

**\*\*Preliminary\*\***

## **How do Credit Card Interest Rates Impact Entrepreneurship?**

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**Abstract:**

Credit cards are an important source of financing for entrepreneurs. However, few academic studies have rigorously investigated the role of credit cards on entrepreneurial activity. In this paper, we utilize a natural experiment, the Supreme Court's *Marquette* decision which changed the interest rates that credit card companies could legally charge, to explore the impact of credit card financing on entrepreneurship. We find evidence that the increase in rates following the decision led to increased self-employment among African Americans. Further analysis indicates that credit cards were an important financing tool for African American entrepreneurs, who had difficulty acquiring credit prior to *Marquette*. We conclude with implications for policy and research on entrepreneurship.

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## **I. Introduction**

Despite a growing interest in understanding how entrepreneurs finance their ventures, few academic studies have explored the financing sources that most entrepreneurs utilize. For example, while numerous academic studies have focused on venture capital financing of new ventures, a very small percentage of entrepreneurs actually receive venture capital. 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” their new venture. In fact, 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). The entrepreneurship practitioner community is well aware of this phenomenon, as explained by Eric Rosenfeld, President of Adaptive Consulting Partners, who said “...I just discovered that credit cards have become today’s start-up business financing tool.”<sup>1</sup> However, academics have yet to rigorously investigate the role of credit cards in the entrepreneurial process.

In this paper, we address this gap by evaluating the impact of variation in credit card interest rates on entrepreneurship in the United States. In particular, we use the *Marquette* decision, a 1978 Supreme Court ruling that effectively eliminated state level caps on credit card interest rates. Prior to *Marquette*, there was significant variation in credit card interest rates across states. After the decision, rates increased and converged, allowing credit card companies in states with previously low interest rates to charge

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[http://www.eventuring.org/eShip/appmanager/eVenturing/eVenturingDesktop?\\_nfpb=true&\\_pageLabel=eShip\\_articleDetail&\\_nfls=false&id=Entrepreneurship/Resource/Resource\\_879.htm](http://www.eventuring.org/eShip/appmanager/eVenturing/eVenturingDesktop?_nfpb=true&_pageLabel=eShip_articleDetail&_nfls=false&id=Entrepreneurship/Resource/Resource_879.htm)

much higher rates and extend credit to different populations. Using this decision as a natural experiment, we test the impact of rate changes on levels of entrepreneurship. Our results indicate that interest rate changes following the *Marquette* decision led to an increase in African American self-employment. In addition, our results suggest that credit cards were an important financing tool for African American entrepreneurs. However, changes in credit card interest rate caps do not seem to affect overall self employment rates. In the next section, we review the extant literature and discuss the *Marquette* decision. We then proceed to discuss our methods and data, results, and the implications from our analysis.

## **II. Literature Review**

The relevant prior literature for our study draws upon at least three different areas of work in entrepreneurship and financial economics. First, the theoretical and empirical work on liquidity constraints and financing entrepreneurship is important for our paper, since the mixed results from this literature may be informed by a careful study of alternative forms of financing, including credit cards. Next, the prior literature on credit cards is relevant for our work, even though very little of this work has rigorously investigated the relationship to entrepreneurial activity. Finally, the large prior literature on minority business and entrepreneurship helps us to understand the constraints facing incipient black entrepreneurs and implies that the extension of credit post *Marquette* may have been expected to increase entrepreneurship in this community.

*Liquidity Constraints and Financing Entrepreneurship*

The role of liquidity constraints in entrepreneurship has presented a persistent puzzle for scholars. While many prior academic studies have focused on the importance of liquidity constraints to entrepreneurs, they yield contradictory results. For example, Blanchflower and Oswald (1998), Fairlie (1999) and Lindh and Ohlsson (1996) all demonstrate that lack of a wealth constraint correlates with higher levels of entrepreneurship. Alternatively, Hurst and Lusardi (2004) and Petersen and Rajan (2002) find that there does not exist a wealth constraint to entrepreneurship. Hurst and Lusardi (2004) find that 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. 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 has focused on these three sources of financing. However, besides these sources of finance, 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).

In particular, the ability to access capital for short term needs is critical for entrepreneurs, since they face regular cash outflows such as rent and utility bills, vendor bills, and salaries for employees. Yet entrepreneurs 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, entrepreneurs may be willing to pay higher rates on borrowed capital. 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).

### *Credit Cards*

More than 6000 banks and other institutions issue credit cards (Stango, 2000). As of 1997, 20% of aggregate personal consumption was financed by credit cards and more than 2/3 of U.S. households had a credit card, with more than half borrowing on it (Gross and Souleles, 2002). Recent studies have found the average credit card balance (conditional on borrowing) to be more than \$2000 and total credit card borrowing to be \$500 billion (Gross and Souleles, 2002). Despite the apparent importance of access to short term credit, no previous study to our knowledge has empirically analyzed the role of credit cards on entrepreneurship. In a study closely related to ours, Zinman (2002) uses the *Marquette* decision to study changes in consumer use of credit cards. Zinman finds

that after *Marquette* individuals are more likely to have a credit card and that African Americans are more likely to enter self employment, but Zinman does not link the two, as we do here. 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 and for larger purchases. Cole et al. (2005) surveyed entrepreneurs between 2001-2005 and found the 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.

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). Economic theory implies that, assuming healthy competition between credit card providers and adequate 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 entrepreneurs typically rely on credit cards for short term financing, a positive shock to the availability of such credit should increase entrepreneurship rates. The effect should be especially pronounced on individuals that have difficulty obtaining credit through banks or other lending channels, and on individuals who are perceived as being higher risk than others. The prior literature on minority business and entrepreneurship, discussed below, indicates that African Americans may have benefitted when interest rate caps were allowed to rise after *Marquette*.

*Minority Business and Entrepreneurship*

Entrepreneurship among minorities has been studied extensively, but only a few studies have employed representative datasets and econometric methods. Prior work has found that African Americans generally enter entrepreneurship at lower rates and have less success than whites. 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, African Americans face challenges in running a successful business. Blanchflower, Levine and Zimmerman (2003) find that black-owned small businesses are more than twice as likely to be denied bank credit. They also show that 21% of black owned small businesses in 1993 expected to face credit availability problems, compared to 6% of white owned small businesses. Other work has found that consumer discrimination may decrease the returns to entrepreneurship for black entrepreneurs (Borjas and Bronars 1989; Meyer 1990; Kawaguchi 2004)

As a result, several public policies have been aimed at increasing minority entrepreneurship at the federal, state, and local level. Among the most notable policies were the contracting set-asides at the federal, state, and city level during the 1970s and 1980s. These programs reserved percentages of government contracts for minority owned businesses, with the hopes of increasing minority entrepreneurship. Chatterji, Chay, and Fairlie (2008) 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 minority entrepreneurship, the indirect impact of the decision could have stimulated entrepreneurial activity by making credit more available to black entrepreneurs. Building on the prior literature that has documented the frequent use of credit cards in entrepreneurial finance, we use an exogenous shock to credit card interest rates to test whether African Americans increase their entry into entrepreneurship. In the next section we describe our data and empirical approach, utilizing an exogenous shock to credit card interest rates.

### **III. Data and Empirical Strategy**

Drawing from the insights of the NFIB study mentioned above, 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 rates will lead to increased entrepreneurship among African Americans. We are able to test this idea with a quasi-natural experiment. In the 1970s and early 1980s, maximum allowable credit card rates varied across states and across time (see Figure 1). For example, the maximum rate in Arkansas in 1977 was 10% whereas in New York it was 18%. In 1983, these rates were 17% and 25% respectively. Rate changes occurred in response to the 1978 US Supreme Court *Marquette* decision which changed rules governing credit card marketing. Prior to the *Marquette* decision, lenders based in a high rate state such as New York were allowed to market credit cards to consumers in a low rate state such as Arkansas, but were prohibited from offering cards at rates higher than the prevailing maximum in the low rate state. In other words, a NY based credit card company could charge a maximum of



10% on cards marketed in Arkansas. Following the *Marquette* decision, lenders could use the maximum rate in their home state or the state to which they marketed their products. For example, in 1983, lenders based in South Dakota were able to market credit cards in Arkansas with unlimited rates (the maximum allowable rate in South Dakota). Two effects of the *Marquette* decision were that a number of states changed their maximum allowable interest rate and credit card companies moved to high rate states with low costs (such as South Dakota). However, it should be noted that the move to high rate states was not immediate. In the early 1980s, very few banks issued credit cards across state borders. 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 in maximum allowable interest rate caps were immediately affected. We treat these changes in credit card interest rates as exogenous and use them to proxy for changes in the availability of capital financing. We then check to see if these changes in credit card interest rates are statistically correlated with changes in levels and rates of entrepreneurial activity.

We use the Survey of Consumer Finances (SCF) data from 1977, 1983, and 1986 for our analysis. This sample allows us to cover the period before and after the *Marquette* decision. The SCF is the only data source we could find that predates the *Marquette* decision and has information on credit card use. From the SCF we collect information on a number of individual and demographic characteristics. We restrict our observations to individuals who are between ages 18 and 65, who work full time (defined by SCF as more than 20 hours per week) and who are not in the “high income” sample. We exclude the high income sample because the SCF does not include any geographic identifiers for

these individuals and so we cannot map them to a state. The main dependent variable is *self employment*. 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* and *income* (which is the highest income bracket before being excluded in the high income sample) as well as continuous variables for *age* and its square and years of *education*. We also collect demographics at the county level which were collected from the 1980 census.<sup>2</sup> Demographic variables included are *county unemployment rate* and *county farm population*. Log of *county median income* is used as an instrument in a Heckman selection equation described below, so not included as a control variable in other regressions. Finally, 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 branching (*interstate branching*), and multi-state holding companies (*holding company*). The data on these deregulations come from Kroszner and Strahan (1999).

To obtain the interest rate levels for each state during our sample period, we have hand collected the data from annual volumes of the *Cost of Personal Borrowing in the United States*. For most regressions, we use a continuous *rate* variable that has been top coded at the highest rate across all states in that year for states that have no limit. However, we also perform robustness checks that use bins for different interest rate limits

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<sup>2</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.

including an indicator variable *no limit* to indicate if the individual is located in a state that has no limit on the maximum allowable credit card interest rate. We report interest rates caps by state and year in Table 3. Changes in interest rate caps from 1975 to 1986 are plotted in Figure 1. This figure shows the increase in average rate caps and increase in number of states with no limits following the 1978 *Marquette Decision*. The goal of our empirical strategy is to take advantage of the pre and post *Marquette Decision* variation in rates to explain changes in black self employment. The exhibit below provides simple summary statistics suggesting that changes in black self employment over time may be correlated with an increase in state interest rate caps.

<b><u>Exhibit 1: Black Self Employment, by State Type and Year</u></b>			
	1977	1983	1986
Other State	0.0118	0.0265	0.0106
No Limit State	0.0192	0.1190	0.0769
<i>T-Test</i>	-0.35	-2.55	-1.66

The goal of the empirical section is to verify that this basic relationship holds after controlling for a number of individual characteristics, county demographics, and state and year effects. More specifically, our empirical strategy is to run a series of logit regressions to investigate how the probability of self employment varies depending on personal characteristics, change in allowable interest rates, and the interaction between the two. The interaction of particular interest is between black and the maximum allowable interest rate. As stated above, we expect that African Americans in states that increase interest rate caps are more likely to enter self employment. We also use interactions with credit card information to confirm the importance of this mechanism. The main specification is of the form:

$$(1) \Pr(\text{self employment})_{ist} = C(Z)_{ist} = \frac{\exp^{Z_{ist}'\beta}}{1 + \exp^{Z_{ist}'\beta}}$$

Where:

$$(1a) Z_{ist}'\beta = \alpha + \lambda_s + \text{TIME}_t + \beta_{\text{rate}} \text{rate}_{ist} + \beta_{\text{black*rate}} \text{black*rate}_{ist} + \mathbf{X}_{ist}\boldsymbol{\beta} + \mathbf{e}_{ist}$$

$\mathbf{X}_{ist}$  is a vector of individual characteristics, county demographics and state banking deregulations. We also include state ( $\lambda_s$ ) and year ( $\text{TIME}_t$ ) fixed effects.

#### **IV. Results**

We present summary statistics in Table 1 and a correlation matrix in Table 2. State interest rate caps for selected years are presented in Table 3. In Table 4, we report the results of fixed effects regressions with a dummy variable for self employment as our dependent variable. The explanatory variables are basic demographic information, interest rate, and interactions between these variables. Columns 1 and 2 explore the relationship between state interest rate caps and self employment. Of particular interest are the interaction terms between race and interest rate cap and gender and interest rate cap which we explore in Columns 3 – 5. As discussed above, when interest rates rise, we expect that African-Americans are more likely to be extended credit and thus more likely to become entrepreneurs. We find this interaction to be positive and significant in Column 3, controlling for state and year fixed effects. That is, the coefficients on *black\*rate* are positive and significant in Column 3, implying that higher interest rate caps are associated with higher levels of entrepreneurship for African-Americans.

In Table 5, we perform several robustness checks to verify our results in the first analysis. First, we separate our interest rate data into mutually exclusive “bins”, *no limit*,

*greater than 18%* (but not "no limit"), *equal to 18%*, and *less than 18%*. The coefficient on the interaction term between *black* and *no limit* remains positive and significant in Column 1. Next, we use just the *no limit* indicator in Column 2 and our results are still significant. Finally, in Column 3, we use a variety of state banking characteristics control variables used in prior research (Knittel and Stango, 2003) and our results remain robust.

We next investigate whether credit cards were indeed the mechanisms by which African Americans entered entrepreneurship. Raw data in Table 9 shows that African Americans are less likely to own credit cards relative to the entire population across all years. The data also show that from 1977 to 1986 both African Americans and the population as a whole increased ownership of credit cards by about the same amount (14%). We examine this relationship more rigorously by controlling for other confounding factors in Table 6. The triple interaction between *black*, *owns any credit card* and *rate* is positive and significant in Column 3, which includes a full set of controls. We interpret this result to mean that African Americans who own a credit card are more likely to become self employed as the state cap on interest rates increases.

In the regressions reported in Table 6, credit card ownership is treated as an exogenous variable that influences the choice to enter self employment. However, like the decision to enter self employment, credit card ownership may be a choice variable. We use a Heckman selection correction approach to control for potential endogeneity of credit card ownership. We use log *median county income* as an exogenous instrument to predict credit card ownership. We expect that as *median county income* increases, banks will be more likely to market credit cards in the county and hence we expect to see higher probability of credit card ownership. The first stage results, presented in column 1 of

Table 7, confirm this prediction; the coefficient on *median county income* is positive and statistically significant at the 1% level (t-stat = 5.75). Linear prediction with the first stage coefficients are then used to create inverse Mills ratios which are incorporated in the 2nd stage to control for potential endogeneity of credit card ownership. Columns 2 and 3 separately break out results by ownership and non-ownership of credit cards, respectively. Column 4 presents results for the full sample. Results in column 2 show the probability of entering self employment given that the individual owns a credit card. The coefficient on *black\*rate* is positive and significant, indicating that African-Americans who own a credit card or more likely to enter self employment as the state interest rate cap increases. The Mills ratio for credit card ownership is included in this regression to control for selection into credit card ownership, but is not significant. Results in column 3 show the probability of entering self employment given that the individual does not own a credit card. The coefficient on *black\*rate* is insignificant, indicating that African-Americans who do not own a credit card or no more likely to enter self employment than other African-Americans as the state interest rate cap increases. The Mills ratio for non-ownership of a credit card is included in this regression to control for selection into non-ownership of a credit card, but is not significant. In column 4, which uses the full sample, the coefficient on the triple interaction *black, owns any credit card* and *rate* is positive and significant indicating that African Americans who own a credit card are more likely to become self employed as the state cap on interest rates increases. The coefficient on the Mills ratio is positive and significant at the 10% level, indicating there exists positive selection into credit card ownership by individuals who enter self employment; if these individuals did not own a credit card, they would be less likely to

enter self employment (Hamilton and Nickerson, 2003). Overall, the results of the Heckman correction for credit card ownership confirm the results in Table 6; credit card ownership coupled with increases in state interest rate caps appears to increase the entry of African-Americans into self employment.

## **V. Alternative Explanations**

Above, we reported evidence that changes in state interest rate caps brought on by the *Marquette* decision led to increases in African Americans entering self employment. It also appears that credit cards were the mechanism used to enter self employment. However, there may be alternative explanations for the correlations we find in the data. For example, it could be the case that African Americans are more likely to move to new states when wanting to start new businesses, and so a disproportionate amount of African Americans are moving to high rate or no limit states to start new businesses. However, using limited information on mobility from the 1986 SCF, it appears that whites are statistically more likely to move to new states, as shown in Table 8. Another explanation might be that states that are already experiencing an increase in black self employment are those states more likely to change to high rate or no limit states. We use information from the Census Population Survey (CPS) from 1971 – 1985 to create time trends of self employment by race and state type (see Figure 2). The trends offer suggestive evidence that black self employment is not increasing in no limit states prior to the *Marquette* decision. Further robustness checks will need to be performed, including looking at changes to state level bankruptcy exemption laws, which Fan and White (2003) have shown are correlated with entrepreneurship.

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. Further investigation of this assumption is warranted. However, since our analysis compares states with big changes in rates to states with little changes in rates, this assumption means that any effect we find may have been attenuated from the actual effect. While a state may have stayed at an 18% cap, some individuals may be using out of state credit cards with much higher limits in later periods. Hence, any difference in entrepreneurship or credit card use between such a state and a state that changes from an 18% limit to a higher limit or to no limit will be lessened.

There are several other limitations to our study. First, while we observe that African Americans that have a credit card are more likely to enter self employment as rate caps increase, we do not have detailed data on African American credit card use, so we cannot ascertain whether African Americans were actually using their credit cards to finance entrepreneurial activity as opposed to other non-business activity. Second, we only have data from three snapshots, 1977, 1983, and 1986, preventing a more comprehensive analysis of entrepreneurial activity during this time. Alternative data sources like the Current Population Survey (CPS) are not linked to credit card usage, making it unsuitable for our study.

## **VI. Conclusion**

We find strong evidence that African American entrepreneurial activity increased after the *Marquette* decision, and that African Americans with credit cards were more



likely to become entrepreneurs following *Marquette*. Our evidence is consistent with the scenario where credit card companies extended credit to more African Americans after *Marquette*, allowing African American entrepreneurs to finance new ventures. This work contributes to the empirical work on financing of entrepreneurship and is one of the few studies to focus on credit cards, one of the most important financing tools used by entrepreneurs. Our results also contribute to the literature on minority entrepreneurship and support the notion that public policies can have a significant impact on minority self-employment rates (Chatterji, Chay, and Fairlie, 2008). Finally, our work supports the notion that minority entrepreneurs face liquidity constraints.

Future research should be aimed at collecting more data on credit cards usage and entrepreneurship, with special attention to minority entrepreneurs. More generally, academics should continue to explore the full spectrum of financing options for entrepreneurship, rather than narrowly focusing on outside equity financing. In our view, this endeavor could yield new insights about entrepreneurship and open up promising areas of research.

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**Table 1: Summary Statistics**

<b><u>Variable</u></b>	<b><u>Mean</u></b>	<b><u>Std. Dev.</u></b>	<b><u>Min</u></b>	<b><u>Max</u></b>
Self Employed	0.05	0.22	0	1
No Limit	0.23	0.42	0	1
Rate (adjusted)	20.15	3.57	10	25
Owns Credit Card	0.75	0.43	0	1
Black	0.10	0.30	0	1
Female	0.39	0.49	0	1
Age	40.33	11.71	18	65
Age-squared	1763.30	987.90	324	4225
Education	12.92	2.80	0	17
Married	0.70	0.46	0	1
Income	0.12	0.33	0	1
Home Owner	0.69	0.46	0	1
Urban	0.30	0.46	0	1
Merger Restriction	0.48	0.50	0	1
Unit Branching	0.29	0.45	0	1
Interstate Branching	0.23	0.42	0	1
Holding Company	0.86	0.35	0	1
County Median Income (log)	9.22	0.27	8.56	9.70
County Unemployment Rate	92.90	34.18	25	224
County Farm Population	1980.75	1963.29	0	14309

Table2: Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
1 Self Employed	1.00																				
2 No Limit	-0.05	1.00																			
3 Rate (adjusted)	-0.05	0.73	1.00																		
4 Owns Credit Card	0.01	0.08	0.09	1.00																	
5 Black	-0.05	-0.06	-0.05	-0.14	1.00																
6 Female	-0.04	0.15	0.11	0.00	0.07	1.00															
7 Age	0.05	0.01	-0.02	0.13	0.01	0.02	1.00														
8 Age-squared	0.05	0.00	-0.02	0.11	0.01	0.02	0.99	1.00													
9 Education	-0.02	0.13	0.12	0.34	-0.14	-0.04	-0.16	-0.17	1.00												
10 Married	0.07	-0.05	-0.06	0.16	-0.13	-0.20	0.11	0.10	-0.03	1.00											
11 Income	0.06	0.14	0.13	0.19	-0.07	-0.01	0.14	0.13	0.28	0.14	1.00										
12 Home Owner	0.06	-0.06	-0.06	0.26	-0.10	-0.06	0.33	0.30	0.00	0.38	0.15	1.00									
13 Urban	-0.03	0.09	0.08	0.08	0.12	0.04	-0.02	-0.02	0.14	-0.10	0.13	-0.11	1.00								
14 Merger Restriction	-0.01	0.35	0.40	0.05	-0.01	0.08	0.02	0.02	0.10	-0.08	0.11	-0.08	0.06	1.00							
15 Unit Branching	0.00	0.22	0.20	0.00	-0.03	0.01	-0.01	-0.01	0.05	-0.06	0.01	-0.10	0.07	0.66	1.00						
16 Interstate Branching	-0.05	0.19	0.03	0.07	-0.02	0.10	0.04	0.03	0.07	-0.03	0.17	0.02	0.05	0.25	0.10	1.00					
17 Holding Company	0.00	0.35	0.22	0.07	-0.03	0.07	-0.01	-0.01	0.12	-0.04	0.10	-0.02	0.11	0.38	0.26	0.22	1.00				
18 County Median Income (log)	-0.01	0.16	0.17	0.17	0.03	-0.01	-0.03	-0.03	0.21	-0.08	0.15	-0.09	0.48	0.05	0.00	-0.10	0.11	1.00			
19 County Unemployment Rate	-0.04	0.01	-0.03	-0.01	0.01	0.00	-0.02	-0.02	-0.05	0.00	-0.04	0.01	-0.06	-0.16	-0.14	-0.12	-0.08	-0.06	1.00		
20 County Farm Population	0.00	0.05	0.13	0.00	-0.12	-0.03	-0.03	-0.02	-0.05	0.05	-0.05	0.01	-0.17	-0.02	0.04	-0.11	-0.02	-0.15	0.24	1.00	

**Table 3: Interest Rate Caps by State  
and Year**

State	1977	1983	1986
ak			18
al	18	21	21
ar	10	17	17
az	18	no limit	no limit
ca	18	no limit	no limit
co	18	21	21
ct	15	18	18
dc	18	18	no limit
fl	18	18	18
ga	18	18	18
ia	18	18	19.8
il	21.6	21.6	21.6
in	18	21	21
ky	18	18	21
la	18	18	18
ma	18	18	18
me	18	18	18
mi	18	18	18
mn	18	no limit	no limit
mo	18	22	22
ms	18	21	21
nc	18	18	18
ne	18	21	21
nj	18	no limit	no limit
ny	18	25	25
oh	24	no limit	no limit
ok	18	21	21
or	10	no limit	no limit
pa	15	18	18
sc	18	no limit	no limit
sd	12	no limit	no limit
tn	18	21	21
tx	18	18	18
ut	18	21	no limit
va	18	no limit	no limit
wa	12	18	18
wi	18	no limit	no limit

Table 3 presents maximum allowable interest rate caps by state and year. We use a top coded *rate* variable as one of the main independent variables predicting entry into self employment. The *rate* variable is created by top coding "no limit" states as having the highest possible interest rate across all states, which is 25 in both 1983 and 1986. Robustness checks using an indicator for "no limit" states confirm the results using the top coded *rate* variable.

**Table 4: Effect of Interest Rate Change on Entrepreneurship**

Dependent Variable:	(1)	(2)	(3)	(4)	(5)
	Self Employment				
Rate		-0.0009 [0.0015]	-0.0012 [0.0015]	-0.0017 [0.0016]	-0.0019 [0.0015]
Black*Rate			0.0116** [0.0033]		0.0113** [0.0032]
Female*Rate				0.0025 [0.0016]	0.0022 [0.0016]
Black	-0.0280** [0.0065]	-0.0280** [0.0065]	-0.0741** [0.0114]	-0.0280** [0.0065]	-0.0731** [0.0112]
Female	-0.0081 [0.0057]	-0.0081 [0.0057]	-0.0084 [0.0057]	-0.0535+ [0.0287]	-0.0481+ [0.0281]
Age	0.0037* [0.0018]	0.0037* [0.0018]	0.0035* [0.0017]	0.0037* [0.0018]	0.0035* [0.0017]
Age-squared	-0.0000+ [0.0000]	-0.0000+ [0.0000]	-0.0000+ [0.0000]	-0.0000+ [0.0000]	-0.0000+ [0.0000]
Education	-0.0019* [0.0010]	-0.0019* [0.0010]	-0.0021* [0.0009]	-0.0019* [0.0010]	-0.0020* [0.0009]
Married	0.0166** [0.0061]	0.0166** [0.0061]	0.0163** [0.0060]	0.0163** [0.0061]	0.0161** [0.0060]
Income	0.0447** [0.0131]	0.0449** [0.0131]	0.0439** [0.0128]	0.0450** [0.0131]	0.0441** [0.0128]
Home Owner	0.0109+ [0.0066]	0.0109+ [0.0066]	0.0111+ [0.0064]	0.0110+ [0.0066]	0.0111+ [0.0064]
Urban	-0.0020 [0.0068]	-0.0022 [0.0068]	-0.0030 [0.0067]	-0.0023 [0.0068]	-0.0031 [0.0067]
Merger Restriction	0.0066 [0.0128]	0.0053 [0.0130]	0.006 [0.0128]	0.0046 [0.0130]	0.0054 [0.0128]
Unit Branching	0.0243 [0.0263]	0.0263 [0.0270]	0.0262 [0.0266]	0.0279 [0.0274]	0.0276 [0.0269]
Interstate Branching	-0.0052 [0.0110]	-0.0058 [0.0110]	-0.0054 [0.0108]	-0.0059 [0.0109]	-0.0055 [0.0107]
Holding Company	0.0257** [0.0079]	0.0253** [0.0080]	0.0252** [0.0078]	0.0257** [0.0080]	0.0255** [0.0078]
County Unemployment Rate	-0.0003* [0.0001]	-0.0003+ [0.0001]	-0.0003+ [0.0001]	-0.0003* [0.0001]	-0.0003+ [0.0001]
County Farm Population	0.0000 [0.0000]	0.0000 [0.0000]	0.0000 [0.0000]	0.0000 [0.0000]	0.0000 [0.0000]
Fixed Effects:					
Year	Y	Y	Y	Y	Y
State	Y	Y	Y	Y	Y
Observations	5130	5130	5130	5130	5130
Log pseudolikelihood	-980.5582	-980.3861	-975.2202	-979.3842	-974.4398
Pseudo R-squared	0.0755	0.0757	0.0805	0.0766	0.0813

Robust standard errors in brackets

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

Table 4 examines the effect of increases in credit card interest rate caps (“rate”) on the probability of self employment. The results show that increases in credit card interest rate caps increased the probability of African Americans to enter self employment (see black\*rate).

**Table 5: Robustness Checks (Dependent Variable: Self Employment)**

	(1)		(2)		(3)
Rate = 18%	0.0059 [0.0171]	No Limit	-0.0335** [0.0090]	Rate	-0.0029 [0.0023]
Rate > 18%	0.0126 [0.0245]	Black*No Limit	0.1719* [0.0829]	Black*Rate	0.0067+ [0.0037]
No Limit	-0.0275+ [0.0148]	Female*No Limit	0.0270 [0.0197]	Female*Rate	0.0009 [0.0018]
Black*Rate = 18%	-0.0080 [0.0334]			State HHI, Credit Cards	0.0000 [0.0000]
Black*Rate > 18%	0.0599 [0.0895]			State HHI, Bank Deposits	0.0000 [0.0000]
Black*No Limit	0.1850 [0.1403]			Number Banks in State	0.0002 [0.0001]
Female*Rate = 18%	-0.0051 [0.0198]			Number Banks with Credit Cards	0.0000 [0.0002]
Female*Rate > 18%	-0.0036 [0.0214]				
Female*No Limit	0.0210 [0.0311]				
Individual Characteristics	Y		Y		Y
Demographic Information	Y		Y		Y
Year Fixed Effects	Y		Y		Y
State Fixed Effects	Y		Y		Y
Observations	5130		5130		3673
Log pseudolikelihood	-971.4481		-972.7126		-672.3482
Pseudo R-squared	0.0841		0.0829		0.0937

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

Table 5 performs robustness checks to verify the findings of Table 4. Column 1 uses several rate bins in addition to the indicator variable for “no limit”; column 2 uses a just the “no limit” bin. Column 3 includes several state level banking control variables. The results are unchanged from Table 4; the interaction between black and a measure of the interest rate cap is positive and significant.



**Table 6: Effect of Credit Card Ownership on Entrepreneurship**

<i>Dependent Variable:</i>	(1)	(2)	(3)
	<i>Self Employment</i>		
Owns Credit Card	-0.0029 [0.0074]	0.0321 [0.0230]	0.0402+ [0.0218]
Rate	-0.0009 [0.0015]	0.0006 [0.0019]	0.0011 [0.0020]
Black	-0.0281** [0.0064]	-0.0736** [0.0117]	-0.0516** [0.0132]
Black*Rate		0.0110** [0.0032]	0.0037 [0.0040]
Owns Credit Card*Rate		-0.0022 [0.0017]	-0.0028 [0.0017]
Black*Owns Credit Card		0.0165 [0.0318]	-0.0517** [0.0097]
Black*Owns Credit Card*Rate			0.0107+ [0.0061]
Individual Characteristics	Y	Y	Y
Demographic Information	Y	Y	Y
Year Fixed Effects	Y	Y	Y
State Fixed Effects	Y	Y	Y
Observations	5130	5130	5130
Log pseudolikelihood	-977.8361	-977.3366	-972.0807
Pseudo R-squared	0.0781	0.0786	0.0835

Robust standard errors in brackets  
+ significant at 10%; \* significant at 5%; \*\* significant at 1%

Table 6 seeks to understand the mechanism that facilitated African-American entry into self employment following the increase in state interest rate caps. The coefficient on the three way interaction suggests that African-Americans that owned a credit card were more likely to enter self employment as the interest rate cap increases.

**Table 7: Effect of Credit Card Ownership on Entrepreneurship, with Heckman Correction**

Dependent Variable:	(1)	(2)	(3)	(4)
	Owns Credit Card	Self Employment		
		Owns Credit Card	No Credit Card	Full Sample
Ln Median Income	0.7693** [0.1301]			
Rate	-0.0300* [0.0132]	-0.0017 [0.0018]	-0.0012 [0.0031]	0.0014 [0.0020]
Black	-0.3562** [0.0696]	-0.0742** [0.0124]	-0.0404 [0.0283]	-0.0477** [0.0155]
Mills Ratio Owns Credit Card		0.0124 [0.0308]		0.0426+ [0.0230]
Mills Ratio Does Not Own Credit Card			0.0146 [0.0432]	
Black*Rate		0.0156** [0.0047]	0.0014 [0.0038]	0.0031 [0.0061]
Owns Credit Card				0.0377+ [0.0223]
Owns Credit Card*Rate				-0.0027 [0.0017]
Black*Owns Credit Card				-0.0521** [0.0097]
Black*Owns Credit Card*Rate				0.0109+ [0.0061]
Individual Characteristics	Y	Y	Y	Y
Demographic Information	Y	Y	Y	Y
Year Fixed Effects (1977, 1983 only)	Y	Y	Y	Y
State Fixed Effects	Y	Y	Y	Y
Observations	5250	3689	1153	5130
Log pseudolikelihood	-2245.865	-730.7277	-209.2434	-971.7272
Pseudo R-squared	0.2408	0.09	0.1337	0.0838

Robust standard errors in brackets

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

Table 7 uses a Heckman approach to correct for potential endogeneity of credit card ownership. Log *median county income* is used to predict credit card ownership in the first stage (t-stat = 5.75). Second stage results confirm results in Table 6: African-Americans that own a credit card are more likely to enter self employment as the interest rate cap increases.

**Table 8: Mobility of Entrepreneurs (1986 data only)**

Move to a New State in Last 3 Years			
	Obs	Mean	Std. Dev
White	1377	0.0523	0.2227
Non-white	173	0.0231	0.1507
	<i>T-Test:</i>	1.67	

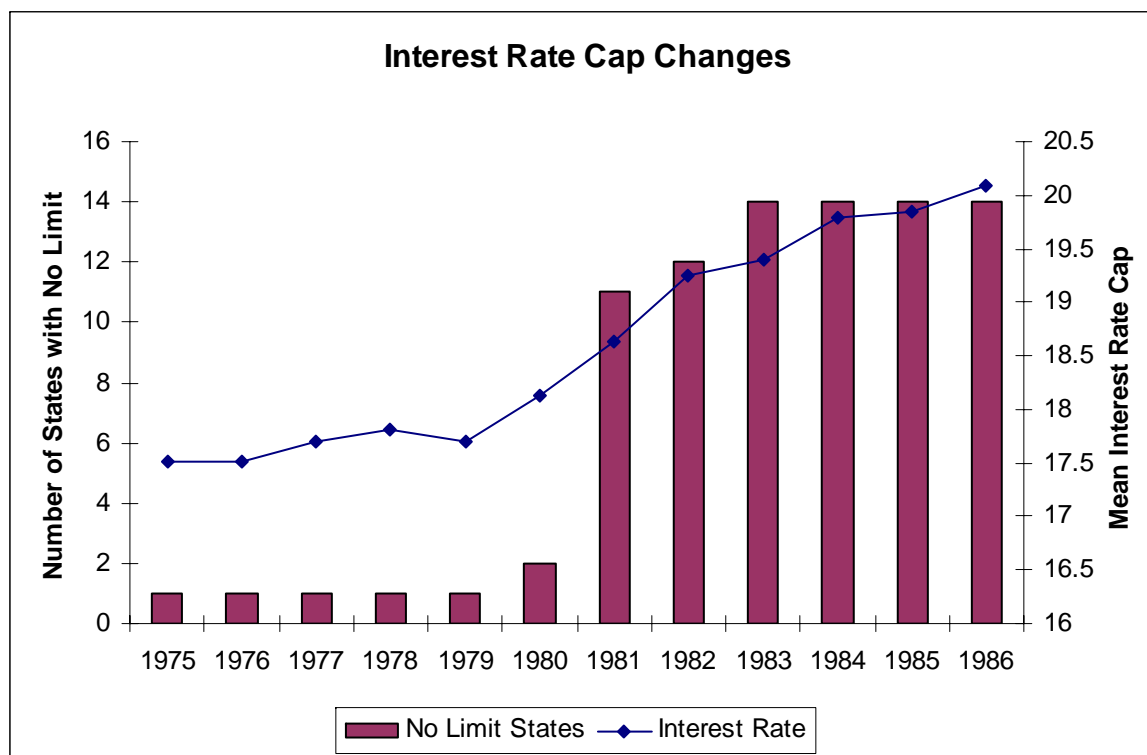
Move to a New State in Last 3 Years			
	Obs	Mean	Std. Dev
No Transition into Self Employment	1532	0.0477	0.2131
Transitioned into Self Employment	18	0.1667	0.3835
	<i>T-Test</i>	-2.33	

Table 8 investigates mobility by race and self employment. Whites are more likely to move states than non-whites, and those that transition into self employment are more likely to move states than those that do not transition into self employment. Of the 18 individuals who transitioned into self employment and moved to a new state, all were white.

**Table 9: Self Employment and Credit Card Use, by Race and Year**

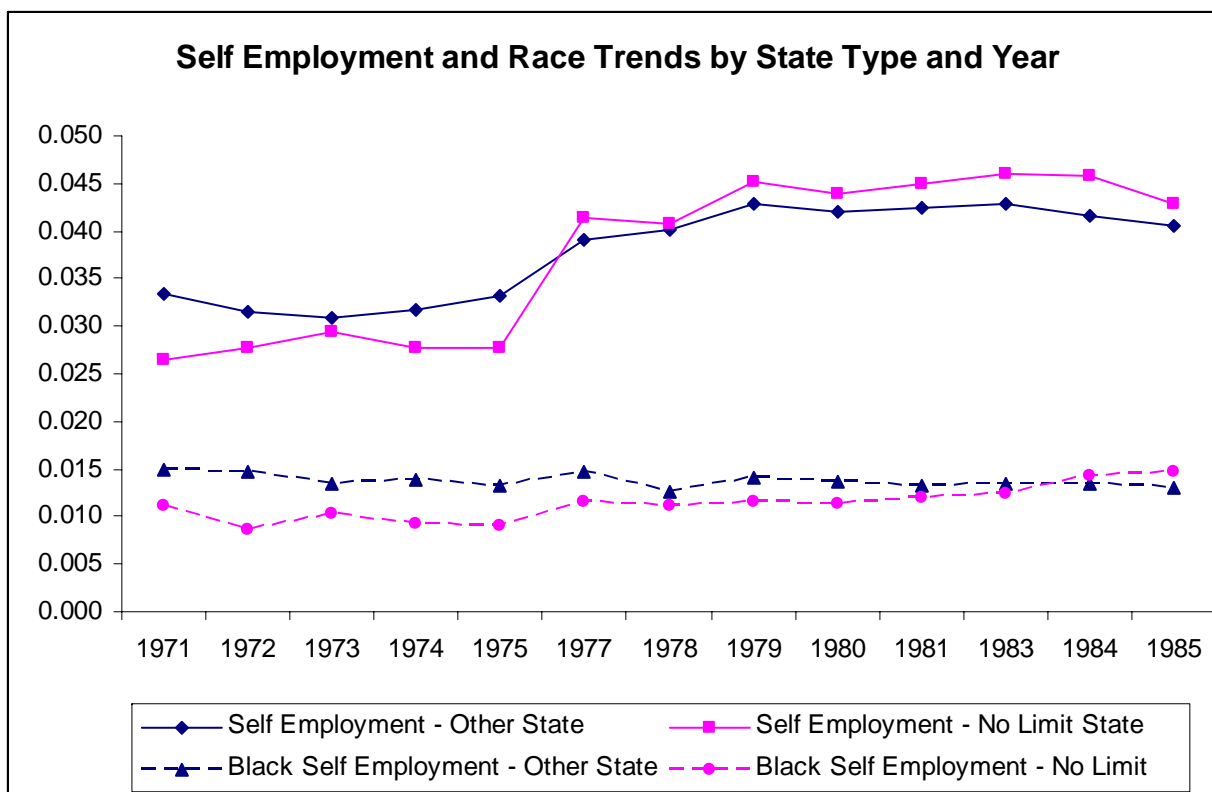
	1977	1983	1986
Black	0.0944	0.1278	0.1034
Self Employed (all)	0.0553	0.0375	0.0235
Self Employed (black)	0.0085	0.0197	0.0081
Own Credit Card (all)	0.6273	0.6380	0.7173
Own Credit Card (black)	0.4316	0.4057	0.4939
Credit Card Debt (all)	139.5522	304.7498	952.1789
Credit Card Debt (black)	137.6624	340.7018	787.9745

Table 9 investigates differences of select variables between “no limit” states and other states across the three years for which SCF data is available (1977, 1983, 1986). African-Americans are less likely to own credit cards across all time periods, but experience a proportionally larger increase in credit card ownership from 1977 – 1986 than non African Americans.



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

Figure 1: State interest rate caps change dramatically following the Supreme Court's *Marquette Decision* in 1978. By 1983, average interest rate caps across all states had risen to approximately 19.5% from an average of approximately 17.5% pre-1978. Also by 1983, 14 states had no limit on interest rate caps, up from one pre-1978.



Source: CPS Data

Figure 2: This figure investigates trends in self employment rates and percent black across states that eventually become “no limit” states by 1986 and those that are not “no limit”. There are kinks in the data between 1975 and 1977, reflecting a change in how the CPS collected data. Other than the 1975-1977 kinks, there do not appear to be any trends that predict which states become “no limit” states.