

STUDYING THE CAUSES OF EMPLOYMENT COUNT DIFFERENCES REPORTED IN TWO BLS PROGRAMS

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Introduction:

The Bureau of Labor Statistics (BLS) measures employment using data from two major statistical programs--the Covered Employment and Wages Program (CEWP) and the Current Employment Statistics (CES) Program. Under CEWP virtually all businesses must provide quarterly reports showing monthly employment and quarterly wages. These data are used to administer the State Unemployment Insurance (UI) system and are usually available 6-9 months after the end of the reference quarter.

The monthly CES program collects employment, payroll, and hours from a sample of 400,000 of the 7 million firms in the CEWP. Preliminary estimates are published about three weeks after the reference period each month. CES employment estimates provide one of the earliest indicators of the health of the economy and are closely watched by Congress, policy-makers, the Federal Reserve, and others.

In addition to serving as the sample frame for the CES, the CEWP figures are also used to "benchmark" the CES estimates. Once each year, in March, the CES employment levels are adjusted to the universe totals from the CEWP. If there are significant measurement differences between the two reporting systems for non-economic reasons, this can result in a large benchmark revision. This point is illustrated by the very large revision which occurred when the figures were benchmarked to 1991 levels. What initially appeared to be a 650,000 downward revision to the CES estimates was largely the result of a change in the way several large payroll processing firms were completing the CEWP for thousands of companies. These firms switched from a count of checks to an unduplicated count of employees.

Conceptually, the employment figures for the two programs should, in most instances, be the same. Both reports define employment as "**persons who worked**

or received pay for any part of the pay period which includes the 12th of the month." However, a review of the reported employment figures for what appears to be the same establishment often differ. This paper reports on a large-scale study reviewing the sources of data used by respondents to both programs and efforts to reconcile the reasons for differences. A probability sample of 8,000 firms in 10 States was selected from the CES and telephone interviews were conducted with both the CES and CEWP respondent.

Why Employment Estimates Differ:

As mentioned above, there are a few "legitimate" reasons why employment figures from the two program may differ. These primarily involve individual industry or State differences between UI "covered" employment and total employment. For example, student nurses and interns are generally not covered by UI and in most States are not supposed to be included on the CEWP report, although they are considered "employed" for purposes of the CES. However, these are the exceptions, as about 98% of all non-farm workers are covered by UI.

Other non-coverage differences likely occur for a number of reasons including:

- the use of different source records for each report;
- differences in the reference periods being used;
- differences in the definition of the reported units;
- the inclusion/exclusion of certain categories of workers from one of the reports.

For example, different respondents within the same firm may be completing each report. These individuals may be using different source records when filling out the report forms. In one instance, the employment figure being used may be a count of checks (which can result in a double-counting if someone receives more than one check), while the other respondent's records may be an unduplicated count of employees. In another instance, one report may inadvertently be including some workers who

actually work in a different physical location but are paid out of the same home office.

The goal of this study was to determine the type, source, and magnitude of these differences. When differences were detected, respondents were asked if they could change their reporting to more closely adhere to the definitions. Through this study, it was believed we could develop an error profile for both the CES and CEWP and recommend ways to improve reporting in both programs.

Research Design:

The research design involved: 1) selecting a probability sample of CES reporters; 2) designing and field testing a questionnaire to elicit the desired information; 3) conducting telephone interviews with the CES and CEWP respondents for each firm; and 4) evaluating the results.

Ten States, representing different regions of the country and economic characteristics, were selected. Within these States, a probability sample of about 8,000 CES reporters was selected. These samples were stratified by size of firm, whether the unit was a single or multi-unit establishment, and the observed difference between the CES and CEWP employment.

Since the goal of the study was to determine the reasons for employment differences, the sample was heavily weighted toward selection of units with known differences in the employment figures for CES and CEWP. However, to profile the universe of both programs, units with little or no difference in employment were also selected for interview.¹

Single vs. multi-unit refers to whether the establishment maintains operations at more than one location. This was believed to be a significant factor in explaining employment differences. One potential reason why there are employment differences may be that one of the reports includes workers from several locations in a single report, while the other report only covers workers at the designated location.

Size was included as a variable in sample selection for a number of reasons. First, size is generally an important explanatory variable when examining establishment data. Second, the overall CES sample is heavily weighed toward the larger establishments because these units account for the majority of employment.² In addition, errors which occur in the

larger units are more likely to impact the CES employment estimates.

Questionnaire Design and Survey Procedures:

Questionnaire design began in early 1994 and underwent extensive internal review. It was then field-tested by conducting a small number of personal visits. This was followed by a larger field test of about 100 telephone interviews. After each round of tests, the questionnaire was refined based on the results of the test.

Interviewer training took place in May 1994. The interviewers were for the most part experienced CES/CEWP staff in each of the participating States. Interviewing began in June 1994 and is scheduled for completion in November 1995.

The questionnaire itself contained two parallel parts; that is, essentially the same questions were asked of both the CES and CEWP respondent. The questionnaire addresses the three major components of the employment concept; *method*, *time period*, and *content*:

The *method* by which the employment counts are derived can vary widely, and is probably determined by the content of the payroll system's standard outputs. The count most consistent with the BLS definition is *an unduplicated count of individuals* working or receiving a check or other form of payment, which prevents the double-counting of employees receiving more than one check. However, reporters may use counts of active employees, employee records, employees who received checks, or counts of checks issued. Most of the incorrect reporting methods tend to overstate employment.

The *time period* for which employment is reported should be the pay period including the 12th of the month. Again, most incorrect reporting results in an over-count. Typical errors include reporting a count for the entire month, or reporting the total quarterly employment each month. In rare cases, under-counting results from using an incorrect time period, such as an employment figure that counts the number of employees on a specific day of the month.

The *content* (i.e., who is counted) can introduce another type of response error. This occurs if the concept of employment for CES and CEWP is mis-

understood. Content error also tends to produce over-counts, because reporters are more likely to include employees who are not covered than to exclude covered employees. Of the three definitional concepts, content error has the smallest impact on overall counts. This is because, if there is an error, it usually impacts only a small segment of the employment.

Survey procedures included mailing an advance notice letter to the CES respondent and, where possible, the CEWP contact person explaining the purpose of the interview. Included in the mailing was a "data comparison" sheet which displayed CES and CEWP employment figures for the most recent 12-month period. The letter explained that we wanted to understand why the figures may be different and which records were used to derive the figures. Shortly after the letters were sent, interviewers began calling the respondents to conduct interviews.

The survey procedures were highly successful in eliciting responses from sample members. The overall response rate for the study was about 80%. Figure 1 summarizes the disposition of the sample.

Figure 1. Disposition of Sample (through July 1995)

Total sample	8,000
Completed (as of July 1995)	4,765
Usable response rate	81%
Refusal	5%
Unable to contact	4%
Other	11%

Note: Interviewing is still underway and will be completed by November 1995.

As can be seen, the refusal rate is very low, about 5%. The "other" category includes some units that the State Agency determined were too sensitive to contact.⁴ Also included in this category are units that were found to be out-of-business.

Key Variables:

There are a number of key variables within the firm

which were expected to explain employment differences. These may be regarded as institutional factors that are outside the control of BLS. These included:

Same/different unit: This refers to whether the employment being reported for the CES and CEWP are for the same unit. The sample units selected for this study were believed to be for the same unit; however, after speaking with the respondent we learned that this may not always be the case. In those cases where they are not the same unit, this can account for the difference. The tabulations presented in this paper are for cases where the two units were the same. These represented about 89% of all cases.

Same/different respondent for CES/CEWP: In the majority of cases the same respondent completes both the CES and CEWP reports. However, in those instances where different individuals complete these reports one would expect that this would increase the likelihood of having different employment counts. Most companies have several different reports that contain employment figures. Each respondent may use different source records.

Single/Multiple payrolls: We expected that units which have multiple payrolls (some workers paid on one frequency and others on another frequency) would have a higher incidence of employment differences. This is because workers on one of these payrolls may not be included in one of the reports. The typical example here is senior managers that are paid monthly (and may be paid from a different account or payroll center), while the remaining employees are paid on a weekly basis.

Payroll prepared in-house/outside: In many instances an outside organization such as a commercial payroll processor or accountant may prepare one or both of the reports. This may impact the figures provided on the reports.

We also analyze the results in terms of the method, timing, and content concepts discussed previously.

Analysis:

Before presenting the results, a few caveats and cautions are warranted. First, the study is still ongoing, therefore, these results should be regarded as preliminary. Second, the data shown are unweighted. As mentioned earlier, the sample including a weighting scheme that included size of firm and size

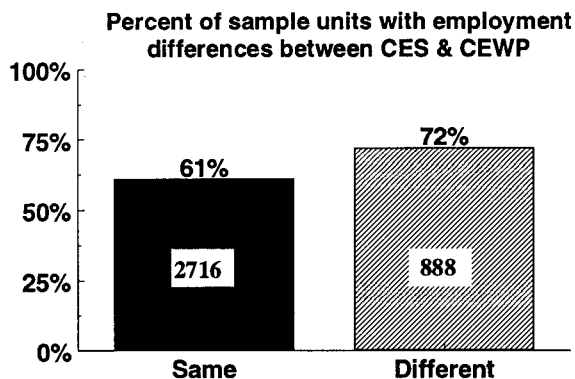
of employment difference between CES and CEWP (over-sampling for large firms and firms with large differences). Thus, the unweighted estimates may over-state the incidence measures compared to the final weighted estimates.

Another cautionary note pertains to the measure of difference used. In measuring the difference between the CES and CEWP employment, we used an average for a 12-month period. Thus, if there was any difference between the figures for any month, the unit was classified as having a "difference". However, since the employment figures are benchmarked against a single month, March, the difference measure used for this study is clearly biased upward.

Same/different unit: We determined that in 89% of the cases the CES and CEWP unit appeared to be the same (and therefore the employment figures should match). In 8% of the cases, the difference was explained by the fact that the unit definition was, in fact, different. In a small (3%) proportion of the cases, we could not accurately ascertain the unit definition. *To eliminate differences caused solely by different unit definitions, all remaining tabulations shown will be for cases where the units were the same.*

Same/different respondent: Figure 2 compares the incidence of employment differences in cases where the same respondent completed both the CES and CEWP and those where two different respondents complete the reports. As can be seen, when one person completes both reports, 61% of the cases show employment differences. When the reports are completed by two different people, the incidence of employment differences rises to 72%.

Figure 2. Same vs. Different Respondent



Multiple payrolls: Figure 3 shows the significance of multiple payrolls in explaining employment differences between CES and CEWP. About three-fourths of the units with multiple payrolls show employment differences between the CES and CEWP, compared with only 62% of the units with only one payroll.

Figure 3. Effect of Multiple Payrolls

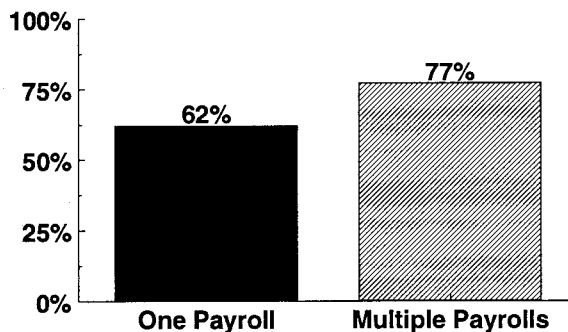
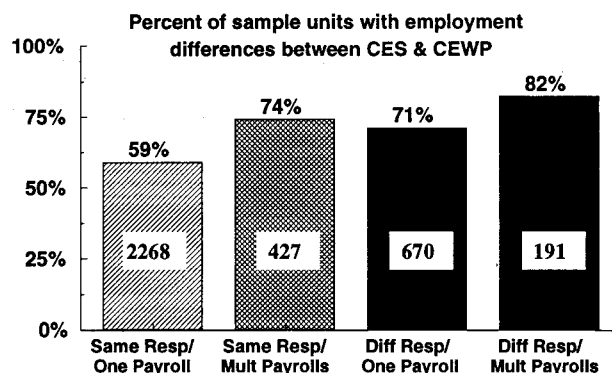


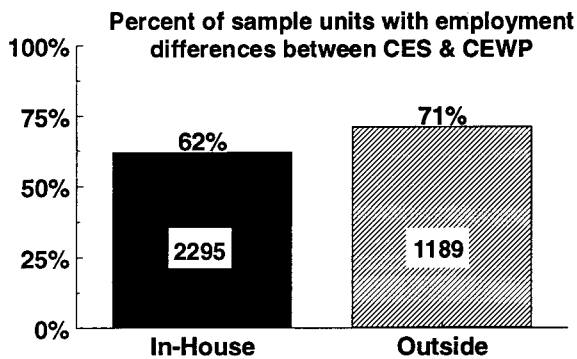
Figure 4 provides a cross-tabulation of both different respondents and multiple payrolls. It appears that the combination of different respondents and multiple payrolls has a cumulative effect on the incidence of employment differences. Where there are different respondents **and** multiple payrolls, the incidence of employment differences is extremely high (82%), whereas when the same respondent does the reports **and** there is only one payroll frequency, the incidence of employment differences drops to 60%. When only one of the two factors is present, the incidence of employment differences falls in between these values.

Figure 4. Interaction of Multiple Payroll and Different Respondent



Payroll prepared in-house/outside: Figure 5 shows the relationship between having the payroll prepared in-house versus being done by an outside organization such as a payroll service bureau or an accountant. When the payroll is prepared in-house, 62% of the firms surveyed showed employment differences. When the payroll is prepared by an outside organization, this percentage increases to 71%. This difference primarily reflects the fact that when the payroll is prepared in-house the same person often does both the CES and the CEWP. However, most outside organizations prepare only the CEWP, whereas the CES form is done by someone in the company. This results in two different individuals preparing the forms. Therefore, these percentages look very similar to those shown in Figure 2 for Same/Different respondent.

Figure 5. Payroll Prepared by Outside Organization



Adherence to Employment Definition: As previously discussed, there are three key aspects to proper reporting of the employment figure: method, timing, and content. Figures 6 and 7 compare how closely the CES and CEWP respondents are adhering to these concepts.

Figure 6. Accuracy of Method and Timing

	CES	CEWP
Timing: Use the pay period including the 12th	94%	74%
Method: Use unduplicated count of employees	94%	94%

Figure 7. Content: Percent Correctly Including/Excluding Specific Types of Workers

	Content Item:	CES	CEWP
I N C L U D E	Part-time employees	98%	99%
	Employees on paid leave	96%	98%
	Executives or corporate officials	89%	95%
	Trainees	99%	99%
	Employees not at work but received pay advances for current pay period	97%	97%
	Employees who resigned, were terminated, or fired during current pay period	96%	98%
E X C L U D E	Employees who resigned, terminated, or fired during earlier pay period	98%	96%
	Employees on leave without pay	97%	98%
	Employees available for work but not working	99%	99%
	Retired employees receiving pensions	100%	100%
	Outside contractors	100%	100%
	Employees on strike for the entire pay period	100%	100%
	Employees on layoff for the entire pay period	100%	99%
Employees in locations outside State/ U.S.	94%	98%	

With respect to method, both the CES and CEWP respondent almost always report correctly, using an unduplicated count of employees. However, for timing there appears to be a difference between the CES and CEWP respondent. CES respondents are more likely to report correctly than the CEWP respondent (94% vs 74%). This is an area where improvement can be made in CEWP reporting.

Figure 7 displays how the CES and CEWP respondent answered the various content questions. The percentages in this figure are the proportion correctly reporting the item in question. Thus, in the top portions of the table the percentages show the proportion correctly *including* the required categories, in the bottom portion of the table the percentages represent the proportion correctly *excluding* the category shown.

Two important conclusions can be drawn from Figure 7. First, in almost all cases both the CES and CEWP respondent are correctly reporting these content items--in only one instance is the percentage reporting correctly below 90%. Second, there are two content areas where CES reporting could be improved. These

are including executives and corporate officials, and excluding employees located outside the State. However, as mentioned above, even for these two items, 89% and 94% are reporting correctly.

Willingness to Change:

Where there were reporting errors, respondents were requested to change their reporting to more closely adhere to the employment definition. Both CES and CEWP respondents seemed willing to make changes. Three-fourths of the CES respondents and over two-thirds of the CEWP were willing to make the requested changes. The somewhat lower percentage for the CEWP is largely explained by the fact that many of the CEWP reports come directly from outside organizations. These organizations either file the CEWP report for the firm or provide the firm with a completed form to file. In either instance, it would be difficult for the firm to change the content of the report since they may not have access to the necessary records.

Conclusions and Recommendations:

The results of this study provide substantial insight into the sources of employment differences between the two statistical programs. One of the largest reasons for differences is measurement for what are really two different units. Once this difference is excluded, there are still instances where the data from the CES and CEWP differ, however these differences are usually small and offsetting. In general:

- most respondents report correctly;
- most differences in reporting can be corrected by the respondent.

Differences are more prevalent for: units with multiple payroll types; where different individuals complete the reports; or where an outside organization prepares the CEWP. Incorrect reference period is a significant reporting problem for the CEWP. CES respondents need to do a better job including managers and excluding employees that are actually working in another State.

Both programs have areas where improvements can be achieved. The two programs must continue to work together to reduce/eliminate reporting errors. This will improve the quality of the data for both programs.

Some avenues for continuing the education process for CES and CEWP respondents include:

- special brochures/flyers highlighting common errors;

- telephone interviews with larger firms with large employment differences; and
- work with payroll processors, software developers, and trade associations involved with the payroll industry.

Many of these initiatives are already underway.

Acknowledgements:

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Footnotes:

¹ Another reason units with no apparent differences were selected was the fact that, although the figures appear to be the same, both figures may be incorrect because of failure to adhere to the definition. For a more complete discussion of the sample design used in this study see the companion paper in these proceedings by Kratzke, et. al., "A Comparison of Estimates for the Mean of a Finite Population Based on a Systematic Sample".

² For example, firms with 250 or more employees make up 8% of the CES sample; however, they account for 67% of CES employment. Thus, accurate figures for these large firms are critical to producing reliable estimates.

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