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Trends in Alternative Learning Month Year Vol Issue D12, I21, I22, I24, I25, I26 Education economics, alternative education, debt crisis, signaling

Attitudinal Trends in Alternative Postsecondary Learning [1]

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Abstract

This paper explores a novel data set (n = 1190) to understand trends in public disposition toward alternative postsecondary learning, with a focus on employers. Results indicate that public favorability is positive and will remain flat over the next year. Employer attitudes are not meaningfully different from the general public.

1. Introduction and Description of Data

Student loan debt in the United States is a recognized concern[**?**], but partial mitigation is offered by recent growth in alternatives to traditional education. This paper fills an empirical gap in scholarly research by supplying data on public and employer favorability of alternative credentials. This paper tests the hypothesis that employer favorability is positive toward alternative credentials.

Alternative postsecondary learning activities are diverse and do not exclude attainment of an accredited degree, but may involve strategic delay or acceleration of accredited education when compared to traditional approaches. Delayed formal education improves the return to education for individuals who are able to leverage employer funding. Accelerated completion improves the return to education in general. Online education is an alternative approach which reduces the cost of college for most students [3].

[3] Mattern and Wyatt[**?**] note that college students live an average distance of 268 miles from home and a median of 94 miles. This indicates that most students could reduce the cost of college by studying remotely from home.

1190 responses, including partial responses, were obtained for four comparable survey administrations from February 2018 to May 2019. Analysis includes 114 right-hand variables and two left-hand variables. Appendix A details the wording of questions and possible responses. Appendix B identifies factors included in each administration.

Responses were collected mainly through SurveyMonkey, Amazon Mechanical Turk, social media, and word of mouth. Each origination channel was grouped using a construct called a collector. Collector effects were insignificant.

Factor-level sample size ranges from 240 to 1190. Appendix C lists technical variable names in alphabetical order along with summary statistics. Appendix D lists variable names in alphabetical order, and summarizes factor strength across models. Several constructs were redundantly operationalized using different measures. For example, age was measured continuously and also by age group. Appendix D makes this factor-to-variable mapping clear.

The variable of interest is entry-level suitability. This variable corresponds to question 2 in Appendix A. It is structured as a favorability question on a scale from 1 to 10. Higher numbers indicate stronger agreement. The wording of the statement to be favored is, "For many professions, alternative credentials can qualify a person for an entry-level position."

A 3-factor index of interest is explored as a secondary concern. This is a 3-factor index includes the variable of interest, favorability toward online learning, and expected conventionality. Expected conventionality measures favorability to the statement, "It will soon become fairly conventional for high school graduates to obtain alternative credentials instead of going to college." The index is checked to ensure findings are robust to the wording of the primary variable of interest. Index findings are also generalizable beyond alternative credentials to alternative education broadly.

No survey administration allowed for measurement of all variables simultaneously. For each calender, year ordinary least squares modelling identified four key models. The first key model is a long model using all available right hand variables. Factors are eliminated one at a time by significance until a subsequent

key model is obtained. The second key model is the weak model. This model includes factors with a p-value of less than .5. The third model is an adjusted r-squared maximizing model, and the fourth model is a strong model involving factors with a p-value less than .1.

The 2019 analysis covers samples from 2018 and 2019. Questions in the October 2018 administration are a superset of those in February 2018. Similarly, May 2019 variables are a superset of February 2019. Analysis of survey results from 2018 indicated that certain factors were unimportant. As a result, some questions were replaced in 2019. It turns out that the most significant factors identified in the 2019 analysis were also measured in the 2018 administrations, but this may be due to oversampling.

2. Empirical analysis and results

The average response for the variable of interest was 6.6. The median response was 7 and the 25th percentile was 5. Unemployed status and other ethnic identification are the two largest significant effects, and they are both positive. Male identification has a large effect in the preferred model, but it is taken to have a true effect close to -0.42, as identified with higher significance in the strong model. Employer effects are not significant in any model, although in the preferred model employer effects obtain an insignificant coefficient of about -.47.

The average response for favorability of online education was the highest among the three index components at 6.8. The average response for expected conventionality is 6.1. All three components of the index of interest are strongly intercorrelated, indicating results for the entry-level suitability of alternative credentials are somewhat generalizable to alternative education broadly. Additional selected factor results are presented in **??**. Appendix D describes factor strength across all models.

The 2019 medium model is preferred. This model explains the majority of sample variation while minimizing complexity. 2018 analysis initially indicated weak effects for religiosity and STEM industry identification, but reanalysis

Table 1: Medium and Strong Models, Selected Variables

Factor	2018 Medium	2018 Strong	2019 Medium	2019 Strong
Male			-2.458*	-0.422**
Not STEM	-1.269*			
Pro AI	0.700*	0.776**		
Quadratic				
Pro AI	-0.065*	-0.069**		
Quadratic				
Pro American	0.011*	0.011*		
Quadratic Expect				
Convention			0.113**	0.081**
Cubic Expect				
Convention	0.003**	0.003**	-0.007*	-0.005***
Quadratic Pro				
Online Learning	0.067	0.016*	0.240	0.013***
Pro Regulation	1.161	0.110*	0.268***	0.110***
Religiosity	0.120*	0.105*		
Income	0.770**	0.192*		
Quadratic Income	-0.056*		0.046	
Unemployed			1.118*	
Other Ethnicity			1.682*	
X_0	1105.125	.106	-12345.347*	3.289***
R-Squared	.597	.504	.526	.319

* $p < .05$ ** $p < .01$ *** $p < .001$ Additional gender variables are excluded for simplicity. Industrial and regional effects are excluded for brevity. Cubic effects are excluded where the significant coefficient would display as 0.000. Selected variables include all other variables which are significant at one of the noted levels in at least one model presented in this table. See the online appendix for coefficient data for further information.

with 2019 data suggests inclusion of these variables may add importantly to explanatory power.

Innovation proxies include favorability to artificial intelligence, cryptocurrency, and online education. These variables are cross-correlated with one another with a p-value of less than .001. An apparent paradox is identified regarding innovation proxies. Favorability to government regulation is positively associated with innovation proxies, while religiosity is associated with reduced innovation favorability.

Conservative status quo bias is a common theme in the literature[**?**]. In the case of education, however, this is paradoxical. The market is a tool of innovation[**?**], so individuals seeking to maintain the status quo ought to disfavor it. Second, traditional education is highly regulated, so individuals committed to high levels of regulation ought to disfavor alternative credentials.

A Kahneman-like explanation is one resolution. Survey respondents may be thinking fast[**?**]. The preference of some conservatives for the status quo in education becomes explained by risk aversion, lack of openness, and related factors. It may be the case that many of these same individuals would favor alternative credentials when a logical mode of thought is activated.

Age group has a more robust effect compared to exact age, indicating cohort effects. Minors are the only age group which is unfavorable toward alternative credentials on average. Minors are also the least sampled group in this data set. Educational attainment was more significant than age or income effects. In addition to level of education, a dummy for whether education was at or greater than obtaining a college degree was independently significant.

Two significant industrial effects exist in the preferred model. The legal industry coefficient of -2.51 is one of the largest effects in any model. It has a p-value of 0.006. The transportation industry coefficient is -1.67 with a p-value of 0.086. The mid-atlantic region is associated with a coefficient of -1.21 and a p-value of 0.01. Robust regional and industrial effects point to a policy explanation. The legal and transportation industries share a common theme of licensing.

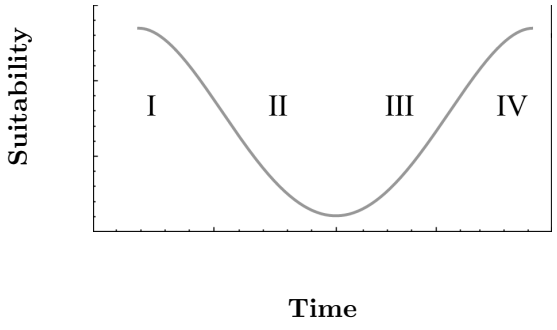
Time has an unimportant effect in the preferred model, but a two-factor exponential expansion obtained an adjusted r-squared of .8689:

$$f(x) = b_1 b_2^t \tag{1}$$

The b_2 p-value is less than .001. The estimate of $b2$ was less than 1, indicating exponential decay, but the rate of decay is trivial so that forecasting is essentially flat. On Monday, February 26, 2018, when $t = 0$ the predicted dependent variable is equal to $b1$, which is estimated at about 6.65. t increments by the day, and the maximum value within the sample is 437. At that time, the point estimate for the dependent variable is about 6.59. Forecasting a year into the future, the estimate is about 6.55.

Another dynamic perspective involves employer-lead favorability cycles. Multiple regression of four variables on the variable of interest results in an adjusted r-squared of .8692. These variables include time interacted with employer status, linear time, and the squares of each of those two. In this model, time has a linear negative and positive marginal effect, although neither are significant. Employer-time, however, is significant, as is its quadratic counterpart. Employer-time has a linear effect of 0.002, a p-value of about 0.03, and a negative but unimportant quadratic effect. This cycle model is conceptually depicted in Figure **??**. Public favorability exists at II and employer attitudes are represented at III.

Figure 1: Employer Driven Favorability



3. Conclusions

Results have applications for firms, policy, and students. Age effects suggest learning providers should market to parents, rather than directly to high school students. Large corporations are able to leverage economies of scale, spread risk across hires, and internally train junior employees. Alternatively educated individuals are diverse[**?**], which is a common corporate goal. These incentives make large corporations a great adoption target for alternative education. This movement is already taking place. Industry leaders are already disavowing the need for formal education[**?**].

Policymakers should level the playing field for alternative education by limiting federal money, or empowering alternative education with those dollars. Licensing should be improved to support substitutes for accredited education. Internship should be facilitated to encourage learning while working. Tax-privileged vehicles targeted at accredited education should be liberalized to support alternative education.

Students should consider learning online, choosing non-elite providers, prior learning assessments, and credit by examination. For roles where a degree is inessential to junior placement, students should prefer a strategy of deferred college and leverage employer assistance once a role is obtained.