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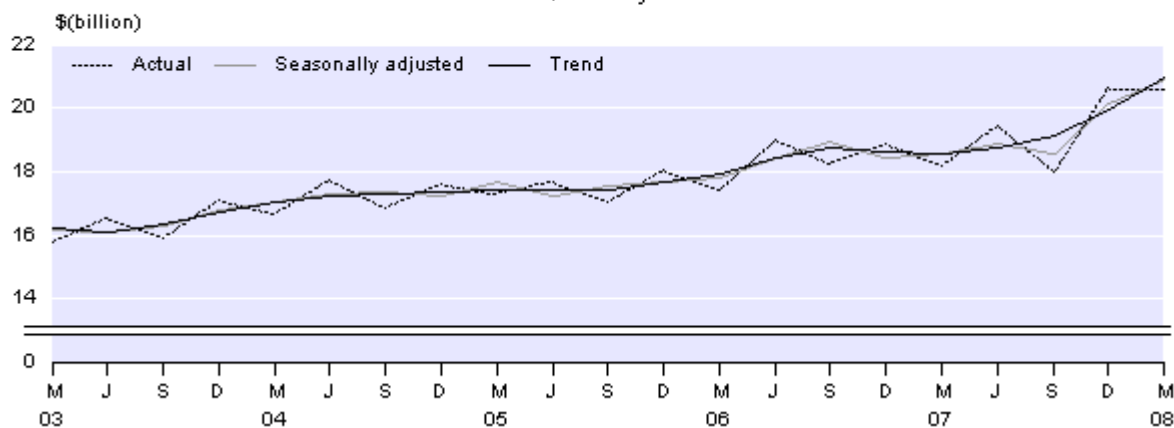
Economic Survey of Manufacturing: March 2008 quarter

Highlights

For the March 2008 quarter compared with the December 2007 quarter (on a seasonally adjusted basis):

- Manufacturing volumes increased 0.2 percent.
- Excluding meat and dairy product manufacturing, volumes decreased 1.4 percent.
- Total manufacturing sales increased 3.7 percent.
- Meat and dairy product manufacturing recorded the largest increase, up 13.0 percent.
- Excluding meat and dairy product manufacturing, total sales fell 0.1 percent.

Total Manufacturing Sales
Quarterly



Dallas Welch (Mrs)
Government Statistician

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There is a companion Media Release published – [Economic Survey of Manufacturing: March 2008 quarter.](#)

Commentary

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

Total sales

Total manufacturing sales increased 3.7 percent (\$743 million) during the March 2008 quarter, the third largest rise since the series began. This was just under half of the record December 2007 quarter increase of 8.3 percent (\$1,547 million). The result was dominated by the meat and dairy product manufacturing industry, which rose 13.0 percent (\$755 million) following the record 26.2 percent (\$1,206 million) increase in the previous quarter.

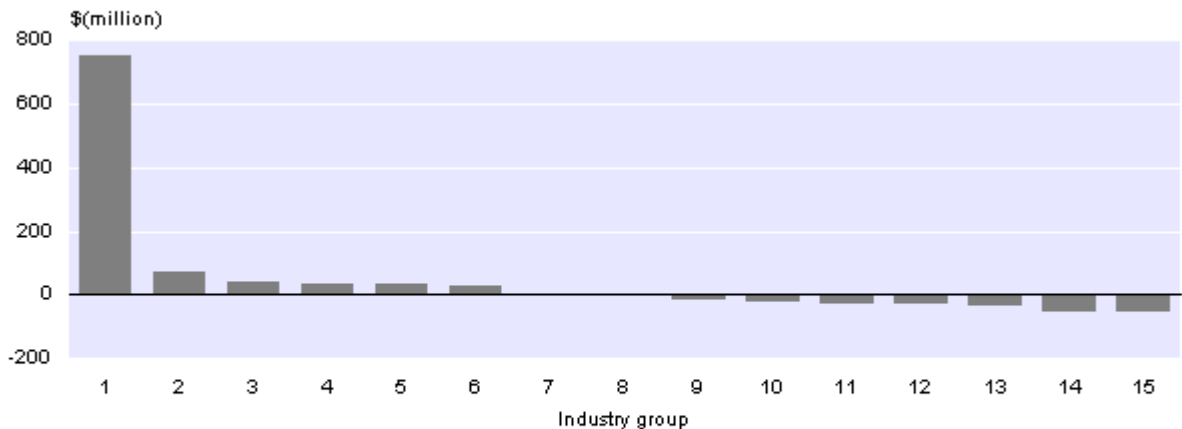
Eight of the 15 published industries recorded increases in sales compared with the December 2007 quarter. Following meat and dairy product manufacturing was other food manufacturing up 3.5 percent (\$75 million) and basic metal manufacturing, up 6.9 percent (\$43 million) completing the trio of top movers.

Wood product manufacturing led the industries to fall during the quarter, down 4.7 percent (\$56 million) just ahead of furniture and other manufacturing, which fell 10.5 percent (\$55 million). Both of these industries were affected by falling volumes of sales of manufacturing during the March 2008 quarter.

The manufacturing sales trend has been stronger in the past year, up 12.8 percent since the March 2007 quarter, an average increase of 3.1 percent per quarter. This follows a small decrease of 1.1 percent between the September 2006 and March 2007 quarters.

Seasonally Adjusted Manufacturing Sales

Change in sales between December 2007 and March 2008 quarters



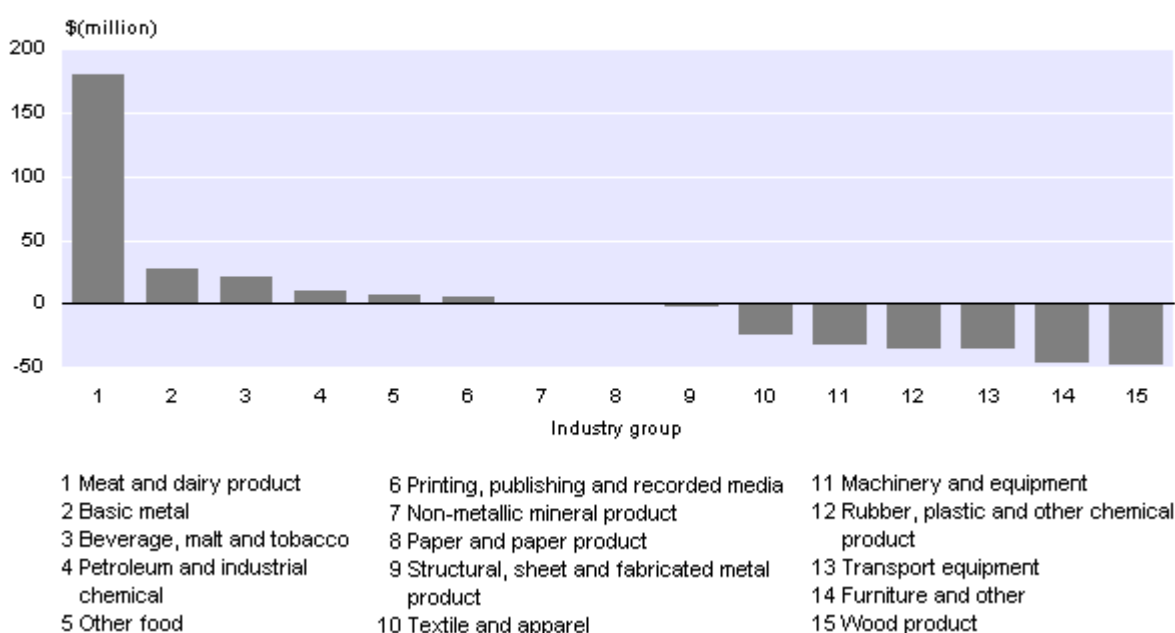
- | | | |
|-------------------------------------|--|---|
| 1 Meat and dairy product | 6 Structural, sheet and fabricated metal product | 11 Paper and paper product |
| 2 Other food | 7 Printing, publishing and recorded media | 12 Rubber, plastic and other chemical product |
| 3 Basic metal | 8 Non-metallic mineral product | 13 Transport equipment |
| 4 Petroleum and industrial chemical | 9 Machinery and equipment | 14 Furniture and other |
| 5 Beverage, malt and tobacco | 10 Textile and apparel | 15 Wood product |

Manufacturing volumes, by comparison, increased 0.2 percent during the March 2008 quarter, following an increase of 3.4 percent in the previous quarter. Manufacturing volumes are derived by accounting for price changes. The price index used to deflate manufacturing sales is based on the December 1997 quarter prices.

Volume increases were recorded for seven manufacturing industries when compared with the December 2007 quarter, with meat and dairy product manufacturing producing the highest volume rise, up 5.0 percent. Basic metal manufacturing followed, up 6.1 percent, while the leading decreases were from wood product manufacturing and furniture and other manufacturing, down 4.7 percent and 11.0 percent, respectively.

However, if the meat and dairy product manufacturing industry were excluded, volumes decreased by 1.4 percent.

Seasonally Adjusted Manufacturing Sales (at December 1997 Quarter Prices)
Change in sales between December 2007 and March 2008 quarters



Total manufacturing (excluding meat and dairy product manufacturing)

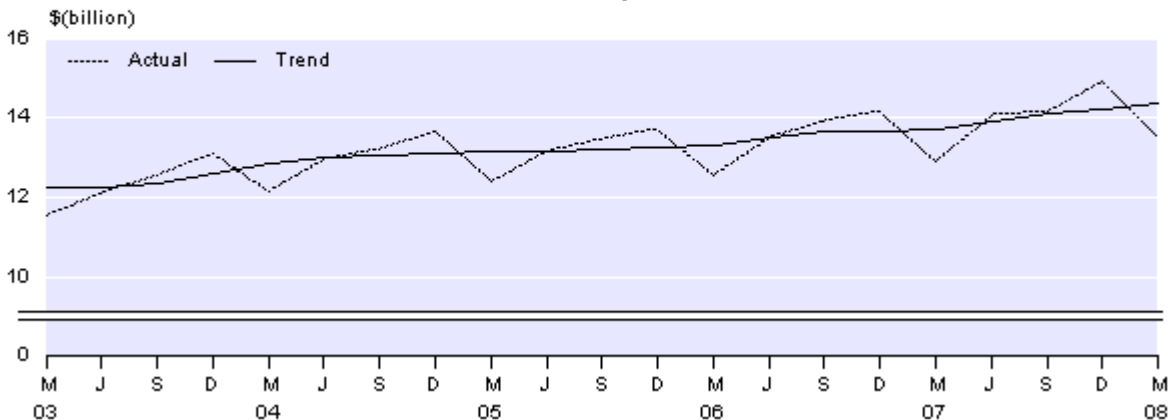
During the March 2008 quarter total manufacturing sales excluding the meat and dairy product manufacturing industry, recorded a slight decrease of 0.1 percent (\$12 million), following the 2.4 percent (\$341 million) increase in the December 2007 quarter.

Wood product manufacturing led the seven industries which decreased during the quarter, down 4.7 percent (\$56 million), followed by furniture and other manufacturing down 10.5 percent (\$55 million). These two accounted for nearly half of the total decrease of the industries to fall, which totalled \$233 million. Partially offsetting these decreases was an increase of 3.5 percent (\$75 million) for other food manufacturing.

Ten industries recorded sales rises or falls of less than \$40 million.

The sales trend for this sub-group continues to generally increase, up 17.4 percent since the June 2003 quarter.

Total Manufacturing Sales
Excluding meat and dairy product manufacturing
 Quarterly



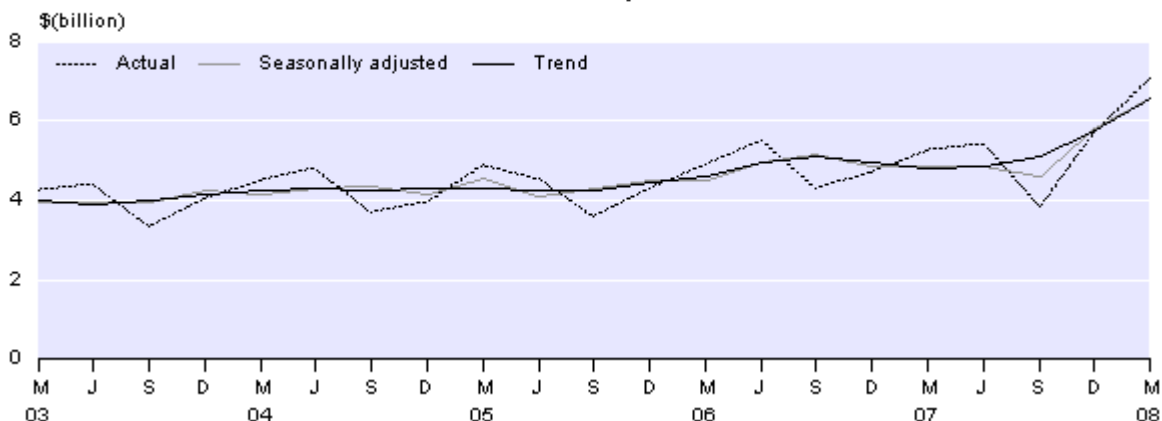
Meat and dairy product manufacturing

A sales increase of 13.0 percent (\$755 million) was recorded for the meat and dairy product manufacturing industry during the March 2008 quarter. The increase is the second largest since the series began, following the record December 2007 quarter rise of 26.2 percent (\$1,206 million).

Meat and dairy product manufacturing volumes rose 5.0 percent, reflecting the combination of both volume and price rises contributing towards the sales increase. Prices received by meat and dairy producers, as recorded by the *Producers Price Index: March 2008 quarter*, show increases of 2.8 percent for meat products and 13.7 percent for dairy products compared with the previous quarter.

In the past year the sales trend for the meat and dairy product manufacturing industry has increased 35.9 percent, its largest annual increase for any year since the series began. Previously the highest annual trend increase was 27.6 percent recorded between the March 2000 and March 2001 quarters.

Meat and Dairy Product Manufacturing Sales
 Quarterly



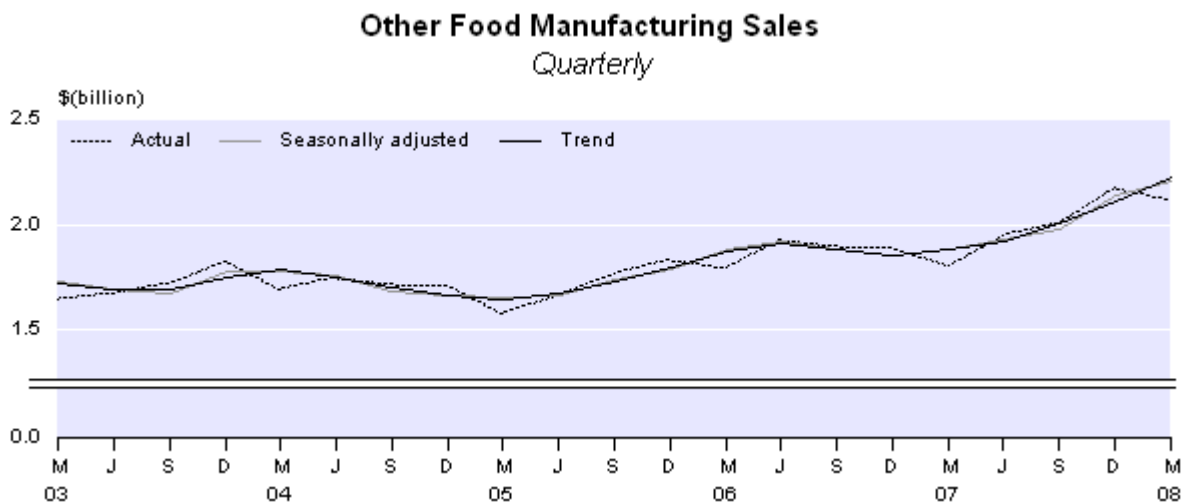
Other food manufacturing

The other food manufacturing industry includes the manufacture of oils and fats, flour mill products, cereal food and baking mix, bread, cake and pastry, biscuits, sugar, confectionery, seafood, and prepared animal bird feed.

During the March 2008 quarter sales for other food manufacturing increased 3.5 percent (\$75 million) following the 7.8 percent (\$154 million) increase in the December 2007 quarter.

By comparison, other food manufacturing volumes increased 0.4 percent from the previous quarter reflecting the higher contribution of increased prices contributing to the March 2008 quarter sales rise. Prices received by manufacturers in this industry, as reported in the *Producers Price Index: March 2008 quarter* increased 3.2 percent during the quarter, the largest rise since the December 2000 quarter.

The sales trend for other food manufacturing continues to rise, up 19.8 percent since the December 2006 quarter. This level of growth is the strongest since the 16.1 percent rise between the March 2005 and June 2006 quarters.



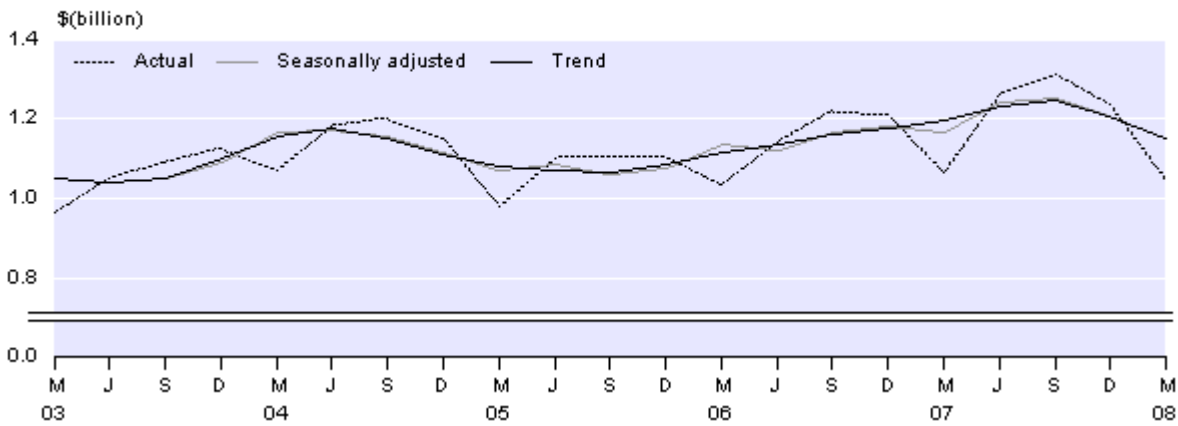
Wood product manufacturing

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

Sales for the wood product manufacturing industry decreased 4.7 percent (\$56 million) during the March 2008 quarter, after a fall of 3.6 percent (\$45 million) in the December 2007 quarter. Volumes decreases for both quarters largely dominate the results, down 4.7 percent and 4.1 percent for the March 2008 and December 2007 quarters, respectively.

Since the September 2007 quarter peak, the sales trend for wood product manufacturing has decreased 7.7 percent. This followed a two-year period of trend increase of 17.1 percent between the September 2005 and September 2007 quarters.

Wood Product Manufacturing Sales *Quarterly*



Furniture and other manufacturing

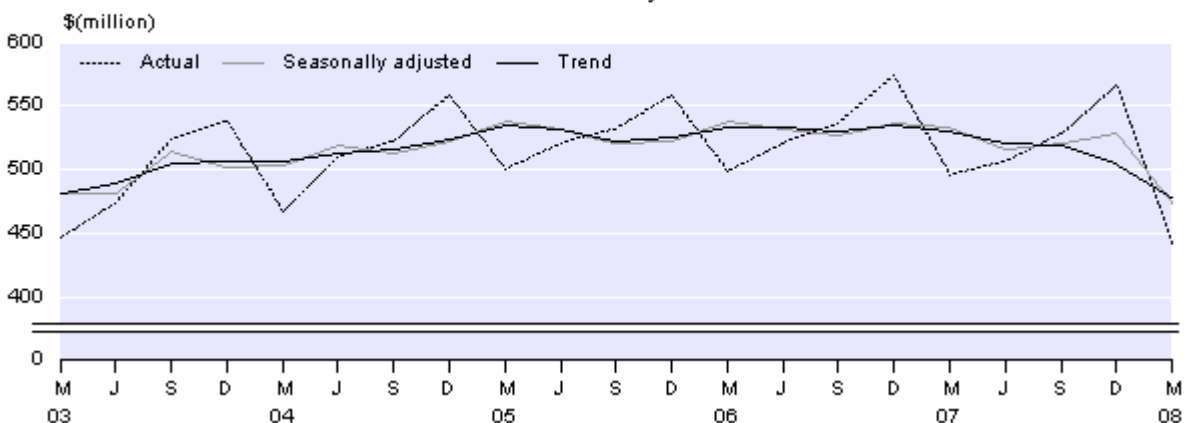
The furniture and other manufacturing industry includes the manufacture of prefabricated buildings, wooden and sheet metal furniture, mattresses, jewellery and silverware, and toy and sporting goods.

Sales for the furniture and other manufacturing industry fell 10.5 percent (\$55 million) during the March 2008 quarter. This is the first time since the series began that it has fallen by more than 10.0 percent, with the next largest decrease of 9.3 percent (\$39 million) being recorded in the September 2000 quarter.

The sales decrease was dominated by the fall in volumes of 11.0 percent from the December 2007 quarter, again eclipsing the previous largest fall of 10.2 percent in the September 2000 quarter.

Since the December 2006 quarter the sales trend for furniture and other manufacturing has decreased 10.4 percent, averaging a fall of 2.1 percent per quarter.

Furniture and Other Manufacturing Sales *Quarterly*



Stocks

During the March 2008 quarter, actual finished goods manufacturing stocks increased 13.5 percent (\$1,048 million) compared with the March 2007 quarter, while stocks for the December 2007 quarter increased by a similar amount, up 13.0 percent (\$936 million) from the December 2006 quarter.

With the effects of price changes removed, the value of finished goods stocks as at 31 March 2008 was \$6,038 million, a decrease of 2.0 percent compared with 31 March 2007.

Meat and dairy product manufacturing provided the largest contribution to the stock volumes decrease, down 8.9 percent.

Revisions

Amended data received from respondents has resulted in revisions for the following industry for the March 2007 quarter:

- machinery and equipment manufacturing operating income and operating expenditure, and salaries and wages.

There have also been corresponding revisions to the seasonally adjusted trend and total series.

Economic Survey of Manufacturing Actual Sales Revisions				
Period (quarter)	Industry	Series ref: MAN	Published on 14 March 2008	Published on 16 June 2008
			\$(million)	\$(million)
March 2007	Machinery and equipment	<i>SNMC16A</i>	1,664	1,637
	Total	<i>SNMCZZA</i>	18,201	18,174

Economic Survey of Manufacturing Actual Purchases Revisions				
Period (quarter)	Industry	Series ref: MAN	Published on 14 March 2008	Published on 16 June 2008
			\$(million)	\$(million)
March 2007	Machinery and equipment	<i>SNMC16B</i>	1,129	1,107
	Total	<i>SNMCZZB</i>	13,078	13,057

Economic Survey of Manufacturing Actual Salaries and Wages Revisions				
Period (quarter)	Industry	Series ref: MAN	Published on 14 March 2008	Published on 16 June 2008
			\$(million)	\$(million)
March 2007	Machinery and equipment	<i>SNMC16C</i>	347	344
	Total	<i>SNMCZZC</i>	2,823	2,820

Measurement errors

All statistical estimates are subject to measurement errors. These include both sample errors and non-sample errors. In addition, the survey applies imputation methodologies to cope with small firms and non-response. These measurement errors should be considered when analysing the results from the survey. 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):

- five percent for value added, sales and salaries and wages at the total manufacturing level
- ten percent for value added, sales and salaries and wages at the published industry level, where the value-added design variable is calculated as follows:
value added = sales – purchases + 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.

At the industry level, the following sample errors were achieved in the March 2008 quarter at the 95 percent confidence interval limit:

Industry	Level (relative percent)	Movement (absolute percent)
	Sales	
Meat and dairy product manufacturing	0.0	0.0
Other food manufacturing	11.3	5.4
Beverage, malt and tobacco manufacturing	0.0	0.0
Textile and apparel manufacturing	5.8	4.6
Wood product manufacturing	4.4	1.3
Paper and paper product manufacturing	0.0	0.0
Printing, publishing and recorded media	4.1	3.9
Petroleum and industrial chemical manufacturing	0.0	0.0
Rubber, plastic and other chemical product manufacturing	9.8	3.3
Non-metallic mineral product manufacturing	3.2	0.8
Basic metal manufacturing	0.0	0.0
Structural, sheet and fabricated metal product manufacturing	4.1	1.7
Transport equipment manufacturing	4.9	4.5
Machinery and equipment manufacturing	3.9	1.9
Furniture and other manufacturing	4.5	1.3
Total manufacturing	1.4	0.7

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 sourced from Inland Revenue.

Imputation

Small firms

Small- to medium-sized firms are generally not surveyed. Their variables are instead modelled from administrative data sourced from Inland Revenue. Ratios calculated from the postal sample units are applied to the administrative data to provide an estimate of their variables.

Non-response imputation

Although every attempt is 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 March 2008 quarter:

Industry	Non-response	Tax modelled
	Percentage of sales	
Meat and dairy product manufacturing	0.6	2.4
Other food manufacturing	5.6	5.5
Beverage, malt and tobacco manufacturing	3.3	5.7
Textile and apparel manufacturing	19.9	16.2
Wood product manufacturing	15.6	9.2
Paper and paper product manufacturing	4.6	0.9
Printing, publishing and recorded media	11.4	10.1
Petroleum and industrial chemical manufacturing	5.1	5.4
Rubber, plastic and other chemical product manufacturing	11.5	7.5
Non-metallic mineral product manufacturing	4.5	6.8
Basic metal manufacturing	4.4	4.0
Structural, sheet and fabricated metal product manufacturing	20.8	11.5
Transport equipment manufacturing	30.2	10.7
Machinery and equipment manufacturing	20.3	11.0
Furniture and other manufacturing	21.4	24.5
Total manufacturing	8.4	6.4

Response rate

The response rate describes the proportion of sales, which was provided by actual survey responses. Note that the calculation of this response rate relates only to data for the postal sample. The Economic Survey of Manufacturing has a target response rate of 85 percent. The response rate achieved for the March 2008 quarter was 91 percent.

For technical information contact:
 Jason Fullen or Blair Cardno
 Christchurch 03 964 8700
Email: subannuals@stat.govt.nz

Next release ...

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

Constant dollar series

Actual sales data is adjusted by a price index to remove the impact of price change on the figures. The adjusted data should then only show the quantity movements, allowing inter-period comparisons. The adjusted series measure sales in December 1997 dollars.

Sales are adjusted using sub-indexes from the PPI. These sub-indexes measure price movements in each of the 15 published manufacturing industries, as well as total manufacturing. When the current price series are divided by the value of the respective sub-indexes, price effects are removed and a volume measure remains. Each of the indexes used for deflation purposes is 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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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. Actual sales at December 1997 quarter prices, by ANZSIC industry
19. Actual finished goods stocks at December 1997 quarter prices, by ANZSIC industry
20. Seasonally adjusted sales at December 1997 quarter prices, by ANZSIC industry