The Labor Market in the Current Slump

Robert E. Hall
Hoover Institution and Department of Economics,
Stanford University
National Bureau of Economic Research
rehall@stanford.edu; website: Google "Bob Hall"

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1 Introduction

Persistent high unemployment has raised questions about the performance of the U.S. labor market since the recession began at the end of 2007: How much of the high and persistent unemployment is the result of the increased subsidy to unemployment from the extension of benefits to 99 weeks? Why hasn't the rise job openings since mid-2009 resulted in faster matching of the unemployed to those openings?

I review the evidence on these questions and reach the conclusion that the events in the labor market are generally consistent with earlier experiences, but with greater job loss than in an previous well documented recession.

2 Unemployment

Figure 1 shows the unemployment rate since the beginning of 1980. Although the peak of unemployment in 2009 was slightly below its peak in 1982, unemployment has not declined as rapidly as in the earlier severe episode and forecasts have unemployment remaining high for many years in the future.

One of the forces tending toward higher unemployment is the increase in unemployment benefits, with the potential to last for almost two years past job loss, well beyond the duration of extensions in earlier recessions. Figure 2 shows an estimate of the effective replacement rate for benefits in the past decade. It is the ratio of total benefits as reported in the

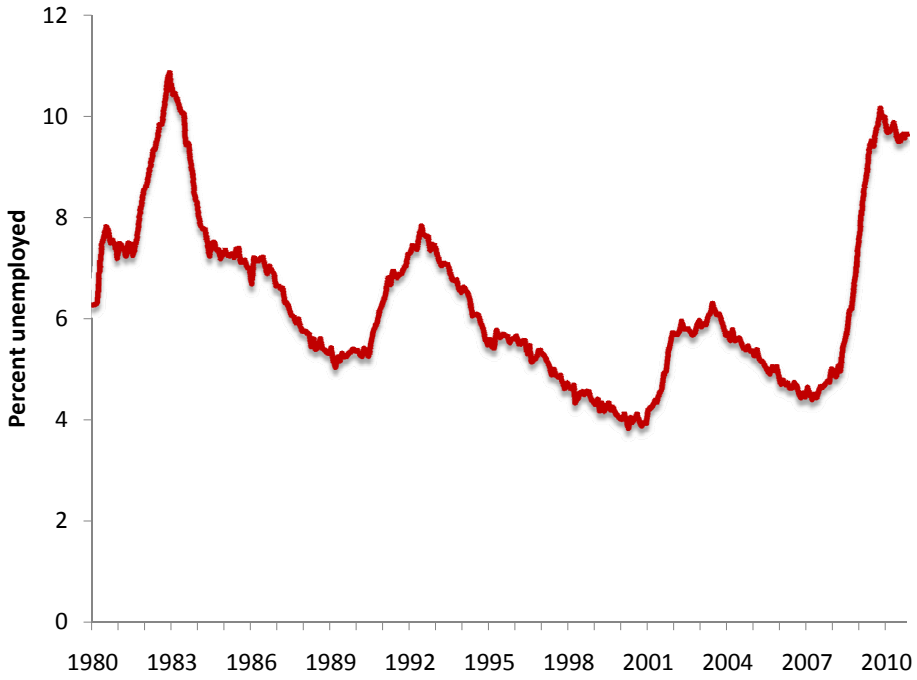

Figure 1: Unemployment Rate

National Income and Product Accounts, Table 3.12, to the median weekly earnings for full-time workers from the Current Population Survey, multiplied by 52. The UI replacement ratio is somewhat higher than in the previous recession, but by an amount that is surprisingly small given how much higher unemployment has risen in this one. Further, the level of the ratio, less than 25 percent of median earnings, does not seem high enough to have a large effect. Still, UI benefits are a subsidy to unemployment and it seems likely that the general principle holds that a subsidy induces more of the subsidized behavior.

3 Labor Force

Figure 3 shows the labor force stated as an index and with a linear trend removed. The labor force expands and contracts along with the economy. Only a small contraction occurred in the severe recession of 1981 and 1982, whereas a vastly greater contraction—about 3 percent from peak to trough—occurred in the recession of 2007 through 2009. Nonetheless, a fairly simple dynamic relation between the labor force and employment describes their joint movements (because unemployment is the difference, one could think equally well of this as a relation between unemployment and employment, or, for that matter, between unemployment and the labor force).

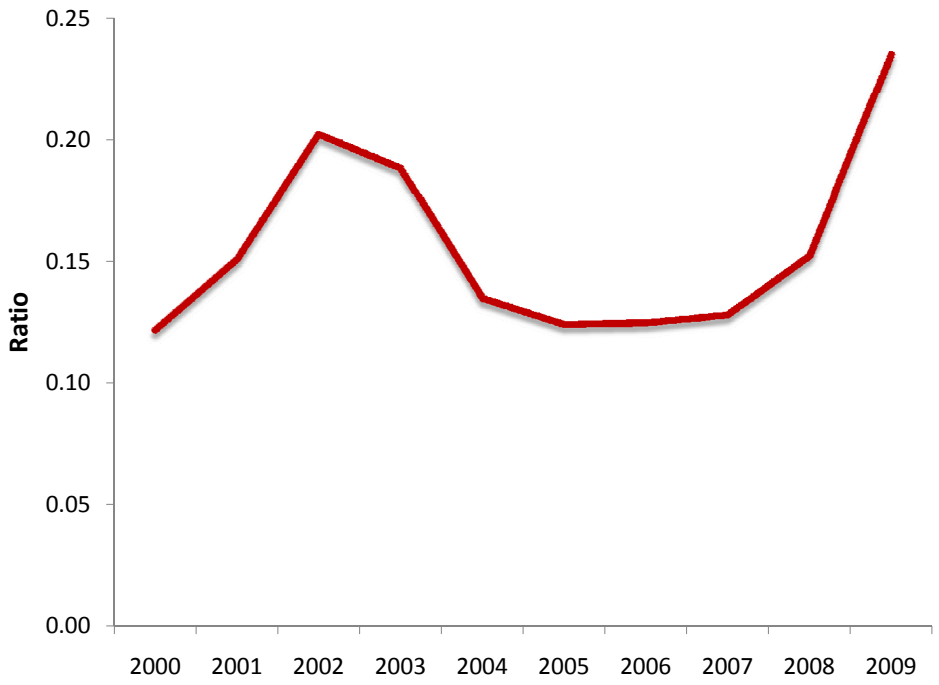

Figure 2: Ratio of UI Benefits to Median Earnings, 2000 to 2009

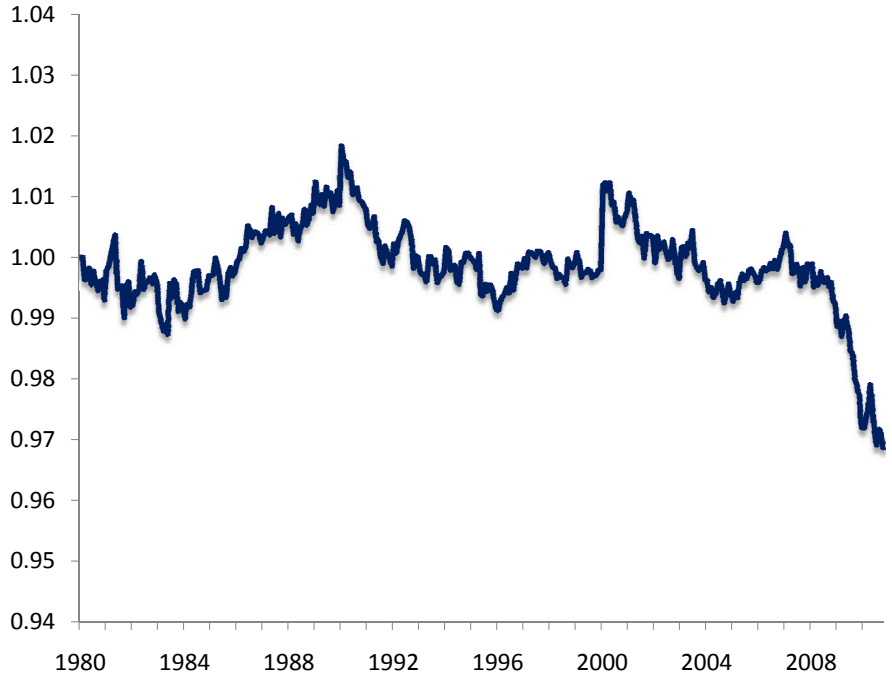

Figure 3: Detrended Index of the Labor Force, 1980 to 2010

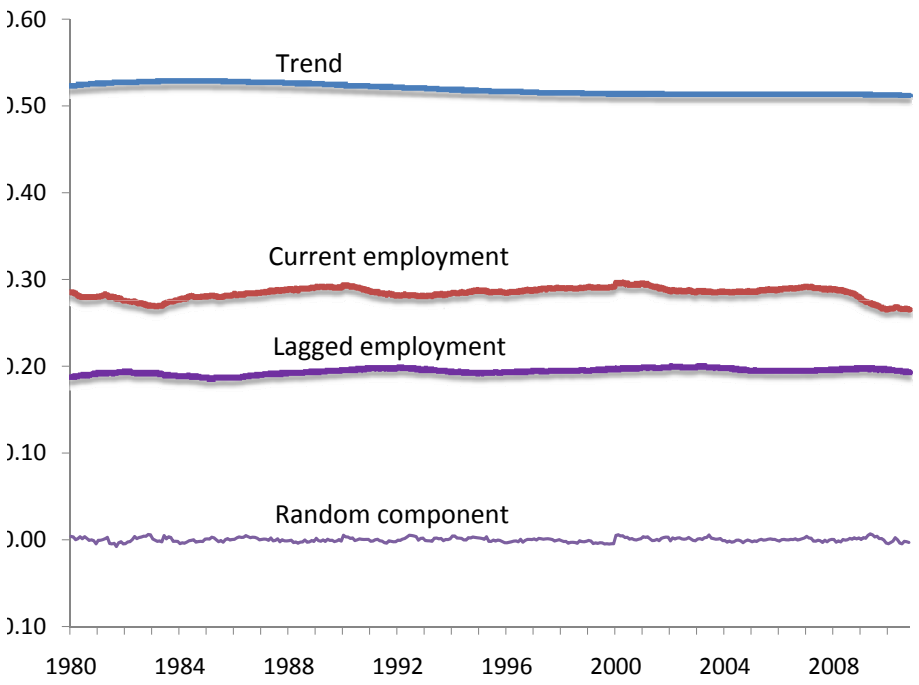

Figure 4: Components of Decomposition of Movements of the Labor Force

The simple relation is expressed in a regression of the labor-force index on current employment, stated as an index by dividing by the same trend function as for the labor force, the employment index lagged 12, 24, and 36 months, a 4th-power polynomial in time, and a constant. The regression covers the period from January 1980 through December 2007, so it omits the potentially puzzling behavior during the current slump. Figure 4 shows the separate contributions of (1) current employment, (2) lagged employment, (3) the deterministic part captured by the polynomial and the constant (which I call the trend), and (4) the random component, the residual in the regression and the forecast error starting in January 2008. Figure 5 compares the sum of all these components except the random one to the actual index of the labor force.

The reasons for the much small plunge of the labor force in 1981 and 1982 compared to 2008 and 2009 are (1) the labor force was trending upward in the earlier slump but is trending normally in the current slump, (2) the decline in employment was substantially greater in the current slump than in the earlier one, (3) the lagged employment effect was adding to the labor force in the earlier slump and reducing it recently, because most of it relates labor-force change positively to employment change two and three years earlier, and employment growth was greater in those years for the 1981-82 experience. Note that the

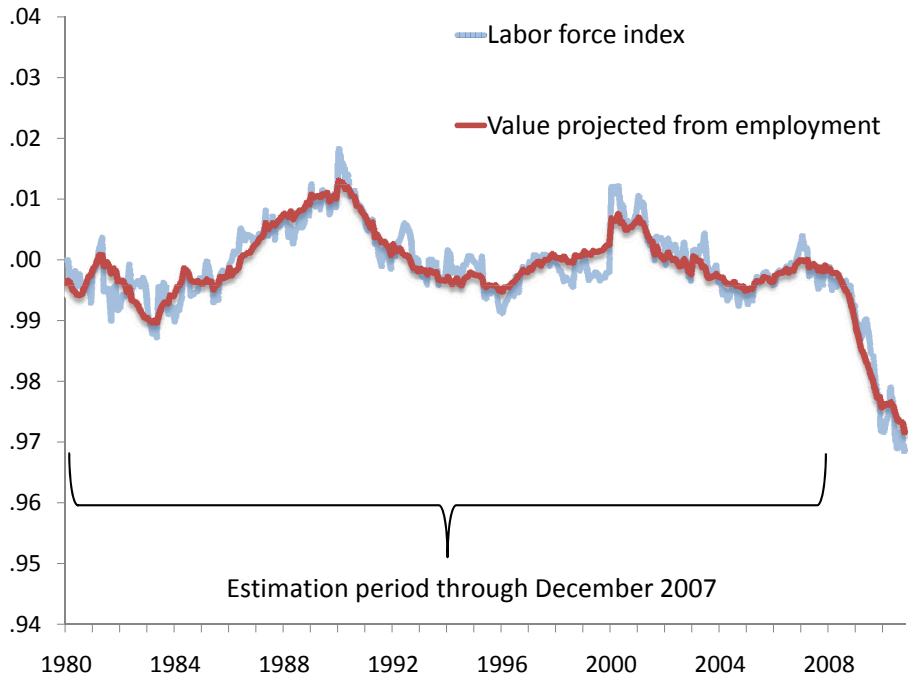

Figure 5: Total of Components of Movements of the Labor Force, except Random Component

contributions of the random component are trivial in both slumps.

I conclude that the joint behavior of the labor force and employment was no different in the current slump than in past experiences, including in particular the previous serious contraction starting in 1981.

Notice that this statement takes no stand on the forces leading to fluctuations in employment and the labor force. Though I am inclined to think that factors outside the labor market caused a reduction in employment and that the decline in the labor force was a normal reaction to that large reduction, the findings are equally relevant within a line of thought where changes in the labor force cause changes in employment. In that view, a large reduction in the labor force resulted in an even larger decline in employment and a corresponding increase in unemployment. The finding that there was no disturbance to the normal joint behavior of the labor force and employment automatically implies that there was no disturbance to the joint behavior of unemployment and employment. Hence the finding casts doubt on the view that the increased generosity of unemployment benefits had an unusual effect in this slump compared to earlier ones (when extensions occurred but were not as generous). It also casts doubt on other views about special factors in this slump. A leading view of that type is that mayhem in the housing market reduced geographic mobility

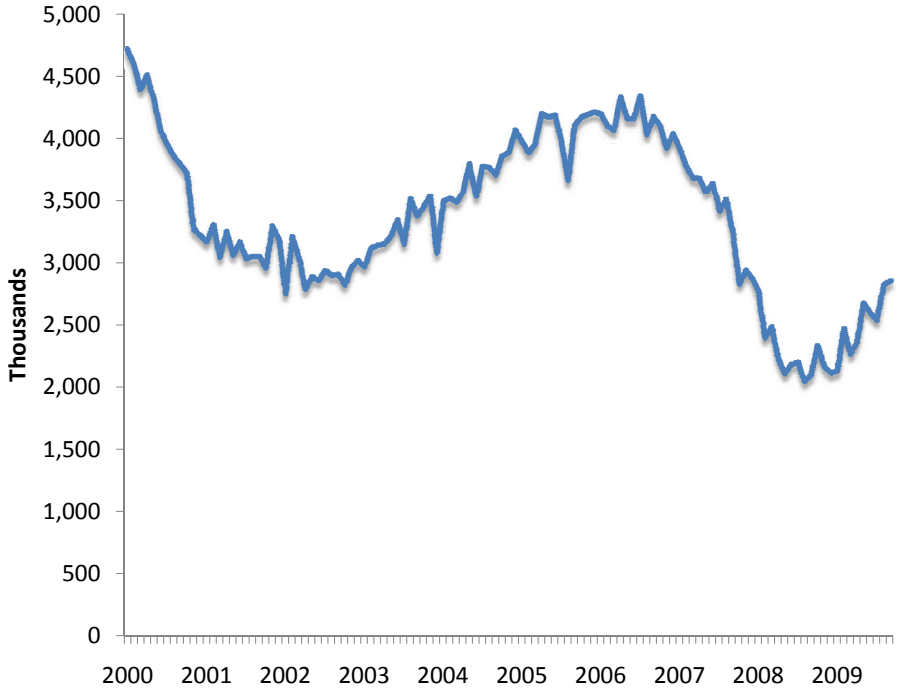

Figure 6: Number of Job Openings, 2000 to 2010

that might otherwise have helped limit unemployment.

4 Job Openings and the Matching Process

Figure 6 shows the number of job openings as measured in JOLTS, the Job Openings and Labor Turnover Survey. Openings are highly cyclical. In a slack labor market, jobs fill much faster, so the total number of openings is low because only those recently posted remain unfilled. Openings reached a trough in July 2009 and have risen smartly since then, while employment continued to decline until December 2009 and unemployment is only slightly below its peak. Some observers have wondered what factors accounted for the difference in the behavior of openings and unemployment and even speculated that openings might be a better measure of the state of the labor market in the current slump because some factor—again, generous UI benefits—was raising unemployment artificially.

Pissarides (1987) introduced the matching function to unemployment theory. It provides a natural framework for measuring matching efficiency. The flow of job matches or hires H is a function of the number of searching workers U and the number of job openings or vacancies, V. A large body of empirical research surveyed in Petrongolo and Pissarides

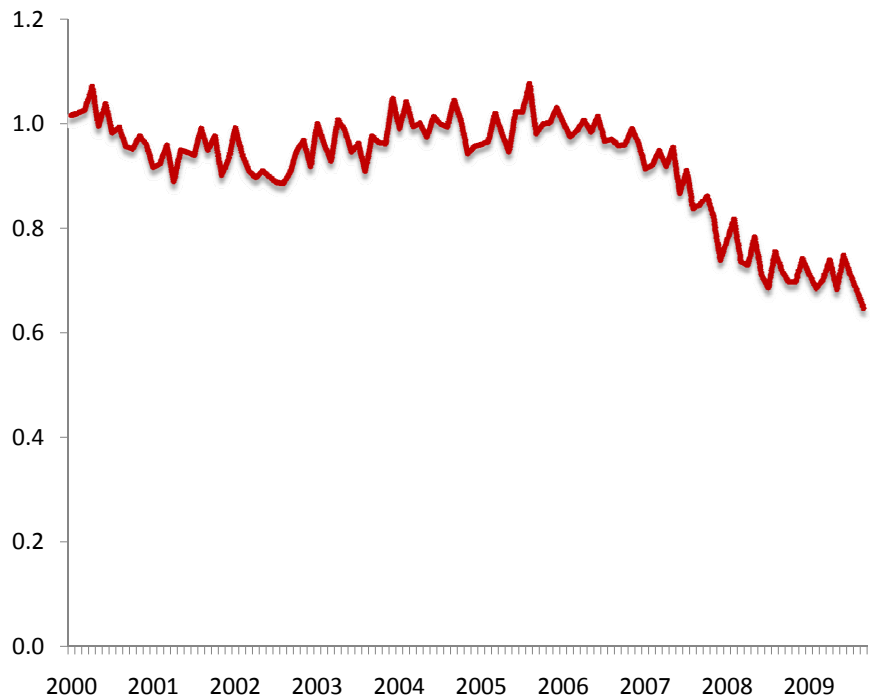

Figure 7: Efficiency of Matching Job-Seekers to Jobs

(2001) suggests that

$$H_t = \phi_t \sqrt{U_t V_t} \tag{1}$$

is a good representation of the matching function. Here ϕ_t is the efficiency of matching. Figure 7 shows the efficiency calculated as

$$\phi_t = \frac{H_t}{\sqrt{U_t V_t}} \tag{2}$$

from JOLTS data on hires H_t and openings V_t along with the household survey data on the number of unemployed workers U_t.

Matching efficiency is pro-cyclical. It fell in the slump that started in early 2001, rose during the mid-decade boom, then fell sharply in the severe recession. Just as it lagged behind the recovery in 2002, it has not yet turned up, despite modest job growth and noticeable growth in job openings.

The Beveridge curve is a convenient way to look at the joint behavior of unemployment and job openings. Figure 8 plots the unemployment rate on the horizontal axis and the ratio of JOLTS job openings to the labor force on the vertical axis (this is not exactly the rate published in JOLTS, which is the ratio of openings to employment). The blue diamonds are for the months December 2000 through July 2009, when the curve was reasonably stable.

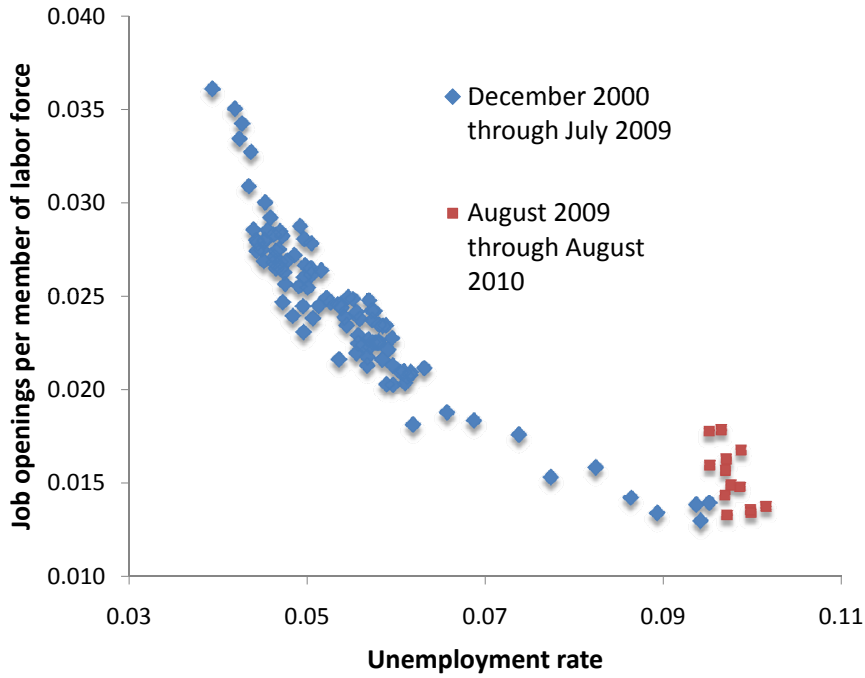

Figure 8: The Beveridge Curve, 2000 through 2010

The last 13 months showed a distinct upward shift, corresponding to the drop in matching efficiency. Job openings increased substantially but the usual decline in unemployment did not occur. Many commentators have pointed to this development as another indication that unemployment was above its expected level.

The Beveridge curve summarizes changes in the labor market's equilibrium over the business cycle. No principle underlying that equilibrium guarantees the stability of the curve—quite the contrary, there is a large literature on loops in the curve over the cycle. The matching function helps explain the issues in shifts of the Beveridge curve. By dividing both sides of the matching function in equation (1) by the labor force L_t and rearranging, one gets

$$\frac{U_t}{L_t} = \left(\frac{H_t/L_t}{\phi_t}\right)^2 \frac{L_t}{V_t} \tag{3}$$

or

$$u_t = \left(\frac{h_t}{\phi_t}\right)^2 \frac{1}{v_t}, \tag{4}$$

where lower-case letters denote ratios to the labor force. The bottom line is that unemployment will be proportional to the reciprocal of the job openings rate if the ratio of the hiring rate to match efficiency, h_t/ϕ_t, is constant. Another way to express this proposition is that the Beveridge curve will be a hyperbola if that ratio is constant. An increase in the hiring

rate h_t or a decrease in matching efficiency ϕ_t will shift the Beveridge curve outward. The reason for the stability of the Beveridge curve prior to August 2009 was that the hiring rate and matching efficiency tended to move together quite closely.

The traditional view of the Beveridge curve is that the labor market makes counterclockwise loops in the (u, v) space. The rationalization for this view is that matching efficiency is roughly constant, but the hiring rate h_t is low during a contraction, as employment falls, and then is high in the recovery, as employment rises. The result is that the factor $\left(\frac{h_t}{\phi_t}\right)^2$ is low in the contraction phase and high in the expansion phase, resulting in the clockwise loops. In the U.S., which has had economy-wide official data on job openings only since the beginning of the 2001 recession, the loops have not previously been apparent. Hiring was only slightly pro-cyclical—constancy of turnover was not a bad approximation—and what variations in hiring that did occur were offset by comparable variations in matching efficiency.

The sharp decline in matching efficiency that accompanied the recession that began at the end of 2007 was not the only cause of the outward shift of the Beveridge curve. An outward loop would have occurred on account of the severity of the recession even with normal behavior of matching efficiency. To illustrate this point, I consider a counterfactual scenario for the labor market in the recession with the following features: (1) the hiring rate would have been the same as actually occurred but (2) matching efficiency would be the equally weighted average of its actual value and its value in April 2008, just before the decline in matching efficiency began. In this scenario, the decline in efficiency is about double the decline that occurred in the aftermath of the 2001 recession, which strikes me as a reasonable criterion for normal behavior in the labor market.

Figure 9 shows the counterfactual Beveridge curve in the same format as Figure 8. A prominent loop is apparent. Procyclical variations in the hiring rate were a significant factor in the behavior of the labor market. From this finding, I conclude that the adverse shift of the Beveridge curve is in part a normal response of the labor market and not entirely the result of some special force tending toward higher unemployment.

5 Sources of the Decline in Matching Efficiency

The fact remains, of course, that unemployment is much higher than it would have been absent the dramatic decline in matching efficiency. Research on the severity of unemployment should concentrate on this important fact.

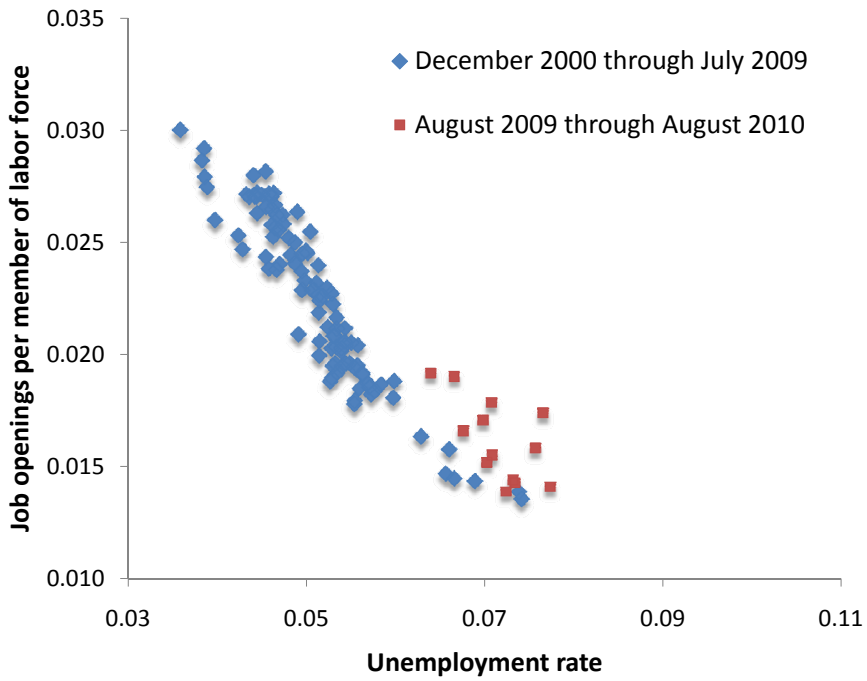

Figure 9: Counterfactual Beveridge Curve with Normal Behavior of Matching Efficiency

Here I will discuss one factor that points in the direction of lower efficiency during slumps, based on the lower rate of turnover that results from the low level of quits when jobs are hard to find. The basic idea is that it is easy for employers to recruit replacements for quitting workers—they tend to have short tenure and low and generic skills. Though such workers are a small fraction of employment, they are a much higher fraction of hiring and separation flows.

Figure 10 shows two measures of labor turnover on the hiring side each calendar quarter. The top line shows data from JOLTS, which asks employers how many workers were hired each month. I have added together data for the three months of each quarter. JOLTS understates hires because it does not consider newly opened establishments. The lower line shows a different measure from the Business Employment Dynamics data, also compiled by the Bureau of Labor Statistics. The BED uses administrative data covering essentially all businesses. The series—often called *job creation*—measures increases in all units that had gains in employment. This measure understates actual hiring because some units hire workers in the same quarter that they lay others off. Davis, Faberman and Haltiwanger (2010) shows how this overlap occurs. Their Figure 6 reports the rates of hiring among shrinking firms and the rates of separations among expanding ones. They are in the process

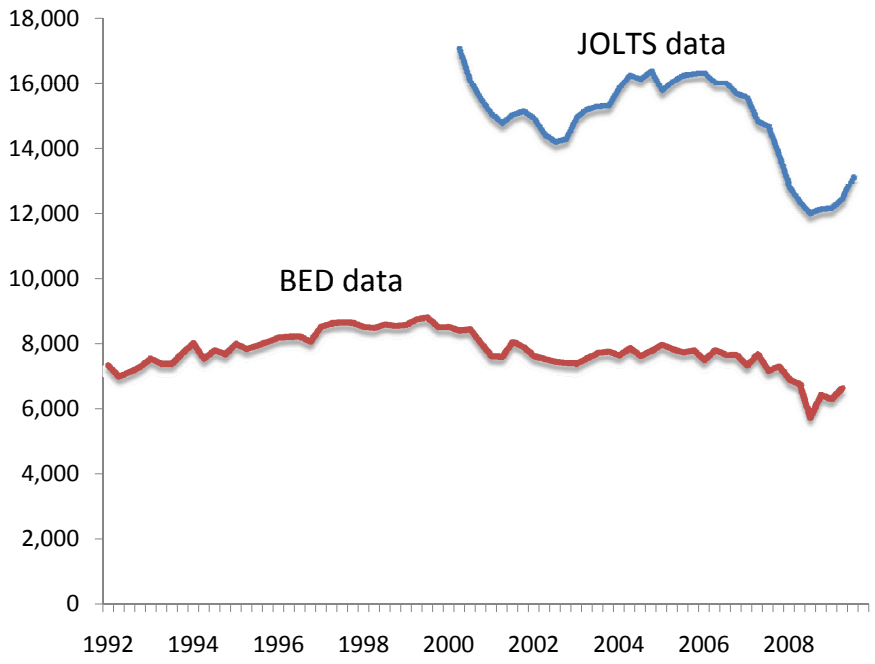

Figure 10: Two Measures of Numbers of New Hires per Quarter

of preparing estimates of hiring and other flows from the gross employment changes in BED.

Hiring rates in JOLTS are about twice as high as job-creation rates in BED and are also more variable. My understanding is that Davis et al.'s research is able to reconcile both of these dimensions of the behavior of the two bodies of data. In times when jobs are easy to find, quits are more frequent but layoffs are at normal levels, so turnover is higher. Thus the ratio of the JOLTS hiring rate to the BED job-creation rate is a measure of turnover. Figure 11 shows the high correlation between the flow of hires and quits in JOLTS.

In strong labor markets, employers need to replace high-turnover quitting workers in disproportionate numbers. Because workers who have quit at other firms are widely available, the matching process is easy and efficient. On the other hand, when jobs are harder to find, quit-related turnover is much lower and the recruiting process is focused more on creating long-term matches. The process is more time-consuming and appears to be less efficient, though in fact it is solving a harder problem.

The decline in match efficiency is closely related to the upward shift in job openings relative to the number of unemployed workers. My interpretation emphasizes that a lower fraction of high-turnover job filling will lower measured efficiency. Others believe that the higher fraction of job-seekers who have been out of work for a year or more reduces matching

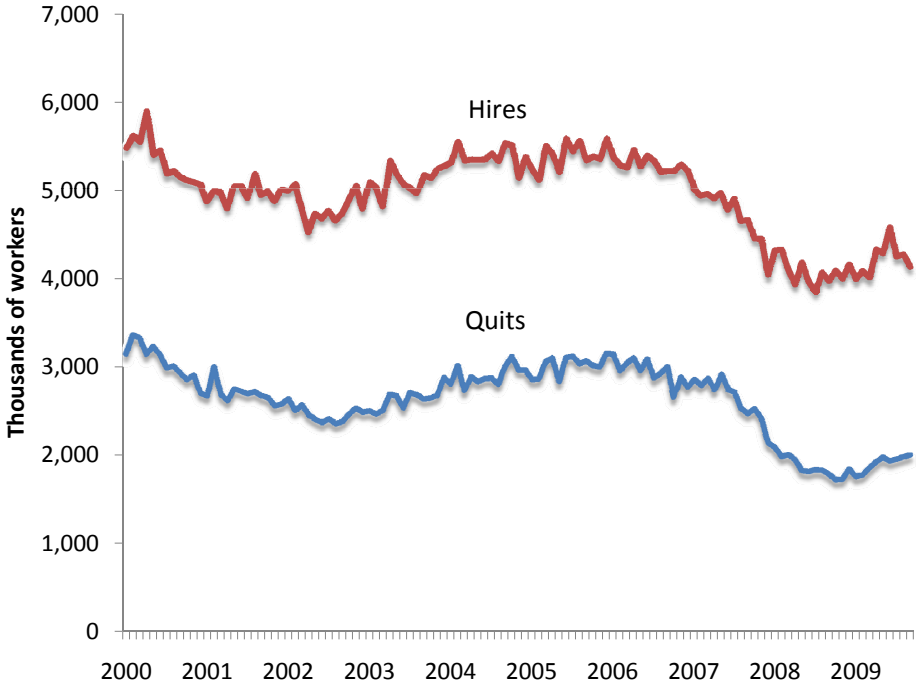

Figure 11: Numbers of Workers Hired and Numbers of Quits, JOLTS

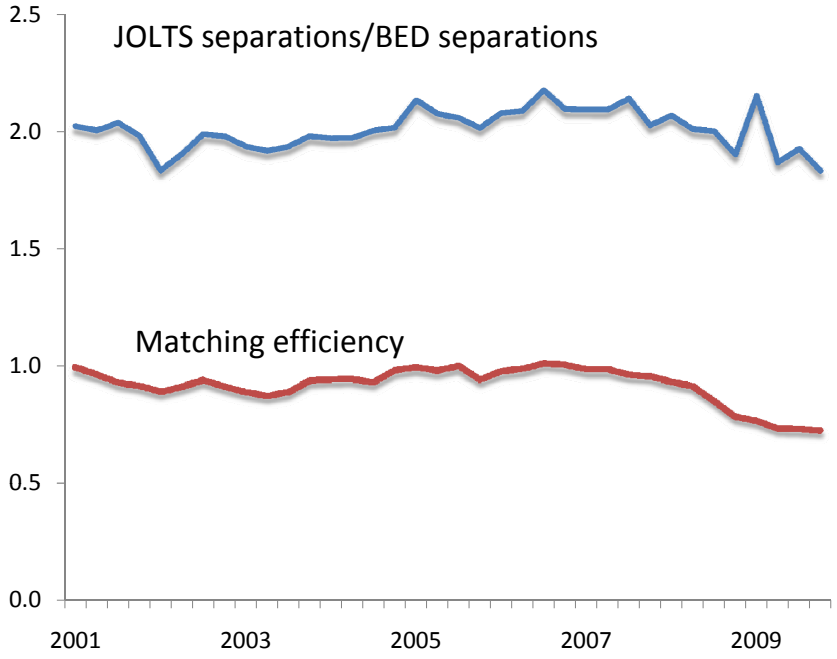

Figure 12: Ratio of JOLTS Hiring Rate and BED Job-Creation Rate together with Matching Efficiency

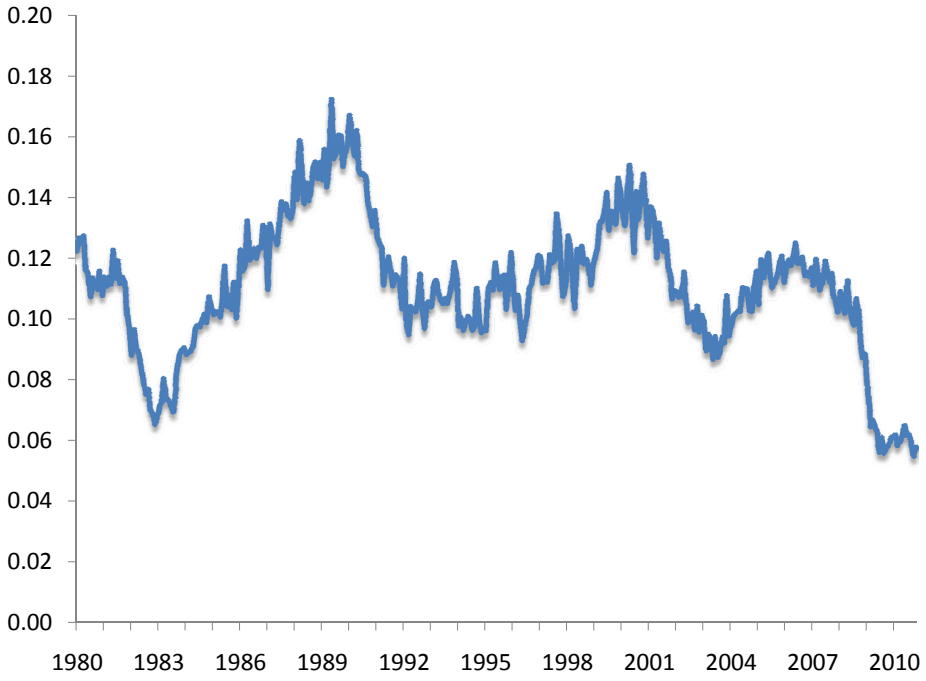

Figure 13: Fraction of Unemployed Who Quit Previous Jobs

efficiency because of deteriorating job skills.

Figure 13 shows the fraction of the unemployed who have quit jobs and confirms the sharp decline of the fraction during slumps.

References

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