

Evaluating Estimates of Labor Demand and Turnover

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Introduction to the Job Openings and Labor Turnover Survey (JOLTS)

In the past, labor market analysts have developed a number of tools for studying the labor market. For example, the Bureau of Labor Statistics has provided strong and well publicized measures of factors such as excess labor supply (in the form of the unemployment rate). The unemployment rate serves as a measure of the amount of unused labor supply in the U.S. labor market. However, the U.S. for many years lacked a parallel measure of unmet labor demand to complete the labor market picture and permit a more complete analysis of the labor market. This more complete picture would demonstrate how changes in labor supply and demand affect the labor market, and in turn the overall economy. In 1999, the U.S. Bureau of Labor Statistics (BLS) introduced the Job Openings and Labor Turnover Survey (JOLTS) to meet that need. Estimates from the JOLTS program were first released in 2002.

The prevalence of unfilled jobs—the number of job vacancies or openings—is an important indicator of the tightness of the labor market. JOLTS measures this degree of tightness by estimating the number of job openings in the economy and then computing a job openings rate. JOLTS also collects data on hires and separations, providing statistical series that aid analysts in understanding the economy and the labor market. The hires and separations collected in JOLTS are valuable numbers in their own right. However, they are also helpful in interpreting the job openings numbers. To illustrate: A high number of job openings can signal unmet labor demand. However, it may also be the result of employment growth within a given industry, or simply a high "churn" rate. A high job openings rate in an industry with relatively low hires and separations could be an indication that employers are having difficulty filling their vacancies. A high job openings rate along with a high hires rate in an industry with growing employment may simply reflect the fact that firms in the industry are staffing up. A high job openings rate in a stable industry with high hires and high separations would probably reflect a high churn rate. While all three of these examples reflect labor demand, only the first one could truly be termed "unmet" labor demand.

This paper evaluates the JOLTS data series by comparing them with other established and recognized economic series. This paper also analyzes the trends in the JOLTS estimates to see where they follow economic labor market theory, and where they diverge from expected behavior.

Brief History of JOLTS

The Bureau of Labor Statistics has produced several different surveys of vacancy and turnover data in its history, but the current program began in 1999. The current program differs from past programs in that it focuses on producing macro-level data to aid in economic analysis of all industries, and the program was initiated at a time when the economy was clearly shifting away from manufacturing and toward services. The JOLTS data were needed to fill a gap in available labor data.

The JOLTS sample is 16,000 private and public nonagricultural establishments selected from the BLS longitudinal database. Estimates include rates and levels for job openings, hires, quits, layoffs and discharges, other separations (including retirements), and total separations. Monthly estimates are produced for each data element for Total U.S., Total Private, Total Government, and four geographic regions. The private sector is further broken out by industry, and government is further broken out into federal government and state and local government combined. Job openings, hires, quits, and total separations are seasonally adjusted for some of the industries at the super sector level. So far, layoffs and discharges and other separations have not exhibited seasonal patterns consistent enough to seasonally adjust the series.

The first JOLTS data release was in July 2002 and included estimates back to December 2000. Estimates are released each month approximately six weeks after the end of the reference month. Although estimates reach back to December 2000,

estimates prior to March 2002 were produced while JOLTS was still considered to be a "developmental" program. Those estimates are considered valid and useful, but it was during that time that the JOLTS program further refined methodology, procedures, and collection instruments.

Job Openings Estimates

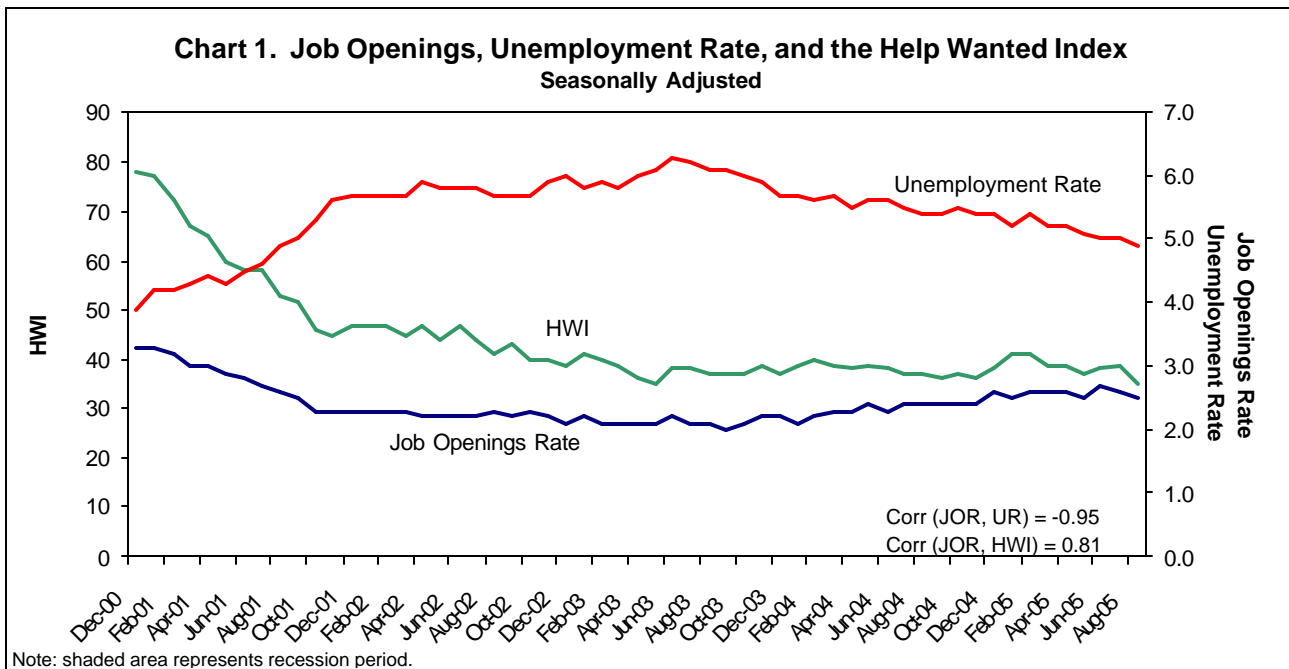
The JOLTS job openings data element was developed to serve as a macro-level indicator of unmet labor demand. Sampled establishments are asked to report their number of unfilled jobs as of the last business day of the month. This one-day snapshot is a stock measure. In order to be counted as a job opening, the job must meet three conditions: a specific position must exist and work must be available for that position, the job must be ready to begin within 30 days if a suitable candidate could be found, and the establishment must be actively recruiting workers from outside the sampled location. These three conditions are necessary to ensure that JOLTS measures current unmet demand for labor, and not establishments' predictions of needed labor, or budgeted positions. These concepts mirror those underlying the Current Population Survey's unemployment rate.

To evaluate the job openings estimates, extensive comparisons to other series have been performed. Two such series are the Unemployment Rate (also a BLS product) and the Conference Board's Help Wanted Index.

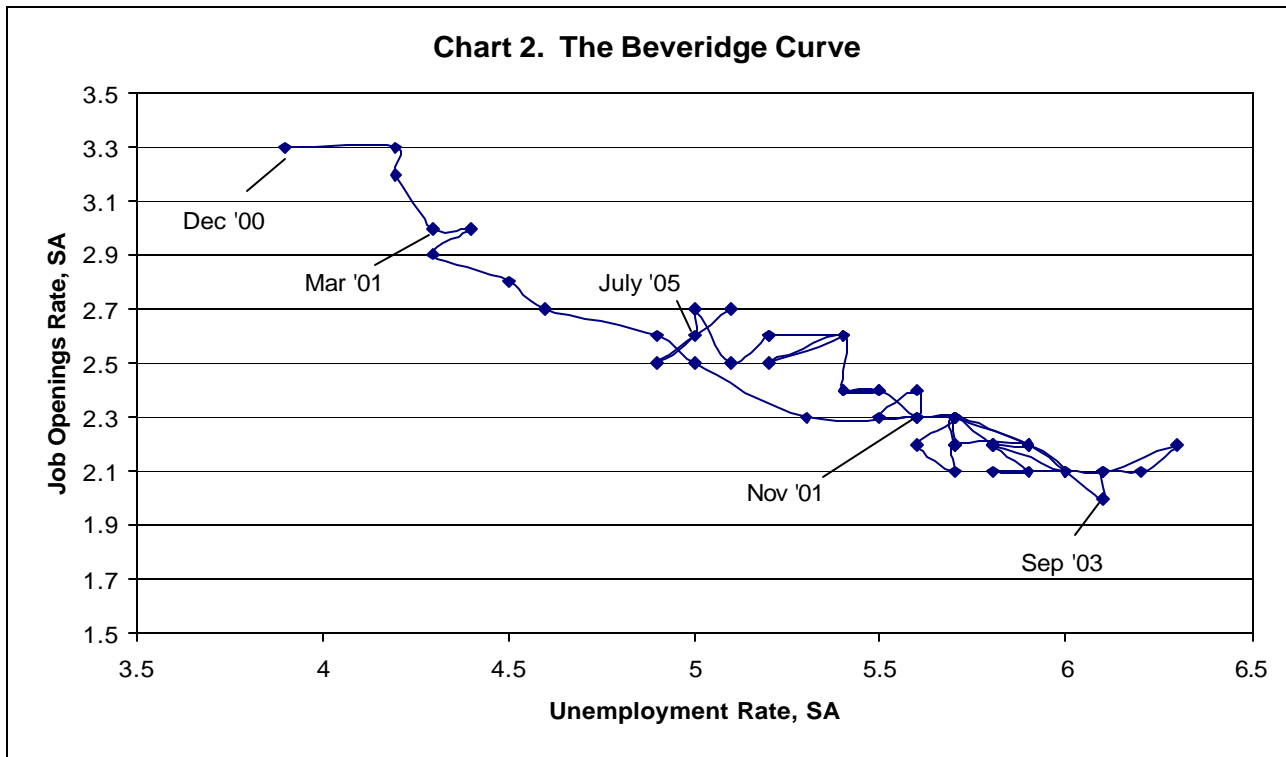
Job Openings, the Unemployment Rate, and the Beveridge Curve

The JOLTS job openings measure of excess labor demand complements the measure of excess labor supply--the unemployment rate. Just as a vacancy must meet three conditions in order to be considered a job opening, a person must meet three conditions to be considered unemployed. To be unemployed, a person must be available to work, could start work immediately if a job could be found, and must be actively looking for a job. The parallel definitions of job openings and unemployed allow for joint analysis of the two series.

Economic theory suggests a negative relationship between the job openings rate and the unemployment rate. That is, when the economy is slow, unemployment is higher and job openings are fewer. But in a stronger economy, unemployment declines and job openings increase. This theory is well-supported by the JOLTS series so far. The correlation between the job openings rate and the unemployment rate (both seasonally adjusted) is a significant -0.95 . As Chart 1 shows, the job openings rate declined from 3.2 percent before the recession to a low of 2.0 percent in September 2003, then trended upward since, stabilizing around 2.6 in December 2004. During the same timeframe, the unemployment rate moved in the opposite direction, increasing from 4.2 percent pre-recession to a maximum of 6.3 percent in June 2003, then steadily trending downward to a low of 4.9 percent in August 2005.



Plotting the job openings rate against the unemployment rate over time forms the Beveridge Curve. With the negative relationship between the job openings rate and the unemployment rate, movement through the business cycle produces movement along the curve. With several years' of paired observations to plot, the curve is easily discernable. (See Chart 2.) From December 2000 through the recession and until September 2003, the movement was downward along the curve as the job openings rate declined and the unemployment rate rose. The movement was then back up the curve from September 2003 through June 2005 as the job openings rate increased and the unemployment rate decreased post-recession. A second theory derived about the Beveridge Curve is that a shift toward or away from the origin reflects a structural change in the economy. Although recent observations fall further from the origin and do not trace the exact path of earlier observations, it is unclear how large a change is needed to be considered significant.



Job Openings and the Help Wanted Index

The only other measure of labor demand at the national level is the Help Wanted Advertising Index (HWI) produced by the Conference Board. Despite differences between the HWI and JOLTS, comparing the two series originally helped assess the JOLTS job openings estimates. The surveys differ in that the HWI only measures openings advertised in newspapers, whereas in JOLTS a job opening qualifies as "advertised" in a variety of ways including word of mouth, posting of a sign in the window of a store, recruitment at job fairs, and electronic advertisement. Even with the differences, the two surveys trend very well with a significant correlation of 0.81. (See Chart 1.) Interestingly, the HWI descended more rapidly throughout the recession, but the gap between the two measures lessens as the time series move further from the recession. The reason for the differential change between the series is unclear, but it could be due to a change in post-recession methods of advertising by employers, or it could be due to a different set of jobs that are open, which may be advertised in a different manner (electronically rather than in a newspaper).

Hires Estimates

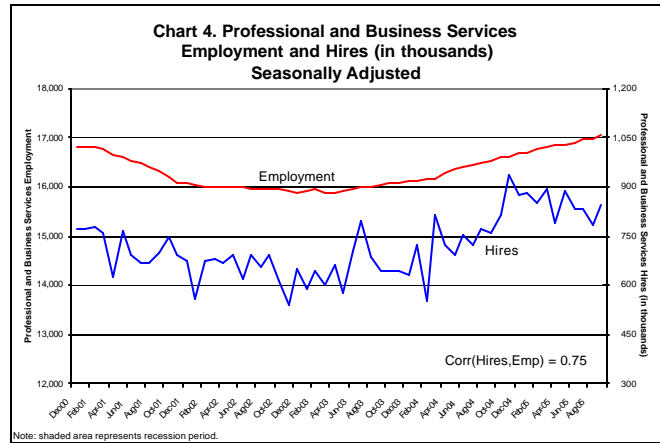
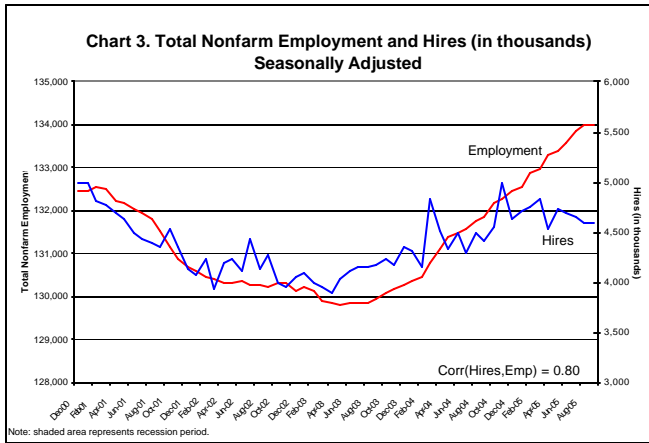
The JOLTS hires data element was developed to measure current labor market activity. Unlike job openings, hires is a flow measure. The sampled establishments are asked to report all accessions to the sampled site throughout the course of the reference month. All types of hires are to be counted, including new hires and rehires, and all types of workers are to be counted, including part-time, seasonal, short-term, and on-call.

Analyzing the hires data element itself, the series moves as expected through the business cycle. From the pre-recession measurement of 3.6 percent, the hires rate declined to a low of 3.0 percent several times during 2002 and 2003 then rose to a high of 3.8 percent in November 2004. Since late 2004, the hires rate has remained relatively flat.

Hires and Employment

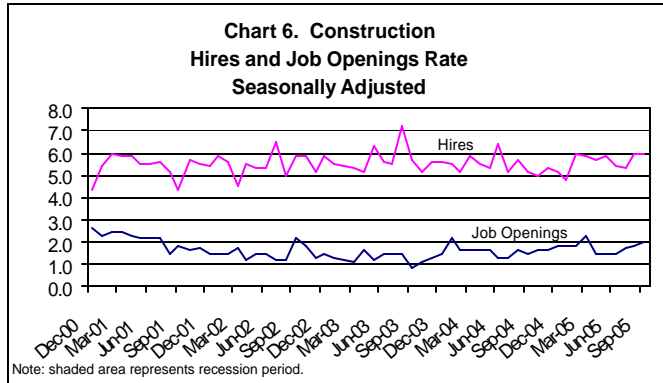
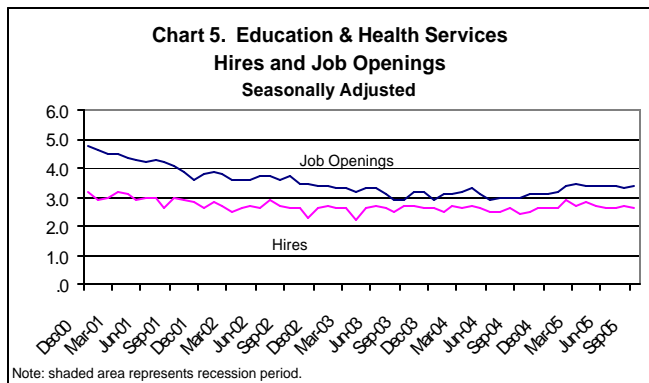
A natural comparison is hires compared to employment. The JOLTS program was carefully designed to match the scope and definitions of the Current Employment Statistics survey. In theory, employment rises when employers hire new employees, or recall workers previously separated through layoffs. The correlation between employment and hires is a significant 0.80, supporting that theory. The positive significant relationship between employment and hires holds at the total nonfarm level,

the total private level, and for several supersectors including trade, transportation, and utilities (correlation 0.67), and professional and business services (correlation 0.75). Charts 3 and 4 present employment and hires for total nonfarm and professional and business services. Interestingly, there is a significant negative correlation of -0.57 between employment and hires for the public sector, which warrants more investigation.



Combining Hires and Job Openings

As mentioned earlier, comparing hires to job openings provides useful information about whether an industry has unmet labor demand or just high turnover. Industries in which the job openings rate regularly exceeds the hires rate can be considered "high need." These are industries in which the demand for labor outpaces the hiring on a regular basis. For total nonfarm, total private, and all industries but one, the hires rate surpasses than the job openings rate, indicating that a sufficient number of employees are available to meet labor demand. The industry in which demand regularly exceeds supply is education and health services. The gap between supply and demand decreased between 2001 and 2004, then began to increase again, perhaps due to the elderly population and school-age population increase. (See Chart 5.) The construction industry is a good example of an industry with high churn but where the demand for workers is easily met, as evidenced by the consistently high hires rate and low job openings rate. (See Chart 6.)



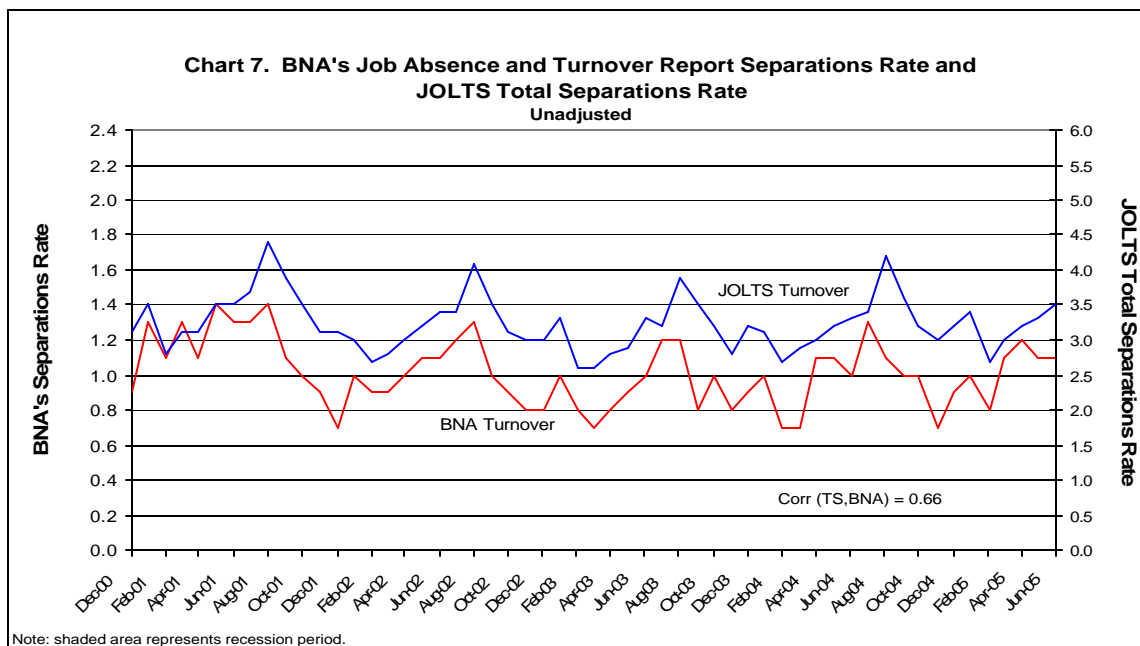
Separations Estimates

As with hires, the separations data elements were developed as flow measures of current labor market activity. The sampled establishments are asked to report all separations from the sampled site throughout the reference month. Unlike job openings and hires, respondents are asked to further subdivide the separations data into voluntary quits, involuntary layoffs and discharges, and all other separations. Tracking voluntary and involuntary separations individually allows better analysis of the labor market. Quits are pro-cyclical, increasing as the strength of the labor market increases, whereas layoffs and

discharges are counter-cyclical, increasing as the strength of the economy decreases. Both types of separations can increase total turnover. The *other separations* category includes separations that are not classified as either voluntary or involuntary, such as deaths, retirements, and disability. In addition, a total separations count is calculated for each responding establishment by summing quits, layoffs and discharges, and other separations. If a respondent cannot report separations data by category, they may report a total separations figure, which is then prorated among the three types of separations during estimation. Each of the separations series can be analyzed longitudinally as well as compared to other series.

Total Separations and BNA Turnover

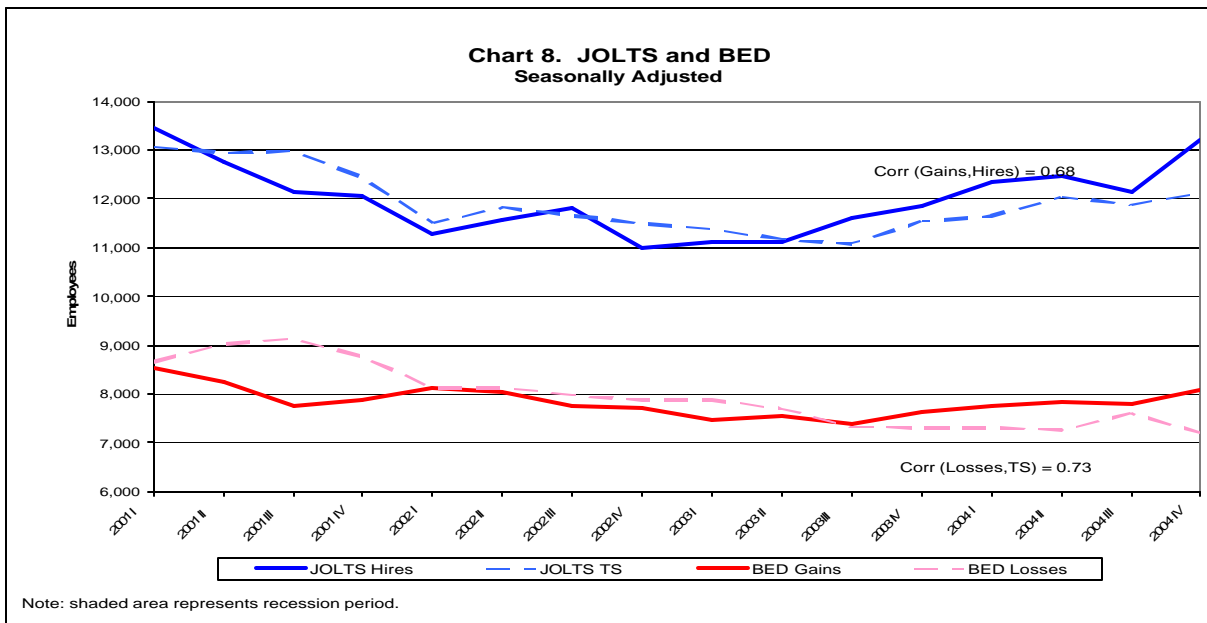
The Bureau of National Affairs produces monthly estimates of employee turnover in their Job Absence and Turnover Report (released quarterly). Although the BNA survey is smaller (only about 300 establishments), the two series are similar enough to make a fair comparison. As expected, the series trend well before, during, and after the 2001 recession, and show great similarity in their seasonal patterns. (The BNA data is not seasonally adjusted). The correlation between the two series is 0.66, which is positive and significant. Also as expected, the JOLTS total separations rate is higher than the BNA turnover rate due to definitional differences. JOLTS counts all separations whereas BNA excludes layoffs, departures of temporary staff, and separations due to elimination of jobs. (See Chart 7.)



Hires/Separations and Gains/Losses

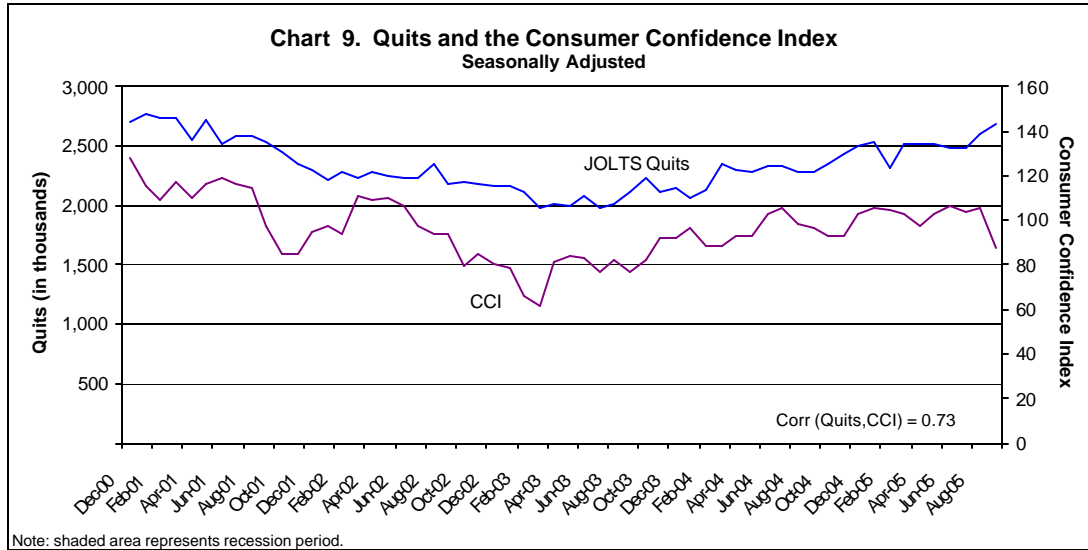
Another new series at BLS is the Business Employment Dynamics. The BED series is derived from the Quarterly Census of Employment and Wages (QCEW, formerly the ES-202 program) data. Like the Employment survey at BLS, the BED measures quarterly net job gains and losses in employment at the establishment level. JOLTS measures each hire and separation within an establishment, tabulating the monthly churn below the net change. Thus, the JOLTS and BED data are logical series to compare. To compare the two series, the monthly hires and separations data are summed to form quarterly figures. As expected, the JOLTS hires track well with the BED gains, which are from establishments that end the quarter with more employment than they began the quarter with. Hires and gains are both pro-cyclical and have a positive and significant correlation of 0.68. (See Chart 8.)

Comparing JOLTS total separations with the BED losses is more complicated due to the components of total separations. Total separations is the sum of pro-cyclical quits, counter-cyclical layoffs and discharges, and the miscellaneous separations categorized as other separations. Despite its complicated structure, total separations exhibits a strong correlation of 0.73 with BED losses. (See Chart 8.)



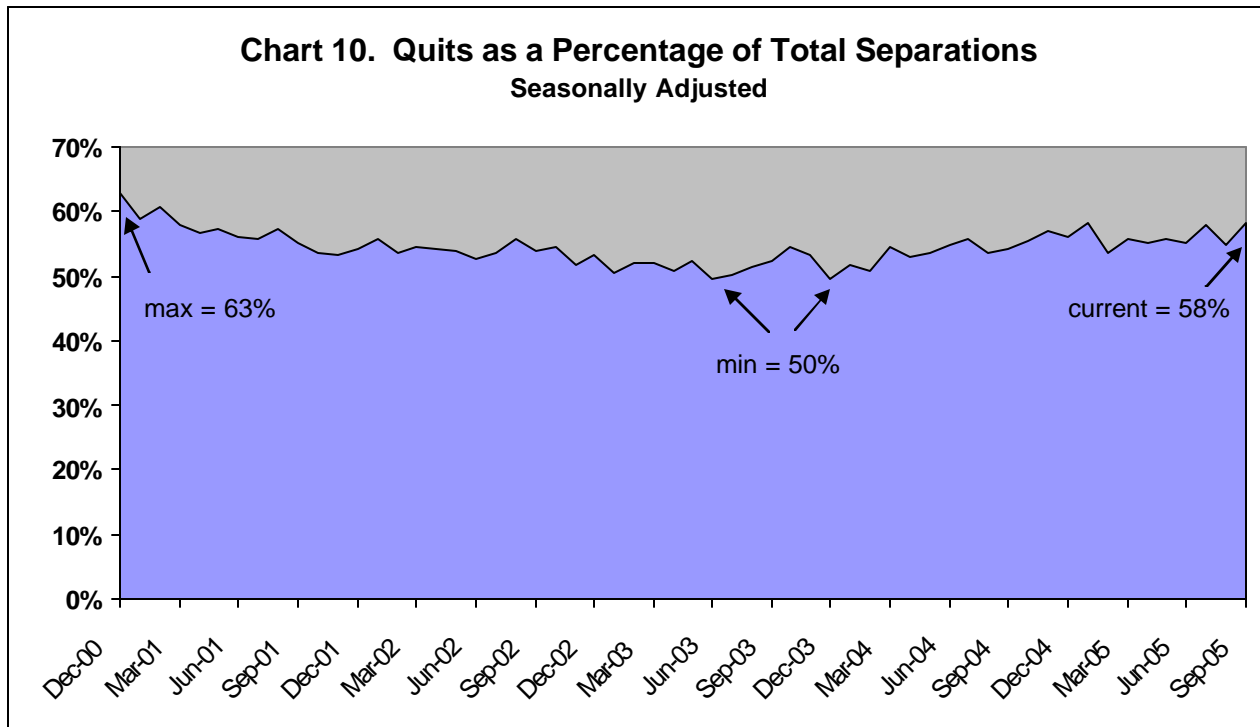
Quits and the Consumer Confidence Index

Quits are thought to indicate workers' ability to change jobs. That is, if workers feel safe in the job market, they feel free to quit their current job to take a different job. Whereas people are both employees and consumers, the quits series is expected to trend well with the Consumer Confidence Index (CCI), produced by the Conference Board. As expected, the quits rate decreases throughout the recession, and rises post-recession. The CCI shows likewise. The two series trend very similarly with a significant positive correlation of 0.73. (See Chart 9.)



Quits as a Percentage of Total Separations

If the theory of quits serving as a barometer of workers' ability to change jobs is true, then we would expect to see quits account for a higher percentage of total separations in better economic periods. This does in fact show up in the JOLTS data. Pre-recession, quits accounted for 63 percent of separations in December 2000. That percentage decreased to a low of 50 percent in several months in 2003, then trended upward again, reaching 58 percent in September 2005. (See Chart 10.)

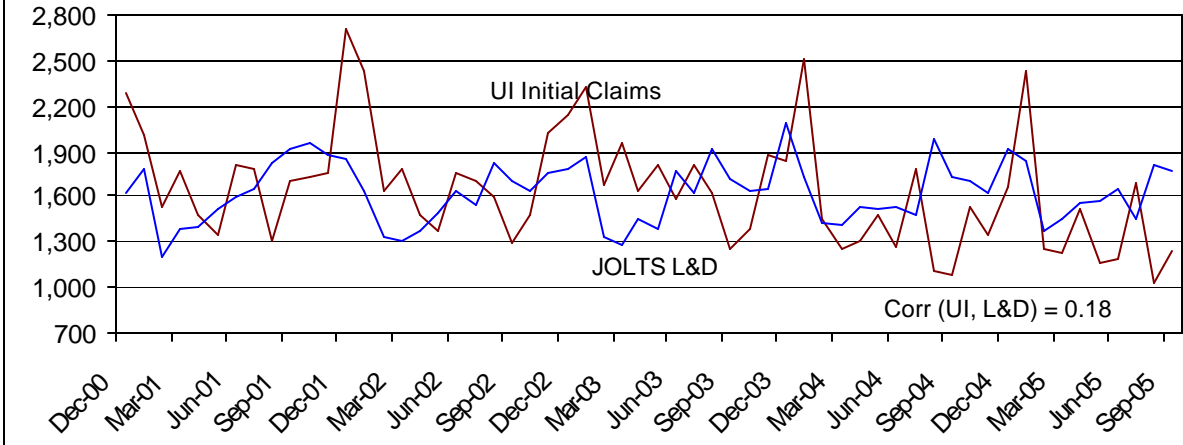


Layoffs and Discharges and Unemployment Insurance Claims

The Employment and Training Administration publishes the number of people filing new claims for unemployment insurance (UI) benefits. Although UI numbers are tabulated by week, the weekly figures can be combined to form monthly numbers and compared to JOLTS layoffs and discharges (L&D) estimates. Not all employees who are laid off are eligible for unemployment benefits, and not all eligible people will file for benefits. Therefore, we expect the JOLTS layoffs and discharges to measure higher than the initial claims figures for UI. Also, because there are often required waiting periods before laid off employees may file for benefits, there is expected to be a lag in the peaks of the two series. Overall, though, we expect the two series to show similar seasonal movements and long-term trends. (Recall that even though layoffs and discharges exhibits seasonal patterns, those patterns are not consistent enough in the short JOLTS series to allow for seasonal adjustment of the data element.)

As can be seen on Chart 11, both series do exhibit strong seasonal variation with UI claims peaking twice a year around January and July, and JOLTS layoffs and discharges also peaking twice a year but around December and August. The correlation between the two series is not as strong as theoretically expected, at a positive 0.18. Some of the differences in movement may be related to the difference in measurement windows. The UI data are tallied by calendar week, which may overlap months, while the JOLTS reference period is the full month, which may end mid-week.

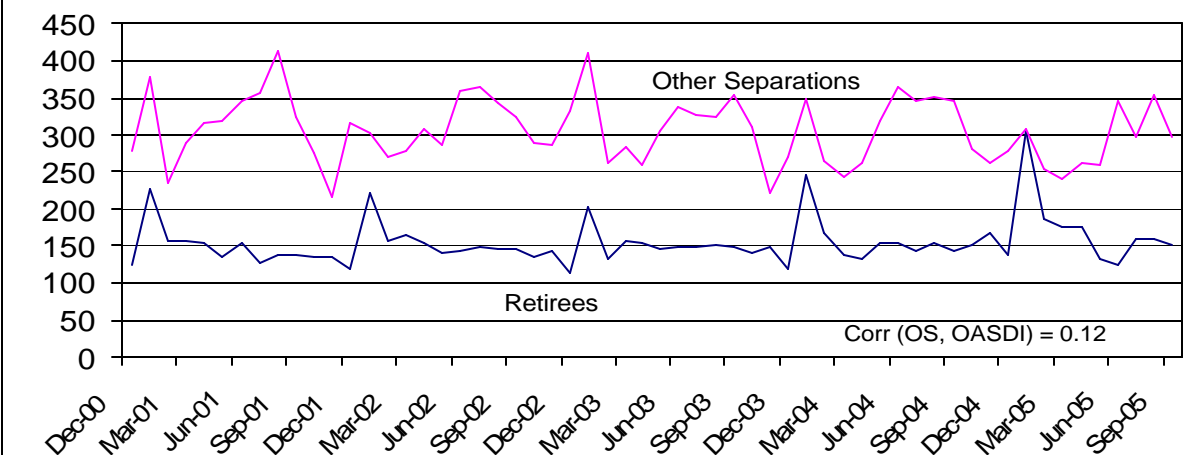
**Chart 11. Layoffs & Discharges (L&D) and UI Initial Claims
Unadjusted**



Other Separations and New Retirees

The other separations category in JOLTS measures deaths, retirements, and other types of separations (such as disabilities) that account for a much smaller portion of turnover than quits and layoffs. A logical comparison is between other separations and new retirees collecting Old-Age, Survivors, and Disability Insurance (OASDI) benefits from the Social Security Administration. As can be seen in Chart 12, both series have strong cyclical peaks, with the OASDI series peaking regularly in January every year, and with other separations peaking twice a year in the summer and winter. The double peaking in the JOLTS series may be due to separations other than retirements that are included in the other separations category. BLS intends to conduct a micro-data review to learn more about this summer peak. With the different peaking patterns between the series, the correlation is only mild at a positive 0.12. (Recall that even though other separations exhibits seasonal patterns, those patterns are not consistent enough in the short JOLTS series to allow for seasonal adjustment of the data element.) With regards to level, other separations are higher than the OASDI benefits due to inclusion of more than just retirements in the JOLTS category.

**Chart 12. Other Separations and Retirees Receiving OASDI Benefits
In thousands, Unadjusted**



Evaluating JOLTS Estimates from the Data User's Viewpoint

The JOLTS program operates an email group and a telephone information line for data users to contact for assistance with JOLTS data. For the most part, JOLTS products fit the need of the data users, but there are always new products to consider. Many of the data requesters want to compare their establishment's turnover rate to the average in their industry, and they are pleased with the series available. Often the users want the turnover data by finer geographic areas such as state or MSA, or by finer industry detail. At the current sample size, these finer breakouts are not possible. Another common request is for annualized turnover data, which is now slated as a JOLTS product for the near future. The last common request is for data by occupation, which is not possible at our current sample size. One product under study is estimates by size class. Size class estimates would be useful in macro-economic research, rather than as a product for individual data users.

Conclusion

The JOLTS data have added an important dimension to available labor market data. As a relatively new program, JOLTS has carefully monitored the data series and compared them to many other established and new data series from both private and public sources. These comparisons indicate that JOLTS data are measuring what they were designed to measure, and are behaving as expected. As longer time series are available, and as seasonal adjustment stabilizes over the next several years, comparisons will indicate if any unexplained differences exist. Further, tracking the series through more business cycles will enable additional analysis of economic theory.

Another part of monitoring the new JOLTS program is evaluating whether the data fit users' needs. So far, indications are that the series have met the goal of providing useful macro-economic analytical tools. Additionally, based on interactions with data users, the data are meeting the needs of the individual data users, although there is always demand for finer breakouts and additional series.

Suggested Reading:

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