

**\*\*Preliminary and Incomplete; Comments Welcome\*\***

## **Credit Cards, Race and Entrepreneurship**

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**Abstract:**

We utilize a natural experiment, the Supreme Court's 1978 *Marquette* decision which changed the interest rates that credit card companies could legally charge, to explore the impact of credit card availability on black entrepreneurship. Using self employment as a measure of entrepreneurship, we use Current Population Survey data from 1971-1985 to show that increases in rates following the *Marquette* decision led to increases in self-employment transitions among black individuals. We verify this same pattern using Survey of Consumer Finance data from 1977-1986 and find additional suggestive evidence that credit cards were an important financing tool that may have allowed black entrepreneurs to circumvent discrimination. We conclude with implications for research on entrepreneurship and public policy.

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## **1. Introduction**

Prior research has shown that black entrepreneurs have a harder time accessing finance than white entrepreneurs. There is also evidence that the business financing frictions encountered by black entrepreneurs are due to discrimination when applying for loans. Our paper investigates whether credit cards, which eliminate the need for face-to-face interactions with a loan officer, are a mechanism which black entrepreneurs use to overcome business financing frictions. We accomplish this by evaluating the impact of variation in state level credit card interest rate caps on black transitions into entrepreneurship in the United States. Exogenous variation in state level interest rate caps comes from the *Marquette* decision, a 1978 Supreme Court ruling that effectively eliminated state level caps on credit card interest rates for a group of states over several years. After the decision a number of states eliminated caps, allowing credit card companies in states which were previously capped at lower interest rates to charge much higher rates and extend credit to more borrowers. We show that elimination of the caps increases black transitions into self employment. These results are consistent across two different data sets. We also show weak evidence that black individuals who own credit cards in states without caps are more likely to be self employed. We furthermore show that blacks are more likely than whites to be turned down by lenders than whites, and that blacks in states with a history of discrimination are more likely to enter self employment following elimination of caps. We believe these findings suggest that black individuals face discrimination-based barriers to entrepreneurship and use credit cards as a mechanism to overcome these barriers. We also show that the results are not driven by interstate moves or other state law changes.

In addition to suggesting a mechanism that black entrepreneurs use to overcome discrimination in lending, our paper also adds to a broad literature about how entrepreneurs finance their ventures. While most prior work has examined new ventures supported by outside capital,<sup>1</sup> the vast majority of entrepreneurs are likely to use their own funds, raise money from their friends and family, or borrow money from commercial banks, government, and other sources (Berger and Udell, 1998). Numerous academic studies have focused on venture capital financing of new ventures (for a review of some of this literature, see Hsu (2001)), whereas a very small percentage of entrepreneurs actually receive venture capital.<sup>2</sup> The vast majority of entrepreneurs finance their businesses through other means. Often before tapping “friends, families, and fools” or after being turned down for a bank loan, incipient entrepreneurs use credit cards to “bootstrap” a new venture. Indeed, a recent study by MasterCard reported that 57% of small business owners used credit cards to finance their companies (Cole, Lahm Jr., Little Jr., and Seipel, 2005; de Paula, 2003). Credit cards represent an important source of short term credit, which can be especially valuable to entrepreneurs. Entrepreneurs face regular cash outflows such as rent and utility bills, vendor bills, and salaries for employees, but often face uncertain cash inflows - for example they typically have few customers and if one or more of these customers delays payment the entrepreneur can face a funding shortfall. In order to cover these funding shortfalls and recognizing that they often lack collateral, entrepreneurs may be

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<sup>1</sup> The three most common forms of outside equity financing are angel investors, venture capitalists and corporate venture capital (Denis, 2004). According to estimates from the National Venture Capital Association, the angel investor market was worth \$100 billion and the venture capital market was worth \$48.3 billion in 2000 (Denis, 2004). There is less reliable data on the total amount of corporate venture capital investments, but it is thought to be a fraction of independent venture capitalist investments (Denis, 2004). Most of the academic research on entrepreneurial finance has focused on these three sources of financing.

<sup>2</sup> According to the National Venture Capital Association, 3,226 companies received venture capital in 2007. In contrast, there were over 10.4 million self employed individuals in 2007, according to the 2008 Small Business Administration’s “Small Business Economy: A Report to the President.”

willing to pay higher rates on borrowed capital in the short term. The importance of the availability of this type of capital to meet immediate needs is addressed in a recent study by the National Federation of Independent Business (NFIB). The NFIB asks small business owners to rank their most severe problems. Cash flow is ranked number seven, whereas obtaining long (5 years) and short (12 months) term business loans is ranked 68 and 70 respectively (see Barth, Yago and Zeidman (2005) for additional information). Hise (1998) reports that a survey by Arthur Andersen found that credit cards were a favored financing source for 34% of the entrepreneurs they contacted. Shermach (2004) argues that credit cards are used more widely by small business owners than other individuals. Cole et al. (2005) surveyed entrepreneurs between 2001 - 2005 and found that credit cards were a source of finance for 37.5% of start-ups. These conclusions were drawn from small sample studies and no large sample analysis has been conducted to our knowledge. Despite the apparent practical importance of credit card financing, the role of credit cards in entrepreneurship has yet to be rigorously investigated, hampering our understanding of this important economic phenomenon.

Credit card companies compete for customers based on a variety of product characteristics, including interest rates (Stango, 2002). Since the *Marquette* decision in 1978, the credit card companies have faced little regulation, and have been free to set interest rates depending on market conditions (Stango, 2003). Assuming healthy competition between credit card providers and good enough information about individuals and their risk, credit card companies should extend credit to a wider variety of individuals as allowable rates increase. The implication for our work is that if credit cards are a mechanism that entrepreneurs can use for short term financing, a positive shock to the availability of such credit should increase the level

of entrepreneurship. The effect should be especially pronounced for individuals that have difficulty obtaining credit through banks or other lending channels.

Prior work has found that blacks generally enter entrepreneurship at lower rates than whites (Fairlie, 1999). Several explanations have been offered to explain this disparity, including family structure (Hout and Rosen, 2000), liquidity constraints and consumer discrimination (Meyer, 1990). Even after becoming entrepreneurs, black individuals face challenges in running a successful business. Robb, Fairlie and Robinson (2009) show that black entrepreneurs have trouble accessing external capital markets, and so tend to rely heavily on owner financing. Blanchflower, Levine and Zimmerman (2003) find that black-owned small businesses are more likely to be denied bank credit than other groups, and when they do obtain credit they pay higher interest rates. Other work (Borjas and Bronars, 1989; Meyer, 1990; Kawaguchi, 2004) has suggested that consumer discrimination may decrease the returns for black entrepreneurs. Ravina (2008) studies an online lending market and finds that, while black borrowers are as likely to obtain a loan as white borrowers, black borrowers pay significantly more basis points than white borrowers, even though delinquency rates are similar. The literature discussed herein linking black individuals and entrepreneurship indicates that blacks may have been less likely than whites to gain access to credit through standard lending channels.<sup>3</sup> Therefore, when interest rate caps were allowed to rise after *Marquette*, leading to an increase in credit cards, black individuals may have been more likely to use credit cards to finance entrepreneurial entry than whites.

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<sup>3</sup> In an appendix, we use data from the time period we are studying to show the same patterns as other researchers. We find that black borrowers in the late 1970s and early 1980s encounter (or believe they will encounter) more financial frictions than white borrowers.

In the next section, we discuss the *Marquette* decision. Section 3 describes our methods and data. Section 4 describes the main results: black individuals were more likely to transition into self employment if residing in a state that eliminated credit card interest rate caps. Section 4 also provides information about the role played by discrimination and by credit cards. Section 5 concludes and discusses implications from our analysis.

## **2. The Marquette Decision**

In December 1978, the Supreme Court considered the case of *Marquette National Bank of Minneapolis vs. First Omaha Service Corp.* The case centered around First Omaha's marketing of credit cards to Minnesota customers. During this period, states were allowed to set their own caps on credit card interest rates, so First Omaha was charging a higher rate (as allowed by Nebraska law) than Minnesota based banks could offer to customers in their own state. As a result, the Minnesota Attorney General contended that these activities interfered with the state's ability to enforce its own usury laws (Ellis, 1998). The Court ruled that the National Bank Act stipulated that banks could charge the highest allowable rate in their home state, regardless of the interest rate caps in the customer's state of residence (Ausubel, 1997; Ellis, 1998).

Starting in 1980, and particularly in 1981, a number of states removed credit card interest rate caps (see Figure 1; New Hampshire was the one state which had no cap for the entire period). Note that the removal of interest rate caps did not immediately follow the Supreme Court ruling in December 1978, but instead occurred over a four year period from 1980 – 1983. According to some accounts, states removed interest rate caps in an attempt to attract and retain

banks, and major banks like Citibank moved to high rate or no limit states such as South Dakota (Ausubel, 1997; Ellis, 1998). However, despite Citibank's high profile move to South Dakota, there was not an immediate influx of out of state banks to no limit states due to laws restricting interstate banking. Many of these laws remained in place until the mid-1980s (Kroszner and Strahan, 1999). As a result, there was not an immediate saturation of interstate credit cards marketed from no limit states to individuals in states with limits. In fact, Knittel and Stango (2003) report that as of 1984 only 8-9 percent of customers with incomes above \$15,000 held out-of-state bank cards. The upshot is that individuals living in states which underwent a change to no limit interest rate caps were immediately affected, but not individuals residing in states with limits.

Since *Marquette*, credit card lending has increased and banks have extended more credit to high risk borrowers, since they can compensate for increased risk of default with higher rates of interest (Ellis, 1998). For those with poor credit ratings or those who were discriminated against under the regulated system, the deregulation of credit card interest rates led to increases in the availability of credit.<sup>4</sup> Bringing together the past literature on financing entrepreneurship, including liquidity constraints, the role of credit cards, and the specific challenges faced by black entrepreneurs, we expect that black entrepreneurship increased after the *Marquette* decision, as more black individuals were given access to credit to finance entrepreneurial ventures. Below, we test this proposition using two different data sets and information on credit card interest rates from before and after the *Marquette* decision. The only other paper that uses the *Marquette*

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<sup>4</sup> Two previous studies found that the pre-*Marquette* caps on interest rates negatively influenced the probability that low income families would have a credit card, but did not have a similar impact on high income families (Baxter, 1985). These findings imply that availability of credit cards may have been constrained prior to *Marquette*.

decision as a natural experiment is unpublished work by Zinman (2002), which uses the *Marquette* decision to study changes in consumer use of credit cards with data from the Fed Survey of Consumer Finance. The emphasis in Zinman's paper is the change in credit card use following the *Marquette* decision. We view Zinman's work as complementary to ours because it shows that individuals are more likely to have a credit card post-*Marquette*.

### **3. Data and Empirical Strategy**

We hypothesize that access to high cost of capital financing is an important determinant of entrepreneurial activity. Our prediction is that higher credit card interest rate caps will lead to increased entrepreneurship, and that this effect will be especially pronounced among blacks. We are able to test this idea with a quasi-natural experiment, whereby a number of states remove interest rate caps following the *Marquette* decision. We treat these state level changes in credit card interest rates as exogenous and use them to proxy for changes in the availability of credit card financing. Raw data confirm that state level changes in credit card interest rates affected availability and type of capital. Our data show that individuals living in states with no limit on the allowable interest rate pay a statistically significantly greater APR on their outstanding balances.<sup>5</sup> In addition, using data on state level HHI of credit card companies, we find that HHI is lower in states with no limit on credit card interest rates.<sup>6</sup> While this result is not statistically significant, it suggests that there is a greater supply of credit cards in no limit states. Finally, according to the Survey of Consumer Finances and as shown in Zinman (2002), there is a higher

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<sup>5</sup> The 1983 Survey of Consumer Finances contains data on self reported credit card APRs. Based on data from 1699 individuals, we can reject the null hypothesis that the credit card APR is the same in no limit states as in other states at the 99% confidence level.

<sup>6</sup> This data was generously provided by Chris Knittel and Victor Stango.



percentage of credit card ownership in no limit states; by 1986 73% of individuals living in limit states owned a credit card whereas 80% of individuals living in no limit states owned a credit card. The goal of our empirical strategy is to take advantage of the state level changes in maximum allowable credit card interest rates brought about by the *Marquette* decision to explain changes in self employment and black self employment, while controlling for other individual characteristics. More specifically, we use a differences-in-differences approach to compare self employment within states that adopt “no limit” regulation on credit card interest rates to self employment within states that do not adopt “no limit” regulation.

Data on interest rate caps for each state during our sample period have been hand collected from annual volumes of the *Cost of Personal Borrowing in the United States*. Figure 1 shows that the number of states with no limits increases from one to fourteen following the 1978 *Marquette* decision. We use two surveys on individual characteristics and employment for our analysis. We first use the Current Population Survey (CPS) data from 1971-1975, 1977-1981, 1983-1985<sup>7</sup> to establish the link between changes in the maximum allowable credit card interest rate and self employment rates. The CPS is ideal for this analysis because it includes many variables that we use to control for alternative explanations. We then use the Survey of Consumer Finances (SCF) data from 1977, 1983 and 1986 to investigate credit card ownership patterns and evidence of discrimination. Both the CPS and SCF data cover the period before and after the *Marquette* decision. However, the SCF data does not include information from all states.<sup>8</sup> The SCF is the only data source we could find that predates the *Marquette* decision and

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<sup>7</sup> CPS does not have data for 1976 and 1982. SCF does not have data for 1978-1982 or 1984-1985.

<sup>8</sup> SCF data does not include information from the following states: DC, HI, ID, KS, MD, MT, ND, NH, NM, NV, RI, VT, WV and WY.

has information on credit card use; however, the SCF has few annual observations. The CPS data has many annual observations, but lacks personal financial information. Hence, our approach is to use data from both surveys. Where possible, we made every effort to collect similar individual characteristics across the two surveys. For both surveys, we restrict our observations to individuals who are between ages 18 and 65, who work full time, and who do not work for the military or on a farm. The main dependent variable is transition into *self employment*. Self employment is a commonly used to identify entrepreneurs, and is the best variable we have given the nature of the CPS data.<sup>9</sup> We identify transitions into self employment by restricting the sample to individuals who were employed full time in a wage paying job in the prior year. We also collect a number of individual characteristics that previous studies have shown are important predictors of self employment. These variables include indicators for *black, female, married, home owner, urban, high school graduate* and *low-income* (indicating household income is in the bottom 20<sup>th</sup> percentile) as well as continuous variables for *age* and its square.<sup>10</sup> Several studies have found that interstate banking deregulation led to increases in entrepreneurship (Black and Strahan, 2002; Cetorelli and Strahan, 2006; Kerr and Nanda, 2009). We include four dummy variables indicating whether the state has passed any banking deregulation that may affect the availability of credit. These variables are dummies for deregulation of intrastate branching through M&A (*merger restrictions*), full intrastate branching (*unit branching*), interstate bank

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<sup>9</sup> It would be interesting to distinguish between self employed individuals who work in a single person firm versus self employed individuals who employ others. Nanda (2009) has a dataset that allows him to perform such a study, but we are unaware of any such dataset in the US that pre-dates the *Marquette* decision.

<sup>10</sup> The results are robust to the exclusion of *homeowner* and *income*, the two variables that are most at risk of being endogenous to the self employment decision.

branching (*interstate branching*), and multi-state holding companies (*holding company*). The data on these deregulations come from Kroszner and Strahan (1999).

The CPS and SCF data sources differ in several ways. With the CPS data, we construct demographic variables at the metro area-state level for *unemployment* and *farm population*. From the SCF we use demographics at the county level which were collected from the 1980 census.<sup>11</sup> Demographic variables included are *county unemployment rate* and *county farm population*. For the SCF, individuals who are in the “high income” sample are excluded because the SCF does not include any geographic identifiers for these individuals and so we cannot map them to a state. The CPS data includes various weights. However, similar to Puri and Robinson (2009), we do not use weights in any of the reported results because our intent is to measure the effect of changes in credit card regulation on an individual’s decision to become an entrepreneur.<sup>12</sup> Table 1 presents summary statistics of all variables used. Figure 2 uses the CPS data to plot black transition into self employment by year and by state type. State types are “no limit” if the state has eliminated credit card interest rate caps or “limit” if the state has not eliminated credit card interest rate caps. We note that there exist a lot of year to year fluctuations, perhaps relating to macro-economic factors or data collection. As a result, we include year dummies in all regressions. We also note that over time, black transitions into self employment appear to be rising in no limit states as compared to limit states.

The main specification is of the form:

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<sup>11</sup> We use the same county demographic values for each year in our sample, and because of the lack of county identification in the 1977 SCF we aggregate county level information to the primary sampling unit (PSU) level.

<sup>12</sup> The results are robust to the use of weights.

$$(1) \text{ self employment}_{imt} = \alpha + \lambda_m + \text{TIME}_t + \beta_{\text{no limit}} \text{no limit}_{imt} + \beta_{\text{black*no limit}} \text{black*no limit}_{imt} + \mathbf{X}_{imt} \boldsymbol{\beta} + e_{imt}$$

$\mathbf{X}_{imt}$  is a vector of individual characteristics (including a dummy for *black*), county demographics and state banking deregulations. The actual covariates depend on the survey used, and are described in more detail below. We include market ( $\lambda_m$ ) and year ( $\text{TIME}_t$ ) fixed effects. Market is defined differently across regressions, but in most cases is at the metro area - state level.<sup>13</sup> For all regressions, we use the variable *no limit* to indicate whether the individual is located in a state that has no limit on credit card interest rates.<sup>14</sup> We expect that individuals who live in states that increase interest rate caps are more likely to transition into self employment, and so we expect  $\beta_{\text{no limit}}$  to be positive. We expect that black individuals who live in states that increase interest rate caps are even more likely to transition into self employment, and so we expect  $\beta_{\text{black*no limit}}$  to be positive.

## 4. Results

### 4.1 Effect of Changes in Interest Rate Caps on Transitions into Self Employment

We first use the Current Population Survey (CPS) data to investigate the effect of interest rate caps on transition from a wage paying job into self employment. In Table 2, we report the results of OLS fixed effects regressions with a dummy variable for self employment as our

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<sup>13</sup> For example, the boundary of the Philadelphia PA/NJ metro area crosses into two states, and so is divided into two mutually exclusive areas: Philadelphia PA and Philadelphia NJ. In addition, areas in each state not part of a metro area are grouped into a statewide non-metro area. The *urban* dummy controls for whether the individual resides in a metro area or not. Information on the top 35 metro areas is presented in an appendix.

<sup>14</sup> We have also performed robustness checks using a continuous rate variable that has been top coded at the highest allowable rate across all states in that year for states that have no limit, as well as using bins for different interest rate limits. The results are qualitatively similar to the results reported below.

dependent variable. For convenience, coefficients on explanatory variables other than *no limit* and *black\*no limit* have been suppressed. All results are clustered at the metro area - state level. Column 1 includes personal characteristic information, 366 metro area - state fixed effects and 13 year dummies. The coefficient on *black\*no limit* is positive and significant at the 5% level. This result confirms our basic hypothesis. The coefficient on *no limit* is negative but insignificant. These results suggest that the switch to no limit on credit card interest rates was an important determinant of black transition into self employment. Columns 2 through 5 add in more fixed effects and interactions to examine how the coefficient on *black\*no limit* changes. Columns 2 through 5 include 145 industry fixed effects. These fixed effects are included to control for different financing needs across industries. For example, according to the FRB's 1987 National Survey of Small Business Finance, the median starting capital in the construction industry was \$9500, whereas the median starting capital in retail trade was \$55,200.<sup>15</sup> Column 3 includes interactions between *no limit* and industry dummies to control for differential effects of the no limit legislation across industries. Column 4 includes interactions between *black* and industry dummies to control for the fact that black individuals may be more likely to work in certain industries. Column 5 includes both the interactions between *black* and industry dummies and between *no limit* and industry dummies. The results are remarkably consistent across the five columns: the coefficient on *black\*no limit* is positive and significant whereas the coefficient on *no limit* is insignificant. The results in columns 1-5 show that black individuals who reside in a state with no limit on credit card rates and who were not self employed at  $t-1$  are significantly more likely to enter self employment by time  $t$  than non-black individuals. In contrast, there is

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<sup>15</sup> NSSBF statistics cited in Hurst and Lusardi (2004). 1987 is the earliest data for the NSSBF data.

no evidence that non-black individuals are likely to enter self employment after a state changes to *no limit*.

## 4.2 Other Law Changes

One concern with the positive results on *black\*no limit* is that there may be other contemporaneous state level changes which are driving the results, or other sources of endogeneity between the probability of self employment and the probability of a state becoming a “no limit” state. We first investigate the extent to which bank deregulation might be explaining the results. Black and Strahan (2002), Cetorelli and Strahan (2006) and Kerr and Nanda (2009) all show that bank deregulation led to an increase in entrepreneurship. One might worry that states which were more likely to undergo bank deregulation were also more likely to switch to no limit. If that were the case, then the coefficient on *black\*no limit* could be driven not by changes in credit card availability but instead by changes to bank competition. Dummy variables indicating whether a bank has deregulated were included in all regressions reported above to control for this possibility. Nevertheless, in Table 3 we report results of regressions that include both *black\*no limit* and an interaction between black and each of the types of bank deregulations. The coefficient on *black\*no limit* is positive and significant in all regressions, whereas the coefficients on the other interaction terms are not significant.

The results presented in Table 3 are important for another reason. We have contended above that the expansion in availability of credit cards would be more likely to affect black entrepreneurs because of the ability to avoid face-to-face interactions with lenders. The counterfactual test would be to show that expansion of availability of credit that requires face-to-

face interaction would be no more likely to affect black entrepreneurs (or may even negatively affect black entrepreneurs). Hence, the fact that the coefficients on the interactions between *black* and the measures for bank deregulation are insignificant, small in magnitude, and negative in some cases provides additional support for our contention.<sup>16</sup>

We next focus on a specific type of state level change that may be affecting our results.<sup>17</sup> Congress passed the Bankruptcy Code of 1978 (which went into effect in late 1979) which allowed individual states to create their own bankruptcy exemption levels, including unlimited exemption levels.<sup>18</sup> Using data sets from 1993-1998, Fan and White (2003) have shown that higher bankruptcy exemption levels are correlated with a higher probability of being self employed. In order to rule out that state bankruptcy exemption levels are driving the results, we create dummies for state "no limit" bankruptcy exemption levels and include these in similar regressions models to those shown in Table 2. To create the *no limit bankruptcy exemption* variable, we use information on whether the state has any no limit bankruptcy exemptions from Table 1 of Gropp, Scholz and White (1997). There are nine such states: Arkansas, Florida, Kansas, Louisiana, Minnesota, Oklahoma, South Dakota, Texas and Vermont. In columns 1-2 of Table 4 we assume that these states pass their bankruptcy exemption laws in late 1979, and investigate whether including the indicator *no limit bankruptcy exemption* has any effect on our previous findings. The coefficient on *no limit bankruptcy exemption* is insignificant, as is the coefficient on the interaction *black\* no limit bankruptcy exemption*, but the coefficient on

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<sup>16</sup> The coefficient on *interstate branching* is positive and significant whereas the interaction *black\*interstate branching* is negative but not significant. However, a Wald test of the coefficients cannot reject that *interstate branching + black\*interstate branching = 0*.

<sup>17</sup> We focus on this specific state level change because it has been linked to increases in entrepreneurship in other research papers as discussed below.

<sup>18</sup> See Gropp, Scholz and White (1997) and Fan and White (2003) for more detail.

*black\*nolimit credit card rate* (called *black\*nolimit* in Table 2 above) remains positive and significant. According to Fan and White (2003), most states had adopted their own bankruptcy exemptions by 1982, and few states changed their bankruptcy exemption level after 1982. Hence, in columns 3-4 of Table 4, we redefine the variable *no limit bankruptcy exemption* by assuming that the exemptions went into effect in early 1982 and repeat the analysis. We find that the coefficient on *no limit bankruptcy exemption* is again insignificant. The results differ from the results found by Fan and White (2003), but it should be noted that Fan and White study a different time period and use a different data set.<sup>19</sup> More important for our study, the coefficient on the interaction *black\* no limit bankruptcy exemption* is insignificant, but the coefficient on *black\*nolimit credit card rate* (called *black\*nolimit* in Table 2 above) remains positive and significant. Based on the analyses presented in Tables 3 and 4, we conclude that the positive results on *black\*nolimit* are not driven by other contemporaneous state level changes.

#### **4.3 Between-State Moves**

An additional source of concern may be that black would-be entrepreneurs are moving to no limit states to take advantage of credit card availability. In order to address this concern, we confirm that there is no significant difference between the share of black individuals before and after a state switches to no limit. Figure 3 depicts the results of a regression of *black* on dummy variables for 1-4 years before and after a state switches to no limit as well as a year dummies and metro area - state dummies. The figure shows that the share of *black* in a state does not significantly change in the four year window around the date of the state's switch to no limit.

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<sup>19</sup> Fan and White (2003) use the Survey of Income and Program Participation data sets from 1993-1998.



We further test this idea using data from the CPS on the demographics of individuals who move to no limit states. As depicted in Table 5, there is no evidence that black individuals, or individuals transitioning into self employment, are any more likely to move from limit to no limit states. These results give us confidence that the effects we report in earlier tables are not driven by the propensity of would be black entrepreneurs to move to states which have recently switched to no limit.

#### **4.4 Access to Finance and the Role of Race**

In order to further understand the role of race in access to credit, we also investigate whether the impact of *no limit* differentially affects black individuals in states with a history of discrimination. To do this, we rely on historical institutional and legal details of the state. We first identify states which allowed slavery at the start of the Civil War (*slave state*) and states which were part of the Confederacy (*confederate state*).<sup>20</sup> A word of caution is necessary here. We understand that there may have been other socio-economic considerations that determined whether a state was a Confederate or Union state in the Civil War, and certainly do not mean to imply that all individuals currently living in states which were part of the Confederacy a century ago are racist. Instead, the goal is to identify variation in institutions and norms across state types from a century ago. As other research has argued, initial conditions of institutions and norms in an area can explain variation across areas in later periods (Acemoglu et al, 2001). We also identify states which were among the last to remove anti-miscegenation laws. We obtain

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<sup>20</sup> Confederate states include Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, Virginia. Slave states include the Confederate states as well as Delaware, Kentucky, Maryland, Missouri.

information on the states which repealed anti-miscegenation laws only after the US Supreme Court's 1967 decision in *Loving v. Virginia* from Fryer (2007). Finally, we identify states which did not have fair housing laws until the federal Fair Housing Act of 1968. We obtain this information from Collins (2004). Table 6 replicates the regressions in Table 2 on transitions into self employment using CPS data, and splits the results by state type. Column (1) focuses on states that were not slave states immediately prior to the Civil War; the coefficient on *black\*no limit* is 0.0054 and significant at the 10% level. Column (2) focuses on states that were slave states immediately prior to the Civil War; the coefficient on *black\*no limit* is 0.0126 and significant at the 1% level. The results in these two columns suggest that black individuals residing in former slave states were more likely to transition into self employment following an increase in credit availability than similar black individuals in non-slave states. Columns (3) and (4) present results from splitting the sample into Confederate and non-Confederate states; Columns (5) and (6) present results from splitting the sample into states with and without anti-miscegenation laws in 1967; Columns (7) and (8) present results from splitting the sample into states with and without fair housing laws in 1968. We find similar results across all four of these measures for discrimination: black individuals residing in states with higher levels of discrimination were more likely to transition into self employment following an increase in credit card availability. This suggests to us that discrimination acts as a potential barrier to entrepreneurial entry.

#### **4.5 The Role of Credit Cards in Self Employment**

We finally use the Survey of Consumer Finances (SCF) data set to investigate whether credit cards were indeed the mechanism by which black individuals financed self employment.

It is important to point out that the SCF includes data on levels of self employment, not transitions into self employment, and that the SCF is a smaller dataset covering fewer states and years. Note from the summary statistics in Table 1 that about 25 individuals in the sample are black and self employed; this low number limits the power of any statistical analysis. In an appendix we present results using CPS data on levels of self employment and verify that the results found using the CPS data set in the prior section can be replicated using a smaller subsample that more closely resembles the sample found in the SCF dataset. In Table 7, we present regression results from the SCF data set. State and year fixed effects are included in all regressions, and results are clustered at the state level. In column 1 we verify the relationship between *black\*no limit* and *self employment* that we found using the CPS data. The results show that increasing the state credit card interest rate cap to *no limit* negatively affects the probability of being self employed, and that black individuals living in a no limit state (*black\*nolimit*) have a significantly higher probability of being self employed. In columns 2-3 we investigate the effect of credit card ownership on self employment. To do this, we split the sample into individuals who own a credit card (column 2) and individuals who do not own a credit card (column 3). The coefficient on *black\*nolimit* is positive and significant for the subsample that owns a credit card and positive but not significant for the subsample that does not own a credit card. We interpret this result as weak evidence that black individuals who own a credit card are more likely to be self employed if they live in a state with no limit on credit card interest rates. While suggestive, the difference in coefficients is not statistically significant;<sup>21</sup> as discussed above, the lack of statistical power from the small amount of data in the SCF dataset is

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<sup>21</sup> The p-value in a two-tailed test is approximately 0.20.

unsurprising. A limitation to this approach is that while we observe credit card ownership, we do not have detailed data on credit card use, so we cannot ascertain whether individuals were actually using their credit cards to finance entrepreneurial activity as opposed to other non-business activity. However, the SCF data do show that self employed individuals are more likely than non self employed individuals to own more credit cards.<sup>22</sup>

## **5. Conclusion**

No previous study to our knowledge has empirically documented how variation in credit card interest rates has influenced entrepreneurship across different demographic groups. This question is crucial, since prior work has documented that black individuals are more likely to face frictions when trying to obtain financing. The *Marquette* decision provides an exogenous shock to credit access by essentially deregulating the credit card markets in many states, allowing credit card companies to extend credit to new borrowers. We find strong evidence that black individuals were more likely to transition into self employment after a state switches to no limit, and weak evidence that black individuals with credit cards were more likely to be self employed. Consistent with Blanchflower et al (2003), we offer qualitative evidence that black entrepreneurs face financial frictions when dealing with lenders. We link these results by showing that, following a state's switch to no limit, blacks are even more likely to transition into self employment if they are located in a state with (arguably) higher levels of discrimination. Our evidence is consistent with a scenario in which blacks face discrimination through regular

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<sup>22</sup> The 1983 and 1986 SCF data include information on the number of bank and general purpose credit cards owned by an individual. Based on data from over 4000 individuals, the average non self employed individual owns 0.9 credit cards; the average self employed individual owns 1.4 credit cards. We can reject the null hypothesis that these numbers are the same at the 99% confidence level.

lending channels; this discrimination is a barrier to entry that results in higher finance costs. Credit cards are a mechanism that black entrepreneurs can use to overcome this barrier because it does not require face-to-face interactions with a lender. While the result is especially pronounced for black entrepreneurs, there is no evidence of a similar effect for non-black entrepreneurs. We believe this is because credit cards allow black entrepreneurs to circumvent discrimination, or the fear of discrimination, when applying for financing in face-to-face settings.

There are several important limitations to our analysis. For the purposes of our empirical analysis, we assume that within state changes in credit card limits had an immediate effect on the rates offered to individuals with credit cards in that state, and that changes in rates of other states had little to no effect on the rates offered within state. Evidence from Knittel and Stango (2003) is consistent with this assumption, but further investigation of this assumption is warranted. However, since our analysis compares states with large changes in rates to states with small changes in rates, this assumption means that any effect we find may have been attenuated from the actual effect. For example, while a state may have stayed at an 18% cap, and not adopted a “no limit” statute, some individuals in that state may be using out of state credit cards with much higher limits in later periods because the card was issued from a bank in a “no limit” state. Hence, any difference in self employment or credit card use between such a state and a state that changes from an 18% limit to no limit will be lessened. The direction of this bias works against us finding a result. Another limitation is that while we treat the state’s switch to no limit as an exogenous shock following the *Marquette* decision, we cannot explain why some states switch to no limit and others do not, let alone predict when a state will switch to no limit. The worry is that a state’s switch to no limit and increases in black transitions into entrepreneurship may be endogenous. However, we believe it unlikely that states are switching to no limit because black

entrepreneurs or black would-be entrepreneurs who are credit constrained are lobbying for such a law change at the statehouse. We base this belief in part on the fact that the text of the *Marquette* decision does not discuss the effect of credit cards on black entrepreneurs.

In the current study, due to data limitations, we cannot directly observe African-American entrepreneurs obtaining credit cards after the *Marquette* decision and then using those cards in turn to finance entrepreneurial ventures. We instead rely on several pieces of evidence that suggest that this scenario occurred. We should point out that there may be another, demand-related, explanation for our results. Namely, it could be the case that the increased availability of credit cards to African Americans leads to increased spending by African Americans on goods and services sold by firms owned by self employed African Americans, which in turn leads to the creation of more firms owned by self employed African Americans.<sup>23</sup> However, the fact that entrepreneurs own more credit cards than non-entrepreneurs is suggestive evidence against the demand-related explanation.

Our results have several implications for the academic literature and public policy. First, this work makes a significant contribution to the empirical work on financing of entrepreneurship since it is one of the few studies to focus on credit cards, one of the most important financing tools used by entrepreneurs. Blanchflower and Oswald (1998), Fairlie (1999), Lindh and Ohlsson (1996), and Nanda (2009) all demonstrate that wealth constraints hinder entrepreneurship and that shocks that remove these constraints lead to higher entrepreneurship. Hurst and Lusardi (2004) and Petersen and Rajan (2002), on the other hand, argue that wealth constraints are likely small. In particular, Hurst and Lusardi (2004) show that

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<sup>23</sup> A demand shock could also arise if there are non-African Americans with similar preferences who also experience an increase in credit card availability.

the probability of entering self employment is broadly similar across most of the wealth distribution. It is possible that these contradictory results may be related to inattention to the relative importance of different types of financing. While individuals may in fact be financially constrained in some respects, access to mechanisms such as credit cards may soften these constraints, which may help explain the broad results reported in Hurst and Lusardi (2004).

While prior research has focused on venture capital financing, our paper provides a more representative view of how entrepreneurship is financed in the United States. In doing so, we have demonstrated that variation in credit card interest rates influence entrepreneurial entry, most likely because credit card companies extend more credit when rates are uncapped. This effect is most pronounced among individuals who were most likely to be denied credit prior to the increase in rates, namely black individuals. Thus, our results support the notion that public policies can have a significant impact on black self-employment rates as found by others. Chatterji, Chay, and Fairlie (2009) investigate the impact of city set asides and find that the programs had a significant impact on black self-employment and employment in the targeted cities. While the *Marquette* decision was not aimed specifically at increasing black entrepreneurship, the indirect impact of the decision could have stimulated entrepreneurial activity by making credit more available to black entrepreneurs. Finally, our work provides additional support for the notion that black entrepreneurs face liquidity constraints. At a time when a credit crisis has triggered a global financial crisis, policymakers must balance the goal of providing credit to worthy borrowers against encouraging unwise risk taking. Future work should examine whether these new entrepreneurs succeeded in their ventures and successfully paid back their credit card loans.

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**Table 1:**

	<i>CPS Dataset</i>		<i>SCF Dataset</i>	
	<i>Mean</i>	<i>Std. Dev.</i>	<i>Mean</i>	<i>Std. Dev.</i>
Transition into Self Employment	0.009	0.092	N/A	N/A
Self Employed	0.070	0.256	0.053	0.224
No Limit	0.086	0.280	0.226	0.418
Black	0.082	0.275	0.099	0.298
Black*No Limit	0.005	0.071	0.016	0.125
Female	0.366	0.482	0.386	0.487
Non-homeowner	0.458	0.498	0.310	0.460
Low Income	0.083	0.276	0.120	0.325
Age	37.028	12.398	40.327	11.708
Age-squared	1524.801	992.757	1763.301	987.904
High School Grad	0.775	0.418	0.817	0.387
Married	0.667	0.471	0.704	0.457
Urban	0.272	0.445	0.302	0.459
Merger Restriction	0.400	0.490	0.481	0.500
Unit Branching	0.310	0.462	0.289	0.454
Interstate Branching	0.071	0.257	0.232	0.422
Holding Company	0.781	0.413	0.857	0.350
Unemployment Rate*	0.030	0.011	0.063	0.024
Percent Farm Population*	0.022	0.040	0.031	0.053
Owns Credit Card	N/A	N/A	0.748	0.434
	<i>N = 420,416</i>		<i>N = 5117</i>	

CPS Sample includes all states and the following years: 1971-1975, 1977-1981, 1983-1985.  
 SCF Sample includes 1977, 1983, 1986 and excludes DC, HI, ID, KS, MD, MT, ND, NH, NM, NV, RI, VT, WV, WY. \*From the 1980 Census for the SCF sample; constructed from data for the CPS sample.

**Table 2:**

**Effect of Interest Rate Change on Black Transitions into Self Employment from a Wage Paying Job, using CPS Data**

	(1)	(2)	(3)	(4)	(5)
No Limit	-0.0008 [0.0007]	-0.0007 [0.0007]	0.0018 [0.0027]	-0.0006 [0.0007]	0.0017 [0.0026]
Black*No Limit	0.0075** [0.0022]	0.0078** [0.0023]	0.0074** [0.0024]	0.0081** [0.0022]	0.0078** [0.0023]
Black	-0.0016* [0.0006]	-0.0007 [0.0006]	-0.0012 [0.0017]	-0.0007 [0.0006]	-0.0010 [0.0018]
Individual Characteristics	Y	Y	Y	Y	Y
Year	Y	Y	Y	Y	Y
Geographic Fixed Effects	Y	Y	Y	Y	Y
Industry Fixed Effects	N	Y	Y	Y	Y
Industry*No Limit	N	N	Y	N	Y
Industry*Black	N	N	N	Y	Y
Observations	420416	420416	420416	420416	420416
R-squared	0.0028	0.0209	0.0214	0.0216	0.0222
Number of clusters	366	366	366	366	366

Robust standard errors in brackets, clustered at MSA-state level

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

Table 2 uses data from the Current Population Survey (CPS) and Cost of Personal Borrowing to examine the effect of increases in credit card interest rate caps (“no limit”) on transitions into self employment at  $t$  from a wage paying job at  $t-1$ . The positive coefficient on *black\*no limit* indicates that increases in credit card interest rate caps increased the probability of black transition into self employment. This result is robust to the inclusion of a number of fixed effects for geography and industry.

**Table 3:**

**Effect of Interest Rate Change on Black Transitions into Self Employment from a Wage Paying Job, using CPS Data**

	(1)	(2)	(3)	(4)	(5)
No Limit	-0.0008 [0.0007]	-0.0008 [0.0007]	-0.0008 [0.0007]	-0.0008 [0.0007]	-0.0008 [0.0007]
Black*No Limit	0.0078*** [0.0022]	0.0077*** [0.0023]	0.0078*** [0.0022]	0.0080*** [0.0023]	0.0077*** [0.0025]
Black*Interstate Branching	-0.0023 [0.0016]				-0.0024 [0.0017]
Black*Merger Restriction		0.0003 [0.0012]			0.0018 [0.0017]
Black*Unit Branching			0.0000 [0.0013]		-0.0005 [0.0017]
Black*Holding Company				-0.0016 [0.0011]	-0.0021 [0.0014]
Black	-0.0019*** [0.0007]	-0.0021*** [0.0008]	-0.0020*** [0.0007]	-0.0008 [0.0008]	-0.0008 [0.0008]
Interstate Branching	0.0019** [0.0008]				0.0019** [0.0008]
Merger Restriction		0.0002 [0.0007]			0.0001 [0.0007]
Unit Branching			0.0007 [0.0010]		0.0007 [0.0010]
Holding Company				-0.0003 [0.0008]	-0.0002 [0.0008]
Individual Characteristics	Y	Y	Y	Y	Y
Year	Y	Y	Y	Y	Y
Geographic Fixed Effects	Y	Y	Y	Y	Y
Observations	420416	420416	420416	420416	420416
R-squared	0.0032	0.0032	0.0032	0.0032	0.0032
Number of clusters	366	366	366	366	366

Robust standard errors in brackets, clustered at metro area-state level

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table 4:**

**Robustness Checks: Transitions into Self Employment with State No Limit Bankruptcy Exemptions**

	(1)	(2)	(3)	(4)
	Bankruptcy Exemptions Assumed to Take Place in 1980		Bankruptcy Exemptions Assumed to Take Place in 1982	
No Limit Credit Card Rates	-0.0002 [0.0008]	-0.0008 [0.0007]	-0.0001 [0.0008]	-0.0006 [0.0007]
No Limit Bankruptcy Exemption	0.0003 [0.0009]	0.0002 [0.0009]	0.0014 [0.0009]	0.001 [0.0009]
Black*No Limit Credit Card Rates		0.0080*** [0.0022]		0.0081*** [0.0022]
Black*No Limit Bankruptcy Exemption		0.0016 [0.0027]		0.0043 [0.0035]
Individual Characteristics	Y	Y	Y	Y
Year	Y	Y	Y	Y
Metro-Area*State Fixed Effects	Y	Y	Y	Y
Observations	420416	420416	420416	420416
R-squared	0.0031	0.0032	0.0031	0.0032
Clusters	366	366	366	366

Robust standard errors in brackets; clustered at metro area-state level

\*significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

CPS covers the following years: 1971-1975, 1977-1981,1983-1985

Table 4 uses data from the Current Population Survey (CPS) and Cost of Personal Borrowing together with information on state level no limit bankruptcy exemption limits from Gropp, Scholz and White (1997) to examine the effect of increases in credit card interest rate caps and bankruptcy exemption limits on the probability of self employment. The positive coefficient on *black\*no limit credit card rates* indicates that increases in credit card interest rate caps increased the probability of black to be self employed. The insignificant coefficient on *black\*no limit bankruptcy exemption* indicates that increases in no limit bankruptcy exemptions had no effect on the probability of black individuals to be self employed. This result suggests that contemporaneous state level changes are not driving the strong result on *black\*no limit* reported in Table 2

**Table 5:**

<b>Effect of Demographic Characteristics on Move to "No Limit State", using CPS Data</b>			
<i>Sample Restriction: From State?</i>	(1)	(2)	(3)
	<i>All Movers</i>	<i>From No Limit State</i>	<i>From Limit State</i>
Self Employed	-0.0024 [0.0018]	0.0006 [0.0009]	-0.0034 [0.0022]
Black	-0.0005 [0.0006]	0.0004 [0.0005]	-0.0004 [0.0006]
Female	-0.0003 [0.0005]	-0.0005 [0.0006]	-0.0003 [0.0005]
Non-homeowner	0.0006 [0.0011]	-0.0013 [0.0013]	0.0000 [0.0011]
Bottom 20% tile Income	0.0001 [0.0012]	0.0010 [0.0010]	0.0000 [0.0011]
Other Individual Characteristics	Y	Y	Y
Year Fixed Effects (Years>1980)	Y	Y	Y
Geographic Fixed Effects	Y	Y	Y
Observations	119735	3771	115964
R-squared	0.9557	0.9952	0.9528
Number of clusters	352	189	352

Robust standard errors in brackets, clustered at MSA-state level

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%



Table 6:

Effect of No Limit on Black Transitions into Self Employment, by State Type, using CPS Data								
Sample Restriction:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Former Slave State?	Former Confederate State?	Anti-miscegenation Law?	No Fair Housing Law?	No	Yes	No	Yes
	No	Yes	No	Yes	No	Yes	No	Yes
No Limit	-0.0007 [0.0008]	-0.0025 [0.0026]	-0.0005 [0.0008]	-0.0059*** [0.0022]	-0.0005 [0.0008]	-0.0024 [0.0025]	0.0000 [0.0009]	-0.0013 [0.0010]
Black*No Limit	0.0054* [0.0029]	0.0126*** [0.0046]	0.0060** [0.0025]	0.0146* [0.0079]	0.0055* [0.0029]	0.0127*** [0.0047]	0.0024 [0.0025]	0.0110*** [0.0027]
Black	-0.0005 [0.0007]	-0.0037*** [0.0010]	-0.0008 [0.0006]	-0.0038*** [0.0011]	-0.0006 [0.0006]	-0.0038*** [0.0010]	-0.0005 [0.0006]	-0.0034*** [0.0009]
Individual Characteristics	Y	Y	Y	Y	Y	Y	Y	Y
Year Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y
Geographic Fixed Effects	Y	Y	Y	Y	Y	Y	Y	Y
Observations	304747	115669	324077	96339	306334	114082	242039	178377
R-Squared	0.003	0.0036	0.003	0.0038	0.0031	0.0035	0.0032	0.003
Clusters	236	130	258	108	237	129	188	178

Robust standard errors in brackets; clustered at state

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

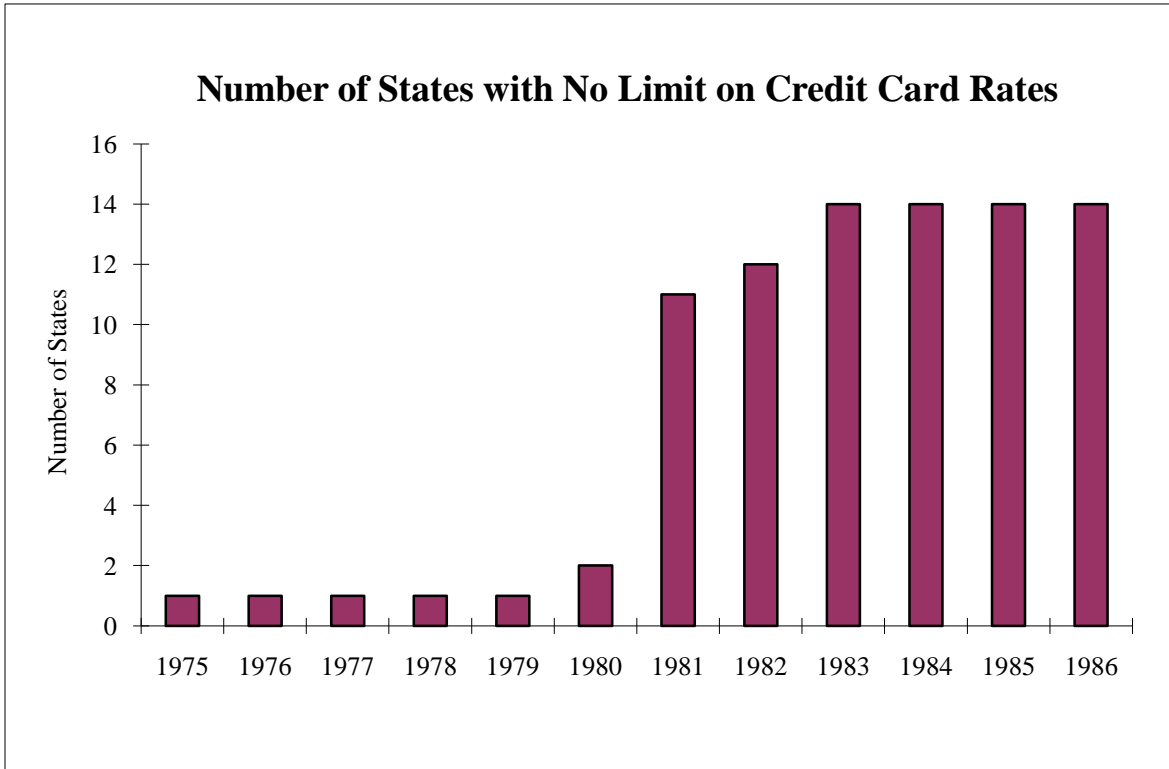
**Table 7:**

<b>Effect of Race on Self Employment Levels, by Credit Card Ownership, using SCF Data</b>			
<i>Sample Restriction: Owns Credit Card?</i>	(1)	(2)	(3)
	<i>No Restriction</i>	<i>Yes</i>	<i>No</i>
No Limit	-0.0309*	-0.0239	-0.0481
	[0.0182]	[0.0192]	[0.0306]
Black*No Limit	0.0774**	0.1011*	0.0045
	[0.0377]	[0.0520]	[0.0243]
Black	-0.0425***	-0.0441***	-0.0424***
	[0.0083]	[0.0072]	[0.0151]
Individual Characteristics	Y	Y	Y
Demographic Information	Y	Y	Y
Year Fixed Effects	Y	Y	Y
State Fixed Effects	Y	Y	Y
Observations	4889	3686	1203
R-Squared	0.0319	0.0367	0.0592
Clusters	36	36	35

SCF excludes DC, HI, ID, KS, MD, MT, ND, NH, NM, NV, RI, VT, WV, WY; SCF includes only 1977, 1983, 1986. Robust standard errors in brackets; clustered at state. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Table 7 uses the SCF dataset and seeks to understand whether credit cards were the mechanism that facilitated black entry into self employment following the increase in state interest rate caps.

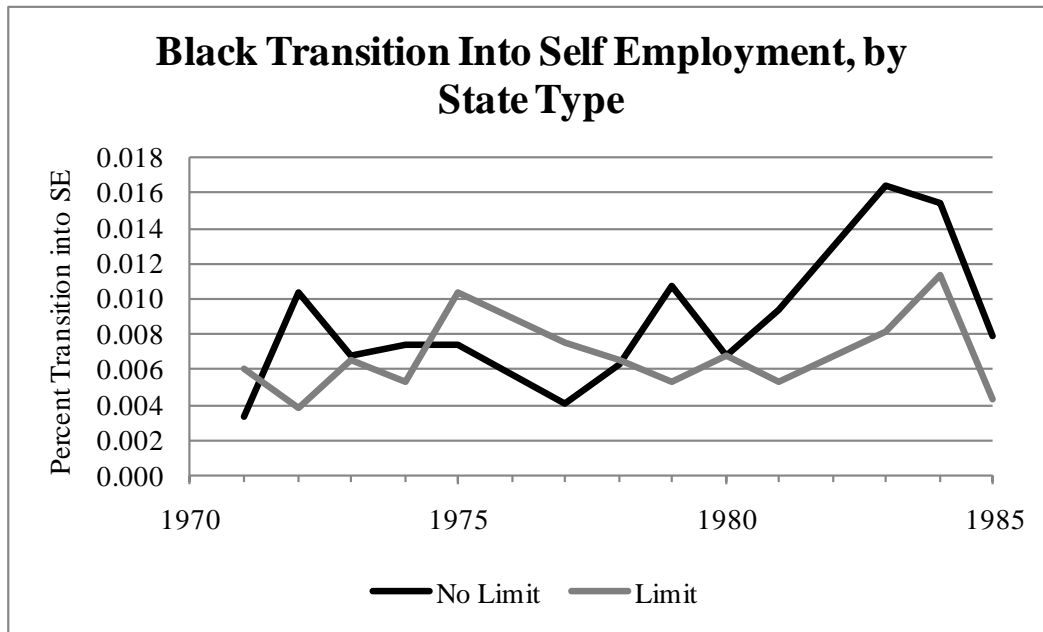
Figure 1:



Source: *The Cost of Personal Borrowing in the United States*

Figure 1 shows the increase in state interest rate caps following the Supreme Court’s *Marquette Decision* in 1978. By 1986, 14 states had no limit on interest rate caps, up from one (New Hampshire) pre-1978. The states which became no limit during this time period are: Arizona (1980), Delaware (1981), Idaho (1983), Illinois (1981), Montana (1981), Nevada (1981), New Jersey (1981), New Mexico (1981), Oregon (1981), South Dakota (1981), Utah (1982), Virginia (1983), Wisconsin (1981).

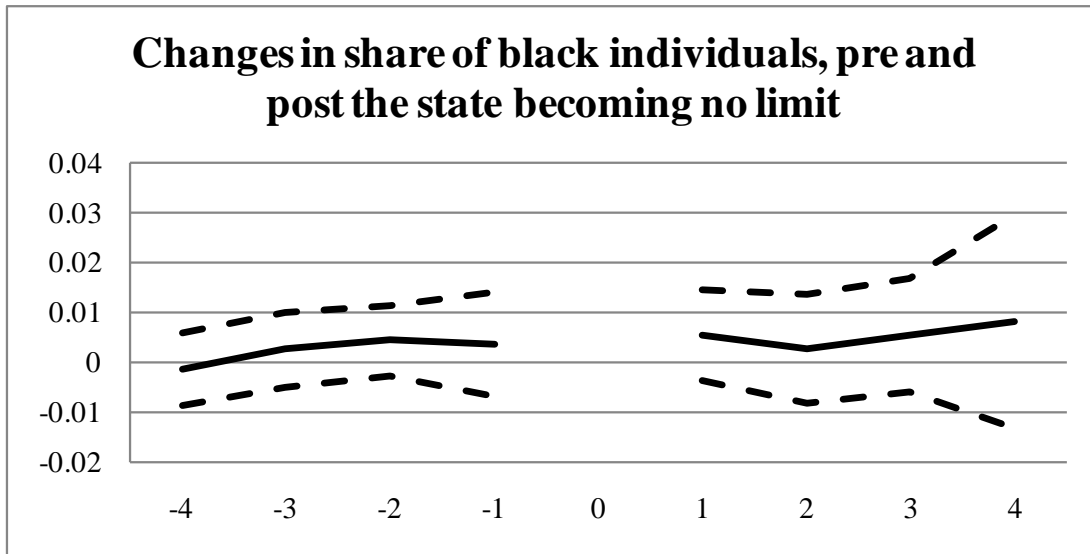
Figure 2:



Source: Current Population Survey 1971-1975, 1977-1981, 1983-1985

Figure 2 shows the percentage of black individuals who transition from a wage paying job at  $t-1$  into self employment at  $t$  by state type.

Figure 3:



Source: Current Population Survey 1971-1975, 1977-1981, 1983-1985

Figure 3 shows the changes in black population in a state for four years before and four years after the state becomes a no limit state. Dashed lines represent the 95% confidence interval.

## Appendix 1:

SCF Survey Questions on Fairness of Lenders and Availability of Loans				
	(1)	(2)	(3)	(4)
<i>Dependent Variable:</i>	<i>Treated Unfairly?</i>	<i>Unfair Practices You Want to Change?</i>	<i>Turned Down or Unable to Obtain?</i>	<i>Afraid of being Turned Down?</i>
Black	3.7915 [2.2671]	2.1454 [1.5042]	0.0692* [0.0370]	0.1155*** [0.0221]
Year	1977	1977	1983	1983
Individual Characteristics	X	X	X	X
Demographic Information	X	X	X	X
State Fixed Effects	X	X	X	X
Observations	1534	1534	2077	2080
R-Squared	0.032	0.047	0.090	0.071
Clusters	35	35	35	35

Robust standard errors in brackets; clustered at state. \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. SCF excludes DC, HI, ID, KS, MD, MT, ND, NH, NM, NV, RI, VT, WV, WY

Survey of Consumer Finances (SCF) survey respondents in 1977 and 1983 were asked a series of questions regarding access to finance. In this appendix we report correlations between *black* and answers to selected questions. The questions differ across the two surveys. For the 1977 survey, respondents were asked about their opinions on institutions that lend money or extend credit, including stores, banks, finance companies and credit unions. Respondents were not asked to distinguish between lenders and creditors.<sup>24</sup> In column 1, we report results of answers to the question “In your opinion, have you ever been treated unfairly in your credit transactions?” Black individuals were more likely to answer yes to the question, but this result is not statistically significant. In column 2, we report results of answers to the question “Are there any (other) practices of creditors or lenders that you think are unfair and would like to see changed?” Black individuals were more likely to answer yes to the question, but again this result is not statistically significant. For the 1983 survey, respondents were asked about their experience obtaining loans or credit. In column 3, we report results of answers to the question “In the past few years, has a particular lender or creditor turned down any request you (or your husband/wife) made for credit or have you been unable to get as much credit as you applied for?” Black individuals were more likely to answer yes to the question, and this result is statistically significant at the 10% level. In column 4, we report results of answers to the question “Was there any time in the past few years that you (or your husband/wife) thought of applying for credit at a particular place, but changed your mind because you thought you might be turned down?” (Emphasis in SCF survey questionnaire). Black individuals were more likely to answer

<sup>24</sup> The specific language is: “In this interview please think of the terms ‘creditors’ and lenders’ as the same thing.”

yes to the question, and this result is statistically significant at the 1% level. Taken together, the results of answers to these questions suggest that black individuals encountered frictions, or believed they would encounter frictions, in their access to financing. However, because of the way the questions were asked, we cannot distinguish if the frictions were primarily from lenders requiring face-to-face interactions, or lenders such as credit card companies which did not require such interactions. It is worth noting that Blanchflower et al (2003), using Survey of Small Business Finance data from 1993 and 1998, report similar qualitative findings that black-owned firms are more likely to report being concerned about credit market problems and less likely to apply for credit because of fear of being turned down.

**Appendix 2:**

**List of Largest Metropolitan Areas from CPS Data**

<u>Metropolitan Area Category</u>	<u>Freq.</u>	<u>Percent</u>
Other metropolitan areas, unidentified	132,673	31.56
NIU, household not in a metropolitan area	99,040	23.56
Los Angeles-Long Beach, CA	18,378	4.37
New York, NY	17,650	4.2
Chicago-Gary-Lake IL	15,571	3.7
Philadelphia, PA/NJ	9,641	2.29
San Francisco-Oaklan-Vallejo, CA	6,566	1.56
Houston-Brazoria, TX	6,080	1.45
Boston, MA	6,021	1.43
Washington, DC/MD/VA	5,762	1.37
Detroit, MI	5,321	1.27
Dallas-Fort Worth, TX	4,641	1.1
Nassau-Suffolk, NY	4,352	1.04
Pittsburg, PA	4,176	0.99
Newark, NJ	4,158	0.99
Miami-Hialeah, FL	3,932	0.94
Cleveland, OH	3,906	0.93
Anaheim-Santa Ana- Garden Grove, CA	3,368	0.8
St. Louis, MO/IL	3,349	0.8
Bergen-Passaic, NJ	3,199	0.76
Denver-Boulder-Longmont, CO	3,195	0.76
Minneapolis-St. Paul, MN	3,172	0.75
San Diego, CA	3,041	0.72
Baltimore, MD	3,024	0.72
San Jose, CA	2,890	0.69
Cincinnati-Hamilton, OH/KY/IN	2,572	0.61
Indianapolis, IN	2,371	0.56
Kansas City, MO/KS	2,224	0.53
Tampa-St. Petersburg-Clearwater, FL	2,214	0.53
Buffalo-Niagara Falls, NY	2,205	0.52
Atlanta, GA	2,196	0.52
Seattle-Everett, WA	2,161	0.51
Riverside-San Bernadino, CA	2,140	0.51
Milwaukee, WI	1,891	0.45
Portland-Vancouver, OR/WA	1,715	0.41
Additional cities	25,620	6.2



## Appendix 3:

Effect of Interest Rate Change on Self Employment Using CPS Data			
Sub-Samples			
	(1)	(2)	(3)
No Limit	0.0038 [0.0032]	0.0008 [0.0030]	-0.0003 [0.0035]
Black*No Limit	0.0109** [0.0039]	0.0131** [0.0040]	0.0159** [0.0037]
Individual Characteristics	Y	Y	Y
Year	Y	Y	Y
State Fixed Effects	Y	Y	Y
State Subsample	CPS	SCF	SCF
Year Subsample	CPS	CPS	SCF
Observations	571034	496588	134711
R-squared	0.0288	0.0281	0.0266
Clusters	51	37	37

Robust standard errors in brackets; clustered at state  
+ significant at 10%; \* significant at 5%; \*\* significant at 1%  
SCF State Subsample excludes DC, HI, ID, KS, MD, MT, ND, NH,  
NM, NV, RI, VT, WV, WY  
SCF Year Subsample includes only 1977, 1983, 1986  
CPS Year Subsample includes 1971-1975, 1977-1981, 1983-1985  
CPS State Subsample includes all states.

In this appendix, we verify the basic relationship between *black\*no limit* and *self employment* for smaller subsamples of the CPS data. The smaller subsamples more closely match the year and states for which Survey of Consumer Finance (SCF) data are available. For convenience, coefficients on explanatory variables other than *no limit* and *black\*no limit* have been suppressed. Column 1 replicates the basic model used in Table 2 above, but uses fixed effects at the state level. Column 2 restricts the sample to only those states that are common across the CPS and SCF dataset. Column 3 further restricts the sample to only those states and years that are common across the CPS and SCF dataset.<sup>25</sup> In general, the results show that when interest rates are allowed to rise individuals identified as black are more likely to be self employed. The coefficient on *black\*nolimit* increases as the sample is increasingly more restricted, suggesting the possibility that the SCF sub-sample is over representative of those states that were positively affected by the change in regulation.

<sup>25</sup> The SCF covers years 1977, 1983 and 1986, but there is no CPS data from 1986, so 1985 is used instead. Also, as noted above, the SCF does not include information for DC, HI, ID, KS, MD, MT, ND, NH, NM, NV, RI, VT, WV, WY.