

Measurement of Forecast Accuracy for the
Colorado Business Economic Outlook
A Forecast Sponsored by the Leeds School of
Business and BBVA Compass

By
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Research
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Background - Colorado Business Economic Outlook (CBEO)

The purpose of this analysis is to evaluate forecast accuracy of the CBEO for the period 1972 to 2010, although the first CBEO was conducted in 1965. The event is prepared by the Leeds School of Business and co-sponsored by BBVA Compass Bank.

The forecast focuses on employment as the measure of economic performance for the state. Employment data is available to the public, produced on a timely basis, and easy to comprehend.

Nationally, most employment or economic forecasts are prepared using econometric models. The CBEO is one of a handful of state forecasts that is based on expert opinion from estimating groups.

Eleven estimating groups provide the insight for each of the 11 NAICS Supersectors. Sector reports are submitted and reviewed by a research team. Revisions are made and these individual sector forecasts are then summed to derive the total for the state.

Motivation for Analysis of CBEO

The following factors served as the motivation for this simplistic analysis:

- Curiosity from estimating group members about the accuracy of the forecast.
- Media reaction to Colorado's Go-Go 90s and the Lost Decade.
- Desire to provide estimating groups with better information to achieve greater accuracy.

During the preparation of this analysis, the following questions arose:

- Does an experienced research team, with a wealth of knowledge, produce a more accurate forecast or does the added knowledge result in an "arrogance" which may reduce the accuracy of the forecast (Owen Lamont, 2001)?
- Does financial support for the event from a private sector vendor (financial organization) and the host institution create bias in the forecast?
- Is a forecast by committee, such as the CBEO more accurate than one based on an econometric model?

The precursor of this analysis was a presentation at an AUBER conference in 2008, which measured CBEO accuracy for a shorter period.

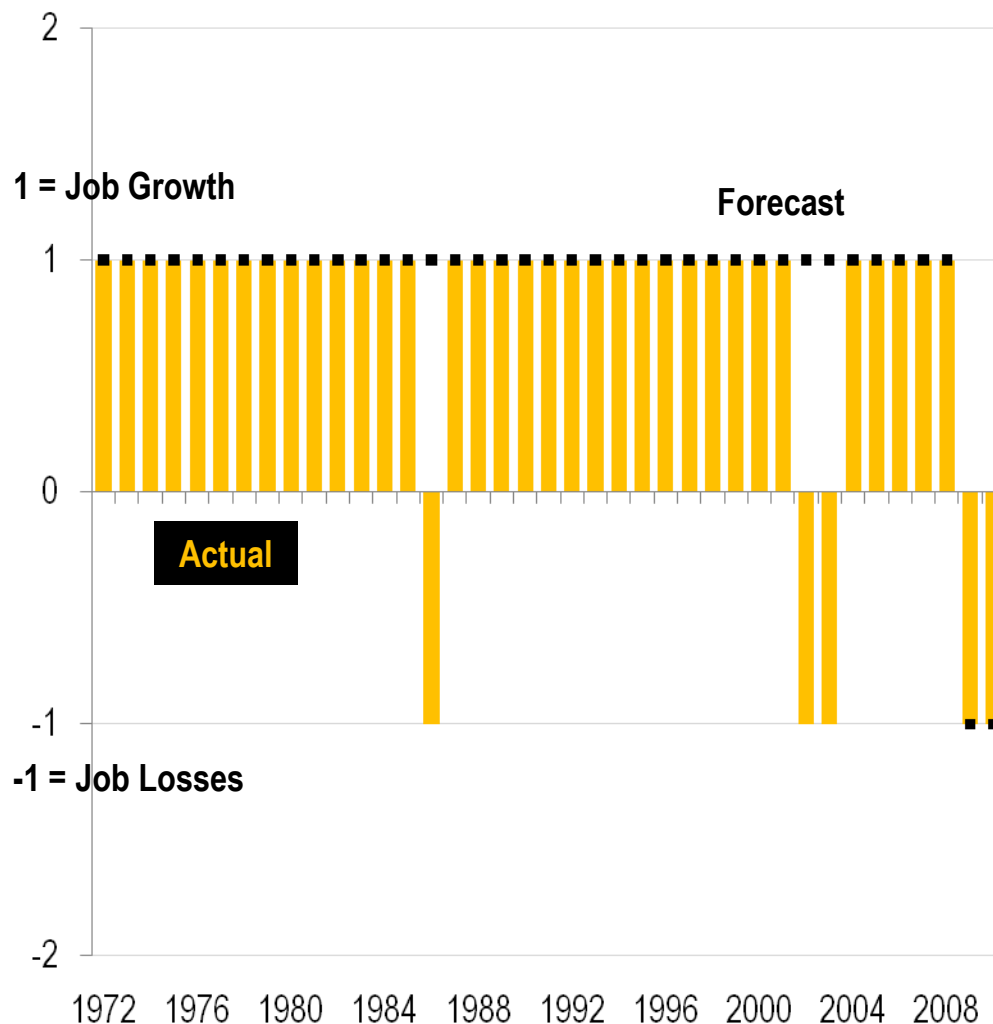
CBEO Forecast Accuracy Job Growth or Job Losses

Growth or Losses Test

This is a simple nonparametric test to determine if the CBEO was accurate from a growth or loss standpoint. Because an employment forecast is intrinsically a growth forecast, its real value occurs if it can identify the years when jobs are lost.

Colorado employment recorded increases in 34 of 39 years. The CBEO accurately predicted growth for all 34 years; however, it inaccurately forecasted growth for three years when jobs were lost. Said differently, jobs were lost in five years. **The CBEO accurately forecasted 2 of the 5 years, or was correct 40% of the time, when job were lost**, missing the declines in 1986, 2002, and 2003.

Forecast Accuracy – Jobs Added (1972-2010)



Forecast Accuracy – Jobs Added (1972-2010)

CBEO Forecast Accuracy

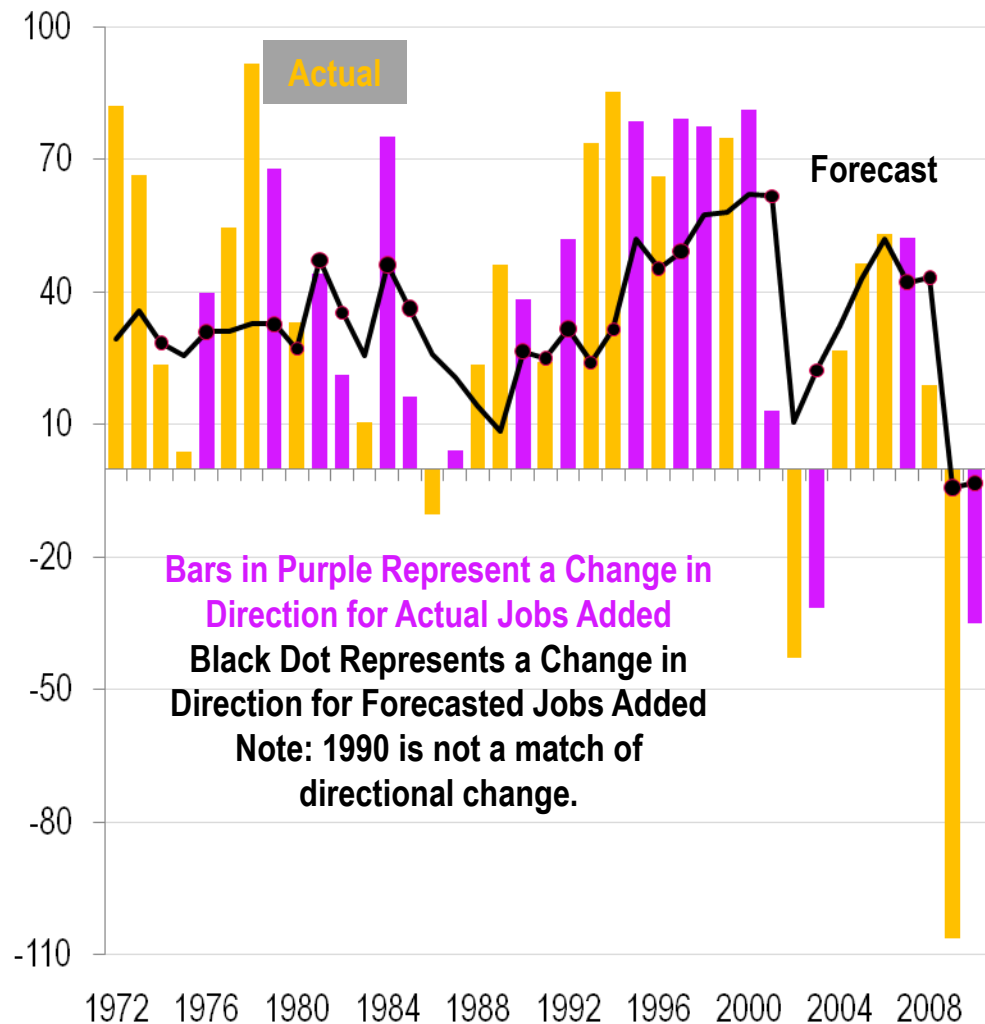
Forecast Over/Under

Forecast Over/Under

This part of the evaluation determines whether there is a tendency for the forecast to be too aggressive or conservative .

- The forecast was less than the actual employment 23 of 39 times, or 59%.
- The forecast was greater than the actual employment 16 of 39 times, or 41%.

Over time, there is a tendency for the forecast to be conservative or lower than actual employment.



CBE0 Forecast Accuracy Turns

Turns (change in the slope or direction of trend line from + to - or vice versa).

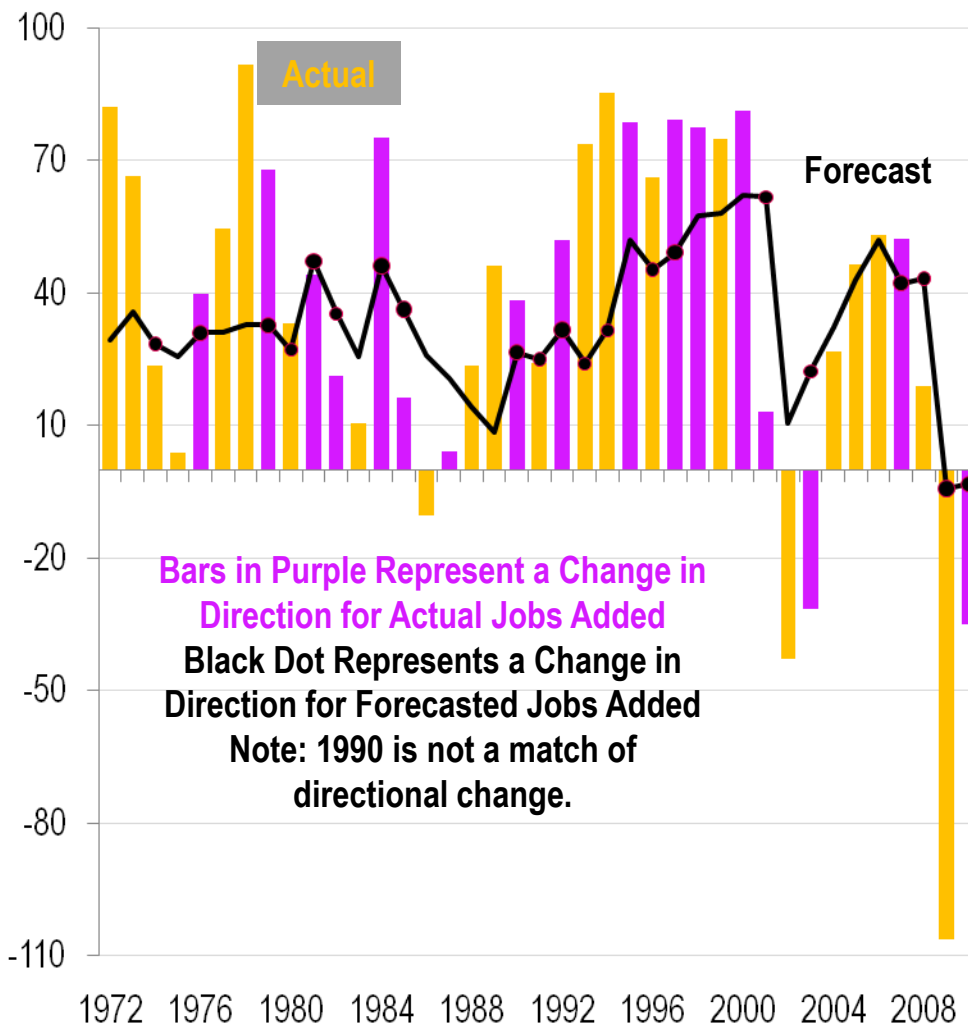
There were 17 actual turns in 37 years.

During those 17 years, the forecast accurately projected turns 12 of 17 times (12 correct, 5 incorrect). These errors occurred in 1979, 1987, 1990, 1995, and 1998.

The forecast projected 6 turns during the remaining 20 years when turns did not occur (0 correct, 6 incorrect). These errors occurred in 1973, 1988, 1989, 1993, 1999, and 2009.

The CBE0 accurately forecasted turns 52% of the time - 12 correct/11 incorrect.

Forecast Accuracy – Jobs Added (1972-2010)



CBEA Forecast Accuracy Central Tendency and Dispersion

Tendency and Dispersion

For the 39 years of the forecast, there was an average of 36,500 workers added each year.

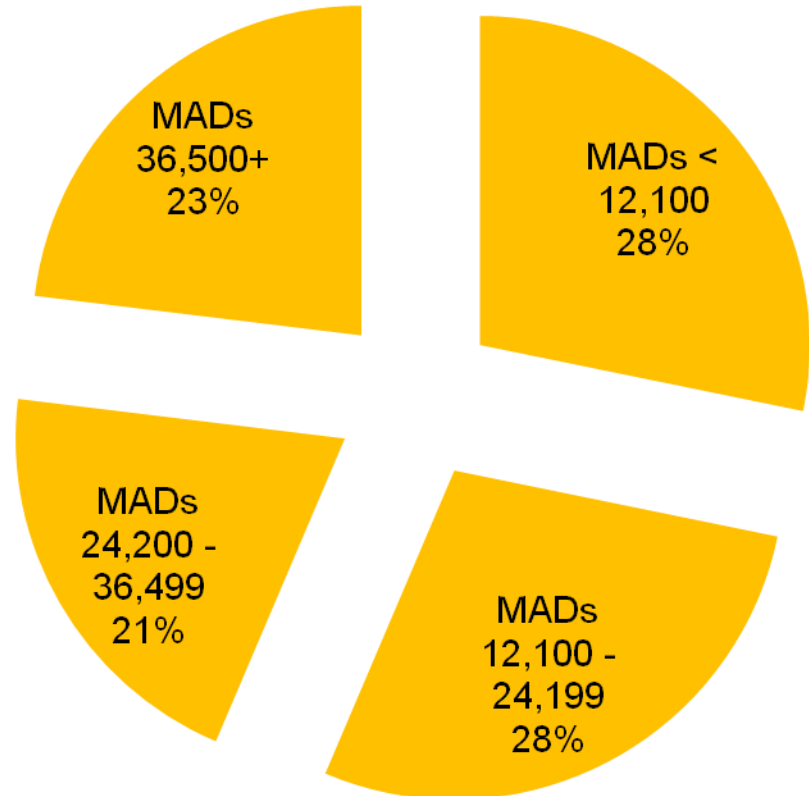
The forecasts had a range of 66,600 (-4,300 to 62,100); the actual data had a range of 198,100 (-106,300 to 91,800). The absolute deviation between the forecast and actual data varied from 1,000 to 102,000 .

The Mean Absolute Deviation (MAD) for the 39 forecasts was 26,300 workers.

- 11 had MADs less than 12,100.
- 11 had MADs between 12,100 and 24,199.
- 8 had MADs between 24,200 and 36,499.
- 9 had MADs 36,500 or greater.

45% of the time the forecast was off by 24,200+.

Forecast Accuracy – Mean Absolute Deviations (1972-2010)



Conclusion

This analysis highlights how difficult it is to have a high level of accuracy in predicting turns, the magnitude of turns, and in forecasting years when job losses occur, particularly given the volatility of the Colorado economy during this 39 year period.

- Jobs were lost in five years. The CBEO accurately forecasted 2 of the 5 years, or was correct 40% of the time, when jobs were lost.
- The forecast was less than the actual employment 23 of 39 times, or 59%, and greater than actual employment 41% of the time.
- The CBEO accurately forecasted turns 52% of the time.
- 45% of the time the forecast erred by 24,200+.
- The discussions associated with the NAICS sectors are likely to be the most valuable part of the forecast because they provide factors that might impact change.

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