

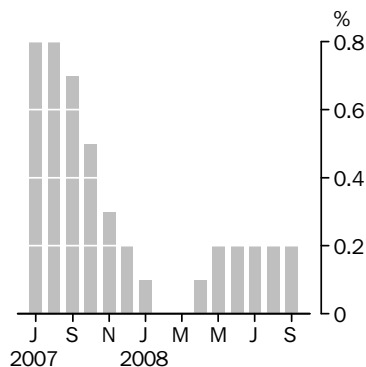
RETAIL TRADE TRENDS

AUSTRALIA

EMBARGO: 11.30AM (CANBERRA TIME) MON 3 NOV 2008

Monthly turnover

Trend estimates
% change



KEY FIGURES

	Sep 08 \$m	Aug 08 to Sep 08 % change	Sep 07 to Sep 08 % change
Turnover at current prices			
Trend estimates	18 351.9	0.2	2.3

KEY POINTS

- The trend estimate of turnover for the Australian Retail series increased by 0.2% in September 2008. This follows a revised increase of 0.2% for each of the last four months.
- In September 2008, four of the six industries had an increase in the trend. Food retailing (+0.6%) had the largest increase. Also increasing were Clothing and soft good retailing (+0.3%), Department stores and Cafes, restaurants and takeaway food services (both +0.2%).
- All States, except New South Wales (-0.3%) had an increase in the trend estimate. The states with the largest increase in the trend estimate were the Northern Territory (+0.9%), South Australia and the Australian Capital Territory (both +0.6%).
- The trend estimate for the Australian retail series increased by 2.3% in September 2008 compared with September 2007.
- The trend estimate for Chains and other large retailers (which are completely enumerated) increased by 0.3% in September 2008 compared to August 2008 and 4.4% in September 2008 compared to September 2007.

CAUTION:
Significant changes
have been made to
the Retail Business
Survey design.

INQUIRIES

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070 or Neil Hamilton on Canberra (02) 6252 5990.

NOTES

FORTHCOMING ISSUES

ISSUE	RELEASE DATE
October 2008	2 December 2008
November 2008	7 January 2009
December 2008	4 February 2009
January 2009	3 March 2009
February 2009	1 April 2009
March 2009	6 May 2009



CHANGES IN THIS ISSUE

There are no changes in this issue.

TIME SERIES DATA

The following trend, seasonally adjusted and original series are available from the Downloads tab of this issue on the ABS website:

- Retail turnover by state
- Retail turnover by industry
- Retail turnover completely enumerated sector, total level.

Also available are standard errors by state and industry.

INTERPRETING MONTHLY MOVEMENTS

Due to the smaller sample size and sampling methodology (involving independent samples for each month of the quarter) introduced from July 2008, there is potentially increased volatility in all series. The original and seasonally adjusted series are most affected and, as a result, the original and seasonally adjusted series are considered of limited use for measuring month to month movements. The ABS recommends using the trend series for this analysis.

NEW QUARTERLY PUBLICATION

More detailed quarterly industry and state estimates will be available from *Retail Trade Quarterly Indicators, Australia* (cat. no. 8502.0). The first issue of this publication, September quarter 2008, is scheduled for release on 17 November 2008. An outline of the new publication and the shells for the time series spreadsheets can be found by accessing the *Retail Trade Quarterly Indicators, Australia* (cat. no. 8502.0) publication from the ABS website.

With the smaller sample size and sampling methodology introduced from July 2008, data quality assurance for the monthly series has focused on state and industry level estimates. With estimates now available for the three months to September, further quality assurance will be undertaken for the release of quarterly series on 17 November. This will include assessing the extent to which the estimated shift in the underlying level of the series resulting from the new methodology aligns with the level of the series from July 2008. It is possible this quality assurance will result in some change to the provisional quarterly estimate (presented on page 3) and related monthly series.

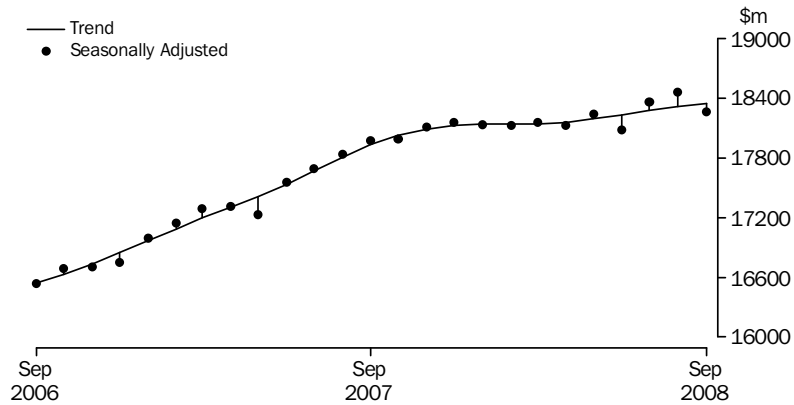
Brian Pink
Australian Statistician

TREND ANALYSIS

TOTAL RETAIL

There have been six months of weak trend growth. This follows a slowing in the rate of trend growth from strong growth in August 2007 to no change in the trend estimate for February and March 2008.

RETAIL TURNOVER, Australia



(a) Estimates to June 2008 are derived from previous sampling methods.

The sum of the seasonally adjusted total turnover series for the three months to September 2008 was \$55,083.2m, an increase of \$641.1m (1.2%) on the sum of the three months to June 2008. However, if the seasonal factors that will be used to compile the quarterly series are applied, the provisional September quarter 2008 total turnover was \$55,037.6m, an increase of \$446.1m (0.8%) on the June quarter 2008.

INDUSTRY TRENDS

Food retailing has had moderate trend growth for five months. Department stores (three months), Clothing and soft good retailing (four months) and Cafes, restaurants and takeaway food services (three months) have had weak trend growth while Household good retailing (three months) and Other retailing (four months) have had a decline in the trend estimate.

STATE TRENDS

The trend estimate has been in decline in New South Wales for nine months. Victoria has had weak trend growth for four months. Both Queensland and Tasmania had weak trend growth in September 2008 after four months and two months, respectively, of moderate growth. Western Australia has had seven months of moderate growth. Both South Australia and the Northern Territory have had moderate to strong growth for over 12 months. South Australia has had moderate growth over the last two months, while the Northern Territory has had strong growth over the last five months. The Australian Capital Territory trend series has been in decline from April to July 2008 but the rate of decline has lessened since May 2008. Trend growth for more recent months has been revised significantly and is showing growth but should be used with caution until future observations are included.

REVISIONS TO TREND

The chart above indicates the level of volatility in the seasonally adjusted series. With the new survey design, it is anticipated that the volatility level will increase from July 2008. This increased volatility will contribute to revisions to trend estimates that are larger on average than those produced under the previous sampling methods. The likelihood of revisions needs to be considered when analysing retail trends.

TREND ANALYSIS *continued*

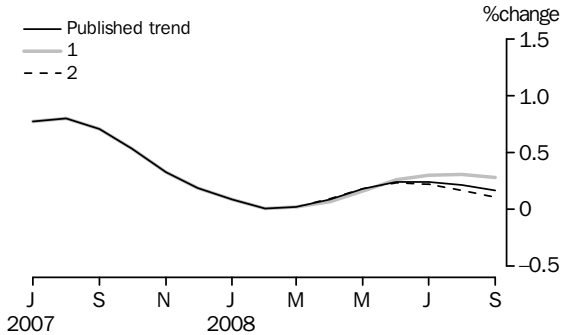
REVISIONS TO TREND
continued

What-if analysis can be used to assess the reliability of the trend estimate at the end points of the series. The following what-if chart presents the possible change in the trend estimates under two different scenarios. The two scenarios for the next month's seasonally adjusted estimates have been derived from the 25th and 75th percentiles of the historical seasonally adjusted movement distribution. The historical seasonally adjusted movements have been adjusted to reflect the expected increase in volatility from the new survey design.

Note that the what-if analysis does not show the unknown impact of revisions to seasonal factor estimates that could arise when the original estimate for the next time period becomes available. For more information see the trend estimates section of the Explanatory Notes.

1 The October seasonally adjusted estimate of retail turnover is 1.39% higher than the September estimate.

2 The October seasonally adjusted estimate of retail turnover is 0.04% higher than the September estimate.



RETAIL TURNOVER, By Industry Group(a): Trend

Month	Food retailing(b)	Department stores	Clothing and soft good retailing	Household good retailing	Other retailing(c)	Cafes, restaurants and takeaway food services	Total
\$ MILLION							
2007							
July	7 112.0	1 496.6	1 270.8	3 033.4	2 541.6	2 214.5	17 668.9
August	7 167.4	1 503.6	1 278.0	3 056.7	2 581.9	2 222.0	17 809.7
September	7 213.5	1 508.1	1 282.6	3 078.4	2 626.7	2 226.4	17 935.8
October	7 248.5	1 510.2	1 284.0	3 092.1	2 670.1	2 226.9	18 031.9
November	7 272.9	1 510.9	1 283.6	3 094.9	2 705.4	2 223.0	18 090.6
December	7 287.7	1 514.8	1 284.8	3 087.4	2 733.2	2 216.1	18 124.1
2008							
January	7 299.0	1 518.5	1 287.3	3 074.1	2 752.1	2 209.3	18 140.3
February	7 307.3	1 520.1	1 286.4	3 062.7	2 766.5	2 198.3	18 141.4
March	7 317.4	1 518.5	1 283.5	3 060.7	2 777.1	2 187.5	18 144.7
April	7 337.5	1 515.7	1 280.9	3 064.0	2 783.3	2 179.4	18 160.9
May	7 369.6	1 513.9	1 280.2	3 068.3	2 785.0	2 176.4	18 193.4
June	7 411.5	1 514.1	1 281.5	3 070.1	2 782.5	2 177.4	18 237.1
July	7 459.5	1 516.1	1 284.2	3 063.7	2 778.0	2 180.1	18 281.6
August	7 508.4	1 519.0	1 287.5	3 051.2	2 771.8	2 183.2	18 321.1
September	7 550.7	1 522.5	1 291.4	3 033.1	2 765.9	2 188.2	18 351.9
% CHANGE FROM PRECEDING MONTH							
2007							
July	0.8	0.7	0.8	0.6	1.3	0.4	0.8
August	0.8	0.5	0.6	0.8	1.6	0.3	0.8
September	0.6	0.3	0.4	0.7	1.7	0.2	0.7
October	0.5	0.1	0.1	0.4	1.7	0.0	0.5
November	0.3	0.1	0.0	0.1	1.3	-0.2	0.3
December	0.2	0.3	0.1	-0.2	1.0	-0.3	0.2
2008							
January	0.2	0.2	0.2	-0.4	0.7	-0.3	0.1
February	0.1	0.1	-0.1	-0.4	0.5	-0.5	0.0
March	0.1	-0.1	-0.2	-0.1	0.4	-0.5	0.0
April	0.3	-0.2	-0.2	0.1	0.2	-0.4	0.1
May	0.4	-0.1	-0.1	0.1	0.1	-0.1	0.2
June	0.6	0.0	0.1	0.1	-0.1	0.0	0.2
July	0.6	0.1	0.2	-0.2	-0.2	0.1	0.2
August	0.7	0.2	0.3	-0.4	-0.2	0.1	0.2
September	0.6	0.2	0.3	-0.6	-0.2	0.2	0.2
% CHANGE FROM CORRESPONDING MONTH OF PREVIOUS YEAR							
2007							
July	9.2	6.0	8.3	8.7	2.6	9.0	7.7
August	9.5	6.8	7.9	8.7	3.9	8.9	8.1
September	9.5	7.4	7.5	8.8	5.6	8.8	8.4
October	9.3	7.4	7.2	8.6	7.4	8.3	8.5
November	8.8	6.8	6.8	7.7	8.7	7.3	8.1
December	8.1	6.2	6.5	6.5	9.8	6.1	7.6
2008							
January	7.4	5.6	6.4	5.0	10.7	4.6	6.9
February	6.6	5.1	5.7	3.7	11.4	3.0	6.2
March	5.9	4.5	4.7	3.0	11.9	1.4	5.5
April	5.5	3.7	3.5	2.6	12.2	0.1	5.0
May	5.2	2.7	2.4	2.3	11.9	-0.8	4.5
June	5.0	1.9	1.6	1.8	10.9	-1.2	4.0
July	4.9	1.3	1.1	1.0	9.3	-1.6	3.5
August	4.8	1.0	0.7	-0.2	7.4	-1.7	2.9
September	4.7	1.0	0.7	-1.5	5.3	-1.7	2.3

(a) See paragraph 6 of Explanatory Notes.

(b) From the July 2008 issue, Food retailing excludes Takeaway food retailing for all time periods.

(c) From the July 2008 issue, Other retailing includes Recreational good retailing for all time periods.

RETAIL TURNOVER, By state: Trend

Month	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Northern Territory	Australian Capital Territory	Australia
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\$ MILLION

2007

July	5 600.3	4 350.7	3 617.9	1 198.5	1 990.2	387.5	176.4	347.4	17 668.9
August	5 650.0	4 385.7	3 653.2	1 207.5	1 999.2	388.1	178.2	347.7	17 809.7
September	5 693.5	4 421.5	3 679.6	1 218.6	2 005.9	388.6	180.5	347.7	17 935.8
October	5 722.8	4 453.1	3 696.8	1 230.9	2 008.6	389.0	182.8	347.8	18 031.9
November	5 734.1	4 476.8	3 706.0	1 243.3	2 007.7	389.5	184.9	348.4	18 090.6
December	5 732.2	4 493.6	3 711.3	1 254.9	2 005.7	390.2	186.7	349.6	18 124.1

2008

January	5 723.5	4 501.7	3 714.3	1 265.2	2 005.0	391.1	187.9	351.5	18 140.3
February	5 709.7	4 500.5	3 712.8	1 274.3	2 009.8	392.2	188.8	353.2	18 141.4
March	5 696.2	4 494.5	3 714.9	1 283.1	2 018.8	394.2	189.8	353.2	18 144.7
April	5 683.8	4 489.3	3 724.6	1 292.3	2 031.2	397.1	191.1	351.5	18 160.9
May	5 671.5	4 490.9	3 740.4	1 302.1	2 045.8	400.5	193.0	349.2	18 193.4
June	5 658.1	4 500.4	3 759.3	1 312.3	2 060.6	403.7	195.2	347.5	18 237.1
July	5 641.9	4 513.7	3 778.2	1 322.4	2 074.6	406.1	197.4	347.2	18 281.6
August	5 624.0	4 528.0	3 794.4	1 331.4	2 088.1	407.7	199.3	348.2	18 321.1
September	5 607.4	4 540.6	3 806.1	1 338.7	2 099.3	408.5	201.1	350.2	18 351.9

% CHANGE FROM PRECEDING MONTH

2007

July	0.9	0.7	1.1	0.6	0.4	0.3	0.8	0.3	0.8
August	0.9	0.8	1.0	0.8	0.5	0.2	1.0	0.1	0.8
September	0.8	0.8	0.7	0.9	0.3	0.1	1.3	0.0	0.7
October	0.5	0.7	0.5	1.0	0.1	0.1	1.3	0.0	0.5
November	0.2	0.5	0.2	1.0	0.0	0.1	1.2	0.2	0.3
December	0.0	0.4	0.1	0.9	-0.1	0.2	1.0	0.4	0.2

2008

January	-0.2	0.2	0.1	0.8	0.0	0.2	0.6	0.5	0.1
February	-0.2	0.0	0.0	0.7	0.2	0.3	0.5	0.5	0.0
March	-0.2	-0.1	0.1	0.7	0.4	0.5	0.5	0.0	0.0
April	-0.2	-0.1	0.3	0.7	0.6	0.7	0.7	-0.5	0.1
May	-0.2	0.0	0.4	0.8	0.7	0.9	1.0	-0.7	0.2
June	-0.2	0.2	0.5	0.8	0.7	0.8	1.2	-0.5	0.2
July	-0.3	0.3	0.5	0.8	0.7	0.6	1.1	-0.1	0.2
August	-0.3	0.3	0.4	0.7	0.6	0.4	1.0	0.3	0.2
September	-0.3	0.3	0.3	0.6	0.5	0.2	0.9	0.6	0.2

% CHANGE FROM CORRESPONDING MONTH OF PREVIOUS YEAR

2007

July	7.2	4.9	10.8	7.0	10.6	6.2	9.5	8.6	7.7
August	7.9	5.4	11.3	7.1	10.1	6.1	9.9	7.7	8.1
September	8.4	5.8	11.7	7.5	9.4	6.0	10.6	6.7	8.4
October	8.6	6.1	11.9	7.9	8.3	5.9	11.3	5.9	8.5
November	8.1	6.1	11.6	8.3	7.0	5.8	11.6	5.2	8.1
December	7.3	6.0	11.0	8.6	5.6	5.7	11.7	4.9	7.6

2008

January	6.3	5.8	10.1	8.8	4.4	5.5	11.3	4.8	6.9
February	5.3	5.5	8.9	8.9	3.7	4.9	11.0	4.6	6.2
March	4.5	5.1	7.6	9.1	3.4	4.5	10.7	3.9	5.5
April	3.7	4.8	6.6	9.3	3.4	4.2	10.7	2.7	5.0
May	2.9	4.4	5.8	9.7	3.7	4.2	11.0	1.4	4.5
June	1.9	4.1	5.1	10.1	4.0	4.5	11.6	0.3	4.0
July	0.7	3.7	4.4	10.3	4.2	4.8	11.9	0.0	3.5
August	-0.5	3.2	3.9	10.3	4.4	5.0	11.8	0.2	2.9
September	-1.5	2.7	3.4	9.9	4.7	5.1	11.4	0.7	2.3

EXPLANATORY NOTES

INTRODUCTION

1 This publication presents monthly trend estimates of the value of turnover of retail businesses classified by industry, and by state and territory. The estimates of turnover are compiled from the Retail Business Survey (RBS).

2 With a sample design introduced in the July 2008 reference month, the aim of the survey is to produce quarterly estimates at the industry group by state level and monthly estimates at a broader level. The survey includes about 3,200 retail and selected service businesses each quarter. About 500 'large' businesses are included in the survey every month. A quarterly sample of about 2700 'smaller' businesses is selected, with about 900 of these smaller businesses are allocated to each month of the quarter. The 'large' business' contribution of approximately 62% of the total estimate ensures a highly reliable Australian total turnover estimate.

3 Quarterly estimates are presented in *Retail Trade Quarterly Indicators, Australia* (Cat. No. 8502.0). This publication includes industry sub group by state and chain volume measures at state and industry level.

SCOPE AND COVERAGE

4 The scope of the RBS is all employing businesses with at least one retail outlet. Like most Australian Bureau of Statistics (ABS) economic surveys, the frame used for the RBS is taken from the ABS Business Register which includes registrations to the Australian Taxation Office's (ATO) pay-as-you-go withholding (PAYGW) scheme. Each statistical unit (as defined below) included on the ABS Business Register is classified to the Australian and New Zealand Standard Industrial Classification (ANZSIC) industry in which it mainly operates. The frame is supplemented with information about businesses which are classified as non-retail but which have significant retail activity.

5 The frame is updated quarterly to take account of new businesses, businesses which have ceased employing, changes in industry and other general business changes. The estimates include an allowance for the time it takes a newly registered business to get on to the survey frame. Businesses which have ceased employing are identified when the ATO cancels their Australian Business Number (ABN) and/or PAYGW registration. In addition, businesses with less than 50 employees which do not remit under the PAYGW scheme in each of the previous five quarters are removed from the frame.

6 The following industries included in the survey are as defined in ANZSIC:

- Food retailing
 - Supermarkets and grocery stores (5110) and non-petrol sales of convenience stores of selected petrol stations
 - Liquor retailing (5123)
 - Other food retailing
 - Fresh meat, fish and poultry retailing (5121)
 - Fruit and vegetable retailing (5122)
 - Bread and cake retailing (5124)
 - Specialised food retailing n.e.c. (5129)
- Department stores (5210)
- Clothing and soft good retailing
 - Clothing retailing (5221)
 - Footwear, fabric and other soft good retailing
 - Footwear retailing (5222)
 - Fabric and other soft good retailing (5223)

EXPLANATORY NOTES *continued*

SCOPE AND COVERAGE

continued

- Household good retailing
 - Furniture and floor covering retailing
 - Furniture retailing (5231)
 - Floor covering retailing (5232)
 - Domestic hardware and houseware retailing (5233)
 - Domestic appliance and recorded music retailing
 - Domestic appliance retailing (5234)
 - Recorded music retailing (5235)
- Other retailing
 - Newspaper, book and stationery retailing (5243)
 - Other recreational goods retailing
 - Sport and camping equipment retailing (5241)
 - Toy and game retailing (5242)
 - Photographic equipment retailing (5244)
 - Pharmaceutical, cosmetic and toiletry retailing (5251)
 - Other retailing n.e.c.
 - Antique and used good retailing (5252)
 - Garden supplies retailing (5253)
 - Flower retailing (5254)
 - Watch and jewellery retailing (5255)
 - Retailing n.e.c. (5259)
- Cafes, restaurants and takeaway food services
 - Takeaway food retailing (5125)
 - Cafes and restaurants (5730).

STATISTICAL UNITS DEFINED ON THE ABS BUSINESS REGISTER

7 The ABS uses an economic statistics units model on the ABS Business Register to describe the characteristics of businesses, and the structural relationships between related businesses. The units model is also used to break groups of related businesses into relatively homogeneous components that can provide data to the ABS.

8 The units model allocates businesses to one of two sub-populations. The vast majority of businesses are in what is called the ATO Maintained Population, while the remaining businesses are in the ABS Maintained Population. Together, these two sub-populations make up the ABS Business Register population.

ATO Maintained Population

9 Most businesses and organisations in Australia need to obtain an ABN, and are then included on the ATO Australian Business Register. Most of these businesses have simple structures; therefore the unit registered for an ABN will satisfy ABS statistical requirements. The businesses with simple structures constitute the ATO Maintained Population, and the ABN unit is used as the statistical unit for all economic collections.

ABS Maintained Population

10 For the population of businesses where the ABN unit is not suitable for ABS statistical requirements, the ABS maintains its own units structure through direct contact with each business. These businesses constitute the ABS Maintained Population. This

EXPLANATORY NOTES *continued*

ABS Maintained Population
continued

population consists typically of large, complex and diverse businesses. The statistical units model described below is used for these businesses.

Enterprise Group: This is a unit covering all the operations in Australia of one or more legal entities under common ownership and/or control. It covers all the operations in Australia of legal entities which are related in terms of the current Corporations Law (as amended by the *Corporations Legislation Amendment Act 1991*), including legal entities such as companies, trusts, and partnerships. Majority ownership is not required for control to be exercised.

Enterprise: The enterprise is an institutional unit comprising (i) a single legal entity or business entity, or (ii) more than one legal entity or business entity within the same Enterprise Group and in the same institutional subsector (i.e. they are all classified to a single Standard Institutional Sector Classification of Australia subsector).

Type of Activity Unit (TAU): The TAU is comprised of one or more business entities, sub-entities or branches of a business entity within an Enterprise Group that can report production and employment data for similar economic activities. When a minimum set of data items are available, a TAU is created which covers all the operations within an industry subdivision (and the TAU is classified to the relevant subdivision of the ANZSIC). Where a business cannot supply adequate data for each industry, a TAU is formed which contains activity in more than one industry subdivision.

SURVEY METHODOLOGY

11 The survey is conducted monthly primarily by telephone interview although a small number of questionnaires are mailed to businesses. The businesses included in the survey are selected by random sample from a frame stratified by state, industry and business size. The survey uses annualised turnover as the measure of business size. For the ATO Maintained Population, the annualised turnover is based on the ATO's Business Activity Statement item Total sales and for the ABS Maintained Population a modelled annualised turnover is used. For stratification purposes the annualised turnover allocated to each business is not updated each quarter as to do so would result in increased volatility in the estimates.

12 Generalised regression estimation methodology is used for estimation. For estimation purposes, the annualised turnover allocated to each business is updated each quarter.

13 The July 2008 issue saw the introduction of a 'one in two out' strategy for collecting data from sampled units. Businesses in the sample sector are allocated evenly across the three months of a quarter with approximately 900 sample sector businesses included each month. These businesses are required to provide a monthly estimate of turnover for the month of the quarter to which they have been allocated. They will then not be required to report data for the next two months i.e. a business allocated to the first month of a quarter will be required to report a monthly estimate for the July, October, January and April reference months.

14 Each quarter, some businesses in the sample are replaced, at random, by other businesses so that the reporting load can be spread across smaller retailers.

15 Most businesses can provide turnover on a calendar month basis and this is how the data are presented. When businesses cannot provide turnover on a calendar month basis, the reported data and the period they relate to are used to estimate turnover for the calendar month.

16 Most retailers operate in a single state/territory. For this reason, estimates of turnover by state/territory are only collected from the larger retailers which are included in the survey each month. These retailers are asked to provide turnover for sales from

EXPLANATORY NOTES *continued*

SURVEY METHODOLOGY

continued

each state/territory in which the business operates. Turnover for the smaller businesses is allocated to the state of their head office or main outlet.

DEFINITION OF TURNOVER

17 Turnover includes retail sales; wholesale sales; takings from repairs, meals and hiring of goods (except for rent, leasing and hiring of land and buildings); commissions from agency activity (e.g. commissions received from collecting dry cleaning, selling lottery tickets, etc.). From July 2000, turnover includes the goods and services tax.

COMPARABILITY OF ESTIMATES

18 Due to the increased sampling error and rotation of the 'one in two out' sampling methodology, the original and seasonally adjusted estimates are considered of limited use for measuring month to month movements. Due to the independent sample sectors selected for each month in a quarter, the monthly estimates can differ due to the businesses included in each sample. However this methodology enables reliable quarterly estimates to be derived from a small sample while providing reliable broad level monthly trend estimates.

SEASONAL ADJUSTMENT AND TREND ESTIMATION

19 Seasonally adjusted estimates are derived by estimating and removing systematic calendar related effects from the original series. In the Retail trade series, these calendar related effects are known as seasonal (e.g. increased spending in December as a result of Christmas) and trading day influences (arising from the varying length of each month and the varying number of Sundays, Mondays, Tuesdays, etc. in each month). Each influence is estimated by separate seasonal and trading day factors which, when combined, are referred to as the combined adjustment factors.

20 The seasonally adjusted estimates also have an allowance for an Easter proximity effect, which is caused when Easter falls late in March or early in April. This effect, when present, is combined with the seasonal and trading day factors to form the combined adjustment factors. There is also a similar allowance for the variable timing of Father's Day. See the Appendix of the July 2001 and August 2002 issues, respectively, of this publication for more information.

21 The Retail series uses a concurrent seasonal adjustment methodology to derive the combined adjustment factors. This means that data from the current month are used in estimating seasonal and trading day factors for the current and previous months. For more information see *Information Paper: Introduction of Concurrent Seasonal Adjustment into the Retail Trade Series* (cat. no. 8514.0).

22 Autoregressive integrated moving average (ARIMA) modelling can improve the revision properties of the seasonally adjusted and trend estimates. ARIMA modelling relies on the characteristics of the series being analysed to project future period data. The projected values are temporary, intermediate values, that are only used internally to improve the estimation of the seasonal factors. The projected data do not affect the original estimates and are discarded at the end of the seasonal adjustment process. The retail collection uses an individual ARIMA model for each of the industry totals and state totals published monthly. The ARIMA model is assessed as part of the annual reanalysis. For more information on ARIMA modelling see *Feature article: Use of ARIMA modelling to reduce revisions in the October 2004* issue of *Australian Economic Indicators* (cat. no. 1350.0).

23 The seasonal and trading day factors are reviewed annually at a more detailed level than possible in the monthly processing cycle. The annual reanalysis will not normally result in significant changes. For Retail Trade, the results of the latest review are normally included in the July issue.

24 A "two-dimensional reconciliation" methodology has been used on the seasonally adjusted time series in this publication to force additivity - that is, to force the sum of fine-level (state and industry) estimates to be equal to the Australian total.

EXPLANATORY NOTES *continued*

SEASONAL ADJUSTMENT AND TREND ESTIMATION *continued*

25 In the seasonal adjustment process, both the seasonal and trading day factors evolve over time to reflect changes in spending and trading patterns. Examples of this evolution include the slow move in spending from December to January; and, increased trading activity on weekends and public holidays. The seasonally adjusted estimates still reflect the sampling and non-sampling errors to which the original estimates are subject. This is why it is recommended that trend series be used to analyse month-to-month movements.

26 The monthly trend estimates are derived by applying a 13-term Henderson moving average to the seasonally adjusted estimates (7-term for quarterly series). The Henderson moving average is symmetric, but as the end of a time series is approached, asymmetric forms of the moving average have to be applied. The asymmetric moving averages have been tailored to suit the particular characteristics of individual series and enable trend estimates for recent periods to be produced. Due to the ABS Retail survey sample decrease starting from July 2008 and to reflect the measurement volatility level increase, a standard end-weight parameter 3.5 of the asymmetric moving average is used to produce trend estimates for all monthly Retail series. Estimates of the trend will be improved at the current end of the time series as additional observations become available. This improvement is due to the combined effect of the concurrent seasonal adjustment methodology and the application of different asymmetric moving averages for the most recent six months (or three quarters). As a result of the improvement, most revisions to the trend estimates will be observed for the most recent six months (or three quarters).

27 Trend estimates are used to analyse the underlying behaviour of the series over time. As a result of the introduction of The New Tax System, a break in the monthly trend series has been inserted between June and July 2000. Care should therefore be taken if comparisons span this period. For more details refer to the Appendix in the December 2000 issue of this publication.

28 For further information on trend estimates, see *Information Paper: A Guide to Interpreting Time Series - Monitoring Trends, 2003* (cat. no. 1349.0) or contact the Assistant Director, Time Series Analysis on Canberra (02) 6252 6345 or by email at <time.series.analysis@abs.gov.au>.

ANALYSING TREND ESTIMATES

29 The following terms are used in this publication to describe month to month movements in the trend series:

- in decline – percentage change in trend estimate less than zero
- no change or flat – percentage change in the trend estimate equal to zero
- weak growth – percentage change in the trend estimate of 0.1 to 0.3%
- moderate growth – percentage change in the trend estimate of 0.4 to 0.7%
- strong growth – percentage change in the trend estimate greater than 0.7%.

RELIABILITY OF ESTIMATES

30 There are two types of error possible in estimates of retail turnover: *Sampling error* which occurs because a sample, rather than the entire population, is surveyed. One measure of the likely difference resulting from not including all establishments in the survey is given by the standard error, see below. Sampling error for each month will be influenced by the rotation effect of having a different third of the sample reporting each month and by some businesses in each month being replaced by other businesses so that the reporting load can be spread across retailers.

Non sampling error which arises from inaccuracies in collecting, recording and processing the data. The most significant of these errors are: misreporting of data items; deficiencies in coverage; non-response; and processing errors. Every effort is made to minimise reporting error by the careful design of questionnaires,

EXPLANATORY NOTES *continued*

RELIABILITY OF ESTIMATES

continued

intensive training and supervision of interviewers, and efficient data processing procedures.

STANDARD ERRORS

31 Seasonally adjusted and trend estimates and chain volume measures are also subject to sampling variability. For seasonally adjusted estimates, the standard errors are approximately the same as for the original estimates. For trend estimates, the standard errors are likely to be smaller. For quarterly chain volume measures, the standard errors may be up to 10% higher than those for the corresponding current price estimates because of the sampling variability contained in the prices data used to deflate the current price estimates.

32 Estimates, in original terms, are available from the Downloads tab of this publication. Estimates that have an estimated relative standard error (RSE) between 10% and 25% are annotated with the symbol '^'. These estimates should be used with caution as they are subject to sampling variability too high for some purposes. Estimates with a RSE between 25% and 50% are annotated with the symbol '*', indicating that the estimates should be used with caution as they are subject to sampling variability too high for most practical purposes. Estimates with a RSE greater than 50% are annotated with the symbol '**' indicating that the sampling variability causes the estimates to be considered too unreliable for general use.

33 To further assist users in assessing the reliability of estimates, key data series has been given a grading of A to C. Where:

- A represents a relative standard error on level of less than 2%. The published estimates are highly reliable for movement analysis.
- B represents a relative standard error on level between 2% and 5%, meaning the estimates is reliable for movement analysis purposes.
- C represents a relative standard error on level between 5% and 10%, meaning users are advised to exercise some caution in interpreting movements for such series.

34 The tables below provide an indicator of reliability for the estimates in original terms. The reliability indicator is based on an average RSE derived over four years.

RELATIVE STANDARD ERRORS, By Industry Group

	<i>Food retailing</i>	<i>Department Stores</i>	<i>Clothing and soft good retailing</i>	<i>Household good retailing</i>	<i>Other retailing</i>	<i>Cafes, restaurants and takeaway food services</i>	<i>Total</i>
RSE (%)	B	A	B	B	B	C	A

RELATIVE STANDARD ERRORS, By State

	<i>NSW</i>	<i>Vic.</i>	<i>Qld</i>	<i>SA</i>	<i>WA</i>	<i>Tas.</i>	<i>NT</i>	<i>ACT</i>	<i>Aust.</i>
RSE (%)	B	B	B	B	B	B	B	B	A

RELIABILITY OF TREND ESTIMATES

35 The trending process dampens the volatility in the original and seasonally adjusted estimates. However, trend estimates are subject to revisions as future observations become available. An indication of the possible revisions to the latest month is included in a What-if chart in 'Trend Analysis'.

ABS DATA AVAILABLE ON REQUEST

36 As well as the statistics included in this and related publication, the ABS may have other relevant data available. Inquires should be made to the Retail Business Survey contact officer on (02) 6252 5990 or any ABS office.

EXPLANATORY NOTES *continued*

RELATED PUBLICATIONS

37 Current publications and other products released by the ABS are available from the Statistics View of the ABS web site <<http://www.abs.gov.au>>. The ABS also issues a daily Release Advice on the web site which details products to be released in the week ahead.

ABBREVIATIONS

ABN	Australian Business Number
ABS	Australian Bureau of Statistics
ANZSIC	Australian and New Zealand Standard Industrial Classification
ARIMA	autoregressive integrated moving average
ATO	Australian Taxation Office
n.e.c.	not elsewhere classified
PAYGW	pay-as-you-go withholding
RBS	Retail Business Survey
RSE	relative standard error
TAU	type of activity unit

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