



## **Information Paper**

# **Experimental Estimates for Australian Industry adjusted for Off-June Year Reporting**

**Australia**

**2010–11**

**I N Q U I R I E S**



**Information Paper**

**Experimental Estimates  
for Australian Industry  
adjusted for Off-June  
Year Reporting**

**Australia**

**2010–11**

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AUSTRALIAN BUREAU OF STATISTICS

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## ABBREVIATIONS .....

<b>\$b</b>	billion (thousand million) dollars
<b>\$m</b>	million dollars
<b>ABS</b>	Australian Bureau of Statistics
<b>ABSBR</b>	Australian Bureau of Statistics Business Register
<b>ANZSIC</b>	Australian and New Zealand Standard Industrial Classification
<b>cat. no.</b>	Catalogue number
<b>EAS</b>	Economic Activity Survey
<b>GST</b>	goods and services tax
<b>IVA</b>	industry value added
<b>QBIS</b>	Quarterly Business Indicators Survey
<b>RSE</b>	relative standard error

## INTRODUCTION

This information paper explains how businesses reporting data on a non-standard financial year basis can impact on the estimates published in *Australian Industry* (cat. no. 8155.0), and describes an experimental methodology designed to measure the impact of this phenomenon on published data.

The estimates presented in *Australian Industry* (cat. no. 8155.0) are derived from the Economic Activity Survey (EAS), and generally represent the 12 month period ended 30 June. However, where businesses are unable to provide data on this basis, an alternate, or 'off-June' accounting period is used. As a result, in some instances estimates may reflect trading conditions occurring outside of the published reference year.

By its nature, 'off-June reporting' is more prevalent in industries with a high degree of foreign ownership, such as MINING, MANUFACTURING and WHOLESALE TRADE, as many countries have different standard accounting periods to Australia. Some local businesses also report for an 'off-June' year for logistical or operational purposes.

Where trading conditions are stable across years, the effect of off-June year reporting is expected to be minimal, but when levels of activity in an industry change quickly, estimates might be more substantially affected. Often, this occurs as a result of price fluctuations or one-off extraordinary events that impact on industry performance.

This paper describes an experimental methodology designed to assess all businesses on the same June year end reporting basis. The methodology uses data collected through the Quarterly Business Indicators Survey (QBIS) to model the impact of off-June year reporting on selected *Australian and New Zealand Standard Industrial Classification* (ANZSIC) (cat. no. 1292.0) industry subdivisions. Using QBIS data, 'off-June year' factors are generated that, when applied to EAS data remove the impact of off-June reporting on estimates. A detailed explanation of the methodology can be found in Chapter 2.

The result is a set of experimental estimates adjusted for off-June year reporting. These experimental estimates, along with the original estimates published in *Australian Industry* (cat. no. 8155.0) are presented by ANZSIC division for selected data items in the Appendix of this paper. The data items are wages and salaries, total income, total expenses and industry value added (IVA), presented for the reference years 2008–09, 2009–10 and 2010–11.

Chapter 3 contains a summary of the effects of the off-June adjustments on EAS data. Care should be taken when using these experimental estimates as modelling may introduce an element of error. Information concerning the reliability of estimates is described in Chapter 4.

USER COMMENTS AND  
FURTHER INFORMATION

The Australian Bureau of Statistics (ABS) is interested in feedback from users of these statistics. Users are invited to contact Annual Integrated Collections at <australian.industry.statistics@abs.gov.au> for comment or to seek clarification on any aspect of this release. Please also note that there are no additional data available by request. The ABS is continuing to evaluate this experimental methodology with a view to possible changes in the future.

RELATED PUBLICATIONS

Other ABS products which may be of interest are listed below, and are available free of charge from the ABS website [www.abs.gov.au](http://www.abs.gov.au):

*Australian Industry, 2010–11* (cat. no. 8155.0), issued annually

*Business Indicators, Jun 2012* (cat. no. 5676.0), issued quarterly

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ABS publications draw extensively on information provided freely by individuals, businesses, governments and other organisations. Their continued cooperation is very much appreciated; without it, the wide range of statistics published by the ABS would not be available. Information received by the ABS is treated in strict confidence as required by the *Census and Statistics Act 1905*.



## SCOPE AND POPULATION

The estimates presented in this paper are classified by industry, in accordance with the 2006 edition of the *Australian and New Zealand Standard Industrial Classification* (ANZSIC) (cat. no. 1292.0).

The scope of the experimental estimates in this paper is based on the EAS, with further constraints imposed to match the scope of QBIS. For a detailed explanation of the scope and methodology of these surveys see Explanatory Notes for *Australian Industry* (cat. no. 8155.0) and *Business Indicators* (cat. no. 5676.0). In brief, the scope of the experimental estimates in this paper consists of all business entities on the Australian Bureau of Statistics Business Register (ABSBR) operating in the Australian economy during the reference period, except for:

In most industries, entities classified to *Standard Institutional Sector Classification of Australia* (SISCA) Sector 3 GENERAL GOVERNMENT. The one industry for which general government units are included is WATER SUPPLY, SEWERAGE AND DRAINAGE SERVICES (ANZSIC Subdivision 28, within Division D ELECTRICITY, GAS, WATER AND WASTE);

- Entities classified to AGRICULTURE, FORESTRY AND FISHING, FINANCIAL AND INSURANCE SERVICES OR PUBLIC ADMINISTRATION AND SAFETY (ANZSIC Divisions A, K and O, respectively);

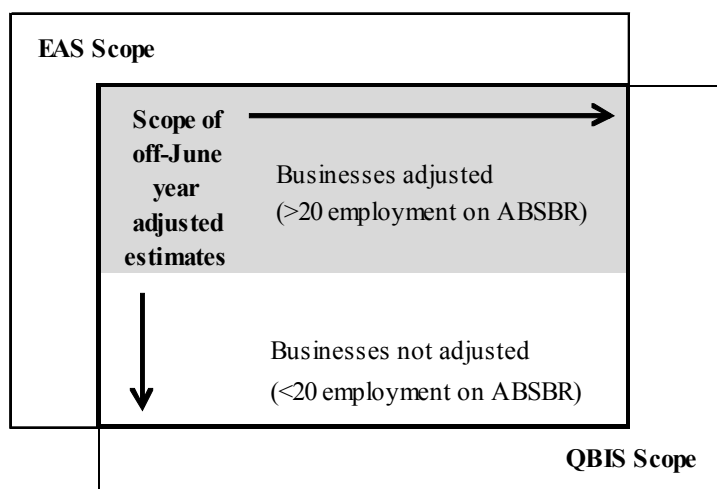
Entities classified to PRIVATE HOUSEHOLDS EMPLOYING STAFF (ANZSIC Subdivision 96, within Division S OTHER SERVICES).

While EDUCATION AND TRAINING AND HEALTH CARE AND SOCIAL ASSISTANCE (ANZSIC Divisions P and Q, respectively) are conceptually in scope of these analyses, QBIS does not collect information on sales and service income or other expenses for these ANZSIC divisions. Thus no adjustment has been applied to these data items for these industries.

Additionally, entities with an employment size of less than 20 on the ABSBR are within scope of the experimental estimates, but are ineligible for adjustment. Data reported by these businesses still contribute to the estimates, but are not adjusted as part of the process described below. Such conditions of the methodology are explained in Chapter 4. The scope of off-June adjusted experimental estimates is summarised in Figure 2.1.

SCOPE AND POPULATION  
*continued*

FIGURE 2.1. SCOPE OF THE EXPERIMENTAL ESTIMATES



THE OFF-JUNE  
REPORTING PROBLEM

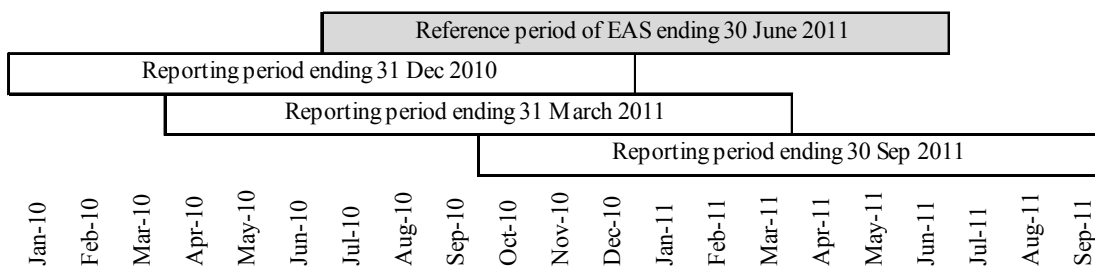
The 2010–11 EAS had a reference period ending 30 June 2011; that is, the aim of the EAS was to measure economic activity over the 12 months from 1 July 2010 to 30 June 2011. Analysis of data from EAS shows that the majority of businesses report for this reference period, but for some industries a substantial proportion report for some other reference period. As noted previously, 'off-June reporting' is more prevalent in industries with a high degree of foreign ownership, such as MINING, MANUFACTURING and WHOLESALE TRADE, as many countries use different accounting periods to Australia.

Considering the 2010–11 EAS, the types of 'off-June' reporting periods typically observed were:

- reporting period ending 31 December 2010;
- reporting period ending 31 March 2011; and
- reporting period ending 30 September 2011.

Consequently, where most data reported in *Australian Industry* (cat. no. 8155.0) are for the 12 months ending 30 June, some data can be reported for periods including the previous one or two quarters, or including the succeeding quarter, as demonstrated in Figure 2.2.

FIGURE 2.2. THE 2010-11 ECONOMIC ACTIVITY SURVEY REFERENCE PERIOD AND OBSERVED PERIODS OF OFF-JUNE REPORTING



THE OFF-JUNE  
REPORTING PROBLEM  
*continued*

Table 2.1 gives an estimate of the percentage of the population likely to report on a financial year basis, and their contribution to total IVA. It presents the off-June reporting businesses which received an adjustment as part of the process described below.

Although businesses reporting for an off-June financial year may be in the minority, their contribution to overall estimates of IVA can be substantial. An example is the MINING industry, with 6% of businesses in the December quarter reporting for a non-standard financial year, contributing 53% of total IVA.

**2.1** PREVALENCE OF OFF-JUNE YEAR REPORTING IN EAS 2010-11, AND THE CONTRIBUTION OF THESE BUSINESSES TO IVA

	ESTIMATE OF PERCENTAGE OF POPULATION BY REPORTING PERIOD (a)				ESTIMATE OF PERCENTAGE CONTRIBUTION TO IVA BY REPORTING PERIOD (a)			
	<i>Financial year reporters</i>		<i>Off-June year reporters</i>		<i>Financial year reporters</i>		<i>Off-June year reporters</i>	
	JUN	DEC	MAR	SEP	JUN	DEC	MAR	SEP
	%	%	%	%	%	%	%	%
<b>2010-11</b>								
B Mining	93	6	np	np	40	53	np	np
C Manufacturing	98	1	—	—	66	27	3	4
D Electricity, gas, water and waste services	98	1	—	np	82	14	np	np
E Construction	100	—	—	np	94	5	np	np
F Wholesale trade	98	2	1	—	65	22	10	4
G Retail trade	100	—	—	—	96	3	—	1
H Accommodation and food services	99	1	—	—	86	10	np	np
I Transport, postal and warehousing	100	—	—	—	86	11	1	2
J Information media and telecommunications	98	1	—	—	76	11	np	np
L Rental, hiring and real estate services	100	—	—	np	91	8	np	np
M Professional, scientific and technical services	100	—	—	—	83	12	3	3
N Administrative and support services	100	—	—	—	87	10	1	2
P Education and training (private)	92	7	—	—	31	69	—	—
Q Health care and social assistance (private)	100	—	—	—	98	2	—	—
R Arts and recreation services	99	1	—	—	93	5	np	np
S Other services	100	—	—	—	88	9	1	2
<b>Total selected industries</b>	<b>99</b>	<b>1</b>	—	—	<b>76</b>	<b>19</b>	<b>3</b>	<b>2</b>

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) Includes all businesses in scope of the experimental estimates, except for non-employed entities below a certain turnover threshold. Other businesses with less than 20 employees are included in the JUN category

The impact of off-June reporting can vary between data items; that is, not only does the incidence and impact of off-June year reporting differ by industry subdivision, it also impacts upon the following data items differently:

- Sales and service income;
- Wages and salaries;
- Other expenses;
- Closing inventories of raw materials;
- Opening inventories of raw materials;
- Closing inventories of finished goods (including work-in-progress); and
- Opening inventories of finished goods (including work-in-progress).

THE OFF-JUNE REPORTING PROBLEM  
*continued*

Consequently, it was necessary to adjust these individual measures to satisfactorily account for each of the different types of off-June reporting within each ANZSIC subdivision.

METHODOLOGY

This paper describes a new methodology developed with the aim of measuring and removing the impact of off-June reporting on estimates published in *Australian Industry* (cat. no. 8155.0).

In summary the experimental estimates presented in the Appendix of this paper were derived by the following process:

- For each in-scope EAS ANZSIC subdivision, subdivision off-June factors were determined for each data item and each of the off-June reporting types;
- QBIS units with incorrectly reported or unrepresentative data in the ANZSIC subdivision were removed from contributing to the subdivision factors;
- Significant EAS units that were also selected in the QBIS collection were assessed for appropriateness to receive an individualised (unit) off-June factor (instead of receiving a subdivision factor);
- Off-June reporting EAS businesses are then assigned either a unit factor (if deemed appropriate) or its respective ANZSIC subdivision and off-June type factor. New values are calculated for these businesses, representing an estimate of how the business would have reported for the standard financial year (that is, 1 July to 30 June). Final aggregated data is then produced on a standard financial year basis.

*Creating subdivision off-June year factors*

It was necessary to create twenty-one separate factors for each in scope ANZSIC subdivision, as demonstrated in Table 2.2.

**2.2** THE 21 OFF-JUNE YEAR MODELLING FACTORS REQUIRED, FOR EACH ANZSIC SUBDIVISION

	Sales and service income	Wages and salaries	Other expenses	Closing inventories of raw materials	Opening inventories of raw materials	Closing inventories of finished goods	Opening inventories of finished goods
ANZSIC Subdivision	Dec-10	Dec-10	Dec-10	Dec-10	Dec-10	Dec-10	Dec-10
ANZSIC Subdivision	Mar-11	Mar-11	Mar-11	Mar-11	Mar-11	Mar-11	Mar-11
ANZSIC Subdivision	Sep-11	Sep-11	Sep-11	Sep-11	Sep-11	Sep-11	Sep-11

The factors were formulated from a subset of businesses sampled in the QBIS which met the following criteria:

- For sales and service income, wages and salaries and other expenses factors: Reported a non-zero value for these data items for the seven relevant quarters which cover all possible types of reporting periods. For example, for 2010–11 the relevant quarters are March 2010 through September 2011. This condition eliminated businesses which either started up or closed down during the period;
- For inventory factors: Reported a non-zero value for sales and service income and inventories for eight relevant quarters (December 2009 through September 2011) to ensure an opening inventory value;

*Creating subdivision  
off-June year factors  
continued*

- Did not report a value for the above items in one quarter greater than 10 times that of an adjacent quarter. This condition eliminated businesses with extreme values; and
- Had an employment size of 20 or more. This removed small businesses, whose data are not expected to be impacted by off-June reporting in the EAS.

Where there were five or less contributing QBIS businesses in an ANZSIC subdivision, it was considered that the number of observations was insufficient for producing the off-June factors. In those cases the off-June factors were produced at ANZSIC division level.

Sales and service income and other expenses factors were not generated for EDUCATION AND TRAINING AND HEALTH CARE AND SOCIAL ASSISTANCE (ANZSIC Divisions P and Q respectively), as the information is not collected by QBIS (see Scope and Population above). For the same reason, inventory factors could only be generated for MINING, MANUFACTURING, WHOLESALE TRADE, RETAIL TRADE, ACCOMMODATION AND FOOD SERVICES (ANZSIC Divisions B, C, F, G and H respectively) and two subdivisions in the ELECTRICITY, GAS, WATER AND WASTE SERVICES Division; ELECTRICITY SUPPLY AND GAS SUPPLY (ANZSIC Subdivisions 26 and 27 respectively).

For each data item, quarterly weighted QBIS data reported by the subset of businesses established above were summed to give an aggregate value for each in scope ANZSIC subdivision. These aggregate quarterly values were then used to create factors that model the impact of off-June reporting for each of the four data items by each in scope subdivision.

To calculate each factor, a ratio of the summed data from the four quarters of the standard financial year is divided by the summed annualised data from the four quarters of the relevant off-June reporting period, as described by Equation 2.1.

EQUATION 2.1. CALCULATING OFF-JUNE FACTORS

$$\begin{aligned} \text{Off-JuneFactor}_{DEC} &= \frac{(Q_{SEP10} + Q_{DEC10} + Q_{MAR11} + Q_{JUN11})}{(Q_{MAR10} + Q_{JUN10} + Q_{SEP10} + Q_{DEC10})} \\ \text{Off-JuneFactor}_{MAR} &= \frac{(Q_{SEP10} + Q_{DEC10} + Q_{MAR11} + Q_{JUN11})}{(Q_{JUN10} + Q_{SEP10} + Q_{DEC10} + Q_{MAR11})} \\ \text{Off-JuneFactor}_{SEP} &= \frac{(Q_{SEP10} + Q_{DEC10} + Q_{MAR11} + Q_{JUN11})}{(Q_{DEC10} + Q_{MAR11} + Q_{JUN11} + Q_{SEP11})} \end{aligned}$$

where Q is quarterly QBIS data aggregated by industry subdivision for the subset of businesses identified above.

Since inventories are stock variables (that is, represent a quantity existing at a particular point in time) the formulae for deriving inventories factors differed slightly, as described by Equation 2.2.

Creating subdivision  
off-June year factors  
continued

EQUATION 2.2. CALCULATING OFF-JUNE INVENTORIES FACTORS

$$InventoriesFactor_{DEC} = \frac{(Q\ Inv_{JUN11})}{(Q\ Inv_{DEC10})}$$

$$InventoriesFactor_{MAR} = \frac{(Q\ Inv_{JUN11})}{(Q\ Inv_{MAR10})}$$

$$InventoriesFactor_{SEP} = \frac{(Q\ Inv_{JUN11})}{(Q\ Inv_{SEP10})}$$

Factors were produced for opening and closing inventories, by type of inventory. The types of inventories specified were raw materials inventories and finished goods inventories (including work-in-progress).

The factors generated in these equations give an indication of the variability in trading conditions between off-June reporting periods and the standard Australian financial year. A factor of 1 indicates no variability, implying there is no effect of off-June reporting on estimates published in *Australian Industry* (cat. no. 8155.0). Conversely, the further a factor lies from 1, the greater the impact of off-June reporting on industry estimates.

An example of the calculation of factors for Subdivision 14, WOOD PRODUCT MANUFACTURING is provided below. Quarterly sales and service income estimates derived from in-scope QBIS data (see Table 2.3) were used to produce off-June factors (see Example 2.1) which were applied to EAS estimates of sales and service income.

**2.3** CALCULATING FACTORS - EXAMPLE: SALES OF GOODS AND SERVICES, SUBDIVISION 14 WOOD PRODUCT MANUFACTURING

Sales and  
service income  
estimates  
derived from  
in scope QBIS  
data (a)

Quarter	\$m
Mar-10	1459
Jun-10	1640
Sep-10	1765
Dec-10	1636
Mar-11	1445
Jun-11	1486
Sep-11	1531

(a) Due to the scoping criteria listed above, these estimates represent a subset of the QBIS data, and so the estimates given here differ from those published in *Business Indicators* (cat. no. 5676.0).

Creating subdivision  
off-June year factors  
continued

EXAMPLE 2.1. CALCULATING FACTORS: Sales of goods and services, Subdivision 14  
WOOD PRODUCT MANUFACTURING

$$\begin{aligned} \text{Off-JuneFactor}_{DEC} &= \frac{(1,765 + 1,636 + 1,445 + 1,486)}{(1,459 + 1,640 + 1,765 + 1,636)} \\ &= \frac{(6,332)}{(6,500)} \\ &= 0.974 \end{aligned}$$

$$\begin{aligned} \text{Off-JuneFactor}_{MAR} &= \frac{(1,765 + 1,636 + 1,445 + 1,486)}{(1,640 + 1,765 + 1,636 + 1,445)} \\ &= \frac{(6,332)}{(6,486)} \\ &= 0.976 \end{aligned}$$

$$\begin{aligned} \text{Off-JuneFactor}_{SEP} &= \frac{(1,765 + 1,636 + 1,445 + 1,486)}{(1,636 + 1,445 + 1,486 + 1,531)} \\ &= \frac{(6,332)}{(6,098)} \\ &= 1.038 \end{aligned}$$

Quality assurance of  
subdivision off-June year  
factors

To validate ANZSIC subdivision off-June factors (derived from QBIS data), the following processes were used:

- Subdivision factors that were more than two standard deviations from the across-economy mean of that particular data item and off-June type were identified. This ensured that the magnitude of the subdivision factor was valid and in line with expectations.
- Top contributors to the factors were identified. To do this, units were individually removed and the factor was re-derived. If the absolute difference from the original to the re-derived factors was more than 0.02 for sales, wages and expense factors and 0.05 for inventory factors, then the unit was considered a top contributor.
- Using this methodology, top contributor units were isolated for one of two reasons; either their data showed a significantly different trend to the rest of their industry (ANZSIC subdivision) or their data (consistent or inconsistent) heavily influenced the factors magnitude (e.g. a unit's data contributes 30% of all data feeding into a particular off-June factor). The QBIS data were assessed for consistency between reporting quarters or valid explanation for any differences. Based on these investigations, a decision was made to include or exclude the 'top contributor' unit's data from contributing to the off-June factor.
- A unit's data was generally excluded from the subdivision factor if there is evidence to suggest that the business had undergone activities/events that could not be considered representative of the rest of the industry subdivision. In instances where no evidence exists on which to base the decision to include or exclude a unit's data in the derivation of the factor, the default decision was to include the unit's data to the off-June factor.

Creating unit off-June  
factors

The use of unit off-June factors were introduced for estimates presented in this paper. Unit off-June factors were applied to improve the accuracy of off-June adjusted estimates. Unit factors were derived similarly to subdivision factors. The difference between the unit and subdivision factor is that a business' unit factor is derived by using its reported

*Creating unit off-June factors continued*

QBIS data only (where the subdivision factor uses all in-scope QBIS data for that subdivision). Only the top two contributing businesses to EAS ANZSIC subdivision estimates for each of the following data items; total income, total expenses, output, intermediate usage or wages and salaries were assessed for unit factor suitability.

*Quality assurance of unit off-June factors*

Assessment was made on the consistency between reported EAS data and reported QBIS data for the relevant four quarters to ensure that the data was correct. Where there was consistency between the two data sources, the unit received a unit factor. Where consistency did not exist between EAS and QBIS data the unit received the subdivision factor.

In assessing a business' suitability for a unit off-June factor, suitability of QBIS data was also reviewed for inclusion in subdivision factors, based on the criteria described above (see Quality assurance of subdivision off-June factors).

*Applying factors to EAS data*

The quality assured off-June factors are then applied to the relevant off-June reporting EAS units.

If an EAS unit was deemed suitable for a unit factor, its reported EAS data is adjusted by its unit factor. Where an EAS unit was not deemed suitable or assessed to receive a unit factor, then its corresponding ANZSIC subdivision's factor for its particular off-June type was applied to reported EAS data.

The off-June year factors are applied to only selected data items from the EAS. The adjusted items are shown in Table 2.4, as well as the factors which were used to adjust them. Note that not all components of the published items have been adjusted, due to a lack of available QBIS data from which to create appropriate factors.



TABLE 2.4. QBIS FACTORS AND ADJUSTED EAS DATA ITEMS

<b>Published data item</b>	<b>Adjusted components of published data items</b>	<b>QBIS factor used</b>	<b>Industries adjusted</b>
Wages and salaries	Wages and salaries	Wages and salaries	All selected industries <sup>b</sup>
Total income	Sales and service income	Sales and service income	All selected industries <sup>b</sup> except Divisions P and Q
Total expenses	Wages and salaries		
	Employer contributions into superannuation	Wages and salaries	All selected industries <sup>b</sup>
	Worker's compensation premiums		
	Fringe benefits tax		
	Payroll tax		
Industry Value Added <sup>a</sup>	Purchases of materials		All selected industries <sup>b</sup> except Divisions P and Q
	Purchases of finished goods	Other expenses	
	Other intermediate input expenses		
	Opening inventories - finished goods	Opening inventories - finished goods plus work-in-progress	
	Opening Inventories - work-in-progress		
	Closing inventories - finished goods	Closing inventories - finished goods plus work-in-progress	Divisions B, C, F, G, H
	Closing Inventories - work-in-progress		
	Opening inventories - raw materials	Opening inventories - raw materials	
	Closing inventories - raw materials	Closing inventories - raw materials	

a Labour costs are a component of IVA for non-market producers only. See Glossary for more information

b Excludes Division A Agriculture, Forestry and Fishing, K Financial and Insurance Services and O Public Administration and Safety. See 'Scope and Population' for more details

TOTAL SELECTED INDUSTRIES

For TOTAL SELECTED INDUSTRIES in 2010–11, applying off-June year adjustments resulted in a \$3.4b (0.4%) increase in the estimate for IVA. Similarly, estimates of total income and total expenses increased by \$15.8b (0.6%) and \$16.6b (0.7%) respectively, and the off-June year adjusted estimate of wages and salaries was \$2.7b (0.6%) higher than the original estimate.

In 2009–10, for TOTAL SELECTED INDUSTRIES, off-June adjustments increased the original estimate of IVA by \$6.8b (0.8%). Estimates of total income and total expenses increased by \$15.4b (0.6%) and \$14.6b (0.7%) respectively, and the off-June year adjusted estimate of wages and salaries increased by \$1.5b (0.4%).

In 2010–11 the differences between original and off-June adjusted estimates for wages and salaries were minor, generally increasing. The largest adjustment was to MINING (\$0.8b or 3.9%).

The industries with the largest increases between original and off-June adjusted total income estimates for 2010–11 were MINING (\$6.7b or 3.0%) and MANUFACTURING (\$2.4b or 0.6%). Total income estimates for EDUCATION AND TRAINING and HEALTH CARE AND SOCIAL ASSISTANCE remained unchanged, as off-June adjustment factors were not able to be generated for this data item for these industries (see 'Scope and Population' in Chapter 2).

The industries with the largest increases between original and off-June adjusted total expenses estimates in 2010–11 were MANUFACTURING (\$4.4b or 1.2%) and MINING (\$4.0b or 2.8%).

The largest contributing industry to the increases in off-June adjusted IVA estimates in 2010–11 was MINING (\$4.1b or 3.1%), which was off-set by a decrease in MANUFACTURING (\$1.6b or 1.6%).

These findings demonstrate that changes in the key estimates of IVA, total income and total expenses were mostly attributed to movements in the MINING, MANUFACTURING and WHOLESALE TRADE industries. As demonstrated in Table 2.1, the off-June reporting businesses in these industries make a substantial contribution to estimates of IVA, and the extent of variation between original and off-June adjusted estimates indicates that these industries were influenced by fluctuations in trading conditions over time. Conversely, although off-June reporting businesses also made a significant contribution to estimates of IVA in EDUCATION AND TRAINING (Table 2.1), off-June adjusted estimates differ only marginally from original values, indicating that this industry experienced minimal variation in trading conditions over time (Table A1.1).

In general, the results presented above were in line with initial expectations, and provide an estimate of the extent of variation caused by the issue of off-June reporting in EAS.

## DATA QUALITY

When interpreting the experimental estimates in this publication, it is important to take into account reasons that may affect the reliability of the experimental estimates. The quality of the experimental estimates can be limited by:

- the validity of the assumptions underpinning the modelling
- the accuracy of the data used in the production of experimental estimates

The methodology is also limited by restrictions in the scope of the industries adjusted. Off-June adjustments have not been applied to, AGRICULTURE, FORESTRY AND FISHING and PUBLIC ADMINISTRATION AND SAFETY (ANZSIC Divisions A and O respectively) as QBIS does not collect information from these industries and factors were not able to be produced. Data collected in EAS suggest that the effect of off-June reporting is minor in these industries. FINANCIAL AND INSURANCE SERVICES (ANZSIC Division K) has also been excluded as it is not collected by the EAS.

ASSUMPTIONS  
UNDERPINNING THE  
MODEL

The modelling methodology used to create the experimental estimates presented in this publication is based on the following assumptions:

- Where a unit factor has been applied for a particular EAS unit, the assumption is the unit's EAS and QBIS data is comparable and their QBIS data accurately reflects quarterly changes in their activity.
- It is valid to only adjust the data reported by businesses with an employment size of 20 or more for off-June reporting. Smaller businesses were excluded as they are relatively minor contributors to the off-June reporting issue.
- Where subdivision factors have been applied, businesses with an employment size of 20 or more, that report for a given off-June financial period, and are in the same ANZSIC subdivision, are assumed to face similar trading conditions throughout the year.
- The relationship between EAS data items and QBIS data items is meaningful and consistent. In assessing this it is important to note that:
  - There are some scope differences between the businesses included in each survey, the largest of these being that government owned or controlled Public Non-Financial Corporations are excluded from QBIS but included in EAS.
  - QBIS and EAS both take their frame from the ABSBR, which is updated quarterly. This leads to minor differences in the businesses available for survey selection between EAS and QBIS, specifically the September, December and March quarterly frames used for QBIS differ from the annual frame used by EAS.
  - Some data item concepts vary slightly between QBIS and EAS, however where data items correlate, derived factors from QBIS were applied to the EAS data items.

## SAMPLING ERROR

Both the EAS and QBIS use a sample of businesses, and are thus subject to sampling error. The resultant estimates are likely to differ from those that would have been produced had data been obtained from every business.

One measure of sampling error is the Standard Error, which indicates the extent to which an estimate might have varied by chance because only a sample of businesses was included. There are about two chances in three that a sample estimate will differ by less than one standard error from the figure that would have been obtained if a census were conducted, and about nineteen chances in twenty (i.e. a confidence interval of 95%) that the difference will be less than two standard errors. Sampling error can also be measured by the Relative Standard Error (RSE) which is obtained by expressing the standard error as a percentage of the estimate to which it refers. RSEs for the four published data items are shown in Table 4.1 below.

#### 4.1 RELATIVE STANDARD ERRORS

Industry Division	Wages and salaries	Total expenses	Total income	Industry value added
	%	%	%	%
Mining	1.4	1.7	1.2	2.1
Manufacturing	0.6	0.5	1.2	0.8
Electricity, gas, water and waste services	0.5	0.5	0.8	0.9
Construction	2.4	2.7	4.3	2.6
Wholesale trade	1.6	1.7	3.6	2.8
Retail trade	2.3	2.4	3.3	2.5
Accommodation and food services	2.3	2.4	4.9	4.2
Transport, postal and warehousing	2.0	2.1	1.3	1.7
Information media and telecommunications	0.8	0.9	1.2	1.1
Rental, hiring and real estate services	1.9	2.1	3.0	3.0
Professional, scientific and technical services	2.2	2.3	2.9	2.2
Administrative and support services	2.5	2.4	3.0	2.2
Education and training	2.6	2.2	2.9	2.5
Health care and social assistance	2.9	2.9	3.7	2.3
Arts and recreation services	1.8	1.5	3.6	2.5
Other services	3.1	3.0	3.9	2.5
<b>Total selected industries<sup>(a)</sup></b>	<b>0.6</b>	<b>0.6</b>	<b>0.7</b>	<b>0.7</b>

(a) Excludes Division A AGRICULTURE, FORESTRY AND FISHING, K FINANCIAL AND INSURANCE SERVICES AND O PUBLIC ADMINISTRATION AND SAFETY

## NON-SAMPLING ERROR

There are a range of other potential errors that are not caused by sampling and can occur in any statistical collection. Non-sampling error may be due to inadequacies in available sources from which the ABSBR was compiled; imperfections in reporting by providers; the modelling of QBIS data; and errors made in the collection and processing of data. Although it is not possible to quantify non-sampling error, every effort is made to reduce it to a minimum.

**A1.1** OFF-JUNE ADJUSTED ESTIMATES BY INDUSTRY DIVISION

	WAGES AND SALARIES		TOTAL INCOME		TOTAL EXPENSES		INDUSTRY VALUE ADDED	
	<i>Original</i>	<i>Off-June adjusted</i>	<i>Original</i>	<i>Off-June adjusted</i>	<i>Original</i>	<i>Off-June adjusted</i>	<i>Original</i>	<i>Off-June adjusted</i>
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
MINING								
2008-09	16 055	16 449	184 179	184 421	123 175	124 186	106 911	106 695
2009-10	16 599	17 033	165 616	171 842	116 379	118 935	88 036	92 007
2010-11	19 140	19 918	219 336	226 060	136 192	140 150	126 296	130 382
MANUFACTURING								
2008-09	52 402	52 511	415 866	407 748	389 202	381 844	103 925	101 424
2009-10	51 975	52 119	388 546	391 864	361 334	365 087	97 940	99 486
2010-11	53 117	53 333	397 402	399 851	370 886	375 268	101 434	99 840
ELECTRICITY, GAS, WATER AND WASTE SERVICES								
2008-09	8 561	8 604	86 316	86 747	76 333	76 530	29 235	29 517
2009-10	9 122	9 128	93 174	93 721	83 181	83 585	32 176	32 327
2010-11	9 833	9 878	104 788	105 108	92 010	92 435	36 146	36 121
CONSTRUCTION (a)								
2008-09	40 849	41 044	264 953	265 456	240 499	241 006	78 899	79 121
2009-10	42 944	42 993	281 707	282 240	254 877	255 397	83 959	84 028
2010-11	47 430	47 651	304 100	305 251	279 089	280 424	88 516	88 588
WHOLESALE TRADE								
2008-09	29 628	29 796	411 107	403 926	397 563	388 786	56 071	55 306
2009-10	30 315	30 519	407 704	410 894	391 823	397 469	55 711	56 138
2010-11	32 503	32 740	432 731	434 666	417 609	421 140	60 110	59 403
RETAIL TRADE								
2008-09	34 067	34 117	345 930	345 499	328 631	328 024	60 325	60 460
2009-10	35 128	35 151	358 438	359 085	342 071	342 778	63 822	63 849
2010-11	37 214	37 237	368 851	369 184	348 822	349 020	68 228	68 299

(a) No adjustment has been applied to inventories due to lack of available QBIS data

**A1.1** OFF-JUNE ADJUSTED ESTIMATES BY INDUSTRY DIVISION *continued*

	WAGES AND SALARIES		TOTAL INCOME		TOTAL EXPENSES		INDUSTRY VALUE ADDED	
	Original	Off-June adjusted	Original	Off-June adjusted	Original	Off-June adjusted	Original	Off-June adjusted
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
ACCOMMODATION AND FOOD SERVICES								
2008-09	17 221	17 213	69 756	69 848	63 249	63 270	29 798	29 858
2009-10	17 688	17 713	72 850	72 833	65 769	65 772	31 351	31 360
2010-11	19 056	19 072	79 899	80 053	74 082	74 210	33 435	33 478
TRANSPORT, POSTAL AND WAREHOUSING (a)								
2008-09	25 677	25 692	129 970	129 699	118 517	118 355	49 448	49 355
2009-10	26 836	26 848	131 178	131 152	121 330	121 341	51 361	51 338
2010-11	28 169	28 245	141 585	142 179	128 431	128 693	55 462	55 884
INFORMATION MEDIA AND TELECOMMUNICATIONS (a)								
2008-09	11 683	11 658	67 367	67 600	61 702	62 011	33 944	33 838
2009-10	11 641	11 653	74 024	74 287	62 854	62 934	35 076	35 274
2010-11	12 139	12 209	76 742	77 077	66 145	66 745	35 664	35 479
RENTAL, HIRING AND REAL ESTATE SERVICES (a)								
2008-09	11 220	11 178	86 912	86 628	73 485	73 262	47 744	47 634
2009-10	10 975	10 989	97 472	97 590	72 508	72 592	49 897	49 946
2010-11	11 593	11 643	105 808	106 092	76 624	76 789	52 998	53 176
PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES (a)								
2008-09	52 047	52 235	186 463	186 043	149 733	149 393	81 588	81 727
2009-10	53 044	53 090	179 018	179 505	146 551	146 928	83 446	83 618
2010-11	56 560	56 940	195 731	196 646	156 740	157 439	90 307	90 970
ADMINISTRATIVE AND SUPPORT SERVICES (a)								
2008-09	26 609	26 613	61 530	61 326	58 702	58 603	37 140	37 040
2009-10	28 701	28 839	67 514	67 675	59 458	59 611	40 494	40 660
2010-11	31 243	31 433	72 944	73 396	63 892	64 296	45 574	45 843
EDUCATION AND TRAINING (a)(b)								
2008-09	12 086	12 534	24 744	24 744	22 446	22 944	15 865	15 870
2009-10	13 171	13 471	27 497	27 497	24 018	24 355	17 028	17 030
2010-11	14 804	15 050	31 194	31 194	26 896	27 169	18 716	18 715
HEALTH CARE AND SOCIAL ASSISTANCE (a)(b)								
2008-09	28 740	28 773	78 465	78 465	66 372	66 409	46 505	46 507
2009-10	31 741	31 759	82 028	82 028	69 996	70 018	48 729	48 730
2010-11	34 874	34 893	88 618	88 618	75 287	75 309	53 235	53 236
ARTS AND RECREATION SERVICES (a)								
2008-09	4 593	4 603	28 093	28 085	24 049	24 042	9 441	9 452
2009-10	5 015	5 008	29 674	29 644	25 323	25 311	10 227	10 216
2010-11	5 405	5 429	30 392	30 392	26 437	26 489	10 467	10 477

(a) No adjustment has been applied to inventories due to lack of available QBIS data

(b) No adjustment has been applied to sales and service income due to a lack of available QBIS data

**A1.1** OFF-JUNE ADJUSTED ESTIMATES BY INDUSTRY DIVISION *continued*

	WAGES AND SALARIES		TOTAL INCOME		TOTAL EXPENSES		INDUSTRY VALUE ADDED	
	<i>Original</i>	<i>Off-June adjusted</i>	<i>Original</i>	<i>Off-June adjusted</i>	<i>Original</i>	<i>Off-June adjusted</i>	<i>Original</i>	<i>Off-June adjusted</i>
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
OTHER SERVICES (a)								
2008-09	13 617	13 703	52 813	52 926	46 713	46 849	22 900	23 010
2009-10	14 289	14 321	54 880	54 880	47 151	47 128	23 324	23 373
2010-11	15 506	15 572	59 573	59 682	51 035	51 184	25 111	25 179
TOTAL SELECTED INDUSTRIES (b)								
2008-09	385 055	386 723	2 494 465	2 479 162	2 240 370	2 225 515	809 741	806 813
2009-10	399 181	400 634	2 511 321	2 526 736	2 244 622	2 259 241	812 575	819 381
2010-11	428 587	431 243	2 709 695	2 725 450	2 390 179	2 406 758	901 699	905 069

(a) No adjustment has been applied to inventories due to lack of available QBIS data

(b) Excludes Division A Agriculture, Forestry and Fishing, K Financial and Insurance Services and O Public Administration and Safety

## GLOSSARY .....

<b>ABSBR</b>	The Australian Bureau of Statistics Business Register. This contains a list of all businesses in Australia, sourced from the Australian Taxation Office. Most entities are represented by an Australian Business Number. This is suitable for ABS statistical needs when the business is simple in structure, however more significant and diverse businesses are profiled directly by the ABS.
<b>Business</b>	A business is generally considered to be a person, partnership, or corporation engaged in business or commerce.
<b>Capital work done for own use</b>	Capitalised work done by the employees or proprietors of a business in manufacturing, constructing, installing or repairing assets, in mineral and petroleum exploration activities, and the in-house development of computer software, for use by the business or for rental or lease. This work is valued at the capitalised costs of the materials and the wages and salaries involved.
<b>Closing inventories</b>	The value of all inventories of finished goods (including inventories for resale), work-in-progress (less progress payments billed), raw materials, fuels and containers at the end of the reporting period.
<b>Depreciation and amortisation</b>	Depreciation/amortisation allowed on tangible and intangible assets. Includes, for lessees only, depreciation/amortisation in respect of finance leases.
<b>Employer contributions into superannuation</b>	Includes all employer contributions to superannuation funds (including the employer productivity contribution) and provisions for employer contributions to superannuation funds. Also includes expenses relating to employer funded defined benefit schemes. Employee contributions and salary sacrifice contributions are excluded.
<b>Industry division</b>	The structure of ANZSIC comprises four levels, ranging from industry division (broadest level) to industry class (finest level). The main purpose of the industry division level is to provide a limited number of categories which give a broad overall picture of the economy. There are 19 divisions within ANZSIC, each identified by an alphabetical letter, that is, 'A' for AGRICULTURE, FORESTRY AND FISHING, 'B' for MINING, 'C' for MANUFACTURING, etc.
<b>Industry subdivision</b>	This is the broadest level category within each industry division of ANZSIC and is identified by a two-digit code, e.g. Industry Subdivision 14 for WOOD PRODUCT MANUFACTURING. Industry subdivisions are built up from industry groups which, in turn, are built up from industry classes.
<b>Industry value added (IVA)</b>	<p>IVA represents the value added by an industry to the intermediate inputs used by the industry. IVA is the measure of the contribution by businesses, in the selected industry, to gross domestic product.</p> <p>The derivation of IVA for individual businesses depends on whether they are classified as market or non-market producers. Non-market producers are those institutions which provide goods or services either free or at prices that are not economically significant. In other words, their prices are not significantly influenced by the amounts that producers are willing to supply, nor the amounts that users are willing to pay to purchase the goods or services being provided. Conversely, market producers provide goods and services at prices that are economically significant.</p> <p>For market producers, the derivation of IVA is as follows:</p> <p>Sales and service income</p> <p><i>plus</i> Funding from federal, state and/or local government for operational costs</p>



**Industry value added (IVA)** *plus* Capital work done for own use  
*continued* *plus* Closing inventories  
*less* Opening inventories  
*less* Purchases of goods and materials  
*less* Other intermediate expenses  
*equals* IVA

However, it should be noted that IVA is a measure of economic activity and is not equivalent to operating profit before tax (OPBT). Wage and salary expenses and most other labour costs are not taken into account in the calculation for market producers, and neither are interest expenses, depreciation or a number of lesser expenses. On the income side, OPBT includes total income, whereas IVA only includes sales and service income and government funding for operational costs.

As a principle, the output of non-market production is valued at cost, including intermediate input expenses. As shown in the above derivation, purchases and other intermediate input expenses are deducted from output in order to arrive at IVA.

Accordingly, the derivation of IVA for non-market producers can be described as follows:

Selected labour costs  
*plus* Depreciation and amortisation  
*equals* IVA

Estimates of industry value added are obtained by summing the contributions of businesses classified to that industry, both market and (if any) non-market producers. Market producers predominate in most industries.

Industry value added is related to, but different from, the national accounting variable gross value added. For national accounts purposes, gross value added is calculated by adjusting IVA to include General government units and also to account for some other effects.

**Off-June reporting** In annual surveys, businesses are asked to report their operations for the standard financial year. In Australia, this is July 1st to June 30th, however the standard financial year differs between countries. Off-June reporting occurs when a business is unable to report the standard financial year, and instead supplies information for a different, 'off-June' year. Many off-June reporters are companies which are based overseas, while some Australian businesses are off-June reporters for other reasons. For example, most schools report for a calendar year (1st January to 31 December) in order to align with the school year.

**Opening inventories** The value of all inventories of finished goods (including inventories for resale), work-in-progress (less progress payments billed), raw materials, fuels and containers at the beginning of the reporting period.

**Other expenses** In the QBIS collection, refers to all expenses other than selected labour costs (see the entry for Total expenses), interest, depreciation and amortisation, capital repayments, costs associated with the transfer of real estate, dividends, donations, export freight charges, extraordinary losses, foreign exchange losses, goods and service tax (GST), excise and duties payable to governments, income tax and other direct taxes, losses on asset sales, and unrealised gains/losses from revaluations of assets. The major items that are included are intermediate input expenses (defined in the entry for Total expenses).

**Payroll tax** A tax levied by state and territory governments on the amount of wages and salaries paid by a business. Excludes pay-as-you-go withholding tax.

**Purchases of goods and materials** Purchases (of materials, components, containers, packaging materials for manufacture or construction, purchases of finished goods for resale and delivery charges separately invoiced or itemised by suppliers) plus capitalised purchases (goods drawn from

inventories for use as fixed tangible assets in capital work done by the employees or proprietors of a business for use by the business or for rental or lease).

<b>Reference period</b>	For each collection year, businesses are asked to report data for the year ended 30 June. However, if a business has a different financial year, it is asked to report for a 12 month period which ends between 1 October of the previous year and 30 September of the current year. This period is then used as a substitute for the financial year ended 30 June. For example, for the 2010–11 collection, a business may have reported data for the year ended 31 December 2010.
<b>Sales and service income</b>	Includes: <p><i>Sales of goods</i></p> <ul style="list-style-type: none"> <li>■ whether or not produced by the business (including goods produced for the business on a commission basis). Includes export sales, sales or transfers to related businesses or to overseas branches of the business, progress payments relating to long term contracts if they are billed in the period, delivery charges not separately invoiced to customers, sales of goods produced by the business from crude materials purchased, and income from 'specific' rates (e.g. water, sewerage, irrigation and drainage rates). Excludes excise and duties received on behalf of the government (e.g. the petroleum production excise duty), sales of assets, natural resource royalties income, interest income, and delivery charges separately invoiced to customers. Exports are valued free on board, i.e. export freight charges are excluded.</li> </ul> <p><i>Income from services</i></p> <ul style="list-style-type: none"> <li>■ includes income from consulting services, repair, maintenance and service income and fees, contract, subcontract and commission income, management fees/charges from related and unrelated businesses, installation charges, delivery charges separately invoiced to customers and royalties from intellectual property (e.g. patents and copyrights) and natural resource royalties income. Excludes interest income, and delivery charges not separately invoiced to customers.</li> </ul> <p><i>Rent, leasing and hiring income</i></p> <ul style="list-style-type: none"> <li>■ derived from the ownership of land, dwellings, buildings and other structures, motor vehicles, plant, machinery and other equipment. Excludes royalties from mineral leases, income from finance leases and payments received under hire purchase arrangements.</li> </ul> <p>These are valued net of discounts given and exclusive of goods and services tax (GST). Extraordinary items are also excluded.</p> <p>The above definitions are equivalent for both EAS and QBIS, with the exception that natural resource royalties income is not included as part of sales and service income for the QBIS collection.</p>
<b>Total expenses</b>	The sum of all expense components.
<b>Total income</b>	Comprises sales and service income, interest income, funding from government for operational costs and other income.
<b>Total selected industries</b>	Total selected industries comprises data for all ANZSIC divisions, excluding ANZSIC Division A - AGRICULTURE, FORESTRY AND FISHING, Division K - FINANCIAL AND INSURANCE SERVICES and Division O - PUBLIC ADMINISTRATIVE AND SAFETY. For a detailed discussion of the scope and coverage of the estimates, see Chapter 2 - Scope and Population. Units classified to the GENERAL GOVERNMENT OF REST OF THE WORLD institutional sectors are excluded from the scope of estimates for most industries that comprise Total selected industries. This limits coverage to private sector entities and government-owned or controlled Public non-financial corporations.

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<b>Wages and salaries</b>	<p>The gross wages and salaries (including capitalised wages and salaries) of all employees of the business. The item includes severance, termination and redundancy payments, salaries and fees of directors and executives, retainers and commissions of persons who received a retainer, bonuses, and annual and other types of leave. Provision expenses for employee entitlements (e.g. provisions for annual leave and leave bonus, long service leave, sick leave, and severance, termination and redundancy payments) are also included, as are salary sacrificed earnings and remuneration of employees in the form of share based payments and stock options.</p> <p>Payments related to self-employed persons such as consultants, contractors and persons paid solely by commission without a retainer are excluded. The drawings of working proprietors and partners are also excluded.</p>
<b>Workers' compensation premiums/costs</b>	<p>Workers' compensation is a compulsory insurance cover to be taken out by all employers, except for self-insured workers, according to legislative schemes to cover employees suffering injury or disease in the course of or arising out of employment.</p>

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