How Do Businesses Recruit?*

BY R. JASON FABERMAN

Most economic theories of hiring and job seeking assume that businesses post vacancies when they demand more labor. Workers then apply for the job, and the most qualified candidate is hired. However, as those who have ever recruited or applied for a job know, the recruiting process is considerably more complex. In this article, Jason Faberman discusses some recent research on how employers recruit. It shows that the extent to which a business uses various recruiting channels depends on the characteristics of the employer, how fast the employer is growing (or contracting), and the overall state of the economy.

One question that has been on the minds of workers and policymakers alike over the past year is: when will a strong pickup in hiring take hold? The hiring of workers by businesses is a key component of the labor market. It is a common occurrence in both recessions and booms, and most individuals have been on one or both sides of the hiring process. In fact, according to the Bureau of Labor Statistics (BLS), nearly 5 million people, on average, are hired each month. Even at its lowest point during the last recession, total hiring in the U.S. totaled 3.9 million workers per month. Given how often hiring occurs, much of the economic evidence in this article will likely sound familiar to most readers. Nevertheless, the complexities and informalities associated with the hiring process have made it a difficult concept for economists to fully formalize in a theoretical framework, and consequently, these same elements have made it difficult to predict how aggregate hiring will behave over time.

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*The views expressed here are those of the author and do not necessarily represent the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

Most economic theories of hiring and job seeking assume that businesses post vacancies when they demand more labor. Workers then apply for the job, and the most qualified candidate is hired. As those who have ever recruited or applied for a job know, however, the recruiting process is considerably more complex. First, it takes time for businesses to find a suitable candidate and for workers to find acceptable employment. Economic theories characterizing these "search frictions" have become commonplace in economic research. In addition, businesses have multiple options for increasing their chances of hiring a qualified employee, for example, engaging in informal networking, increasing their recruiting efforts, or offering relatively generous pay or benefits. These channels make the recruiting process more complex, and economic theories on how businesses recruit have yet to fully capture these complexities.

In this article, I present some recent research that documents that the extent to which a business uses these other recruiting channels depends on its characteristics, such as its industry and the type of job it is recruiting for. It also depends on how fast the business is growing (or contracting). Last, it depends on the state of the economy. Recessions are periods when individuals find it hard to find work, and consequently, they are also times when businesses find it relatively easy to fill open positions.

ECONOMIC THEORIES OF HIRING AND RECRUITING

There are many economic models

of recruiting and hiring.[1] These models are generally based on theories of labor market search and matching that were recently recognized in the awarding of the 2010 Nobel Prize in economics. The models evaluate how workers find new jobs and how firms find new workers, given that there are frictions in matching the two. That is, it takes time for workers to figure out what jobs are available, and it takes time for employers to evaluate candidates for jobs. These frictions cause unemployed workers and vacant jobs to exist in the labor market simultaneously. Over the years, such models have proven valuable in evaluating the behavior of hiring, wages, and unemployment, most often over the business cycle, and in evaluating various labor market policies, such as employment protection and unemployment insurance benefits.

Central to many of these models is the notion of a vacancy or, more generally, that the frictions involved in matching workers to firms make recruiting a worker costly. Consequently, firms must weigh the expected cost of hiring a new worker, which consists of not only the wage they must pay but also the time and resources they must devote to the search process, against the expected benefit, which is generally how productive a firm expects its new hire to be.

Starting from this basic premise, different theories of labor market search and matching diverge widely in how the recruiting process occurs. For example, some theories implicitly model a link between wages and recruiting behavior. These models of "directed search," such as the one presented by Espen Moen, postulate that workers observe the wages offered by firms before they decide where to apply. The implication from these models is that firms can reduce the time it takes to find a worker by offering a wage higher than what their competitors offer (and thereby increase their number of applicants). Similarly, in his book, Christopher Pissarides presents a model in which firms vary in how much effort they put into recruiting rather than the wages they offer in trying to fill their vacancies.

In another example, Boyan Jovanovic addresses the uncertainty often associated with the hiring process by constructing a model in which workers are hired by (matched with) firms and both must learn about the match's "quality" over time. That is, they both learn whether or not each is happy with the employment relationship. This type of model implies that recruiting efforts are just one cost in a longer process to figure out whether a worker is a good fit with that firm.

There are also theories that ignore the search and matching aspect of recruiting and focus instead on its other complexities. For example, Michael Rothschild and Joseph Stiglitz present a model in which firms design contracts to screen their applicants to improve their chances of finding a suitable match.[2] James Montgomery develops a model in which the social networks of the existing workforce provide an alternative recruiting channel for firms.

Together, these lines of research underscore the need to understand exactly how firms recruit in the real world. The different types of models provide for very different characterizations of how firms hire workers and thus provide differing views on which channels are most important for recruiting, on how much recruiting differences affect the behavior of the labor market, and on what policies may best spur hiring. Only empirical evidence on employers' recruiting practices can shed light on which aspects of these models best describe what happens in the real world. In the remainder of this article, I summarize the existing evidence on these recruiting practices. A central theme that stands out is that no one theory captures what goes on in the data. This is partly because the different types of recruiting practices that firms use often depend on the characteristics of the position they are trying to fill. It is also because certain practices, such as informal recruiting methods, are not well captured at all by the existing theories.

It takes time for workers to figure out what jobs are available, and it takes time for employers to evaluate candidates for jobs. These frictions cause unemployed workers and vacant jobs to exist in the labor market simultaneously.

[1] Seminal work on this topic includes the 1985 study by Christopher Pissarides and the 1994 work by Dale Mortensen and Pissarides. Their work spawned a large literature on the issue, much of which is summarized in the survey piece by Richard Rogerson, Robert Shimer, and Randall Wright. Mortensen and Pissarides, along with Peter Diamond, shared the 2010 Nobel Prize in economics.

[2] The Rothschild-Stiglitz model is explicitly about contracts in insurance markets, but it has been extended to an understanding of labor markets.

EMPIRICAL ECONOMIC RESEARCH ON RECRUITING

Perhaps surprisingly, economic research on how firms recruit is relatively thin. This contrasts with the amount of research that exists on how individuals (both employed and unemployed) find new work (i.e., the labor supply counterpart to recruiting).[3] A major reason for this is a severe lack of data on recruiting. There are few surveys that capture the data needed for a complete study of recruiting behavior, and these surveys usually have relatively few observations and are often outdated.

Another major reason for the paucity of research on recruiting is that informal recruiting has proven to be an important channel. This point has been stressed in research dating back to work in 1966 by Albert Rees. Formal recruiting methods generally refer to explicit efforts by a business to find and hire a worker. These methods include posting a help wanted sign in the window or an ad in the newspaper or on the Internet, posting an opening at a job center (a common practice in European labor markets), and posting a vacancy announcement with an employment agency. While data on these recruiting methods are sparse, the methods themselves employ tangible measures of recruiting that an economist could study. Informal recruiting methods refer to hires made through channels such as referrals from acquaintances or existing employees, informal contacts made through networking, and the hiring of walk-in applicants who inquired about work without the existence of a formal job opening. Given their informal nature, these practices prove difficult to accurately measure even when surveys on recruiting explicitly try to account for them. Other actions related to recruiting have also proven difficult to accurately measure. These include the number of applicants and interviews for a particular position and the efforts a business undertook to hire someone.

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Nevertheless, research by Rees and more recent work by Jed DeVaro provide some useful insights on how firms recruit. For example, Rees finds that informal recruiting is an important part of hiring, primarily because it allows businesses to gather more information about a potential hire in a less costly way than more formal methods. Using a survey of employers in the Chicago area, Rees is able to document a variety of informal channels that firms use, such as relaxed hiring standards, and finds that the benefits these channels afford often made them preferable to the more formal methods provided by placement agencies that specialized in recruiting workers. DeVaro shows that the type of recruiting method used is closely related to the starting wage of the position. He finds that informal recruitment methods (such as referrals) have longer vacancy durations but lead to higher wage hires. The findings of both researchers underscore the importance of recruiting channels outside of the standard method of posting a vacancy.

EXISTING EVIDENCE ON VACANCIES AND HIRING

Other research has also shed light on how firms recruit. The existing evidence can be grouped into three categories: recruiting based on the characteristics of the business and the job, recruiting based on how much a business is growing (or contracting), and recruiting behavior over the business cycle.

Recruiting Behavior Varies with Business Characteristics. From an economist's point of view, one of the most important metrics for analyzing recruiting is the cost of recruiting, in terms of time, money, and resources. A big part of this cost is how long it takes to fill a vacant position. An open vacancy represents an unfilled job, meaning that a business has profitable work to be done, but there is no one currently doing it. Thus, one aspect of the cost of a vacancy that remains open is the opportunity cost of the unfilled position. A vacancy also signifies that there is some form of active recruiting undertaken by firms. This implies that the firm is devoting resources — in terms of the time and effort of its existing workers, as well as potential direct costs, such as advertising expenses — to recruiting a new worker. These costs and their effects on the recruiting behavior of individual firms can vary widely by the firm's industry and the characteristics of both the job and the firm.

[3] For example, see the 1999 review article by Henry Farber and the studies by Robert Hall, Shigeru Fujita and Gary Ramey, and Michael Elsby, Ryan Michaels, and Gary Solon, to name a few.

In my research with Steven Davis and John Haltiwanger, we show that one useful metric of how successful firms are in recruiting workers is the *vacancy yield*. The vacancy yield is the number of hires per vacancy posted (i.e., the success, in terms of a hire, of an employer's recruiting efforts). It is a simplified measure of the job-filling rate, which is the speed at which employers fill their vacancies.[4] When analyzed alongside the rates of hiring and vacancy posting, the vacancy yield can provide a more complete picture of the recruiting behavior of firms.

Table 1 shows how the number of hires as a percent of employment (the hiring rate), the number of vacancies as a percent of total jobs (employment plus vacancies), and vacancy yields vary across industries and across the major U.S. regions. The data come from published statistics from the BLS's Job Openings and Labor Turnover Survey (JOLTS).

On average, the hiring rate is 3.8 percent of nonfarm employment and the vacancy rate is 2.9 percent of total jobs (employment plus vacancies, i.e., filled plus unfilled jobs). The vacancy yield averages 1.3 hires over the month per vacancy open at the beginning of the month. In theory, the vacancy yield would take a value between zero and one. In practice, however, the yield can be greater than one, as is the case in Table 1. This is because data on hiring are often measured as a total amount over a period, while vacancies are usually measured as a stock at a specific point in time, in this case, at the beginning of the month. Consequently, the vacancy yield will capture the hires from vacancies that

[4] The main difference between the vacancy yield and the job-filling rate is that the latter accounts for the fact that some vacancies can be both posted and filled within a period, and therefore not show up in the data that are used to calculate the vacancy yield.

TABLE 1

Summary Statistics on Hiring and Vacancies

Category	Hiring Rate	Vacancy Rate	Vacancy Yield	Employment Growth Rate
Total Nonfarm	*3.8*	*2.9*	*1.32*	*-0.02*
Total Private	*4.2*	*3.0*	*1.41*	*-0.04*
Selected Industries				
Construction	6.0	1.9	3.24	-0.17
Manufacturing	2.5	1.9	1.35	-0.38
Retail Trade	4.8	2.5	1.93	-0.07
Transportation & Utilities	3.2	2.2	1.45	-0.07
Information	2.7	3.2	0.83	-0.30
Finance & Insurance	2.5	3.3	0.74	-0.01
Real Estate	4.0	2.5	1.55	-0.02
Professional & Business Services	5.4	3.8	1.41	-0.01
Education	2.5	2.0	1.24	0.21
Health Services	3.0	4.1	0.73	0.21
Leisure & Hospitality	6.8	3.6	1.88	0.08
Government	1.6	1.9	0.83	0.06
Region				
Midwest	3.7	2.5	1.44	-0.08
Northeast	3.3	2.7	1.23	0.02
South	4.0	2.9	1.34	0.01
West	3.9	2.9	1.34	-0.06

Source: Author's calculations from published JOLTS statistics from January 2001-May 2010. Hiring rates are percentages of employment. Vacancy rates are percentages of employment plus vacancies (i.e., total jobs). The vacancy yield is the number of hires during the month per vacancy open at the beginning of the month. The employment growth rate is the difference between total hires and total separations as a percent of employment. It is comparable to the growth rate obtained from calculating the change in payroll employment.

are posted and filled within the period but not from the vacancies that open during the period.[5] In addition, hiring done through informal channels may never use a vacancy, which could also push the average amount of hires per vacancy above one if these channels are prevalent enough. There is a large variation in these rates and in hires per vacancy across industries and across regions. Industries with high worker turnover (and thus high hiring rates), such as construction, retail, and leisure and hospitality, have relatively high vacancy yields. The high vacancy yield, in part, reflects the high turnover in these industries, but it also reflects the fact that many of their hires come from recruiting channels other than posting a formal vacancy. The converse is true for industries such as government, which has both low turnover and a low vacancy yield, the latter partly reflecting the fact that government agencies tend to have more formal recruiting practices than the private sector. The differences across regions generally reflect differences in the mix of jobs across areas, but they also reflect differences in growth, which generally coincides with a greater churning of workers (through greater migration, job-hopping, etc.).

Table 1 also shows that there is considerable variation across regions. The generally faster-growing South and West tend to have higher hiring rates (and, consequently, higher turnover), while the Midwest has the lowest growth but the highest vacancy yield. The Northeast, which tends to have a disproportionate share of industries and occupations that are low turnover and high wage, has both low hiring rates and low vacancy yields.

Research has also found that recruiting efforts and recruiting outcomes tend to be highly related to the starting wage offered. For example, Table 2, which is replicated from research by John Barron, John Bishop, and William Dunkelberg, shows that larger firms tend to pay higher wages, interview more workers, and invest more time in recruiting. This occurs primarily because high-wage jobs tend to require high or specialized skills. Finding workers with such skills often proves difficult. In addition, the opportunity cost of getting a poorly matched worker is relatively higher for these positions.

As some of my research with Guido Menzio shows, high-wage jobs also tend to have longer vacancy durations (Table 3). This is especially true for managerial and professional and technical jobs. Again, the skills required for the job strongly affect how much firms are willing to invest in the search process. Table 3 also shows that a sizable fraction (20 percent) of hiring occurs without any recruiting, as reported by the firms surveyed.[6] This is some of the most striking evidence in support of the informal channels

[5] My research with Davis and Haltiwanger, as well as several other studies (e.g., the study by Kenneth Burdett and Elizabeth Cunningham), finds that vacancy durations are relatively short, with the average vacancy remaining open for about three weeks.

[6] The survey asks how long it took for firms to fill their last vacancy, allowing for the special case where "no recruiting" took place.

TABLE 2

Characteristics of Recruiting by Firm Size, 1980

Name	Starting Wage (2009 $)	Number of People Interviewed	Number of Offers Made	Hours Spent Recruiting, Screening & Interviewing
All Firms	*10.73*	*6.3*	*1.3*	*8.0*
Size of Firm				
1-9 workers	10.10	5.2	1.2	6.2
10-25 workers	10.31	6.3	1.3	7.1
26-250 workers	11.09	7.0	1.4	9.4
251 or more workers	13.00	8.3	1.3	12.7

Source: Author's calculations and replication of estimates from Barron, Bishop, and Dunkelberg. The original estimates come from the 1980 Employment Opportunities Pilot Project.

TABLE 3

Characteristics of Recruiting by Occupation, 1980 and 1982

Name	Starting Wage (2009 $)	Avg. Vacancy Duration (days)	Pct. with No Recruiting	Number of Applications	Number of Interviews
All Hires	*11.42*	*22.0*	*20.1*	*12.6*	*7.0*
Selected Occupations					
Professional & Technical	14.71	37.1	22.0	9.3	8.0
Management	16.12	49.1	29.4	11.0	5.3
Clerical	9.32	17.7	15.1	16.4	8.7
Sales	10.64	29.7	16.9	13.0	7.2
Personal & Other Services	8.08	9.9	18.7	9.6	4.8
Processing & Machinery	11.36	19.3	25.4	9.3	7.2
Structural Work	15.58	23.4	27.8	8.3	6.3

Source: Author's work with Guido Menzio. Estimates come from the 1980 and 1982 waves of the Employment Opportunities Pilot Project. The fraction of hires with "no recruiting" refers to positions that were reported to have a vacancy open for zero days.

stressed by Montgomery, Rees, and DeVaro as an important recruiting tool.

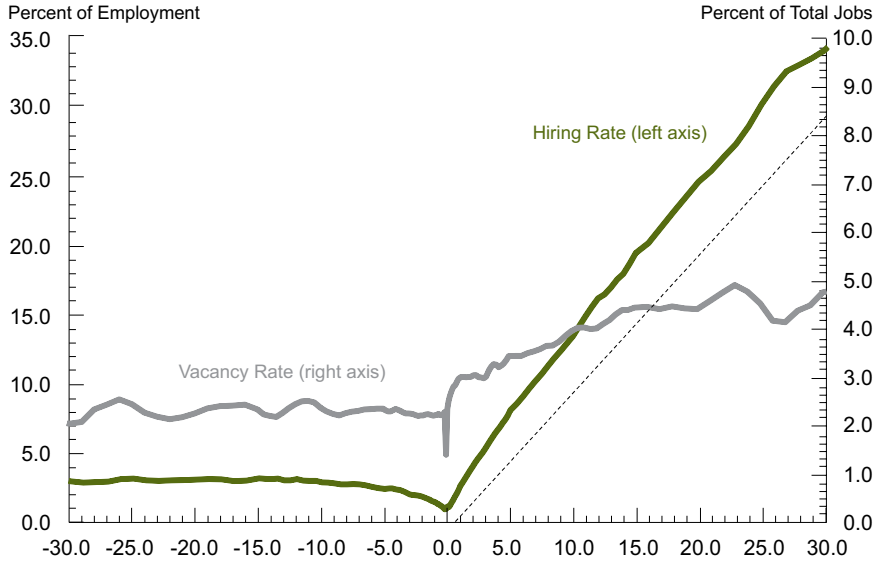
Recruiting Behavior Varies with Business Growth. In my research with Davis and Haltiwanger, we find that how fast a business is growing affects how it recruits. Namely, we find that the hiring rate rises nearly one-for-one with a business's employment growth rate but the vacancy rate rises much less than one-for-one with the growth rate (Figure 1). This implies that the vacancy yield (which is measured as hires per vacancy) also rises with the growth rate (Figure 2). The relationship of these variables to business growth is predominantly limited to when businesses expand. Contracting businesses have similar hiring rates, vacancy rates, and vacancy yields regardless of the size of the contraction.

The behavior of hires is mostly mechanical (the dashed line in Figure 1 represents the minimum hiring rate needed to grow by a certain percent), but there is no mechanical reason why the vacancy rate or vacancy yield should exhibit such behavior. In fact, most economic models of labor market search and matching imply a vacancy yield that is unrelated to business growth. In our research, however, we find that the vacancy yield rises even after controlling for the fact that fast-growing businesses may just post and fill vacancies very quickly. There are several reasons for this to be the case, although more research is needed to determine its exact causes. One hypothesis is that firms relax their hiring standards when trying to expand rapidly, making it easier to fill their vacant positions. Another hypothesis is that there are *scale economies* in recruiting, meaning that firms are able to benefit from added efficiencies when trying to hire many people at once. Yet another hypothesis is that firms rely more heavily on informal recruiting channels when trying to expand quickly, implying that hiring per (formal) vacancy would rise with growth.

Recruiting Behavior Varies over the Business Cycle. Finally, and perhaps most important, recruiting behavior varies over the business cycle. Obviously, when times are good, businesses are more likely to post vacancies and hire. Less obvious is the fact that a business's success rate

FIGURE 1

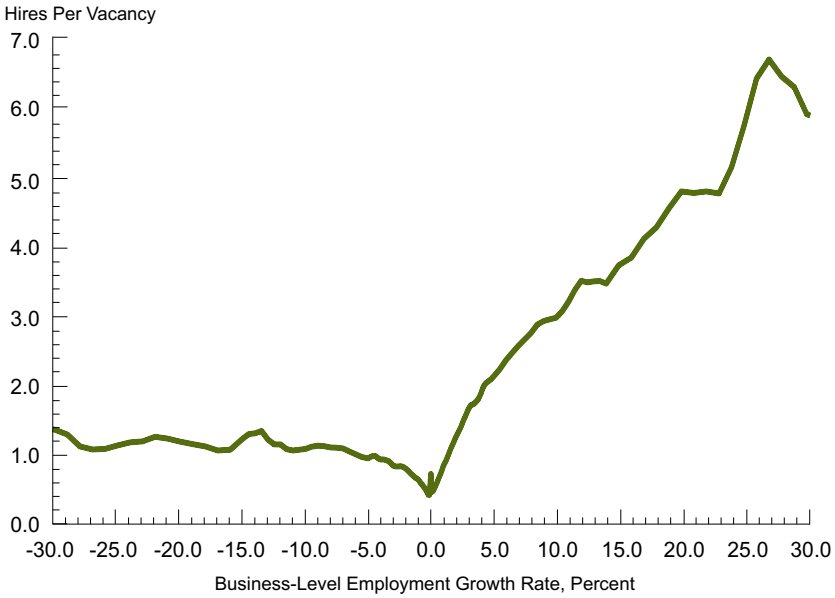
Hiring and Vacancy Rates by Business-Level Growth



Source: Estimates from my study with Steven Davis and John Haltiwanger, which uses establishment micro-data from JOLTS pooled over 2001-2006. The dashed line represents a 45-degree line emanating from the origin, representing the minimum amount of hiring to achieve a given growth rate.

FIGURE 2

Vacancy Yield by Business-Level Growth



Source: Estimates from my study with Steven Davis and John Haltiwanger, which uses establishment micro-data from JOLTS pooled over 2001-2006.

in recruiting and its potential use of alternative recruiting channels vary over the business cycle as well.

Figure 3 shows the behavior of the hiring rate, the vacancy rate, and the vacancy yield over the past 10 years, again from published JOLTS statistics. Recessions are indicated by the shaded bars. Hiring and vacancies are procyclical. They both increase during expansions and fall during recessions. Two things stand out for the hiring and vacancy rates in Figure 3. First, relative to the earlier recession, the 2008-09 period was a time of very steep declines in the rates of hiring and vacancy posting. Second, over the full period, the vacancy rate is more volatile than the hiring rate (that is, it rises relatively more during expansions and falls relatively more during recessions).

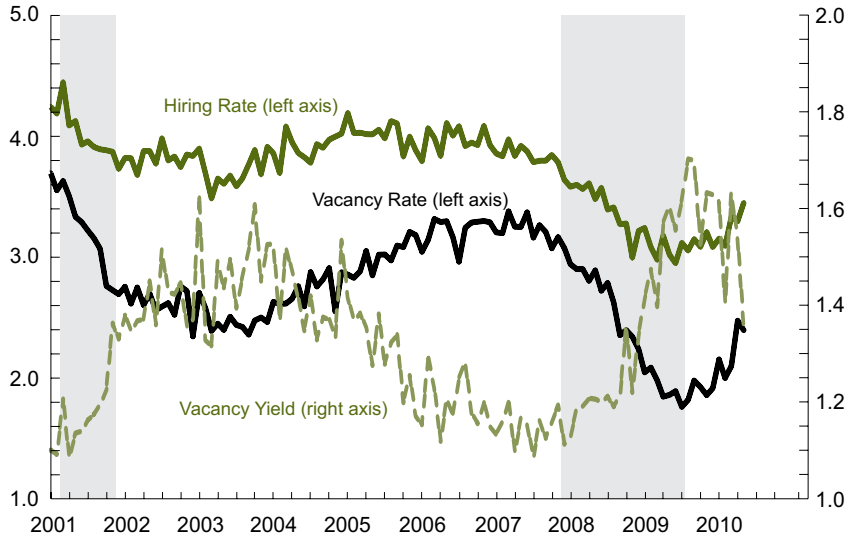
The vacancy yield is countercyclical. It rises during recessions and falls during booms and thus moves opposite to both hires and vacancies primarily because it is easier to fill openings during recessions when there are more unemployed workers applying for relatively fewer positions.

Figure 4 shows the movements of the daily job-filling rate and the monthly escape rate from unemployment over a longer time series.[7] The job-filling rate (the day-by-day rate at which vacancies are filled) is an estimate that comes from my research with Davis and Haltiwanger. As noted earlier, it is similar in concept to the vacancy yield. The main exception is that the job-filling rate accounts for the fact that some hires come from vacancies that are posted and filled within a month (such vacancies never appear as part of the monthly vacancy

[7] The time series in Figure 4 ends earlier (December 2009) than the series in Figure 3 (July 2010), which is why the job-filling rate does not exhibit the same decline observed with the vacancy yield.

FIGURE 3

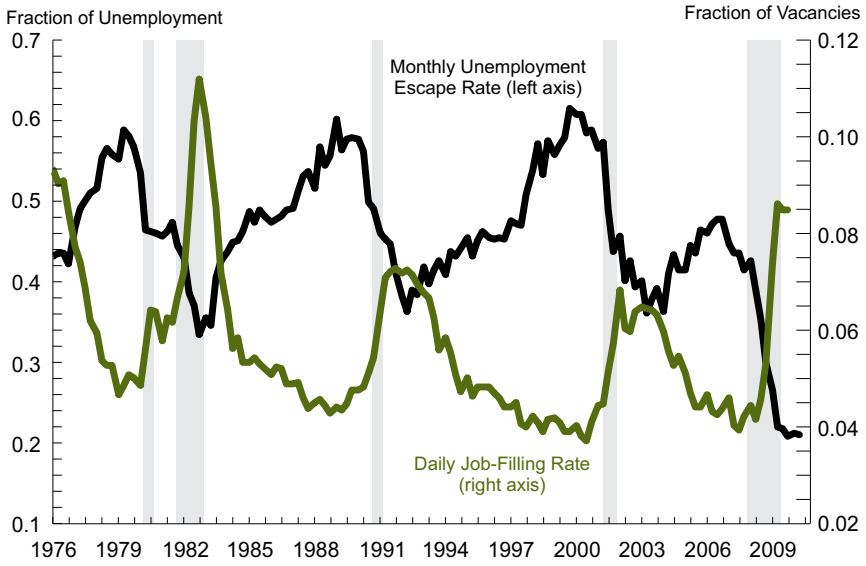
Hiring, Vacancies, and the Vacancy Yield over Time



Source: Author's calculations from published JOLTS data for nonfarm employment, January 2001-May 2010. Rates are expressed as percentages of employment. The vacancy yield is measured as the number of hires during the month per vacancy open at the start of the month. Shaded areas represent NBER-dated recessions.

FIGURE 4

Unemployment Escape Rate and Job-Filling Rate over Time



Source: Author's calculations from published CPS unemployment data, and vacancy rate estimates from the study by Regis Barnichon. Shaded areas represent NBER-dated recessions.

data). Its main limitation is that its calculation is more involved than that of the vacancy yield, so it is not as easily obtained from published statistics and, consequently, not as current as the vacancy yield series in Figure 3. The job-filling rate in Figure 4 is at the daily frequency, so it implies that businesses fill, on average, about 5.7 percent of their open vacancies on a given day. The monthly escape rate from unemployment is the percent of unemployed individuals from the previous month who are no longer employed in the current month. One shortcoming is that the measure does not distinguish between individuals who found new work and those who dropped out of the labor force, although research suggests that the escape rate closely tracks the rate at which the unemployed actually find new jobs.[8]

Despite the differences in measurement, Figure 4 shows that the job-filling rate, like its counterpart the vacancy yield, is strongly countercyclical. It exhibited its largest spike at the height of the 1982 recession, rising to over 11 percent of vacancies per day. The spike at the height of the most recent recession, at 8.6 percent, was the second highest on record. Businesses found it hardest to fill their vacancies during the boom times of the 1998-2000 period. The movements in the unemployment escape rate are almost a mirror image of the movements in the job-filling rate. The contrasting behavior of the two series over time is intuitive: recessions are periods when it is hard for workers to find a job but easy for firms to fill their vacancies. The opposite is true of expansions. It is worth noting that during the last recovery, the rate at which individuals escaped unemployment has remained well below the next lowest trough on

[8] See, for example, an earlier *Business Review* article by Shigeru Fujita.

record. This is a primary reason why the unemployment rate has remained persistently high during this period. The divergence currently remains a puzzle to economists. A rise in structural unemployment, perhaps due to the downturn in the housing market, changes in the industry composition of the economy, or changes in government policies (such as extensions of unemployment insurance benefits) have all been suggested as potential causes, although much work remains to be done on the issue.

CONCLUSION

Hiring and recruiting are key features of the labor market. While these features are common occurrences often experienced by most individuals, many economic models of the labor market still grapple with dealing with their complexities. The models do well in capturing the notion that many costs and frictions exist in the matching of workers to firms, but they have yet to fully characterize the fact that businesses use multiple channels, both formal and informal, to attract and recruit workers. Existing evidence on these channels shows that the extent to which firms use these channels, and their success with them, varies with the type of firm, the type of job, how much the firm is looking to expand, and economic conditions.

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