

Embargoed until 10:45am – 15 December 2008

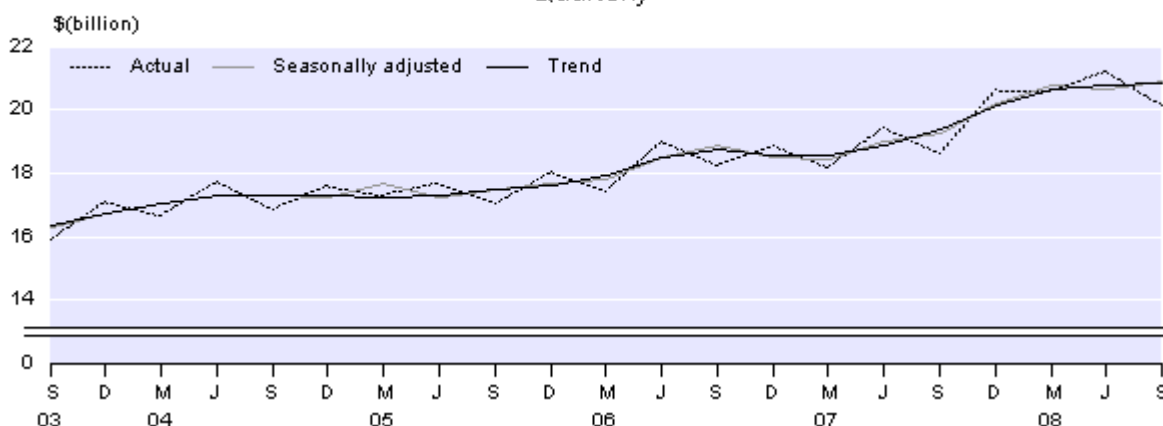
Economic Survey of Manufacturing: September 2008 quarter

Highlights

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

- The volume of manufacturing sales decreased 2.3 percent and is now at its lowest level since the first half of 2003.
- Excluding meat and dairy product manufacturing, the volume of sales decreased 3.2 percent.
- The value of manufacturing sales rose 1.3 percent.
- Excluding meat and dairy product manufacturing, the value of sales rose 0.1 percent.
- The meat and dairy industry sales value rose 3.0 percent while the machinery and equipment industry sales value fell 3.4 percent.

Total Manufacturing Sales
Quarterly



Geoff Bascand
Government Statistician

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

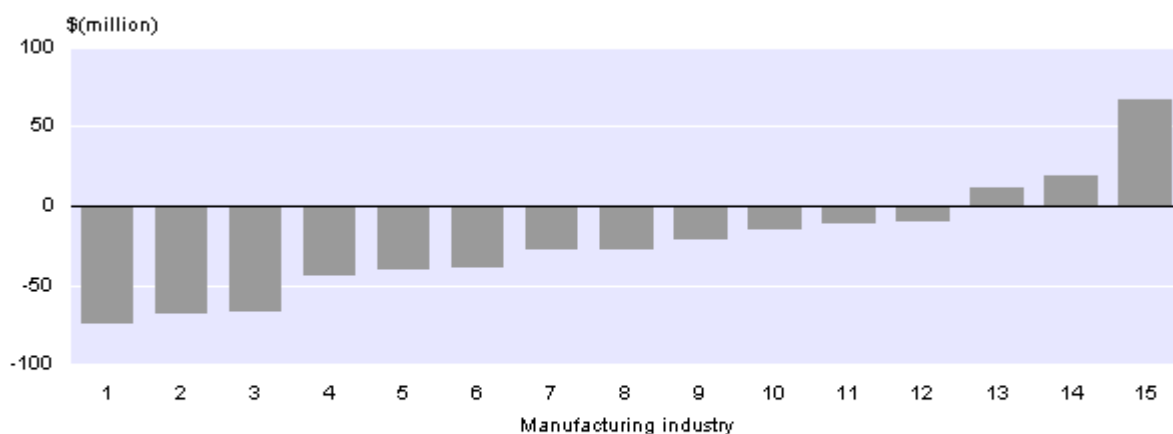
Commentary

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

All manufacturing industries

The volume of manufacturing sales decreased 2.3 percent in the September 2008 quarter, following a decrease of 1.1 percent in the June 2008 quarter. It is now at its lowest level since the first half of 2003. Volumes are calculated by removing the effect of price changes from values.

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



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

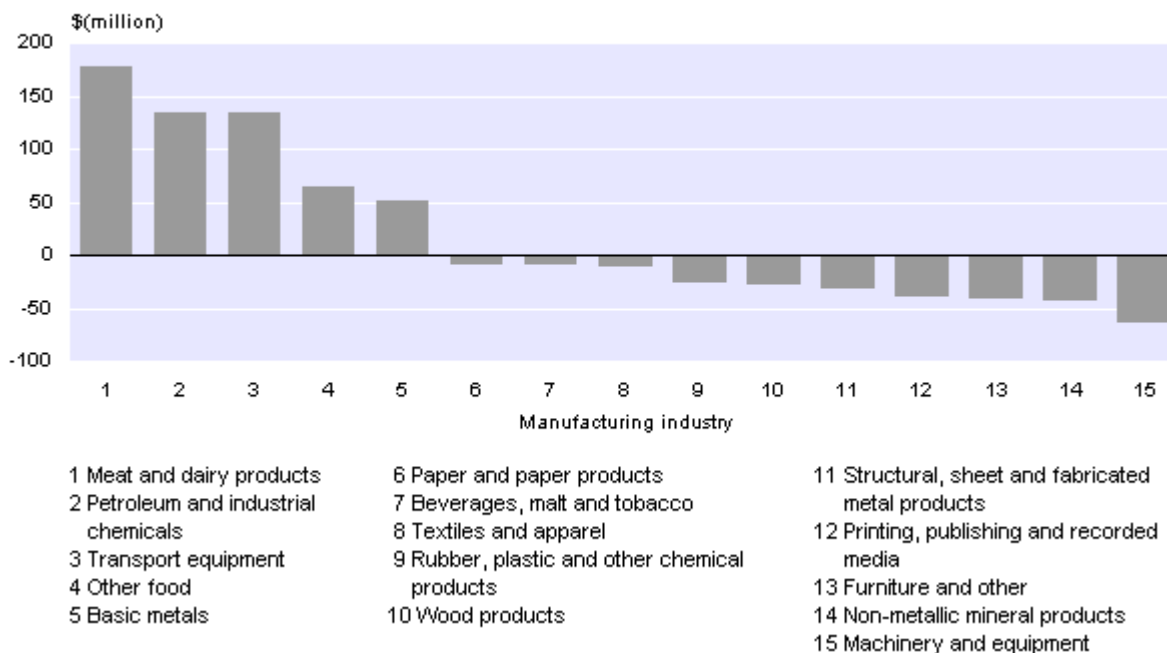
Although the volume of sales is down, increased prices for meat, fertiliser and other goods led to a rise in sales value of 1.3 percent (\$265 million) in the September 2008 quarter. This follows a decrease of 0.5 percent in the previous quarter.

Increases in sales values occurred in five of the 15 published industries in the September 2008 quarter. The largest increase was in the meat and dairy product manufacturing industry, up 3.0 percent (\$178 million), followed by the petroleum and industrial chemical manufacturing industry, up 16 percent (\$135 million) and the transport equipment manufacturing industry, up 18 percent (\$135 million).

Decreases in sales values occurred in ten published industries in the September 2008 quarter. The largest decrease was in the machinery and equipment manufacturing industry, down 3.4 percent (\$65 million), followed by the non-metallic mineral product manufacturing industry, down 5.7 percent (\$43 million).

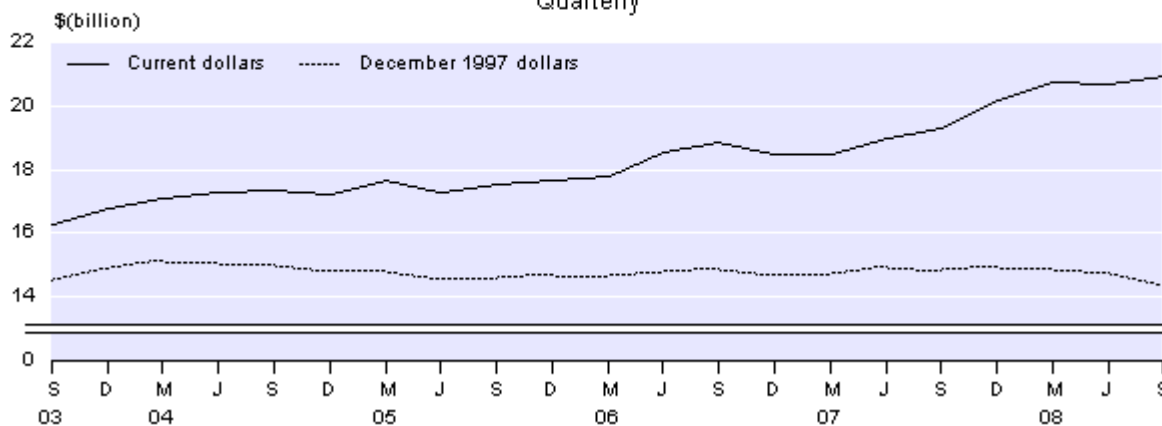
Seasonally Adjusted Manufacturing Sales

Change in sales between June 2008 and September 2008 quarters



Seasonally Adjusted Manufacturing Sales

Current and constant dollars
 Quarterly



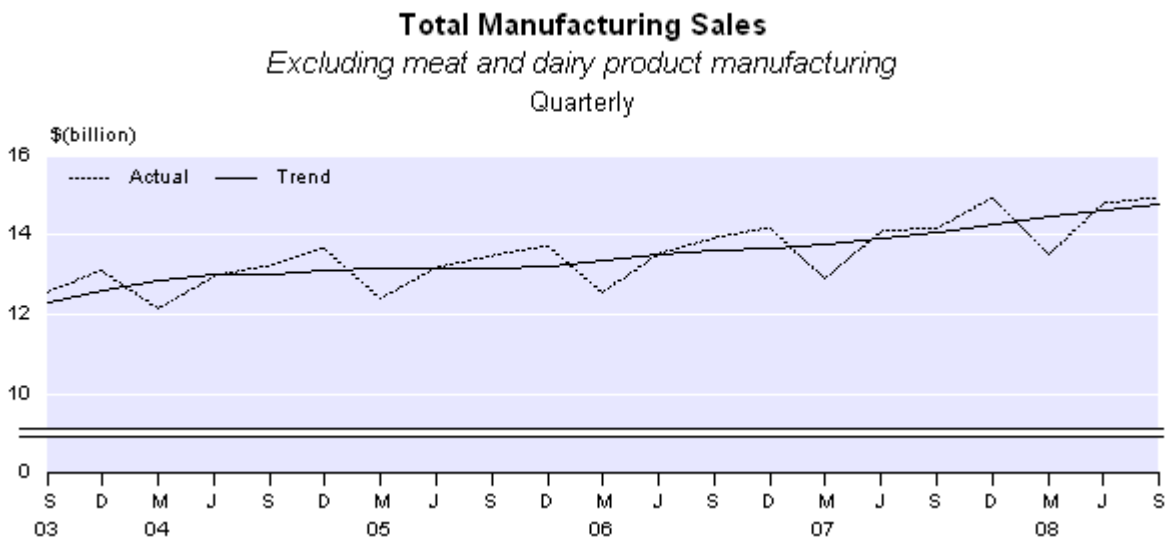
Stocks of finished goods, which are not seasonally adjusted, decreased in value by 6.8 percent (\$564 million) from the June 2008 quarter but are up 13 percent from the September 2007 quarter. After removal of price changes, the volume is down 7.1 percent from the June 2008 quarter and up 0.8 percent from the September 2007 quarter. The meat and dairy product manufacturing industry was the main contributor to the stock movement this quarter.

The trend for sales values shows a rise for the sixth consecutive quarter but the rate of increase has eased considerably compared to late 2007 and early 2008.

All manufacturing excluding meat and dairy product manufacturing

The volume of sales fell 3.2 percent in the September 2008 quarter, following a rise of 0.7 percent in the June 2008 quarter. Three industries each contributed about a fifth of this decrease: structural, sheet and fabricated metal products; paper and paper products; and machinery and equipment. The main increase was for the transport equipment manufacturing industry.

The value of sales, which was boosted by price rises, increased 0.1 percent (\$18 million) in the September 2008 quarter, following an increase of 2.0 percent (\$295 million) in the June 2008 quarter.



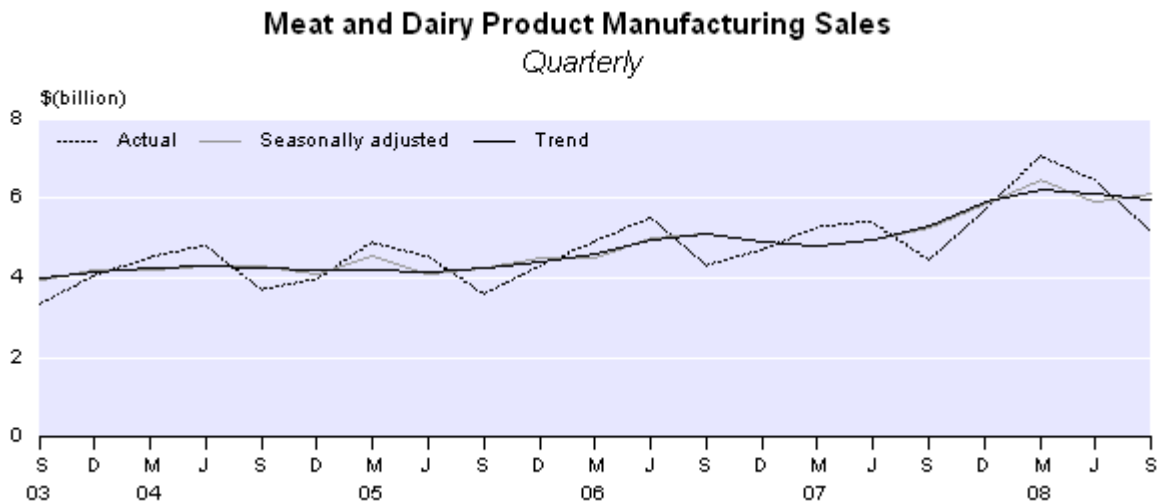
Petroleum and industrial chemical manufacturing and transport equipment manufacturing showed the largest rises in sales value in the September 2008 quarter but were counteracted by smaller-sized falls for numerous industries, including machinery and equipment manufacturing, non-metallic mineral product manufacturing, and furniture and other manufacturing.

Stocks of finished goods, which are not seasonally adjusted, increased in value by 10 percent (\$534 million) from the June 2008 quarter and are also up 10 percent from the September 2007 quarter. The volume of stocks rose 5.8 percent from the June 2008 quarter and 2.2 percent from the September 2007 quarter.

The sales trend continues to rise, and is up 21 percent from the June 2003 quarter low-point.

Meat and dairy product manufacturing

The volume of sales for this industry rose 0.3 percent in the September 2008 quarter, after falling 8.1 percent in the previous quarter. A sales value increase of 3.0 percent (\$178 million) was recorded in the September 2008 quarter. This follows a fall of 8.4 percent in the June 2008 quarter but before that there were four quarters with a combined rise of 35 percent. Meat prices rose 10 percent in the September 2008 quarter, while dairy prices fell 2.5 percent, according to industry outputs in the *Producers Price Index* release.



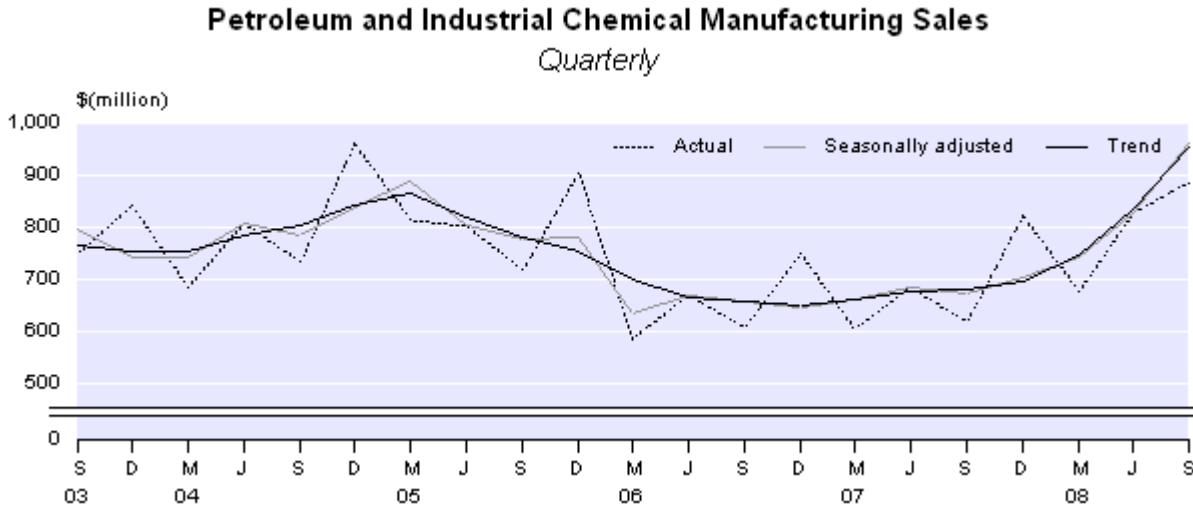
Stocks of finished goods, which are not seasonally adjusted, dropped 34 percent in value from the June 2008 quarter, but are up 21 percent on the September 2007 quarter. Stocks in this industry typically rise in the December and March quarters then fall in the following two quarters. After removal of price changes, the volume is down 36 percent from the June 2008 quarter and down 4.2 percent from the September 2007 quarter, implying that prices remain relatively high.

The trend for sales values shows falls for the latest two quarters following medium to large rises in the previous four quarters.

Petroleum and industrial chemical manufacturing

This industry includes petroleum refining, petroleum and coal product manufacturing, and fertiliser and other industrial chemical manufacturing. The main output, in value terms, is fertiliser.

The volume of sales for this industry rose 3.2 percent in the September quarter, following a rise of 10 percent in the previous quarter. The value of sales also rose, up 16 percent (\$135 million) in the September 2008 quarter, following a rise of 11 percent in the previous quarter. These figures indicate that most of the September quarter rise in sales value was price-related, whereas the rise in the preceding quarter was mostly quantity-related.



Output prices, as measured by the *Producers Price Index*, leapt 15 percent in the September 2008 quarter, following a decrease of 1.6 percent in the previous quarter.

Stocks of finished goods, which are not seasonally adjusted, were reported at a high level in the September 2008 quarter, up 83 percent in value from the preceding quarter. After removal of price changes, the volume shows a rise of 56 percent. This means that increased quantities and higher prices were both important contributors to the large increase in stock value.

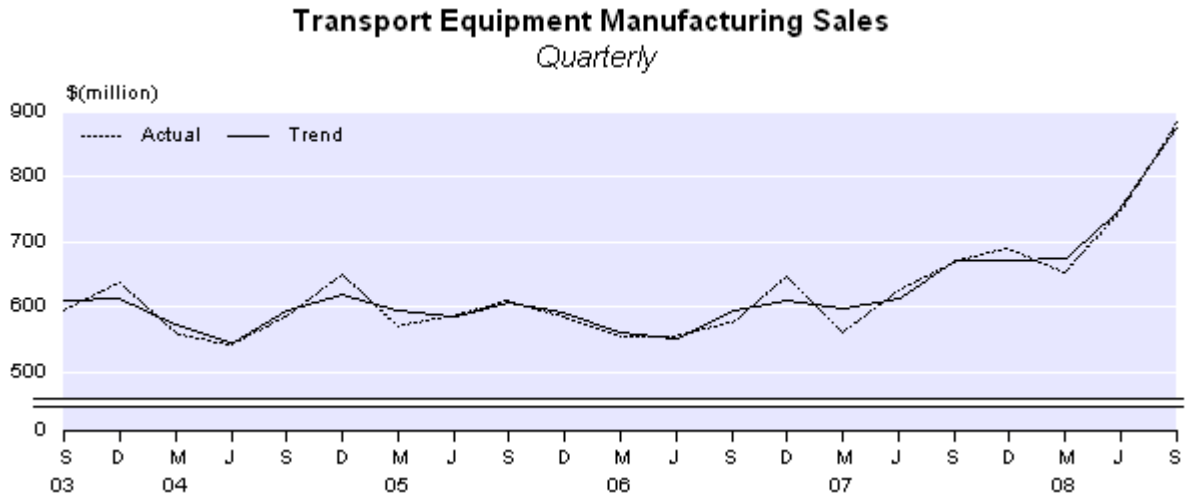
The trend for the value of sales shows rises for the latest seven quarters, with the bulk of the upward movement concentrated in the June and September 2008 quarters.

Transport equipment manufacturing

This 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.

The volume of sales for this industry rose 11 percent in each of the September and June 2008 quarters. The value of sales, because of price increases, showed larger rises, up 18 percent (\$135 million) in the September 2008 quarter, following a rise of 14 percent in the June 2008 quarter. Most of the latest rise is aviation-related.



Output prices, as measured by the *Producers Price Index*, rose 6.5 percent in the September 2008 quarter and 3.2 percent in the June 2008 quarter.

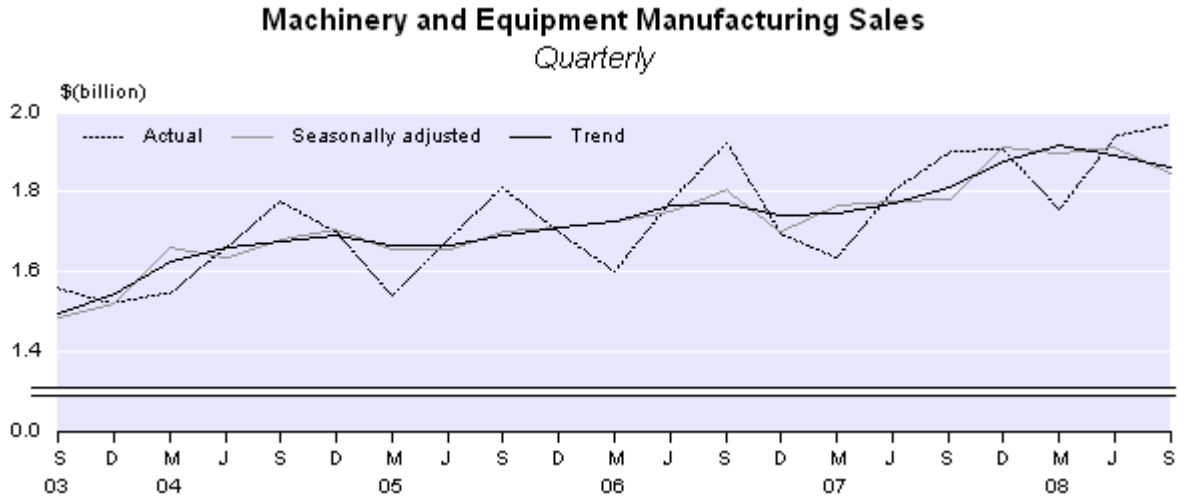
Stocks of finished goods, which are not seasonally adjusted, rose 46 percent in value during the September 2008 quarter, mostly because of aviation-related stocks, and are up 34 percent from the September 2007 quarter. The volume of stocks rose 38 percent in the September 2008 quarter and is up 21 percent from the September 2007 quarter.

The trend for the value of sales shows rises for the latest six quarters, with most of the overall increase for these quarters occurring in the June and September 2008 quarters.

Machinery and equipment manufacturing

This industry includes the manufacture of industrial electronic equipment and appliances, and photographic and scientific equipment.

The volume of sales for this industry decreased 4.7 in the September 2008 quarter after rising 1.4 percent in the June 2008 quarter. The value of sales decreased 3.4 percent (\$65 million) in the September 2008 quarter, following an increase of 0.8 percent in the June 2008 quarter.



Output prices, as measured by the *Producers Price Index*, decreased 0.3 percent in the September 2008 quarter, following a rise of 1.5 percent in the June 2008 quarter.

Stocks of finished goods, which are not seasonally adjusted, rose 2.6 percent in value during the September 2008 quarter but are down 6.8 percent from the September 2007 quarter. The volume of stocks rose 1.8 percent in the September 2008 quarter but is down 11 percent from the September 2007 quarter.

The sales trend shows downward movement for the latest two quarters, following five quarters of increases.

Revisions

Corrections to data received earlier have resulted in revisions to the meat and dairy product manufacturing industry for the September 2007 quarter. These revisions have had a flow-on effect on higher-level series and on seasonally adjusted and trend series.

Industry	Variable	Series MANQ.	Period (quarter)	Published 14 Dec 2007	Published 15 Dec 2008
				\$(million)	\$(million)
Meat and dairy	Sales	SNMCZ1A	Sep 2007	3,834	4,463
Meat and dairy	Purchases	SNMCZ1B	Sep 2007	2,947	3,388
All manufacturing	Sales	SNMCZZA	Sep 2007	18,016	18,633
All manufacturing	Purchases	SNMCZZB	Sep 2007	12,841	13,275

Relatively minor revisions were also made to values of closing stocks in the machinery and equipment manufacturing industry in the four quarters ended June 2008.

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 September 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	10.3	7.1
Beverage, malt and tobacco manufacturing	0.0	0.0
Textile and apparel manufacturing	5.5	1.9
Wood product manufacturing	3.3	2.5
Paper and paper product manufacturing	0.0	0.0
Printing, publishing and recorded media	9.2	7.7
Petroleum and industrial chemical manufacturing	0.0	0.0
Rubber, plastic and other chemical product manufacturing	12.7	2.8
Non-metallic mineral product manufacturing	4.0	1.8
Basic metal manufacturing	0.0	0.0
Structural, sheet and fabricated metal product manufacturing	5.6	2.5
Transport equipment manufacturing	13.2	15.3
Machinery and equipment manufacturing	3.5	2.0
Furniture and other manufacturing	5.6	3.2
Total manufacturing	1.7	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 shows percentages of sales imputed in the September 2008 quarter:

Industry	Non-response	Tax modelled
	Percentage of sales	
Meat and dairy product manufacturing	1.2	3.0
Other food manufacturing	8.2	4.8
Beverage, malt and tobacco manufacturing	2.3	5.6
Textile and apparel manufacturing	12.8	15.2
Wood product manufacturing	13.7	8.4
Paper and paper product manufacturing	4.6	0.6
Printing, publishing and recorded media	8.1	10.3
Petroleum and industrial chemical manufacturing	8.0	4.5
Rubber, plastic and other chemical product manufacturing	11.7	7.2
Non-metallic mineral product manufacturing	2.7	6.8
Basic metal manufacturing	4.8	3.5
Structural, sheet and fabricated metal product manufacturing	12.5	10.5
Transport equipment manufacturing	25.8	7.6
Machinery and equipment manufacturing	16.1	11.3
Furniture and other manufacturing	9.6	22.1
Total manufacturing	8.2	6.7

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 September 2008 quarter was 91 percent.

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

Next release ...

Economic Survey of Manufacturing: December 2008 will be released on 16 March 2009

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 that 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.

ANZIND

An ANZSIC-based classification that groups 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 [Infoshare](#).

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

This information is also available from our online database [Infoshare](#)

Subject category: Industry sectors

Groups: Economic Survey of Manufacturing; Forestry, Logging and Timber Production; Livestock Slaughtering; Primary Production; Secondary Production