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Credit Where Credit Is Due?: Race, Gender, and the Credit Scores of Business Startups

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Credit Where Credit Is Due?:
Race, Gender, and the Credit Scores of Business Startups

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This research seeks to understand the degree to which credit scores of new business startups are influenced by racial or gender considerations. It also examines the degree to which access to business credit lines is influenced by racial and gender-related factors that go beyond would-be borrowers' credit scores. Using credit data from new startups, the analysis finds that, when controlling for firm and human capital characteristics, Black-owned startups receive lower than expected business credit scores. Moreover, when credit scores, firm characteristics, and human capital characteristics are taken into consideration, startups owned by people of color still receive business credit lines that are substantially lower than those of their White-owned counterparts, and startups owned primarily by women receive credit lines that are substantially lower than those owned primarily by men. A Blinder-Oaxaca decomposition suggests that credit lines for Black-owned businesses would more than double, Latino-owned businesses' lines of credit would nearly triple, Asian-owned businesses' lines of credit would more than triple, and those where the primary owners are women would be more than twice as large if their business lines of credit were determined in the same way as those for businesses owned primarily by Whites and by men.

Credit Where Credit Is Due?:
Race, Gender, and the Credit Scores of Business Startups

Newly established firms typically face valuable growth opportunities that need to be financed. This need for financing is a critical challenge for the owners of small businesses (Cole, 1998). Indeed, startup survival often depends on being able to secure sufficient external financing to initiate investment projects (e.g., Audretsch, 1995; Holtz-Eakin et al., 1994; and Persson, 2004). Credit scores have become the standard tool used by lenders in determining who should receive funding, at what rate, and under what conditions (Spader, 2010).

While the impact of credit ratings on financial outcomes is apparent and increasing, the process by which these scores are generated remains elusive and shrouded in mystery (Spader, 2010). The Federal Reserve Board found that while credit scores do differ among racial and ethnic groups, credit-score statistical models are not biased against any demographic group and are highly predictive of future payment performance (Braunstein, 2010). Moreover, they found that the use of credit scoring has made credit more available for major purchases such as buying homes. These findings suggest that credit scoring represents a system to level the playing field. Indeed, such findings suggest that credit scores represent a merit-based process that moves beyond race and gender.

Nevertheless, critics have questioned the accuracy and fairness of credit-score models (Capon, 1982; Bates, 1997; Blanchflower, Levine, and Zimmerman, 2003; Bates and Robb, 2008; Fairlie and Robb, 2008; and Weller, 2009). They charge that in some cases, credit-scoring is inherently biased against minority groups such as Blacks and Hispanics (Park and Coleman, 2009). Caplovitz (1961 and 1974) documented that the poor, residents of the inner-city, and racial and ethnic minorities paid more for basic goods and services because of their inability to access credit at reasonable interest rates. Cohen-Cole (2008) also found that lenders set credit

limits on revolving accounts based in part on the racial composition of the neighborhood in which a borrower resides. He concluded that "it appears likely that a race variable appears somewhere in the determination of credit availability" (p. 1). More generally, restricted access to capital limits disadvantaged minorities from starting businesses (Fairlie 1999, Bates and Lofstrom 2008, Lofstrom and Wang 2007, Fairlie and Woodruff 2009). Discrimination in credit lending and credit scoring has the potential for substantial consequences for new businesses, the economy, and society.

Despite the importance of this topic and the vast amount of discussion surrounding the value of a good credit score for small businesses and consumers alike, social scientists have paid scant attention to it (Pager and Shepherd, 2008). Most studies on credit have tended to focus on mortgages and discriminatory lending practices such as "redlining" (Massey and Denton, 1993; Squires and O'Connor, 1993; Oliver and Shapiro, 1995; Black, Robinson, and Schweitzer, 2001; Taylor, 2005; Phillips, 2010; and Nembhard and Marsh, 2012). Although there are newer studies that examine how the system of credit operates for businesses owned by various racial and gender groups (e.g., Carruthers and Ariovich, 2010; and Mijid and Bernasek, 2013), to date there is no study examining group-based differences in credit scores and subsequent ability to borrow, especially among new and small businesses.

The current research has two goals. It seeks to understand the race- and gender-related determinants of credit scores of new business startups. In addition, it examines the degree to which access to credit for new businesses is influenced by race- and gender-related factors that go beyond would-be borrowers' credit scores. Using data from the Kauffman Firm Survey, the analysis examines racial and gender differences in credit scores of business startups, net of firm characteristics that should serve as determinants of business credit scores. This portion of the

analysis focuses on credit scores as a dependent (outcome) variable that is determined by firm characteristics (e.g., company size, business net worth or equity, industrial sector, and legal form of incorporation) and business owners' characteristics (e.g., education, age, years of experience in the industry, etc.).

The second phase of the analysis focuses on credit scores as a determinant of business startups' ability to secure credit lines. Here, credit scores serve as a central independent variable that helps predict how much financing beginning businesses can secure.

Literature Review

Credit scores of business startups are important, especially because business startups are central to job growth and the functioning of American society. As Kane (2010:6) points out, business "startups create an average of 3 million new jobs annually. Job growth is driven, essentially entirely, by startup firms that develop organically." Moreover, small businesses employ more than half of private-sector workers and produce more than half of the private-sector output (Kane, 2010). Also, over the past two decades, small businesses have been responsible for creating approximately 65% of all new jobs. And historically, at the start of economic recoveries such businesses have created more jobs than larger firms. But according to the Federal Reserve, during the Great Recession (2007-2010), loans to small businesses decreased by more than $40 billion (Federal Reserve Board, 2010). The Fed found that during that period, most banks said they were toughening their lending standards. Indeed, more than 75% of new and small businesses that applied for loans during 2010 were rejected for at least a portion of their loan request (Federal Reserve Bank of New York, 2010). Lack of access to credit makes it much more difficult for startups to grow and hire employees (Herring and Henderson, 2011).

The need for financing is a critical challenge for the owners of most new businesses. Other than supplier credit, debt is a main source of financing for firms in traditional industries (e.g., Berger and Udell, 2006; Huyghebaert, 2006; Huyghebaert and Van de Gucht, 2007). For startup firms, failure rates are typically high in the first few years after startup. Huyghebaert and Van de Gucht (2004) document that approximately 50% of all firms that failed did so during the first five years of their existence. Such high failure rates likely lead lenders to be cautious in their lending decisions.

But above and beyond these normal concerns about lack of access to financing, women and minority applicants may be concerned that they receive even less favorable treatment from lenders that is unrelated to their creditworthiness. Despite laws outlawing discriminatory lending practices, it is possible that lenders use questionable information in making their lending decisions, in establishing credit rates or in determining loan amounts. In the consumer credit market, for example, Cohen (2004) found that the nation's largest auto lender—Ford Motor Credit Company (FMCC)—engaged in finance markup charges that led to racial disparities in auto lending that cost African Americans and Latinos additional auto loan debt over other borrowers. Such discrepancies in finance rates between African Americans and Latinos and other consumers could not be explained by differences in creditworthiness. Such discrimination occurred in two ways. First, African Americans and Latinos were more likely to be assessed finance markup charges. Second, the finance markup charges they faced were, on average, higher than those faced by non-African American and non-Latino consumers in similar credit categories. A similar analysis of GMAC lending showed that more than half of African Americans customers received "subjective markups" (Cohen, 2003). Moreover, African

American borrowers paid more than 2.5 times the amount in subjective markups compared with Whites. Such discrepancies existed across all credit tiers.

The availability of credit to small business borrowers has been examined in several studies (e.g., Peek and Rosengren, 1998; Strahan and Weston, 1998; Frame, Padhi, and Woosley, 2001; Berger, Frame, and Miller, 2005; and Brevoort, 2009). Generally, smaller firms are less likely than large firms to apply for new credit, and they are less likely to have their applications approved (Peek and Rosengren, 1998). Application rates for newer and older firms were similar, but startup firms were more likely than established ones to be denied credit. The finding that smaller and newer firms have their loan applications denied more frequently is consistent with the conventional wisdom that these firms are riskier, have shorter credit histories or less collateral to pledge as security, and are less transparent.

Other studies have examined the importance of borrower characteristics, as such information is critical to the lending process (e.g, Cole, Goldberg, and White, 2004; Berger and Udell, 2006; and Petersen and Rajan, 1995). Historically, lenders have been more likely to extend credit if they had a relationship with a borrower because of the availability of more reliable information (Cole, 1998). Lenders usually based their credit granting decisions on judgmental methods that involved the exercise of individual judgment by credit officers on a case by case basis (Capon, 1982).

The Federal Reserve Board was mandated by Congress to investigate the fairness of credit scoring. As mentioned above, it found that credit scores vary among racial and ethnic groups but that the use of credit scoring has made credit more available for major purchases such as buying homes. The Fed's study, encompassing credit bureau records and demographic data from a national statistical sample, found that credit-score statistical models are not biased against

any demographic group and are highly predictive of future payment performance (Braunstein, 2010).

These findings run counter to the results from other studies. Previous research provides evidence that is consistent with Black business owners facing lending discrimination. Duca and Rosenthal (1993), for example, found that minorities face tighter debt limits and are more likely to be credit constrained than are their White counterparts. Tootell (1996) found unexplained differences in access to mortgage markets across racial and ethnic groups. Cavalluzzo, Cavaluzzo and Wolken (2002) found higher loan application rejection rates among (otherwise equivalent) minority-owned businesses looking to borrow. In general, Black-owned firms experienced higher loan denial probabilities and pay higher interest rates than did White-owned businesses even after taking into account differences in creditworthiness and other factors (e.g., Cavalluzzo, Cavaluzzo and Wolken, 2002; Blanchflower, Levine and Zimmerman, 2003; Cavaluzzo and Wolken, 2005, and Robb, Fairlie, and Robinson 2009).

A well-functioning credit market should not have racial nor gender disparities. Lenders should be using a credit scoring system that is colorblind and gender neutral. But credit scoring is a practice that is notoriously shrouded in mystery. Proponents of credit scoring suggest that credit decisions in judgmental systems were subject to arbitrary and capricious behavior by credit evaluators, but that decisions made with a credit scoring system are objective and free from such problems. But as Capon (1982:85) suggests, “since prediction is the sole criterion for acceptability, any individual characteristic that can be scored, other than obviously illegal characteristics, has potential for inclusion in a credit scoring system.” As he points out, proponents of credit scoring originally wanted to include in their models such characteristics as race, ethnicity, gender, religion, marital status, etc. (Capon, 1982). In Congressional hearings on

the matter, it was disclosed that among the factors included were such things as "first letter of the last name of the borrower," the "width of product being purchased," and the "age difference between a man and wife." This is in addition to anything else that was found to be statistically related to payment performance for whatever reason. Although Congress embraced credit scoring systems, it explicitly "proscribed characteristics that were either immutable (race, color, national origin, sex) or central to the individual's life (religion, marital status)" (Capon, 1982:87).

But is it possible that credit evaluators use such factors any way? Do women and minority applicants have reason to be concerned that they receive lower credit scores and even less favorable treatment from lenders that is unrelated to their creditworthiness?

Research Questions and Hypotheses

We pose two central research questions: (1) Net of other factors, do the race and/or gender of the primary owners of new business startups affect credit scores? And (2) net of credit scores and other factors, do race of primary owner and gender of primary owner affect business startups' access to credit?

Proponents of a universalistic model of creditworthiness would suggest that race and gender have little or nothing to do with the credit scores of businesses once firm characteristics such as company size, business net worth (i.e., equity), industrial sector, location, legal form of incorporation, and history of the company are taken into account. They would suggest that there is even less reason to suspect differences in credit scores once human capital characteristics such as years of education and years of experience in the industry are taken into consideration. In contrast, those who believe that credit determination is neither transparent nor universalistic would put forth the following hypotheses:

Hypothesis 1a: Net of credit-relevant factors, the credit scores of new business startups owned by African Americans are lower than those owned by Whites.

Hypothesis 1b: Net of credit-relevant factors, the credit scores of new business startups owned by women are lower than those owned by men.

Similarly, proponents of a universalistic model of creditworthiness would suggest that race and gender have little or nothing to do with access to credit above and beyond creditworthiness (i.e., business credit scores). And, again, they would suggest that there is even less reason to suspect differences in access to credit by race and gender after taking into consideration additional factors such as company size, business equity, industrial sector, location, legal form of incorporation, history of the company, and human capital characteristics of business owners. In contrast, those who believe that credit is not universalistic would put forth the following hypotheses:

Hypothesis 2a: Given similar credit scores and net of credit-relevant factors, new business startups owned by African Americans have lower credit lines than those owned by Whites.

Hypothesis 2b: Given similar credit scores and net of credit-relevant factors, new business startups owned by women have lower credit lines than those owned by men.

It is also possible that race and/or gender are related to some aspects of credit scores and not others. Below, we provide an assessment of the race-credit and gender-credit link. We test the competing hypotheses using data from the Kauffman Firm Survey. The analysis also examines these relationships net of firm characteristics and human capital characteristics of new business owners.

Data and Methods

Data

The Kauffman Firm Survey (KFS) is a nationally representative study of startup businesses in the United States. In 2004, this survey collected information on 4,928 firms. The data contain detailed information on the firms and background information on the owners of these new firms. Background information on the owners (up to 10) includes race, ethnicity, gender, age, education, work experience, previous startup experience, etc. For firms with multiple owners, the owner with the largest equity share in the firm was designated as the "primary owner." When two or more owners held equal shares, hours worked in the firm was used to create a rank ordering. In addition to the publicly available data on these business startups, the KFS also has a subset of confidential data on these firms, including such sensitive information as their business credit scores, their access to credit, their levels of capitalization, their levels of indebtedness, and their sources and amounts of equity. The businesses in the sample are all startups, (i.e., less than a year old); thus, it is more possible than usual to treat the "history" of each business as a constant, at least inasmuch as they all have less than one year of credit history at the time of the survey. We are able to capitalize on this fact by using the Kauffman Firm Survey data in the analysis.

Operationalizations

The analysis included two dependent variables: business creditworthiness (credit scores) and business credit access (credit line). The central independent variables are race of primary business owner and gender of primary business owner. In addition, there are several firm characteristics: company size, business net worth or equity, industrial sector, whether the business is home-based, whether the business holds some comparative advantage over its competitors, whether the business owns any intellectual property, and legal form of

incorporation. Several business owners' characteristics also serve as controls: education, age, and years of experience in the industry. The operationalizations of these variables are presented below.

Business Credit Score (Paydex). To measure business credit scores, we used the Dun & Bradstreet Paydex Score. "The D&B Paydex Score is D&B's unique dollar-weighted numerical indicator of how a firm paid its bills over the past year, based on trade experiences reported to D&B by various vendors. The D&B Paydex Score ranges from 1 to 100, with higher scores indicating better payment performance" (Dun and Bradstreet, 2010). The higher the score a firm receives, the better its pay history is considered to be, and thus, the higher its credit rating. According to Dun and Bradstreet, lenders should consider a score above 75 to reflect a comfortable business to which to lend. To get to a Paydex Score above 75 most business owners have at least six vendors reporting with at least $15,000 in revolving credit. It should be noted that, because all of these businesses in this study are startups in their first year of business, they will not have a year-long track record of payment history.

Business Access to Credit (Credit Line). In order to assess firms' access to credit, they were asked: "What was the maximum credit line" on several debt financing options, including business or corporate credit cards, business loans from commercial banks, business lines of credit, business loans from non-bank financial institutions, loans from government agencies, loans from other businesses, and business loans from other individuals not associated with the management of the business. The totals from these various financing options were summed to create a total Credit Line.

Race/Ethnicity. Respondents were told: "I am going to read a list of race categories. Please choose one or more that best describes your/primary owner's race. Are you American

Indian or Alaska Native, Native Hawaiian or other Pacific Islander, Asian, Black or African American, or White?" In addition, respondents were asked: "Are you/primary owner of Hispanic or Latino origin?" Responses were dummy variable coded to indicate whether the primary owner of the business was White, Black, Latino, Asian, or from some other racial/ethnic group.

Gender. Respondents were asked: "Are you/primary owner male or female?" Answers were dummy variable coded 1 for female and 0 for male.

Firm characteristics: Company size was operationalized as the number of employees in the company. Business net worth or equity is the amount of the funds contributed by the owners (and stockholders) plus the retained earnings (or losses). It was coded as the amount of investment from all sources--including spouses or life partners; parents, in-laws or children of owners of the business; individuals unrelated to the owners; other companies; government agencies; and venture capitalists--invested in the business minus liabilities from all sources. Industrial sector is dummy variable coded into North American Industry Classification System (NAICS) 2-digit codes which classify business establishments according to type of economic activity.

To indicate whether a firm was home-based, respondents were asked: "How would you describe the primary location where [NAME BUSINESS] operates?" Those that reported that the primary location of their business was in a home or garage were coded 1, and others were coded 0. To determine a business had a competitive advantage (i.e., something unique or distinctive) relative to its competitors, respondents were asked whether their business provides a competitive advantage compared to competitors. Those who said yes were dummy coded 1, and others were coded 0. Respondents were also asked whether the business owns any intellectual property. Those that said yes were dummy coded 1, and others were coded 0. Finally, respondents were

asked about the legal form of incorporation of their business. Responses were dummy variable coded to indicate whether the businesses were sole proprietorships, partnerships, corporations, or limited liability companies.

Owners' Characteristics. To measure education, respondents were asked: "What is the highest level of education you/primary owner have completed so far?" Responses were coded as follows: less than 9th grade=8; some high school, but no diploma = 10; high school graduate (diploma or equivalent = 12; technical, trade or vocational degree = 13; some college, but no degree = 14; Associate's degree = 14; Bachelor's degree = 16; some graduate school but no degree = 17; Master's degree = 18; professional school or doctorate = 20. In order to measure age of primary owner, respondents were asked: "How old will you/primary owner be on your/his/her next birthday?" Age was coded as actual years. Respondents were asked about the primary owner's years of experience in the industry: "How many years of work experience have/has you/primary owner had in this industry—the one in which [NAME BUSINESS] competes?" Experience in the industry was coded as actual years.

Results

Do credit scores for business startups differ according to the race and gender of the primary owners? Figure 1 shows that credit scores do differ by race. On average, startup businesses with Asian and White owners have higher than average credit scores. Those startups with African American and Latino primary owners have lower credit scores. Startups owned by Whites have Paydex Scores of 35.8 on average. Those owned by Asians have average credit scores of 39.5. In contrast, new businesses owned by African Americans have credit scores of 31.1 on average. And those nascent firms owned by Latinos have business credit scores of 32.9 on average. African American-owned businesses are significantly lower than average, and

White- and Asian-owned firms are significantly higher than the overall average. Figure 1 also shows that startups owned by women have significantly lower credit scores (33.2) than do new firms owned by men (35.9).

(Figure 1 About Here)

Although much research has established racial and gender differences in credit scores, these results still constitute a bit of a surprise to the degree that all of the businesses in this study are startups in their first year and, thus, have less than a year-long credit history.

Still, it is possible that other factors such as firm characteristics explain these racial and gender differences in credit scores within the first year of business startup. To examine this possibility, we examine the relationship between race of owner and credit scores net of firm characteristics.

Table 1 provides some selected characteristics of business startups by race and by gender. This table shows that startups differ in terms of the characteristics of the firms by race of the primary owner. For example, firms with White owners are a bit larger (2.0 employees) than those owned by Blacks (1.3 employees) and Latinos (1.4 employees) but smaller than those owned by Asians (3.6 employees). White-owned firms are slightly less likely (29.8%) to be sole proprietorships than are those owned by Blacks (39.7%) and Latinos (35.4%) but more likely than are those owned by Asians (23.5%). White-owned startups (23.9%) are more likely to be in construction than are Black-owned startups (14.5%), Latino startups (18.9%), and Asian startups (13.3%). White-owned startups (24.9%) are slightly less likely to be involved in professional and managerial services than are Black-owned (27.5%), Latino-owned (26.8%), and Asian-owned (32.7%) startups. More than half (50.7%) of White-owned startups are home-based. This compares with 60.5% of Black-owned startups, 45.1 of Latino-owned firms, and 45.1% of

Asian-owned startups. Startups do not appear to differ by race of owner in terms of their ownership of intellectual property. They do, however, differ substantially by race in terms of their amounts of equity. On average, White-owned startups have $77,163 in equity compared with $27,949 for Black-owned startups, $83,579 for Latino-owned startups, and $124,428 for Asian-owned startups.

(Table 1 About Here)

Startups also differ by the characteristics of their owners. On average, the primary owners of White-owned startups have more years of work experience (13.2 years) than do those of Black-owned startups (10.6 years), Latino-owned startups (12.7 years), and Asian-owned startups (9.5 years). But the primary owners of White-owned startups (41.3%) are slightly less likely to have experience in the industry of their firms than are those in Black-owned startups (42.5%), Latino-owned startups (47.8%), and Asian-owned firms (47.8%). The primary owners of White-owned startups tend to be slightly older (47 years old) than those from Black-owned firms (43.7 years old), Latino-owned startups (44.5 years old), and Asian-owned startups (41.6 year). In terms of educational attainment, Asian-owned startups have primary owners who have slightly higher levels of education (16.4 years) on average than do White-owned (15.2 years), Black-owned (15.1 years), and Latino-owned (15.0 years) startups.

When broken down by the gender of the primary owner of the startup, we also see differences. Startups that have men rather than women as their primary owners tend to have more employees (2.2 versus 1.2), are more likely to be involved in construction (25.2% versus 15.2%), and they are slightly more likely to be engaged in professional and managerial services (25.9% versus 23.2%). Female-owned startups are more likely (41.2% versus 30.3%) to be sole proprietorships. Female-owned startups are also slightly more likely than are male-owned

startups to be home-based (54% versus 49.2%), and they are slightly less likely to own intellectual property (18.8% versus 22.1%). There are substantial differences in female-owned and male-owned startups in terms of their equity. On average, male-owned startups have $83,814 in equity versus $47,928 that female-owned startups have.

Male- and female-owned startups also differ in terms of the other characteristics of their primary owners. The primary owners of male-owned startups, on average, have more work experience (13.9 years versus 9.4 years), and they are more likely to have experience in the industry (44.3% versus 34.9%). The primary owners of male- and female-owned startups do not differ significantly in terms of age (46 years old for both male- and female-owned) nor education (15 years of education for both male- and female-owned).

Still, because of the compositional differences in the characteristics of firms by the race of the primary owner and by the gender of the primary owner, it is important to statistically control for such factors. Model 1 of Table 2 presents the effects of race of primary owner and gender of primary owner on business credit scores. Model 2 presents these effects net of characteristics of firms. Model 3 presents these effects net of characteristics of firms and other characteristics of the primary owners of firms. Model 1 shows that, on average, Black-owned startups are 5.3 Paydex credit points lower than are White-owned startups. This difference is statistically significant at $p < .01$. Latino-owned startups also have lower business credit scores than do White-owned startups, but these differences do not attain statistical significance. Asian-owned startups have slightly higher business credit scores than do White-owned startups, but again, these differences do not attain statistical significance. Model 1 also shows that female-owned startups have marginally lower business credit scores than do male-owned ($p = .064$). But

are such racial and gender differences attributable to differences in the characteristics of the firms?

(Table 2 About Here)

Model 2 presents the effects of race of primary owner and gender of primary owner, net of characteristics of firms. When the size of the firm, industrial sector, legal form of ownership, location of the firm, ownership of intellectual property, and amount of equity were taken into account, Black-owned startups still had significantly lower business credit scores than their White-owned counterparts. In other words, differences in the characteristics of the firm do not account for business credit score differences between Black-owned and White-owned startups. Differences in characteristics of firms do, however, appear to explain credit scored differences between male-owned and female-owned startups. In other words, when characteristics of firms are taken into account, marginal differences in business credit scores between male- and female-owned firms become nonsignificant.

It is also noteworthy that business credit scores increase as the size of the firm increases. On average, startups in construction, wholesale trades, F.I.R.E. industries, and professional and managerial services have significantly higher business credit scores than those in other sectors. Firms that are partnerships, corporations, and legal liability companies have higher business credit scores on average than do sole proprietorships. On average, home-based startups have lower credit scores than those located elsewhere. And finally, the higher the equity, the higher a startups' business credit score. All of these differences are statistically significant at $p < .05$.

Model 3 of Table 2 shows that even when other characteristics of the primary owner are taken into consideration, Black-owned startups have lower business credit scores than do their White-owned counterparts. Indeed, this model suggests that, rather than helping to explain the

gap in credit scores, when factors such as work experience, experience in the industry, age, and education are taken into account, the Black-White gap actually widens. Net of firm characteristics and other owner characteristics, the effects of race of owner are statistically significant at $p < .01$.

But what if Black-owned startups' credit scores were determined in the same fashion as those of their White counterparts? To address this question, we use a Blinder-Oaxaca decomposition (Blinder, 1973 and Oaxaca, 1973). The Blinder-Oaxaca decomposition technique decomposes differentials into two components: a portion that arises because two comparison groups, on average, have different qualifications or credentials (e.g., size of firm and labor market experience of primary owner) when both groups receive the same treatment (explained component), and a portion that arises because one group is more favorably treated than the other given the same characteristics (unexplained component). A linear equation is estimated using a regression analysis.

In order to examine sources of credit score differentials between Whites and Blacks, a counterfactual equation is constructed where Blacks are treated as Whites. In other words, the intercept and coefficient in Blacks' equation are replaced by those of Whites' equation. Credit score differentials between Whites and Blacks, on average, can be decomposed into a "characteristics effect" that is due to differences between Whites' credit scores and counterfactual credit scores, and a "coefficients effect" that is due to differences in treatment.

Figure 2 shows that the credit score gap between businesses where the primary owner is White and those where the primary owner is African American would shrink substantially. Indeed, the gap would close by more than half (from 4.7 credit points to 2.3 credit points) if the credit scores of Black-owned and White-owned businesses were determined in the same fashion.

(Figure 2 About Here)

But do racially-based differences in credit score determination translate into differences in access to credit? Figure 3 shows that credit lines differ by race of the primary owner. On average, startup businesses with White owners have higher than average credit lines. Those startups with African American, Latino, and Asian primary owners have lower credit lines. Startups owned by Whites have credit lines of $14,176 on average. In contrast, those owned by Asians have average credit lines of $6,219. New businesses owned by African Americans have credit lines of $2,033 on average. And those new firms owned by Latinos have business credit lines of $4,467 on average. Figure 2 also shows that startups owned by women have significantly lower credit lines ($4,559) than do new firms owned by men ($14,506).

(Figure 3 About Here)

Table 3 presents the effects of race of primary owner and gender of primary owner on business credit lines. Model 1 shows the effects of race of primary owner and gender of primary owner on business credit line. Model 2 presents these effects net of business credit score. Model 3 shows the effects net of credit scores and characteristics of firms. Model 4 presents these effects net of credit scores, characteristics of firms, and other characteristics of the primary owners of firms. Model 1 shows that, on average, Black-owned startups have credit lines that are $11,826 less than those of White-owned startups. This difference is statistically significant at $p < .01$. Latino-owned startups also have lower business credit lines than do White-owned startups, but these differences do not attain statistical significance. Asian-owned startups have credit lines that are $9,536 lower than those of White-owned startups. Model 1 also shows that female-owned startups have business credit lines that are $9,191 less than those of male-owned startups.

It is possible, however, that such racial and gender differences are attributable to differences in credit scores.

(Table 3 About Here)

Model 2 shows that credit scores are positively related to credit lines ($p < .01$). But racial and gender differences in business credit lines are not attributable to differences in credit scores. Indeed, when credit scores are taken into account, racial and gender differences generally become more pronounced rather than less pronounced. In particular, differences in credit lines between those of White-owned and Latino-owned startups grow to $12,526 and become statistically significant. The difference between Asian-owned and White-owned startups grows to $10,868 and remains statistically significant. And the differences between female-owned and male-owned startups grows to $9,788 and remains statistically significant. In other words, not only do credit scores fail to explain racial and gender differences in credit lines; rather, they appear to mask the size and significance of such differences.

Models III and IV of Table 3 show that when other characteristics of the firms and of the primary owners are taken into consideration, startups owned by people of color still have business credit lines that are lower than those of their White-owned counterparts. Indeed, these models suggest that, rather than helping to explain the gap in credit scores, when factors such as work experience, experience in the industry, age, and education are taken into account, the Asian-White gap actually widens. Net of credit scores, firm characteristics, and other owner characteristics, the effects of race of owner remain statistically significant at $p <.01$. Similarly, the gender of owner effects remain statistically significant.

We again use the Blinder-Oaxaca decomposition to estimate what business lines of credit would be if they were determined in the same way as those for businesses owned primarily by

Whites and by men. In the case of Black-owned businesses, the credit lines would more than double (from $2,033 to $4,847). For Latino-owned businesses, lines of business credit would nearly triple (from $4,467 to $13,321). And for Asian-owned businesses, lines of credit would more than triple (from $6,219 to $21,457). If credit lines for women-owned businesses were determined like those for those where the primary owners are men, the lines of credit would be more than twice as large (from $4,559 to $9,251). In short, there are both substantial racial and gender differences in access to credit, net of credit scores.

Conclusions

The main objective of this research was to examine the roles of race and gender in the determination of credit scores and access to credit for new businesses. The paper began with the observation that business startups face critical challenges in financing themselves. Indeed, startup survival often depends on being able to secure sufficient external financing. The paper then reviewed the literature on the availability of credit to small business borrowers and pointed to a disagreement in the literature about whether businesses owned by people of color and women receive even less favorable treatment from lenders that is unrelated to their creditworthiness. The paper put forth hypotheses consistent with proponents of a universalistic model of creditworthiness that suggests that race and gender have little or nothing to do with the credit scores of businesses once firm characteristics are taken into account. It also considered an alternative set of hypotheses that suggest that credit determination is neither transparent nor universalistic. We then used microdata from the Kauffman Firm Survey to analyze racial and gender differences in credit scores of business startups, net of firm characteristics that should serve as determinants of business credit scores. The second phase of our analysis focused on credit scores as a determinant of business startups' ability to secure credit lines.

Our results suggest that that business credit scores do differ by race and gender. On average, startup businesses with Asian and White owners have higher than average credit scores and those startups with African American and Latino primary owners have lower credit scores. We also found that startups owned by women have significantly lower credit scores than do new firms owned by men. Because the businesses in question were all startups, (i.e., less than a year old), it was more possible than usual to control for their histories and to see that racial and gender differences in credit scores go beyond the credit histories of these firms. Moreover, we found that differences in the characteristics of the firms do not account for business credit score differences between Black-owned and White-owned startups. And when factors such as work experience, experience in the industry, age, and education are taken into account, the Black-White gap in credit scores for new businesses actually widens.

We found somewhat different patterns for the link between gender of owner and credit scores. When we control for differences in characteristics of firms, apparent business credit score differences in male-owned and female-owned new firms are reduced to the point of statistical non-significance.

We also found that there are both racial and gender differences in access to credit, net of credit scores. Indeed, we found that when credit scores are taken into account, racial and gender differences in access to credit generally become more pronounced rather than less pronounced among new firms. In other words, not only do credit scores fail to explain racial and gender differences in credit lines, they appear to mask the size and significance of such differences. Net of credit scores, firm characteristics, and other owner characteristics, the effects of race of owner and gender of owner on access to credit remain statistically significant.

Needless to say, our results suggest that the determination of credit for new businesses is not colorblind. And perhaps even more disheartening is the idea that even with the same credit scores as Whites and men, people of color and women will receive significantly less in access to credit. In other words, minorities appear to be penalized in the determination of credit scores and then again in access to credit lines. They appear to suffer discrimination both at the point of determining credit scores and at the point of lenders' lending decisions.

Credit scoring was originally created to increase the objectivity and consistency of the credit evaluation process. It was hailed as a new way to avoid the pitfalls of judgmental methods that involved the exercise of biased judgment by credit officers. A well-functioning credit market should not have racial nor gender disparities. In other words, credit analysts and lenders should be using credit scoring that is colorblind and gender neutral. Unfortunately, our results suggest that such colorblindness and gender neutrality have not yet been achieved. Future research will need to uncover why race and gender persist in credit determination and outcomes.

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Figure 1

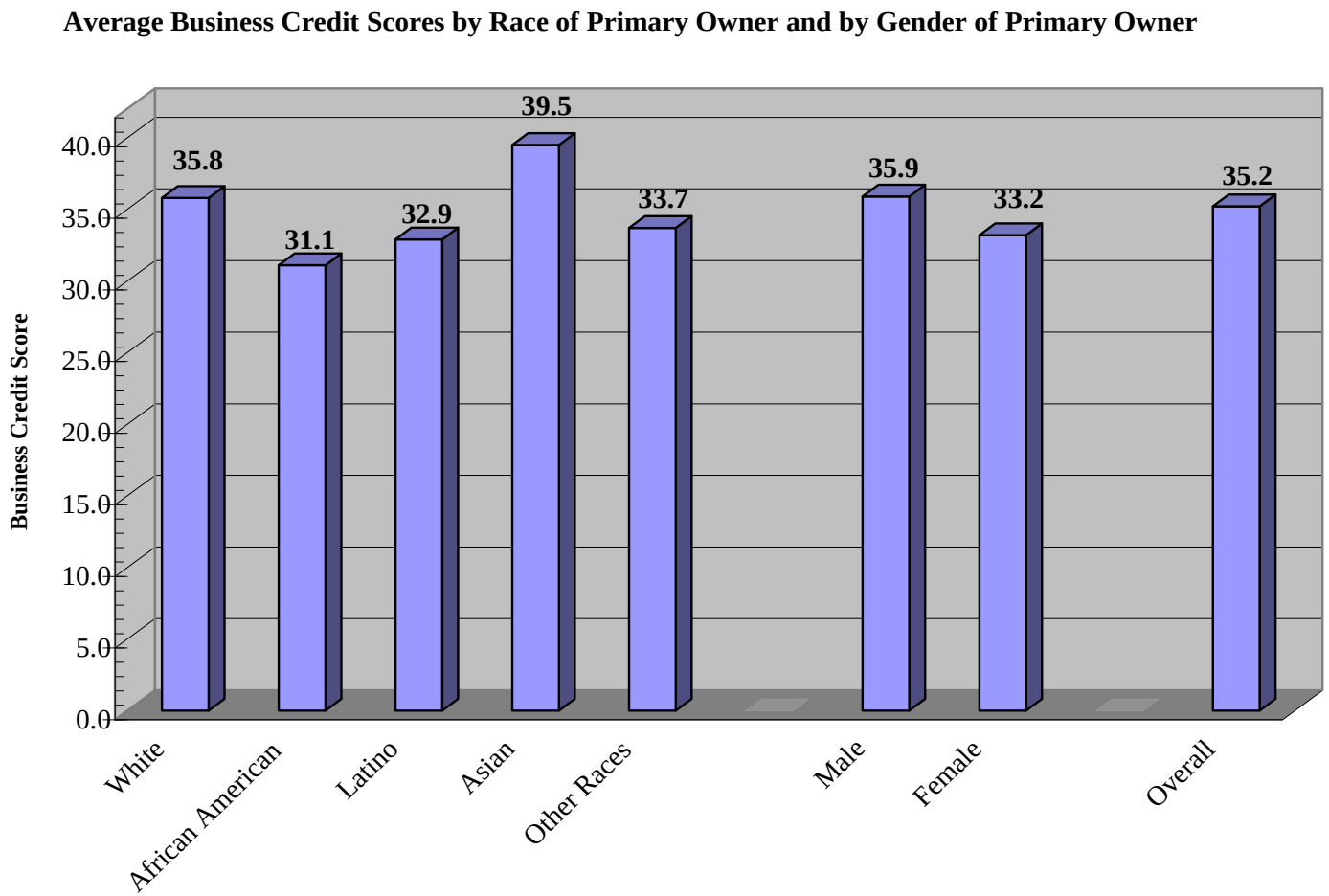
Average Business Credit Scores by Race of Primary Owner and by Gender of Primary Owner
Business Credit Score
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
35.8
31.1
32.9
39.5
33.7
35.9
33.2
35.2
White
African American
Latino
Asian
Other Races
Male
Female
Overall

Figure 2

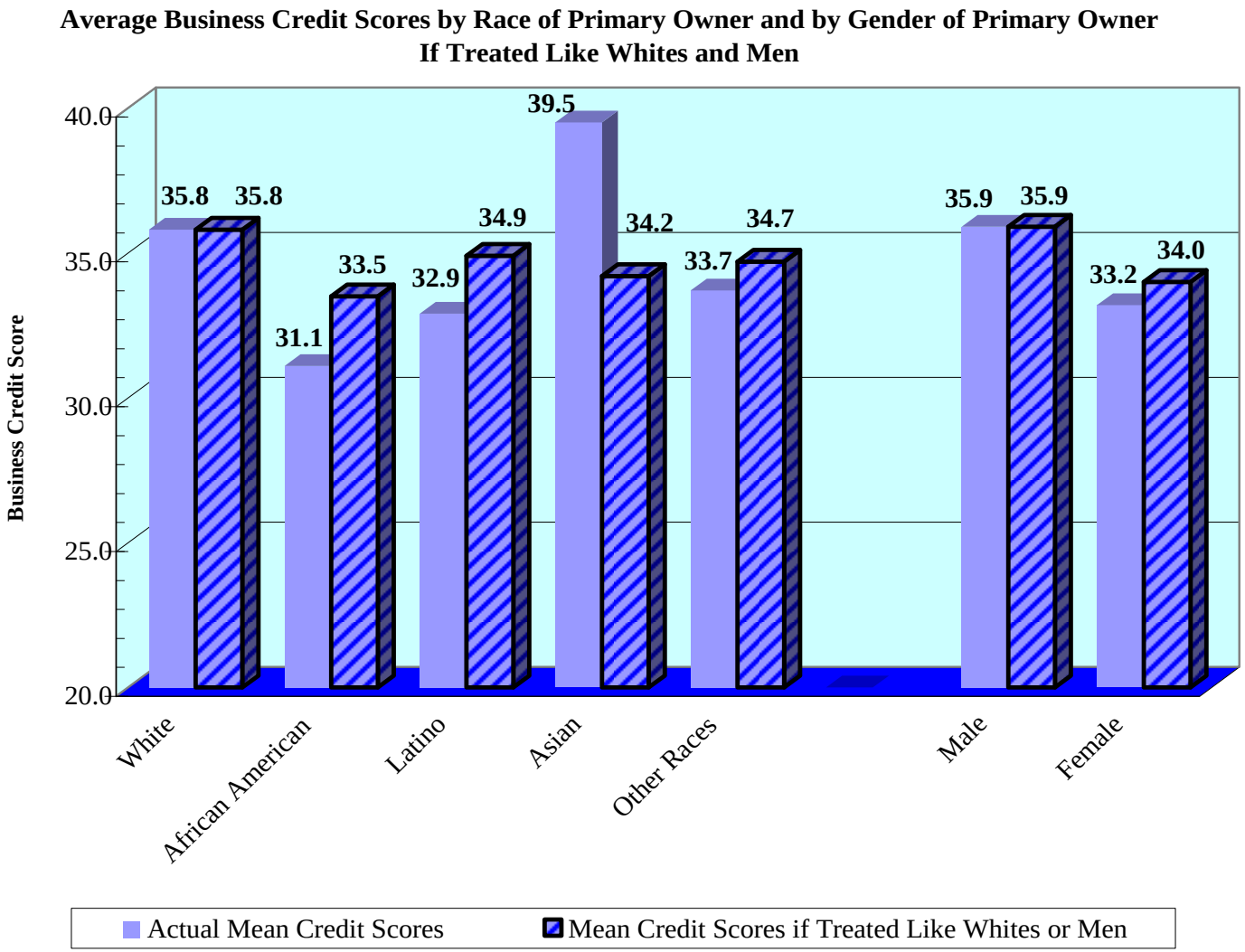
Average Business Credit Scores by Race of Primary Owner and by Gender of Primary Owner
If Treated Like Whites and Men
Business Credit Score
40.0
35.0
30.0
25.0
20.0
35.8
35.8
31.1
33.5
32.9
34.9
39.5
34.2
33.7
34.7
35.9
35.9
33.2
34.0
White
African American
Latino
Asian
Other Races
Male
Female
Actual Mean Credit Scores
Mean Credit Scores if Treated Like Whites or Men

Figure 3

Average Business Line of Credit by Race of Primary Owner and by Gender of Primary Owner

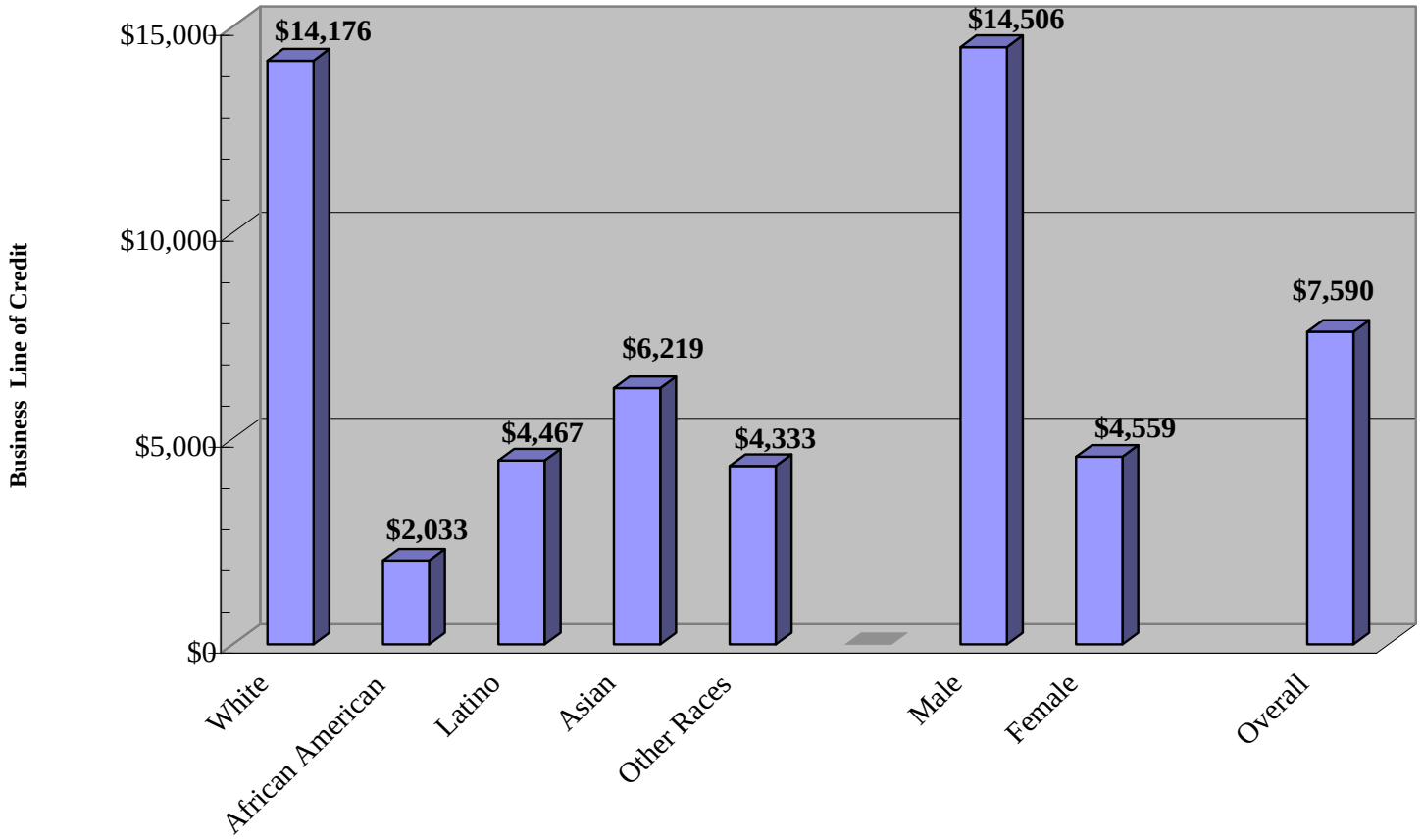

Figure 4

Figure 4:
Average Business Line of Credit by Race of Primary Owner and by Gender of Primary Owner
If Treated Like White and Male

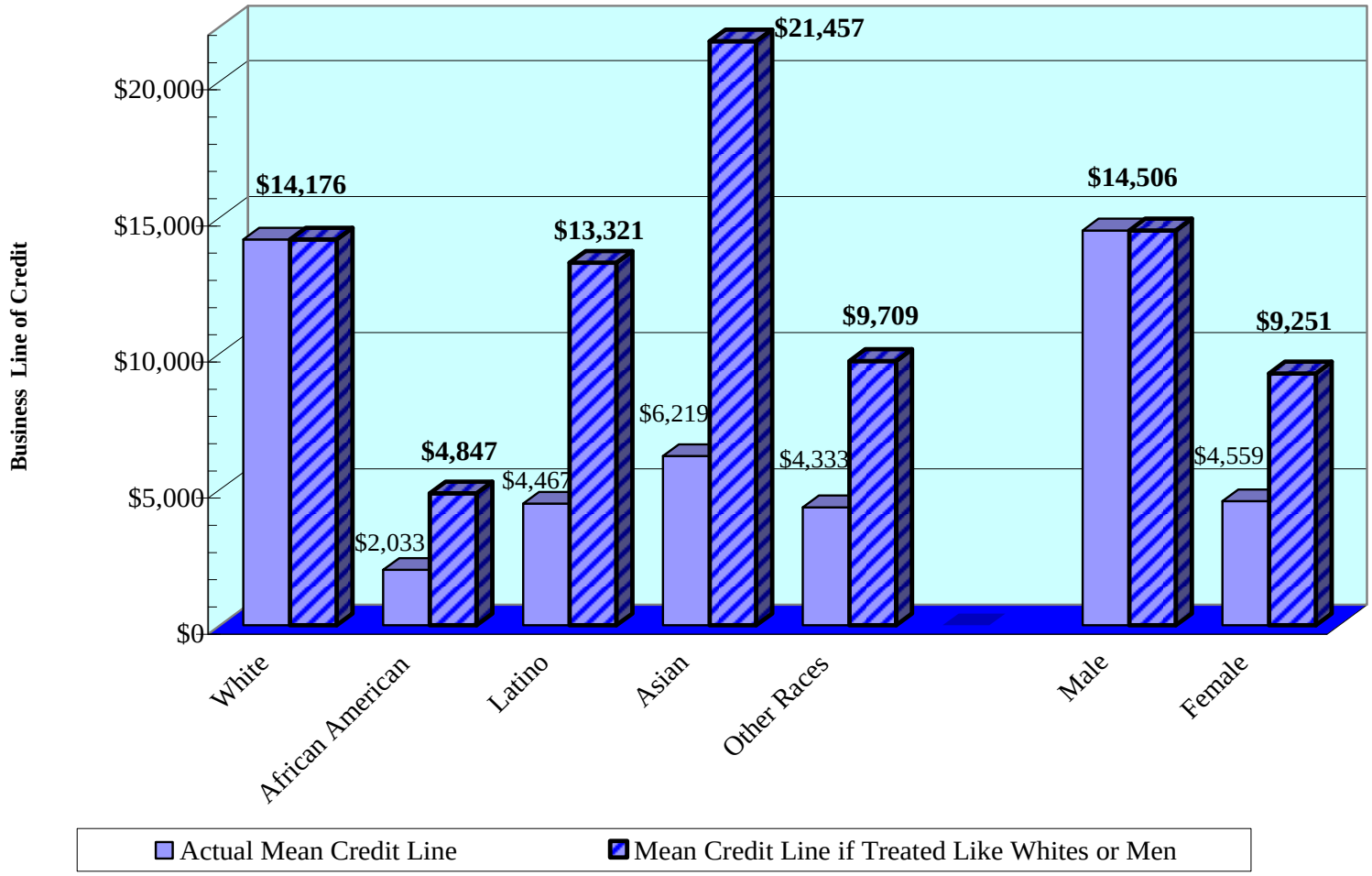

Table 1:
Selected Characteristics of Business Startups by Race and Gender of the Primary Owner

Characteristic	White	African American	Latino	Asian		Male	Female
Mean Number of Employees	2.0	1.3	1.4	3.6		2.2	1.2
% Sole Proprietorships	29.8	39.7	35.4	23.5		30.3	41.2
% in Construction	23.9	14.5	18.9	13.3		25.2	15.2
% in Professional or Managerial Services	24.9	27.5	26.8	32.7		25.9	23.2
% Home-Based	50.7	60.5	45.1	38.7		49.2	54
% Owning Intellectual Property	21.2	19.5	21.9	20.9		22.1	18.8
Mean Amount of Equity	$77,163	$27,949	$83,579	$124,428		$83,814	$47,928
Mean Years of Work Experience	13.2	10.6	12.7	9.5		13.9	9.4
% with Experience in Same Sector	41.3	42.5	47.8	47.8		44.3	34.9
Mean Age of Primary Owner	47.0	43.7	44.5	41.6		46.4	46.0
Mean Years of Education of Primary Owner	15.2	15.1	15	16.4		15.2	15.1

Table 2:

OLS Regression Models Predicting Business Credit Scores of Startups by Race and Gender of the Primary Owner and Other Selected Factors[a]

Independent Variables	Business Credit Scores		
	Model 1	**Model 2**	**Model 3**
Constant	35.887 **	29.372 **	21.790**
Black Owner	-5.318**	-3.936**	-4.974**
Latino Owner	-2.280	-2.043	0.101
Asian Owner	3.614*	1.540	3.216
Other Race Owner	-2.270	-0.732	-0.135
Female Owner	-1.640*	0.442	0.352
Firm Size		0.251**	0.258**
Equity		0.001**	0.000**
Partnership		3.767*	5.362**
Corporation		4.124**	3.003**
Limited Liability		3.670**	3.271**
Home-Based		-4.678**	-4.487**
Intellectual Property		-0.609	-0.472
Construction		7.819**	7.396**
Wholesale		9.560**	7.223**
Retail		2.235	2.078
Transportation		3.841	3.919
Information		3.302	1.904
F.I.R.E.		8.936**	8.913**
Professional/Managerial Service		6.609**	5.650**
Administrative Support Services		-1.718	-1.990
Health and Social Services		2.188	1.237
Arts and Entertainment		0.609	0.146
Work Experience			0.057
Age of Primary Owner			0.095**
Education of Primary Owner			0.218
R^2	.008**	.101**	.104**
N	3602	3519	2647

* p< .05 ** p< .01

[a]Coefficients are unstandardized. For the dummy (binary) variable coefficients, significance levels refer to the difference between the omitted dummy variable category and the coefficient for the given category.

Table 3:

OLS Regression Models Predicting Business Lines of Credit of Startups by Race and Gender of the Primary Owner and Other Selected Factors[a]

Independent Variables	Business Line of Credit			
	Model 1	**Model 2**	**Model 3**	**Model 4**
Constant	16215.01**	3312.68	-2423.62**	-30895.98*
Black Owner	-11826.23**	-10543.57**	-7347.34**	-6468.35**
Latino Owner	-7685.16	-12525.63**	-11212.24**	-12903.38**
Asian Owner	-9536.36**	-10868.46**	-17278.97**	-19008.54**
Other Race Owner	-12017.25**	-12066.97**	-7908.63**	-7277.53**
Female Owner	-9191.02**	-9787.89**	-7673.79**	-7008.29**
Business Credit Score		407.76**	191.15**	260.05**
Firm Size			2838.14**	905.46*
Equity			0.05**	0.03**
Partnership			3628.12	6977.19**
Corporation			-3456.050	-404.71**
Limited Liability			6708.81*	5208.34**
Home-Based			-5180.04*	-5896.97**
Intellectual Property			-7055.91	-5111.14
Construction			4085.57	2324.06**
Wholesale			28879.11**	27701.66**
Retail			14183.43**	15778.32
Transportation			3928.61	3599.15
Information			-1754.42	-5147.86
F.I.R.E.			4964.61	-1886.59**
Professional/Managerial Service			2805.21	-5699.26**
Administrative Support Services			2439.47	-2252.02
Health and Social Services			14170.31	11142.53
Arts and Entertainment			-3910.82	-5075.96
Work Experience				759.79*
Age of Primary Owner				92.38**
Education of Primary Owner				1169.17
R^2	.006**	.018**	.091**	.094**
N	4872	3566	3499	2633

* p< .05 ** p< .01

[a]Coefficients are unstandardized. For the dummy (binary) variable coefficients, significance levels refer to the difference between the omitted dummy variable category and the coefficient for the given category.