

## LABOR CONTRACT FORMATION, SEARCH REQUIREMENTS, AND USE OF A PUBLIC EMPLOYMENT SERVICE

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A puzzling observation is that few employers use a “free” employment service. In this paper, we argue that this is due to unanticipated effects of a governmental constraint on the behavior of certain individuals. In particular, a job search requirement for recipients of government transfer payments (unemployment insurance and others), when fulfilled through the public employment service, decreases the proportion of employers, and thus the unemployed other than recipients of transfer payments, using the public employment service. Thus such a job search requirement, designed to increase the likelihood of recipients of transfer payments finding employment and thus decrease the number unemployed, may instead increase the number unemployed by reducing use of a public employment service by others who are unemployed.

In section I, the contract formation behavior of employers in an economy in which certain types of costly information exist is considered. In section II, the effects of introducing both a public employment service and a job search requirement for recipients of transfer payments into the economy are examined.

### I. THEORETICAL FRAMEWORK

Consider an employer who has discovered the value of a particular task. The employer now seeks individuals able to perform that task. Let  $\theta$  be the probability that an employer locates an individual willing to perform the task in a period of length  $\epsilon$ . The probability  $\theta$  depends on the advertising cost incurred per period by the employer to make contacts,  $c$ , and a shift parameter,  $\eta$ . That is,  $\theta = k(c, \eta)$ , with  $k_1, k_2 > 0$  and  $k_{12} > 0$ .

If individuals contacted are identical and the true quantity of labor services offered is known by the employer, then the employer would offer to each individual contacted an employment contract. That contract would be an agreement to pay positive wage,  $w$ , reflecting the derived value of the labor services provided each period. If individuals contacted are heterogeneous in the quantity of labor services provided, then employment contracts offered to each individual contacted would differ in the wage payment.<sup>1</sup> If the employer learned the true quantity of the labor services provided only after  $L$  periods of employment, then the employ-

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1. We assume all individuals contacted can perform the task in the sense that their output is positive. Otherwise, there would be no gains to the exchange envisioned.

ment contracts offered would involve a wage payment contingent on that quantity.

The above discussion indicates that even if an employer contacts individuals providing heterogenous quantities of labor services not known at the time of hiring, all individuals contacted receive an offer of employment. To focus on the employer's choice of whom to hire, we therefore make the following two assumptions. First, we invoke costs of negotiating and enforcing a contract that restrict the nature of the employment contract to be a fixed wage payment per period of employment,  $w$ . We thus rule out contingent wage payments. Second, we assume that an employer incurs an interview cost  $I$  to obtain an index measure of qualifications,  $Q$ , for each individual contacted prior to hiring. Although the true value of labor services offered by a particular individual,  $V$ , is not known to the employer prior to hire, we assume the random variables  $V$  and  $Q$  are not independent. In particular, let  $f(v, q)$  denote the joint probability density function, with  $E(V|Q = q)$  being an increasing function of  $q$ .<sup>2</sup> Then an employer's optimal hiring decision is characterized by a reservation index of qualifications,  $q^*$ : individuals contacted with a qualification index less than  $q^*$  are not offered employment.

The true value of the labor services provided by a new employee is discovered by the employer after a period of employment whose expected length depends on the monitoring undertaken. In particular, let  $\tau$ , the probability that the employer measures the true supply of labor of the employee in a given period of length  $\epsilon$ , be given by  $\tau = h(m, \gamma)$ , with  $h_1, h_2 > 0$ ,  $h(0, \gamma) = 0$ , and  $\lim_{m \rightarrow \infty} h = 1$ .<sup>3</sup> The term  $m$  denotes the monitoring cost incurred per period by the employer and  $\gamma$  is a shift parameter indicative of the productivity of monitoring.

We now consider the optimal contract formation strategy of an employer which involves the choice of the expenditures to attract applicants,  $c$ , the reservation index of qualifications,  $q^*$ , and the degree of monitoring of the performance of a new employee,  $m$ , in order to maximize the expression

$$(1) \quad G = E\left(\int_0^D - (I\theta + c)e^{-rt} dt + \int_D^{D+L} (E(V|Q \geq q^*) - w - m)e^{-rt} dt\right) \\ + \frac{\text{Prob}(V \geq w | Q \geq q^*)\tau}{\tau + \delta} \int_{D+L}^{D+L+S} (E(V|_{V \geq w}^{Q \geq q^*}) - w)e^{-rt} dt$$

According to equation (1), the employer interviews, incurring advertising and interviewing costs, for  $D$  periods, a random variable dependent

2. In this sense, the model developed may be viewed as the employer analog to the job search model of Borjas and Goldberg (1978).

3. This monitoring cost is conceptually separate from monitoring costs which ensure available labor services are forthcoming. To simplify notation, these costs are netted out of our measure of the wage payment.

on the choice of the reservation index of qualifications,  $q^*$ , and advertising expenditures,  $c$ .  $D$ , the time before an individual is hired, has a density function of the form,  $g(D) = \alpha \beta \theta e^{-\alpha \beta \theta D}$ , where  $\theta$  is the probability of a contact,  $\alpha$  is the probability a random contact is offered employment and  $\beta$  is the probability that an individual accepts the wage offer.<sup>4</sup> The probability a random applicant is offered employment is given by  $\alpha = \int_{q^*}^{\infty} f(q) dq$ , where  $f(q)$  is the marginal probability density function of  $Q$ .

On hiring, the employer receives for  $L$  periods the expected value of the labor services conditional on the qualifications being at least  $q^*$  minus wage payments and monitoring costs. If, after  $L$  periods, the employer determines the true value of labor services (rather than the new employee quits), then the employee is retained only if this value exceeds the wage payment. Thus monitoring, by reducing the expected value of  $L$ , reduces the expected employment length of an individual whose value is less than  $w$ .  $L$ , the length of employment until either the new employee quits or the true value of his labor services is discovered, has a density function of the form  $j(L) = (\delta + \tau)e^{-(\delta + \tau)L}$ , where  $\delta$  is the probability that the employee quits in a given period of length  $\epsilon$ .  $S$ , the length of employment if quitting is the only cause for ending employment, is then a random variable with density function  $z(S) = \delta e^{-\delta S}$ .

Differentiation of the first order conditions for maximization of expression (1) generates the effects on the reservation index of qualifications, advertising expenditures, and monitoring expenditures of changes in certain parameters. We discuss below the effects on employer contract formation behavior of changes in the information structure.

Consider the effect of a change in  $\theta$ , the probability of an applicant contacting an employer in a given period, as represented by a change in the shift parameter,  $\eta$ . There are two effects of, say, an increased applicant flow ( $d\eta > 0$ ). First, an increased flow of applicants means choice of a higher reservation index of qualifications which implies a greater gain to the employer of entering the labor market since  $G$  rises, other things equal. Second, an increase in the flow of applicants results in a substitution of an increased reservation index of qualifications for reduced monitoring of those now more carefully screened and a reduced expenditure on attracting applicants.

A decrease in the probability that an individual contacted accepts a wage offer ( $d\beta < 0$ ) leads to a reduction in the reservation index of qualifications and by implication a reduced gain to the employer of interviewing.<sup>5</sup> Advertising expenditures to attract applicants fall while monitoring expenditures rise; gathering information across applicants prior to an

4. For simplicity, we assume  $\beta$  is independent of  $Q$ .

5. It should be noted that whether an individual will accept employment at the wage offered is often discovered during interviewing. Thus a  $\beta$  much less than one is consistent with rarely observing a wage offer being rejected if there are costs to formally making an offer.

employment contract offer is now less advantageous than gathering information on individuals who have accepted employment.

Employers respond to lower interviewing costs ( $dI < 0$ ) by choosing a higher reservation index of qualifications and higher advertising expenditures to attract applicants, substituting these for lower expenditures in monitoring the new employee's performance. On the other hand, if the monitoring expenditures required to achieve a given probability of determining the true value of labor services fall, ( $d\gamma > 0$ ), the employer chooses less extensive screening of potential employees (a decrease in the reservation index of qualification) and increased monitoring of new employees performing these tasks. This result implies that more mistakes (a true value of labor services below the wage payment) are made and discovered in a given period for individuals hired to perform tasks involving lower monitoring expenditures.

## II. THE INTRODUCTION OF A PUBLIC EMPLOYMENT SERVICE

Let us introduce a public employment service into a labor market populated with employers facing the costly information acquisition chores described in the previous section. Such a service enables the employer to increase the likelihood of a contact ( $d\eta > 0$ ) with no additional advertising expenditures. As we have shown, employers gain in such a situation. Yet why might many employers choose *not* to use a public employment service? For instance, a recent study of the U.S. Employment Service prepared for the U.S. Department of Labor by Camil Associates finds that "during the last six months of 1974, 25 percent of all employers used the state employment services, listing with them 23 percent of all job orders for which they recruited" (p. 13).

An obvious answer is that the Employment Service provides applicants that differ from applicants an employer would otherwise encounter. Not so obvious is how they differ and why. We shall argue that they differ in that applicants sent by the Employment Service have a lower likelihood than other applicants of accepting employment. Given positive costs of interviewing, an employer will choose not to use the Employment Service providing individuals with lower  $\beta$  even if the probability of acceptance of employment,  $\theta\beta$ , is held constant by an increase in  $\theta$ .<sup>6</sup> Why this difference exists will be linked to a second government intervention into the labor market in the form of a job search requirement for recipients of transfer

6. Note that we could have chosen instead to state that individuals sent by the public employment service are "less qualified" in that they have a low  $Q$ . But then we are left with explaining why, *a priori*, such individuals would be more likely to choose a labor market intermediary such as a public employment service.

payments, particularly unemployment insurance.<sup>7</sup>

Daniel Hamermesh, in a recent monograph on the unemployment insurance programs, cites the common statutory provisions of these programs. On ceasing employment, individuals apply for unemployment insurance benefits at the local Employment Service office. Eligibility for these benefits is usually determined during a one-week waiting period. Then, "every two weeks (in most states) the beneficiary returns at the appointed time to receive a check for his UI benefits. . . . So long as he can show he is looking for work and that he has not refused 'suitable work' in a job found for him by the Employment Service, the worker may continue to receive his payment" (1977, p. 5-6). If these search requirements are fulfilled by using the Employment Service, then applicants sent by the Employment Service to an employer are more likely to be recipients of unemployment insurance than those drawn from other sources. We have found that the probability of using the Employment Service is 68 percent higher for an unemployed individual who is receiving unemployment insurance benefits and 82 percent higher for an individual who has applied for UI benefits.<sup>8</sup> This finding is not surprising given the apparent low cost to the worker of choosing this method of meeting search requirements. The Camil study indicates that in a random sample of 20 Employment Service offices in cities having a population of between 100,000 and 200,000, 55 percent of the offices were co-located with UI programs and of these 30 percent shared a common intake desk.<sup>9</sup>

7. A former administrator of the Employment Service has stated before a congressional committee that "the role of the Employment Service was greatly expanded two years after it began with the enactment of the Social Security Act of 1935 which established the Federal-State unemployment insurance program. Under laws establishing the unemployment insurance program, availability for employment — or the so-called work test — is required as a precondition for eligibility to collect unemployment insurance compensation. Responsibility for administering this work test has been vested in the State employment services." (April-May, 1976, p. 5) Anecdotal evidence that supports our view is contained in an employer response reported in Rees and Schultz (1970) concerning applicants sent by a public employment service: "Their referrals are people who don't want to work, they just want their compensation checks. It costs too much to screen out their referrals to find a good one." (p. 43)

8. These findings are derived from a recent supplement to the Current Population Survey that contains information on the UI status and job seeking activities of individuals recorded as unemployed in May, 1976. For this sample of 3188 unemployed individuals, a logit model of the probability that an unemployed individual contacts the Employment Service as part of his recent search activities was estimated. Care is required in interpreting these findings, for once we have established a net gain to many employers from not using the Employment Service, this also implies that the gain to use by the unemployed other than unemployment insurance recipients is less.

9. The costs of supporting the Employment Service and thus its function of satisfying search requirements are in part borne by unemployment insurance recipients. According to recent reports prepared by a congressional committee, "Eighty-five percent of the moneys for Federal grants to states to operate their employment agencies are derived from the Federal Unemployment Tax assessed on employers (this tax funds the unemployment insurance program). General revenue funds make up the remaining fifteen percent." (Sept. 1976, p. 3)

Evidence that unemployment insurance recipients are less likely to accept employment than others who are unemployed is contained in Barron and Mellow; holding search choices (measured search intensity and reported relative reservation wage) constant, unemployment recipients have a 45 percent lower probability of leaving unemployed status over a given month than other unemployed workers.

We have indicated a perverse effect of search requirements for UI beneficiaries: many employers choose not to use the Employment Service. The likelihood of this perverse effect depends on the magnitude of interview costs. Those employers with lower interview costs ( $dI < 0$ ), since they experience a greater gain to an increase in the applicant flow and a reduction in the loss associated with a reduced likelihood of applicants accepting employment, are more likely to use the Employment Service. But who are these employers?

Large employers (in terms of number of employees) are more likely to have some current employees specializing in the hiring process. One thus expects larger employers to have lower interview costs due to such specialization, and therefore be more likely to use the Employment Service, other things equal. Evidence from surveys of employers is consistent with this prediction: "It is the larger, more structured employer who uses the Employment Service (ES) . . . only 17 percent of employers with 10 or fewer persons (used) the ES, but 49 percent of those having 101 to 250 employees, 65 percent of those with from 251 to 500 employees, and 74 percent of those with more than 500 employees (used the ES) . . . The population of employers using the ES is made up of a much larger percentage of large establishments, of establishments which are part of larger firms; of establishments with personnel departments; of establishments having their recruitment vested with managers, department heads, or personnel departments" (U.S. Department of Labor Report, p. 1-20).<sup>10</sup> In contrast, employers hiring for positions requiring greater skill or prior training typically incur greater costs interviewing an applicant. Thus our analysis would predict that these employers would be less likely to use the Employment Service. This is consistent with the observation that unemployed individuals with higher weekly earnings at their prior job are less likely to use the Employment Service to locate potential employers.<sup>11</sup>

10. A recent employment survey of members of the National Federation of Independent Business (NFIB) concerning the "last person hired" by the firms supports this observation. Information gathered by the survey includes the number of applicants interviewed prior to hire and the number of offers made. Dividing the first by the second obtains a measure of the number of applicants per acceptable applicant. This corresponds to  $1/\alpha$  where  $\alpha$ , the probability a random applicant is offered employment, depends on the choice of the reservation index of qualifications. For this data set, we find that, other things equal, larger employers see more applicants per acceptable applicant; this is consistent with our hypothesis of a lower interview cost for such employers. Note it is also consistent with larger employers having higher monitoring costs ( $d\gamma > 0$ ). Among all employers in the survey, the average number of applicants per week was 3.2 and the average number of applicants per acceptable applicant was five.

A second reason why larger employers are most likely to use the employment service may rest on the existence of affirmative action programs that are more likely to affect large employers.

11. The source of this observation is discussed in footnote 8.

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