# Managerial Valuation of Applicant Credentials and Personal Traits in Hiring Decisions

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# ABSTRACT

# Managerial Valuation of Applicant Credentials and Personal Traits in Hiring Decisions

We study how managers value applicant credentials and personal traits in hiring decisions. Using the ordered probit model, we confirm previous results – managers rank applicant traits higher than credentials. However, we also uncover patterns not previously observed – managerial valuations of some of these characteristics are dependent on managers' perception of the overall state of the economy, on firm and immediate workplace characteristics, and on managers' personal characteristics. Manager valuations of credentials vary with a large number of factors; this is not so for applicant personal traits. This is not surprising as most managers view the five traits considered "as extremely important."

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## 1. INTRODUCTION

Worker productivity may be enhanced by on-the-job training or by the adoption of various human resource management practices, such as pay-for-performance plans and problem-solving teams (Ichniowski and Shaw, 2003). However, the success of these various schemes partly depends on the quality of workers at the time of hiring. Therefore, it is of utmost importance that employers hire high quality workers at the outset.

There is a large literature on businesses' hiring practices. The labor economics literature primarily focuses on the determinants of who gets hired (See, e.g., Hu, 2003; and, Barron et al., 1985). Labor economists have also investigated whether hiring decisions are biased against minorities (See, e.g., Stoll et al., 2004). Traditionally, labor economists mainly use applicant credentials, such as education and labor market experience, when they study who gets hired; applicant personal traits are typically ignored.[1]

The labor economics literature to a lesser degree than the human resource literature, assumes that managers, when making hiring decisions, choose individuals whose contribution to company goals would be largest; and, in an environment where individual contributions are hard to monitor, to hire individuals whose monitoring costs would be lowest. That is, a firm's profit maximization motivates managers' decisions. However, hiring decisions are not purely a function of optimizing behavior but also are a function of the characteristics of the agents making the decisions.[2] Thus, managerial valuations of both applicant credentials and personal traits may vary with their characteristics.

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[1] Recently, the importance of personal traits is recognized in labor economics. A number of studies have found evidence that personal traits, such as sociability, perseverance, and self-esteem, also affect earnings (See, e.g., Cawley et al., 2001; Dunifon et al., 2001; Heckman and Rubinstein, 2001; Goldsmith et al., 1997). Personal traits may also partly explain why some individuals are persistently not employed or why some have longer unemployment spells (See, e.g., Darity and Goldsmith, 1996).

[2] Kaufman (1999, p. 362) points out that in most extant labor economics literature, "imperfections or biases in information are introduced as a feature of the *environment*, not the human agent." That is, traditional

The human resource management literature recognizes the importance of applicant personal traits; and, there is a well-established framework for studying personal traits in this literature, namely the "Big Five" model of personality. The five dimensions in the "Big Five" model are Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness.[3] These traits are especially useful when hiring managers have many qualified applicants (based on credentials) to choose from. Interestingly, there is some evidence that managers put more weight on personal traits. For example, one study finds that employers rank applicant attitude much higher than years of completed schooling (4.6 versus 2.9 on a five-point scale with 5 being very important and 1 being not important) when making hiring decisions (*First Findings*, 1995).[4]

Although the human resource management literature recognizes the effect individual characteristics may have in decision making processes, no one has investigated whether managers' valuation of applicant credentials and personal traits vary with managers' personal characteristics, with managers' perception of the overall state of the economy, and with firm and immediate workplace characteristics. To study these, questions specially designed for this study were appended to The Gallup Organization's Workplace Audit. Managers were asked to rate on a five-point scale the importance of

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models abstract from the characteristics of the decision makers and assume that individuals are rational decision makers.

[3] Neuroticism is the tendency to exhibit poor emotional adjustment, often characterized by chronic stress, anxiety, and depression (Judge and Ilies, 2002). Extraversion refers to one's propensity to be sociable, dominant, and positive in outlook (Watson and Clark, 1997). Openness to Experience is the degree to which one is curious, creative, flexible, and unconventional in behavior (McCrae, 1996). Agreeableness describes the propensity to be kind, gentle, trusting, trustworthy, and warm (Judge and Ilies, 2002). Conscientiousness is a measure of reliability, responsibility, dependability, organization, and persistence (Judge et al., 2002).

[4] Other characteristics considered are applicant's communication skills (4.2), previous work experience (4.0), recommendations from current employees (3.4), previous employer recommendation (3.4), industry-based credentials (3.2), score on tests administered as part of the interview (2.5), academic performance (2.5), experience or reputation of applicant's school (2.4), and teacher recommendations (2.1).

applicant credentials (five factors) and personal traits (five factors) when making hiring decisions.

Since managerial valuations are inherently ordered, we use the ordered probit model in our estimations. For the most part, we obtain fairly intuitive results. For example, managerial valuations of the importance of educational background (one of five applicant credential variables considered) increase with managers' educational attainments; managers who are confident in their companies' financial future tend to give higher valuations to an applicant's educational background, work record, work appraisals, and technical knowledge. Although manager valuations of credentials are found to vary with a large number of factors, this is not so for applicant personal traits. This is not surprising as most managers view the five traits considered "as extremely important."

The rest of the paper proceeds as follows. Section 2 contains a detailed discussion of the data and empirical method used. The results are presented and analyzed in Section 3. Finally, Section 4 provides the implications of our results for private and public policymaking. We also explore extensions to the current study in this section.


## 2. DATA AND EMPIRICAL METHODOLOGY

*2a. Data*

The data employed come from The Gallup Organization. Questions relating to managers' hiring preferences were appended to Gallup's Workplace Audit conducted in February 2003. Respondents to the survey who indicated that they have at least some hiring authority were asked how important selected applicant characteristics are when they make hiring decisions. Of the 1,011 respondents, 289 respondents have at least some hiring

authority; a complete set of regressors are available for 249 respondents. Table 1 contains several respondent or manager characteristics.[5] For example, 20% report having complete authority in making hiring decisions, 57% are men, and 86% are white.

Table 1 near here

The managers were asked to rate on a five-point scale the importance of the following applicant credentials and personal traits: a) educational background; b) professional references; c) work record or experience; d) performance appraisals; e) knowledge of technical skills; f) responsibility, dependability, thoroughness; g) persistence and the ability to stick with something to completion; h) ability to take initiative and do things without being told; i) ability to be open-minded to new experiences; and, j) self-confidence and belief in one's abilities.[6] The first five capture individuals' technical skills which economists deem to be directly related to worker productivity;[7] the last five are personal traits which shape attitudes, and since attitudes lead to certain types of behavior, these broadly capture individuals' behavioral skills. These five traits were chosen because

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[5] Our sample includes both executives and supervisors. All respondents who report having at least some hiring authority are included and, for brevity, we refer to them as managers.

[6] The questions read as follows: "Please tell me how important the following factors are to you in hiring employees. Using a five-point scale, where 5 is extremely important, and 1 is not important at all, please rate the importance of the following factors in deciding whether to HIRE an applicant." To ensure that the responses are independent of the order by which the characteristics are presented, the order of presentation was randomized. For brevity, we shorten the names of some of these characteristics. For example, we refer to responsibility, dependability, thoroughness, as simply responsibility.

[7] These credentials are those most frequently ascertained in organizations' selection systems. For instance, most companies use some sort of application form in their hiring process. These forms usually contain sections asking about educational background, work record, and personal and professional references. Technical skills, whether assessed through structured tests or prior performance appraisals, are also seen as valuable predictors of future work performance (See, e.g., Wilk and Cappelli, 2003). Compensation strategists have characterized work appraisal as the way that "organizations place value on the various parts of their structure through which employees carry out their business strategies and purpose. … job evaluation provides the essential link between business direction and individual [rate] value" (Murlis and Fitt, 1991, p. 43).

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of their demonstrated relationship with job performance.[8] Summary statistics of the responses are tabulated in Table 2.[9]

Table 2 near here

Of the ten characteristics we consider, all personal traits have the highest mean scores which range from 4.35 to 4.73 (on a five-point scale with 5 being extremely important and 1 being not important at all), followed by work record with a mean score of 4.17. Educational background has the lowest mean score at 3.64. It is not surprising that personal traits have the highest mean scores given managers' objective of minimizing monitoring, termination, or quit costs. It is also not surprising that the mean for educational background is lower than that for work record. The latter is a better indicator of applicant productivity in the workplace. Because potential employees also need to acquire firm-specific skills to be productive, managers also deem "ability to be open-minded to new experience" as extremely important.[10]

Since the responses are inherently ordered, the ordered probit model is used to determine whether the responses vary by environmental or managerial characteristics. To maintain consistency with the literature, managerial responses are recoded as follows:

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[8] For example, meta-analyses of studies using the "Big Five" (Personality) taxonomy have demonstrated a clear and consistent relationship between conscientiousness and persistence and job performance across a wide range of occupations (Barrick and Mount, 1991) and openness to new experience has been found to be a "valid [predictor] of training proficiency across occupations" (Mount and Barrick, 1995, p. 168). A proactive personality (i.e., initiative) has also been demonstrated to be both an antecedent to proactive behavior (Crant, 2000) and a positive correlate of job performance (Crant, 1995). Support has also been found for a positive relationship between self-confidence and performance. For example, Krishnan et al. (2002) find this in specific (e.g., sales) contexts while Stajkovic and Luthans (1998) find this in broadly diverse occupational contexts.

[9] Interestingly, when we conduct a factor analysis of the responses for the ten characteristics, two common factors are identified. All five credential items define factor one; and, factor two is found to represent all five personal traits.

[10] Our results are broadly consistent with those in *First Findings* (1995), see footnote 4.

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Extremely important is recoded to 4 (from 5) and not important at all is recoded to 0 (from 1).[11] We discuss the ordered probit model in the next sub-section.

*2b. Ordered Probit*

The model is defined as follows:[12]

$$R_{ij}^* = \theta_j X_{ij} + \varepsilon_{ij}, \qquad j = 1,...,10 \tag{1}$$

where $R_{ij}^*$ is the importance manager *i* gives to factor *j* when making a hiring decision; the matrix **X** contains environmental and managerial characteristics (to be described in detail below);[13] $\theta_j$ are regression parameters and $\varepsilon_{ij}$ is a stochastic error term.

Although $R_{ij}^*$ is not observed, we do observe the responses of the managers to each of the questions relating to these factors. The responses, R, are defined as follows:

$$
\begin{aligned}
R &= 0, \text{ if } R_j^* \leq \mu_{0j} \\
&= 1, \text{if } \mu_{0j} < R_j^* \leq \mu_{1j} \\
&= 2, \text{if } \mu_{1j} < R_j^* \leq \mu_{2j} \,, \\
&= 3, \text{if } \mu_{2j} < R_j^* \leq \mu_{3j} \\
&= 4, \text{if } R_j^* > \mu_{3j}
\end{aligned}
$$

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[11] We keep the original value of the responses in Table 2. Ordered probit estimates of equation (1) and their marginal effects are based on these "transformed" values. We should note that no manager gave a response of "not important at all" for three personal traits (persistence, initiative, and self-confidence). For these variables, the responses are coded as follows: extremely important is recoded to 3 (from 5), and so on.

[12] The following discussion is adopted from Greene (1997) and Gale et al. (2002).

[13] The notion that manager valuations of the ten characteristics are expected to systematically vary not only by the condition of the environment (captured by economy-wide factors and by firm and immediate workplace characteristics) but also by the characteristics of the manager is motivated by recent studies that have shown that decisions are not purely a function of optimizing behavior but also are a function of the characteristics of the agents making the decision. For example, List (2004) finds very strong evidence that individual (trading) actions (in a non-laboratory setting) are influenced by the amount of experience they have in the marketplace. In particular, individual behavior closely matches the prediction of the neoclassical model as they gain more experience. Mason et al. (1991) find that women tend to be more cooperative than men (although the difference is not statistically significant) at the start of a series of non-cooperative games. However, men become more cooperative over time.

where each of the $\mu_j$'s denote unknown threshold parameters for each factor $j$. The managers in principle could respond with their own valuation ($R^*$). However, since the responses are limited to just five choices, managers will choose the response "that most closely represents their own feelings..." (Greene, 1997, p. 927). Given the assumptions of the ordered probit model, the following probabilities for each response $k$ can be derived:

$$\Pr(R = k) = \Phi\left(\mu_{k+1,j} - \theta_j X_{ij}\right) - \Phi\left(\mu_{k,j} - \theta_j X_{ij}\right), \tag{2}$$

where $\Phi(.)$ is the cumulative density function for a normal random variable.

Table 3 contains summary statistics pertaining to environmental factors: managers' perception of the overall state of the economy, industry and firm characteristics, and immediate workplace characteristics. Of the 249 managers in our sample, 23% report that they feel that the economy is in excellent or good condition, 14% are in the manufacturing sector, 67% work for companies with fewer than 500 employees, and 66% report that their team's (or department's) productivity improved during the past year.

Table 3 near here

Responses are expected to vary with managers' perceptions of the overall state of the economy at the time of the interview (CURRENT CONDITION); and with managers' expectations about the state of the economy a year from the time of the interview (FUTURE CONDITION). Both are qualitative variables. CURRENT CONDITION equals 1 when the economy is perceived to be in good or excellent condition; FUTURE CONDITION equals 1 when the economy is expected to get better in a year. Gorter et al. (2003) and Barron et al. (1985) provide clear evidence that labor market conditions (which are dependent on macroeconomic conditions) affect the structure of hiring. This suggests that managers' valuation of the ten characteristics may vary depending on their perceptions

of the current and future state of the overall economy. As Darity and Goldsmith (1996, p. 134) point out, if "firms are risk averse and that information is asymmetric, then firms are likely to be cautious and reluctant in hiring from the pool of the unemployed, since they are not sure how much a given individual has been damaged psychologically by their exposure to joblessness." That is, to minimize the chance of hiring an individual in poor psychological health (a consequence of unemployment) managers are expected to put more importance on personal traits during periods of high unemployment than they normally would. In our context, this means that some of the five personal traits may be judged less important when the economy is perceived to be in good or excellent condition (a tight labor market) or when the economy is expected to get better in the future. That is, negative coefficients are expected for CURRENT CONDITION and FUTURE CONDITION in all personal traits regressions.[14]

Manager responses are also expected to systematically vary with industry and firm characteristics. These include an indicator of the sector a manager works in, company size (measured using the number of employees), company hiring practice, and manager's perceptions of the company's financial condition at the time of the interview and manager's expectations about the company's financial future.

We have no expectation as to how managers in the manufacturing sector would rate these ten factors compared to managers not in the manufacturing sector. Manager

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[14] It should be pointed out that in the ordered probit model, a statistically significant negative coefficient estimate indicates that an increase in the relevant independent variable decreases the probability that the manager will respond "extremely important" (4, highest value for the dependent variable) and increases the probability that the manager will respond "not important at all" (0, lowest value). However, it is not clear how probabilities for responses between the highest and lowest values change with the independent variable. In the context of qualitative independent variables, a statistically significant negative coefficient indicates that compared to the base, the probability that the manager will respond "extremely important" ("not important at all") is lower (higher). Similarly, it is not clear how probabilities for responses 1 to 3 change with the dummy variable. See Greene (1997) for details.

valuations of credentials are expected to increase with company size. According to Dupray (2001), larger firms tend to employ more complex production technologies and experience faster rates of technical and organizational change. These suggest that "the cost of a bad job-worker match could be much more costly than in a small company" (Dupray, 2001, p. 14). Indeed, the author finds that more educated individuals are more likely to be hired by large companies. In addition, if monitoring costs increase with firm size (See, e.g., Garen, 1985), manager valuations of personal traits are also expected to increase with company size. Companies are classified into three groups: companies with less than 500 employees; companies with 500 to less than 10,000 employees; and, companies with 10,000 employees or more. Since the base group is companies with at least 10,000 employees, COMPANY SIZE is expected to have negative coefficients in all regressions.

Managers employed in companies that base their hiring decisions on structured interviews and tests (as opposed to informal interviews) are expected to give higher valuations to each of the credential variables. Cognitive dissonance theory (Festinger, 1957) suggests that managers working in organizations that utilize structured tests and formal interviews would place more value on objective credentials. This allows managers to align their behaviors (i.e., use objective information) in a manner that would maintain consistency with an implicit attitude that formal selection methods lead to a more rational decision. Since we define HIRING PRACTICE=1 when managers report that hiring decisions are based on structured interviews and tests, HIRING PRACTICE is expected to have positive coefficients in the credentials regressions. Symmetrically, we expect HIRING PRACTICE to have negative coefficients in the personal traits regressions.

Managers' perceptions of the current and future financial conditions of the companies they work for are also expected to affect their valuations. The rationale provided for managers' perceptions about the current and future state of the overall economy applies here as well. That is, (perceived) context matters. We define COMPANY CURRENT CONDITION=1 when the company's current financial condition is perceived to be excellent or good; two dummy variables capture managers' confidence in the financial future of the companies they work for (COMPANY FUTURE CONDITION). The base category for COMPANY FUTURE CONDITION is when managers disagree or strongly disagree with the following statement "I am confident in my company's financial future." Thus, these three dummy variables are expected to have negative coefficients in the personal traits regressions.

There is, however, an alternative explanation as to why valuations are expected to vary with perceived current company condition. This explanation is partly motivated by an anomaly that has been consistently observed in non-market or market experiments: individual preferences appear to be not independent of endowment (See, e.g., List, 2004). An individual's valuation of a good rises with ownership of the said good.[15] This psychological effect in our context may be interpreted as follows: People prefer to work for companies in excellent financial condition. Hence, if managers perceive that the companies they work for are in excellent condition, their valuation of their jobs would rise. Maintenance of their companies' finances becomes more important; thus, managers would give higher valuations to each of the ten factors. This is because one way to preserve (if not improve) a company's financial condition is the selection and hiring of "good" workers. This means that COMPANY CURRENT CONDITION is expected to have positive

[15] This anomaly is referred to as the endowment effect.

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coefficients in all regressions. However, since this and the previous explanation lead to opposite predictions, the sign for COMPANY CURRENT CONDITION in the personal traits regressions is then ambiguous.

Immediate workplace characteristics include productivity, turn-over, gender mix, and racial mix. We define productivity as the quantity and quality of work done, taking into account the amount of resources used. Our expectation on how the managers' responses are correlated with productivity depends on the following assumption: Managers make rational decisions, i.e., decisions are consistent and maximize value (Simon, 1986). Based on this assumption, if an organization has established a level of success with regard to its productivity, we would expect that it would make decisions that would have the lowest probability of causing that performance to decline. Thus, managers are expected to value each of the characteristics more. We define PRODUCTIVITY=1 when the workplace is reported to have experienced an improvement; thus, we anticipate that PRODUCTIVITY will have positive coefficients in either the credentials or personal traits regressions. This explanation is quite similar to the endowment effect identified in the previous section.

Attribution theory has two tenets: self-serving bias and fundamental attribution error. Self-serving bias characterizes the tendency to attribute our own success to internal factors and our failures to external ones, one effect being to help preserve psychological well-being (Miller and Ross, 1975). The basic principle of the fundamental attribution error is that when making judgments about the behavior of other people, we tend to overestimate the importance of internal factors and underestimate the importance of external factors (Miller and Lawson, 1989). Taken together, these provide a theoretical explanation for managers' valuation of applicant characteristics based on company turnover.

There are two main reasons why employees leave organizations. First, when an employee leaves an organization, the employee, at some level, is rejecting the company. Thus, this could be viewed as a failure of the organization in its ability to retain its workforce. The second explanation follows from attribution theory. Based on the self-serving bias principle, managers would attribute an employee's departure to some deficiency on the employee's part, as opposed to an organizational shortcoming. The fundamental attribution error principle, in addition, would predict that managers would attribute such deficiencies to an internal characteristic of the employee (e.g., lack of desire, unwillingness to work hard), and thus would be more cautious in relying on personal characteristics (i.e., traits), and, accordingly, would more likely to weigh objective information (i.e., credentials) more heavily when selecting new employees. We define TURNOVER=1 if the immediate workplace is reported to have experienced increased turnover; following attribution theory, TURNOVER is expected to have positive coefficients in the credentials regressions and negative coefficients in the personal traits regressions.

We classify workplaces according to their gender composition as follows: co-workers mostly men (GENDER MIX: MOSTLY MEN); co-workers mostly women (GENDER MIX: MOSTLY WOMEN); and, co-workers half-men, half-women. We define the last category as the base group. Our expectations for these variables depend on two assumptions: first, managers consider the effects of their decisions on the dynamics of the workplace; [16] second, men put more weight on objective characteristics. [17] If both

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[16] There is a fair amount of evidence that leads to the conclusion that, in general, managers are risk averse (See, e.g., Janis and Mann, 1977). The literature in group dynamics details the power of pressures on individuals to conform with group norms in order to gain acceptance (Kiesler and Kiesler, 1969). Going

assumptions hold, given our variable definitions, we would expect GENDER MIX: MOSTLY MEN to have positive coefficients in the credentials regressions and GENDER MIX: MOSTLY WOMEN to have positive coefficients in the personal traits regressions.

Managerial valuations of the ten characteristics are also assumed to be related to the racial composition of the immediate workplace. We define RACIAL MIX: MOSTLY SAME=1 if co-workers mostly are of the same race. Managers making hiring decisions often develop an unconscious schema, or mental model, about the attributes of applicants (Fiske and Taylor, 1991). Even if not based on conscious discrimination, such schemas are often based on demographic characteristics, such as race (Powell and Butterfield, 2002). Race becomes part of the hiring decision-making schema when the incumbents are primarily of one race. Thus, when, for instance, white individuals dominate the incumbents in a particular job title, decision makers are more likely to view white applicants as possessing the personal qualities necessary for success in the position. The sign for RACIAL MIX: MOSTLY SAME in all regressions is ambiguous as it depends on both the race of the applicant and the racial composition of the current incumbents.

Seven managerial characteristics available from the survey are considered: hiring authority, tenure with the company, tenure at the position, gender, race, age, and educational attainment. Managers are classified into three hiring authority groups. Managers with less control over hiring are expected to systematically give higher valuations to each of the credential variables considered: The less complete one's hiring

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against group norms would thus run the risk of one's not being accepted, and hence we would expect most managers to conform with his/her group's norms.

[17] For example, some studies of strategic decision-making have found that women place greater emphasis on non-financial goals relative to men (Kaplan, 1988); rate intrinsic motivators (e.g., recognition) as more important than do men (Fischer et al., 1993); and, are more likely to rely less on systematic processes than men (Brush, 1992).

authority, the more probable that a hiring decision may need to be defended (to a superior); and, the more the need to conform with the norm of making decisions based on objective criteria.[18] Since managers are classified into three groups, with the group having complete control as the base, the above explanation suggests positive (negative) coefficients for HIRING AUTHORITY in the credentials (personal traits) regressions. However, *conditional* on an applicant having the requisite credentials, managers with less hiring authority may also put more importance on personal traits as doing so tends to minimize the chance of making a bad hire. That is, positive coefficients for HIRING AUTHORITY cannot be ruled out in the personal traits regressions. Thus, the sign for HIRING AUTHORITY in the personal traits regressions is ambiguous.

Recently, studies have found that experience in the marketplace and gender influence individual choices and behavior (e.g., risk-taking) in market and non-market settings. For example, Myagkov and Plott (1997) find that participants in an experiment become less risk-seeking with experience; Dwyer et al. (2002) find that women take less risk than men in financial matters. These suggest that managerial valuations of each of the ten characteristics will also vary by tenure, age, and gender.[19]

Valuations of applicant credentials are expected to be higher, the shorter the manager's experience level. That is, managers with less experience with the company (TENURE WITH COMPANY) or at the current position (TENURE AT POSITION) are expected to put more value on objective characteristics (i.e., on credentials). The rationale as to why these factors are expected to be correlated with managers' responses is the same

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[18] There is evidence that group members of higher status are allowed to deviate from the norms to a greater degree than lower status members (Hackman, 1992).

[19] That is, since individual choices and actions are dependent on their tastes or preferences, managerial valuations of the ten factors are also expected to vary based on these same characteristics.

to those given for hiring authority. Three tenure groups are considered; the base group being those that have at least 15 years of tenure (those with most seniority). This classification scheme suggests that we expect TENURE WITH COMPANY and TENURE AT POSITION to have positive coefficients in the credentials regressions. This is because reliance on more objective criteria may require less defense of a bad choice brought about by inexperience. And, the need to conform to the norm of rational decision-making is also more intense the shorter the tenure. Negative coefficients, on the other hand, are expected in each of the personal trait regressions. However, positive coefficients cannot be ruled out in the personal trait regressions. As previously indicated, to minimize the chance of making a bad hire, if managers with shorter tenures are more cautious, *conditional* on applicants having the requisite credentials, managers with shorter tenures may also put more importance on personal traits.

While tenure with company and tenure at position capture experience related to the job, the inclusion of the age variable controls for managers' tolerance for risk taking. In a study examining asset allocation decisions, Riley and Chow (1992) found that risk aversion declined with age, up to age 65, at which point risk aversion increased. Since the relevant age group for our purposes is less than 65 (all but four of our managers are 65 years old or less), *conditional* on applicants having the requisite credentials, the valuation of personal traits is expected to increase with the manager's age. AGE is expected to have positive coefficients in the personal traits regressions.

Although there is growing evidence in the management literature that there are few, if any, substantial differences between men and women on measures of performance-related ability (e.g., Eagly and Carli, 1981; Hyde, 1981), there are several indications that

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the two genders do differ in their management styles. For instance, women seem to use more interpersonal skills when leading subordinates, whereas men tend to rely on formal structure and authority in their leadership activities (Druskat, 1994; Eagly and Johnson, 1990). One would expect, then, that women would focus more on personal traits in selection decisions, at least relative to men. Thus, a positive (negative) coefficient is expected for MALE in each of the credentials (personal traits) regressions.

We expect non-white managers to rate the importance of subjective applicant characteristics (i.e., personal traits) higher than white managers; this is due to a greater tendency for non-white managers to feel themselves discriminated against and evaluated inequitably on workplace measures (See, e.g., Dixon et al., 2002).[20] Thus, WHITE is expected to have a negative coefficient in each of the personal traits regressions. Likewise, we also expect white managers to rate the importance of objective applicant characteristics higher than non-white managers; thus, a positive coefficient is expected for WHITE in each of the credentials regressions.

Finally, managers' valuation of applicant credentials is expected to increase with managers' educational attainment. For example, investments made by managers in their own education signal the importance they place on this factor. Managers are grouped according to whether or not they are at least a college graduate. Since at least a college graduate is the base group, EDUCATIONAL ATTAINMENT is expected to have negative coefficients in some of the credentials regressions.

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[20] Dixon et al. (2002), in a study of more than 1,000 university employees, find that black and Hispanic workers perceive themselves to be discriminated against and treated unfairly compared to their white co-workers. This would in turn, theoretically, make the non-white managers more sensitive to the need to judge others on more than just objective criteria.

3. ANALYSIS OF RESULTS

The coefficient estimates for the ordered probit models are contained in Tables 4 and 5. Judging by the computed $\chi^2$ values (with 24 degrees of freedom), with the exception of one, all models are statistically significant at conventional levels of significance. Three goodness-of-fit measures suggest that the models have fairly decent fits. We consider variables that are found to be statistically significant in at least the 10% level below. Managers' valuation of the importance of work record, work appraisals, persistence, and open-mindedness in hiring decisions vary with their perceptions of the current state of the economy. Perception of the company's future financial condition is found to be statistically significant for educational background, work record, work appraisals, technical knowledge, responsibility, persistence, and initiative. The characteristics of the immediate workplace are found to be statistically insignificant in all cases except two.

Tables 4 and 5 near here

With regard to managers' characteristics, hiring authority is statistically significant for work record and technical knowledge. Tenure with company is statistically significant for work record and responsibility. A manager's tenure at the current position is statistically significant for references, work record, work appraisals, and self-confidence. Age is statistically significant for responsibility, persistence, initiative and self-confidence. A manager's race is also found to be related to the valuation of applicants' work appraisals and self-confidence. Finally, educational attainment is statistically significant for educational background, work appraisals, persistence, initiative, open-mindedness, and self-confidence.

To better understand the implications of our results, we present the marginal effects of the variables found to be statistically significant in at least the 10% level in Tables 6 and 7. The marginal effects for each of the characteristics (except Age) are obtained as follows: Pr[R|x=1] - Pr[R|x=0], with all other characteristics kept at the mean values. We also indicate the statistical significance of the marginal effects.

Tables 6 and 7 near here

Consider the marginal effects for educational background in Table 6. The results indicate that managers who report that they strongly agree, agree (marginal effect=0.1662) or are neutral (marginal effect=0.2249) with the statement "I am confident in my company's financial future" are more likely (than managers who report that they disagree or strongly disagree with the statement) to rate this characteristic as extremely important (R=4);[21] and, the differences are statistically significant at the 1% level. This is not unanticipated given the proclivity of managers in Western democracies (e.g., the United States) to state a preference for rationality in making decisions (Robbins, 2001). Thus, managers responding to a question about a future positive outcome might be expected to give great weight to an objective (i.e., rational) attribute of those who would contribute to that success, namely prospective employees.

This bias toward proclaiming a rational foundation in decision making may also account for the fact that in our study, all else being equal, managers whose team or department experienced increased turnover in the past year were also more likely to value educational background as extremely important (marginal effect=0.1018), consistent with

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[21] This also means that they are less likely to respond not important at all (R=0). Note that the sum of the probabilities for each row in Tables 6 and 7 equals one. Our analysis focuses on the upper tail of the probability distributions. We should further note that the marginal effects at all response values for the most part are statistically significant in at least the 10% level.

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our a priori expectations. The difference in the probabilities is statistically significant at the 1% level.

Managers with no college degrees are less likely to rate educational background as extremely important when hiring employees (marginal effect=-0.0756). The difference in the probabilities is statistically significant at the 10% level. This outcome is not surprising; managers tend to show positive bias toward those they perceive to be similar to them. This similarity effect is frequently seen in the human resource practices of both selection and performance appraisal (Mathis and Jackson, 2003; Pulakos and Wexley, 1983).

Managerial valuations of professional references are correlated only with managers' tenure at their current position. Managers who have been in their current position for less than three years are less likely to rate references as extremely important than managers that have been in their current position for 15 years or more (base group). The difference in the probability is about 30%. A qualitatively similar result is obtained for managers who have been in their current position for 3 to less than 15 years. Both marginal effects are statistically significant at the 1% level. These results are opposite those of our expectations. In the previous section, we argued that managers with shorter tenures are expected to put more value on objective characteristics. This is because a bad choice brought about by inexperience may require less defense to a superior if the choice was based on objective (rather than subjective) criteria. A plausible explanation for our results is this: while obtaining employment background information (i.e., reference checks) on prospective employees has been a long-standing, widespread, organizational practice (Muchinsky, 1979; Ryan and Lasek, 1991), the current consensus among human resource management researchers and practitioners is that reference checks have little utility in the selection

process (See, e.g., Hunter and Hunter, 1984; Reilly and Chao, 1982). The primary reason for this is that applicants are unlikely to supply a reference source who is likely to provide negative information; and employers, due to fears of defamation litigation, are increasingly unlikely to offer more than verification of employment dates.  Therefore, managers with shorter tenures would be less apt to place as much weight on information obtained from reference checks than would their counterparts with longer tenures, for whom the practice of obtaining background information would more probably have become a matter of habit.

Managers' valuations of work record and performance appraisals vary with the most number of factors. Managers who rate the economic condition of the country today as good or excellent are less likely to view an applicant's work record and appraisals as extremely important. The marginal effects are -0.1636 and -0.1383, respectively; and, both effects are statistically significant at the 1% level. Managers who report that they strongly agree or agree with the statement "I am confident in my company's financial future" are more likely to rate these characteristics as extremely important. The probability differences are also statistically significant at the 1% level. These results seem contradictory, but they are not. The first result suggests that managers place less value on work record and performance appraisals when the labor market is (perceived to be) tight. One way to preserve (if not improve) their companies' financial future is to hire "good" workers. Thus, managers place higher valuations on work record and performance appraisals when they are confident in their companies' financial future.

As suggested in the preceding section, managers with less hiring authority would probably exhibit a lower tendency to risk norm violation by using objective information to a greater extent than managers with more authority. Our results support this contention, as

the less hiring authority managers have, the more likely they are to judge work record as extremely important. The difference in the probabilities between managers with complete and managers with (only) a great deal of hiring authority is about 14%.

All else equal, tenure with the company also affects a manager's valuation of work record. In particular, managers are more likely to rate work record as extremely important the shorter their tenure is with the company. This is consistent with our expectations. The difference in probabilities is not only statistically significant but also practically significant at about 30-38%. Interestingly, tenure at the current position has the opposite effect—managers are less likely to rate work record as extremely important the shorter their tenure is at the current position. A similar qualitative result is found for work appraisals. A conjectural explanation for these dissimilar results is this: When a manager is a relative newcomer to an organization, he/she may be more likely to rely on objective evaluation measures, so as to conform with group norms. On the other hand, managers who are newcomers to a position may very well be more apt to take a "clean slate" approach, i.e., reserve judgment on employees' work record until they have had the opportunity to view their workers' performance firsthand.

Controlling for all other factors, white managers are less likely to rate work appraisals as extremely important (marginal effect=-0.2273). We had expected a positive coefficient with a belief that non-whites will place less importance on work appraisals when they believe that these are done unfairly. However, we obtain a result that is opposite of our expectation. The desire to conform could explain why non-white managers would more likely give a higher valuation (than whites) to an objective characteristic.

Managers without at least a college degree are more likely to rate work appraisals as extremely important (marginal effect=0.1014). Lesser-educated managers value work appraisals more as they may not have the technical knowledge to evaluate applicants using factors that are not directly related to the work under consideration. The marginal effect for this relationship is statistically significant at the 1% level.

Managers who are neutral with the statement "I am confident in my company's financial future" are more likely to rate technical knowledge as extremely important (marginal effect=0.2117). And, the less hiring authority managers have, the more likely knowledge of technical skills will be judged to be extremely important. These results are consistent with our expectations.

Turning to the five traits, we find that the marginal effects are statistically significant for only a small number of variables; and, for practical purposes significant for even fewer variables, see Table 7. This is not surprising as almost all respondents rate these characteristics as extremely important or important (See Table 2); three of these traits did not even receive a response of "not important at all" from a respondent. These traits are persistence, initiative, and self-confidence.

Valuations of responsibility and open-mindedness tend to vary with selected environmental and managerial characteristics. Managers who rate their company's current financial condition as excellent or good are less likely to rate responsibility as extremely important to hiring whereas managers who strongly agree or agree with the statement "I am confident in my company's financial future" are more likely to rate responsibility as extremely important. The marginal effects are -0.2150 and 0.4305, respectively; and, both are statistically significant at the 1% level. The former result suggests that personal traits

are judged by managers to be less important when they perceive their companies to be doing well. The latter result is consistent with the notion that a desire to not change a successful system will lead managers to put more importance on all applicant characteristics.

Compared to managers in a gender-mixed work environment, managers in workplaces that are mostly women are more likely to rate responsibility as extremely important (marginal effect=0.1594). This comports with a stream of organizational literature suggesting that, compared to men, women are much more likely to not only be expected to demonstrate conscientiousness, but actually do so (See, e.g., Lippa, 1995). So, managers in workplaces that consist mostly of women would value this characteristic more highly than managers in gender-mixed workplaces. The marginal effect, though, is statistically significant only at the 10% level.

All else equal, managers who have been with the company for less than three years are less likely to rate responsibility as extremely important (marginal effect=-0.1145). A similar result is obtained for older managers. Although both are statistically significant at the 5% level, the probability differences are small. The first result could be explained by the conformity pressures outlined earlier. In addition, managers with shorter tenures may have less opportunity to see the benefits of responsibility in an employee over time, particularly in comparison with their longer-serving colleagues; thus, they place less value on responsibility. Although we had expected AGE to have positive coefficients in the personal traits regressions, it not surprising that we find a negative coefficient for AGE here. This is because older managers might also want to comply with norms of objectivity since older managers often perceive themselves to be more vulnerable to having their

employment terminated than younger workers. Thus, they would place less value on a subjective characteristic than their younger counterparts.[22]

With regard to open-mindedness, extremely important is a less likely response for managers who perceive that the current economic conditions are excellent or good, perhaps due to concerns about changing things during times of positive outcomes; or, for managers in manufacturing, where changes in systematic processes might be counterproductive. The marginal effects are -0.1500 and -0.1799, respectively. Finally, managers without at least a college degree are more likely to rate open-mindedness as extremely important (marginal effect=0.2140). All the marginal effects are statistically significant at the 1% level.

The following generalizations can be made from the above results: manager valuations of credentials mostly vary with manager's perceptions of the *current* state of the overall economy; with the *future* state of their companies; with manager's hiring authority, tenure at the current position, and educational attainment. Since very little variation exists in how managers rate the five traits, it is not surprising that very few of the coefficient estimates (and marginal effects) are statistically and practically significant in the personal traits regressions.

## 4. CONCLUDING COMMENTS

The increasing level of demographic diversity in U.S. workplaces, combined with the knowledge that individuals often are attracted to, selected by, and exit companies based

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[22] This fear has enough of a basis in reality that U.S. workers over 40 years of age receive protection from discrimination in employment under the Age Discrimination in Employment Act (ADEA). Passed in 1967, and amended in 1978 and 1986, the ADEA covers all employment practices, including hiring, discharge, pay, promotions, benefits, and other terms of employment. According to one professional human resources association, the area of layoffs/downsizing has the greatest potential for age discrimination, due to such factors as older employees earning higher wages on average than younger workers, stereotypes about older individuals not having the requisite stamina to perform certain jobs, even concerns about the "image" that older workers portray to customers and clients of an organization (Quirk, 1993).

upon the congruence of their own personal characteristics (e.g., attitudes, values) and attributes of the employing organization (e.g., structure and culture) (See, e.g., Schneider, 1987; Schneider et al., 1995) makes the investigation of managerial valuations of applicant characteristics particularly relevant. Prospective employees need to know how managers value credentials and personal traits. We confirm previous results—managers rank applicant traits higher than credentials when making hiring decisions. We also uncover patterns not previously observed—managerial valuations of some of these characteristics are dependent on managers' perception of the overall state of the economy, on firm and immediate workplace characteristics, and on managers' personal characteristics.

The paper can be extended in two directions. First, a similar analysis can be conducted for promotions. Do credentials become as important as personal traits when managers make promotion decisions? Second, individuals in the job market can be asked how important they think managers value each of the credentials and personal traits considered. This will provide a much needed insight as to whether there is congruence between employers' valuations and what prospective employees think employers value (when making hiring and promotion decisions). If these two groups' valuations are incongruent, then there is an incentive for government to encourage businesses to develop more transparent screening and reward structures. One practical benefit of this is the potential for a more congruent match between employer and employees, leading to decreases in turnover, absenteeism, counterproductive behavior, etc. From a societal perspective, greater efficiencies in government budgetary policy directed at workforce re-training and subsidization of certain chronically underemployed populations (e.g.,

racial/ethnic minorities, women, etc.) could be achieved through better "fit" between employers and workers.

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TABLE 1. SUMMARY OF MANAGERIAL CHARACTERISTICS

| Characteristics | Mean |
|---|---|
| Hiring authority | |
| Some | 0.37 |
| Great deal | 0.43 |
| Complete (base) | 0.20 |
| Tenure with company | |
| Less than 3 years | 0.27 |
| Three years to less than 15 years | 0.45 |
| Fifteen years or more (base) | 0.28 |
| Tenure at position | |
| Less than 3 years | 0.39 |
| Three years to less than 15 years | 0.49 |
| Fifteen years or more (base) | 0.11 |
| Age | 42.25 |
| Male | 0.57 |
| White | 0.86 |
| Educational attainment | |
| Less than college graduate (base) | 0.41 |
| At least college graduate | 0.59 |

Note: Tabulated from Gallup's Workplace Audit conducted February 2003.

TABLE 2. SUMMARY OF MANAGER RESPONSES
HOW IMPORTANT ARE APPLICANT CREDENTIALS AND PERSONAL TRAITS

| | Mean | Standard Deviation | Coefficient of Variation | Distribution of responses (in %) | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 5 | 4 | 3 | 2 | 1 |
| APPLICANT CREDENTIALS: | | | | | | | | |
| Educational Background | 3.64 | 0.96 | 26.28 | 19.68 | 36.14 | 36.14 | 4.82 | 3.21 |
| References | 3.72 | 1.00 | 26.94 | 25.70 | 32.53 | 32.93 | 6.02 | 2.81 |
| Work Record | 4.17 | 0.82 | 19.70 | 40.16 | 40.16 | 16.87 | 2.41 | 0.40 |
| Work Appraisals | 3.92 | 0.92 | 23.38 | 30.12 | 38.55 | 25.70 | 4.42 | 1.20 |
| Technical Knowledge | 3.98 | 0.91 | 22.84 | 31.73 | 41.37 | 21.69 | 3.61 | 1.61 |
| PERSONAL TRAITS: | | | | | | | | |
| Responsibility | 4.73 | 0.56 | 11.93 | 77.51 | 19.28 | 2.41 | 0.40 | 0.40 |
| Persistence | 4.55 | 0.65 | 14.20 | 62.65 | 30.52 | 6.02 | 0.80 | 0.00 |
| Initiative | 4.67 | 0.60 | 12.86 | 72.29 | 23.29 | 3.21 | 1.20 | 0.00 |
| Open-Mindedness | 4.38 | 0.77 | 17.67 | 53.41 | 33.33 | 12.05 | 0.40 | 0.80 |
| Self-Confidence | 4.35 | 0.71 | 16.30 | 47.79 | 40.16 | 11.24 | 0.80 | 0.00 |

Notes: Tabulated from Gallup's Workplace Audit conducted February 2003.
Scale: Response=5 is extremely important; Response=1 is not important at all.

TABLE 3.  SUMMARY OF ENVIRONMENTAL CHARACTERISTICS

| Characteristics | Mean |
|---|---|
| **ECONOMY-WIDE FACTORS** | |
| Current economic condition | |
|     Excellent or good | 0.23 |
|     Only fair or poor (base) | 0.77 |
| Economic condition in a year | |
|     Get better | 0.57 |
|     Stay the same or get worse (base) | 0.43 |
| | |
| **COMPANY CHARACTERISTICS** | |
| Manufacturing | 0.14 |
| Company size | |
|     Less than 500 employees | 0.67 |
|     500 to less than 10,000 employees | 0.21 |
|     10,000 employees or more (base) | 0.13 |
| Hiring practice=1, if decision based on | |
|     structured interviews/tests | 0.29 |
| Current financial condition | |
|     Excellent or good | 0.73 |
|     Only fair or poor (base) | 0.27 |
| Confident about company's financial future | |
|     Strongly agree or agree | 0.69 |
|     Neutral | 0.19 |
|     Disagree or strongly disagree (base) | 0.13 |
| | |
| **WORK-PLACE CHARACTERISTICS** | |
| Productivity=1, improved during past year | 0.66 |
| Turn-over=1, increased during past year | 0.22 |
| Gender mix | |
|     Co-workers mostly men | 0.43 |
|     Co-workers mostly women | 0.33 |
|     Co-workers half men, half women (base) | 0.24 |
| Racial mix=1, co-workers mostly same race | 0.68 |

Note: Tabulated from Gallup's Workplace Audit conducted February 2003.

TABLE 4. ORDERED PROBIT REGRESSION RESULTS

| | EDUCATIONAL BACKGROUND | REFERENCES | WORK RECORD | WORK APPRAISALS | TECHNICAL KNOWLEDGE |
|---|---|---|---|---|---|
| CONSTANT | 1.3091 [c/] | 2.6130 [a/] | 2.1960 [b/] | 3.1590 [a/] | 1.2755 |
| | (0.7645) | (0.7013) | (0.9525) | (0.8221) | (0.7911) |
| **ECONOMY-WIDE** CURRENT CONDITION | | | | | |
| (Base: only fair; poor) | -0.2384 | -0.2559 | -0.4491 [b/] | -0.4529 [b/] | 0.0156 |
| | (0.2119) | (0.1836) | (0.2065) | (0.2000) | (0.1993) |
| FUTURE CONDITION (Base: stay same; get worse) | 0.1825 | -0.0970 | 0.2751 | 0.0497 | -0.0716 |
| | (0.1684) | (0.1629) | (0.1734) | (0.1691) | (0.1651) |
| **CO. CHARAC.** MANUFACTURING | -0.3407 | -0.0947 | 0.0228 | -0.4097 [c/] | 0.1051 |
| | (0.2390) | (0.2481) | (0.2584) | (0.2218) | (0.2273) |
| COMPANY SIZE: LESS THAN 500 | 0.3083 | 0.0281 | -0.1381 | 0.3673 | 0.3001 |
| | (0.2377) | (0.2553) | (0.2605) | (0.2784) | (0.2630) |
| COMPANY SIZE: 5OO TO LESS THAN 10,000 | 0.4200 | -0.2893 | 0.0325 | 0.1289 | 0.4276 |
| | (0.3063) | (0.2971) | (0.3021) | (0.3149) | (0.3103) |
| HIRING PRACTICE | 0.2304 | 0.2392 | 0.3210 | -0.0988 | -0.2019 |
| | (0.1852) | (0.1958) | (0.2011) | (0.1972) | (0.1955) |
| CURRENT CONDITION (Base: only fair; poor) | -0.2598 | -0.0882 | -0.1392 | 0.0629 | 0.1267 |
| | (0.2266) | (0.2428) | (0.2617) | (0.2550) | (0.2308) |
| FUTURE CONDITION (strongly agree; agree with statement of confidence in future) | 0.7679 [a/] | 0.2469 | 0.7822 [b/] | 0.5706 [c/] | 0.4162 |
| | (0.2948) | (0.3119) | (0.3344) | (0.3382) | (0.3028) |
| FUTURE CONDITION (neutral with statement of confidence in future) | 0.7465 [a/] | 0.0632 | 0.5737 [c/] | 0.2044 | 0.5675 [c/] |
| | (0.2878) | (0.3033) | (0.3086) | (0.3049) | (0.2993) |
| **WORK-PLACE CHAR.** PRODUCTIVITY | 0.0062 | -0.1312 | -0.0633 | -0.1328 | 0.0141 |
| | (0.1633) | (0.1665) | (0.1691) | (0.1751) | (0.1685) |
| TURN-OVER | 0.3709 [b/] | 0.0803 | -0.1645 | 0.2515 | -0.0875 |
| | (0.1868) | (0.1942) | (0.1954) | (0.1953) | (0.2012) |
| GENDER MIX; MOSTLY MEN | -0.2697 | -0.2621 | -0.0322 | -0.3992 | 0.0019 |
| | (0.2012) | (0.2261) | (0.2282) | (0.2427) | (0.2053) |
| GENDER MIX; MOSTLY WOMEN | -0.0487 | 0.1291 | 0.1330 | 0.0837 | -0.0378 |
| | (0.2191) | (0.2314) | (0.2301) | (0.2592) | (0.2232) |
| RACIAL MIX; MOSTLY SAME | 0.2914 | 0.2231 | 0.2852 | 0.1443 | -0.1127 |
| | (0.1800) | (0.1711) | (0.1923) | (0.1705) | (0.1785) |

|  | EDUCATIONAL BACKGROUND | REFERENCES | WORK RECORD | WORK APPRAISALS | TECHNICAL KNOWLEDGE |
|---|---|---|---|---|---|
| **INDIVIDUAL CHAR.** | | | | | |
| HIRING AUTHORITY: SOME | 0.3607 | 0.1816 | 0.1431 | -0.0498 | 0.5404 [b/] |
|  | (0.2256) | (0.2217) | (0.2294) | (0.2468) | (0.2358) |
| HIRING AUTHORITY: GREAT DEAL | 0.2269 | 0.3286 | 0.3564 [c/] | 0.2757 | 0.5146 [b/] |
|  | (0.2152) | (0.2204) | (0.2136) | (0.2301) | (0.2288) |
| TENURE WITH COMPANY (LESS THAN 3 YEARS) | 0.1827 | 0.3226 | 0.9893 [a/] | 0.4726 | 0.3814 |
|  | (0.3002) | (0.2983) | (0.3491) | (0.3346) | (0.2958) |
| TENURE WITH COMPANY (3 TO LESS THAN 15 YEARS) | 0.0931 | 0.2450 | 0.8045 [a/] | 0.3084 | 0.1564 |
|  | (0.2350) | (0.2431) | (0.2427) | (0.2530) | (0.2155) |
| TENURE AT POSITION (LESS THAN 3 YEARS) | -0.3088 | -0.9568 [a/] | -0.8180 [a/] | -0.9560 [b/] | -0.4591 |
|  | (0.3351) | (0.3598) | (0.4085) | (0.4007) | (0.3550) |
| TENURE AT POSITION (3 TO LESS THAN 15 YEARS) | -0.4484 | -0.5866 [b/] | -0.4796 | -0.6525 [b/] | -0.2417 |
|  | (0.2813) | (0.2833) | (0.3167) | (0.3251) | (0.2794) |
| AGE | 0.0063 | -0.0025 | 0.0032 | -0.0097 | 0.0056 |
|  | (0.0082) | (0.0080) | (0.0087) | (0.0092) | (0.0082) |
| MALE | -0.0177 | 0.0428 | -0.1406 | 0.0577 | 0.1963 |
|  | (0.1908) | (0.1636) | (0.1772) | (0.1881) | (0.1731) |
| WHITE | -0.3672 | -0.3577 | -0.4115 | -0.6209 [a/] | -0.3099 |
|  | (0.2400) | (0.2215) | (0.2545) | (0.2353) | (0.2739) |
| EDUCATIONAL ATTAINMENT (Base: at lease college graduate) | -0.3107 [c/] | 0.1694 | 0.2648 | 0.3010 [c/] | 0.0460 |
|  | (0.1659) | (0.1590) | (0.1796) | (0.1696) | (0.1702) |
| Number of observations | 249 | 249 | 249 | 249 | 249 |
| Log of likelihood function | -300.2784 | -318.0305 | -261.0108 | -286.0053 | -296.0829 |
| Restricted log likelihood | -326.7264 | -336.1338 | -285.0791 | -316.0155 | -310.5570 |
| Chi Square | 52.8961 [a/] | 36.2065 [c/] | 48.1366 [a/] | 60.0204 [a/] | 28.9481 |
| Correct predictions | 0.4137 | 0.3735 | 0.5100 | 0.4618 | 0.4739 |
| McFadden $R^2$ | 0.0809 | 0.0539 | 0.0844 | 0.0950 | 0.0466 |
| McKelvey-Zaviona $R^2$ | 0.2173 | 0.1524 | 0.2105 | 0.2490 | 0.1259 |

Notes: The numbers in parentheses are standard errors. [a/] Statistically significant at the 1% level; [b/] Statistically significant at the 5% level; [c/] Statistically significant at the 10% level.

TABLE 5. ORDERED PROBIT REGRESSION RESULTS

| | RESPONSIBILITY | PERSISTENCE | INITIATIVE | OPEN-MINDEDNESS | SELF-CONFIDENCE |
|---|---|---|---|---|---|
| CONSTANT | 4.0792 [a/] | 3.5711 [a/] | 2.6029 [b/] | 2.6331 [a/] | 4.2477 [a/] |
| | (1.3380) | (0.9509) | (1.0493) | (0.8149) | (0.8861) |
| **ECONOMY-WIDE** CURRENT CONDITION | | | | | |
| (Base: only fair; poor) | -0.2580 | -0.4861 [b/] | -0.1911 | -0.3782 [c/] | -0.1286 |
| | (0.2689) | (0.2300) | (0.2590) | (0.2137) | (0.2132) |
| FUTURE CONDITION (Base: stay same; get worse) | 0.0865 | 0.2110 | 0.4897 [b/] | 0.1218 | 0.0884 |
| | (0.2750) | (0.2054) | (0.2278) | (0.1764) | (0.1699) |
| **COMPANY CHAR.** MANUFACTURING | -0.3683 | -0.1017 | -0.1546 | -0.4563 [c/] | -0.2359 |
| | (0.3146) | (0.2640) | (0.3315) | (0.2487) | (0.2279) |
| COMPANY SIZE: LESS THAN 500 | 0.2477 | 0.2539 | 0.3342 | 0.1285 | -0.0371 |
| | (0.3738) | (0.2831) | (0.3292) | (0.2772) | (0.2874) |
| COMPANY SIZE: 500 TO LESS THAN 10,000 | 0.1050 | 0.1498 | 0.4708 | -0.0554 | 0.0523 |
| | (0.4495) | (0.3265) | (0.3884) | (0.3154) | (0.3159) |
| HIRING PRACTICE | -0.1143 | -0.0946 | -0.1913 | -0.0387 | -0.1684 |
| | (0.3053) | (0.2239) | (0.2498) | (0.2019) | (0.1984) |
| CURRENT CONDITION (Base: only fair; poor) | -1.0389 [a/] | -0.1384 | -0.1157 | -0.0376 | -0.0903 |
| | (0.3618) | (0.2425) | (0.3142) | (0.2314) | (0.2383) |
| FUTURE CONDITION (strongly agree; agree with statement of confidence in future) | 1.4016 [a/] | 0.6202 [c/] | 0.6402 [c/] | 0.2905 | 0.3904 |
| | (0.4472) | (0.3204) | (0.3738) | (0.3082) | (0.3022) |
| FUTURE CONDITION (neutral with statement of confidence in future) | 0.5178 | 0.1092 | 0.3991 | -0.0926 | 0.3484 |
| | (0.4418) | (0.3187) | (0.3626) | (0.2975) | (0.2907) |
| **WORK-PLACE CHAR.** PRODUCTIVITY | 0.1772 | 0.2138 | 0.2939 | 0.1673 | -0.0059 |
| | (0.2495) | (0.2112) | (0.2424) | (0.1934) | (0.1837) |
| TURN-OVER | -0.0978 | 0.0456 | -0.0932 | -0.0693 | 0.2442 |
| | (0.2874) | (0.2577) | (0.2855) | (0.2079) | (0.2064) |
| GENDER MIX; MOSTLY MEN | -0.1826 | -0.2245 | -0.2358 | -0.0510 | -0.1541 |
| | (0.3031) | (0.2450) | (0.2664) | (0.2245) | (0.2284) |
| GENDER MIX; MOSTLY WOMEN | 0.6808 [c/] | 0.1973 | 0.1120 | 0.3354 | -0.0601 |
| | (0.3742) | (0.2733) | (0.2819) | (0.2339) | (0.2563) |
| RACIAL MIX; MOSTLY SAME | -0.0506 | -0.1949 | -0.3344 | -0.2507 | -0.2474 |
| | (0.2740) | (0.2101) | (0.2489) | (0.1980) | (0.1997) |

| | RESPONSIBILITY | PERSISTENCE | INITIATIVE | OPEN-MINDEDNESS | SELF-CONFIDENCE |
|---|---|---|---|---|---|
| **INDIVIDUAL CHAR.** | | | | | |
| HIRING AUTHORITY: SOME | 0.2498 | -0.3254 | 0.2096 | 0.2959 | -0.1929 |
| | (0.3478) | (0.2642) | (0.2857) | (0.2599) | (0.2336) |
| HIRING AUTHORITY: GREAT DEAL | 0.3750 | -0.2708 | 0.2059 | 0.3961 | 0.0553 |
| | (0.3624) | (0.2690) | (0.2840) | (0.2471) | (0.2365) |
| TENURE WITH COMPANY (LESS THAN 3 YEARS) | -0.4034 | -0.2521 | -0.1740 | -0.2488 | 0.1683 |
| | (0.4276) | (0.3540) | (0.4127) | (0.3093) | (0.3213) |
| TENURE WITH COMPANY (3 TO LESS THAN 15 YEARS) | -0.5831 [b/] | -0.2411 | -0.1453 | -0.2337 | 0.0141 |
| | (0.2936) | (0.2574) | (0.2937) | (0.2326) | (0.2444) |
| TENURE AT POSITION (LESS THAN 3 YEARS) | -0.3066 | -0.1538 | 0.1138 | -0.2688 | -0.7136 [b/] |
| | (0.5310) | (0.4335) | (0.4389) | (0.3750) | (0.3559) |
| TENURE AT POSITION (3 TO LESS THAN 15 YEARS) | -0.1544 | 0.0294 | 0.3594 | -0.2188 | -0.4130 |
| | (0.4450) | (0.3493) | (0.3552) | (0.3286) | (0.3212) |
| AGE | -0.0290 [c/] | -0.0235 [b/] | -0.0250 [b/] | -0.0070 | -0.0188 [b/] |
| | (0.0153) | (0.0101) | (0.0123) | (0.0090) | (0.0092) |
| MALE | -0.1912 | -0.0824 | -0.0633 | 0.0211 | -0.1138 |
| | (0.3277) | (0.2142) | (0.2299) | (0.1801) | (0.2023) |
| WHITE | 0.1762 | -0.0655 | -0.1574 | 0.0064 | -0.5174 [c/] |
| | (0.3865) | (0.3096) | (0.3465) | (0.2735) | (0.2794) |
| EDUCATIONAL ATTAINMENT (Base: at least college graduate) | 0.3895 | 0.6062 [a/] | 0.4411 [b/] | 0.5480 [a/] | 0.5576 [a/] |
| | (0.2851) | (0.1925) | (0.2178) | (0.1774) | (0.1696) |
| | | | | | |
| Number of observations | 249 | 249 | 249 | 249 | 249 |
| Log of likelihood function | -134.9032 | -192.4668 | -162.3076 | -236.4748 | -228.7658 |
| Restricted log likelihood | -161.5784 | -214.9255 | -183.6765 | -253.2434 | -249.9250 |
| Chi Square | 53.3503 [a/] | 44.9173 [a/] | 42.7378 [b/] | 33.5371 [c/] | 42.3186 [b/] |
| Correct predictions | 0.7751 | 0.6064 | 0.7671 | 0.5542 | 0.5783 |
| McFadden $R^2$ | 0.1651 | 0.1045 | 0.1163 | 0.0662 | 0.0847 |
| McKelvey-Zaviona $R^2$ | 0.3369 | 0.2280 | 0.2424 | 0.1648 | 0.2105 |

Notes: The numbers in parentheses are standard errors. [a/] Statistically significant at the 1% level; [b/] Statistically significant at the 5% level; [c/] Statistically significant at the 10% level.

Table 6. MARGINAL EFFECTS FOR THE ORDERED PROBIT MODELS

| | R=0 | R=1 | R=2 | R=3 | R=4 |
|---|---|---|---|---|---|
| **EDUC. BACKGROUND** | | | | | |
| CO. FUTURE CONDITION (strongly agree; agree with statement of confidence in future) | -0.0492 [a/] | -0.0607 [a/] | -0.1890 [c/] | 0.1327 | 0.1662 [a/] |
| CO. FUTURE CONDITION (neutral with statement of confidence in future) | -0.0221 [b/] | -0.0372 [b/] | -0.2106 | 0.0449 | 0.2249 [a/] |
| WORKPLACE TURN-OVER | -0.0136 [b/] | -0.0218 [b/] | -0.1065 | 0.0402 | 0.1018 [a/] |
| EDUC. ATTAINMENT (Base: at least college graduate) | 0.0149 [a/] | 0.0216 [a/] | 0.0857 | -0.0466 [a/] | -0.0756 [c/] |
| | | | | | |
| **REFERENCES** | | | | | |
| TENURE AT POSITION (LESS THAN 3 YEARS) | 0.0617 [a/] | 0.0926 [a/] | 0.2106 [c/] | -0.0941 | -0.2708 [a/] |
| TENURE AT POSITION (3 TO LESS THAN 15 YEARS) | 0.0293 [a/] | 0.0517 [a/] | 0.1440 | -0.0450 | -0.1801 [a/] |
| | | | | | |
| **WORK RECORD** | | | | | |
| ECONOMY CURRENT COND. (base: only fair; poor) | 0.0027 [a/] | 0.0203 [a/] | 0.1027 [a/] | 0.0379 | -0.1636 [a/] |
| COMPANY FUTURE COND. (strongly agree; agree with statement of confidence in future) | -0.0057 [c/] | -0.0385 [b/] | -0.1779 | -0.0562 | 0.2783 [a/] |
| COMPANY FUTURE COND. (neutral with statement of confidence in future) | -0.0015 | -0.0143 [c/] | -0.1044 | -0.1043 [b/] | 0.2245 [a/] |
| HIRING AUTHORITY: GREAT DEAL | -0.0014 | -0.0119 | -0.0742 | -0.0492 | 0.1367 [a/] |
| TENURE WITH COMPANY (LESS THAN 3 YEARS) | -0.0027 | -0.0242 [b/] | -0.1700 | -0.1817 | 0.3786 [a/] |
| TENURE WITH COMPANY (3 TO LESS THAN 15 YEARS) | -0.0035 [c/] | -0.0281 [b/] | -0.1635 [b/] | -0.1082 | 0.3034 [a/] |
| TENURE AT POSITION (LESS THAN 3 YEARS) | 0.0052 [a/] | 0.0363 [a/] | 0.1799 | 0.0757 | -0.2971 [a/] |
| | | | | | |
| **WORK APPRAISALS** | | | | | |
| ECONOMY CURRENT COND. (base: only fair; poor) | 0.0100 [a/] | 0.0328 [a/] | 0.1196 | -0.0241 | -0.1383 [a/] |
| MANUFACTURING | 0.0095 [a/] | 0.0307 [a/] | 0.1084 | -0.0256 | -0.1230 [b/] |
| COMPANY FUTURE COND. (strongly agree; agree with statement of confidence in future) | -0.0124 [b/] | -0.0406 [b/] | -0.1494 | 0.0265 | 0.1758 [a/] |
| TENURE AT POSITION (LESS THAN 3 YEARS) | 0.0228 [a/] | 0.0692 [a/] | 0.2399 [a/] | -0.0400 | -0.2919 [a/] |
| TENURE AT POSITION (3 TO LESS THAN 15 YEARS) | 0.0113 [a/] | 0.0399 [a/] | 0.1679 [a/] | -0.0050 | -0.2141 [a/] |
| WHITE | 0.0059 [a/] | 0.0258 [a/] | 0.1481 [b/] | 0.0475 | -0.2273 [a/] |
| EDUC. ATTAINMENT (Base: at least college graduate) | -0.0045 | -0.0172 [c/] | -0.0786 | -0.0011 | 0.1014 [a/] |

|  | R=0 | R=1 | R=2 | R=3 | R=4 |
|---|---|---|---|---|---|
| **TECHNICAL KNOWLEDGE** |  |  |  |  |  |
| COMPANY FUTURE COND. (neutral with statement of confidence in future) | -0.0122 [b/] | -0.0254 [b/] | -0.1208 | -0.0533 | 0.2117 [a/] |
| HIRING AUTHORITY: SOME | -0.0148 [b/] | -0.0286 [b/] | -0.1206 | -0.0298 | 0.1938 [a/] |
| HIRING AUTHORITY: GREAT DEAL | -0.0151 [b/] | -0.0285 [b/] | -0.1162 | -0.0223 | 0.1821 [a/] |

Notes: The marginal effects for dummy variables are calculated as follows: Pr [R|x=1] - Pr [R|x=0]. The standard errors are available upon request. [a/] Statistically significant at the 1% level; [b/] Statistically significant at the 5% level; [c/] Statistically significant at the 10% level.

Table 7. MARGINAL EFFECTS FOR THE ORDERED PROBIT MODELS

| | R=0 | R=1 | R=2 | R=3 | R=4 |
|---|---|---|---|---|---|
| **RESPONSIBILITY** | | | | | |
| COMPANY CURRENT CONDITION (Base: only fair; poor) | 0.0011 | 0.0017 | 0.0183 | 0.1938 [c] | -0.2150 [a] |
| COMPANY FUTURE CONDITION (strongly agree; agree with statement of confidence in future) | -0.0085 | -0.0101 | -0.0706 | -0.3413 | 0.4305 [a] |
| WORKPLACE GENDER MIX; MOSTLY WOMEN | -0.0008 | -0.0014 | -0.0143 | -0.1429 | 0.1594 [c] |
| TENURE WITH COMPANY (LESS THAN 3 YEARS) | 0.0009 [b] | 0.0013 | 0.0127 | 0.0996 | -0.1145 [b] |
| AGE | 0.0000 | 0.0001 | 0.0007 | 0.0067 | -0.0076 [b] |
| **PERSISTENCE** | | | | | |
| ECONOMY CURRENT CONDITIONS (Base: only fair; poor) | 0.0064 [a] | 0.0519 [a] | 0.1287 | -0.1869 | |
| COMPANY FUTURE CONDITION (strongly agree; agree with statement of confidence in future) | -0.0081 | -0.0651 [c] | -0.1630 | 0.2362 | |
| AGE | 0.0002 [b] | 0.0020 [b] | 0.0065 | -0.0088 | |
| EDUCATIONAL ATTAINMENT (Base: at least college graduate) | -0.0050 | -0.0495 [c] | -0.1643 | 0.2188 | |
| **INITIATIVE** | | | | | |
| ECONOMY FUTURE CONDITIONS (Base: stay same; get worse) | -0.0072 | -0.0242 | -0.1269 | 0.1583 | |
| COMPANY FUTURE CONDITION (strongly agree; agree with statement of confidence in future) | -0.0121 | -0.0369 | -0.1678 | 0.2167 | |
| AGE | 0.0003 [c] | 0.0011 [b] | 0.0065 | -0.0080 | |
| EDUCATIONAL ATTAINMENT (Base: at least college graduate) | -0.0053 | -0.0192 | -0.1117 | 0.1363 | |
| **OPEN-MINDEDNESS** | | | | | |
| ECONOMY CURRENT CONDITIONS (Base: only fair; poor) | 0.0065 [a] | 0.0029 | 0.0710 [a] | 0.0696 | -0.1500 [a] |
| MANUFACTURING | 0.0092 [a] | 0.0040 | 0.0905 [b] | 0.0763 | -0.1799 [a] |
| EDUCATIONAL ATTAINMENT (Base: at least college graduate) | -0.0066 | -0.0032 | -0.0881 | -0.1162 [b] | 0.2140 [a] |
| **SELF-CONFIDENCE** | | | | | |
| TENURE AT POSITION (LESS THAN 3 YEARS) | 0.0108 [a] | 0.1241 [a] | 0.1419 | -0.2768 | |
| AGE | 0.0002 [b] | 0.0030 [b] | 0.0043 | -0.0075 | |
| WHITE | 0.0037 [a] | 0.0650 [a] | 0.1335 | -0.2022 | |
| EDUCATIONAL ATTAINMENT (Base: at least college graduate) | -0.0059 | -0.0839 [b] | -0.1298 | 0.2196 | |

See notes in Table 6.