HISTORICALLY BLACK COLLEGES AND UNIVERSITIES, BARRIERS AND ENTREPRENEURSHIP IN SOCIA CY CLY DISADVANTAGED MARKETS

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ABSTRACT

Historically Black Colleges and Universities (HBCU’s), as engines of human capital formation, have missions oriented toward educating and training black Americans, are a source for social networking and also provide contractual services. It is posited that they can enhance entrepreneurial ability and create an environment that is favorable to the formation, entry and survival of black-owned firms. Findings were inconclusive and may reveal unobserved effects locally with respect to social, entrepreneurial and/or location variables. For example, many HBCU’s are in socially disadvantaged markets that may include low income, high poverty and crime conditions. Thus, these results provide impetus for further research on these factors and their implications for black entrepreneurship.

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1. Introduction

The United States Commerce Department Minority Business Development Agency State of Minority Business Report series illustrates a historical and ongoing disparity between black and nonblack firms. It shows relative to non-black-owned firms, black-owned firms achieve lower revenue, have a shorter lifespan and employ fewer workers. Various authors suggest that political and economic barriers are to blame for difficulties that black entrepreneurs’ encounter regarding sustaining their enterprise resulting in less success, wealth attainment and survival. The impacts of poorer performance can be linked to less desirable social outcomes to include higher unemployment, crime and poverty (Mangum, 2010).

However, it is posited that HBCU’s, as engines of human capital formation, can enhance entrepreneurial ability lowering these barriers and increase the probability of entry for black-owned firms. Barriers can proffer a “first movers advantage” and may explain the well-documented disparities in self-employment, where black-owned firms are significantly underrepresented due to past injustices transformed into political barriers and competitive forces experienced as economic barriers (Darity & Williams, 1985; Mangum, 2008).

Impediments to black entrepreneurship in the form of political and economic barriers have been perpetrated through competitive forces, public policy and anti-competitive practices at local, state and federal levels constraining black Americans’ access to citizenship rights, educational resources, employment options and entrepreneurial opportunities (Mangum, 2008). Presumably, HBCU’s have missions oriented toward educating and training black Americans, are a source for social networking and also provide contractual services. Access to education, training, social networks and public contracts enhance entrepreneurial ability and affects social,
political and economic inequities. Thus, their presence may improve the social, political and economic status of black Americans (Mangum, 2011).

Entrepreneurship can be a pathway to wealth considering an individual’s or group’s access and acquisition of the determinants of entrepreneurship, i.e., human, financial, social and political capital (Fairlie & Meyer, 1999; Rasheed, 2004; Fairlie & Robb, 2007; Mangum, 2008). However, realization of opportunities can be disrupted when the black entrepreneur is constrained by inadequate capital resources hindering entrepreneurial ability (Robb, 2002; Rasheed, 2004). Stevens (1984) found that reduced access to resources lower black business formation rates, increase failure rates and culminated in fewer firms entering the market and a lower business participation rate when compared to non-minority firms.

The theoretical approach of this research regards black-owned firm entry as an entrepreneurial decision process that emanates from the perceived relative height of market entry barriers which conditions the expected profitability of new entrants. The relative height of entry barriers can be determined or at least impacted by the management and operational decisions of the incumbent firm(s), i.e., economic barriers. Barriers may also be determined through lobbying tactics and public policy (Mangum, 2008). These decisions serve to increase the relative costs of operation to the new entrant (Blees, et al, 2003).

Human capital formation increases entrepreneurial ability and can enhance development of strategies to achieve growth and profitability that decreases market barriers affects, increases the owner’s equity and diminishes the black and white wealth gap (Bates, 1997; Brimmer, 1988). Human capital has historically been focused on entrepreneur-centered characteristics, i.e., years of education. However, HBCU’s educate and train black Americans, facilitate increased access to contracts and support development of favorable social networks. Therefore, it is plausible that
HBCU’s, as engines of human capital formation, have a causal affect on new black-owned firm entry.

2. Barriers Reduce Entry of Black Firms

Summary data reported in The State of Minority Business 2001 reveals that the average size of minority-owned firms is small relative to non-black-owned firms in terms of both gross receipts and employment. Black-owned firms had the lowest average revenue per firm at only $86,000, employing a mere 700,000 persons – there were more black-owned firms (823,500) than employees.

The report failed to offer a basis for these findings. However, various authors have sought to explain the dearth of black entrepreneurs along the lines of the determinants of entrepreneurship to include human capital (Fairley & Robb, 2007; Adebayo, et al., 2001; Bates, 1997).¹

This explanation at least partially explains the state of black-owned firms regarding the historical performance of black entrepreneurs. The basis for the reported findings is important because historically entrepreneurship has been a source of improvement for disadvantaged groups (Robb, 2002; Fairlie & Robb, 2007).

Investigation of the entrepreneurial process through decomposition uncovers the role of market barriers that can diminish new firm entry. Kirzner (1973) suggests that new-firm-entry is an outcome of opportunity discovery, the entrepreneurial decision and has an important function in market economies. New firms enter if the profit (price) level is above the long-run competitive level thereby inducing an equilibrating function in markets. As agents of change, new entrants

¹ Black Americans have lower levels of human capital, i.e., educational attainment and business experience; previous authors have shown is required for successful long-term entrepreneurship.
(entrepreneurs) contribute to allocative and dynamic efficiency in markets (Schumpeter, 1983). Competitive or environmental mechanisms (barriers) can reduce the probability of entry. Consequently, barriers reduce the potential for allocative and dynamic efficiency and are detrimental to industry dynamics and economic welfare (Blees, et al, 2003).

New opportunities are realized from knowledge and information about disequilibrium conditions denoted by market discrepancies between supply and demand according to the “Austrian Approach” (Kirzner, 1997). An alert entrepreneur discovers the potential opportunities to profit based on an accurate knowledge of supply and demand attitudes in the market. The realization of the market opportunity is dependent on the entrepreneur’s ability to form salable products and services from necessary factors: land, labor, and capital. Education has been the key source of human capital that has been very important historically to entrepreneurial ability (Bates, 1990; Robb, 2002). Through entrepreneurial ability, the entrepreneur seeks utility maximizing outcomes by designing strategy to successfully navigate markets within the context of conditions.

These market conditions are characterized by competitive forces and political and economic barriers. Bain’s (1956) early work on barriers to entry describes the limit price as the maximum to which price can be raised above the competitive level without attracting entry. The study focused on manufacturers in the United States and concluded that the most significant market barriers were product differentiation, economies of scale, control of patents and scarce resources (Orr, 1974). He first introduced the notion that potential competition may lead incumbents to sacrifice current profit in order to increase barriers to potential entrants (Masson & Shaanan, 1982).

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ii Human capital may come in the forms of schooling or business acumen (experience or training). Schooling is the focus of this study.
Governmental agents routinely solicit the cooperation of industry while designing legislation, thus, often allowing incumbent firms the ability to influence regulations in their favor (Bratton & Haynie, 1999). Blees, et al (2003) state governmental barriers have historically been limited to controls exercised through licensure requirements, i.e., natural monopolies. Other governmental barriers include inadequate governmental structure, underpaid and unmotivated public servants and strong bargaining powers (lobbying) of domestic companies with established interests that hinder competition through conflicting laws, arbitrary rule enforcement, questionable ethical practices and licensing delays.

Incumbent firms are able to realize and sustain market advantage as “first movers” through historical political impediments to entry of other firms and anti-competitive practices that may include lobbying tactics. Lobbying tactics by incumbent firms allow them to acquire and maintain market advantage in public and private sectors. In the public sector, they are able to manipulate regulatory policy and contracting opportunities (Rasheed, 2004). The power and control exercised by incumbents have three primary benefits. They are able to shape public policy, obtain public contracts and deny these same opportunities to other potential entrants.

Human capital has historically been focused on entrepreneur-centered characteristics, i.e., years of education, compared to defining the role of the educational institutions themselves. Therefore, this study seeks to investigate this role by assessing the impact of HBCU’s on the entry of black-owned firms. A relationship may exist between human capital and firm entry to explain profit expectations, growth, size and success of black-owned firms. Research is necessitated by the historical nature of the social, political and economic conditions encountered by blacks (Mangum, 2011; Darity & Williams, 1985). Thus, the aim of this study is to investigate market entry barriers and whether HBCU’s are a causal link increasing entry of
black-owned firms through increased human capital formation, social networking and greater access to contracts which enhance profitability and growth possibilities.

3. Methodology and Data

The discrete nature of black-owned firm entry is well suited for an estimation framework in which the probability distribution for the dependent variable is discrete (Price 2005; Cameron & Trivedi 1998). The observations of black-owned firms are integer-valued (count data) and non-negative integers. As such, the parameters are estimated within a Generalized Poisson Regression framework (GPR). Chappell, Kimenyi & Mayer (1990) and Price (2005) suggest that a Poisson approach is more appropriate because all types of observations, positive integers and zeros are processed in a logical consistent manner and are natural outcomes of the specification.

The GPR framework accounts for non-negative integer values for the dependent variable and the infrequent nature of entry by modeling the number of occurrences of an event as a function of independent variables permitting zero entry observations to be a natural outcome of the econometric specification. The “zero entry” counties provide insight on the nature of entry behavior relative to profit opportunities and costs. It is the zero entries that provide an indication of the impact of entry barriers and the ability of incumbent firms to deter profits that may preclude entry of new firms.

The theoretical framework motivating this research is the Limit Profit Model of firm entry. The entry decision is viewed as a function of profit expectations and market entry barriers. The Limit Profit Model has been the model of choice when measuring the impact of barriers on entry (Geroski, 1995) as it provides a straightforward approach for theoretical and empirical assessment of market entry barriers. A general way to consider the effects of barriers to entry on
the limit price is to assume that they are reflected by the incumbent firm’s assessment of the probability of entry and their taste for competition.

An advantage of the Limit Profit Model is the capacity to assess these market barriers through measuring firm entry as a function of expected profit and market entry barriers for impact on small entrepreneurial firms. This study utilizes the straightforward approach of the Limit Profit Model to provide insight into the nature of market entry barriers and the effect of HBCU’s on black-owned firm entry.

To estimate the parameters of an empirical Limit Profit Model of black-owned firm entry, this study used data from the Survey of Minority Owned Business Enterprises (SMOBE) and from the White House Initiative on HBCU’s and the U.S. Department of Education. The SMOBE dataset is the primary source of our variable of interest – black-owned firms.

SMOBE is a product of the Department of Commerce Economic Census acquired through a mailed survey to over 2.5 million businesses nationally every five years. A sample of businesses and self-employed persons are randomly selected to represent their type of business and geographic area to provide valuable economic data on business owners' race, ethnicity, and gender. This survey is part of the economic census program, which the Census Bureau is required to conduct every 5 years by law (Title 13 of the United States Code). The published data include number of firms, sales and receipts, paid employees, and annual payroll and are presented by geographic area, industry, firm size, and legal form of organization. Businesses were eligible to be selected for these surveys if they reported any business activity on 1992 and 1997 Internal Revenue Service tax forms.iii

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iii Includes the 1040(Schedule C), "Profit or Loss from Business" (Sole Proprietorship). Many self-employed individuals do not consider the activity reported on their Schedule C to be an actual business (for example, babysitter, sales representative, construction contractor, and so forth).
Data on Historically Black Colleges and Universities (HBCU’s) were obtained from the White House Initiative on HBCU’s and the U.S. Department of Education. Data are obtained and produced annually by compiling HBCU’s for each state throughout the United States. The roster’s count includes public and private institutions that provide two-year or four-year enrollment.\textsuperscript{iv}

4. The Effect of HBCU’s on Black Entrepreneurship

The dependent variable, NETENTRY is measured as the difference between 1992 and 1997 firm counts due to the lack of a preferred gross measure (Chappell, Kimenyi & Mayer, 1990). This procedure actually enriched the dataset by giving information on firm exit as well (Mayer & Chappell, 1992). For example, some counties had negative entry rates specifying more firms exiting than entering in the county. Due to our present focus on market entry, counties without entry or negative rates are coded zero (Duetsch, 1984). This procedure eliminates negative net entry counts removing important information regarding firm exits. However, it also ends the problem of negative valued integers for the Poisson specification placing our primary focus on market entry. Firm exit is beyond the scope of the present study but does present a future research opportunity.

The number of Historically Black Colleges and Universities (HBCU) per county in each state was included to provide insight into their potential impact as engines of human capital formation, social networking sites and sources for contractual opportunities.

\textsuperscript{iv} For the purposes of this study, only four-year institutions will be utilized.
Independent variables include gross sales per firm for each county (SALES), calculated as the ratio of the difference between gross sales divided by the number of firms. SALES is utilized to proxy the high barriers implemented by incumbent firms realizing significant market share. Incumbents essentially used their sales to increase market barriers to thwart potential entrants. Relative price and profit data are acquired by potential entrants and used in their decision-making framework to determine the appropriateness of the decision to enter.

The number of black elected officials per county (BELECT) is obtained from NRBEO and summed across county and type of elected office for the total number of black elected officials in each county. Due to the nature of the political process in which policy implementation lags are present, values are lagged by one year relative to observation of net business entry. The primary basis of the lag is the annual nature of the public budgeting and contracting cycle.

The percentage of county population that is black (PCTBLACK) was computed from a simple ratio of black population per county to the total county population. The density of county populations (DENSITY) was determined by a ratio based on the geographic area and total population of each county. Population density and percentage of black county population were included to control for ethnic concentration factors that could influence results regarding implications for black entrepreneurship in cities.

Lastly, we utilize Census geographic criteria to control for unobserved spatial factors and state variation that may matter for black-owned firm entry. We use dummy variables to signify in which region of the United States a state is grouped. A state is given one for its group, zero otherwise. The groups are NORTHEAST, MIDWEST, SOUTH and WEST.

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\(^v\) Variable was dropped due to collinearity.
Descriptive data shows the county level environment for black firms. The maximum profit per firm was capable of attracting new firm entry leading to positive community impact and procuring lobbying assistance with a total of $14,818,500. However, the mean (average) profits for a county firm that entered into business was only $48,368, suggesting on average, businesses that entered the market were capable of providing a limited living for the entrepreneur. At that level, it is also difficult to enhance the local community through employment and community infrastructure investment. The same is true of the mean sales per firm at merely $67,336.

Tables’ 1 – 3 report parameter estimates of the empirical Limit Profit Model across four specifications of a Generalized Poisson Regression: (1) Simple Poisson, (2) Simple Negative Binomial, and (3) Zero-Inflated Negative Binomial. Where relevant, we also report as a goodness-of-fit measure pseudo $R^2$, a test for overdispersion ($\alpha = 0$), and a Vuong test for the adequacy of a Negative Binomial specification.\(^v\) As a test of the explanatory power of the overall regression, a likelihood ratio test is also reported.

Table 1 reports parameter estimates from a simple Poisson Regression specification. The estimates have the expected sign and are statistically significant for each variable except SALES. Previous studies found incumbent profits to be a proxy for profit expectations that is significant and positively related to potential firm entry. Revenue from sales has been considered a barrier emulating a proxy for market share and economies of scale.

HBCU has a positive and significant affect on black-owned firm entry. However, the unexpected sign of PCTBLACK suggest a potentially high degree of correlation between HBCU and PCTBLK since a priori we would expect historically black colleges and universities to be

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\(^v\) As a test of the explanatory power of the overall regression, a likelihood ratio test is also reported. These methods were chosen instead of others because in the OLS Regression count data are highly non-normal and are not well estimated by OLS regression.
located in counties with a high proportion of black persons. However, the correlation between them suggests a relatively benign relationship (.0640).

Table 1. Poisson Regression.

<table>
<thead>
<tr>
<th></th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>z</th>
<th>P&gt;z</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBCU</td>
<td>0.0448734</td>
<td>0.0008813</td>
<td>50.92</td>
<td>0*</td>
</tr>
<tr>
<td>PCTBLK</td>
<td>-0.0533116</td>
<td>0.0005342</td>
<td>-99.79</td>
<td>0*</td>
</tr>
<tr>
<td>SALES</td>
<td>0.0001344</td>
<td>2.88E-06</td>
<td>46.62</td>
<td>0*</td>
</tr>
<tr>
<td>BELECT</td>
<td>0.0280395</td>
<td>0.0000493</td>
<td>569</td>
<td>0*</td>
</tr>
<tr>
<td>DENSITY</td>
<td>0.0000565</td>
<td>1.65E-07</td>
<td>343.62</td>
<td>0*</td>
</tr>
<tr>
<td>MIDWEST</td>
<td>0.859813</td>
<td>0.0092631</td>
<td>92.82</td>
<td>0*</td>
</tr>
<tr>
<td>NORTHEAST</td>
<td>-2.040197</td>
<td>0.0136185</td>
<td>-149.81</td>
<td>0*</td>
</tr>
<tr>
<td>WEST</td>
<td>-0.3867558</td>
<td>0.0112225</td>
<td>-34.46</td>
<td>0*</td>
</tr>
<tr>
<td>_cons</td>
<td>3.885043</td>
<td>0.0075978</td>
<td>511.34</td>
<td>0*</td>
</tr>
</tbody>
</table>

*Significant = .05
Goodness-of-fit chi2 = 598875.5
Prob > chi2(2702) = 0.0000

The initial results may not identify causal effects due to very low probability values for each variable, very low standard errors and a significant deviance statistic that measures model goodness-of-fit. Measuring goodness-of-fit provides an assessment of the efficacy of the Poisson Regression Model underlying the parameter estimates. vii Consequently, the values for the deviance statistic (598875.5) and its significant probability provide evidence failing to support the assumption of equidispersion and possibly evidence of excess zeroes.

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vii Goodness of fit can be shown using Pseudo-R\(^2\), plotting residuals against the fitted values to assess variances, or Deviance and Pearson chi-square divided by the degrees of freedom to detect overdispersion or underdispersion. Because the Poisson model assumes that variance and mean are equal, dividing the deviance and Pearson statistic by the degrees of freedom should be approximately one. A value less than one indicate underdispersion and values greater than one indicate overdispersion.
The Poisson model assumption of equidispersion was too restrictive, Table 2 reports parameter estimates from a Negative Binomial Model. The Poisson Model parameter estimates may not identify causal effects, perhaps as a result of overdispersion.

Table 2. Negative Binomial Regression.

<table>
<thead>
<tr>
<th>Dependent Variable = NETENTRY</th>
<th>Number of obs</th>
<th>=2711</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispersion = mean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log likelihood = -4084.9252</td>
<td>LR chi2(8)</td>
<td>=245.4</td>
</tr>
<tr>
<td></td>
<td>Prob &gt; chi2</td>
<td>=0</td>
</tr>
<tr>
<td>Pseudo R2</td>
<td></td>
<td>=0.0292</td>
</tr>
</tbody>
</table>

| Coef.  | Std. Err. | z     | P>|z| |
|--------|-----------|-------|-----|
| HBCU   | 0.0523113 | 0.053896 | 0.97 | 0.332 |
| PCTBLK | 4.625536  | 1.511314 | 3.06 | 0.002*|
| SALES  | 0.0026087 | 0.0012839 | 2.03 | 0.042*|
| BELECT | 0.0726006 | 0.0294084 | 2.47 | 0.014*|
| DENSITY| 0.0024777 | 0.0005318 | 4.66 | 0*   |
| MIDWEST| 0.6993361 | 0.5464365 | 1.28 | 0.201|
| NORTHEAST| -0.8706161 | 0.4034533 | -2.16 | 0.031*|
| WEST   | 0.4130707 | 0.4850148 | 0.85 | 0.394|
| _cons | 0.9808216 | 0.4317844 | 2.27 | 0.023*|

*Significant = .05

Likelihood-ratio test of alpha=0: chibar2(01) = 5.9e+05 Prob>=chibar2 = 0.000

Negative Binomial parameter estimates produce valid estimates by processing positive integers and relaxing the assumption of equidispersion if excess zeroes are not a concern. We find in Table 2, however, that HBCU has a insignificant value, a low Pseudo R^2 (.0292), a unreliable sign on the SALES coefficient, a very large value for PCTBLK and a large positive value of the Likelihood Ratio may indicate dual problems. The data apparently are over dispersed and have excess zeroes.

The next sets of parameter estimates in Table 3 are from a Zero-Inflated Negative Binomial Model (ZINB) specification where the assumption of equidispersion is relaxed, while also allowing for excess zeros in the dependent variable. The ZINB is a technique utilized to achieve
identification in count models by adjusting for excess zeros or heteroscedastic data. A binary probability model determines whether a zero or a nonzero outcome occurs.

The ZINB model introduces unobserved discrete heterogeneity to differentiate those variables that always have zero counts and those that are at risk of having a zero count. The ZINB model combines the negative binomial regression model with a binary logit or probit model, differentiating the variables that always have a zero count from those that do not.

The model is inflated assuming that zeroes exist due to no black firm entry, spatially, arising from a fewer number of black persons in the county population and subsequently less number of HBCU’s. The lack of new black firm entry would be expected to be positively correlated with less HBCU’s and a lower black population spatially. Table 3 reports parameter estimates from the ZINB.

Table 3. Zero-inflated Negative Binomial Regression.

<table>
<thead>
<tr>
<th>Inflation model = logit</th>
<th>Number of obs</th>
<th>=2711</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log likelihood = -3718.262</td>
<td>Nonzero obs</td>
<td>=421</td>
</tr>
<tr>
<td>Dependent Variable = NETENTRY</td>
<td>Zero obs</td>
<td>=2290</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coef.</th>
<th>Std. Err.</th>
<th>z</th>
<th>P&gt;z</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBCU</td>
<td>-0.0156067</td>
<td>0.0371504</td>
<td>-0.42</td>
</tr>
<tr>
<td>PCTBLK</td>
<td>-0.1980528</td>
<td>0.0580616</td>
<td>-3.41</td>
</tr>
<tr>
<td>SALES</td>
<td>-0.0002245</td>
<td>0.000104</td>
<td>-2.16</td>
</tr>
<tr>
<td>BELECT</td>
<td>0.0517789</td>
<td>0.0120797</td>
<td>4.29</td>
</tr>
<tr>
<td>DENSITY</td>
<td>0.0005181</td>
<td>0.0001605</td>
<td>3.23</td>
</tr>
<tr>
<td>MIDWEST</td>
<td>0.2809463</td>
<td>0.4832511</td>
<td>0.58</td>
</tr>
<tr>
<td>NORTHEAST</td>
<td>-0.1216981</td>
<td>0.424127</td>
<td>-0.29</td>
</tr>
<tr>
<td>WEST</td>
<td>0.9419717</td>
<td>0.6181392</td>
<td>1.52</td>
</tr>
<tr>
<td>_cons</td>
<td>4.113081</td>
<td>0.3441712</td>
<td>11.95</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inflate</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>z</th>
<th>P&gt;z</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCTBLK</td>
<td>-56.60596</td>
<td>6.152076</td>
<td>-9.2</td>
<td>0*</td>
</tr>
<tr>
<td>_cons</td>
<td>3.932455</td>
<td>0.2380482</td>
<td>16.52</td>
<td>0*</td>
</tr>
</tbody>
</table>

**Significant = .05**

Likelihood-ratio test of alpha=0: chibar2(01) = 1.9e+05 Pr>=chibar2 = 0.0000

Vuong test of zinb vs. standard negative binomial; z = 8.62 Prz = 0.0000

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viii Inflation designates the class of variables used to define those in the always zero class (inflate = 1). The probability of being in the class is:

\[ \Pr(\text{always 0}|x, z) = \Pr(\text{inflated = 1}|x, z) = F(z; \lambda) = \Psi; \]

where \( F \) is a cumulative distribution function for the logistic when logit is used for the binary model. The predicted rate combines the results for those variables that are always zero with those that are not using equation:

\[ E(y|x, z) = [0 \times \Psi] + [\mu_x (1 - \Psi)] = \mu_x - \mu_x \Psi. \]

ix To calculate the probability of observing a particular count, the results from the count equation must be adjusted according to the probability of the observation being in the always zero category (Long & Freese, 2001).
In general, the ZINB parameter estimates reported in Table 3 appear to be well defined given model diagnostics. In the case of overdispersion, the ZINB model may be a better suited empirical model for count data by relaxing the Poisson assumption of equidispersion.\(^x\)

The likelihood ratio test reported in Table 3 is a test of the overdispersion parameter alpha. Alpha is significantly different from zero and thus reinforces that the Poisson distribution is not appropriate. The overdispersion parameter confirms that the ZINB model is the more appropriate model that accounts for overdispersion in the data revealing more precise standard errors and coefficients. We must abandon the Poisson assumption of equidispersion due to the better fit associated with the ZINB model. Additionally, appropriate signs on the appropriate variables and standard errors suggest valid and reliable estimates.

An additional test of the ZINB is the Vuong statistic. It is the test of choice for non-nested over dispersed data modeled through a regime splitting mechanism (Vuong, 1989). It is used to test alternatively distributed data that may systematically produce a different proportion of zeros than Poisson.

The Vuong statistic is the standard for testing the hypothesis that \(E[m_i] = 0\) and shows it has a limiting standard normal distribution. It is a bi-directional statistic where large values of \(v\) favor ZINB and small negative values favor the standard negative binomial model. For example in our model, the significant value of the Vuong Test with a value of 8.62 reveals that the ZINB is the more appropriate model supporting our assumptions of overdispersion and excess zeroes in the data.

\(^x\) ZINB accounts for instances that the variance of the model is greater than its mean. We can test for overdispersion with the dispersion parameter alpha. The test measures the equality of the mean and the variance imposed by the Poisson distribution against the alternative that the variance exceeds the mean. In this case, the null hypothesis (\(H_0\)) becomes there is no difference between variance and mean versus the alternative hypothesis (\(H_1\)) that the variance is larger than the mean – overdispersion (Cameron & Trivedi, 1998).
HBCU has a negative coefficient and an insignificant value. This result does not follow expected entrepreneurial theoretical foundations and may reveal unobserved effects locally with respect to social, entrepreneurial and/or location variables. Many HBCU’s are located in socially disadvantaged markets that may include low income, high poverty and crime conditions. Clearly, these conditions are not ideal for successful entrepreneurship. Thus, these findings provide impetus for further research on these factors and their implications for black entrepreneurship.

However, other ZINB parameter estimates, BELECT, SALES, PCTBLACK, and DENSITY are significant in the model at the 5 percent level (Table 3). SALES have correct signs, significant values and small magnitude coefficients. DENSITY’s coefficient is significant although low in magnitude, revealing cities as opportunistic places for new black firm entry.

PCTBLK has an interesting result that requires further research. It reveals that in the presence of other variables in the model, the portion of the county’s population that is black contributes negatively (-0.1980528) to black-owned firm entry.

Intuition would suggest that the negative value for PCTBLK may be due to its high correlation with HBCU, since it is assumed that the presence of a large black population has a causal effect on the number of HBCU’s. However, Pearson Correlations provide additional information regarding the nature of the relationship between PCTBLK and HBCU. At .0640 their correlation is not expected to impart ambiguity within the model. \textsuperscript{xi}

Thus, PCTBLK’s negative value in the model is not readily apparent and is a clear opportunity for future research regarding the black population characteristics and black firm entry. The result is confounding but may provide insight to the socio-economic conditions of

\textsuperscript{xi} The correlation coefficient measures the strength of a linear relationship between two variables. The correlation coefficient is always between -1 and +1. The closer the correlation is to +/-1, the closer the relationship is to being perfectly linear. Although seemingly arbitrary, a reading closer to .7 is the common standard for a strong association.
black Americans supporting the similar result for historically black colleges and universities. If a
black-owned firm targets black Americans in his or her business their may be broad implications
for the level of income and rate of poverty in a particular community. Intuition suggests that
communities with significant portions of low income persons and high crime rates should have
low probability of new black firm entry.

5. Conclusions and Policy Implications
This study developed and explored the hypothesis that HBCU’s foster the formation of a black
entrepreneurial class through business ownership. Appealing to economic theory regarding new
firm entry, it was posited that HBCU’s, as engines of human capital formation, have missions
oriented toward educating and training black Americans, are a source for social networking and
also provide contractual services. Thus, the presence of historically black colleges and
universities could lower market barriers to entry faced by black entrepreneurs. An empirical
Limit Profit Model of firm entry was developed and estimated with national data on black-owned
firms and the number of HBCU’s.

Parameter estimates from the Limit Profit Model suggest that black-owned firm entry is
indeed impeded by political and economic barriers. However, the impact of HBCU’s on those
barriers is elusive. The parameter estimates revealed that black-owned firm entry is insignificant
and negatively correlated with levels of historically black colleges and universities. Although it
does not follow stated theory regarding human capital as a determinant of entrepreneurship, it
may reveal a more important revelation. This finding has several plausible explanations. First, it
suggests that HBCU’s train students to seek wage and salary employment. Second, students are
counseled to further their education by attending graduate school programs. Third, HBCU’s may
not patronize black-owned firms contractually, as well as they should. Fourth, it suggests that many HBCU’s may be located in low income, high poverty and crime areas. There are implications for business schools, entrepreneurship degree programs, contractual services and community development.

The parameter estimates reported provide insight on the historical and contemporary factors that have constrained the formation and growth of a black entrepreneurial class. First, growth and survival prospects for the black-owned firm are extremely important due to research findings that suggest small business owners’ hire persons like themselves; blacks hire blacks, whites hire whites (Bates, 1995). Fairlie & Robb (1997) find that blacks are more able to approximate the wealth of whites through successful entrepreneurship in favorable market conditions. There are broad implications for community and economic development policy and presents an opportunity to study the potential affects of market entry barriers over time.
References


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