# ADP Payroll Processing Data Can Provide Early Look at Texas Job Growth

By Keith R. Phillips and Christopher Slijk

**ABSTRACT:** A monthly estimate of state job growth prepared by payroll processor ADP is a reliable advance indicator of changes in official employment data released by the Bureau of Labor Statistics. The ADP figures are useful in providing timely analysis of the Texas economy.

**M**onthly job growth is among the most important and timely indicators available to measure economic conditions at the state level. Official employment data are usually available about three weeks following month's end. But Automatic Data Processing (ADP) Inc., a national payroll processing company, provides estimates of private sector job growth that are released 10 days earlier.

ADP's payroll processing operations in Texas are a subset of the 23 million employees covered nationwide, accounting for approximately 20 percent of national private sector employment.

While ADP's estimates of private sector job growth do not exactly match the official data, an analysis of the firm's estimates shows they are correlated and can be used in a simple model to obtain useful preliminary estimates of Texas job growth.

## Measuring Job Growth

Texas nonfarm employment from the Current Employment Statistics (CES) program, produced by the Bureau of Labor Statistics (BLS) in cooperation with the Texas Workforce Commission (TWC), is generally available the third Friday of the month.[1] These data reflect the number of jobs on company payrolls for the week that includes the 12th day of the month. For example, Texas employment data for May 2015 will be released on June 19 and will reflect the number of jobs at firms and government agencies during the week of May 8–12.

At the same time May figures are released, the data for April are revised. Besides the month-earlier revision, the only other official revision occurs at the annual benchmark, which coincides each year with the release of the January data. The benchmark, which aligns the CES survey data with the more comprehensive Quarterly Census of Employment and Wages, provides a better measure of actual job growth but lacks timeliness.

Timely, comprehensive employment data are critical to evaluating economic activity in real time. Other indicators of economic activity, such as Texas real gross domestic product (RGDP), are more delayed. RGDP is released annually with about a six-month lag.[2] As of May 2015, Texas RGDP data were only available for 2013.

Because of the importance of the employment data, the Dallas Fed takes steps to improve the series and make it more useful. Improvements include early benchmarking and applying a two-step seasonal adjustment to the data at the fine industry and metropolitan levels. These processes reduce revisions when the annual benchmark occurs and ensure proper adjustments for seasonality.[3]

Arriving at an estimate of private sector job growth 10 days sooner than the official data—as the ADP data do—can be important to analysts who track the economy and to businesses that plan for labor and capital changes. This is particularly true during times of significant economic adjustment, such as the recent decline in the energy sector.

Nationally, ADP releases an estimate of seasonally adjusted private sector job growth two days before the official BLS data are released. In 2013, ADP began releasing data for 29 states and the District of Columbia. Because the ADP's seasonally adjusted private sector employment data do not represent a comprehensive sample of private sector jobs, a statistical evaluation is necessary to provide guidance on the data's efficacy as an earlier estimate of job growth.

## ADP Job Estimates

Because ADP does not process payrolls for the government, the ADP estimate is an assessment of private sector employment. In Texas, private employment represents 84.2 percent of total nonfarm jobs. Thus, the ADP report can be used by itself to estimate private sector job growth or can be added to an estimate of government sector growth to approximate total nonfarm job growth.

Since ADP began tracking this data in January 2005, the seasonally adjusted series has moved closely with official BLS estimates of Texas private sector employment (*Chart 1*). Year-over-year growth rates in ADP and BLS data tell a similar story—the two are very closely related (*Chart 2*).

However, if one were simply to use the growth rate in the ADP as an early estimate of growth in the official data, Chart 2 shows there would be recurring periods of persistent overestimation and underestimation. This implies that a model using changes in the ADP as well as past values in official job growth estimates would provide better forecasts than one using growth in the ADP alone.

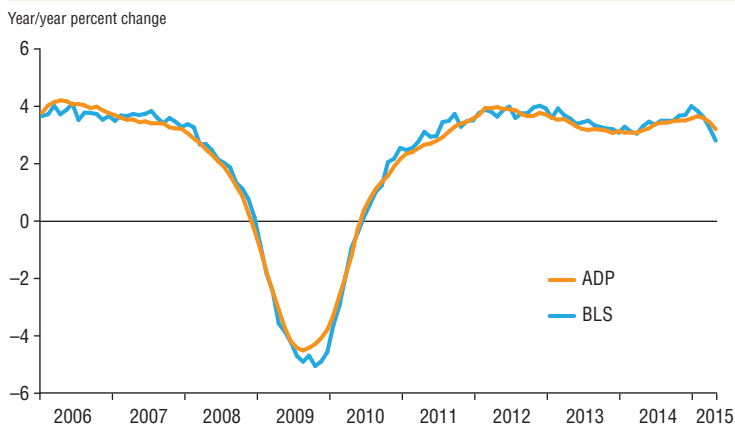There is another important issue to consider: The data in Charts 1 and 2 show the final revised values of

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**Chart 1** | ADP Employment Tracks Official Data Closely

Index, January 2005 = 100, seasonally adjusted
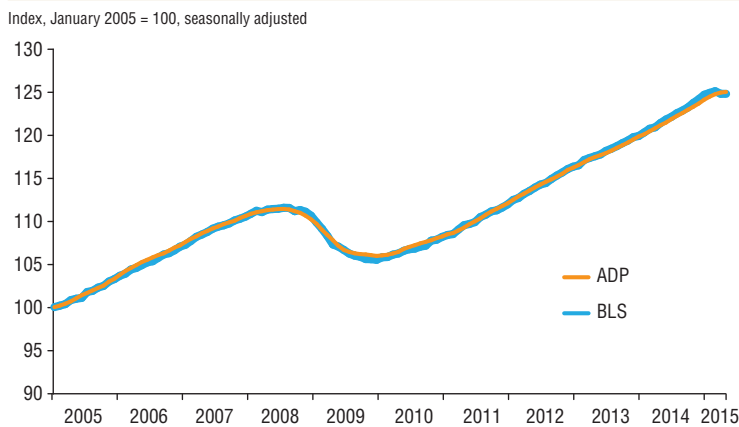


SOURCES: Automatic Data Processing (ADP); Bureau of Labor Statistics (BLS).

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**Chart 2** | Employment Series Similar, but Official Data More Volatile

Year/year percent change



SOURCES: Automatic Data Processing (ADP); Bureau of Labor Statistics (BLS).

employment. Yet in real time, what we are estimating with a 10-day advance is the *first* estimate of job growth—not the second revised estimate or the final benchmark estimate. It could be that a model fit on the current BLS series—which is benchmarked through September 2014, has second estimates through March 2015 and a first estimate for April 2015—does not perform well when used to fit only first estimates (the most recent month).

Given that the focus of this examination is the use of ADP data for timely current analysis, we are most interested in obtaining an early estimate of what the official estimate will be 10 days later. Hence, we construct a model based only on first estimates of monthly growth of the official employment data going back to 2005. ADP data are also subject to revision, and this exercise draws on as much first-estimate ADP data as possible.[4]

## Model Performance

The model indicates that ADP data are useful in estimating Texas private sector job growth. There is a strong, statistically significant relationship between changes in the ADP data and the first estimate of Texas private sector job growth. This relationship holds up in different variations of the model. The version of the model used considers past changes in private employment

growth along with the current-month ADP estimate. (For more information on the model, see the appendix "Using ADP Data to Estimate Texas Private Job Growth," www.dallasfed.org/assets/documents/research/swe/2015/appendix.pdf.)

Chart 3 illustrates how the model would have performed if used from January 2013 through April 2015. The first value of the green line shows the result of running the model using official private employment data through December 2012 and January ADP data released in early February 2013.

Moving forward from January 2013, the model is reestimated using only the data available at the time of the given month. Hence, the green line is a replication of what the actual forecast would have been had the model been run each month on the day that the ADP estimate was released. It is clear that the official first estimates of job growth are much more volatile than the ADP estimate and the model forecast.

Additionally, the average error from the forecast is smaller than if the ADP growth rate were used as a direct estimate of private sector job growth. During this 28-month, real-time forecast exercise, the estimate was also unbiased—meaning that the average error was not statistically different from zero. While in some months the error can be quite large, the forecast is useful

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**Chart 3** | Model Predicts Employment Changes Better than ADP Alone

Annualized percent change, seasonally adjusted
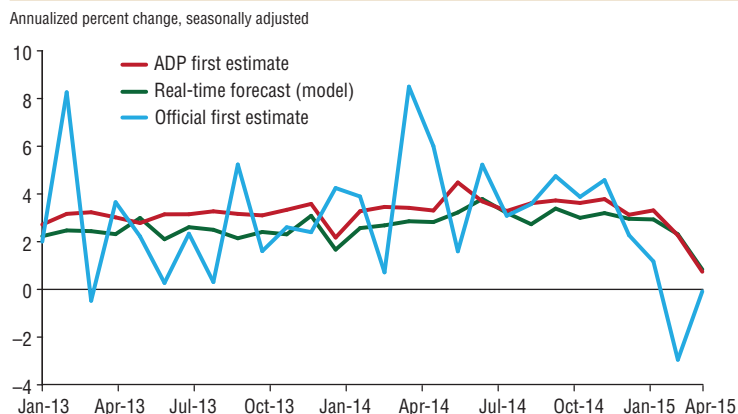


SOURCES: Automatic Data Processing (ADP); Bureau of Labor Statistics (BLS); authors' calculations.

overall in producing an early estimate of private sector job growth.

This analysis shows that the ADP data can provide useful information about the current month's growth in private sector jobs 10 days before official data are released. However, another interesting question is whether the errors in the forecast can tell us anything about the revisions in the official data from the first estimate to the second.

In other words, if the model with the ADP data suggests that private job growth is likely to strengthen, while the CES first estimate shows a weakening, does this imply that the data are more likely to be revised upward when the second estimate of official growth is released the following month?

Chart 4 plots the percentage-point error in the annualized growth forecast and the revision from the first to second estimate and indicates a positive relationship between the two. To quantify this, the official data revision from the first estimate to the second is statistically compared through regression on the model's forecast error.[5] It appears that the error in the model is statistically significant in explaining the revisions in the official data. That is, the bigger the error from the ADP model (if the first estimate of official job growth is much higher than the ADP model

forecasts), the more likely the first estimate will be revised downward the following month.

As an example of the timely application of the model, data through April 2015 were used. The first estimate of April private sector job growth is lower than the model forecasts, as Chart 3 shows. Based on the relationship between forecast errors and official revisions in Chart 4, the official annualized growth rate from March to April will likely be revised higher by 0.2 percentage points.

## Challenges and Related Research

Analysis shows that the ADP data appear to provide early insight into very recent growth in private sector jobs in Texas. The estimate is much smoother than the formal CES data and, thus, when monthly job growth experiences large swings, the early growth estimates based on the ADP can be quite different than the official data released 10 days later.

Smoothness in the ADP data may be due to an overrepresentation of large firms that tend to be less volatile than smaller firms or an overrepresentation of industries that fluctuate less than average.

These results are consistent with similar national studies. Previous re-

search on employment data for the U.S. shows that incorporating national ADP data into a short-term forecasting model improves the accuracy of projections for first-estimate BLS data.[6]

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### Notes
[1] The job estimates for January and February are delayed due to the annual benchmark processes—the remaining months follow the third Friday schedule.

[2] In September 2015, the Bureau of Economic Analysis plans to release quarterly state GDP with a six-month lag.

[3] For further information on these processes, see "Reassessing Texas Employment Growth," by Franklin Berger and Keith R. Phillips, Federal Reserve Bank of Dallas *Southwest Economy*, July/August 1993, www.dallasfed.org/assets/documents/research/swe/1993/swe9304a.pdf. Also see www.dallasfed.org/research/basics/index.cfm.

[4] Each month when the ADP estimates are released, the prior two months are revised. Monthly releases of Texas ADP data are available online back to July 2014. We use these releases to create a real-time first-estimate series from that date.

[5] Second estimates of December data are not available from the same generation of data prior to the BLS benchmark. Due to the October 2013 government shutdown, the second estimate for August and first estimate for September are not available. These data were excluded from the model of the error terms and from Chart 4.

[6] "Testing the Value of Lead Information in Forecasting Monthly Changes in Employment for the Bureau of Labor Statistics," by Allan W. Gregory and Hui Zhu, A*pplied Financial Economics*, vol. 24, no. 7, 2014, pp. 505–14.

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### Chart 4 | Forecast Errors Indicate Likely Revisions in Following Month

Annualized percentage-point difference from CES first estimate
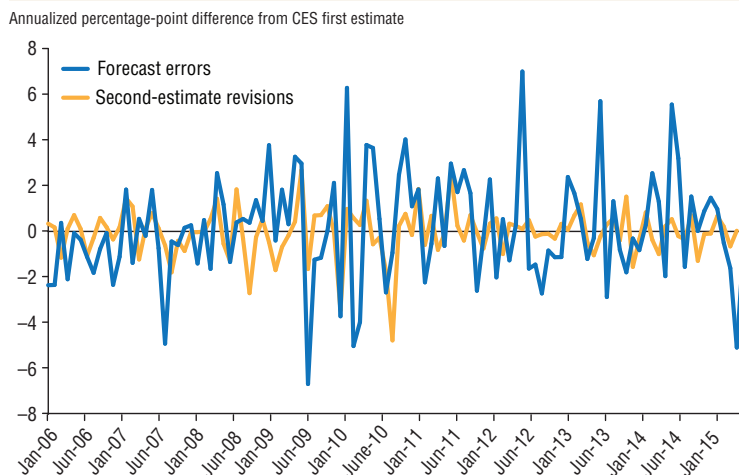


NOTES: December values and August–September 2013 values excluded. Data are seasonally adjusted.
SOURCES: Automatic Data Processing; Bureau of Labor Statistics' Current Employment Statistics (CES).