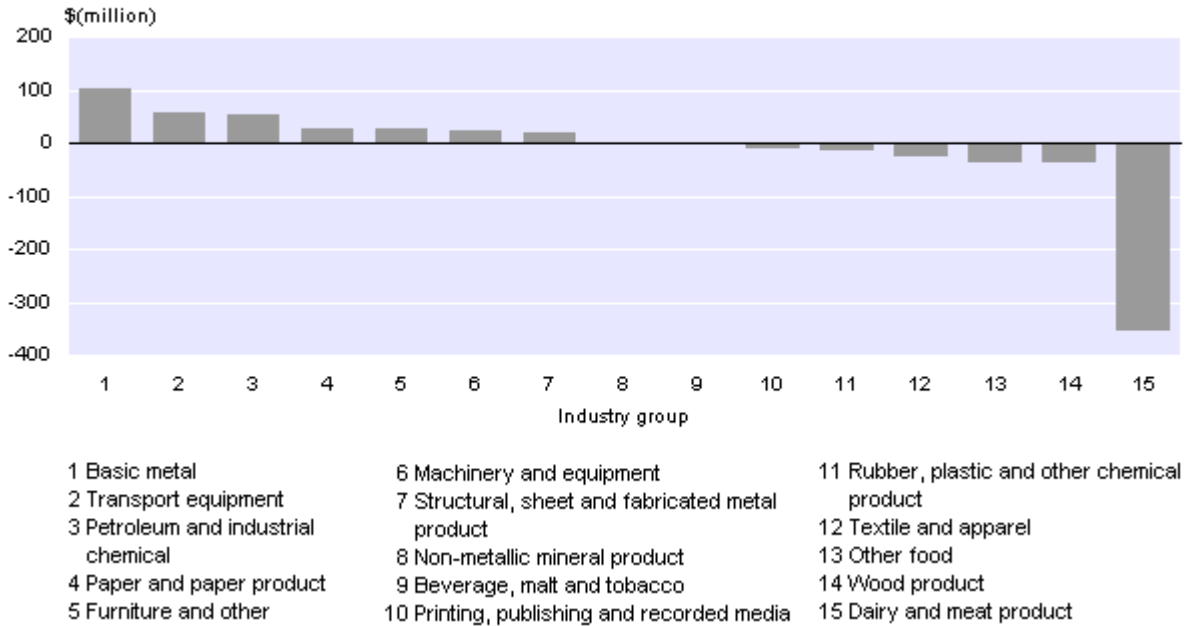
The manufacturing sales trend continues to rise. However, the latest figures indicate an easing in the growth rate, following three quarters of relatively strong increases.



The manufacturing sales volume decreased 1.0 percent in the June 2008 quarter, following a decrease of 0.2 percent in the March 2008 quarter, and an increase of 3.6 percent in the December 2007 quarter.

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

Seasonally Adjusted Manufacturing Sales (at December 1997 Quarter Prices)
Change in sales between March 2008 and June 2008 quarters



Stocks

The unadjusted value for closing stocks of finished goods is up 10 percent (\$783 million) for the June 2008 quarter compared with the same quarter a year earlier. Meat and dairy product manufacturing contributed most of this change, with an increase of 22 percent (\$574 million). The March 2008 and December 2007 quarters showed increases of 14 percent and 13 percent, respectively, compared with the same quarters a year earlier.

The unadjusted volume of finished goods stocks is down 3.1 percent (\$187 million) for the June 2008 quarter compared with the same quarter a year earlier, reflecting lower stock volumes in the meat and dairy industry.

All manufacturing excluding meat and dairy product manufacturing

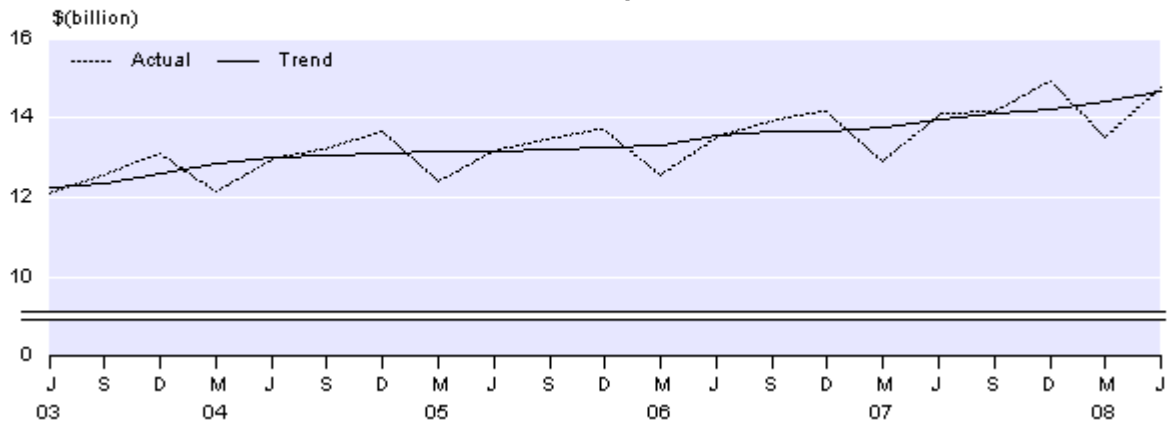
For the June 2008 quarter, all manufacturing sales excluding the meat and dairy product manufacturing industry had an increase of 3.1 percent (\$439 million), following a decrease of 0.2 percent (\$22 million) in the March 2008 quarter.

Basic metal manufacturing, up 27 percent (\$177 million), and transport equipment manufacturing, up 14 percent (\$94 million), contributed over half the June quarter rise. The main falls were in wood product manufacturing, down 4.5 percent (\$51 million) and textile and apparel manufacturing, down 4.9 percent (\$29 million).

The sales volume rose 1.8 percent in the June 2008 quarter, following a fall of 1.4 percent in the March 2008 quarter.

The sales trend continues to generally move upward, and has risen 20 percent since the June 2003 quarter.

Total Manufacturing Sales
Excluding meat and dairy product manufacturing
 Quarterly



Meat and dairy product manufacturing

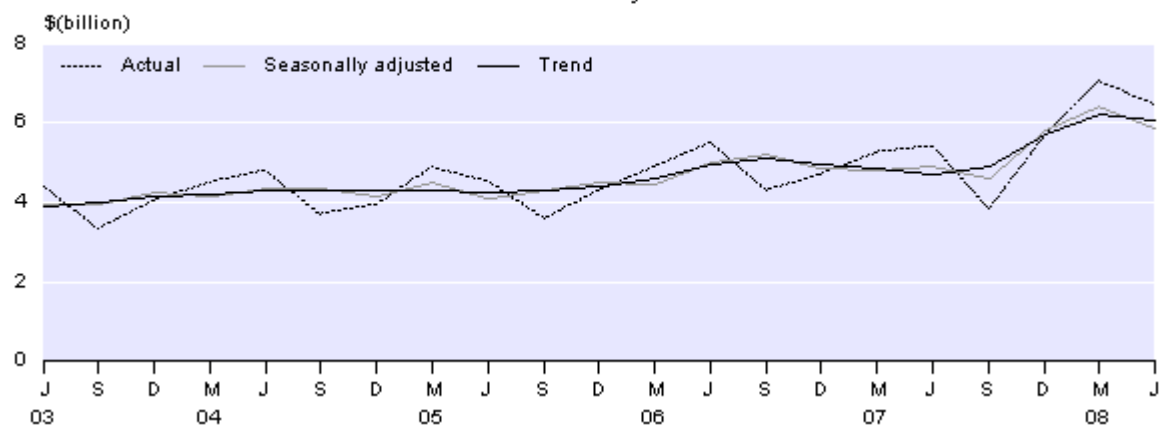
A sales decrease of 8.9 percent (\$572 million) was recorded for the meat and dairy product manufacturing industry in the June 2008 quarter. This is the largest percentage decrease in almost 10 years and offsets some of the large rise of 40 percent (\$1,827 million) during the previous two quarters.

Meat and dairy product manufacturing volumes fell 9.4 percent in the June 2008 quarter, after rising in the previous two quarters. The latest fall reflects a drop of 17 percent in the seasonally adjusted exported volume of dairy products in the June 2008 quarter, as shown in the Overseas Trade Indexes (Volumes) release. Meat prices rose 5.9 percent in the June 2008 quarter, while dairy prices eased 0.4 percent after a 52 percent rise across the previous five quarters, according to industry outputs in the Producers Price Index release.

Stocks of finished goods, which are not seasonally adjusted, dropped 16 percent from the March 2008 quarter high-point, but are up 22 percent on the June 2007 quarter. Stocks typically rise in the December and March quarters then fall in the following two quarters.

The sales trend for the meat and dairy product manufacturing industry shows a decrease for the June 2008 quarter, following three quarters of rises totalling 31 percent. However, these movements are only indicative at this stage and may be revised in future quarters.

Meat and Dairy Product Manufacturing Sales
 Quarterly



Wood product manufacturing

The wood product manufacturing industry consists of log sawmilling, wood chipping, timber re-sawing and dressing, and the manufacture of plywood and veneer, fabricated wood and wooden structural components. The industry comprises a mix of exported wood commodities and domestic wood manufacturing sales.

Sales by the wood product manufacturing industry fell 4.5 percent (\$51 million) in the June 2008 quarter, following falls in the previous two quarters. The decreases in these three quarters total 13 percent (\$160 million). Volumes continued to fall, down 3.8 percent for the June 2008 quarter, and down 11 percent across the previous three quarters.

Output prices, as measured by the *Producers Price Index*, fell 1.3 percent during the three quarters to June 2008, while the value for stocks of finished goods, which is not seasonally adjusted, rose 15 percent during the latest two quarters.

The sales trend shows a fall for the three quarters to June 2008, following increases in 2006 and 2007.



Basic metal manufacturing

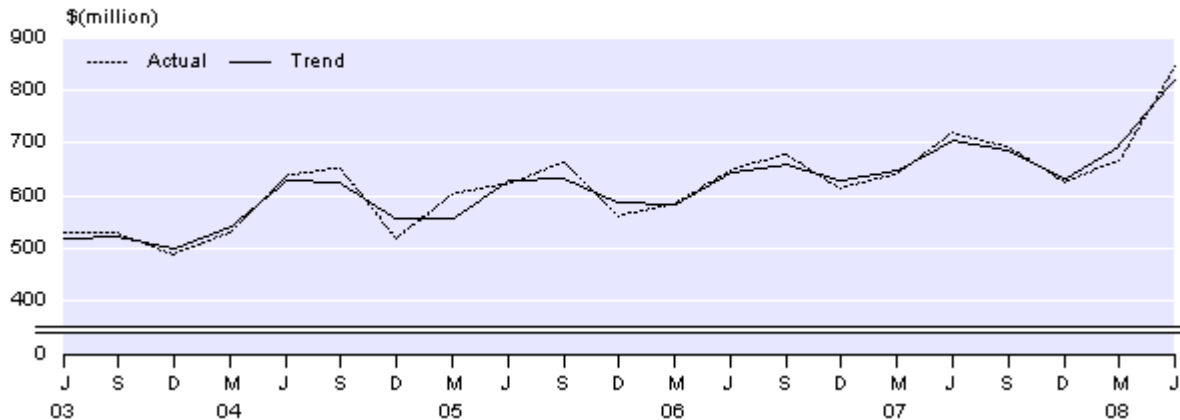
The basic metal manufacturing industry includes the manufacture of iron and steel, basic non-ferrous metals, and non-ferrous basic metal products.

Sales by this industry do not have a stable seasonal pattern, so are not seasonally adjusted.

Sales by the basic metal manufacturing industry rose 27 percent (\$177 million) in the June 2008 quarter, following a rise of 6.9 percent in the March 2008 quarter, and a fall of 10 percent in the December 2007 quarter. Volumes rose 22 percent in the June 2008 quarter and 6.1 percent in the March 2008 quarter, and fell 10 percent in the December 2007 quarter.

Output prices, as measured by the *Producers Price Index*, rose 3.5 percent in the June 2008 quarter. Stocks of finished goods, which are not seasonally adjusted, decreased 5.1 percent during the latest two quarters, while stock volumes dropped 9.1 percent.

Basic Metal Manufacturing Sales Quarterly



Transport equipment manufacturing

The transport equipment manufacturing industry includes the manufacture and repair of a variety of transport equipment including ships, locomotives and aircraft.

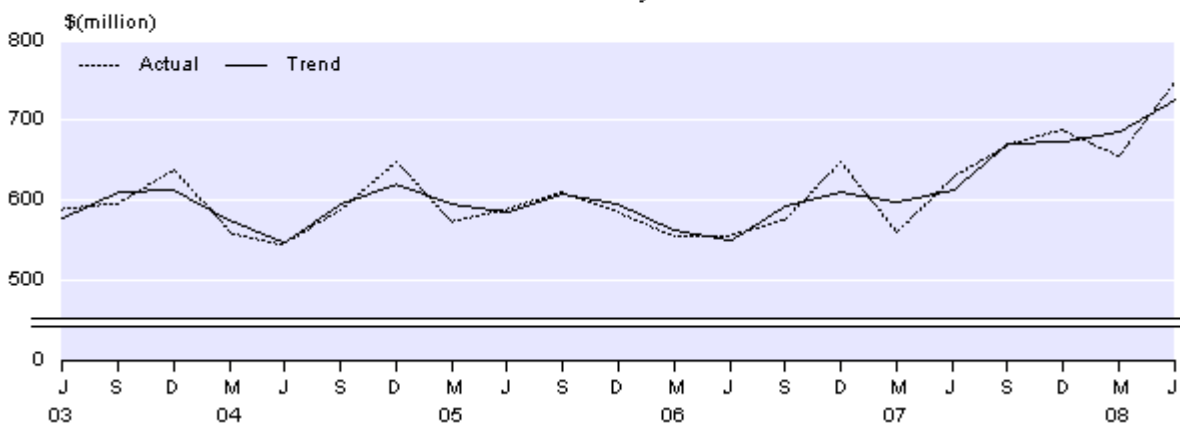
Sales by this industry do not have a stable seasonal pattern, so are not seasonally adjusted.

Sales by the transport equipment manufacturing industry rose 14 percent (\$94 million) in the June 2008 quarter, following a fall of 5.0 percent in the March 2008 quarter. Volumes rose 11 percent in the June 2008 quarter, fell 6.3 percent in the March 2008 quarter, and showed rises totalling 23 percent for the June to December 2007 quarters.

Output prices, as measured by the *Producers Price Index*, rose 4.7 percent in the latest two quarters, while the value for stocks of finished goods decreased 12 percent.

The sales trend shows a rise for the latest five quarters, increasing 22 percent since the March 2007 quarter.

Transport Equipment Manufacturing Sales Quarterly



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 postal survey was 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 are calculated each quarter for absolute values and for changes in value from the previous quarter.

The sample errors for the June 2008 quarter, at the 95 percent confidence interval limit, are:

Industry	Sample error for sales	Sample error for change in sales
	Percent	
Meat and dairy product manufacturing	0.0	0.0
Other food manufacturing	9.2	7.7
Beverage, malt and tobacco manufacturing	0.0	0.0
Textile and apparel manufacturing	6.0	2.4
Wood product manufacturing	4.1	3.4
Paper and paper product manufacturing	0.0	0.0
Printing, publishing and recorded media	6.4	5.5
Petroleum and industrial chemical manufacturing	0.0	0.0
Rubber, plastic and other chemical product manufacturing	12.5	5.5
Non-metallic mineral product manufacturing	3.3	1.1
Basic metal manufacturing	0.0	0.0
Structural, sheet and fabricated metal product manufacturing	5.9	5.4
Transport equipment manufacturing	4.6	2.7
Machinery and equipment manufacturing	3.3	4.1
Furniture and other manufacturing	4.4	2.3
Total manufacturing	1.4	1.0

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.

The table below indicates the percentage of sales that was imputed in the June 2008 quarter:

Industry	Non-response	Tax modelled
	Percentage of sales	
Meat and dairy product manufacturing	0.4	2.6
Other food manufacturing	4.8	4.8
Beverage, malt and tobacco manufacturing	5.3	6.1
Textile and apparel manufacturing	11.6	16.7
Wood product manufacturing	11.2	9.2
Paper and paper product manufacturing	0.8	0.9
Printing, publishing and recorded media	9.9	10.4
Petroleum and industrial chemical manufacturing	4.8	5.0
Rubber, plastic and other chemical product manufacturing	11.0	7.8
Non-metallic mineral product manufacturing	16.6	6.4
Basic metal manufacturing	4.1	3.6
Structural, sheet and fabricated metal product manufacturing	19.5	11.0
Transport equipment manufacturing	13.9	10.5
Machinery and equipment manufacturing	14.8	12.3
Furniture and other manufacturing	13.8	24.0
Total manufacturing	7.2	6.8

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 June 2008 quarter was 91 percent.

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Next release ...

Economic Survey of Manufacturing: September 2008 will be released on 15 December 2008

Technical notes

Background to the survey

The Economic Survey of Manufacturing (QMS) is designed to provide short-term economic indicators for the manufacturing sector. In addition, the data is used to compile the manufacturing sector component of quarterly national accounts. The survey was last redesigned in the June 2001 quarter.

Population

The target population for this survey is all kind-of-activity units (KAUs) operating in New Zealand that are classified as Manufacturing (Australian and New Zealand Standard Industrial Classification Division C) on Statistics New Zealand's Business Frame.

Sample design

The survey population is stratified according to:

- industries defined by the ANZSIC-based ANZIND classification at the working industry level
- size (in terms of rolling mean employment)
- turnover (annualised GST sales).

Each ANZIND working industry division contains between two and four substrata. Because of the contribution large units make to the economic activity within each industry group, they are all included in the sample. A portion of the remaining medium to large units is also included in the sample. In addition, small- to medium-sized businesses have their data modelled from administrative data (GST and Employee Monthly Survey (EMS)) sourced from Inland Revenue. All manufacturing KAUs belonging to a selected 'enterprise' are included.

About 1,600 units have been selected in the postal sample from the entire population, and approximately 17,000 units have their data modelled from tax data.

Sample maintenance

Sample maintenance is the process that maintains the sample over time, to reflect births, deaths and other structural changes identified on the Business Frame. The information for Business Frame changes comes from a variety of sources, including GST registrations and respondent contact.

New enterprises are identified when they register for GST. Once a quarter, the new enterprises are selected into the sample using the same criteria as for the original sample. These are referred to as births. When an enterprise ceases trading, its manufacturing KAUs are removed from the survey. These are referred to as deaths.

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

Sample reselection

The sample for the QMS is reselected each quarter to ensure the sample reflects changes occurring in the manufacturing population.

Industry classifications

From the September 2001 quarter, QMS estimates have been published using industries defined by the ANZSIC-based ANZIND classification. The ANZSIC series are the official QMS statistics.

The introduction of ANZSIC ensures the industry classification used by Statistics NZ better reflects contemporary economic activity. It also improves the comparability of statistics produced in New Zealand and Australia.

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 size of these errors is difficult to quantify. Data is subject to revision if significant errors are detected in subsequent quarters.

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

ANZSIC

Australian and New Zealand Standard Industrial Classification system.

ANZIND

An ANZSIC-based classification used to group industries for publication.

Business Frame

A register of all economically significant businesses operating in New Zealand. The population of the QMS 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 (KAU)

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

Rolling mean employment (RME)

RME is a 12-month moving average of the monthly employee count (EC) figure which replaces the numbers of full-time and part-time employees.

Operating income

Income from total sales. This includes:

- sales of processed goods
- sales of goods purchased for resale
- sales of services
- repair services
- manufacturing and processing fees
- management fees
- rental income
- leasing income
- royalties
- patent fees.

Operating income may contain end-of-year payouts that relate to production from earlier quarters. Operating income excludes:

- donations
- insurance claims
- subsidies/government grants
- exchange rate gains
- extraordinary items
- gains on sales of fixed assets
- excise duties
- bad debts.

Purchases and operating expenditure

This includes:

- purchases of goods for resale
- purchases of goods and materials for production
- motor vehicle expenses
- electricity and fuels
- management fees
- telecommunication expenses
- charges and fees paid to other businesses/divisions
- general operating expenditure (eg freight, rent)
- royalties
- patent fees.

Purchases and operating expenditure may incorporate payments for materials or services that may relate to quarters other than those in which they are recorded.

Purchases and operating expenditure excludes:

- interest/dividend payments
- sales tax
- excise duties
- fringe benefit tax
- donations
- bad debts
- extraordinary items
- exchange rate losses
- losses on sales of fixed assets
- depreciation.

Salaries and wages

Gross salaries and wages paid to employees during the quarter, excluding salaries and wages to working proprietors, and drawings.

Stocks of raw materials

Closing stocks of raw materials for use in production.

Stocks of finished goods

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

Additions to fixed assets

This includes purchases of land, and other fixed assets and capital works by own employees. It excludes any revaluation of fixed assets.

Disposals of fixed assets

This includes sales of land or other fixed assets (reported at sale price). It excludes any devaluation of fixed assets.

Use of manufacturing data in quarterly national accounts

A key use of the QMS is in the calculation of manufacturing value added for the compilation of quarterly Gross Domestic Product (GDP).

Base year manufacturing value added is extrapolated using volume indexes. For each ANZSIC division, volume indexes are calculated from deflated sales and the deflated finished goods stock change. Sub-indexes from the Producers Price Index (PPI) are used for deflating QMS sales and finished goods stocks.

QMS data is supplemented with production data for the following industries:

- Meat and dairy product
- Petroleum and industrial chemical
- Basic metal.

Seasonally adjusted series

The X-12-ARIMA package has been used to produce the seasonally adjusted estimates and trend estimates for sales in all subdivisions. Seasonal adjustment aims to eliminate the impact of regular seasonal events (such as annual cycles in agricultural production, winter or annual holidays) on time series. This makes the data for adjacent quarters more comparable.

All seasonally adjusted figures are subject to revision each quarter. This enables the seasonal component to be better estimated and removed from the series.

The X-12-ARIMA seasonal adjustment package is a very robust procedure; however, it has problems when there has been an abrupt change in the seasonal variation, as do other seasonal adjustment packages.

As a result of the restructuring within the dairy industry, there has been a discontinuity in the meat and dairy product and total manufacturing series. The seasonal pattern of the dairy series may have become less closely tied to production cycles due to the removal of the monopsony in the industry. Should this occur, it is likely that the seasonality of the total sales series will also change, as it has been strongly influenced by the seasonality of the meat and dairy series. Therefore, a seasonal movement of a given magnitude in the meat and dairy product and total manufacturing series before June 2002 may not have the same meaning as a seasonal movement of a similar magnitude after June 2002.

Since September 2002 the dairy series have been adjusted to take some account of this expected change in behaviour. There may be further revisions to the meat and dairy, and the total manufacturing series, as further information becomes available which enables Statistics NZ to better quantify the effect of the changes in the dairy industry.

Due to the changes in the meat and dairy series, it has been decided to change the seasonal adjustment method for total sales from direct to indirect. This will allow the series to better respond to changes in the seasonality of the components, and was considered preferable to our usual selection criteria. More information on direct and indirect adjustment is available on our website www.stats.govt.nz in the [seasonal adjustment FAQ pages](#).

For further information contact seasonaladjustment@stats.govt.nz.

The trend series are calculated using the X-12-ARIMA seasonal adjustment package. They are based on a five- or seven-term moving average of the seasonally adjusted series, with an adjustment for outlying values.

Trend estimates towards the end of the series incorporate new data as they become available and can therefore change as more observations are added to the series. Revisions can be particularly large if an observation is treated as an outlier in one quarter, but is found to be part of the underlying trend as further observations are added to the series. Typically, only the estimates for the most recent quarter will be subject to substantial revisions.

Volume series

These are value series that have been adjusted by a price index to remove the effect of price changes. They can then be used for measuring quantity change. The volume series, at present, are expressed in December 1997 quarter dollars.

Values are adjusted using sub-indexes from the Producers Price Index (PPI). These sub-indexes measure price movements in each of the 15 published manufacturing industries, as well as total manufacturing. When the value series are divided by the respective sub-indexes, price effects are removed and a volume measure remains. The PPI sub-indexes are available on INFOS.

More information

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

Estimated trend

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. 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.

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Timing

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

Tables

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

1. 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. Sales – unadjusted, at December 1997 quarter prices, by industry
19. Sales – seasonally adjusted, at December 1997 quarter prices, by industry
20. Closing stocks of finished goods, at December 1997 quarter prices, by industry