Perceived Skills Gaps in Alternative Postsecondary Education as Determinants of Hireability

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Abstract

This paper explores an original data set to understand the influence of perceived skill gaps on hiring. Results show that employers expect low skill from non-college graduates, even when the candidate is technically certified. Respondents expect non-college graduates to break formal and informal rules. Interestingly, this is considered a valuable behavior. State and industry effects each explain about 5 percent of outcomes, skill gaps explain about 10 percent, and interviewer perspectives on rule breakers explains about 15 percent. Perceived soft skill gaps are particularly important.

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1. Introduction

A substantial gap exists between the skills expected by employers and those possessed by college graduates[1, 2, 3, 4]. Vocational school and other non-college means of higher education are seen to endow technical skill, but the traditional degree remains associated with higher wages. This paper tests the hypothesis that perceived skill gaps explain the salary variance. In particular, this paper hypothesizes a perceived soft skills gap among non-college graduates.

The signaling model has become a standard explanation of the value of the degree. Following this model, scholars claim that the college degree signals intelligence, work ethic, and conformity[5]. Alternatives to college signal intelligence and technical skill. This paper tests the hypothesis that employers assume a deficit in the differential candidate properties of conformity and concientiousness.

Concientiousness is associated with a variety of positive outcomes, but there is reason for employers to value imperfect conformity. Firm innovation is attributable to underlying employee innovation, but conformity is antithetical to innovation. Leaders and high performers also behave abnormally, but in a way that is seen as desirable.

Risk aversion represents a seperate reason to select for conformity. A risk averse employer with low ability to distinguish high performing outliers from low performing outliers may prefer not to hire an outlier at all. The gamble is particularly expensive for small employers that are unable to spread risk across many hires. A secondary investigation in this paper will be to look for employer size effects. If large employers are favorable to alternatively educated individuals, this will add weight to an explanation based on risk aversion.

Alternative credentials refer to credentials other than the undergraduate degree[6]. The category includes, for example, industry certifications, portfolios of work, and transcript, badges, or other records of unaccredited learning and achievement. Individuals pursuing alternative credentials typically intend to leverage the credential toward better employment. That is, they have the same

ends as college students. Many individuals obtain alternative credentials as a supplement to the degree. Such a situation is pareto-superior to degree attainment alone and is therefore intentionally excluded from analysis. This paper focuses on alternatively credentialed non-college graduates in order to better identify stigmata of interest.

2. Methodology

This study uses ordinary least squares regression analysis to estimate the effect of perceived skill gaps on willingness to hire. Perceived skill gaps and willingness to hire are included in original response data collected by online survey ($n = 212$). Observations are cross-sectional and taken at the individual level. The data is available for replication or any other use[1].

Respondents were obtained through the Amazon Mechanical Turk crowdsourcing service. Respondents were United States citizens at or over the age of eighteen. Respondents were paid for participation. The survey administration took place in July of 2020.

Respondents were asked 65 questions in two sections. The first section of responses describe the respondent. There are 13 questions in this section. The second section identifies perceived skill gaps for 13 skills. Each section beings with a contextual message to normalize response anchoring. Questions are provided in nonrandom order for the same reason. Appendix A provides a copy of the survey.

Data from the second section is used to calculate perceived skill gaps. For each of 13 skills, the respondent is asked to imagine four types of candidates. One type of candidate is an ideal candidate. At a high level, skill gaps are calculated by differencing skill levels of the ideal candidate with others.

Perceived skill is reported on a scale from 1 to 10. Perceived skill is reported for the ideal candidate, the average actual employee, the average recent college

[1] See `https://osf.io/8qtxf/?view_only=95b0c0b0c65e4b7983198cc87c2ab733` for data used in this study.

graduate, and the average alternatively credentialed non-college graduate. Skill gaps are technically computed in two ways. One method allows for overqualification of job candidates and the other does not. Overqualification effects have been identified as important[7, 8], but these effects are often ignored during skill gap analysis[9].

When overqualification is allowed, the skill gap is measured as a raw skill gap. The raw skill gap is the skill level of the ideal candidate less the skill level of the actual candidate. The skill gap without overqualification is calculated as the raw skill gap or zero if the raw skill gap value is negative.

3. Results

Alternatively credentialed non-college graduate (ACNG) hireability was generally positive. The mean response was 7.5 on a scale from one to ten ($\sigma = 1.80$). Employers status was not associated with a significant response effect. Perceived skill gaps explained a significant and important portion of hireability variance.

Table 1 compares perceived skill gap explanatory power in a simple regression to explanatory power of other simple regressions involving factors of known relevance to hireability. Allowing for overqualification seems to weaken explanatory power. Overqualification effects seem to be heterogeneously signed per skill, so generalizing weakens overall explanatory power relative to ignoring these effects. With overqualification, perceived skill gaps explain about fifty percent more than industrial effects or robust state effects. Without overqualification, the adjusted explanatory power of perceived skill gaps is about three times the adjusted explanatory power of industry or state effects. Semi-robust state factors are dummy variables by state which are significant in a multiple regression. Robust state factors are subset of semi-robust state factors which are additionally significant in a simple regression.

Table 1 also describes the explanatory power of so-called rulebreaker effects. Whether the candidate is perceived as a rule breaker is a perceived skill gap, but employers evaluate this gap in a heterogenous and multispecific way. In the

Table 1: Factor Group Explanatory Power in a Simple Regression

Effect Group Name	Adj R-Sqr	R-Sqr	Max p-value
Industry	0.0185	0.0510	0.288
Rulebreaker	0.1432	0.1554	0.053
Skill Gaps with Overqualification	0.0558	0.0737	0.106
Skill Gaps without Overqualification	0.0758	0.0933	0.115
State, Robust	0.0177	0.0503	0.227
State, Semi-Robust	0.0034	0.0648	0.831

first place, this heterogenous evaluation has sign and magnitude implications for the dependent variable of interest. Secondarily, heterogenous evaluation implies a qualitatively different evaluation. These differences are captured using three questions in the first section of the survey.

The three rulebreaker questions measure respondent agreement on a scale from 1 to 10 with statements about rule breakers, or "People who are willing to break formal or informal rules and norms." The first statement indicates that rule breakers present a risk to the reputation, productivity, or value of a company. This statement received the least agreement and greatest response variance among three qualitatively different descriptions of people that are willing to break rules ($\mu = 6.40, \sigma = 2.55$).

The second statement states that people break rules which hold them back, and that rule breakers "could just as easily be high performers as low performers." This statement received the most agreement and least comparative response variance as a rule breaker description ($\mu = 7.42, \sigma = 1.91$). The agreement with this statement provides evidence against the thesis that em-

ployers value conformity for its own sake. In turn, this adds weight to the theory that employers value conformity as a risk aversion tactic, but they actually believe nonconformity may signal positive outlier potential. The third description of rule breakers states that they tend to be gifted in the areas of innovation or creativity, and that such people may benefit the company of a culture ($\mu = 7.25, \sigma = 2.03$).

Each of the three rulebreaker effects turns out to be independently important. These effects collectively explain more than three times as much response variance as do industrial or state effects. Rulebreaker effects are about twice as important as perceived skill gaps. This is not taken to be a general lesson about skill gaps. Willingness to break rules is a special case of a behavior which is valuable under certain parameters. This contrasts with something like poor communication skill which is generally detrimental.

Table 2 provides several model results.

4. Conclusions

It's not a nerd / geek stereotype wherein a technical individual lacks social skill rather, it's a general devaluation of vocational schooling as devoid of soft skill improvement the notion being that college to some degree endows social skill, or at least filters for or signals it.

In David Blake's approach / Degreed's Approach skills are 1-8 and there is no notion of 'overqualification' (for better or worse) https://degreed.com/skill-certification (in this idea, overqualified candidates are qualified; discounts overqualification as detrimental, ie hiring manager doesn't want to hire a report with many years of mgr experience) ... The Expertise Economy measure skill gap as skills quotient: https://www.expertiseeconomy.com/speaking

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Notice that the alternatively credentialed individual doesn't need the average employer to value him or her. He or she simply needs some significant chance of being hired, and that certainly exists. Moreover, the average employer is

Table 2: Table of Multiple Regression on Favorability, Selected Variables

	Model 1	Model 2	Model 3	Model 4	Model 5
Gap, Body Language	-2.240e-01*	-3.831e-01**	-1.507e-01+	-3.155e-01*	-3.060e-01*
	(8.314e-02)	(1.124e-01)	(8.980e-02)	(1.173e-01)	(1.145e-01)
Gap, Body Language-IT	2.199e-01+	2.298e-01	1.837e-01	2.791e-01	2.771e-01+
	(1.269e-01)	(1.656e-01)	(1.334e-01)	(1.707e-01)	(1.665e-01)
Gap, Commute		-2.320e-01++	-4.953e-02	-1.197e-01	-1.582e-01
		(9.720e-02)	(6.862e-02)	(1.023e-01)	(1.010e-01)
Gap, Conscientiousness	2.416e-01*	3.223e-01*	1.387e-01	2.174e-01+	2.175e-01++
	(8.000e-02)	(1.045e-01)	(8.483e-02)	(1.129e-01)	(1.093e-01)
Gap, Customer Service	-1.259e-01+	-1.512e-01	-1.253e-01+	-1.276e-01	-1.323e-01
	(6.389e-02)	(9.599e-02)	(7.162e-02)	(1.037e-01)	(1.009e-01)
Gap, Rule Breaker		-6.336e-02	-3.896e-02	-8.535e-02	-1.034e-01
		(1.028e-01)	(6.054e-02)	(1.082e-01)	(1.036e-01)
Gap, Salary		-1.135e-01	3.873e-02	-6.250e-03	
		(8.284e-02)	(6.597e-02)	(8.575e-02)	
Gap, Teamwork		1.227e-01	6.812e-02	1.287e-01	1.131e-01
		(9.179e-02)	(6.963e-02)	(9.697e-02)	(9.505e-02)
Gap, Technical	-1.274e-01+		-9.408e-02	-1.010e-01	-9.806e-02
	(7.443e-02)		(7.702e-02)	(1.023e-01)	(1.001e-01)
Rulebreaker, Culture Add	2.612e-01**	2.829e-01**	2.114e-01*	2.279e-01*	2.235e-01*
	(7.057e-02)	(7.015e-02)	(7.187e-02)	(7.190e-02)	(7.036e-02)
Rulebreaker, Risky	1.688e-01**	1.758e-01**	1.517e-01*	1.472e-01*	1.686e-01**
	(4.993e-02)	(4.813e-02)	(5.160e-02)	(5.063e-02)	(5.006e-02)
Rulebreaker, Rockstars	1.406e-01+	1.748e-01++	1.669e-01++	1.546e-01++	1.655e-01++
	(7.646e-02)	(7.245e-02)	(7.851e-02)	(7.754e-02)	(7.599e-02)
Adj R-sqr	0.3100	0.3491	0.2317	0.2554	0.2866
R-sqr	0.4408	0.4663	0.3409	0.3613	0.3880

Standard errors in parentheses

+ $p < 0.10$, ++ $p < 0.05$, * $p < .01$, ** $p < .001$

already favorable to alternative credentials. As more alternatively credentialed individuals are highered and promoted through society, there is reason to think the number of opportunities afforded to alternatively educated individuals may grow. The problem doesn't seem to be about whether alternative credentials work, but whether they exist in a given industrial context, and whether an individual would like to pay the college premium for better favorability when both options are feasible.

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