

Measuring labor dynamics: the next generation in labor market information

The Quarterly Census of Employment and Wages (QCEW) provides the core of BLS business statistics; now, new data linkages between the QCEW and unemployment insurance wage records enable economists to better understand the complex job dynamics taking place in the national and local economy

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In recent years, a growing number of researchers have begun to explore the potential for using existing sources of information to address both longstanding and emerging issues in national and local labor markets. One of the main sources of information for these analysts is the Unemployment Insurance (UI) program's administrative records, which provide information about employers and employees.

This issue of the *Monthly Labor Review* profiles the wide range of uses being made of microdata flowing from the UI system. The articles illustrate the innovative research and the relatively untapped potential for harnessing these administrative records that, together with sophisticated matching techniques, can develop new products and insights.

This article presents an overview of the data, their source, and their current and potential uses. The articles that follow were chosen because they provide a broad profile of many applications already instituted at local levels in a growing number of States. Many States beyond those mentioned in the articles are using these data sets in research projects.

New challenges and data gaps

The forces of globalization, technological change, and changes in the labor force are more important than ever. Relevant, timely, detailed information is needed to capture the impact of these forces and to understand the inherent dynamic qualities of the current labor market.

The existing array of Federal and State survey-based data series provides key economic information on a timely basis, but does not fully portray the dynamic nature of today's job market. The chief difficulties are that the various series do not provide adequate detail, often are not available longitudinally, and cannot illuminate crosscutting issues. Also, surveys are expensive and frequently are limited in industrial and geographic detail. The development of new approaches that take advantage of existing, already-collected administrative data is a response to the challenge of dealing with these problems.

At both State and national levels, an increasing number of economists have begun to harness a range of existing administrative data sets to fill gaps in the data and to provide important information to improve decisionmaking. One of these efforts is the BLS release of business employment dynamics data on gross job gains and losses. The data are drawn from the existing Quarterly Census of Employment and Wages (QCEW) files that have been linked longitudinally.¹

Related administrative records, such as those on employee wages, also can be linked to the QCEW records. The linked employer-employee file then becomes a powerful tool for understanding the workings of the economy and the job market.

A tale of two files

All of the basic information sources for the BLS business dynamics data flow from the State UI systems. Under UI laws, each business is re-

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quired to provide two sets of information each quarter: one at the employer level, the other at the employee level.

The QCEW. At the employer level, statistics on the number of employees for each month of the quarter, the total wages, and the contributions to the UI system are generated from Quarterly Contribution Reports submitted by businesses to State Workforce Agencies. The employer-level records contained in these reports are tabulated, reviewed, and edited, and the statistics that are thereby produced provide the core of much of the BLS establishment programs—as they have for more than 30 years since 1972. Also known as the ES-202 series, these quarterly business data constitute the QCEW.² The results of this Federal-State cooperative program are published about 6 months after each quarter is over. The basic UI data are augmented by two important supplementary data sources that ensure the accuracy of detailed industry codes, as well as a quarterly Multiple Worksite Report that provides information on employment and wages for each individual business location. Together with the UI data, these three data sources, which cover the private and public sectors, allow detailed industry data to be tabulated and published for the Nation, States, Metropolitan Statistical Areas, and counties. Together, they provide an indispensable source of accurate national and local employment and wage information for use in analyzing various aspects of the labor market.

Among the agencies that use this information are the Employment and Training Administration (ETA), the Bureau of Labor Statistics, and various State and other Federal agencies. Within the Bureau, besides providing the employment benchmark for the Current Employment Statistics monthly payroll survey, the QCEW is the universe frame for the sampling of several important economic surveys. Other agencies use the QCEW for funding allocation purposes, and State workforce agencies and the ETA use it in the administration of the UI program. The QCEW also is an important input in a large number of national statistics. For example, it is the largest single input to the Bureau of Economic Analysis Personal Income estimates. Business locations are currently being geocoded, so that the physical location of an establishment can be displayed precisely on a map. This BLS initiative permits visual displays of data, the development of subcounty data, and detailed geographic analysis of the data.

Wage records. Along with the quarterly contribution reports, which present aggregate employment and wage data, employers provide a separate document called the wage record report, with information at the employee level. This report is required of every business covered by the UI program in each State. For each business establishment, the employee-level report lists each employee and his or her Social Security number, name, and wages for the quarter. In some States, more

data elements, such as hours worked, also are available. By themselves, wage records do not carry enough information to be useful for economic analysis. However, when they are merged with the industry, State, and county codes and with physical location addresses from the QCEW, a powerful data set becomes available.

The original and overriding purpose of these two reports submitted by employers was to provide enough information to administer the UI program, to assess and ensure the solvency of the UI trust fund, and to furnish information pertinent to determining a person's eligibility for UI benefits.

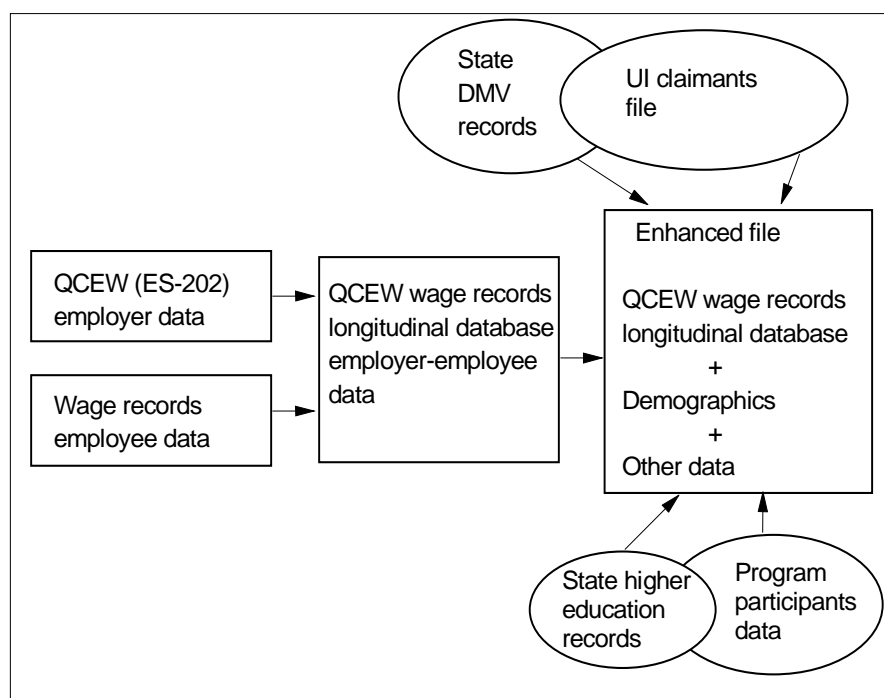
Linking QCEW and wage records

The UI account number is the common identifier of both the QCEW and a firm's wage records. The combination of both data sources provides the foundation of a powerful tool of linked data sets that are currently being used for a growing number of research projects and analyses. When the wage records are coupled with the employer information in the QCEW, the resulting merged data set affords an opportunity for new measures of labor market dynamics at national and local levels. (See chart 1.)

For example, once a firm's wage records are linked to that firm's QCEW account, some basic labor market events can be identified. The appearance of an individual's wage record with a particular business denotes a hire, the disappearance denotes a separation, and the reappearance of a record is a rehire. These simple measures can be very important for local decisionmakers, planners, and job-training providers. By tabulating new hires, analysts can compare statistics across counties or States and across industries. Analysts and policymakers can tell whether firms are hiring and, if so, at what wage level. Another very useful piece of business decisionmaking information is the firm's separation or turnover rate. Businesses want to know whether the flow of staff from their firm is more or less than that of other firms in similar industries and areas. Information on turnovers may help businesses decide whether an adjustment to their employees' wages, benefits, or other factors might achieve their business objectives more efficiently and retain their employees more effectively. Counting the number of wage records that disappear from a firm's quarterly listing of wage records allows this information to be tabulated at levels of detail that are not available from any other source.

Linked wage records and QCEW files also can provide an important insight into the nature of multiple jobholding. The appearance of a worker's Social Security number in more than one firm's wage records can signify that the worker is a multiple jobholder. The role of multiple jobholding in the earnings progression can be examined through this technique. For example, researchers can easily identify industries with a prevalence of multiple jobholding, or they can see whether there

Chart 1. New products from linked Quarterly Census of Employment and Wages (QCEW) and Wage Records



Sample products:

- Job creation and destruction rates
- New hires
- Rehires
- Separations rate
- Turnover rate
- Multiple jobholders
- Labor market attachment
- Job tenure
- UI claimants profile
- Program evaluations
- Performance measures
- Pre- and postlayoff studies
- Ad hoc research
- Economic shock analysis
- Worker mobility

is an earnings differential between multiple jobholders and single jobholders.

Wage records are available on a quarterly basis and can be linked longitudinally. Wage records linked longitudinally through the QCEW are valuable in analyzing labor market dynamics because they allow analysts to look at labor market participants and events over time and to study emerging trends. For example, once such large series are developed, labor market interactions among workers, such as the workers' labor market attachment, job tenure, and earnings progression within and across jobs, can be measured. Using the QCEW identifier, some States have constructed time series with up to 14 years of data, and many others could do the same, thus offering opportunities to study long-term impacts of government programs or of economic shocks such as closings of military bases or major employers, very large layoffs, or natural disasters on the local level.

Linking the QCEW to other data sets

The QCEW also includes identifiers that allow it to link to other data sources, thereby making possible an increasing spectrum of uses. For example, demographic sources could provide age and gender codes to allow the number of hires of men and women by county, by industry, and by age group to be

calculated. This information, combined with that on wages, could aid in formulating workforce development policies.

Further links to files available at the State level, including unemployment claimant files, can profile the duration of a worker's unemployment, prelayoff wages, and postlayoff wages. Linkages to education and other employment and training program participation records could further the analysis of a program's effectiveness in speeding up employment and in raising wages, as well as aid those making human capital investment decisions.

Wage records and other BLS programs

The availability of wage records offers a valuable opportunity for expanding and improving BLS program data. The linkage of the QCEW with the UI wage records is a natural starting point. Wage records can be used to enhance the accuracy of the new BLS business employment dynamics data. By linking the quarterly QCEW data across time, a longitudinal database has been created that provides job creation and job destruction measures on a quarterly basis. The utility of the business employment dynamics series, which classifies establishments as opening, closing, expanding, and contracting, depends on the analyst's ability to distinguish opening and closing firms from

continuously operating firms that may be going through mergers, consolidations, or acquisitions. This accounting currently relies on identifying business predecessors and successors. Improving the analyst's techniques is important, because, if one cannot identify business openings and closings accurately, one can misconstrue a new employer's accounts with a predecessor as a business opening and a terminated employer's accounts with a successor as a business closing. In the one case, the number of openings, and in the other, the number of closings, is affected. The UI wage records are being used by several States to track the movements of groups of employees as they shift from one business to another. Such tracking also can help determine whether an apparent new business unit identifier is a true business opening or is a business that has merely been purchased by another firm. Careful distinctions between openings and closings, as opposed to the presence of a continuous unit (though with a new name, due perhaps to a merger or an acquisition), are critical to the accuracy of these new and visible data series on gross job gains and losses.

Wage record data also may be used to improve the new BLS Job Openings and Labor Turnover Survey (JOLTS),³ which provides current monthly data on the number of job openings, hires, and separations (including quits, layoffs, and other separations) at the national level on a timely basis. These data come from a small sample of 16,000 businesses and are the only current, statistically representative data on labor demand in the U.S. statistical system.

Wage records give information on numbers of separations; the JOLTS, by contrast, is more detailed, offering information on the individual components of separations—quits and layoffs—thus making a distinction between voluntary (quits) and involuntary (layoffs and discharges) separations that cannot be reliably determined with wage records.

Despite their shortcomings with respect to distinguishing between quits and layoffs, wage records can provide information about hires and total separations at detailed industry and geographical levels; however, the data may not be available for 7 to 10 months after the separation has taken place. Wage records also are a potential validation tool used to check the accuracy of responses to the Bureau's Mass Layoff Statistics (MLS) survey, reducing the need and cost of response analysis programs that are often utilized to validate survey data. In the MLS program, research began in the late 1990s into the use of wage records as a tool for labor market analysis. A paper presented at the International Symposium on Linked Employer-Employee Data in May 1998 marked the beginning of the development of the MLS Longitudinal Linked Database (LLD), a computer application that allows States to track, compare, and measure postdisplacement labor market activity for groups of workers or employers.⁴ States have used the MLS LLD to conduct postdisplacement research on groups of workers by industry, by reason for layoff (including regularly collected reasons, such as bankruptcy, and unique

situations, such as the September 11, 2001, terrorist attacks), and by geography.

In the Bureau's Local Area Unemployment Statistics program, research is ongoing into the use of wage records to measure labor market activity within the official concepts of the labor force. States participating in this venture have (1) developed a method for assigning the place of residence to individuals listed in the wage record, (2) converted wage record transactions to individuals within the labor market, (3) investigated the topic of the measurement of new employment as opposed to reemployment, and (4) introduced unemployment insurance records as a way of breaking the calendar quarter into weekly or monthly segments. The research is aimed at providing information that may be used to measure new entrants and reentrants into the labor market, particularly below the State level.

Wide range of uses

In addition to establishing indicators that can be obtained from the QCEW and wage records, linking all of these data sets with other data sets lends richer dimensions to labor market or some other kind of economic analysis. The range of uses of the QCEW with linked wage records continues to expand; a list of some of these, categorized by type of use, is given in exhibit 1. The other articles in this issue have been selected as examples of the types of analyses that can flow from the use of QCEW-enhanced wage records. The authors are from some of the States that have been leading the effort in mining QCEW and wage records to address important labor market issues.

The Federal-State partnership

States have been using administrative wage records for economic research for almost two decades now, and the pace has intensified in recent years. A scan of States' use of wage records conducted by the BLS Federal-State Wage Records Committee identified one published State research product in 1986 that used such records. By contrast, in 2002, States published 36 research products based on wage records. Federal interest in wage records has been spurred by the passage of several pieces of legislation, most recently the Workforce Investment Act of 1998. This Act mandates the development by the Department of Labor of a comprehensive national, State, and local labor market information system to serve the planning purposes of State and local workforce investment boards. According to the Act, such a system would include wage records, maintained longitudinally and set up to allow for the production of local, State, and national employment and earnings data.

To make this system a reality, a national Wage Records Committee (see previous paragraph) sponsored by the

Exhibit 1. Uses of a combined Quarterly Census of Employment and Wages/Wage Record database

Economic statistical measures:

- Analysis of the levels and rates of employer-level job creation and destruction.
- Measures of labor market dynamics, such as employment and wages of those hired, rehired, or separated; special tabulations on aged workers and on young and highly mobile workers.
- Measures of wage differentials between those who change jobs relatively frequently and those with long-term attachments to their jobs.
- Geographic relocations, including effects on the duration of unemployment and the reemployment wages of dislocated workers.
- Profiles of worker job mobility and multiple jobholders.
- Levels and changes in earnings, by detailed industry and geography, including county data, data on low-wage earners by age group, and information on earnings differentials between men and women.
- Cross-State and cross-regional worker mobility and migration.

Economic policy and program performance evaluations:

- Study of Welfare-to-Work outcomes, including short- and long-term analysis of employment and unemployment duration, frequency of job changes, wage changes over time, and the impact of economic downturns on workers in this group.
- Analysis of job-training program outcomes, including short- and long-term analysis of effects on employment and wages over time.
- Followup of UI claimant outcomes, including prelayoff wages and job tenure status, length of time the claimant continues receiving unemployment insurance benefits, time required for reemployment following exhaustion of benefits, reemployment wages, and geographic location and industry of reemployment.
- Profiling of outcomes of layoffs, including quantifying differences in economic impact and worker outcomes

resulting from mass layoffs, compared with the normal economic impact of layoffs in the local area.

- Performance of outcome analyses, including comparing profiles of those who complete a job training program, those who begin such a program, but leave before completing it, and other groups.

Questions regarding economic development and economic shock analysis:

- When large firms reduce their workforce significantly or leave an area, what becomes of the skilled workforce? Do the displaced workers migrate out of State, find other employment within the area (at adjusted wages), or exit the labor force?
- What types of workers do fast-growing areas attract, and where do they come from? Are these workers young and mobile, and are they drawn from the retired, the semiretired, or the existing population that currently is not in the labor force?
- Where do new firms get their workers? From unemployment rolls, other firms, or neighboring areas? From outside the State? From among multiple jobholders? Or from yet another source?
- When natural disasters or other events occur, what is the size and profile of the affected workforce in the area, and what becomes of these workers?

Development of employer and local-area-workforce profiles:

- Demographic profiles of the workforce, such as profiles of aged workers and profiles of new entrants and low-wage earners by age.
- Profiles of resident and nonresident workers.
- Source and demographic profiles of the population of new hires.
- Demographic profiles of separated workers and their geographic and industry relocation outcomes.
- Profiles of workers' job mobility and of the transportation infrastructure that supports mobility.

Workforce Information Council was established in 2002. The committee, which is composed of staff and researchers from 14 States and the Bureau of Labor Statistics, is charged with identifying existing uses and users of the QCEW-enhanced wage records, assessing resources and infrastructure requirements for a potential wage-records-based program, and profiling barriers to the access and use of wage records by States. A survey of the 50 State Workforce Agencies conducted by the Wage Records Committee clearly pointed to the need for such a national program. The survey results and a national Wage Records Symposium, which was held in July 2003 in Washington, DC, also revealed a growing momentum towards building a national wage records program.⁵ States are beginning to expand the use of these administrative records, and a rich body of research based on them is steadily accumulating. The survey and the symposium, however, found that, despite the progress made so far, significant barriers to the efficient and full utilization of this rich data source remain.

Limitations and barriers

The survey of the States just discussed revealed that the most frequently cited barrier to the access and use of wage records was insufficient staff and resources. Beyond these common problems, the full-scale use of the combined QCEW and wage records is also limited in several specific areas. First, as with any set of administrative data, this set needs some review and editing prior to its use. Second, States need a set of common concepts and definitions in order for the resulting economic data to be comparable. Third, States require a common, standardized set of computer tools to be used and shared at the State level so that alternative data sets can be utilized to address each individual State's needs as it sees fit. The BLS Federal-State Wage Records Committee has set the framework for identifying ways to address these needs.

Another barrier is the need for cross-State sharing of wage records to address commuting and worker mobility across State

lines. One-third of U.S. employment is in counties bordering other States, and there is a very high level of cross-State commuting, particularly in the densely populated eastern United States. The development of files suitable for cross-State sharing faces several difficult methodological problems, yet cross-State sharing remains very important to virtually every use discussed in this article. Another critical issue is the need for methods for allocating the wage records of a firm to the individual locations of multiestablishment businesses. The Census Bureau is conducting research in this area.

Maintaining the confidentiality of information from individuals' wage records is the single most important issue facing users of wage records. Among the policies and techniques that must be developed to maintain confidentiality are the encryption of Social Security numbers, a policy which ensures that only sufficiently large groups of people and firms will be studied, and recognized nondisclosure methods.

Federal agencies other than the Bureau of Labor Statistics have a strong interest in using wage records. For example, the ETA will use them to evaluate the performance of certain of its programs under the Office of Management and Budget's Common Measures Initiative. The Census Bureau also has developed approaches to using wage records and the QCEW in innovative ways. Cross-agency, collaborative approaches have proven to be a good way of moving forward effectively.

STRONG DEMAND FOR BETTER INFORMATION to explain the dynamic nature of the labor market, together with an emphasis on accountability and performance measures in all government programs, is prompting researchers to use existing employer and employee administrative records to fill data gaps. Among the many advantages to using these already collected data are their comparatively low cost and detailed coverage. The combined QCEW and wage records are ideal tools for generating labor market dynamic indicators. They also are useful in analyzing labor market behavior, performance measures, and economic shocks. □

Notes

¹ See James R. Spletzer, R. Jason Faberman, Akbar Sadeghi, David M. Talan, and Richard L. Clayton, "Business employment dynamics: new data on gross job gains and losses," *Monthly Labor Review*, April 2004, pp. 29–42.

² QCEW data are on the Internet at <http://www.bls.gov/cew/home.htm>.

³ JOLTS data are on the Internet at <http://www.bls.gov/jlts/home.htm>.

⁴ Sharon Brown and Robert Cottrell, "Linking Administrative and Survey Data to Identify Mass Layoffs," paper presented at the International Symposium on Linked Employer-Employee Data, Arlington, VA, May 1998.

⁵ The proceedings of the symposium, including articles and presentation materials, are on the Internet at <http://www.workforceinfocouncil.org>.