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SIFTING AND SORTING: PERSONAL CONTACTS AND HIRING IN A RETAIL BANK*

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Using unique data from a large retail bank, we investigate the theoretical mechanisms by which preexisting social ties affect the hiring process. By focusing on a single, large employer, we are able to identify the recruitment practices and hiring criteria used during screening for entry-level positions. This method allows us to assemble data for the pool of candidates at multiple phases of the hiring process and to conduct empirical tests of the various roles that personal contacts might play at each stage. Because we are able to treat hiring as a process, rather than as an event, we can also consider the possible selection biases introduced by the multistage screening process. More specifically, we study how employee referral (i.e., being recommended by a current bank employee) affects an applicant's success at multiple stages of the recruitment process, and we examine the cumulative effects of referral status on the chance of being offered a job. Results of probit models indicate that, controlling for other factors, referrals have advantages at both the interview and job-offer stages compared to external nonreferral applicants. Consistent with theoretical arguments that referrals are pre-screened by current employees, our results show that referral applicants present more appropriate résumés than do nonreferral applicants. Referral applicants also are more likely than nonreferrals to apply when market conditions are more favorable. Nevertheless, résumé quality and application timing cannot explain referrals' advantage at the interview and hire phases. We discuss the theoretical implications of these findings.

The literature on social stratification has increasingly focused on the organizational processes that shape job rewards. Whereas early studies in the status-attainment tradition conceptualized the stratification process as the conversion of individuals' background resources (e.g., family background and education) into income and occupational status, the subsequent literature

has paid more attention to various features of the employer's side of the labor market as determinants of inequality (e.g., industry structure, class, or firm) (Baron 1984). An important theoretical concern then became how individuals are matched to particular jobs (Sørensen and Kalleberg 1981), and attention turned to the means by which individuals first pierce the organizational boundary and are hired (Granovetter 1981).

A significant strand of research on the job/person matching process focuses on the role of preexisting social ties in the hiring process. Although the job/person matching process has often been approached from the per-

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spective of potential job-seekers (Bridges and Villemez 1986; Granovetter 1995; Lin, Ensel, and Vaughn 1981), little empirical research has drawn on the employer's side of the labor market, despite the theoretical centrality of employers' behavior in accounts of job/person matching (Granovetter 1981; Sørensen and Kalleberg 1981).

In this paper, we begin to rectify the imbalance. Starting with the employer's side of the labor market, we seek to deepen our understanding of hiring as a social process that links people to jobs (i.e., we examine the roles of social ties in selecting hires from a pool of candidates). We develop a set of falsifiable hypotheses that sharply distinguish among the various mechanisms by which personal contacts may influence the screening process, and we adjudicate among these competing theoretical accounts using unique data on hiring into entry-level positions at a large retail bank.

By focusing on the hiring process for a single, large employer, we can overcome a number of the limitations of previous research on the role of social ties in hiring. Because we can directly determine the criteria this firm uses to sort candidates during pre-hire screening, we can identify more precisely the role social ties play at each phase of the hiring process. Moreover, we are able to assemble data for the pool of candidates at multiple phases of the hiring process and to conduct empirical tests of the various roles that personal contacts might play at these stages. Because we can treat hiring as a series of screens rather than as a single event, we can examine the possible selection biases introduced by the multistage nature of the process. Specifically, we study whether employee referrals (i.e., job applicants referred by a current employee) have improved success rates at multiple stages of the recruitment process, and we examine the cumulative effect of referral status on the chance of being offered a job.

SOCIAL CONTACTS AND HIRING

A large body of literature documents the pervasiveness of personal contacts in labor markets, but relatively few studies focus specifically on hiring (for a review, see Granovetter 1995). Many studies start with a sample of

currently employed people and examine how they obtained their jobs (Corcoran, Datcher, and Duncan 1980; Lin, Ensel, and Vaughn 1981). From the perspective of scholars interested in hiring outcomes *per se*, studies using this design have selected on the dependent variable. Without baseline information on the presence or absence of social ties for the pool of competing applicants, some of whom are hired and others of whom are not, it is impossible to isolate the effect of social contacts on hiring. For example, it is not clear whether the use of personal contacts exerts any independent influence on one's chance of being hired. If large proportions of job-seekers use their friends and relatives as sources of information during job search, then even if hiring decisions were being made randomly, a similarly large proportion of hires would report having used personal contacts.

Start-with-hire studies have looked at the post-hire consequences of social ties (i.e., a few studies have attempted to test the notion that hires made through personal contacts are better matched to their jobs than people hired through other channels). Personal contact hires' performance is alleged to be superior to that of other hires because the social tie is a conduit for difficult-to-obtain information about the job and the candidate. Access to such information allows both the candidate and the employer to make better decisions. Information on the "intensive" margin, which deepens information about a particular job and employer, as opposed to information on the "extensive" margin, which provides information about a broad range of jobs (Rees 1966), may not be available to job applicants by any other means. Similarly, social ties are hypothesized to provide employers with extra information about the applicant that would not appear on a résumé or be readily obtainable from an interview. People hired via personal contacts are posited to be better matched to a position than people hired in other ways, and consequently they should be less likely to quit (Datcher 1983; Decker and Cornelius 1979; Gannon 1971; Wanous 1980) and should have lower absenteeism (Breaugh 1981; Taylor and Schmidt 1983) and better performance evaluations (Breaugh and Mann 1984; Caldwell and Spivey 1983; Swaroff, Barclay, and Bass 1985).

The empirical evidence on whether individuals hired through personal contacts are better workers is scant and inconclusive (for reviews, see Bishop 1993; Granovetter 1995). Perhaps one reason for the inconclusive nature of these studies is that none of these post-hire studies have considered the possible effects of pre-hire screening on post-hire inferences about social ties and employee performance. By their very nature hires are a selected sample, and by starting with hires all of these empirical studies are subject to the possible effects of selection bias (Berk 1983; Heckman 1979). The way post-hire performance is related to recruitment source is likely to be highly contingent on the role that personal contacts play in pre-hire screening. While hires made through personal contacts may be particularly well-suited to their positions (i.e., they would be more appropriate than the average candidate) (Quaglieri 1982), it is important to remember that people hired without the benefit of personal contacts are also survivors of a screening process that is attempting to select candidates who are best suited for the job. Comparisons of the job performance of people hired with or without the use of personal contacts would understate the importance of social ties on performance if the process were to be considered from the perspective of initial job candidates.

Correcting the analyses for selection bias would raise the job performance advantage of people hired through personal contacts relative to other hires. If, however, candidates hired through social ties were to be less appropriate than the average candidate (if, for example, the hiring process were to have elements of particularism [Grieco 1987]), such hires might be systematically less qualified than people hired by other means. The outcome would be adverse selection, and correcting for selection bias in this case might lower the performance advantage of people hired via personal contacts. Without examining the *nature of the screening mechanism*, it is difficult to make inferences about the relative performance of applicants with and without personal ties.

A second set of studies avoids these difficulties by using samples of job-seekers or job-changers (Bortnick and Ports 1992; Granovetter 1995; Marsden and Hurlbert

1988; Ports 1993) to examine the chance of obtaining a job using various search methods. At least in principle, these studies contain information on the pool of people who are potentially competing for jobs, thus permitting inferences about the comparative success of job-finding for candidates who have used different search methods.¹ Despite these advantages, these studies have two weaknesses. First, because they contain samples of people looking for a diverse array of jobs at many different firms, these studies cannot uncover the specific influence of social ties on the organizational screening process. Depending on the firm's particular human resources practices, personal contacts can affect the hiring process at several points: during the formation of a pool of applicants, in how applicants learn about the screening process, in the extent of information applicants obtain about job openings, and so forth. Because employers vary in the degree to which they rely on the use of personal contacts as a means of recruitment (Kalleberg et al. 1996; Marsden and Campbell 1990), our ability to interpret the results for these studies is limited. Put another way, the organizational processes on the employer's side of the job/person matching process are incomplete in these accounts.

The second problem with many of these studies is related to the first: Studies of job-changers tend to have limited and, depending on the particular needs of the hiring firm, sometimes inappropriate controls for worker characteristics. Because the use of social ties for job search may be related to other variables that measure the overall appropriateness of the job-seeker for the job opening

¹ Of course, job-seekers also are a selected sample, and it would be hazardous to make inferences about the effects of personal contacts on hiring outcomes for all workers based on studies of job-seekers. To our knowledge, only Marsden and Hurlbert (1988) have attempted such a correction, and they find no selection bias associated with the use of personal contacts in job search. This finding is understandable when one considers that substantial percentages of people obtain jobs without reporting *any* job search (Campbell and Rosenfeld 1985; Granovetter 1995; Osberg 1993). This suggests that a model where the decision to seek a job is defined as a selection criterion for obtaining a job is at least incomplete.

(e.g., education, relevant work experience), the generally sparse controls for individual-level variables in these studies could result in biased assessments of the role of social ties in hiring.

For both start-with-hire and job-seeker studies, then, a significant limitation has been the difficulty of observing the process by which the firm selects employees from among a pool of candidates. We need studies that tap the screening process at various phases and measure the ways in which social ties might affect outcomes at each stage. To our knowledge, ours is the first study to solve this problem.

RESEARCH SETTING

We studied the hiring process for four entry-level branch office jobs at a retail bank. The bank is part of a large, globally diversified financial services institution. We studied records of the bank's hiring activities in the western region of the United States (covering more than 80 branches) during the 27 months from January 1993 through March 1995, when we could be assured the firm kept accurate records. The unit charged with screening employment inquiries for this region is called the Western Region Human Resources group (WRHR).

We chose to study entry-level jobs for both theoretical and practical reasons. First, a number of scholars argue that personal contacts might matter more in hiring for high-status jobs rather than low-status jobs (Marsden and Campbell 1990; but see Granovetter 1995:147). Therefore our study is a conservative test of the role of personal contacts in hiring. Second, WRHR had virtually complete information about recruitment for these entry-level jobs—more than 90 percent of the inquiries for these jobs were funneled through WRHR.

The four jobs we study are Customer Service Representative (CSR), Personal Banker (PB), Business Banker (BB), and Mortgage Consultant (MC). CSR is an hourly teller position on the retail side of the bank. PB is a salaried position requiring sales to individual customers in the retail bank. BBs are similar to PBs in their duties, except they serve commercial customers. MC is a commissioned sales position in the commercial bank. Al-

though MCs fall within the commercial bank's reporting structure, they operate out of the retail bank's branches. Over the period studied, the starting pay for these jobs ranged from approximately \$16,000 to \$45,000, with BBs starting toward the high end of the pay range and CSRs starting toward the low end. In addition to their base salaries, MCs are rewarded on the dollar deposits and loans they bring to the business.

WRHR tracked 5,568 initial employment inquiries during this period. If an applicant's résumé or application seemed to match particular areas that needed filling and if the applicant survived the paper screen, he or she was retained in the pool for further consideration, and was contacted by recruiters and asked either to come to WRHR offices for an interview or referred to a hiring manager for an interview.² Of the 5,568 inquiries, 31.5 percent (1,754) resulted in interviews by WRHR or the hiring manager or both. Offers of employment were extended to 20.6 percent of those interviewed (362 of 1,754), and 90 percent (326 of 362) of those offers were accepted.

This setting has several features that make it ideal for research on social ties and hiring. First, these data provide baseline information on the presence or absence of social ties for the pool of applicants competing for these four jobs. WRHR recorded in a computer database the application source for every employment inquiry at initial contact with the bank, and they kept this information regardless of whether the applicant proceeded to the next phase of screening. WRHR coded recruitment source in 18 categories, including newspaper ad, walk-in, phone-in, employment agency, job fair,

² All candidates who received job offers were interviewed by a hiring manager. Everyone who was interviewed had been screened by WRHR. However, some candidates were interviewed by WRHR but were not sent to the hiring manager for further consideration. For the candidates who were interviewed but did not receive job offers, we cannot be certain whether they were rejected by WRHR or the hiring manager. Consequently, we treat the interview phase as a joint effort on the part of WRHR and the hiring manager. This is consistent with WRHR's description of their role—they seek to mimic the screening decisions that hiring managers would make downstream.

campus recruiting, professional organization, and employee referral. WRHR personnel define employee referral as any employment inquiry in which the applicant contacted them at the suggestion of a current bank employee.³ We measure the presence or absence of a candidate's social ties to the firm by whether the candidate was referred by a current employee.

Second, because we were able to learn the WRHR's screening criteria (see "Procedures" below), we can specify the set of appropriate individual control variables that affect hiring. Thus, we can consider the extent to which an applicant's referral status is a proxy for other characteristics that might make the applicant desirable to WRHR. Finally, because WRHR traces employment inquiries from initial contact, through interview, to actual hire, we are able to treat hiring as a multistage process in which social ties may play different roles at the various stages. Hence, we can identify the precise influence of social ties at each step in the selection process for these four jobs.

This firm's hiring practices are not particularly distinctive with respect to its screening and interview procedures, at least when compared to other large firms with professional personnel departments (Cohen and Pfeffer 1986). It is an accepted modern personnel practice to pay current employees for employee referrals. Human resources trade magazines trumpet the use of such programs and publications aimed at human resource practitioners suggest that personnel managers consider this technique for recruiting (Halcrow 1988; LoPresto 1986; Stoops 1981, 1983). Moreover, a nationally representative sample of employers (National Organization Survey) reports that

36.7 percent of employers frequently use employee referrals as a recruitment method (Kalleberg et al. 1996:138).

Generalizability can be definitively demonstrated only by replication of our results in other settings (indeed, we are currently taking some first steps in this direction by collecting data on hiring in a separate unit of the bank located in the midwestern United States), but we argue that comprehensive information on employer screening is required to deepen our understanding of the hiring process and the role played by social ties in labor market recruitment. None of the extant across-employer data sources can test the theories we develop, as it is impossible to distinguish among the different theoretical mechanisms through which social ties might affect the hiring process without the kind of fine-grained data we analyze here.

Procedures

Using criteria suggested by WRHR, we coded each candidate's application materials to measure the candidate's appropriateness for the four jobs. In our interviews with recruiters regarding their role in pre-interview screening, they told us that they view various applicant characteristics as desirable but not absolute requirements. They also stated that it was their view that it was possible to be overqualified for these entry-level positions. Generally, they want candidates for these jobs to have either a bachelor's degree (i.e., 16 years of education) or five years of experience in the financial services industry. They tend to look unfavorably on candidates with more advanced degrees (e.g., an MBA) or extensive work experience outside the industry. They worry that such "overqualified" people might be using these jobs as platforms from which to search for jobs in other firms for which their skills might be more appropriate.

We coded applicants' résumés to reflect these concerns. We recorded the applicant's gender, years of education, years of experience in the financial services industry, and years of experience outside the banking industry. We also included two dummy variables, one for computer experience and one for foreign language experience. We tested multiple specifications of education effects

³ WRHR recruiters are quite confident that the data they record on recruitment source at the earliest contact are accurate. First, a line on the employment application explicitly asks whether the applicant has been referred. Second, employees are paid if the people they refer are hired and survive a 90-day probation period. The amount of money paid for referrals depends on the level of the hire, but even for these entry level jobs the amount is nontrivial, with rewards ranging from \$200 to \$1,000. This creates an important incentive for referring employees to ensure that applicants list them as the recruitment source.

and found that WRHR does not treat applicants with more than a BA differently from those with less than 14 years of education. But, WRHR is more likely to grant interviews to candidates with 14 to 16 years of school than to candidates with either more education or less education. Consequently, education was treated as a dummy variable for which 14 to 16 years of school was coded 1 and 0 otherwise. Although WRHR personnel say they think of five years of experience in the financial services industry as desirable, in our preliminary analyses we could not find any evidence of a distinct break at the five-year mark of experience in financial services in the chances of granting an interview. There may be other features of a résumé that occasionally catch a recruiter's eye, but these variables capture the factors for which WRHR recruiters systematically screen.

We drew a sample from the paper files and developed a set of weights so that the sample reflected the population of job inquiries.⁴ We stratified the sample into three categories: external referrals, external nonreferrals, and internals (current bank employees seeking transfers).⁵ Because of their relatively small numbers, we included all referrals (N = 441)

⁴ Note that the unit of analysis used here is the employment inquiry. Sixteen percent of the inquiries were from candidates who had applied multiple times. We tested for the impact of multiple applications on the processes we study here by coding two variables, a dummy variable coded 1 for multiple applications and 0 otherwise, and a spline, where single applications are coded 0, and the number of applications is coded for people with multiple inquiries. We found no effects of multiple applications using these procedures, nor do the results change if we limit our analyses to first-time applicants.

⁵ Requests to transfer into these four jobs are also funneled through the WRHR. Although their small numbers make it difficult to make robust inferences about them, such internal transfers are an extremely interesting comparison group for the referrals. Whereas external referrals may have certain advantages over external nonreferrals (e.g., extra information), it would be difficult to argue that external referrals will have more advantages than internal job applicants. For many of the processes we study, external nonreferrals will form a lower-bound baseline and internals an upper-bound comparison group to referrals. We will note the results for internals at the appropriate points in the analyses.

and all internals (N = 134), and assigned these cases a weight of 1. For external nonreferrals, we sampled paper files at rates that produced analyzable numbers of records per job category, and we calculated weights to reflect their sampling ratios.⁶ After we deleted cases with missing information, these procedures yielded valid records for 2,634 cases: 830 CSRs, 793 PBs, 549 BBs, and 463 MCs. In order to have statistical tests reflect the number of unweighted cases, we recalculated the weights to average 1 and to sum to the sample size. We use these weights in all analyses presented below; the substantive conclusions did not change when we used unweighted data.

HYPOTHESES

The literature reviewed above suggests that personal contacts affect the hiring process in a number of distinct ways. First, employers commonly assume that employee referrals help deepen their pool of qualified job candidates because current employees pre-screen applicants. Because inappropriate candidates are more likely to be turned away by current employees, the referrals who do apply should be better qualified than other candidates who are not similarly pre-screened (Breaugh and Mann 1984; Schwab 1982). This leads to our first hypothesis:

H₁: External referrals present more appropriate résumés than do external nonreferrals.

Another way in which social ties might affect the hiring process is through the accumulation of additional information about the organization that might not be available through other means. Many studies argue that personal contacts provide additional information that improves the match between the applicant and the *job*, but to our knowledge, no studies have examined whether social ties provide inside information about the firm's *hiring and screening practices*. Such information may lead referrals to adjust their

⁶ We sampled applications for CSR and PB jobs at a rate of 33 percent. Because there were fewer applications for the other two positions, we increased the sampling rates to 45 percent for BBs and 53 percent for MCs.

application behavior (i.e., timing the application when hiring conditions are more favorable) in an attempt to capitalize on this inside information. If social ties work this way, we predict:

H₂: External referrals time their applications better than do external nonreferrals.

The remaining hypotheses address the effects of social ties through the multiple stages of the hiring process. Following the literature, we hypothesize that referrals are advantaged relative to external nonreferrals during the hiring process. Whereas the extant literature does not distinguish between the roles of personal contacts at each of the various stages of the hiring process, we treat the stages separately in our hypotheses. First:

H_{3a}: External referrals are more likely to be granted an interview than are external nonreferrals.

Second:

H_{3b}: Conditional on interview, referrals are more likely to receive a job offer than are external nonreferrals.

It is a separate question whether the advantages that might accrue to referrals can be accounted for by the mechanisms specified in Hypotheses 1 and 2. If pre-screening by current employees and inside information about the hiring process are the main conduits by which social ties affect hiring, we hypothesize that:

H_{4a}: Referral/nonreferral differences in the probability of being interviewed can be explained by referrals' more appropriate résumés and application behavior.

In addition to the mechanisms described by Hypotheses 1 and 2, the interview itself could account for referral/nonreferral differences at the job-offer stage. WRHR's decision to interview is based primarily on information from the résumé and other application materials, whereas the decision to offer a job depends also on a candidate's performance during the job interview. According to WRHR, although "hard" criteria (e.g., educational background and experience) are not ignored at the job-offer stage, these four jobs require customer contact—thus "soft" interpersonal skills (Kirschenman and Necker-

man 1991) are also an important consideration in hire decisions. If referrals were only providing advance information on "soft skills," we would expect any referral advantage to disappear once candidates were screened for these "soft" skills during an interview. Consequently, we hypothesize that:

H_{4b}: Referral/nonreferral differences in the probability of receiving a job offer can be explained by referrals' more appropriate résumés, application behavior, and interview selection process.

ANALYSES

We start with the effect of social ties on the applicant pool. If current employees pre-screen referrals (i.e., encourage appropriate candidates to apply, and discourage less suitable applicants) (Schwab 1982; Breaugh and Mann 1984), we would find that referrals present résumés that are systematically more appropriate to the job than are those of external nonreferrals (Hypothesis 1).

We used the WRHR hiring guidelines to test whether referrals present résumés that are systematically more appropriate than nonreferrals. Hypothesis 1 implies that résumé characteristics will form two distinct profiles—one for external referrals and one for external nonreferrals. Given that several of the résumé variables are measured nominally (computer skills, foreign language skills, and education), we developed a strategy based on log-linear models.⁷

We examined whether application source (referral/nonreferral) is statistically independent of the joint distribution of the five résumé variables listed above. We compared a log-linear model in which the five résumé variables are each related to application source with a baseline model of independence between application source and the

⁷ This analysis strategy requires that we cross-tabulate the résumé variables. For these tabular analyses only, we dichotomized the years of bank experience and years of nonbank experience variables at their medians: two and five years, respectively. This results in two dummy variables where 1 equals two years or more and 0 equals less than two years for bank experience, and where 1 equals five years or more and 0 equals less than five years for nonbank experience.

Table 1. Log-Linear Tests of Independence between Application Source and Résumé Profile

Model	Variables ^a	Likelihood Ratio Chi-Square	Degrees of Freedom
Model A ₁ : Independence (baseline)	{CLBNE}{R}	62.9***	31
Model A ₂ : Two-way effects	{CLBNE}{CR}{LR} {BR}{NR}{ER}	16.4	26
Likelihood-ratio test of A ₁ – A ₂ ^b		46.5***	5
Model B ₁ : Independence (baseline)	{CLBNEJ}{JR}	144.8	124
Model B ₂ : Two-way effects	{CLBNEJ}{CR} {LR}{BR}{NR} {ER}{JR}	80.3	119
Likelihood-ratio test of B ₁ – B ₂ ^c		34.5***	5
Model B ₃ : Three-way effects	{CLBNEJ}{CJR} {LJR}{BJR} {NJR}{EJR}	65.3	104
Likelihood-ratio test of B ₂ – B ₃ ^d		15.0	15

^a C = computer skills, L = foreign language skills, B = years of bank experience, N = years of nonbank experience, E = 14 to 16 years of education, J = job, and R = application source (referral or nonreferral).

^b Tests for independence between application source and the joint distribution of résumé variables.

^c Tests for independence between application source and the joint distribution of résumé variables and job.

^d Tests whether the joint distribution of résumé variables differs by job.

*** $p < .001$

joint distribution of the résumé factors. More specifically, we contrast the model

$$\{C,L,B,N,E\} \{C,R\} \{L,R\} \{B,R\} \{N,R\} \{E,R\},$$

with the baseline model defined by

$$\{C,L,B,N,E\} \{R\},$$

where C is computer skills, L is foreign language skills, B is bank experience, N is nonbank experience, E is 14 to 16 years of education, and R is application source; all variables are measured as dichotomies.

Table 1 shows a significant reduction in chi-square between Model A₂ and the baseline model (Model A₁), indicating that the joint distribution of the five résumé variables is not independent of application source. Table 1 also examines whether these findings are altered if we allow the résumé profile to vary by job. Models B₁ and B₂ add a four-category variable distinguishing among the jobs to Models A₁ and A₂. The reduction in chi-square between Models B₁ and B₂ is statistically significant, indicating that the joint distribution of the résumé variables and job is related to application source. Model B₃ al-

lows job to affect the relationship between each résumé variable and application source. This model is not a significant improvement over Model B₂, suggesting that the relationship between résumé profile and application source does not vary by job.

The fact that referrals and external nonreferrals have distinct résumé profiles is necessary, but not sufficient, to conclude that referrals present more *appropriate* résumés than do external nonreferrals. Table 2 presents descriptive statistics for the résumé variables to determine whether referrals are more appropriate candidates than are external nonreferrals. Compared with nonreferrals, referrals are more likely to have computer skills and language skills. Also consistent with our expectations, referrals have less nonbanking experience, more bank-related experience, and a greater proportion of applicants with 14 to 16 years of education than do external nonreferrals.⁸ Thus, Hypothesis 1 is supported in these data.

⁸ Although it is inconsistent with our conception of the résumé variables as forming a profile,

Table 2. Weighted Mean Characteristics of Applicants' Résumés, by Application Source

Résumé Characteristic	All Applicants	External Nonreferrals	External Referrals
Has computer skills	.50	.49	.60*
Has foreign language skills	.20	.20	.26
Has 2 or more years bank experience	.53	.52	.65*
Has 5 or more years nonbank experience	.50	.52	.30*
Has 14 to 16 years of education	.82	.81	.84
Number of cases (unweighted)	2,275	1,867	408

* $p < .05$ (individual chi-square tests)

Table 3. Weighted Means of Hiring-Conditions Variables, by Application Source

Hiring-Condition Characteristic	All Applicants	External Nonreferrals	External Referrals	<i>t</i> -Values
Number of applicants during month of application	110.0	112.4	82.9*	(6.78)
Number of openings during month of application	23.5	23.3	25.2	(-1.60)
Applicants per opening during month of application	6.4	6.7	4.0*	(7.94)
Number of cases (unweighted)	2,499	2,058	441	

* $p < .05$

As we hypothesized above, personal contacts might affect hiring by providing inside information about the firm's hiring practices. Specifically, such information might lead referrals to time their applications when conditions are more favorable (Hypothesis 2). We assess the state of hiring conditions for each job by coding the number of openings, the number of applicants, and the number of applicants per opening for the month when the candidate initially applied. Table 3 presents mean values for these characteristics. External referrals' applications should be better timed with respect to number of openings if referring employees were tipping off potential candidates about impending job openings. The results of *t*-tests presented in Table 3 show that referrals do not appear to have special access to information about job openings. On the other hand, compared with

we also considered the statistical significance of the various factors individually. All five of the referral/nonreferral differences are in the right direction, but only three of the contrasts are strong enough to be statistically significant when considered individually (i.e., computer skills, years of bank experience, and years of nonbank experience).

external nonreferrals, referral candidates apply during months when there are fewer competitors for the jobs (on average, 82.921 versus 112.411).

We asked WRHR about the possible means by which referrals might realize such an advantage. WRHR personnel reported that when there is a shortage of applications relative to openings, they actively seek referrals from the bank's current employees. Indeed, we see evidence of this in Table 3: The average ratio of applications to openings for referrals is relatively low compared to that for external nonreferrals (4.0 versus 6.7). Clearly, this provides referrals with extra information about the recruitment process that is not easily obtainable by external nonreferrals. These results are consistent with Hypothesis 2, but for reasons that differ from our theoretical expectations. This pattern shows that referrals do reap the benefits of information about the recruitment process. However, this transfer of information is not initiated by either referring employees or job applicants. Rather, it is the policy of seeking applications from referrals when there is a shortage of applicants that results in referrals' timing advantages.

There are clear referral/nonreferral differences in candidates' backgrounds and application behavior, but it is still an open question whether referrals are advantaged relative to external nonreferrals in hiring outcomes. We hypothesized that referrals are more likely to be granted an interview than are external nonreferrals (Hypothesis 3a). We have evidence that interview rates do indeed differ by recruitment source: Twenty-seven percent of external nonreferrals are granted interviews by WRHR or the hiring manager, whereas 79 percent of referrals are interviewed. This difference is statistically significant ($p < .001$; LR chi-square = 238.402, d.f. = 1); Therefore, Hypothesis 3a is supported.⁹

Although we did not explicitly hypothesize about internals, it is interesting to note that referrals are interviewed at a rate that is almost as high as the rate for internal candidates (79 percent versus 83 percent), and the contrast between internals and external nonreferrals is statistically significant ($p < .001$; LR chi-square = 86.284, d.f. = 1). At this stage, then, referrals are treated much the same as internal candidates. The question remains whether internals differ from other candidates in their résumé profiles and application timing (Hypotheses 1 and 2). We are hampered from fully considering these questions by the small number of internals. Although the differences are not statistically reliable, it is worth noting that the descriptive pattern of results generally shows that internals display résumés and application behavior more like those of referrals than those of external nonreferrals.

We also test whether referrals are advantaged in the post-interview stage of the hiring process. When we consider job-offer rates by application source conditional on interview, we find that referrals are offered jobs at three times the rate of external nonreferrals (38 percent versus 12 percent), a highly significant difference ($p < .001$; LR

chi-square = 49.903, d.f. = 1). Thus, Hypothesis 3b is supported: Conditional on the interview selection process, referrals are more likely to receive a job offer than are external nonreferrals.¹⁰

Internals receive offers at a rate (66 percent) that is significantly different from both referrals ($p < .001$; LR chi-square = 12.413, d.f. = 1) and external nonreferrals ($p < .001$; LR chi-square = 70.475, d.f. = 1). Whereas internals' advantage over external nonreferrals at the interview stage is comparable to that of referrals, clearly internal candidates are preferred over all external candidates post-interview.

Referrals and internal candidates enjoy advantages at each distinct stage of the hiring process. What are the cumulative effects of these benefits? When the job-offer rate is calculated on the base of all applicants (i.e., regardless of whether they have been interviewed), 30 percent of referrals and 55 percent of internal candidates receive job offers, compared with only 3 percent for external nonreferrals. Whereas the advantage of referrals over external nonreferrals is on the order of 3:1, when each stage is considered separately these benefits compound. When candidates first apply, the chance of a job offer for a referral is about 10 times greater than that for an external nonreferral (30 percent versus 3 percent). For internal candidates, the chance of a job offer is more than 18 times that for external nonreferrals (55 percent versus 3 percent).

We now address Hypotheses 4a and 4b: Can the referrals' advantages over nonreferrals shown in analyses of Hypotheses 1 and 2 account for referrals' comparative success in the hiring process (Hypotheses 3a and 3b)? To answer this question, we develop predictive models of interview and job offer to control for the effects of referrals' more appropriate résumés and better timed applications.

Table 4 presents the descriptive statistics for the interview and job-offer models. We

⁹ Recall that the size of the monetary reward given to current employees for referrals varies by job. In preliminary analyses, we studied the impact of the size of the reward on the chance of being interviewed and offered a job. Although we cannot rule out that the reward may affect the size of the applicant pools for the four jobs, we could not find any evidence that the reward affects hiring outcomes.

¹⁰ Contrary to past research, which says that network recruits are more likely than other recruits to accept job offers (Blau and Robins 1990; Holzer 1987), we find no evidence of application source differences in the propensity to accept job offers: Regardless of application source, 90 percent of offers are accepted.

include four sets of independent variables in our models of the hiring process. First, we include the various résumé variables to control for the candidate's appropriateness. As with our tests of Hypothesis 1, we code dummy variables for computer skills, foreign language skills, and education. We also include variables for years of bank experience and years of nonbank experience. Consistent with much of the literature in the human capital tradition (Mincer 1974), we include a squared term for years of bank experience to measure the decaying value of work experience. We also include an interaction between years of bank experience and education to assess WRHR's contention that recruiters see college education and bank experience as substitutes for one another. Second, with regard to application timing (Hypothesis 2), we assess the average state of the market for the job during the month of initial application by measuring the number of applications per opening. Third, we include three control factors in the models: gender, multiple applications, and a set of dummy variables for job title (CSR is the omitted category). Finally, we distinguish application source by coding two dummy variables for internal candidates and referrals (external nonreferrals are the omitted category). In preliminary analyses, we found no evidence of interactions between each of these factors and the other variables in our models. Consequently, we assess the impact of these variables by entering them in the models in a linear form.

Overall, 31.6 percent of applicants were interviewed and 18.5 percent of interviewees were offered jobs (see Table 4). The interview and job-offer candidate pools also show different application source composition. Whereas referrals make up 8.1 percent of all candidates, referrals are 2.5 times more numerous among interviewees than among initial candidates (20.3 percent versus 8.1 percent). A similar pattern emerges for the small number of internals: Although internal candidates make up only 1.4 percent of the pool of initial candidates, they compose 3.3 percent of candidates for job offers.

Except for years of bank experience, candidates who have been interviewed have, on average, more appropriate résumé characteristics than do initial applicants. Applicants who advance past the interview stage also

Table 4. Weighted Means and Standard Deviations for Variables in the Interview and Job-Offer Models

Variable	Interview Model	Job-Offer Model
<i>Control Variables</i>		
Female	.43 (.50)	.55 (.50)
Made multiple applications	.16 (.37)	.16 (.36)
Business banker	.22 (.41)	.07 (.25)
Mortgage consultant	.17 (.37)	.10 (.30)
Personal banker	.30 (.46)	.36 (.48)
Customer service representative	.32 (.47)	.48 (.50)
<i>Résumé Variables</i>		
Has computer skills	.50 (.50)	.61 (.49)
Has foreign language skills	.21 (.41)	.29 (.45)
Years of bank experience	4.55 (6.38)	4.04 (5.11)
(Years of bank experience) ²	61.36 (148.46)	42.41 (110.09)
Has 14 to 16 years of education	.82 (.39)	.86 (.35)
Years of bank experience × 14 to 16 years of education	3.68 (6.06)	3.29 (4.81)
Years of nonbank experience	6.29 (6.32)	4.69 (4.96)
<i>Timing of Application</i>		
Applications per opening	6.44 (4.70)	4.48 (3.54)
<i>Application Source</i>		
Internal applicant	.01 (.12)	.03 (.18)
External referral	.08 (.27)	.20 (.40)
External nonreferral	.90 (.29)	.76 (.43)
<i>Dependent Variables</i>		
Had interview	.32 (.47)	—
Received job offer	—	.19 (.39)
Number of cases	2,158	818

Note: Numbers in parentheses are standard deviations.

Table 5. Binomial Probit Coefficients Predicting Interview among Applicants to Four Entry-Level Jobs

Independent Variable	Coefficient	Change in P ^a
<i>Control Variables</i>		
Female	.10 (.07)	.040
Made multiple applications	.15 (.09)	.056
Business banker	-.01** (.12)	-.273
Mortgage consultant	-.39** (.11)	-.132
Personal banker	-.27** (.08)	-.094
<i>Résumé Variables</i>		
Has computer skills	.19** (.07)	.068
Has foreign language skills	.38** (.08)	.147
Years of bank experience	.06** (.02)	.023
(Years of bank experience) ²	-.002** (.001)	-.001
Has 14 to 16 years of education	.22* (.11)	.077
Years of bank experience × 14 to 16 years of education	-.02 (.01)	-.008
Years of nonbank experience	-.02* (.01)	-.006
<i>Timing of Application</i>		
Applications per opening	-.05** (.01)	-.018
<i>Application Source</i>		
Internal applicant	.87** (.25)	.335
External referral	1.23** (.12)	.448
Constant	-.45** (.14)	—
-2 Log-likelihood	2,179.98	—
Number of cases	2,158	

Note: Numbers in parentheses are standard errors.

^a Change in the probability of an interview associated with a unit change in each variable. Evaluated at mean levels of years of bank experience, years of bank experience squared, years of bank experience × 14 to 16 years of education, years of nonbank experience, applications per opening, and the following categories for the nominal variables: male, 14 to 16 years of education, no computer skills, no foreign language skills, applying for customer service representative, applying only once, and external nonreferrals.

* $p < .05$ ** $p < .01$

have better timed applications than do initial applicants. On average, initial candidates applied at times when there were 6.4 competitors for the job to which they were applying, whereas applicants who made it to the job-offer stage had applied when there were fewer competitors (4.5 applicants per job). The fact that survivors of the first stage of screening have more appropriate résumé characteristics and better timed applications than do initial applicants suggests the need to control for selection when we assess the effect of referrals in our multistage model of the hiring process.

If pre-screening by current employees and information about the hiring process are major conduits for the impact of personal contacts on hiring outcomes, we should find that referrals' more appropriate résumés and better application timing account for referrals' higher interview rates (Hypothesis 4a). We test this hypothesis in Table 5.

Table 5 shows the results of a binomial probit model that predicts interviews among applicants. Candidates with computer skills and foreign language skills are significantly more likely to be granted an interview. The derivative (change in P) for foreign language skills is particularly large: Knowing a foreign language increases the chance of an interview by 15 percent. Applicants with 14 to 16 years of education, more extensive bank experience, and less nonbanking experience are also significantly more likely to be interviewed. The significant negative effect of the squared term for bank experience is consistent with the notion that the value of experience decays over time. Although the sign is in the correct direction, the interaction term testing whether education and bank experience are substitutes for each other is not statistically significant. The state of the market during the candidate's month of application is also related to the chance of an interview: When other factors are controlled, candidates who apply when there are greater numbers of applicants per job opening are significantly less likely to be interviewed.

Although there is evidence that résumé factors, application timing, and control variables affect the chances of being interviewed, there is also a large and statistically significant independent effect of referral: Referrals are 45 percent more likely to be interviewed

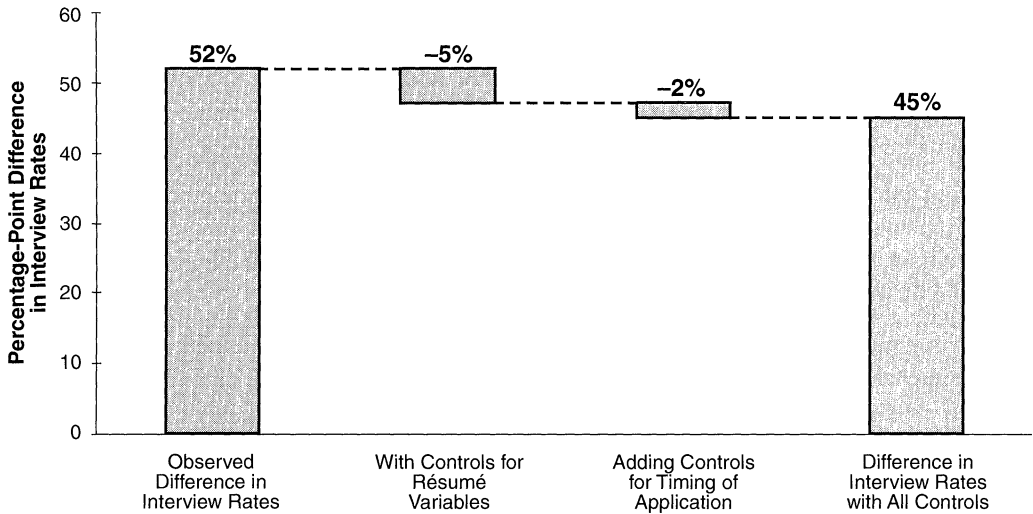


Figure 1. Percentage-Point Difference in Interview Rates between Referrals and External Nonreferrals

than are external nonreferrals, even when applicants in these two groups have the same résumé characteristics and application timing. Indeed, referrals are even more likely to be interviewed than internal candidates. Controlling for other factors, internal candidates are 33 percent more likely to be interviewed than are external nonreferrals.

The referral effect remains substantial even after other factors are controlled, but the question remains how much referrals' more appropriate résumés and better application timing account for their higher interview rates. We ran a series of models (tables available on request) to adjudicate among the various processes that might account for the observed referral advantage. Figure 1 decomposes the "zero-order" referral advantage (i.e., the referral advantage calculated from a probit model predicting interview with only dummy variables for application source)¹¹ into portions attributable to referrals' more appropriate résumé characteristics (as per Hypothesis 1) and better timed applications (Hypothesis 2). Overall, 79 percent of referrals and 27 percent of external nonreferrals are interviewed, but little of this 52 percentage-point difference can be accounted for by

differences between these two groups in résumé characteristics. Controlling for résumé factors lowers this percentage-point difference to 47. The addition of the application timing variable reduces referrals' advantage to 45 percent. Overall, the 7 percentage point reduction in the impact of referral that is attributable to résumé factors and application timing can account for only 13 percent of referrals' observed interview advantage (7 out of 52 percent).¹² Consequently, Hypothesis 4a is not supported in these data.

The interview itself could account for referral/nonreferral differences at the job-offer stage. Interview decisions are primarily based on information provided on résumés and other application materials, but job-offer decisions also rely on candidates' performances during job interviews. Because these four jobs require customer contact, interpersonal skills are likely to be an important consideration in the decision to hire. Nevertheless, even after we control for the interview selection process, referral/nonreferral differ-

¹¹ This model yields coefficients of 1.48 (S.E. = .10) for referrals and 1.60 (S.E. = .19) for internal candidates. The changes in probabilities are .52 for the referral effect, and .56 for the internal candidate effect.

¹² We also measured the extent to which résumé and application timing explained internal candidates' advantage at the interview stage. Before controls, internals are 56 percent more likely to be interviewed than are external nonreferrals; the advantage shrinks to 34 percent after including controls. Despite their small numbers, the coefficient for internal candidate in Table 5 shows that the latter difference is statistically significant.

ences may persist at the offer stage. In particular, it is possible for the mechanisms described by Hypotheses 1 and 2 (i.e., referrals' more appropriate résumés and application timing) to not account for referral/non-referral differences in the probability of receiving a job offer after we control for the interview selection process (Hypothesis 4b).

We test this hypothesis with a predictive model. No one can receive a job offer for these jobs without first being interviewed, so we use interview as the first stage in a selection-corrected model predicting job offer. We estimate a bivariate probit model with selection, which is the appropriate statistical model when both the ultimate dependent variable (job offer) and the selection variable (interview) are dichotomous.¹³ Because the same "paper" criteria are used when the manager decides which of the interviewed candidates will be offered a job, we include all the same predictors we used in the models predicting interview in the job-offer stage analyses.¹⁴

Table 6 presents the coefficients of the bivariate probit model. The correlation between the errors of the two equations is very large (.86), although it is not statistically reliable. The high correlation between the errors strongly suggests that whatever factors are omitted from the interview stage are also

omitted from the offer stage. This result is consistent with a model in which the first and second stages are attempting to sort applicants on the same criteria. But, the large standard error for the correlation between the error terms means that the two processes are difficult to separate statistically. Although collinearity between the two stages of the model limits our ability to make confident inferences about omitted factors, we are able to reliably separate the effects of other predictors on hiring outcomes by stage. Most important, several substantively important job-offer stage effects survive the collinearity problems inherent in modeling this multistage process, including the effect for referral.

Although not all the effects are statistically significant, the impacts of the independent variables on job offer are, with few exceptions, in the same direction as those for the interview stage. This finding also supports WRHR's contention that the hiring process is a series of successive, consistent screens. The derivatives show that effects at the job-offer stage are much attenuated compared to the effects at the interview stage. For example, foreign language skills improve the chance for an interview by 15 percent, but raise the chance of a job offer by only 4 percent. This outcome is likely to be due to the selected nature of the post-interview field of candidates.

To test Hypothesis 4b, we assess the impact of application source on the chance of a job offer. We ran a series of models (tables available on request), decomposing the observed referral advantage in job-offer rates into parts attributable to referrals' superior chances of selection at the interview stage, their more appropriate résumé characteristics, and their better timed applications. Figure 2 presents referral/nonreferral differences in job-offer rates after these factors are controlled. Overall, referrals are 28 percent more likely to be offered jobs than are external nonreferrals, a difference that is highly significant ($p < .001$; LR chi-square = 49.903, d.f. = 1). Correcting for selection alone lowers our estimate of the referral advantage at the job-offer stage by 12 percentage points. This reduction reflects all the advantages that referrals enjoy at the interview phase, including résumé advantages, application timing

¹³ The logic behind the selection correction used here is similar to Heckman's (1979) approach to selection correction (also see Berk 1983), although the estimation procedure is different. Rather than estimate a selection equation that is then summarized by the inverse of the Mill's ratio and included as a control in a second step, the full-information maximum-likelihood (FIML) estimator used here accounts for the likelihood of selection in a single step. Although computationally more involved than iterative two-step techniques, FIML produces estimates that are asymptotically efficient and generally more efficient than Heckman's two-stage estimator (Maddala 1983).

¹⁴ WRHR recruiters conceive of the hiring process as a series of successively more stringent screens designed to save the hiring manager time. With the exception of characteristics that might be assessed during an interview, they think they know the main criteria that hiring managers use, and they try to make interview decisions that would mimic hiring managers' downstream screening decisions.

Table 6. Results of Bivariate Probit Model Predicting Job Offer Controlling for Selection at Interview Stage for Four Entry-Level Jobs

Independent Variable	Interview Stage		Job-Offer Stage	
	Coefficient	Change in P ^a	Coefficient	Change in P ^a
<i>Control Variables</i>				
Female	.10 (.07)	.039	.27* (.12)	.022
Made multiple applications	.15 (.09)	.058	-.03 (.16)	-.002
Business banker	-1.02** (.13)	-.276	-.50 (.39)	-.019
Mortgage consultant	-.39** (.11)	-.133	.24 (.35)	.019
Personal banker	-.27** (.08)	-.096	-.09 (.14)	-.005
<i>Résumé Variables</i>				
Has computer skills	.18** (.07)	.066	.14 (.11)	.008
Has foreign language skills	.38** (.08)	.147	.46** (.11)	.044
Years of bank experience	.06** (.02)	.022	.06* (.03)	.004
(Years of bank experience) ²	-.002** (.001)	-.001	-.001 (.001)	.000
Has 14 to 16 years of education	.22 (.12)	.078	.16 (.19)	.009
Years of bank experience × 14 to 16 years of education	-.02 (.02)	-.008	-.04 (.03)	-.003
Years of nonbank experience	-.02* (.01)	-.006	-.04* (.02)	-.002
<i>Timing of Application</i>				
Applications per opening	-.05** (.01)	-.017	-.05** (.02)	-.003
<i>Application Source</i>				
Internal applicant	.90** (.22)	.345	1.30** (.28)	.239
External referral	1.24** (.11)	.450	1.24** (.14)	.218
Constant	-.44** (.15)	—	-1.90** (.24)	—
Rho	.86 (1.13)	—	—	—
-2 Log-likelihood	—		2,717.53	
Number of cases	2,158		818	

Note: Numbers in parentheses are standard errors.

^a Change in probability of dependent variable (job offer or interview) for a unit change in each variable. Evaluated at the mean for years of bank experience, years of bank experience squared, years of bank experience × 14 to 16 years of education, years of nonbank experience, and applications per opening, and at the following categories for the nominal variables: male, 14 to 16 years of education, no computer skills, no foreign language skills, applying for customer service representative job, applying only once, external nonreferral.

* $p < .05$ ** $p < .01$

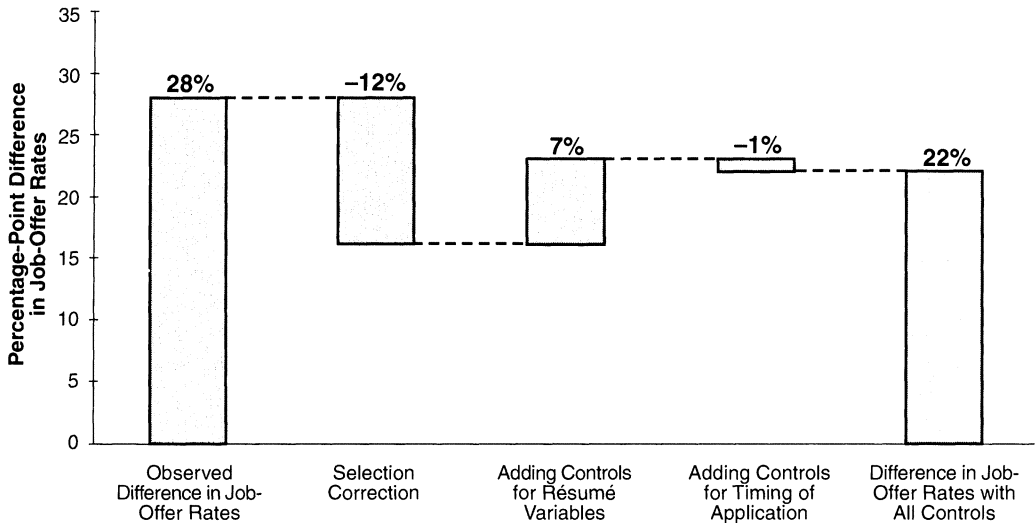


Figure 2. Percentage-Point Difference in Job-Offer Rates (Given Interview) between Referrals and External Nonreferrals

advantages, and possibly better performances during the interviews.

Figure 2 provides some indirect evidence supporting the idea that referrals have superior interview performance. Adding résumé variables to the job-offer analysis raises the referral advantage by 7 percentage points. The fact that adding résumé information from the second screen restores some of the referral advantage suggests that the selection correction overestimates the extent to which the referral advantage results from selection on "paper" credentials. In any case, second stage résumé and control factors cannot account for 5 percentage points of the referral/nonreferral difference in offer rates. This 5-point residual suggests that, compared to external nonreferrals, referrals tend to have more of whatever it is that leads interviewees to be offered jobs, even after résumé variables are taken into account. Although this is certainly not conclusive evidence, this pattern is consistent with the idea that referrals perform better during interviews than do external nonreferrals.

Finally, we add application timing to the job-offer stage of the model: This diminishes referrals' advantage over nonreferrals by an additional 1 percent. When all variables in the model are controlled, a large and statistically significant effect of application source remains. *Ceteris paribus*, referrals' chances

of obtaining a job offer are 22 percent greater than the chances for external nonreferrals. Referrals' advantages over external nonreferrals at the job-offer phase cannot be explained by selection at the interview stage, more appropriate résumé characteristics, or better timed applications.¹⁵ Therefore, Hypothesis 4b is not supported.

DISCUSSION

We have distinguished among the various mechanisms by which personal contacts may influence hiring. We have found empirical support for several theoretical arguments regarding the role of social ties in hiring, but these processes do not account for referrals' advantages during screening in the hiring process. The question remains: What factors can account for referrals' comparative success in recruitment?

We think there are four potential explanations for referrals' advantages. The first involves the use of referrals as a way of solving short-term labor shortage problems. Re-

¹⁵ Whereas referrals were clearly more likely to be interviewed than internal candidates, at the job-offer stage internal candidates' and referrals' advantages over external nonreferrals' job-offer chances are similar (24 percent versus 22 percent).

referrals provide a quick and inexpensive way to generate a pool of job applicants. WRHR turns to referrals when the number of qualified applicants falls too low. Although this policy gives referral candidates an advantage during recruitment, our analyses have shown that the magnitude of the effect is relatively small.

A second explanation emphasizes organizational imperatives not directly related to screening. WRHR personnel see their referral policies as part of a more general strategy of "bottom-up" employee involvement in the running of the bank. Because a direct goal of the referral policy is to heighten employees' feelings of empowerment, they have come to expect that their hiring suggestions will be given serious consideration. By soliciting referrals, WRHR is, in essence, asking employees to put their personal social networks to work for the company. Recruiters may give referrals the benefit of the doubt during screening in order to maintain good relations with current employees, further reinforcing the chance that employees will recommend referrals. We would expect this "benefit of the doubt" effect for referrals to be stronger at the interview phase, which is largely controlled by WRHR, than at the job-offer stage, when the wishes of the hiring manager predominate. This is precisely the pattern we find.

The third and fourth explanations for referrals' advantages in the recruitment process involve post-hire outcomes. The first of these explanations emphasizes the role of referrals in providing extra information to both sides of the market; the second explanation focuses on social obligations between newly hired workers and the employees who have referred them. Both the information and obligation arguments suggest that referrals should produce better post-hire matches so that people hired via personal contacts should be less likely to quit and more likely to perform better than those hired through other channels.

The information argument suggests that social ties provide employers with information on a candidate's skills or attributes (e.g., diligence, honesty) that are difficult to observe before someone is actually hired. Other things equal, the advance information provided by social ties may be a "leading indi-

cator" of post-hire outcomes. Social ties also might transmit information to the applicant about the job that may not otherwise be available. The extra information might lead applicants to make fewer "mistakes" when accepting a job. Thus, referral hires should be better suited to the requirements of the position, and consequently, they should perform better and be less likely to quit than nonreferral hires.

The social obligation argument suggests that, on the one hand, newly hired employees may be concerned with how their on-the-job behavior affects the reputations of the people who referred them. If a new hire seeks to maintain a good relationship with his or her referrer, the new hire will feel additional pressure to perform well. On the other hand, referrers may feel some obligation to help new hires succeed by helping to train, mentor, and monitor the new employees they refer (Bailey and Waldinger 1991; Grieco 1987). Even if the referral is no more skilled or able than other hires, the recruit's preexisting ties to other employees may help him or her to learn the job and adjust more quickly to the workplace. These "obligation" effects can operate even in the context of perfect information.

Irrespective of other organizational imperatives served by a referral policy (e.g., solving labor shortage problems or employee empowerment goals), both the information and obligation arguments suggest that referrals should produce better post-hire matches than other means of recruitment. However, the evidence is mixed on whether people hired via personal contacts make better workers. Given extant data, studies relating application source to turnover or productivity have had to begin with a sample of employees that is likely to distort an assessment of the differences between referrals and nonreferrals because of selection bias. Without examining the hiring *process*, it is difficult to make inferences about the relative post-hire performance of referrals and nonreferrals.

Although we have not addressed post-hire outcomes in this study, the results of this paper put us in a unique position for understanding the processes by which recruitment source mediates job matching. Having elucidated the *nature of the selection mechanism*,

we are now poised to make inferences about the relative post-hire performance of people hired through various recruitment channels. Building on the findings of this paper, our ongoing research on post-hire outcomes controls for selection and allows us to consider separately the pre- and post-hire consequences of personal contacts.

SUMMARY AND CONCLUSION

We have found support for several theoretical arguments regarding the role of social ties in hiring. We brought into sharp focus the theoretical mechanisms by which social ties may affect the hiring process. We then used a unique data source to adjudicate among the competing theoretical accounts of the role of social ties in hiring. In particular, we found evidence that social contacts favorably influence the composition of the pool of job candidates—referrals display more appropriate job qualifications than do nonreferrals. We also found evidence that personal contacts act as a conduit for information about the organizational screening process.

We next examined the influence of employee referral on success at various stages of the recruitment process. If referrals simply provide employers with information about “observable” qualities and skills (such as information they can glean from a résumé), then controlling for these characteristics would eliminate any effect of referral status on the chance of being interviewed. This is simply not the case here. A second possibility is that personal contacts provide advance information on characteristics such as interpersonal skills or oral communication that can be readily discerned in the interview, but not before. If that is the case, recruits with personal contacts should be more likely to be interviewed, but no more likely to be hired, given an interview. Here, too, our data are not consistent with this explanation. Our results show that referrals also have an advantage over nonreferral applicants at the job-offer stage, even after we control for other factors.

The hiring outcomes in this study are best understood not as the result of abstract, disembodied forces like “markets” or “networks,” but as driven by the actions of concrete organizational actors. Although one

might be tempted to view social ties as informal manifestations of the role of kin and ethnic relations in the economy, in our study personal contacts are a formal means by which the firm seeks to harness the power of social relations for its own ends. By considering the actions of the firm’s recruiters, we have demonstrated the power of an empirically grounded approach in giving content to abstractions such as market and network, and we have contributed to a better understanding of the organizational bases of economic life.

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REFERENCES

- Bailey, Thomas and Roger Waldinger. 1991. “Primary, Secondary, and Enclave Labor Markets: A Training Systems Approach.” *American Sociological Review* 56:432–45.
- Baron, James N. 1984. “Organizational Perspectives on Stratification.” *Annual Review of Sociology* 10:37–49.
- Berk, Richard A. 1983. “An Introduction to Sample Selection Bias.” *American Sociological Review* 48:386–98.
- Bishop, John. 1993. “Improving Job Matches in the U.S. Labor Market.” *Brookings Papers: Microeconomics* 1:335–400.
- Blau, David M. and Philip K. Robins. 1990. “Job Search Outcomes for the Employed and Unemployed.” *Journal of Political Economy* 98:637–55.
- Bortnick, Steven M. and Michelle Harrison Ports. 1992. “Job Search Methods and Results: Tracking the Unemployed, 1991.” *Monthly Labor Review* 115:29–35.
- Breaugh, James A. 1981. “Relationships between Recruiting Sources and Employee Performance, Absenteeism, and Work Attitudes.”

- Academy of Management Journal* 24:142-47.
- Breaugh, James A. and Rebecca B. Mann. 1984. "Recruiting Source Effects: A Test of Two Alternative Explanations." *Journal of Occupational Psychology* 57:261-67.
- Bridges, William P. and Wayne J. Villemez. 1986. "Informal Hiring and Income in the Labor Market." *American Sociological Review* 55:574-82.
- Caldwell, David and W. Austin Spivey. 1983. "The Relationship between Recruiting Source and Employee Success: An Analysis by Race." *Personnel Psychology* 36:67-72.
- Campbell, Karen E. and Rachel Rosenfeld. 1985. "Job Search and Job Mobility: Sex and Race Differences." Pp. 147-74 in *Research in the Sociology of Work*, vol. 3, edited by I. H. Simpson and R. L. Simpson. Greenwich, CT: JAI Press.
- Cohen, Yinon and Jeffrey Pfeffer. 1986. "Organizational Hiring Standards." *Administrative Science Quarterly* 31:1-24.
- Corcoran, Mary, Linda Datcher, and Greg J. Duncan. 1980. "Most Workers Find Jobs Through Word of Mouth." *Monthly Labor Review* 103:33-35.
- Datcher, Linda. 1983. "The Impact of Informal Networks on Quit Behavior." *Review of Economics and Statistics* 65:491-95.
- Decker, Phillip J. and Edwin T. Cornelius III. 1979. "A Note on Recruiting Sources and Job Survival Rates." *Journal of Applied Psychology* 55:226-28.
- Gannon, Martin J. 1971. "Sources of Referral and Employee Turnover." *Journal of Applied Psychology* 55:226-28.
- Granovetter, Mark. 1981. "Toward a Sociological Theory of Income Differences." Pp. 11-48 in *Sociological Perspectives on Labor Markets*, edited by I. Berg. New York: Academic Press.
- . 1995. *Getting a Job: A Study of Contacts and Careers*. 2d ed. Chicago, IL: University of Chicago Press.
- Grieco, Margaret. 1987. *Keeping It in the Family: Social Networks and Employment Chance*. London, England: Tavistock.
- Halcrow, Allan. 1988. "Employees Are Your Best Recruiters." *Personnel Journal* 67:42-49.
- Heckman, James J. 1979. "Sample Selection Bias as a Specification Error." *Econometrica* 45: 153-61.
- Holzer, Harry J. 1987. "Hiring Procedures in the Firm: Their Economic Determinants and Outcomes." Pp. 243-74 in *Human Resources and the Performance of the Firm*, edited by M. Kleiner, R. N. Block, M. Roomkin, and S. W. Salsburg. Madison, WI: Industrial Relations Research Association.
- Kalleberg, Arne L., David Knoke, Peter V. Marsden, and Joe L. Spaeth. 1996. *Organizations in America: Analyzing Their Structures and Human Resource Practices*. Thousand Oaks, CA: Sage.
- Kirschenmann, Joleen and Kathryn Neckerman. 1991. "'We'd Love to Hire Them, But . . .': The Meaning of Race for Employers." Pp. 203-32 in *The Urban Underclass*, edited by C. Jencks and P. Peterson. Washington, DC: Brookings Institution.
- Lin, Nan, Walter Ensel, and John Vaughn. 1981. "Social Resources and Strength of Ties: Structural Factors in Occupational Status Attainment." *American Sociological Review* 46:393-405.
- LoPresto, Robert. 1986. "Recruitment Sources and Techniques." Pp. 13-1-13-26 in *Handbook of Human Resource Administration*, 2d ed., edited by J. J. Famularo. New York: McGraw Hill.
- Maddala, G. S. 1983. *Limited-Dependent and Qualitative Variables in Econometrics*. New York: Cambridge University Press.
- Marsden, Peter V. and Karen E. Campbell. 1990. "Recruitment and Selection Processes: The Organizational Side of Job Search." Pp. 59-79 in *Social Mobility and Social Structure*, edited by R. L. Breiger. New York: Cambridge University Press.
- Marsden, Peter V. and Jeanne S. Hurlbert. 1988. "Social Resources and Mobility Outcomes: A Replication and Extension." *Social Forces* 66:1038-59.
- Mincer, Jacob. 1974. *Schooling, Experience, and Earnings*. New York: National Bureau for Economic Research and Columbia University Press.
- Osberg, Lars. 1993. "Fishing in Different Pools: Job Searching Strategies and Job Finding Success in NJ in the Early 1980s." *Journal of Labor Economics* 11:348-86.
- Ports, Michelle Harrison. 1993. "Trends in Job Search Methods, 1970-92." *Monthly Labor Review* 116:63-67.
- Quaglieri, Philip L. 1982. "A Note on Variations in Recruiting Information Obtained through Different Sources." *Journal of Occupational Psychology* 55:53-55.
- Rees, Albert. 1966. "Information Networks in Labor Markets." *American Economic Review* 56:559-66.
- Schwab, Donald P. 1982. "Recruiting and Organizational Participation." In *Personnel Management*, edited by K. R. and G. Ferris. Boston, MA: Allyn and Bacon.
- Sørensen, Aage B. and Arne L. Kalleberg. 1981. "An Outline of a Theory of the Matching of Persons to Jobs." Pp. 49-74 in *Sociological Perspectives on Labor Markets*, edited by I. Berg. New York: Academic Press.
- Stoops, Rick. 1981. "Employee Referral Pro-

- grams: Part I." *Personnel Journal* 60:98.
- . 1983. "Employee Referral Programs." *Personnel Journal* 62:690–92.
- Swaroff, Phillip, Lizabeth Barclay, and Alan Bass. 1985. "Recruiting Sources: Another Look." *Journal of Applied Psychology* 70:720–28.
- Taylor, M. Susan and Donald W. Schmidt. 1983. "A Process Oriented Investigation of Recruitment Source Effectiveness." *Personnel Psychology* 36:343–54.
- Wanous, John P. 1980. *Organizational Entry: Recruitment, Selection, and Socialization of Newcomers*. Reading, MA: Addison-Wesley.