NCVER

Technical PAPER

Adjustment notes for apprentice and trainee estimates

MARCH 2010

DATA COLLECTIONS AND ANALYSIS BRANCH

NATIONAL CENTRE FOR VOCATIONAL EDUCATION RESEARCH

This technical note provides a cumulative record of the adjustment notes relevant for the estimation of apprentice and trainee figures at each collection.

This document commences with the adjustment note for Collection 62 (December 2009 estimates used to produce the September quarter 2009 publication).

Contents

Introduction

Apprentice and trainee data are reported by the State and Territory Training Authorities to NCVER on a quarterly basis, starting at the September quarter of 1994. The set of data submitted that quarter is referred to as Collection 1. The sets of data submitted in subsequent quarters are referred to as Collection 2, Collection 3 and so on.

NCVER publishes data on the numbers of contracts of training that commence, complete, cancel/withdraw, re-commence, expire or suspend and the time at which these events occur (referred to as the "date of effect"). From these events, the number of contracts in training at a given time can be calculated.

Due to time delays in reporting data on the status of contracts to NCVER, the most recent data are estimated. Further details regarding this methodology are provided in the technical paper produced by NCVER, *Estimation of Apprentice and Trainee Statistics,* which can be found at <http://www.ncver.edu.au/publications/2213.html>.

The purpose of this technical paper is to document the adjustments that are made to the estimates at each collection, and produce a cumulative document of these adjustments, commencing at Collection 60, June 2009 estimates.

Adjustment note for collection 62

NCVER examines the quarterly COT estimates produced by the endorsed model in order to check that the estimates are reasonable. In particular, a decision rule was introduced in collection 45 that mandated reviewing all estimates with relative prediction errors of 10% or more. The goal of the review is to correct for any large bias in estimation that might be caused by changes in the pattern of reporting practices over time. Note that whilst an estimate might be adjusted for bias, its associated prediction error is not altered.

Commencement estimates in the Australian Capital Territory for September 2009 and June 2009 were associated with relative prediction errors over 10%. For March 2009, the relative prediction error was nearly 8% and was also reviewed.

The relative prediction errors for expired contracts remained typically high although much reduced from the levels experienced in past years. In particular, both NSW and Victoria are under 10% and the highest value is about 35%.

The contribution of expired contracts to the in training estimate is usually small both in level and variation. High relative errors appear to be explained to some degree by the fact that the estimates are small numbers and therefore any variation is relatively large. Adjustments to estimates of expired contracts have little effect on the corresponding estimates of in training. Consequently, no alterations to estimates of expired contracts have been made.

Australian Capital Territory

Commencements for the March 09 quarter

From endorsed model – Estimate = 1889; Relative Error = 7.86%.

Time window for calculating average lag factor is from December 2006 quarter to September 2008 quarter.

The lag for the second quarter in the time window is clearly higher than the others. The following two quarters after the time window indicate a decreasing trend (refer to Figure 1 in Attachment 1). Quarters 3 to 8 show a stable ('flat') trend. Hence, they have been used as the basis for the revision of the estimate.

Revised Estimate = 1828

Commencements for the June 09 quarter

From endorsed model – Estimate = 1229; Relative Error = 13.71%.

Time window for calculating average lag factor is from December 2006 quarter to September 2008 quarter.

The lags for the second and third quarters in the time window are clearly higher than the others. The following two quarters after the time window also indicate a decreasing trend (refer to Figure 2 in Attachment 1). Similar to March 09 quarter, Quarters 4 to 8 show a flat trend. So they were used as the basis for the revision of the estimate.

Revised Estimate = 1136

Commencements for the September 09 quarter

From endorsed model – Estimate = 1368; Relative Error = 14.35%.

Time window for calculating average lag factor is from December 2006 quarter to September 2008 quarter.

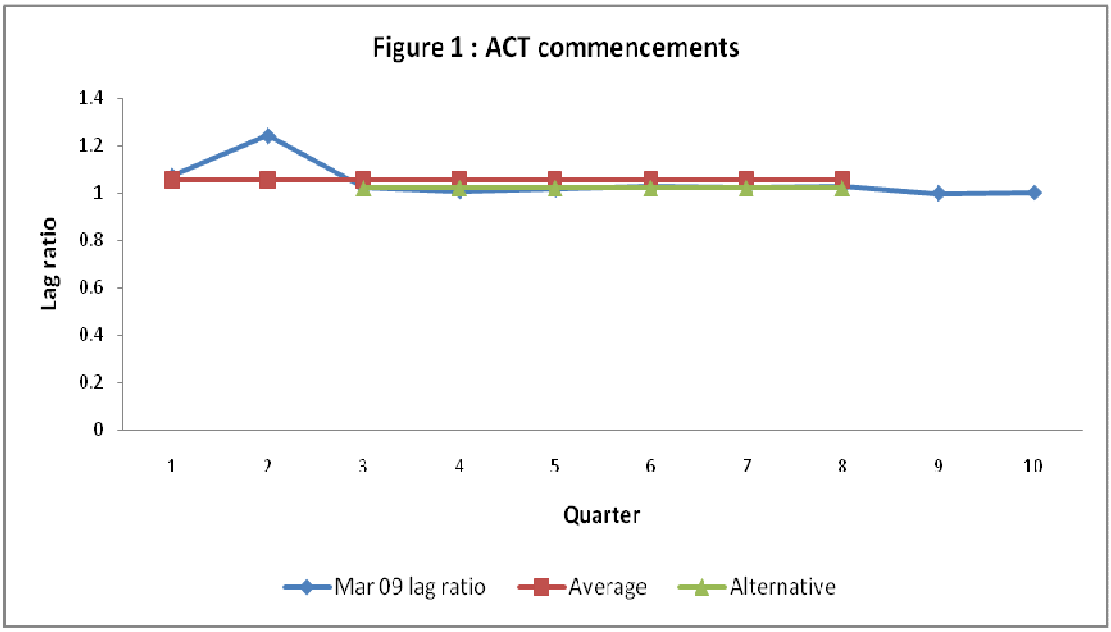
The lags for the second and third quarters in the time window are clearly higher than the others. The following two quarters after the time window indicate a return to the lower level (refer to Figure 2 in Attachment 1). Quarters 5 to 8 have been used as the basis for the revision of the estimate because of the flat trend.

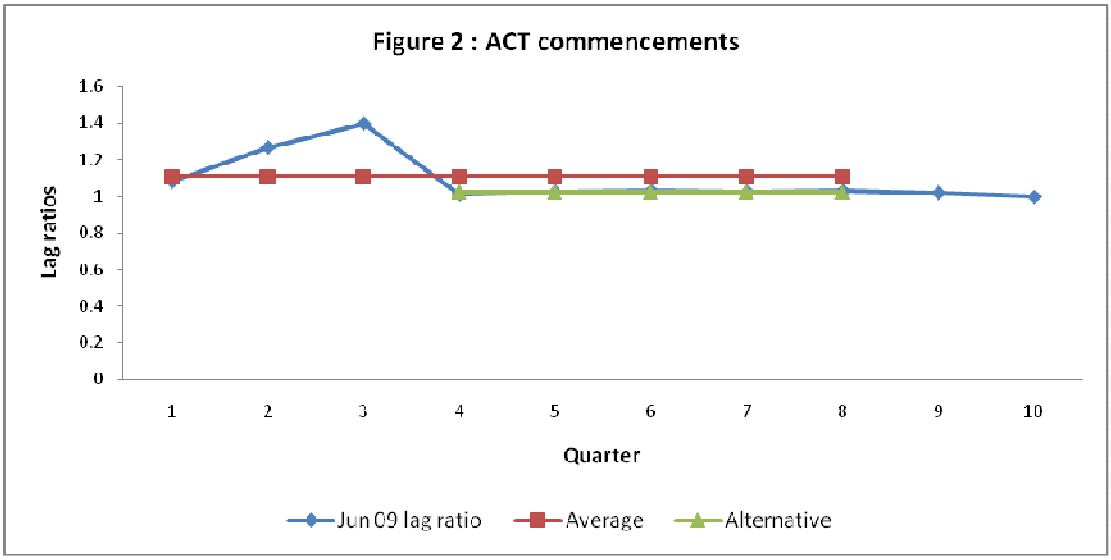
Revised Estimate = 1237

Attachment 1: Revised Estimates for Collection 62

The following graphs depict the pattern of the lag ratios for the estimates that were revised. The graph shows the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8) and also the two quarters following (labelled 9 and 10).

Horizontal lines are also displayed on the graph. One represents the average lag as calculated from the lags in the time window (red line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (green line).





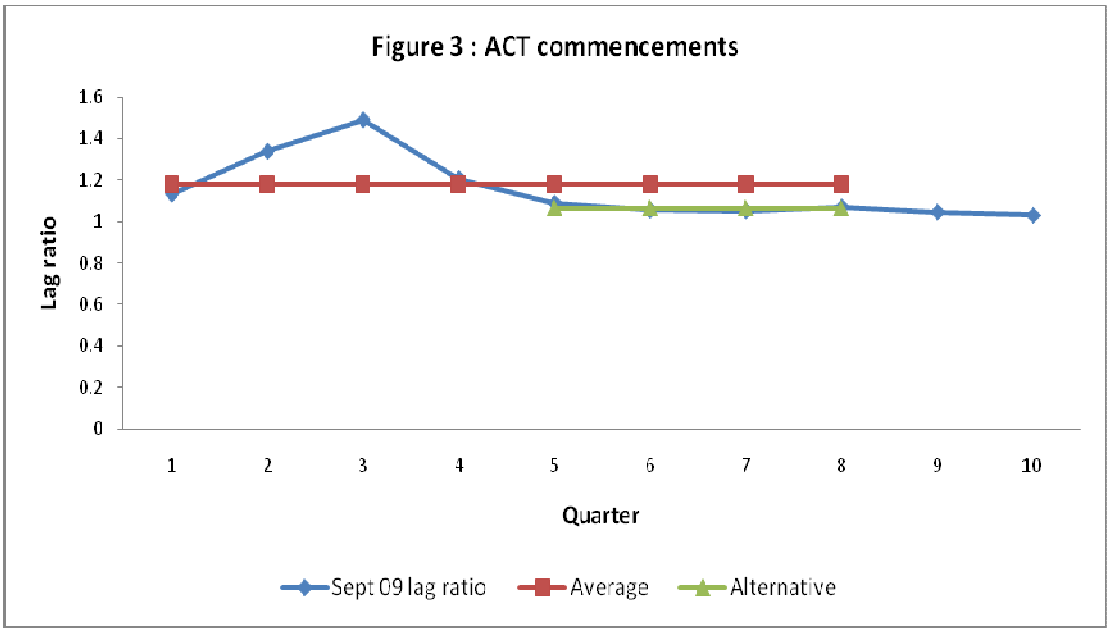
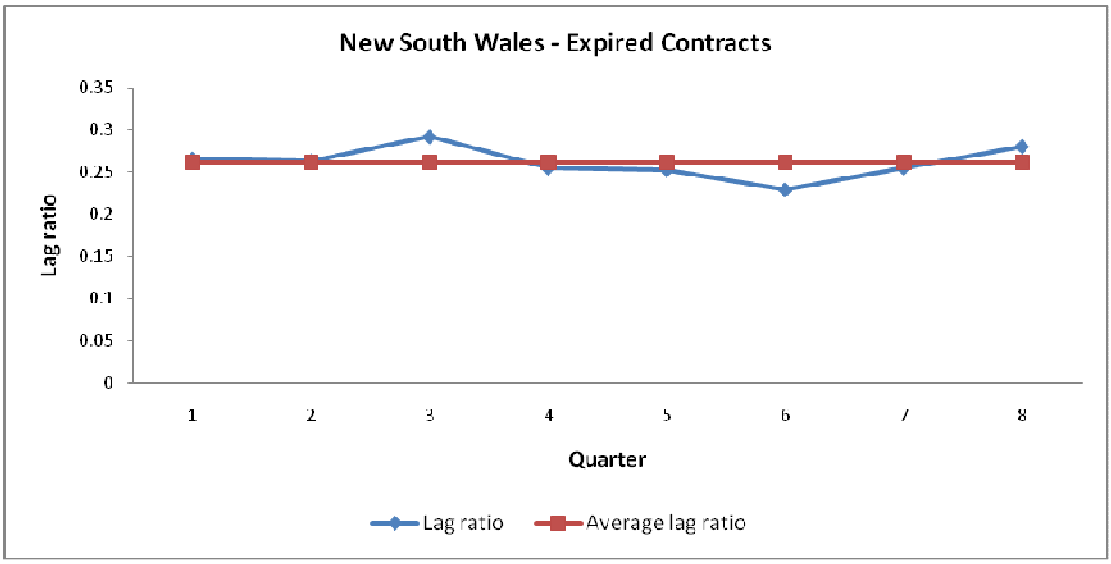


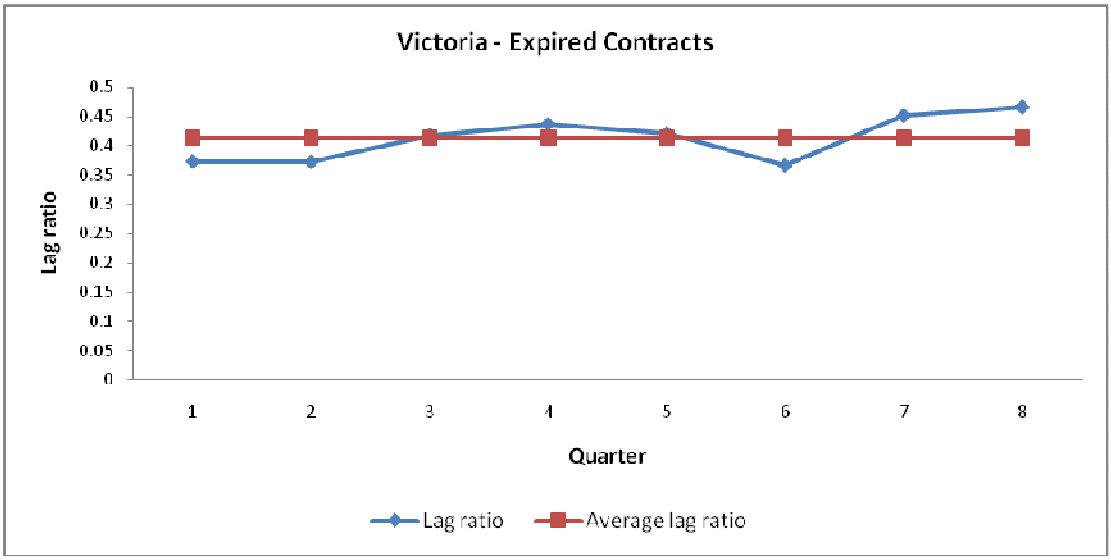
Figure 3 : ACT commencements
Lag ratio
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6
7
8
9
10
Quarter
Sept 09 lag ratio
Average
Alternative

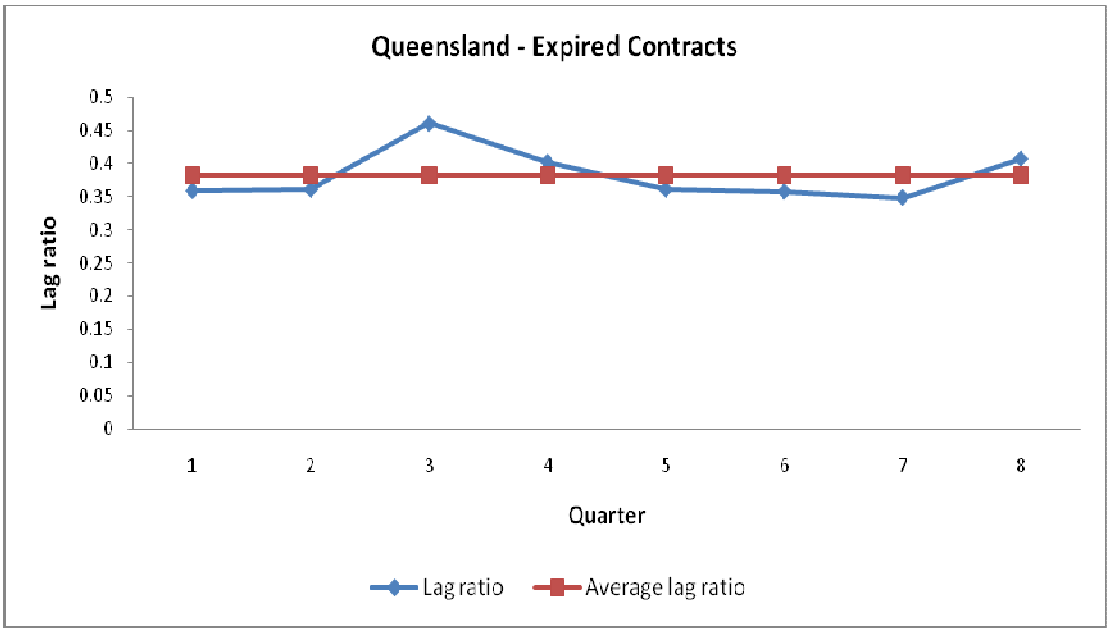
Attachment 2: Expired Contracts for Collection 62

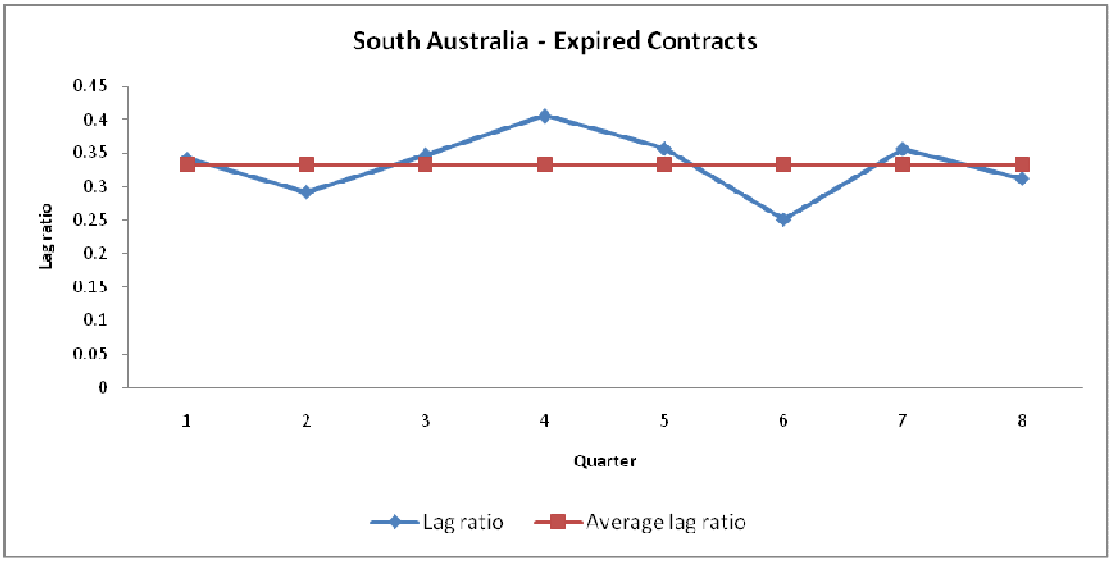
Although subject to high relative errors, estimates of expired contracts have not been altered because they are such a small contributor to the in training estimate. The following graphs depict the pattern of the lag ratios for the estimates of expired contracts. As can be seen from the following graphs, the pattern of the lags does not always suggest an alternative way of estimating expired contracts.

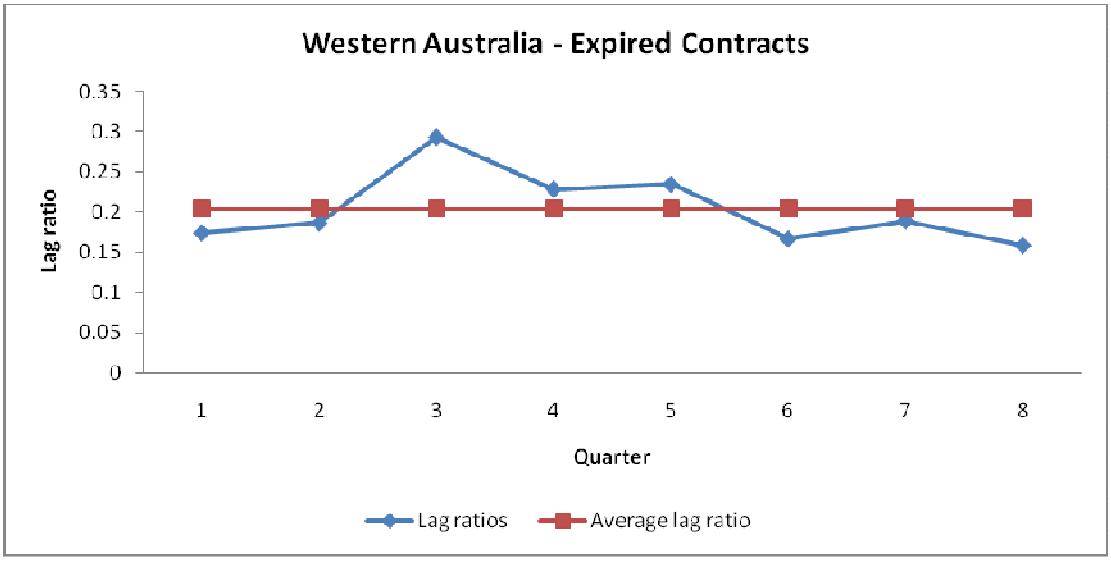
The graphs show the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8). A horizontal line is also displayed on each graph, representing the average lag as calculated from the lags in the time window (red line).

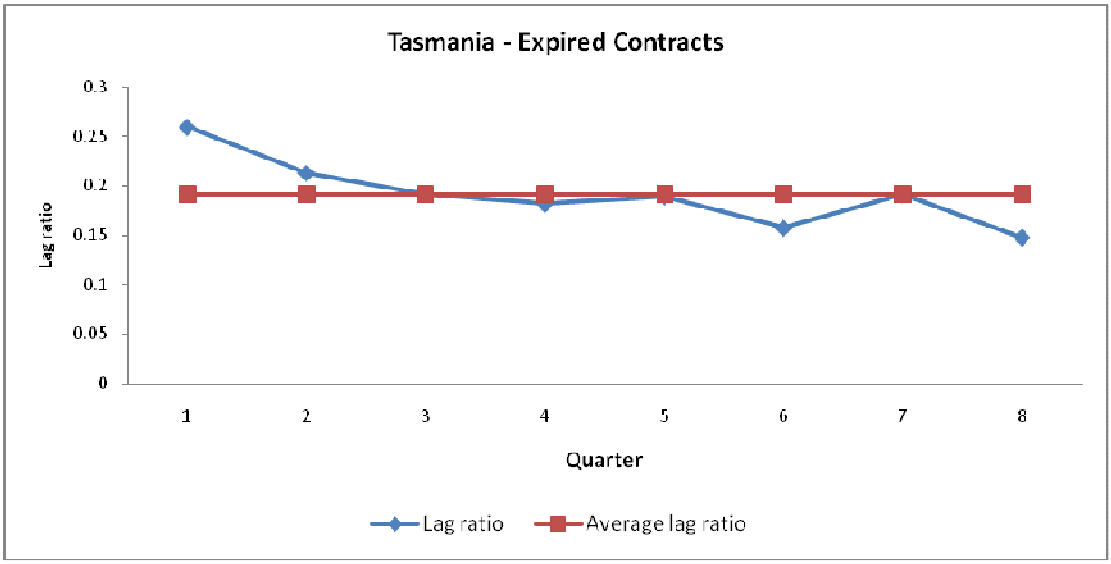


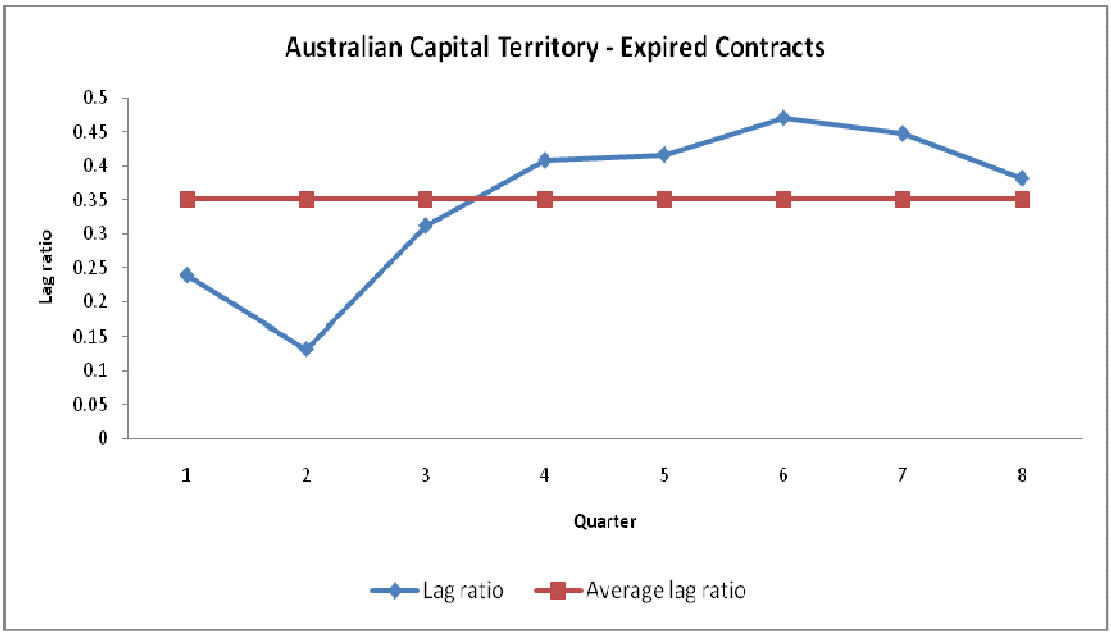



Queensland - Expired Contracts
Lag ratio
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
Quarter
Lag ratio
Average lag ratio


South Australia - Expired Contracts
Lag ratio
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
Quarter
Lag ratio
Average lag ratio


Western Australia - Expired Contracts
Lag ratio
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
Quarter
Lag ratios
Average lag ratio


Tasmania - Expired Contracts
Lag ratio
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
Quarter
Lag ratio
Average lag ratio


Australian Capital Territory - Expired Contracts
Lag ratio
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
Quarter
Lag ratio
Average lag ratio

Adjustment note for collection 61

NCVER examines the quarterly COT estimates produced by the endorsed model in order to check that the estimates are reasonable. In particular, a decision rule was introduced in collection 45 that mandated reviewing all estimates with relative prediction errors of 10% or more. The goal of the review is to correct for any large bias in estimation that might be caused by changes in the pattern of reporting practices over time. Note that whilst an estimate might be adjusted for bias, its associated prediction error is not altered.

Commencement estimates in the Australian Capital Territory for March 2009 and June 2009 were associated with relative prediction errors over 10%. For December 2008, the relative prediction error was over 7% and was also reviewed. In South Australia, the relative prediction error associated with cancellations/withdrawals in June 2009 was over 7% and was also reviewed. However, there was no necessary adjustment made to its estimate.

The relative prediction errors for expired contracts remained typically high. A particularly high relative error for estimates of expired contracts was observed in ACT. As can be seen from Attachment 2, the lag ratios for expired contracts in ACT continue to display an increasing trend within the time window used for estimation. The two quarters following the time window indicate the possibility that this trend might be reversing.

The contribution of expired contracts to the in training estimate is usually small both in level and variation. High relative errors appear to be explained to some degree by the fact that the estimates are small numbers and therefore any variation is relatively large. Adjustments to estimates of expired contracts have little effect on the corresponding estimates of in training. Consequently, no alterations to estimates of expired contracts have been made.

Australian Capital Territory

Commencements for the December 08 quarter

From endorsed model – Estimate = 870; Relative Error = 7.93%.

Time window for calculating average lag factor is from September 2006 quarter to June 2008 quarter.

The lag for the third quarter in the time window is clearly higher than the others. The following two quarters after the time window indicate a decreasing trend (refer to Figure 1 in Attachment 1). Quarters 1 to 2 and 4 to 8 have been used as the basis for the revision of the estimate.

Revised Estimate = 847

Commencements for the March 09 quarter

From endorsed model – Estimate = 1986; Relative Error = 13.77%.

Time window for calculating average lag factor is from September 2006 quarter to June 2008 quarter.

The lags for the third and fourth quarters in the time window are clearly higher than the others. The following two quarters after the time window indicate a return to the lower level (refer to Figure 2 in Attachment 1). Quarters 1 to 2 and 5 to 8 have been used as the basis for the revision of the estimate.

Revised Estimate = 1855

Commencements for the June 09 quarter

From endorsed model – Estimate = 1305; Relative Error = 14.54%.

Time window for calculating average lag factor is from September 2006 quarter to June 2008 quarter.

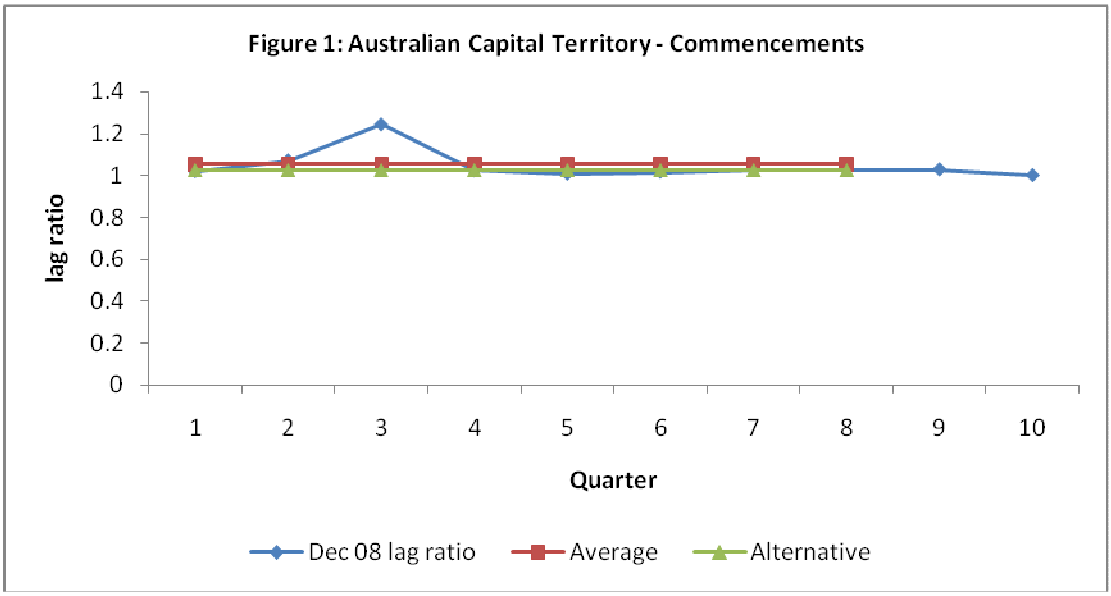
The lags for the third and fourth quarters in the time window are clearly higher than the others. The following two quarters after the time window indicate a return to the lower level (refer to Figure 2 in Attachment 1). Quarters 1 to 2 and 5 to 8 have been used as the basis for the revision of the estimate.

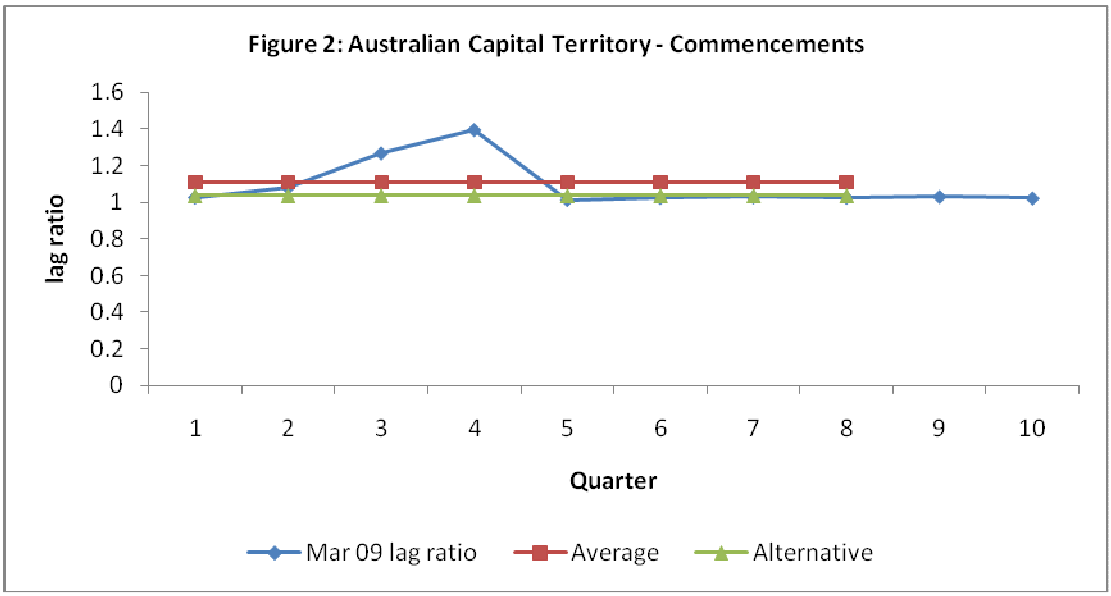
Revised Estimate = 1226

Attachment 1: Revised Estimates for Collection 61

The following graphs depict the pattern of the lag ratios for the estimates that were revised. The graph shows the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8) and also the two quarters following (labelled 9 and 10).

Horizontal lines are also displayed on the graph. One represents the average lag as calculated from the lags in the time window (red line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (green line).





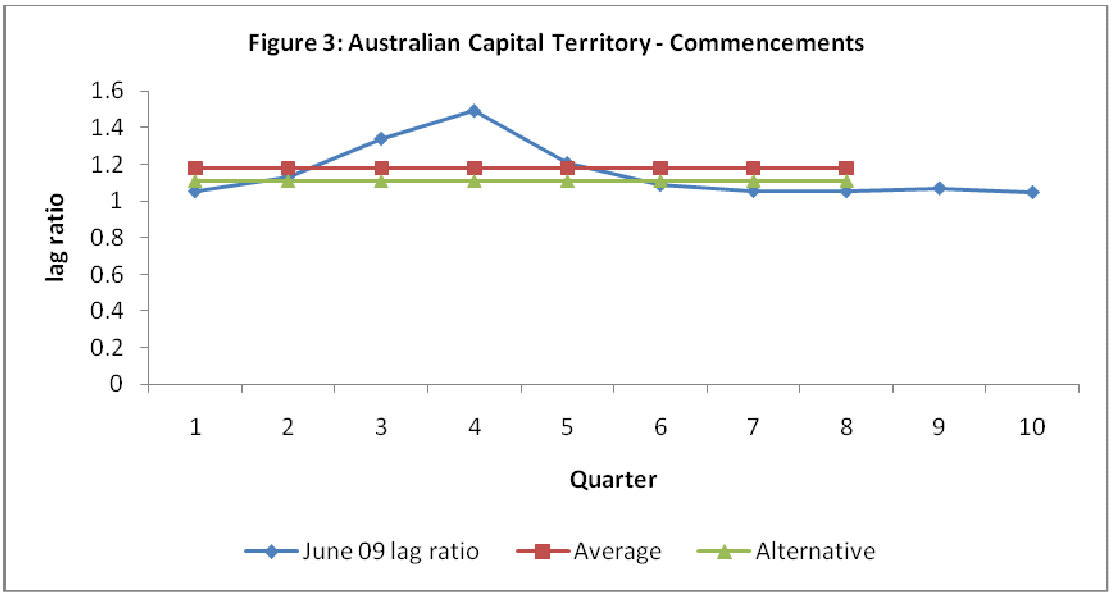
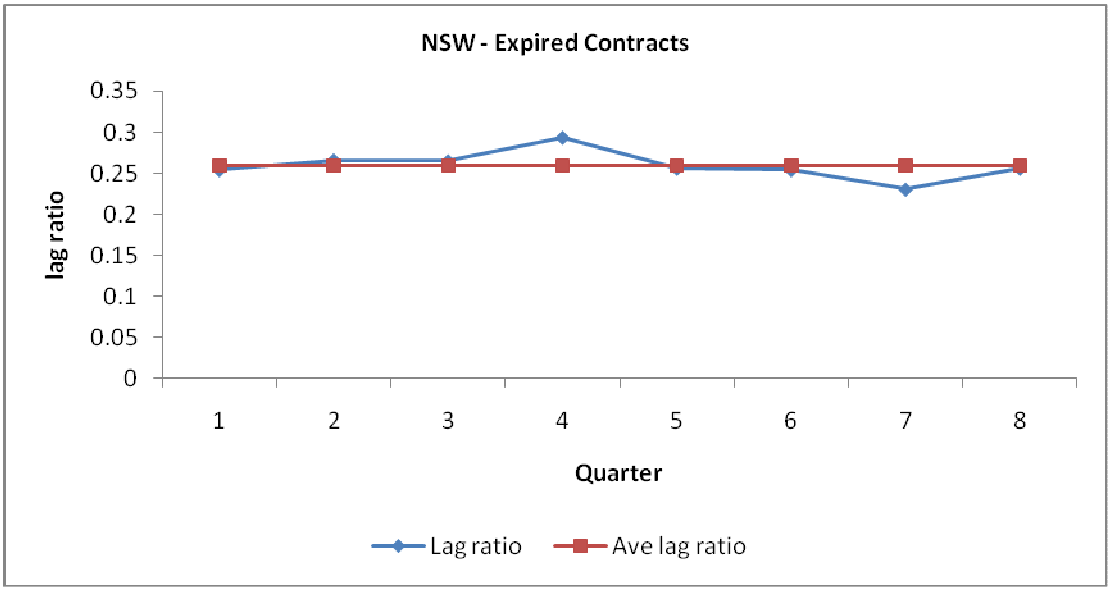


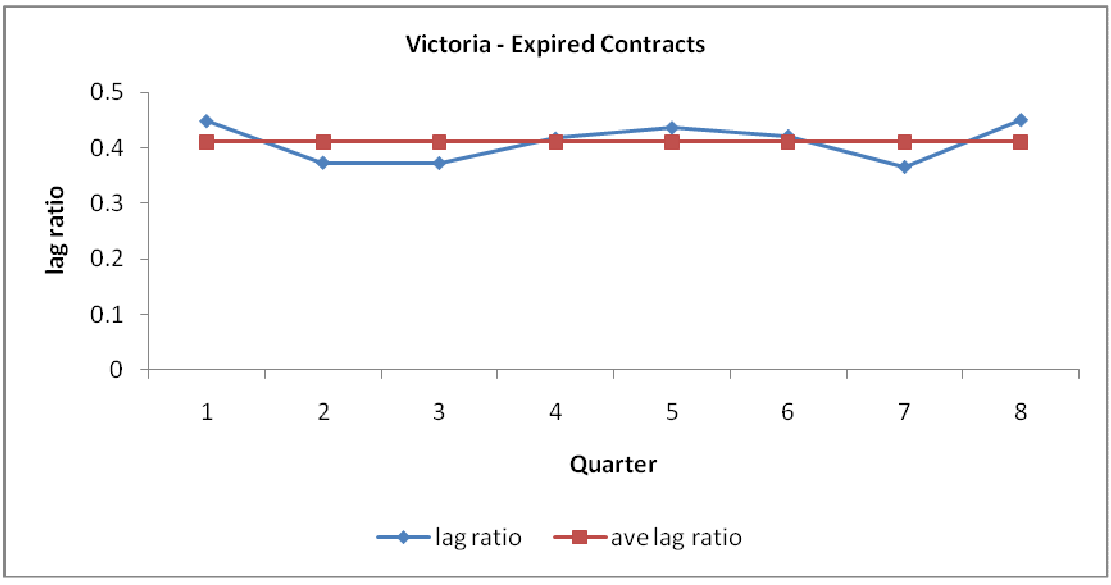
Figure 3: Australian Capital Territory - Commencements
lag ratio
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6
7
8
9
10
Quarter
June 09 lag ratio
Average
Alternative

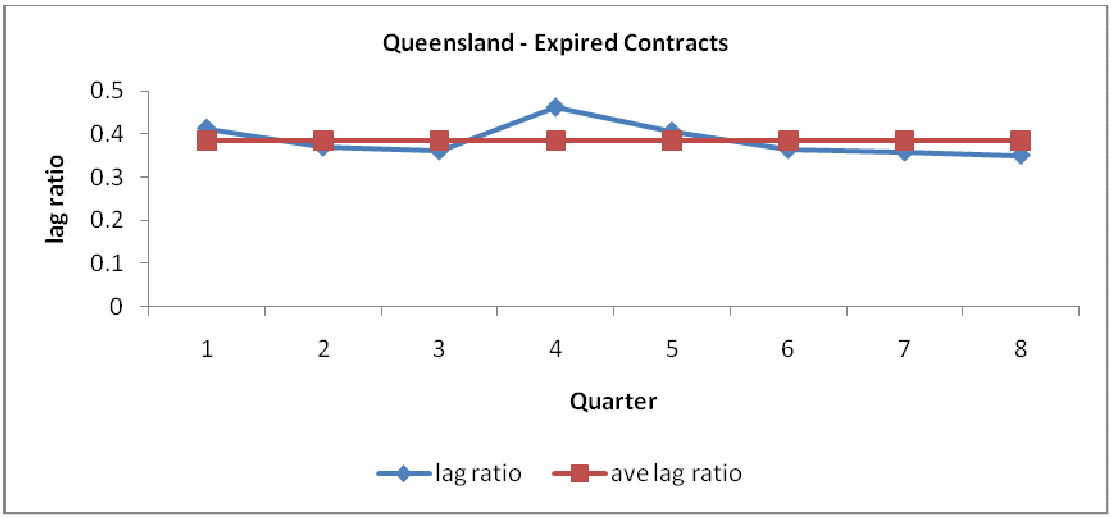
Attachment 2: Expired Contracts for Collection 61

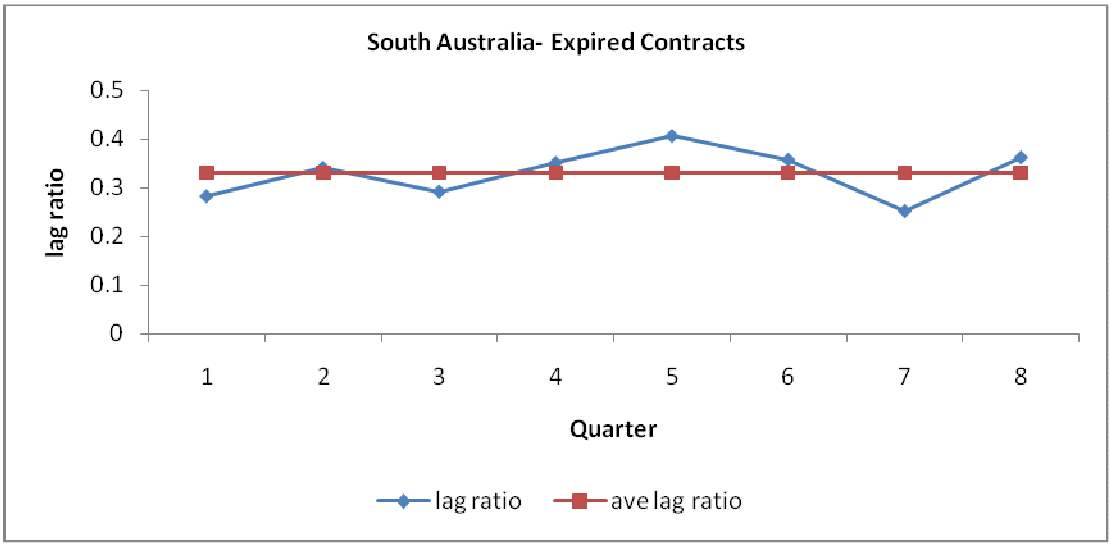
Although subject to high relative errors, estimates of expired contracts have not been altered because they are such a small contributor to the in training estimate. The following graphs depict the pattern of the lag ratios for the estimates of expired contracts. As can be seen from the following graphs, the pattern of the lags does not always suggest an alternative way of estimating expired contracts.

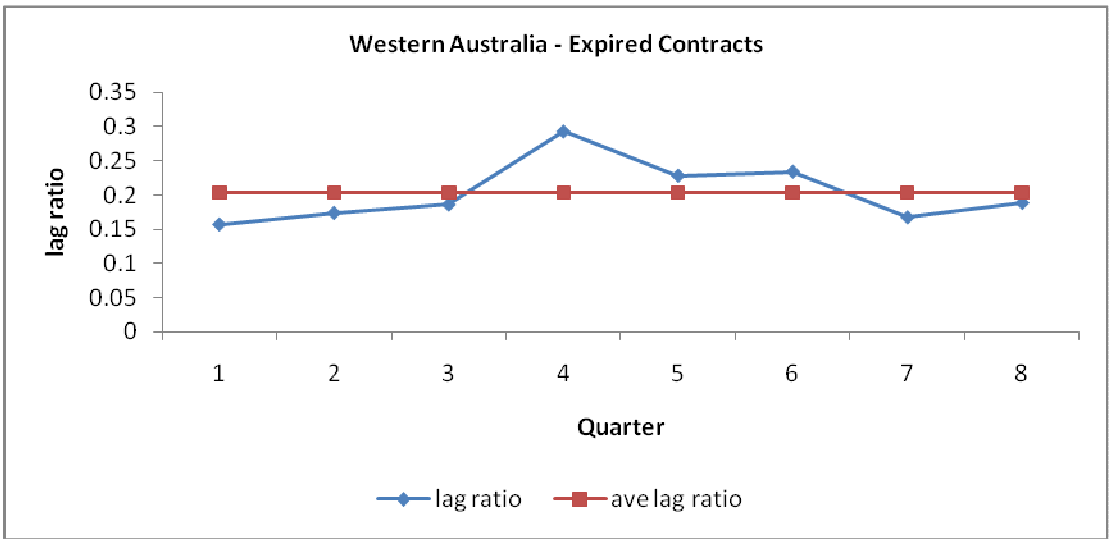
The graphs show the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8). A horizontal line is also displayed on each graph, representing the average lag as calculated from the lags in the time window (red line).

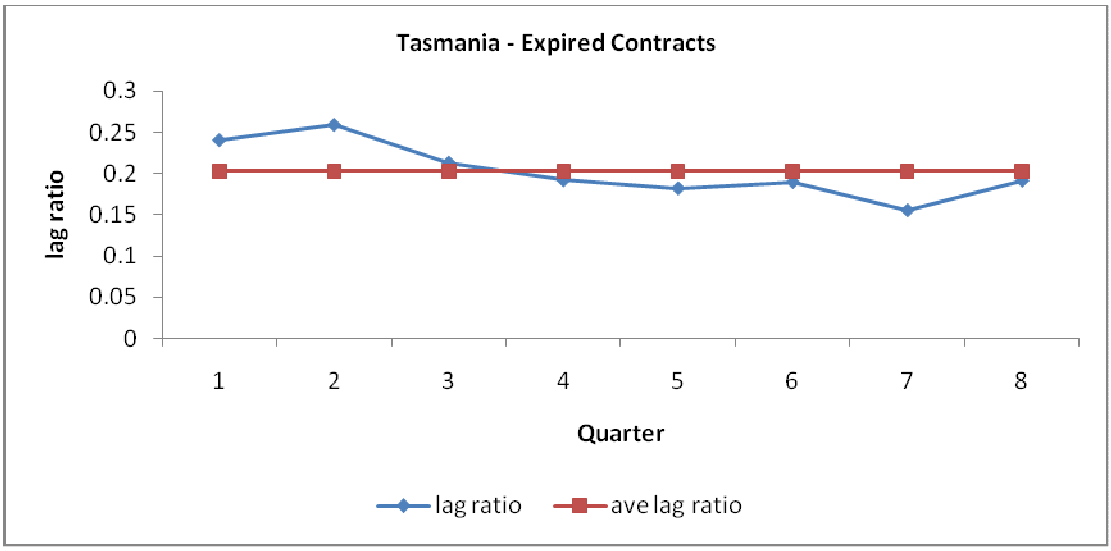


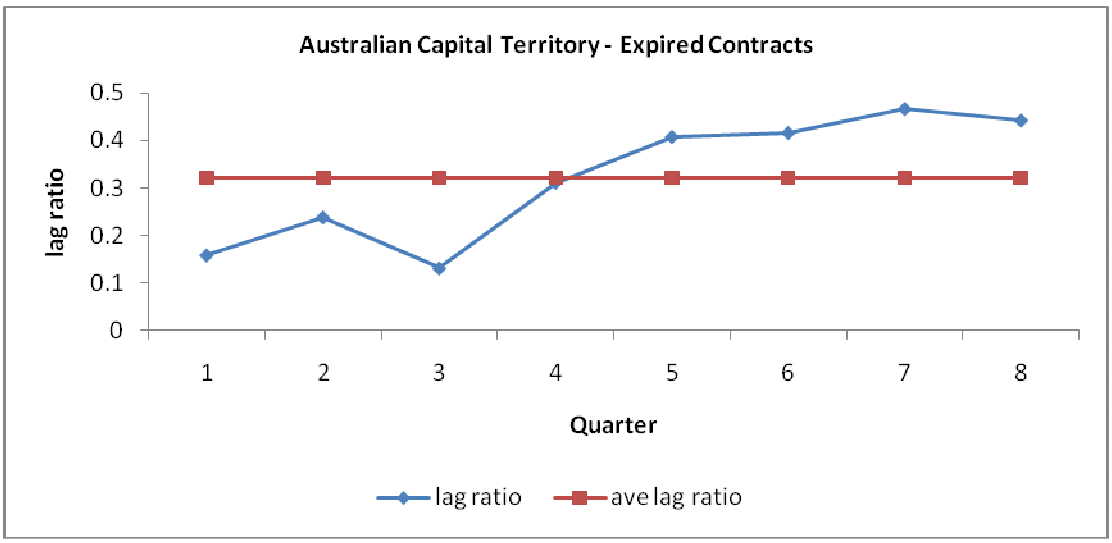



Queensland - Expired Contracts
lag ratio
0.5
0.4
0.3
0.2
0.1
0
1
2
3
4
5
6
7
8
Quarter
lag ratio
ave lag ratio


South Australia- Expired Contracts
lag ratio
0.5
0.4
0.3
0.2
0.1
0
1
2
3
4
5
6
7
8
Quarter
lag ratio
ave lag ratio


Western Australia - Expired Contracts
lag ratio
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
Quarter
lag ratio
ave lag ratio


Tasmania - Expired Contracts
lag ratio
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
Quarter
lag ratio
ave lag ratio


Australian Capital Territory - Expired Contracts
lag ratio
0.5
0.4
0.3
0.2
0.1
0
1
2
3
4
5
6
7
8
Quarter
lag ratio
ave lag ratio

Adjustment note for Collection 60

NCVER examines the quarterly COT estimates produced by the endorsed model in order to check that the estimates are reasonable. In particular, a decision rule was introduced in collection 45 that mandated reviewing all estimates with relative prediction errors of 10% or more. The goal of the review is to correct for any large bias in estimation that might be caused by changes in the pattern of reporting practices over time. Note that whilst an estimate might be adjusted for bias, its associated prediction error is not altered.

Commencement estimates in the Australian Capital Territory for December 2008 and March 2009 were associated with relative prediction errors over 10%. In South Australia, the relative prediction error associated with cancellations/withdrawals in March 2009 was over 7% and was also reviewed.

The relative prediction errors for expired contracts remained typically high although they were generally lower than those calculated for the previous collection. A particularly high relative error for estimates of expired contracts was observed in ACT. As can be seen from Attachment 2, the lag ratios for expired contracts in ACT continue to display an increasing trend within the time window used for estimation. The two quarters following the time window indicate the possibility that this trend might be reversing.

The contribution of expired contracts to the in training estimate is usually small both in level and variation. High relative errors appear to be explained to some degree by the fact that the estimates are small numbers and therefore any variation is relatively large. Adjustments to estimates of expired contracts have little effect on the corresponding estimates of in training. Consequently, no alterations to estimates of expired contracts have been made.

Australian Capital Territory

Commencements for the December 08 quarter

From endorsed model – Estimate = 874; Relative Error = 12.84%.

Time window for calculating average lag factor is from June 2006 quarter to March 2008 quarter.

The lags for the fourth and fifth quarters in the time window are clearly higher than the others. The following two quarters after the time window indicate a return to the lower level (refer to Figure 1 in Attachment 1). Quarters 1 to 3 and 6 to 8 have been used as the basis for the revision of the estimate.

Revised Estimate = 822

Commencements for the March 09 quarter

From endorsed model – Estimate = 2007; Relative Error = 13.68%.

Time window for calculating average lag factor is from June 2006 quarter to March 2008 quarter.

The lags for the fourth, fifth and sixth quarters in the time window are clearly higher than the others. The following two quarters after the time window indicate a return to the lower level (refer to Figure 2 in Attachment 1). Quarters 1 to 3 and 7 to 8 have been used as the basis for the revision of the estimate.

Revised Estimate = 1848

South Australia

Cancellations/withdrawals for the March 09 quarter

From endorsed model – Estimate = 1,601; Relative Error = 7.25%.

Time window for calculating average lag factor is from June 2005 quarter to March 2007 quarter.

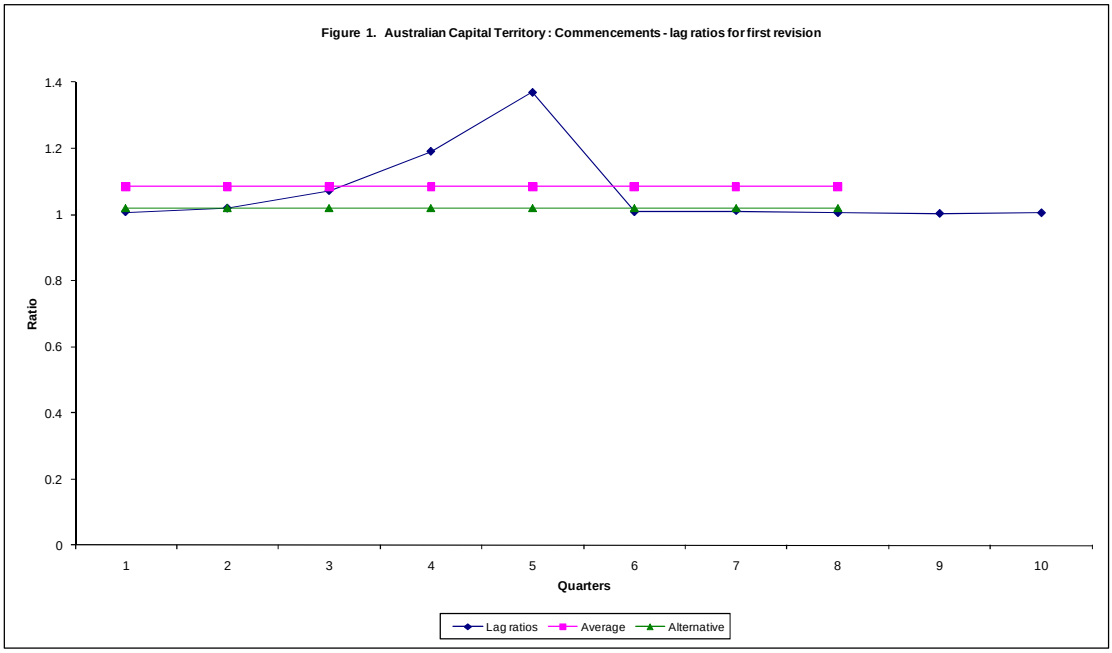
The lags for quarters 1 to 4 are clearly below the lags for quarters 5 to 8. The two quarters following the time window indicate that the higher level will continue (refer to Figure 3 in Attachment 1). Quarters 5 to 8 have been used as the basis for the revision of the estimate.

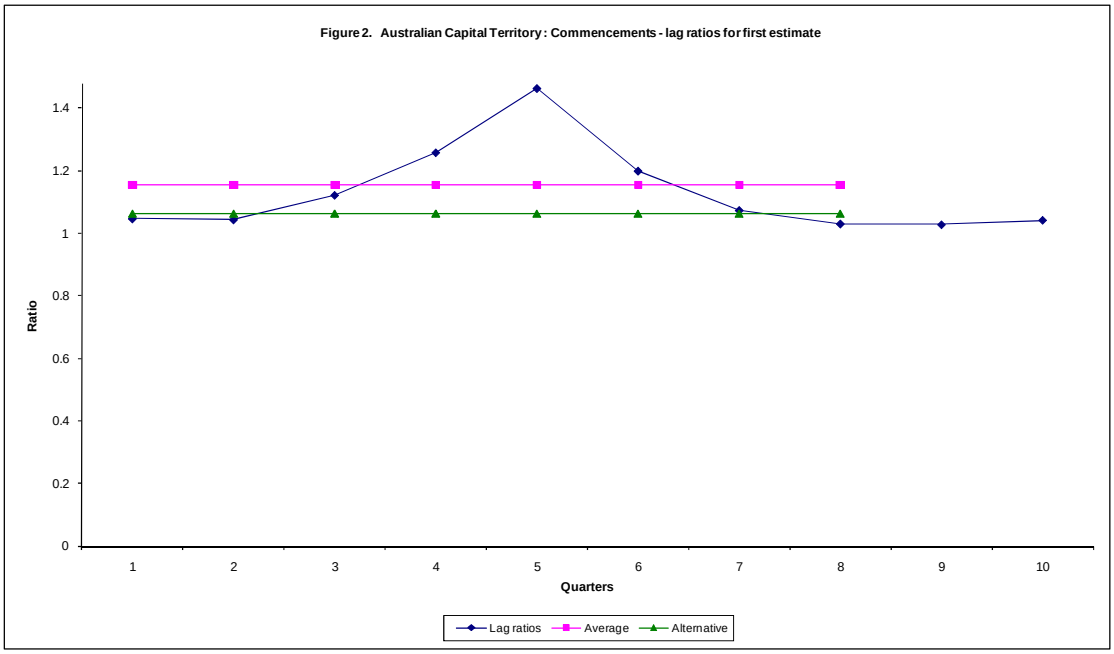
Revised Estimate = 1,685

Attachment 1: Revised Estimates for Collection 60

The following graphs depict the pattern of the lag ratios for the estimates that were revised. The graph shows the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8) and also the two quarters following (labelled 9 and 10).

Horizontal lines are also displayed on the graph. One represents the average lag as calculated from the lags in the time window (pink line). Where there is another, it represents the average lag as calculated from the alternative time period used for the revised estimate (green line).





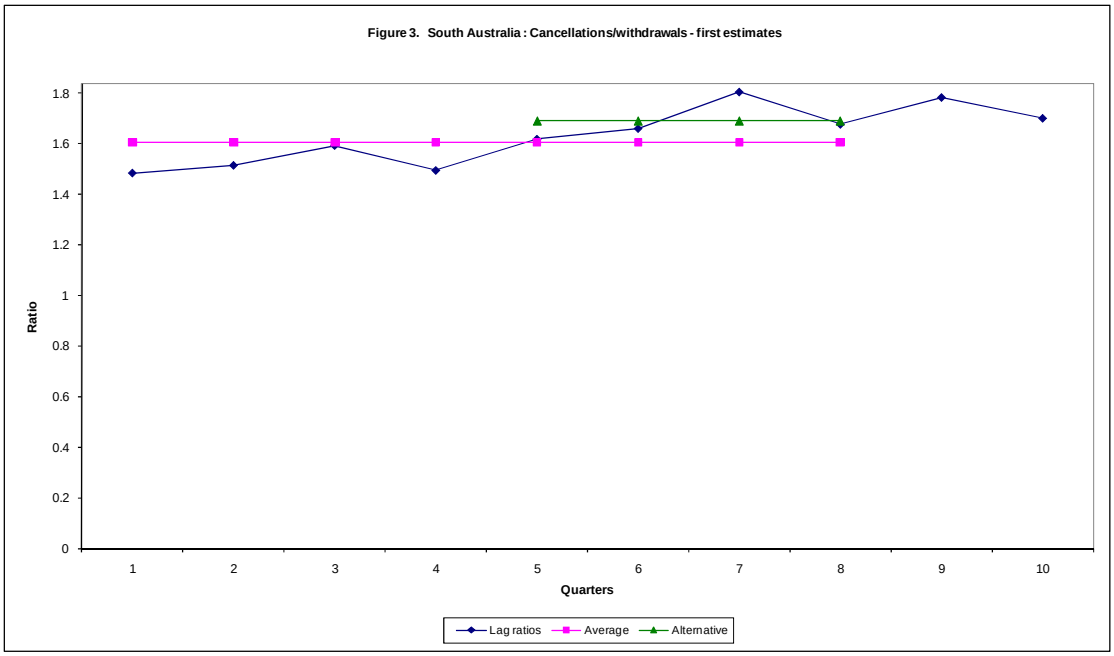
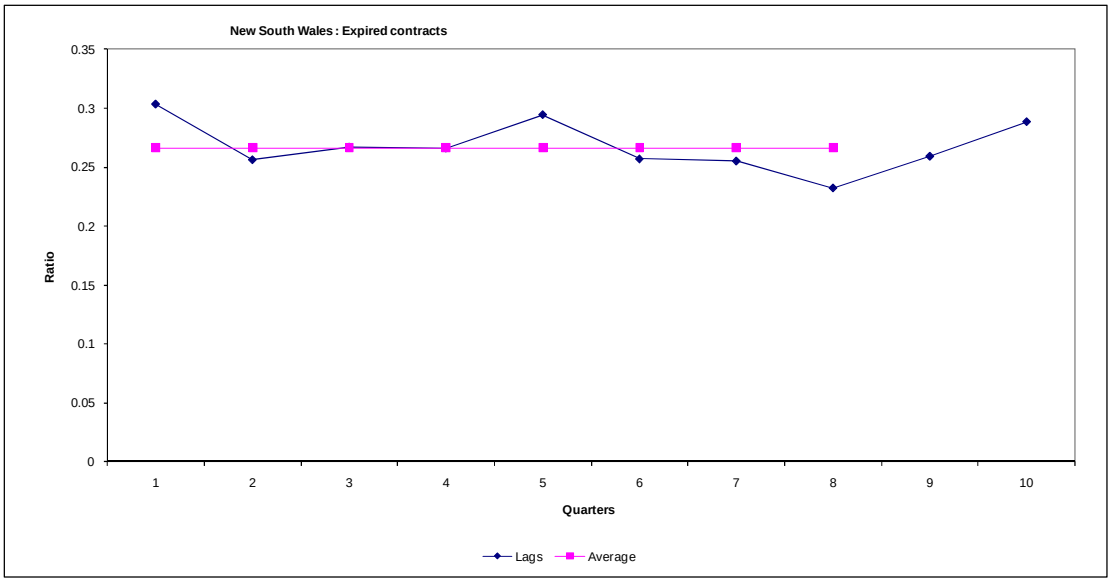


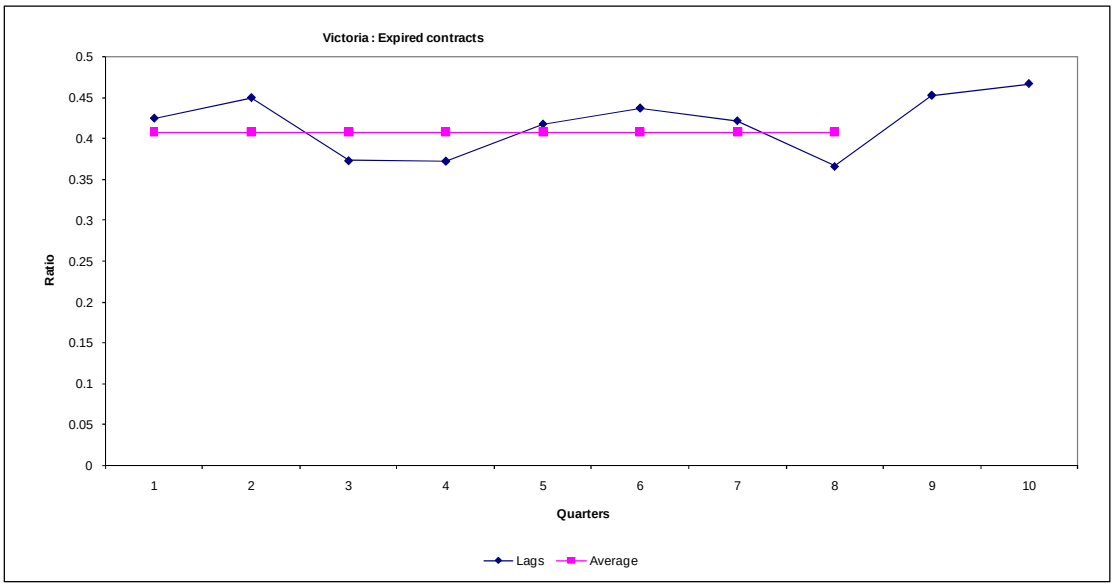
Figure 3. South Australia : Cancellations/withdrawals - first estimates
Ratio
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1
2
3
4
5
6
7
8
9
10
Quarters
Lag ratios
Average
Alternative

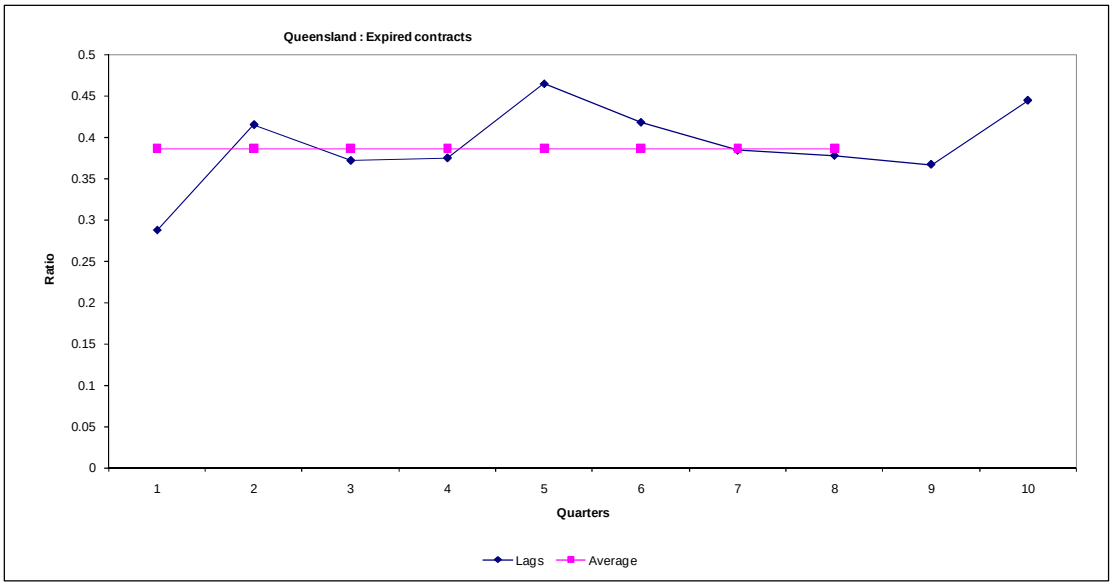
Attachment 2: Expired Contracts for Collection 60

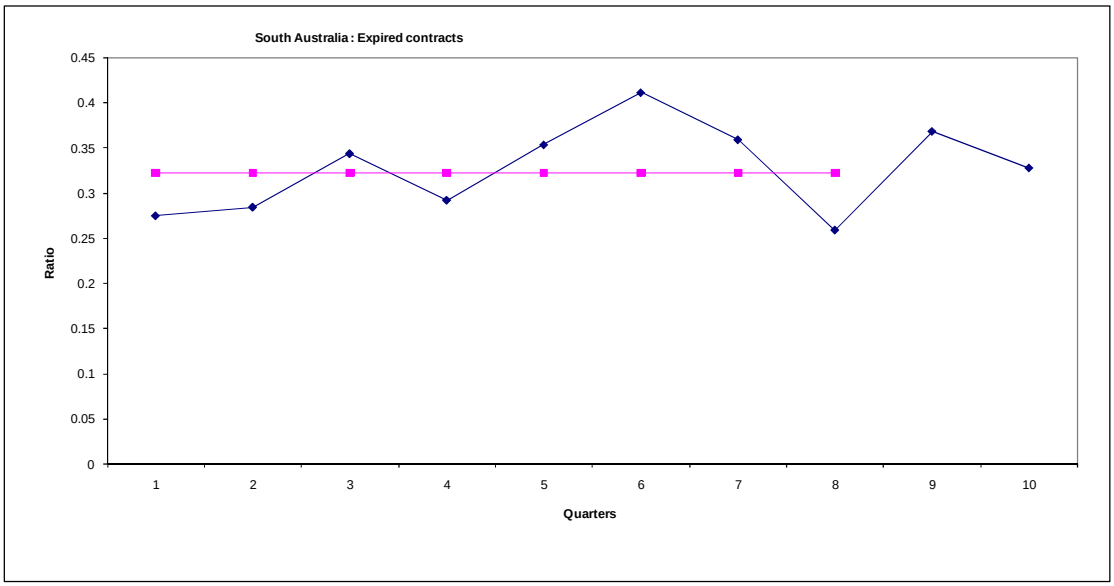
Although subject to high relative errors, estimates of expired contracts have not been altered because they are such a small contributor to the in training estimate. The following graphs depict the pattern of the lag ratios for the estimates of expired contracts. As can be seen from the following graphs, the pattern of the lags does not always suggest an alternative way of estimating expired contracts.

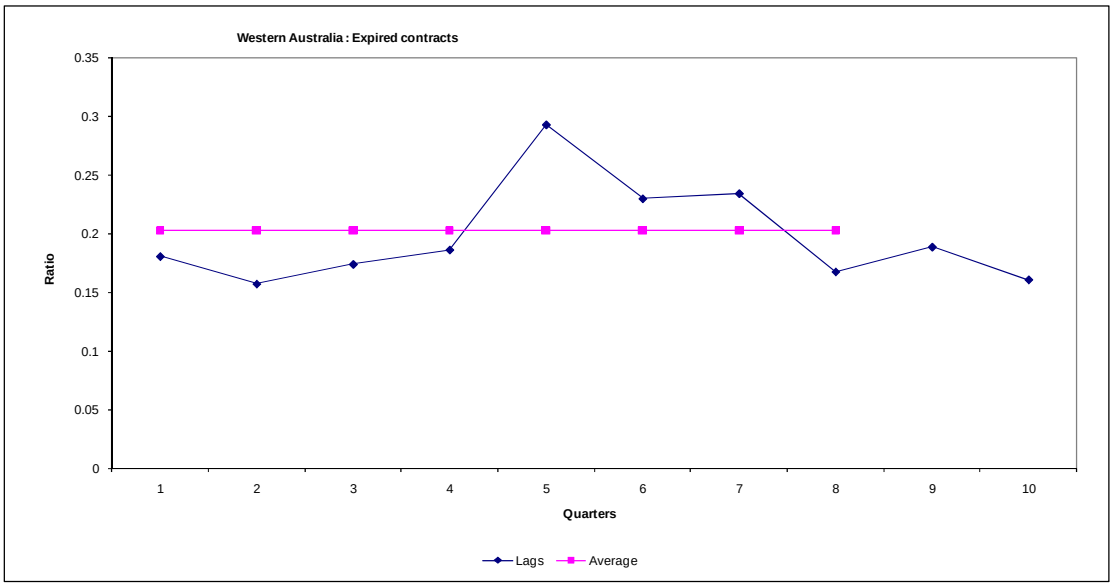
The graphs show the lag ratios for the eight quarters in the time window used in the endorsed model (labelled 1 to 8) and also the two quarters following (labelled 9 and 10). A horizontal line is also displayed on each graph, representing the average lag as calculated from the lags in the time window (pink line).

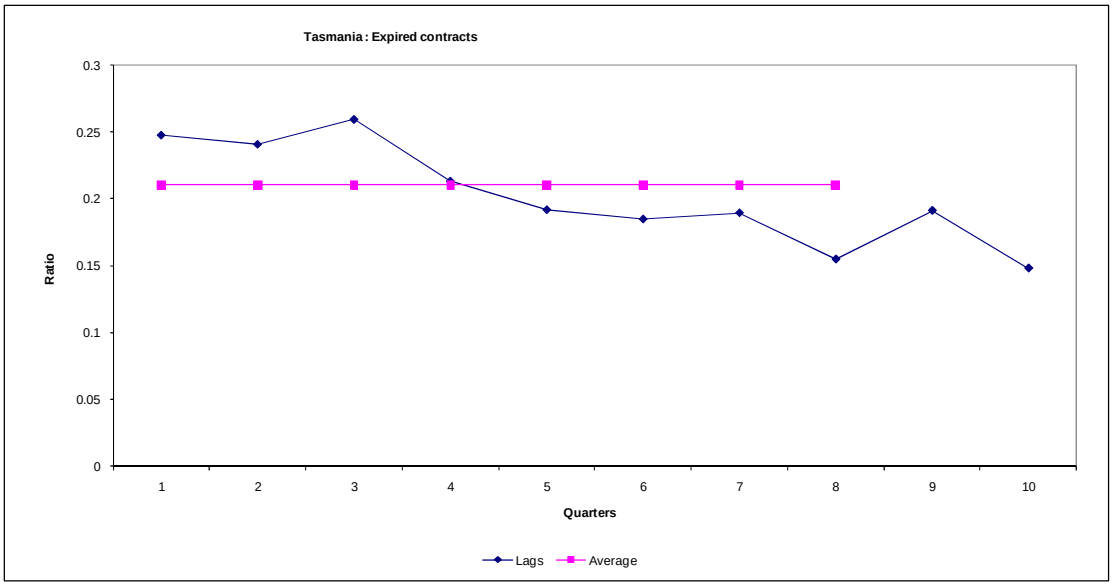


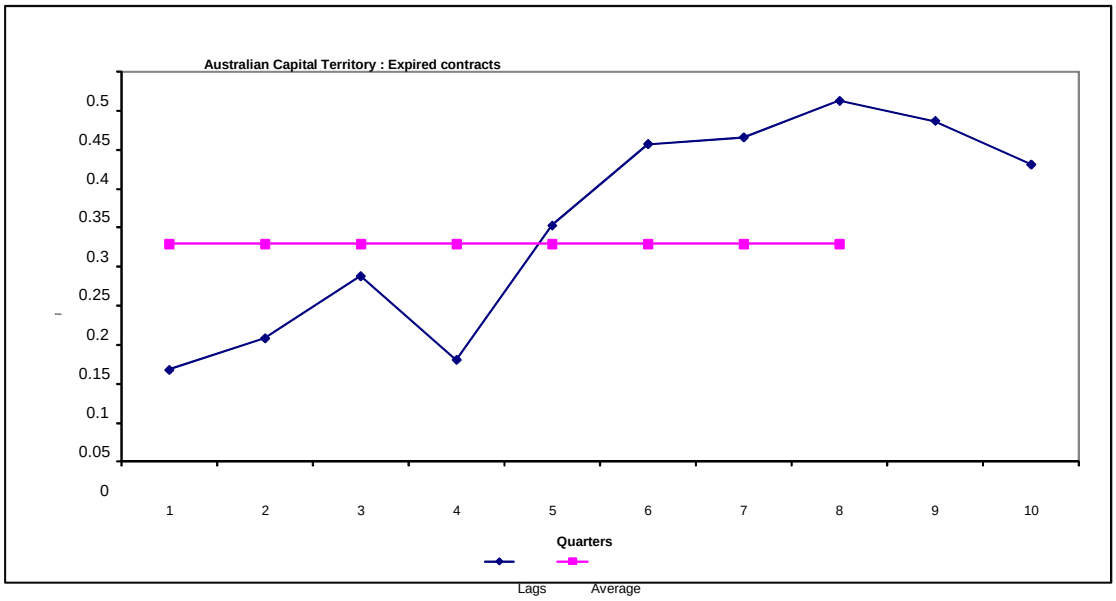



Queensland : Expired contracts
Ratio
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
9
10
Quarters
Lags
Average


South Australia : Expired contracts
Ratio
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
9
10
Quarters


Western Australia : Expired contracts
Ratio
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
9
10
Quarters
Lags
Average


Tasmania : Expired contracts
Ratio
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
9
10
Quarters
Lags
Average


Australian Capital Territory : Expired contracts
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1
2
3
4
5
6
7
8
9
10
Quarters
Lags
Average

References

Harvey, B 2009, *Estimation of Apprentice and Trainee Statistics,* NCVER, Adelaide.
This paper can be found at <http://www.ncver.edu.au/publications/2213.html>.