

Information on the New DEWR Monthly Leading Indicator of Employment

by

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What is a Leading Indicator of Employment?

A Leading Indicator of Employment pre-empts and foreshadows changes in cyclical employment. It is designed to **lead** Employment, and tell us when this variable is likely to reach its peak or trough. This can be especially useful in policy making because with enough lead time policies or programme responses can be implemented in order to avert the worst effects of a downturn in cyclical employment or to take advantage of a prospective upturn.

Why create a new Leading Indicator of Employment?

The current DEWR Leading Indicator of Employment originally had a lead time of about eight months. However, as a result of structural changes since the year 2000 in the relationship between employment and the component series used in the Indicator, the average lead time for this series has fallen to about six months.

Two of the series in the original Leading Indicator of Employment were newspaper-based job advertisements; namely, the ANZ Job Advertisements series and the DEWR Skilled Vacancies Index. Newspaper Job Ads have been viewed as less relevant by many commentators, due to the rise of internet job advertisements series. However, internet-based job ads were no better as a leading indicator. In the course of performing the review of the DEWR Leading Indicator of Employment, various internet series such as the ANZ Internet Job Advertisement series and SEEK Employment Index series were studied for inclusion in the indicator but were found to be coincident or the component series were too short for inclusion (with most internet series starting around the year 2000).

Both of the quarterly series were removed from the original Leading Indicator, due to the large revisions that occurred every three months with the inclusion of another quarter's data. These series are being considered for inclusion to the new Quarterly Fundamental Leading Indicator of the Employment-Population ratio. For this reason no component series that are released quarterly were examined for the Monthly Leading Indicator.

Due to the shorter lead time and other problems discussed above with other components of the original Leading Indicator of Employment, new component series were examined including internet series to replace the Job Advertisement series. The end result was a Leading Indicator with an average lead time of about twelve months, comprising the four following components:

- ANZ Newspaper Job Advertisements;
- Dun and Bradstreet Employment Expectations Index;
- Westpac-Melbourne Institute Leading Index of Economic Activity; and
- Westpac-Melbourne Institute Consumer Sentiment Index.

A description of the components and the process for producing the series is contained in the following sections.

* This paper reflects the authors' views and does not necessarily represent those of the Department of Employment and Workplace Relations or the Australian Government. The authors would like to thank staff and former staff of the Economic and Employment Issues Section of DEWR and its predecessor Departments for their assistance.

Background on the new Leading Indicator of Employment:

The DEWR Leading Indicator of Employment is the average of the normalised and standardised cyclical elements of four series which have been shown to lead cyclical employment consistently over a long period.

The Leading Indicator is designed to provide advance warning of turning points in “cyclical employment” (i.e. the deviation of the one-year seasonally adjusted trended level of employment growth from its six-year trend with these trend series being normalised and standardised). The average lead time of the Indicator (i.e. the time between a peak or trough in the Indicator and the corresponding peak or trough in cyclical employment) is around nine months (or about twelve months if account is taken of the additional twelve-month lag in the Dun and Bradstreet Employment Expectations Index before it is put into the new Leading Indicator), although it has varied over the past decade. A ‘turning point’ in the Indicator is said to be confirmed when there are six consecutive monthly movements in the same direction after the turning point. A fall (or rise) in the Indicator does not necessarily mean that the level of employment will subsequently fall (or rise). Rather, it implies that after a lag, the growth rate of employment may fall below (or rise above) its trend rate of about 2.6 per cent (in July 2007) a year.

Series Considered for the Leading Indicator

One of the main reasons for reviewing the Leading Indicator was due to the rise in the number of internet job advertisements such as those on SEEK which have outstripped newspaper job advertisements over recent years. This growth in internet and the subsequent decline in newspaper advertising has led many to question the validity of newspaper job advertisements as a continued leading series for employment. However, the department has found that while the lead time has declined for newspaper job advertisements they still lead employment which helps to explain the use of ANZ Newspaper Job Advertisements in the new Leading Indicator. Internet job advertisements, however, were found to be coincident (to move in tandem with employment) perhaps because these jobs may be filled very quickly through this medium compared with those advertised in newspapers.

The ANZ Newspaper Job Advertisement series was found to be the best series for use in the Indicator as a proxy for job vacancies and thereby future employment. The original indicator also used the DEWR Skilled Vacancies Index, however, this index was found to be highly correlated with the ANZ series, and ANZ was found to be the better predictive series through regression analysis. Therefore the DEWR Skilled Vacancy Index was removed from the new Indicator.

No component series that are released quarterly were included in the new Leading Indicator as they were found to cause major historical revisions to the Indicator when added in once per quarter. Also the planned production of a Quarterly Fundamental Leading Indicator of the Employment-Population Ratio meant that these component series should be reserved for use in this Indicator.

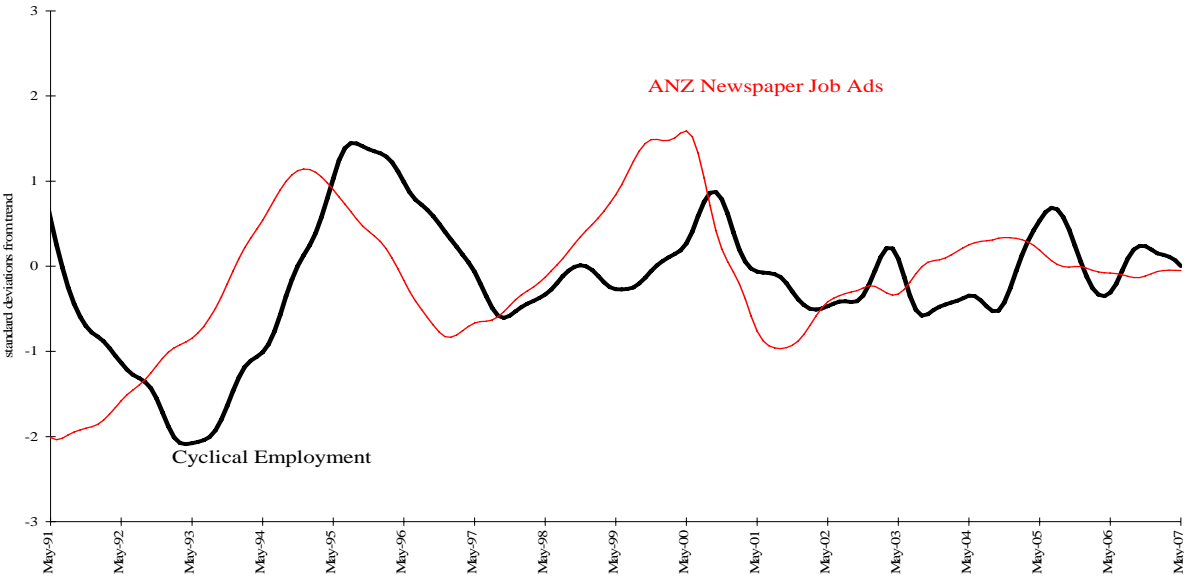
Various monthly series were studied for use as components in the new Monthly Leading Indicator of Employment, they included New Motor Vehicle Sales, Building Approvals, Real Retail Sales, the number of people normally Employed Full-time but Stood Down for Economic Reasons and the Yield Difference (the difference between the 10-year Australian Government bond yield and the 90-day bank bill interest rate). However, each of these component series through regression analysis was not found to be a useful component series for creating a leading indicator of employment.

Several of the monthly expectations and leading indicator series such as Dun and Bradstreet Business Expectations Survey, NAB Business Expectations survey, Westpac-Melbourne Institute Consumer Sentiment Index, Westpac-Melbourne Institute Leading Indexes of Economic

Activity, Westpac-Melbourne Institute Leading Index of Inflation were examined and found to be useful proxies for intentions and were added into the new Monthly Leading Indicator of Employment.

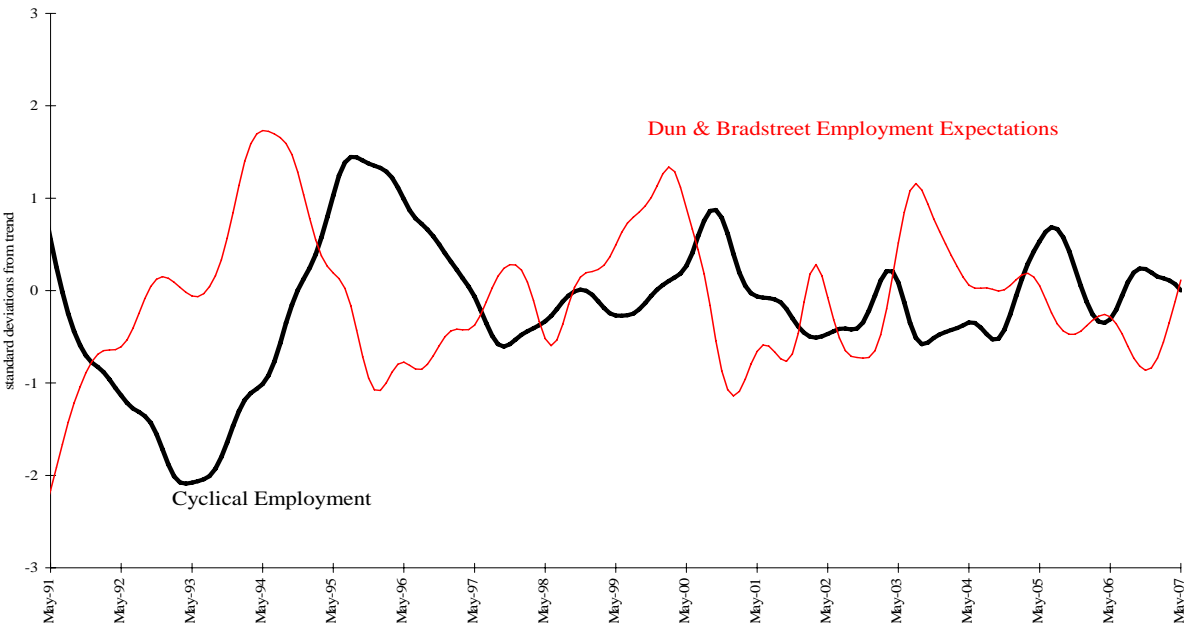
The component series selected for the new Monthly Leading Indicator of Employment are:

1. *ANZ Newspaper Job Ads* from *ANZ Job Advertisements Survey* (monthly, seasonally adjusted);



The cyclical ANZ Job Advertisement series closely mirrors cyclical employment up until about January 2002, when the series amplitude begins to flatten. Through regression analysis, this series receives a 52.5 per cent weighting for the Leading Indicator. This is our primary series for measuring job vacancies, and as such is directly representational of employment which explains the large weight this series receives.

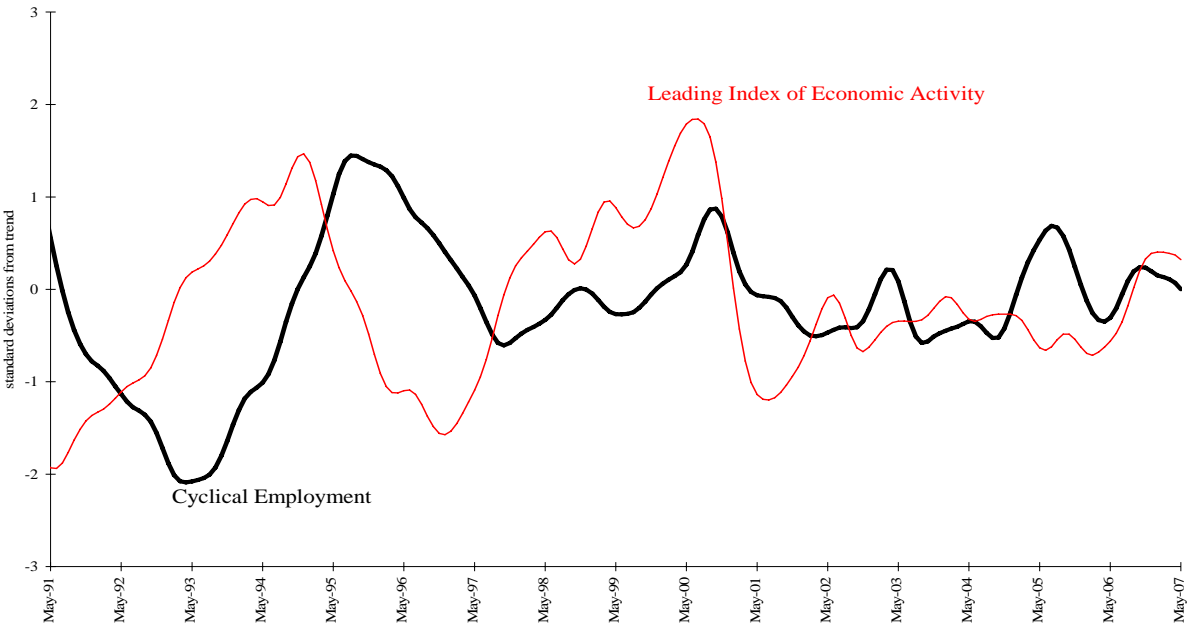
2. *Dun and Bradstreet Employment Expectations* from *Dun and Bradstreet Business Expectations Survey* (monthly, seasonally adjusted);



The Dun and Bradstreet Employment Expectations Index survey has a solid lead time of twelve months, which is rather curious considering this is a monthly series used for recording through-the-year employment expectations a quarter ahead. However, this becomes more understandable when you consider that employment is actually a lagging indicator of economic performance and that we are dealing with expectations of the needs of businesses for more employees in the future. As such, business would be more likely to pay overtime than employ new people until they are sure that they need them, and then when recruiting would have a lag time in finding new employees suitable for filling the position. It is worth noting that while this series is a quarterly indicator (of through-the-year employment expectations a quarter ahead) that is released monthly (with each month's results predicting the next quarter's results) and as such can be treated as a monthly component series without the revisions associated with other quarterly series.

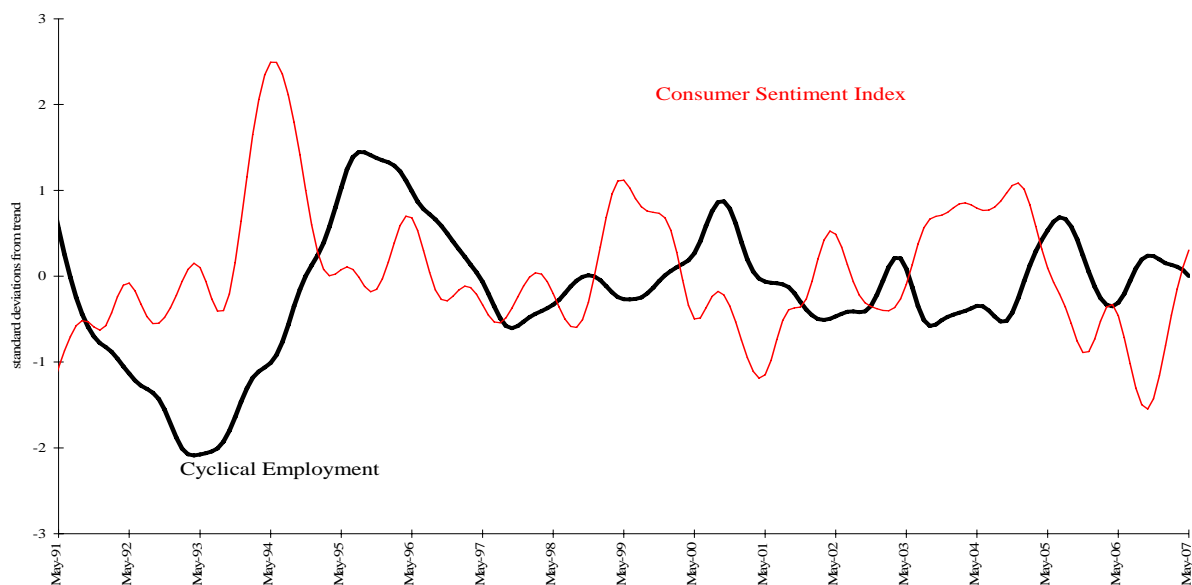
When the Dun and Bradstreet Employment Expectations Index was included in the regression analysis with lags of both 12 months and 24 months (the latter became apparent through examination of a time series plot of residuals of the initial regression), the 12-month lag was insignificant but the 24-month lag was highly significant and had the expected (positive) sign. This is probably because the variable with the 12-month lag was more highly collinear with the other variables. Regression analysis indicates this component should receive a 19.5 per cent weight.

3. *Westpac-Melbourne Institute Leading Index of Economic Activity* (monthly, seasonally adjusted);



The Leading Index of Economic Activity is a monthly measure of economic performance that was formerly represented by quarterly real GDP. The advantage of this series over real GDP is two fold; first it is a monthly series instead of a quarterly series, and secondly, it is a leading indicator of GDP and so will be a better component than last quarter's historical real GDP figures. This series is given a weighting of 18.1 per cent through the regression analysis.

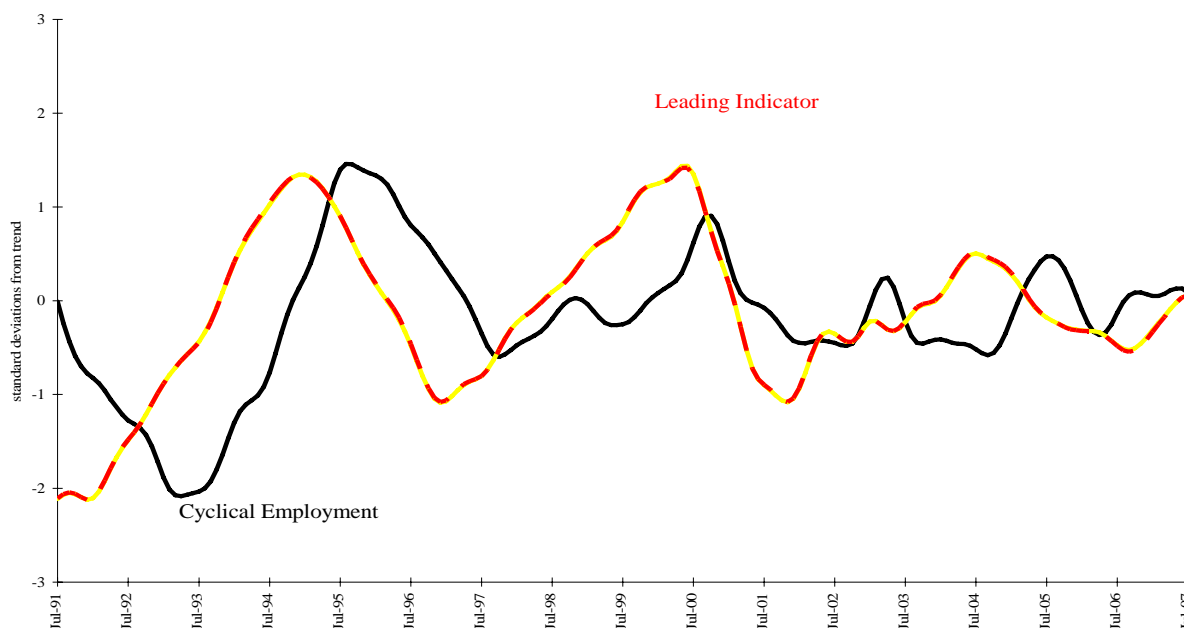
4. *Westpac-Melbourne Institute Consumer Sentiment Index* (monthly, seasonally adjusted).



The consumer sentiment series is also a very good component series for leading employment as it represents the population's willingness to spend money. As you would know, the more people are willing to spend, the stronger the economy. This series, through regression analysis, is given a weighting of 10.0 per cent.

Test of Robustness

The new Monthly Leading Indicator of Employment has its component series weighted, with weights determined by regression analysis as mentioned above. The weights of the series will be reassessed in January of each year. To test how much of a difference changing the sample period would have made, weights were calculated using data for the period from March 1980 to May 2005 (ie truncating the sample period by two years at the end) and applied to the Indicator to see whether the estimated weighting and resultant Indicator would have changed noticeably. The resulting comparison of the Indicator with the current 2007 weights to an indicator with the 2005 weights can be seen in the chart below.



There is very little difference between the two indicator series (2005 weights in red, 2007 weights in yellow). The recalculation of the weights for each series has caused little change in the Indicator between these periods.

Comments:

The aim of launching a new Monthly Leading Indicator of Employment is to enhance its lead time and to help increase the accuracy of the series in predicting future movements in the indicator. The new Indicator meets these aims and in future should offer indications of longer term movements in employment.

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