Hirability and Educational Prestige

John Vandivier[a]

[a] *4400 University Dr, Fairfax, VA 22030*

Abstract

Alternative credentials offer a partial solution to the skill gap and student debt crises, supernormal returns for some students, and a tool to support diversity hiring for firms. This paper tests the hypothesis that educational prestige explains hirability better than accreditation. Results from an original questionnaire ($n = 454$) confirm that prestige explains comparatively more hirability variance. Accredited credentials have higher average prestige, but alternative credentials have a larger variance in prestige, so a significant number of job opportunities favor the nontraditional student. When prestige is low, hirability for alternative credentials remains nontrivial. Analysis using ordinary least squares and linear mixed models demonstrate that industry, state, individual, and other effects favor the nontraditional student in specific cases.

Keywords: debt crisis, skill gap, prestige, social economics, education economics, alternative education

2010 MSC: I20, I24, J24, B55

Email address: jvandivi@masonlive.gmu.edu (John Vandivier)

1. Introduction

The accredited degree is an established means toward desirable labor outcomes, but proliferation of the degree is associated with a variety of well-understood issues including the student debt crisis, skill gaps, grade inflation, low social return, and contribution to lack of diversity in the labor market. Alternative credentials, or non-accredited credentials, are a broad category of offerings that exhibit greater variation intensity, price, and outcomes[1]. This paper hypothesizes that variation in the properties of alternative credentials contemporaneously inhibit normal usage and support occasional superior results.

Strategic usage of alternative credentials requires a qualitative description of the occasions in which they provide superior results. Decomposition of alternative credentials can be accomplished through a variety of lenses, and this paper takes the lens of prestige. This paper tests the hypothesis that prestige is a better explanation of willingness to hire than accreditation. Results are made practical through the description of low-effort methods to identify of high prestige alternative credentials.

The motivation for the lens of prestige extends from the literatures on education economics and the economics of social norms. Education economics provides two mainstream accounts of the value of a degree. One account is the human capital model and the other is the signaling model. The human capital model explains that improved labor outcomes result from skills gained by a student in the course of education.

Alternative credentials are regarded as preferred to the traditional degree for the attainment of specific technical skills[2]. For this reason, many college graduates supplement using alternative credentials. Some alternative learning providers specifically target this market with a special kind of alternative education called last-mile training. This presents an explanatory problem for the human capital model. If better labor outcomes arise from skill enhancement, then alternatively educated individuals should enjoy better wages, employment

rates, and so on, compared to college graduates.

The signaling model holds that credentials signal a basket of applicant qualities that are valued by employers. Proponents of the signaling model commonly argue that the college degree signals intelligence, work ethic, and conformity[3]. This presents a testable contrast to the signal of an alternative credential. Alternative credentials also signal intelligence, but they may not signal work ethic, and they are generally expected to signal non-conformity rather than conformity.

This paper hypothesizes that prestige is valued by employers as a signal, and indeed it is in part a signal of conformity. Google is a prestigious employer and also an alternative learning provider. From the point of view of Google, their own credential is a preferred conformity signal as well as a signal of skill. The case of employer-provided credentials is interesting, but it is not the main argument in this paper. While conformity and prestige intersect at times, this paper does not suppose they are identical nor generally correlated. Instead, this paper argues that these are two social characteristics that are valued by employers and a lack in one may be compensated for by the presence of the other.

In a broad review of economics and norm types, hiring decisions exist within what Elster would identify as work norms[4]. Elster supports a rational model of work norms, with the caveat that social interactions may involve unobserved emotional effects. Similarly, the neoclassical model utilized in this paper comes with the caveat that applicability of results is constrained in cases where a hiring decision is made subject to abnormal emotional effects. This paper will also make use of the distinction between social and legal norms provided by Elster.

Within the economics of work norms, Rivera is one scholar to have recently operationalized social norms as prestige[5]. Rivera finds that prestige is important in her analysis, but the scope of her analysis is focused within an analysis of traditional education and a few specific industries including health and law. The current paper extends the analysis of prestige and hiring norms across many

industries and to include alternative credentials.

As a preview, statistical evidence confirms that prestige independently explains hirability better than accreditation alone, but accreditation fails to be explained away. Instead, models that use both factors produce superior estimates of willingness to hire. The independent importance of accreditation indicates that asymptotic improvement to alternative credentials are unlikely to fully compete away the traditional education system. The failure of arbitrary technical and social gains in alternative credentials to fully crowd out traditional education points to a need to investigate legal norms for further remedy. The conclusion describes policy options that solve for the remainder of concerns in higher education that survive competition from alternative credentials.

2. Description of Data and Methodology

This paper investigates an original set of online questionnaire responses ($n = 454$). Responses are cross-sectional data obtained in March of 2021. Respondents are United States citizens at or over the age of eighteen. Qualified respondents participated in the survey through the Amazon Mechanical Turk platform.

Appendix A contains the wording and response options for each question. Appendix A also contains the wording for a priming message presented at the start of the survey. The priming message lays out the definition of alternative credentials for the purposes of the study. The message also provides several concrete examples of alternative credentials, including "a Certified Project Manager certification, a portfolio of work, a Khan Academy profile, or a Nanodegree from Udacity."

The dependent variable of interest is called hirability. This variable measures individual response on a 10-point scale to the question, "For many professions, alternative credentials can qualify a person for an entry-level position." The questionnaire is composed of three sections. The first section collects respondent characteristics and baseline hirability. The second section collects hirability and

prestige responses with respect to nine specific learning providers. The third section collects hirability and prestige responses with respect to eight vignette learning providers.

Data from the first section is used to optimize an ordinary least squares model. Vignette data is analyzed as panel data in a mixed model with individual random effects. The vignette model allows comparison between prestige and accreditation coefficients, but it encounters a practical problem in that the schools are only vignettes rather than actual learning providers. To address the practical concern, descriptive statistics are compared between vignette and actual schools using information from the second section.

Additionally, half of respondents were randomly selected for exposure to an informational message about actual schools. The message is included in Appendix A. The message provides rating data from two leading credential aggregator websites. University ratings are US News ranking information for the 2021 school year. Coding bootcamp ratings are Course Report ratings from December 2020.

Respondent characteristics are measured as categorical variables. Hirability and prestige are measured as 10-point likert-type responses. Prestige also takes a secondary representation as a stipulated boolean. Stipulating schools as high or low prestige allows the paper to verify that prestige response is correlated to stipulated prestige. For example, a vignette school is identified to the respondent as well-known for being prestigious. This corresponds to a stipulated boolean with a value of true. When the respondent reads that a school is known for being high in prestige, they are then asked for their own prestige rating on a 10-point scale.

As a preview of results, stipulated high prestige is strongly correlated with high prestige response. At the same time, there are cases where a respondent gives a low response rating to, for example, the University of Chicago, which is a school that happens to be stipulated as high prestige on the basis of aggregator website ratings.

Two-way representation of prestige enables better general application of find-

ings into the real world. In the real world, an individual can easily access aggregator website ratings. In the real world, an individual cannot readily access questionnaire results for many credentials. Results from this paper include the identification of rules of thumb that a person can use to identify actual learning providers as high prestige. To ensure clarity of results, stipulated prestige always refers to the boolean and prestige response refers to the 10-point measure.

Stipulated prestige is used in the vignette section and the section on actual schools. All other variables are either 10-point likert-type responses or categorical variables[1]. Categorical variables are exclusively respondent characteristics. There are four other respondent measures that are likert-type responses. Vignette responses include responses for hirability and prestige, while actual schools only receive responses for hirability.

Respondent characteristics include eight standard controls and four questions unique to this study. The eight controls include age, gender, ethnicity, income, level of education, employment status, the industry of occupation, and state of residence. A unique question on work norms records whether the respondent tends "to work more closely with coworkers at your company or customers and external business partners." The motivation for this question is to test whether prestige disproportionately impacts roles that are outward or client-facing. Respondents are also directly asked whether they "prefer to hire or work with a person that has a college degree rather a person that holds a reputable certification or non-college credential."

Another unique control is support for online education. This is useful to distinguish preference for alternative education which is due to unobserved preference for online education. The fourth control is called expected conventionality.

[1] It is an accepted practice to treat Likert-type responses as either categorical or continuous for regression analysis. Jaccard and Wan provide support for continuous analysis of Likert-type data. They note that severe departures from the assumptions on cardinality "do not seem to affect Type I and Type II errors dramatically," particularly when the Likert scale is five or more points[6]. This paper treats responses on a 10-point scale as continuous.

This variable measures whether the respondent believes that it will soon be common for an individual to obtain an alternative credential instead of going to college. This is a useful correction variable for two reasons. First, it seperate willingness to hire on the basis of the preferences of others from willingness to hire on the basis of own preferences.

Second, surveys sometimes overreport effects because of the lack of cost constraint on respondent expression. This bias is sometimes called budget constraint bias or omitted budget constraint bias[7, 8]. Without a cost constraint, there is a risk that the respondent may exagerate their true willingness to hire. For individuals that reveal such an exageration effect, it is plausible that their expected conventionality is similarly affected, so using this variable as a control attenuates this concern.

The second unique control is support for online education. Online education is the response to question four in the appendix. This control allows an analyst to hold constant the mode of instruction when interpreting favorability to alternative credentials.

Vignette questions are formatted following Atzmüller and Steiner[9]. Each vignette stipulates whether a school is accredited, whether the respondent should imagine the school as impressive, and whether the respondent should imagine that other people consider the school impressive. Each stipulated factor can take a value of true or false, resulting in eight vignette questions.

This study uses multiple regression and descriptive statistics to generate results. Multiple regression is conducted using ordinary least squares (OLS) for baseline hirability analysis and linear mixed models (LMM) are used for for vignette analysis. OLS specification of vignette data is inappropriate because repeated measures of hirability from a single participant introduce an individual-level bias into resulting coefficients. LMM yields linear coefficients that can be interpreted as similar to OLS coefficients. One difference of note is that adjusted r-squared is not available for an LMM model. Following Magezi[10], linear mixed models in this paper use a within-participant random factor, or individual random effects, to correct for individual-level repeated measures bias.

3. Results

Results ($n = 454$) indicate that accredited degrees are generally higher in prestige compared to alternative credentials. At the same, alternative credentials are associated with significant hirability, and alternative credentials are preferred to accredited degrees in a certain common situations.

Three specific situations are identified in which an alternative credential is preferred to a degree with respect to hirability. First, specific alternative credentials are of particularly high prestige. In this study, the prestige response for the average accredited degree is about equal to the prestige of a credential from Google.

Second, some individuals award prestige preferentially to alternative learning providers. When comparing actual learning providers, 71 percent of respondents prefer at least one alternative credential to at least one university degree. This proportion increases to about 75 percent when respondents are given rating data provided from online aggregator and review sites. These sites include US News and Course Report, and they aggregate learning providers, report standard information about those providers, and allow users to leave reviews.

Third, in some cases there are indirect compensating factors, such as industry or state effects, that enhance support for alternative credentials to the extent that they become competitive with an accredited degree. For example, the state effect for California is positive on hirability and it retains a magnitude that compensates almost exactly for the hirability penalty from non-accreditation.

Mean baseline hirability is 7.58 on a 10-point scale, and the median response is 8. Table 1 gives average hirability and prestige for interesting segments of respondents. Four basic results in the table are worth noting. First, stipulated prestige always moves with prestige response as expected. Second, accredited schools are generally higher than non-accredited schools as expected.

Third, the difference in average hirability between high and low prestige providers is more than twice the difference in hirability between accredited and unaccredited providers. This supports the possibility that at some level of pres-

Table 1: Average Hirability and Prestige

	Total Range	**Normal Range**
N	350	339
Favorability	7.65	7.81
Small COVID Impact	0.526	0.534
Medium COVID Impact	0.294	0.286
Large COVID Impact	0.094	0.097
Small Change to Remote Activity	0.323	0.324
Medium Change to Remote Activity	0.274	0.277
Large Change to Remote Activity	0.271	0.268
Small Increase to Remote Favorability	0.311	0.319
Medium Increase to Remote Favorability	0.360	0.360
Large Increase to Remote Favorability	0.160	0.156

tige, alternative education becomes competitive with traditional education. The fourth result is an initial attempt at a prestige rule of thumb. For both vignette and actual schools, if a school can obtain a prestige score of 7 or more, it will be at least as prestigious as the average accredited school.

Google is the only unaccredited learning provider to acheive a strong competitive status. The mean prestige response for Google was 7.10 and the median response was 7. Two lower bars for competitive status are interesting. First, an alternative provider can be described as moderately competitive if it fails to beat the average university, but it succeeds in beating at least one university on average. Second, an alternative provider can be described as weakly competitive if it fails to beat any university on average, but it succeeds in beating at least one university in a significant percentage of individual responses. No alternative credentials investigated in this study meet the criteria for moderate competitiveness. All stipulated high prestige learning providers are at least weakly competitive.

When asked directly, 41.6 percent of respondents indicated that they would not prefer to "work with a person that has a college degree rather a person

that holds a reputable certification or non-college credential." When comparing prestige responses instead of asking directly, over 70 percent of respondents preferred at least one actual alternative credential to at least one university credential. Over half of respondents preferred at least one actual alternative credential that was stipulated as high prestige to at least one university credential that was stipulated as high prestige. When Google is excluded, over one-quarter of respondents preferred at least one actual alternative credential that was stipulated as high prestige to at least one university credential that was stipulated as high prestige.

Zety is in part a job search support platform. Zety finds that one in six job applicants are given an interview, and the average conversion rate from interview to offer was 19.78 in 2016[11]. Assuming rejections are independent enables naive estimation that most job searches consist of at least four interviews[2] and dozens of applications. Given the rates at which respondents prefer alternative credentials to accredited degrees, a job search of typical length is likely to include several applications and at least one interview with one or more employers that would prefer an alternative credential stipulated as high prestige to an accredited degree.

More than half of respondents prefer a high prestige alternative credential to at least one high prestige accredited degree. After excluding the highest prestige alternative credential from Google, more than one-quarter of respondents still prefer one of the remaining high prestige alternative credentials to at least one high prestige accredited degree. When asked directly, about 42 percent of respondents state that they do not prefer to work with a person that has a college degree rather a person that holds a reputable non-college credential.

Average hirability among the sample of

1. summary Results (percent prefer degree, prestige high-low stipulated vs

[2]Four independent games that each include an eighty percent chance of rejection yields $0.8^4 = 0.4096$. The associated probability of having at least one offer result from four interviews would be about $1 - 0.41 = 0.59$, or 59 percent, which is more likely than not.

prestige yes-no accreditation) 2. vignette Results (prestige vs accreditation on hirability) 3. concrete results (translating prestige into aggregation site metrics; no fav reg) b. context effect

arguments roughly 1. summary data: stipulated high quality alt creds vs others and proportion that would weakly affirm 2. non-panel models of favorability 3. panelized model of vignette (primary regression analysis) 4. analysis of concrete data using descriptive statistics and insights from the vignette study

conclusion - implications for application from the consumer perspective and supply-side (getting on an aggregation site nbd, naming important, public branding)

theoretically (low-prestige + not well known) ¿ (low prestige + well known). did that seem true?

4. Conclusions

Two rules of thumb: 1. Get a Google. (general competitive rule: Amazon and Microsoft are other examples) 2. Aggregator cream of the crop (secondary rule; may result in a longer job search but still viable)

In any case, also seek to leverage compensating factors (third rule)

The synthesis of results from this paper and the data from Zety on job search length forms a practical rule of thumb. The selection criteria for stipulated high prestige alternative credentials other than Google was to use a reputable bootcamp aggregator, in this case Course Report, and to choose a learning provider with more than four hundred reviews and an average rating of more than 4.25 on a 5-point scale. Google was selected on the basis of industry leadership. Credential producers that are also Fortune 50 companies fit this description.

policy recommendations are constrained in recognition of the political economy of education as a turbulent, endogenous, entangled thing, in contrast to a simplistic analysis that might treat politics as a thing distinct from and able to exogenously move the economy (wagner: Wagner argues contra Becker and other

neoclassicals that so-called political competition doesn't get you to the efficient economic outcome. "Unlike market entities, political entities cannot generate their own revenue. To support their activities, political entities must attach themselves parasitically to market entities and activities" so, rents still exist in some form or another, usually vis a vis an indirect transaction: 'an indirect form of transaction, not different in form from the various indirect transactions that arise in the presence of price controls' from american democracy comes a forced triad traces the problem all the way to the american constitutional architecture. at some level, a full resolution to the problem would require competition at the level of the constitution; insert plug for seasteading it's not actually even clear that the success of seasteading or another form of constutional competition is less feasible than change in the below 8 laws;

also cite leeson/boettke robust political economy to emphasize the perhaps unexpectedly high difficulty of substantial change perhaps refer to the friedman rule about how, even if we got the legal change we asked for, administrative costs and so forth could result in cost/quality differentials that are in excess of what we want

perhaps a short history of educational change policy; media and social reaction (eg faciliation under trump was decried) to emphasize the general pessimism extends into education and it perhaps accentuated rather than attenuated in this particular policy field

so, constitutional competition is the great height at which the last remainder of educational policy consequence can be addressed at the macro level express optimism that much can be done at the mesoeconomic and micro levels; individuals, and firms and even meso entities like states and industries can and are already doing much...

The conclusion describes policy options that solve for the remainder of concerns in higher education that survive competition from alternative credentials.

1. remove accreditation 2. lower the bar for accreditation 3. remove professional requirements that include requirement for accreditation 4. remove legally enshrined preferential treatment of accredited credentials (esp government pay

scales and in government contracts) 5. how to fill the gap? define skill-based requirements instead of accreditation (better outcomes for govt and all) 6. (institution based vs skill or course based accreditation) 1. ...see 8 for a non-policy workaround (but working around is likely more costly than direct fix) 6. aggregators need to do a better job 7. individuals don't need to wait for social movement to reap individual-level benefits 8. hybrid approach; universities can (and increasingly already do) partner with external providers for a win-win 1. better university placement rates 2. better university solutioning of the skill gap 3. accreditation given fully or partially (ACE; professional credit) to unaccredited partners (institution based vs skill or course based accreditation)

1. overall is there evidence that bootcamp can replace college due to prestige effects? what caveats? - we need to consider price in the real world - we had a threshold of name recognition to ensure statistical confidence; what happens if we drop below that? say a bootcamp w less than 30 reviews? 2. online education isn't a good fit for all learners 3. parental preference matters; if parents will finance university but not bootcamp (or vice-versa) then effective cost to student is modified - this also presents a channel for pro-ACNG movement 4. policy differences: government or employer may provide financing or employment conditinoal on a certain type of educational participation

overall advice: as an individual, work backwards from a particular desired job description as a society: push for policies which make comparing across types easier, generate lower cost and higher skill outputs, and clearer signals of productivity, reducing demand for prestige which is really 1) a second-best / fallback signal of productivity, and 2) a form of slack and a biased means toward inefficient selection (anti-diversity as a byproduct; again see Pedigree)

References

[1] T. Urdan, Beyond the noise: The rise of alternative credentials (Dec 2020). URL https://tytonpartners.com/library/beyond-the-noise-the-rise-of-alternative-credentials/

[2] R. Craig, A new U: Faster+ cheaper alternatives to college, BenBella Books, 2018.

[3] B. Caplan, Signaling versus educational innovation (Apr 2012).
URL https://www.econlib.org/archives/2012/04/signaling_versu.html

[4] J. Elster, Social norms and economic theory, Journal of economic perspectives 3 (4) (1989) 99–117.

[5] L. A. Rivera, Pedigree: How elite students get elite jobs, Princeton University Press, 2016.

[6] J. Jaccard, C. K. Wan, J. Jaccard, LISREL approaches to interaction effects in multiple regression, no. 114, sage, 1996.

[7] M. Ahlheim, Contingent valuation and the budget constraint, Ecological Economics 27 (2) (1998) 205–211.

[8] M. J. Pachali, P. Kurz, T. Otter, Omitted budget constraint bias and implications for competitive pricing, Available at SSRN 3044553 (2020).

[9] C. Atzmüller, P. M. Steiner, Experimental vignette studies in survey research, Methodology (2010).

[10] D. A. Magezi, Linear mixed-effects models for within-participant psychology experiments: an introductory tutorial and free, graphical user interface (lmmgui), Frontiers in psychology 6 (2015) 2.

[11] B. Turczynski, 2021 hr statistics: Job search, hiring, recruiting & interviews (Feb 2021).
URL https://zety.com/blog/hr-statistics