Technical Notes to "Forecasting a Revision of History"

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To estimate the upcoming benchmark revisions of Arkansas payroll employment data, A set of relationships between CES data and QCEW data were estimated using ordinary least squares regression. Specifically the log of each super-sector component of the CES data was regressed on a constant, a linear trend, and the corresponding data from the QCEW. The estimation period was January 2001 through December 2007. For each sector, i,

$$\ln(CES_{it}) = c_i + \alpha_i Trend + \beta_i \ln(QCEW_{it}) + \varepsilon_t$$

The regression estimates were used to "forecast" new values for the CES series using QCEW data for the period January 2008 through June 2009.[1] The series were then extended through November 2009 using the formula

$$F_{it} = \exp[\ln(F_{it-1}) + \ln(P_{it} / P_{it-1})]$$

where F_{it} is the constructed forecast value and P_{it} is the published data from the CES at time t.

For most sectors, the coverage of the CES and QCEW data are nearly identical. However, the QCEW includes agricultural employment in its category of "Natural Resources and Mining." To benchmark the "Mining and Logging" component of CES, only two components of the QCEW were used: "Mining, quarrying, and oil and gas extraction" and "Forestry and logging." The latter category includes some agricultural activities in the forestry component, but logging is available as a separate category only on an annual basis. The two data sets also have slightly different coverage within the "other services" category, but these differences were ignored.

The benchmarking regressions were estimated using seasonally adjusted data. That is, the QCEW data series were seasonally adjusted using the Census X12 procedure before estimating their relationships to the CES data (which are seasonally adjusted by the BLS). This facilitated the presentation of benchmarked projections in seasonally adjusted form, minimizing the number of seasonal adjustment procedures employed and obviating the need to account for any differences in seasonal patterns between the two sets of data.

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[1] The revision will move the benchmark from 2008Q2 to 2009Q2. However, when the previous benchmark revisions were calculated, the QCEW data for Jan-Jun 2008 were preliminary. This suggests an estimation/forecast breakpoint of January 2008.