# Bank Competition and Entrepreneurial Gaps: Evidence from Bank Deregulation*

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**Abstract**

This paper provides evidence that bank competition reduces gender and racial gaps in entrepreneurship by improving banking services and reducing discrimination. Exploiting the interstate bank deregulation from 1994 to 2021, I find that stronger bank competition increases the quantity and quality of banking services provided to minority borrowers. I develop a novel measure of bank discrimination based on the narrative information extracted from the complaints filed to the Consumer Financial Protection Bureau (CFPB) using textual analysis. Using this measure, I find that bank competition reduces complaints about discrimination. Due to the improved banking services and reduced discrimination, bank competition reduces the entrepreneurial gaps by loosening the financial constraints of female and minority entrepreneurs. At the firm level, relaxed financial constraints reduce the gender and racial gaps in startup performance. As a consequence, equal access to entrepreneurial opportunities reduces gender and racial disparities in entrepreneurial equity, and thus fosters wealth equality. Finally, I present evidence that bank competition can reduce racial disparities in access to the Paycheck Protection Program (PPP) loans which are fully guaranteed by the federal government and risk-free. This unique setting eliminates the concern that disparities in credit risk may drive the entrepreneurial gaps. Overall, my results suggest that bank competition can promote equity in access to finance and generate equitable economic growth.

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# 1 Introduction

Entrepreneurship boosts economic growth through its important role in driving job creation and innovation (Andrews et al. 2022; Chemmanur and Fulghieri 2014; Haltiwanger, Jarmin, and Miranda 2013). Despite its benefits, there are pronounced racial and gender gaps in entrepreneurship.[1] These gaps in entrepreneurship are quite persistent, in contrast to the gradually narrowed gaps in all other occupations (Gompers and Wang 2017). Reducing these gaps may significantly affect economic growth, job creation, and inequality, which emphasizes the importance of comprehending the frictions restraining business formation among minorities and women (Ewens 2022).

In this paper, I study how access to finance affects women's and minorities' propensities to become entrepreneurs. I find bank competition reduces gender and racial gaps in entrepreneurship by improving the quantity and quality of banking services. Relying on a novel measure of discrimination, my paper shows that minority entrepreneurs also benefit from bank competition because of reduced discrimination. Furthermore, better access to finance reduces the gaps in firm performance, and thus helps female and minority entrepreneurs accumulate more business equity and wealth. To establish a causal relationship between access to finance and entrepreneurial gaps, I exploit the interstate bank deregulation that took place from 1994 to 2021. My paper also finds that bank competition is negatively associated with the racial disparities in access to Paycheck Protection Program (PPP) loans. Since the federal government fully guarantees these loans, this allows me to

[1] In 2018, women owned 20 percent of all firms with employees and made up 47 percent of the labor force. Black Americans owned 2 percent of employer firms and made up 12 percent of the labor force. Women-owned and black American-owned businesses create 8 percent and 1 percent of jobs, respectively. This calculation is based on the labor force statistics from the Current Population Survey and Census's Annual Business Survey.

rule out the alternative hypothesis that racial disparities in credit risk drive entrepreneurial gaps.

Bank finance plays a pivotal role in entrepreneurial activities. The lack of startup capital has long been recognized as the most important factor impeding the success of businesses, especially for minorities (Fairlie and Robb 2010). Among different types of capital, Robb and Robinson (2014) find that entrepreneurial firms rely heavily on bank financing and access to bank loans increases the size and the quality of firms. However, numerous studies indicate that minorities and women are disadvantaged groups in the lending market compared with whites and men after controlling for creditworthiness (Asiedu, Freeman, and Nti-Addae 2012; Blanchflower, Levine, and Zimmerman 2003; Fairlie, Robb, and Robinson 2022; Tootell 1996), which may limit the financing abilities of minorities and women to set up a startup. Financial frictions, such as credit rationing caused by discrimination or bias, may be especially binding on these disadvantaged groups. The relaxation of financial regulation may remove barriers to the entrepreneurial career choices of disadvantaged groups by allocating capital to these underprivileged groups with productive projects, thus reducing inequality. Therefore, understanding the effect of bank credit supply is critical. My paper is the first paper to document that access to bank loans reduces gender and racial gaps in entrepreneurship.

My study is comprised of three parts. In the first part of my paper, I document that bank deregulation improves the quantity and quality of banking services provided to minority borrowers and reduces discrimination against these minorities. First, following Rice and Strahan (2010), I build a time-varying index to capture exogenous shocks to the supply of banking credit from 1994 to 2021 based on the 1994 Interstate Banking and Branching Efficiency Act (IBBEA) and the 2010 Dodd-Frank Wall Street Reform and Consumer Protection

Act (Dodd-Frank Act). Effective in 1994, the IBBEA made interstate bank branching legal but gave the option to states to set up barriers to the entry of banks from outside the state. These barriers were reduced in a staggered way in the following years by various states. The Dodd-Frank Act further eliminated the de novo interstate branching restrictions on a nationwide scale in 2010. Exploiting this index and the data from the Federal Deposit Insurance Corporation (FDIC), I first find that bank deregulation increases the density of bank branches in counties with high proportions of minority borrowers. Combining this index with the household-level data from the Survey of Income and Program Participation (SIPP), I then show that bank competition increases the probability of being financially included for minorities relative to their white counterparts. This result suggests that bank competition increases the quantity of banking services for minorities that are more likely to be rationed by mainstream financial service providers.

Second, I exploit data from the Consumer Financial Protection Bureau (CFPB) to measure the quality of banking services using the incidence of consumer complaints against banks about fraud, poor customer service, and misselling (Begley and Purnanandam 2021). I find that deregulation improves the quality of banking services in zip codes with high minority shares of the population.

Third, I develop a novel measure of discriminatory treatment using the narrative information along with the complaints provided by the CFPB dataset based on the textual analysis method.[2] The results of my analysis using this novel measure show that increased competition reduces the incidence of complaints about discrimination, especially in areas with high proportions of minority consumers.

In the second part of my paper, I establish that the relaxation of regulation reduces en-

[2]This textual analysis method was first used by Haendler and Heimer (2021) to measure the readability of complaints.

trepreneurial gaps by triggering an exogenous increase in credit accessibility for women and minority entrepreneurs. Using detailed household-level data, I find that interstate branching deregulation reduces gender and racial gaps in entrepreneurship because of reduced discrimination. The likelihood of a woman or the member of a minority group to be an entrepreneur increases by 1.2% or 1.6%, respectively, after a state fully deregulates relative to their fully regulated counterparts, which is equivalent to a 39% (respectively, 70%) reduction in the gender (respectively, racial) gap in entrepreneurship. This effect is stronger in industries with higher dependence on external financing, suggesting that the relaxation of financial constraints narrows these gaps. I also provide direct evidence that bank deregulation reduces the startup capital gap between entrepreneurs, thus corroborating that bank competition can remove the barriers to entry for aspiring women and minority entrepreneurs who are rationed by banks before deregulation.

Second, I examine the underlying channel through which bank competition reduces the gaps in entrepreneurship. I find that economies where women and minorities face high discrimination or bias experienced a more substantial reduction in business formation gaps after bank deregulation. This piece of evidence complements Becker's (1957) argument that financial sector deregulation will reduce discrimination because of intensified competition.

Third, I document the existence of gender and racial gaps in entrepreneurial firm performance, broadly consistent with previous findings (Fairlie and Robb 2007, 2009). Next, I show that interstate branching deregulation reduces the performance gap between firms owned by privileged entrepreneurs (male and white entrepreneurs) and underprivileged group-owned firms (female and minority entrepreneurs). This effect was more pronounced during the financial crisis, when financial frictions were exceptionally high, and credit was in short supply.

Fourth, I find that the inequality in business equity accumulation and wealth is reduced as a consequence of narrowed entrepreneurial gaps in firm performance. My analysis emphasizes the economic significance of entrepreneurial gaps in business equity accumulation. The gender and racial gaps in business equity account for 49% and 26%, respectively, of the gaps in wealth accumulation. In fully deregulated states, wealth gaps can be reduced by 12% because of reduced gaps in business equity, compared with fully regulated states.

In the third part of this study, I use the PPP loans data from the Small Business Administration (SBA) to control for credit risks and confirm that bank deregulation can reduce the racial gaps in access to small business credit during the COVID-19 pandemic. Small businesses owned by minorities or located in minority neighborhoods are more likely to get access to PPP loans if the predetermined bank competition level is high. As for the intensive margin, bank competition reduces the racial gap in the amount of PPP loans. My results suggest that the market structure of the financial system may impact the efficiency and equity of this business support program.

Overall, I document that the marginal benefits of financial inclusion among female and minority entrepreneurs shocked by supply-side credit changes are significant. My results suggest that female and minority entrepreneurs are financially constrained and can benefit from better access to finance.

I conduct several tests to rule out alternative hypotheses. I first try to mitigate selection bias and the concern of reverse causality. I do not find evidence that women or minorities are more likely to live in and move to states with fierce bank competition than men and whites. As for reverse causality, I do not find evidence supporting the notion that the implementation of bank deregulation is correlated with state-level entrepreneurial gaps. Second, I show that my results about entrepreneurship are robust to controlling for metropolitan

statistical areas (MSA)-income decile-year joint fixed effects. By construction, MSAs cluster adjacent territories with similar social and economic conditions. Therefore, I compare the entrepreneurial gaps within the same MSA straddling the border of two states with different bank deregulation levels to ensure that a granular level of local economic shocks does not drive my results. Finally, I run placebo tests by randomly specifying the deregulation years other than the actual years but keeping the whole distribution of deregulation years unchanged. I find that my results are not driven by unobservable factors that may coincide with my deregulation events.

The rest of the paper is organized as follows. Section 2 relates my paper to the existing literature and its contribution relative to this literature. Section 3 describes the institutional setting and also my data and variable construction. Section 4 presents my empirical tests and results on the effects of bank deregulation on the quantity of quality of financial services provided in minority communities. Section 5 presents my empirical tests and results on the effects of bank deregulation on startup creation. Section 6 presents my empirical tests and results on the effects of bank deregulation on startup firm performance. Section 7 presents my empirical tests and results on the effects of bank deregulation on the inequality in business equity accumulation. Section 8 presents my empirical tests and results on how bank deregulation affects racial disparities in entrepreneurs' access to PPP loans. Section 9 concludes.

## 2 Related Literature and Contribution

My paper contributes to the literature on bank deregulation and entrepreneurship in several ways. First, my paper provides new insight into the determinants of gender and racial gaps in entrepreneurship. Recent articles explore how to motivate female entrepreneurs

from the following perspectives: reproductive rights (Zandberg 2021), equal inheritance rights (Naaraayanan 2019), network frictions (Howell and Nanda 2019), career risk (Gottlieb, Townsend, and Xu 2022), and gender stereotypes of investors (Ewens and Townsend 2020; Hebert 2020). I show that local bank competition also matters for both gender and racial gaps and underscore the need for policy intervention aimed at financial inclusion to reduce gender and racial gaps.

Second, my paper contributes to the literature that examines the effect of bank competition on discrimination in two ways. To start with, it is very hard to detect discriminatory treatment using the unexplained racial gap in outcome variables as a measure of discrimination because of omitted variables. To my best knowledge, my paper is the first to develop a novel and direct measure of discrimination from the narrative information in complaints against banks using textual analysis. This method may be applied to other settings since unstructured textual data are widespread now.[3] Second, my results complement previous studies that find bank competition can reduce discrimination in different markets. Economists typically focus on wage inequality and labor participation ratio through the standard Beckerian framework that predicts financial sector deregulation will reduce discrimination because of intensified competition (Becker 1957) in the labor market. Black and Strahan (2001) find that bank deregulation diminishes the gap between men's and women's wages because it increases the cost of discrimination against female bank employees. Levine, Rubinstein, and Levkov (2014) document that bank competition reduces the wage gap between black workers and white workers by boosting the entry of entrepreneurial firms and reducing racial discrimination in the labor market. Buchak and Jørring (2021) find that bank competition

[3]For example, we can use reviews from consumers (such as the complaints filed to the Better Business Bureau (BBB)), employees (Glassdoor provides company reviews from current and former employees), and other stakeholders to detect discriminatory or unfair treatment.

reduces discriminatory practices in mortgage lending. There is, however, little evidence on how bank competition reduces discrimination or bias in the entrepreneurial financing market. My paper exploits household finance data to show how bank competition interacts with discriminatory social norms in the business or entrepreneurial financing market.

Third, my paper complements the literature on the real effect of bank deregulation. So far, this literature documents that bank reform improves the efficiency of capital allocation and thus boosts economic growth and entrepreneurial activities (Amore, Schneider, and Žaldokas 2013; Bai, Carvalho, and Phillips 2018; Black and Strahan 2002; Cetorelli and Strahan 2006; Chatterji and Seamans 2012; Cornaggia et al. 2015; Fonseca and Matray 2022; Hombert and Matray 2017; Jayaratne and Strahan 1996; Kerr and Nanda 2009; Krishnan, Nandy, and Puri 2015). However, little is known about whether or how bank deregulation achieves economic growth with equity and inclusion. My paper shows that deregulation can trigger equitable development by securing equal rights to access finance. In addition to the well-established improved capital allocation channel, I find that bank competition can affect economic growth through talent allocation by expanding the career choice set and shaping the economic opportunities for disadvantaged but talented groups.[4]

Fourth, my paper also adds to the literature that investigates the effect of deregulation on inequality. Unequal access to finance has long been recognized as a leading cause of persisting inequality. Financial deregulation can reduce inequality in many ways (see Beck, Demirgüç-Kunt, and Levine (2007) for a detailed survey of this strand of literature). Access to finance can help poor people invest in physical and human capital (Célerier and Matray

[4]Financial friction may decrease economic efficiency if underprivileged people's productive projects are forgone, and their talents are misallocated because of financial constraints (Piketty 2000). Hsieh et al. (2019) build a model and estimate that between 20% and 40% of growth in aggregate market output per person can be explained by minorities and women making career choices towards highly skilled occupations and the accompanying improved talent allocation.

2019; Sun and Yannelis 2016). Beck, Levine, and Levkov (2010) find that bank deregulation reduces income inequality by increasing low-skilled workers' labor demand and wage rates. While we see the participation rate of the disadvantaged group (women and minorities) in the labor market approaches that of the advantaged group (men and white) during the last 50 years, disadvantaged groups are still underrepresented in highly skilled occupations, especially in entrepreneurship. Theory shows that financial friction may lead to persistent income and wealth inequality if talented but financially constrained individuals are impeded from becoming entrepreneurs (Banerjee and Newman 1993). My paper tests and confirms these theoretical predictions and provides an equally important but less studied mechanism by which access to finance can reduce inequality through its effects on the convergence in occupational distribution, especially in entrepreneurial career choices.

Fifth, my paper relates to the literature studying racial gaps in access to PPP loans. Lots of papers find that minorities are less likely to get access to PPP loans because of discrimination (Chernenko and Scharfstein 2021; Erel and Liebersohn 2021; Howell et al. 2021). Relative to these papers, I demonstrate that bank competition can reduce the racial gap and increase the efficiency of the program in reducing job loss since these minority-owned businesses are heavily concentrated in industries that are most hit by the COVID-19.

Finally, I update the bank deregulation index developed by Rice and Strahan (2010). Their index ended in 2005. I extend the bank competition index to 2021 to track the changes in bank deregulation in recent years. Researchers may take advantage of my extended index to study the impact of bank competition in a broader context (e.g., during the financial crisis period and the COVID-19 pandemic). My index may be useful for studying the effect of the new generation of bank regulation law- the Dodd-Frank Act- whose influence is still

controversial and debatable.[5]

# 3 Institutional Setting and Data

In this section, I present the legislative history of bank deregulation from 1994 to 2021 and construct the bank branching deregulation index. I then describe the data I use to examine the effect of bank deregulation on entrepreneurial gaps.

## 3.1 Bank Deregulation Index

There have been two important deregulatory laws in U.S. recent history which I exploit in my empirical analysis: The Riegle-Neal Interstate Banking and Branching Efficiency Act (IBBEA) and the Dodd-Frank Wall Street Reform and Consumer Protection Act (the Dodd-Frank Act). In this subsection, I discuss each of these acts in turn and how I use them in my empirical analysis.

### 3.1.1 The Riegle-Neal Interstate Banking and Branching Efficiency Act (IBBEA) of 1994

Banks were not allowed to branch across state lines before the Riegle-Neal Interstate Banking and Branching Efficiency Act (IBBEA) of 1994. Following the passage of the act, banks outside the state may be allowed to open branches across state lines without permission. While IBBEA made interstate branching possible, states are allowed to use the four important provisions contained in IBBEA to restrict or increase the cost of out-of-state entry: (a) the

[5]The aim of the Dodd-Frank Act is to mitigate systematic risks in the financial system which are perceived to be responsible for the financial crisis of 2008. However, the efficacy of this act is challenged, and there are mounting concerns about its negative impact on small businesses and banks. For example, Bordo and Duca (2018) find that the Dodd-Frank Act reduced small business formation by reducing banks' incentive to make small business loans.

minimum age requirement for the target bank of interstate acquirers, (b) the state permission of de novo interstate branching, (c) the state permission of interstate branching by acquiring a single branch or portions of an institution, (d) the statewide deposit cap on branch acquisitions. After the implementation of the IBBEA, states keep the authorities revising every provision. Between 1994 and 2021, 47 states relaxed their banking regulation constraints. 39 states modified their provisions more than once, showing that the deregulation process is gradual and mild (see Table 1).

[Insert Table 1 about here]

Following Rice and Strahan (2010), I construct the bank competition index ranging from 0 to 4 based on these four provisions. The index is set to zero if there are no interstate branching restrictions. I add one to the index when states have any of these four restrictions. For example, one will be added to the index: (1) if the minimum age requirement on target banks of interstate acquisition is three years or more; (2) if de novo interstate branching is not allowed in a state; (3) if an out-of-state bank cannot enter the local market via the acquisition of branches instead of buying the whole bank; (4) if the deposit cap imposed by the state is less than 30%. By definition, a smaller index value indicates greater competition because of relaxed restrictions to entry for out-of-state banks, which challenged local and community banks.

#### 3.1.2 The Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act)

Section 613 of the Dodd-Frank Act allows out-of-state banks to establish a de novo branch in any other state as if they were chartered in that state. Effective in 2010, the enactment of the Dodd-Frank Act will mean that the barrier to de novo interstate branching is removed, and

banks will have greater access to and compete within national markets. The introduction of the Dodd-Frank Act was primarily driven by the Great Recession, and its aim is to promote financial stability and protect consumers against abusive financial services and products. This nationwide law change is beyond the control of any state government and thus plausibly exogenous to the local economic conditions and entrepreneurial financing needs. I subtract one from the bank deregulation index if a state does not allow de novo branching before the Dodd-Frank Act to measure the effect of this law shock.

Before my study, scholars who study the real effect of bank deregulation or competition, simply rely on the bank deregulation index developed by Rice and Strahan (2010). However, their index ends in 2005, capturing 61% of regulation changes from 1994 to 2021. To take advantage of their index, scholars either restrict their sample period to years before 2005 or assume there is no additional deregulation after 2005, which may partially capture or even bias the true effect of bank competition. In this study, I extend the bank competition index to the year 2021 using the legal research database Westlaw to examine the changes in bank deregulation in recent years (see Table 1 for the deregulation index and Table A1 in the Appendix for the underlying detailed law changes).[6] Researchers can exploit my comprehensive index to evaluate the comprehensive impact of bank competition without bias. My index's long track record of regulation can be applied in a broad context (e.g., the effect of bank regulation during the financial crisis period and the COVID-19 pandemic period).

To validate the extended bank deregulation index, I check whether interstate branching deregulation has boosted the growth of interstate branches. Bank branch information is

[6]Westlaw is an online legal research data and service provider for lawyers, legal professionals, and researchers. I collect information on the changes and effective dates of state and federal statutes about bank deregulation from this database.

collected from the Sum of Deposits (SOD) provided by the FDIC. From Figure 1, we can see that the total number of interstate branches increased from 1994 to 2021. While the number of total branches declined after the financial crisis, the share of interstate branches increased, which has put pressure on local non-interstate branches.

[Insert Figure 1 about here]

### 3.2 SIPP Data

To investigate whether bank deregulation reduces entrepreneurial gaps, I use household-level survey data from the SIPP covering the 1990-2019 period.[7] This dataset is suitable for my research because of its three unique characteristics. First, this longitudinal survey enables me to analyze the dynamic transition of households to entrepreneurs and the corresponding capital accumulation process. The longitudinal feature is essential in the context of my study, given that the effect of credit accessibility on entrepreneurial activities may take time to materialize. Second, the comprehensive nature of this survey makes it possible for researchers to collect multi-dimensional information about demographic characteristics, job status, and financing conditions at the individual level and the linked entrepreneurial business performance. The long history of this dataset allows me to examine the long-term and overall effect of bank deregulation without bias. I drop individuals younger than 22 years old (individuals who are in school) and older than 60 years old (individuals who are close to retirement). This filter gives me a total sample of 326,809 unique individuals.

[7] I use the following panels: 1990, 1991, 1992, 1993, 1996, 2001, 2004, 2008, 2014, 2018, 2019. In each running panel, the SIPP surveyed approximately 30,000 households over several waves (4 to 16 waves) during 2 to 4 years. From 1990 to 2008, each wave is comprised of core surveys that collect sociodemographic and income information on household and topical surveys that cover information on numerous topics. After the 2008 panel, the SIPP combine the topical surveys with core surveys. I take advantage of core surveys to get household employment status and sociodemographics and the Asset and Liabilities topical survey to collect balance sheet information on the household.

Table 2 shows summary statistics of all main variables and control variables used in the analysis. Of the 326,809 individuals, 51% are male, and 29% are minorities (nonwhites). Panel A shows that the unconditional likelihood of transition into entrepreneurs in three years is 6.1% for men and 4.0% for women. I also document a 1.4% racial gap in the probability of starting a business. In terms of other sociodemographic features, minorities are less likely to be homeowners and have less education and employment history than their white counterparts. Panel B of Table 2 illustrates the economic conditions and financial well-being of these individuals. In most cases, men and whites have higher labor incomes and better access to finance than women and minorities. Especially, the average secured business debt owed by male entrepreneurs is three times as large as that owed by female entrepreneurs. The business debt used to support entrepreneurship raised by minority entrepreneurs is also less than half of the business debt borrowed by white entrepreneurs. However, it does not necessarily suggest that men and white are overindebted since their business equity is two times larger than that of women and minority business owners. These gaps in business equity are significant and explain 49% of the gender gap and 26% of the racial gap in household net worth. Panel C of Table 2 summarizes the data on the characteristics of firms founded by households who already operate businesses the first time they enter the sample and are interviewed. Most of the firms own fewer than 25 employees, indicating that the average size of businesses in my sample is small. I present the existence of performance gaps measured by firm size and profit amount between male (white) entrepreneurs and female (minority) entrepreneurs, consistent with previous literature (Fairlie and Robb 2007, 2009).

[Insert Table 2 about here]

# 4 Effect of Deregulation on the Quantity and Quality of Financial Services in Minority Communities

In this section, I show that minorities are underserved by banks, and branching deregulation improves the quantity and quality of financial services in minority communities. I then build a discrimination index and find that competition reduces discrimination against minority groups.

## 4.1 Effect of Deregulation on the Quantity of Banking Services and Financial Inclusion

Panel A of Figure 2 shows that bank branch density is negatively correlated with the minority ratio at the county level using data from the FDIC. Bank branch density is measured by the number of branches per 10,000 inhabitants. The minority ratio is the ratio of non-white residents in a county. A one standard deviation increase in the minority share of the population is correlated with a decrease of 18% in bank branch density.

[Insert Figure 2 about here]

I estimate the following model to test whether bank deregulation increases the quantity of financial services, measured by bank branch density:

$$\begin{aligned} Log(BranchDensity_{c,t+1}) = & \beta_1 Dereg_{s,t} \times Minority_{c,t} + \beta_2 Minority_{c,t} + \\ & \gamma CountyControl_{c,t} + \alpha_{s,t} + \delta_c + \varepsilon_{c,t} \end{aligned} \tag{1}$$

where $BranchDensity_{c,t+1}$ is the number of branches divided by the number of residents in county $c$. $Dereg_{s,t}$ is the time-varying deregulation index at the state level. I reverse the bank competition index ranging from 0 to 4 to make my results easier to interpret. 0 is assigned to

fully regulated states, while 4 represents fully deregulated states. Therefore, a smaller index value implies more stringent regulation in my specification.[8] $Minority_{c,t}$ is the minority share of the population in county $c$. I also use a dummy variable $Minority\ Dummy_{c,t}$ indicating whether a county is in the top quartile of the distribution in terms of minority ratio as an alternative measure. Log population, unemployment rate, log personal income per capita, and the growth rate of personal income per capita are included as control variables $CountyControl_{c,t}$. I include state-year joint fixed effects $\alpha_{s,t}$ and county fixed effects $\delta_c$. I cluster standard errors at the state level to control serial correlation within states.[9]

Célerier and Matray (2019) find that bank branch density increases because of deregulation. Panel A of Table 3 shows the effect of bank deregulation is stronger in counties with a high minority ratio. The coefficient of the interaction term $Deregulation\ Index \times Minority\ Dummy$ implies that counties in the top quartile of the distribution in terms of minority ratio experienced a $(4 \times 3\% =)$ 12% increase in the bank branch density if a state is fully deregulated (Columns 3 and 4 of Table 3).

[Insert Table 3 about here]

I examine whether the effect of bank deregulation on bank branch density in minority communities translates into a reduced racial gap in access to bank accounts using the SIPP dataset. The following linear probability regression model presents my empirical design:[10]

$$BankAccount_{i,s,t+1} = \beta Dereg_{s,t} \times Minority_i + \gamma Minority_i + FEs + \alpha_{s,t} + \varepsilon_{i,s,t} \quad (2)$$

[8] The reversion of the bank deregulation index does not impact my main results. My economic conclusion still holds if I do not reverse the index.

[9] I find similar results by double clustering standard error at the state and year level.

[10] A logit model is not my first choice for two reasons. First, a nonlinear model is not suitable if I want to include plenty of fixed effects. Second, the efficiency gains of a nonlinear model compared with a linear model is marginal when I convert the raw coefficient estimations to interpretable marginal effects (Angrist and Pischke 2008). However, my results are robust if I use logit regression models.

where $BankAccount_{i,s,t+1}$ is a dummy variable set to 1 if a resident $i$ in state $s$, opens a bank checking or saving account one year after deregulation. $Dereg_{s,t}$ is the banking deregulation index. The indicator variable $Minority_i$ is equal to one if households are minorities. Joint state-time fixed effects $\alpha_{s,t}$ are included to capture local economic and political conditions that may impact the implementation of bank deregulation (Kroszner and Strahan 1999).[11] I include numerous fixed effects: income deciles, family structure (the number of family kids and the number of family adults), age, homeownership, education (elementary, high school, and college), marital status, and employment conditions. I also interact state-year joint fixed effects with income deciles fixed effects to absorb every unobserved heterogeneous time-varying local shock across different income groups. These fixed effects allow me to better control for confounding factors that affect the demand for the bank account. Standard errors are clustered by state to control correlation within states. I rely on comparing the racial gap in access to bank accounts between advantaged households and disadvantaged households with similar sociodemographic features and income in a treated state before and after bank deregulation relative to a group of control states that do not witness regulatory changes to identify my key coefficients $\beta$. Positive coefficients on the interaction terms between demographics and bank deregulation index imply that in states more open to branching, disadvantaged groups become more likely to open bank accounts compared with their privileged counterparts. Table 3 shows my regression results. The coefficient $\beta$ of the interaction term $Deregulation\ Index \times Minority$ and the coefficient $\gamma$ of the dummy variable *Minority* in Column (4) of Table 3 suggest that full deregulation can reduce the racial gap by 80% ($\beta \times 4 \div \gamma = 0.011 \times 4 \div 0.055 = 80\%$).

My result that the racial gap in holding bank accounts decreases when deregulation

[11] I cannot include county-level fixed effects since the SIPP only provides the location of households at the state level.

exogenously increases the supply of the quantity of banking services indicates that unbanked minorities may have difficulties in getting access to financial services and bank deregulation can remove these barriers and promote financial inclusion.

### 4.2 Effect of Deregulation on the Quality of Banking Services

In the previous subsection, I study the effect of deregulation on the quantity of banking services provided to minorities and financial inclusion. However, we know little about the impact of bank deregulation on the quality of banking products and services received by minorities. My research takes the first step in this dimension by studying the effect of deregulation on the quality of banking services in the consumer lending market, measured by the incidence of consumer complaints against banks about fraud, poor customer service, and misselling (Begley and Purnanandam 2021). The consumer complaints data are collected from the CFPB. I find that deregulation improves the quality of banking services, but only in the zip code with a high minority population share.

Panel B of Figure 2 shows that the incidence of mortgage-related complaints against banks is significantly higher in areas with high proportions of minority borrowers. Begley and Purnanandam (2021) argue that these complaints are meaningful because complaints will lead to higher fines imposed against banks charged by the CFPB. I estimate the following model to study the relationship between bank deregulation and the quality of banking services to consumers in the zip code with a high minority population share:

$$Log(complaints)_{z,t+1} = \beta Dereg_{s,t} \times Minority_z + \gamma_z + \alpha_{s,t} + \phi_{m,t} + \varepsilon_{z,t} \tag{3}$$

The dependent variable is the logarithm of the total number of complaints filed to the

CFPB in a given five-digit zip code $z$ one year after the deregulation shock. $Dereg_{s,t}$ is the time-varying deregulation index at the state level. $Minority_z$ is the minority share of the population in a zip code $z$ at the beginning of my sample period (2012-2021). I collect demographics data at the zip code level from the 2010 Census files. Zip code fixed effects $\gamma_z$ and state-year joint fixed effects $\alpha_{s,t}$ are included in my regressions to control for local economic conditions such as house prices and income conditions, and demographic characteristics like educational attainment that may impact the incidence of complaints. MSA-year joint fixed effects $\phi_{m,t}$ are included to control finer local economic and political conditions. Thus, my model captures variation in the outcome variable within the same MSA area but straddling two states with different bank deregulation levels, which enables me to study the relation between bank deregulation and the quality of banking services received by minority residents after ruling out the local economic conditions and demographic characteristics.

Panel A of Table 4 presents the results of the regression in the above equation (3). In Columns (1) to (3), the independent variable is the interaction term between the deregulation index and the minority ratio, while in Columns (4) to (6), I use the interaction term between the deregulation index and the minority dummy that indicates whether the minority population share is in the top quartile of the distribution. My results are robust if I use different sets of fixed effects. Column (6) shows that a one-unit increase in the bank deregulation index can reduce 5.4% complaints in areas with high proportions of minority borrowers compared with less deregulated neighboring areas in the same MSA.

[Insert Table 4 about here]

I conduct lots of robustness tests to show the validity of my results. I focus on mortgage-related complaints since home equity loans are important sources of startup capital. My

results are robust if I expand to cover other products such as checking accounts, student loans, and payday loans, suggesting that the effect of bank deregulation holds in the general banking services. As an alternative measure of the dependent variable, I re-estimate my results using the total number of complaints scaled by the total number of mortgages in a given zip code and find similar results. Data on the total number of mortgages come from the IRS Statistics of Income database. Finally, I drop frivolous complaints or complaints whose issues are the fault of the borrower by examining the resolution of complaints. I drop complaints that are closed without relief and find robust results. In general, my results show that deregulation can improve the quality of banking services received by residents in minority communities.

### 4.3 Effect of Deregulation on Discrimination

Theory predicts that bank deregulation can reduce discrimination because of intensified competition (Becker 1957). If banks discriminate against borrowers in a competitive market, they will lose market share since these borrowers can easily switch to other banks that do not discriminate against them. However, it is very hard to detect discriminatory treatment using the unexplained racial gap in outcome variables like interest rate as a measure of discrimination because of omitted variables.[12] To solve this problem, I develop a novel and direct measure of discriminatory treatment using the narrative information along with the complaints provided by the CFPB dataset based on the textual analysis method.[13] This measure allows me to directly test whether deregulation eliminates the complaints about unfair

[12]It is still debatable whether minority borrowers are discriminated in the mortgage lending market. Bartlett et al. (2022) find the unexplained racial gaps in interest rate after controlling for credit risks of borrowers and argue that banks discriminate. However, Bhutta and Hizmo (2021) conjecture that these racial gaps are offset by differences in discount points. Their results do not support minorities are discriminated against by banks.

[13]The narrative information is available since 2015.

treatment and discrimination against consumers. My results show that increased competition caused by the introduction of interstate banks reduces the incidence of complaints about discrimination, especially in areas with high proportions of minority consumers.

I measure borrowers' perceptions of being discriminated against using textual analysis of the narrative along with the complaints. The narrative including the words "discrimination", "unfair","partial","inequity","prejudice","injustice" or other related concepts or words is treated as complaints about discrimination.[14] An example of discrimination complaints is given in Table A2. After identifying complaints about discrimination, I use the same model as in equation (3), except that I replace the dependent variable Log(complaints) with Log(discrimination complaints) or **1**(discrimination complaints). Log(discrimination complaints) is the logarithm of the total number of complaints about discriminatory treatment filed to the CFPB in a given zip code. **1**(discrimination complaints) is a dummy variable indicating the incidence of discrimination complaints in a given zip code.

Panel B of Table 4 presents the results of discrimination. The dependent variable in Columns (1) to (4) is Log(discrimination complaints). I find that a one-unit increase in the bank deregulation index can reduce the discriminatory treatment by 2.8% (Column (4)) in minority communities, compared with less deregulated minority communities in the same MSA. As for the extensive margin, the probability of the incidence of discrimination complaints decreases by 4.0% in areas with high proportions of minority borrowers because of one step deregulation (Column (8)). The coefficient estimate is huge in terms of the mean value (5.3%) of the dependent variable. My results are robust if I drop frivolous complaints that are closed without relief. My results are broadly consistent with Becker's argument that

[14]Related derivative words for "discrimination" are the following:"discriminated","discriminates", "discriminate","discriminating" and other related words starting with "discrimin". Similarly, related words for "partial","inequity","prejudice","injustice" are also included to identify discriminatory treatment.

competition may lead to less discrimination.

# 5 Bank Deregulation and Startup Creation

## 5.1 Specification

I start my analysis by examining how the relative entrepreneurial choices of minorities and women change after deregulation compared with those of white and men. These staggered shocks are important to compare individual entrepreneurial choices before and after deregulation because I can better isolate the effect of these events from other confounding changes affecting economic conditions in a state. I test the effect of bank competition on entrepreneurial activities in two stages: the startup creation stage and the startup development stage.[15]

I begin my investigation of the effects of bank competition on entrepreneurship by fitting the following line probability econometric model:

$$\begin{aligned} Entrepreneur_{i,s,(t+1,t+3)} =& \beta_1 Dereg_{s,t} \times Minority_i + \beta_2 Dereg_{s,t} \times Gender_i + \\ & \beta_3 Dereg_{s,t} \times Minority_i \times Gender_i + \gamma_1 Minority_i + \\ & \gamma_2 Gender_i + \gamma_3 Minority_i \times Gender_i + FEs + \alpha_{s,t} + \varepsilon_{i,s,t} \end{aligned} \tag{4}$$

where $Entrepreneur_{i,s,(t+1,t+3)}$ is a dummy variable set to 1 if a resident $i$ in state $s$, opens a startup within three years after deregulation (startup creation period: year $t+1$ to year $t+3$).[16] $Dereg_{s,t}$ is the banking deregulation index. The indicator variable $Minority_i(Gender_i)$ is equal to one if households are minorities (women). Joint state-time fixed effects $\alpha_{s,t}$ are

[15] I build a cross-sectional sample based on the SIPP data since households are surveyed and tracked for less than four years. I do not have enough variations at the individual level to build a panel dataset.

[16] Parker (2018) reports that the median time needed by an entrepreneur to open a business is more than a year. For robustness, I change the time horizon of the startup creation period to one year or two years and find similar results.

included to capture local economic and political conditions that may impact entrepreneurship. I include numerous fixed effects as in equation (2): income deciles fixed effects, family structure, age, homeownership, education, marital status, and employment conditions.[17] I interact state-year joint fixed effects with income deciles fixed effects to absorb every unobserved heterogeneous time-varying local shock across different income groups. These fixed effects allow me to better control for confounding factors that affect entrepreneurial career choices. Standard errors are two-way clustered by state and year to control correlation within states and time.[18] I rely on comparing the entrepreneurial gaps between advantaged households and disadvantaged households with similar sociodemographic features and income in a treated state before and after bank deregulation relative to a group of control states that do not witness regulatory changes to identify my key coefficients $\beta$. Positive coefficients on the interaction terms between demographics and bank deregulation index imply that in states more open to branching, disadvantaged groups become more likely to be entrepreneurs compared with their privileged counterparts.

### 5.2 Startup Creation

Table 5 reports the results of my baseline regressions that show the positive, significant, and robust effect of bank deregulation on reducing the gender and racial gaps in entrepreneurship.

[Insert Table 5 about here]

In Column (1) of Table 5, I only include two indicators for gender and race of individuals and state-year joint fixed effects. Controlling for state-year joint fixed effects enables me to compare individuals in the *same* state-year. The coefficient on *Female* (*Minority*) is

[17] Unemployed individuals are less likely to start big-scale firms because their start-up capital is limited (Hombert et al. 2020).

[18] I find similar results by clustering standard error at the state level.

-0.022 (respectively, -0.014), significant at the 1% level, implying that women (respectively, minorities) are 44% (respectively, 28%) (the economic magnitude=-0.022 (respectively, -0.014)/0.050)[19] less likely to be entrepreneurs compared with men (respectively, whites). In Column (2), I introduce the interaction terms between the bank deregulation index and gender or race to study the effect of bank deregulation. The coefficients on the interaction terms are 0.3% and 0.4% for gender and race, respectively. Given that the mean value of transition into entrepreneurs is 5%, these coefficients indicate that each step of bank deregulation increases women's (respectively, minorities') likelihood to be entrepreneurs by 6% (respectively, 8%) relative to their privileged counterparts. The coefficients are also economically significant in terms of the gender and racial gaps: a one-unit increase in bank competition can reduce the gender (respectively, racial) gap by 12% (respectively, 20%).[20] In Column (3), I include the interaction term between *Female* and *Minority* and the triple interaction term $Dereg \times Female \times Minority$ to have a granular classification of individuals based on gender and race. However, I do not find that bank deregulation has an additional effect on minority women since I already control the impact on women and minorities separately.

In Columns (4) to (6), a large set of household-level fixed effects and state-year-income decile joint fixed effects are introduced to control demand for bank credit and confounding factors that may impact entrepreneurship. The results are stable and robust, suggesting that deregulation reduces gender and racial gaps even after controlling household-level characteristics. The introduction of these stringent fixed effects indicates that I compute entrepreneurial gaps by comparing individuals in the same income decile-state-year. In this case, every step of bank deregulation reduces the entrepreneurial gaps between individuals

[19] 0.050 is the mean value of my dependent variable, reported in the last row in Table 5.

[20] The reduced gender gap=the coefficient on $Dereg \times Female(\beta_2)$ / the coefficient on $Female(\gamma_2)$. Similarly, the reduced racial gap=the coefficient on $Dereg \times Minority(\beta_1)$ / the coefficient on $Minority(\gamma_1)$.

in the same income-decile-state-year relative to the entrepreneurial gaps between individuals with the same sociodemographics and income level in the same year but residing in a state that does not experience deregulation.

Columns (7) and (8) introduce MSA-year-income decile fixed effects and drop observations with unavailable MSA information.[21] MSAs are integrated geographical regions of relatively high population density, including at least one core area and adjacent territory that has economic and social connections with the core. I include MSA-year-income decile joint fixed effects to control time-varying unobservable factors across MSAs: for example, the local labor market condition, which is always intertwined with entrepreneurship. MSAs are thought to represent the local labor market because of close commuting ties within MSAs. After including these fixed effects, I identify the effect of bank deregulation by comparing individuals residing in the same MSA but straddling two different states. My results imply that within the same MSA, entrepreneurial gaps in a deregulated state are smaller compared with gaps in an adjacent state but in the same MSA. These results indicate that my results are robust even when I control for fine local economic conditions.

Figure 3 shows the dynamics of the reduced gender and racial gap in entrepreneurship around interstate bank deregulation. The specification used in these two figures is the same as that in equation (4), except that I replace the bank deregulation index with a bunch of dummy variables indicating years relative to bank deregulation and estimate the effect on gender and racial gaps separately. The gender and racial gaps are narrowed after deregulation and do not exhibit a discernible pattern before the deregulation year, suggesting that I can verify the parallel trend assumption.

[Insert Figure 3 about here]

[21] Starting from the 2004 wave, the MSA information is not reported in the SIPP dataset.

I decompose the sample into two subsamples based on six sociodemographic characteristics and estimate the heterogeneous effect of bank competition on racial and gender gaps. My results are significant in two subsamples, except for the unemployed subsample, whose small sample size (less than 5% of the whole sample) restrains me from finding significant results. Testing the significance level of difference between two coefficients estimated from two subsamples, I find that coefficients are quite similar across different subsamples. These heterogeneity analyses suggest that particular components of my sample do not drive my findings. For instance, I find similar effects for renters versus homeowners, implying that the house prices appreciation channel discovered by Favara and Imbs (2015) cannot account for the whole effect of bank competition on entrepreneurial gaps since renters cannot enjoy the housing price appreciation brought by bank deregulation. The only exception is that I find that the impact of bank competition is significantly stronger for minorities with low income. One possible reason why poor minorities benefit more from the relaxation of credit constraints than wealthy minorities is that they are more likely to be financially constrained and lack startup capital to be entrepreneurs.

My results are robust if I use different specifications and control variables: (1) use different fixed effects: I can include state-year-industry jointed fixed effects to control unobserved state-industry performance such as local natural resources and industry shocks (for example, technological innovation). I can also include family fixed effects because family characteristics and resources matter for entrepreneurship (Naaraayanan 2019; Zandberg 2021). (2) I drop the financial crisis period. (3) Run placebo tests by randomly specifying the deregulation years other than the actual years but keeping the whole distribution of deregulation years unchanged. I find that my results are not driven by unobservable factors that coincide with my deregulation events. (4) Weighted least squares (WLS) regressions are used because

poor people are oversampled in the SIPP data.

Finally, I try to mitigate selection bias and reverse causality concerns. I do not find evidence showing that women or minorities are more likely to live in and move to states with high bank competition than men and whites to get access to finance. Another concern is that staggered deregulation timing is not exogenous and is caused by omitted factors that drive or correlate with both bank deregulation and entrepreneurial gaps. For example, if states are worried about gender or racial inequality and lift the restrictions on interstate branching to improve minorities' and women's access to credit, my results may be driven by a mechanical decrease in entrepreneurial gaps after deregulation. The alternative scenario is that states might relax the regulation when the economic condition is good and needs financial support. In this case, the underlying economic conditions may impact bank deregulation and entrepreneurial gaps simultaneously. I follow Kroszner and Strahan (1999) and predict deregulation timing using different factors that might impact or correlate with entrepreneurial gaps to solve this concern. I do not find evidence that the timing of bank deregulation is correlated with the gender or racial gap. In Column (1) of Table A3, I regress the bank deregulation index on the female and minority ratio at the state level. The results do not support that the fractions of women or minorities are correlated with bank competition level. In Column (2), I include entrepreneurial activities and entrepreneurial gaps and still do not find any significant relationships. It seems that I can rule out the concern that states have motives to deregulate to reduce the gap when the gender or racial imbalance is high. My insignificant results are not surprising since a large part of bank deregulatory changes is driven by the Dodd-Frank Act, whose time of implementation is totally determined by the federal government as a response to financial crisis and thus beyond the control of a single state government.

### 5.3 Startup Capital

Access to financial services can help entrepreneurs use different sources of financing: (1) business loans, (2) personal loans, including secured loans (home equity loans and vehicle loans), and unsecured loans (credit card debt and student debt). One direct method to examine which financing channel indeed supports new entrepreneurship creation is to investigate changes in all kinds of debt after the individual transition into an entrepreneur. For instance, if business loans are indeed efficient sources of startup capital, a new business owner will support her business by borrowing money from banks and increasing her business debt. If not, it will be hard to argue for the presence of a business loan channel. My dataset enables me to observe the behavior pattern of new entrepreneurs in terms of variations in all kinds of debt.

To explicitly test the underlying channel, I run the following regressions:

$$\begin{aligned}\triangle log(1+Debt_{i,s,t+1}) =& \beta_1 Minority_i \times New\ Entreprenuer_{i,t} + \\ & \beta_2 Dereg_{s,t} \times Minority_i \times New\ Entreprenuer_{i,t} + \gamma_1 New\ Entreprenuer_{i,t} + \\ & \gamma_2 Minority_i + \gamma_3 Dereg_{s,t} \times Minority_i + FEs + \alpha_{s,t} + \varepsilon_{i,s,t}\end{aligned} \tag{5}$$

$$\begin{aligned}\triangle log(1+Debt_{i,s,t+1}) =& \beta_1 Female_i \times New\ Entreprenuer_{i,t} + \\ & \beta_2 Dereg_{s,t} \times Female_i \times New\ Entreprenuer_{i,t} + \gamma_1 New\ Entreprenuer_{i,t} + \\ & \gamma_2 Female_i + \gamma_3 Dereg_{s,t} \times Female_i + FEs + \alpha_{s,t} + \varepsilon_{i,s,t}\end{aligned} \tag{6}$$

where the dependent variable is the first difference in different kinds of debt between year

$t$ and year $t$+1 for individual $i$ in state $s$. My key independent variable *New Entrepreneur* is equal to one if an individual transition into an entrepreneur at year $t$. I control the same set of fixed effects as in equation (4). In equation (5), $\beta_1$ estimates the racial gap in the initial debt used as startup capital, while $\beta_2$ tests whether the gap can be reduced by bank deregulation. In equation (6), I use the same specification but focus on the gender gap. I use four different kinds of debt borrowed from banks in Table 6: secured business debt (Column (1)), mortgage debt (Column (2)), vehicle debt (Column (3)), and credit card debt (Column (4)).

Table 6 presents the main coefficients of $\beta$ from the regressions. Panel A reports the effect of bank deregulation on the racial gap in debt changes around the transition into entrepreneurship. Secured business debt owed by minority entrepreneurs is 66% less than the business debt owed by white entrepreneurs, indicating that this gap is not trivial in Column (1). The racial gap in business debt between white-lead and minority-lead firms is around \$158,000 (of 2010 \$).[22] A one-unit increase in bank deregulation reduces the racial gap in business debt by 16.7%. My results are broadly consistent with Blanchflower, Levine, and Zimmerman (2003), who document the existence of racial discrimination in the business lending market, and the finding of Chen, Lin, and Sun (2021) that argue bank deregulation can reduce racial disparity in the small business lending market because of intensified competition.

[Insert Table 6 about here]

As for personal debt, I find that only home equity loans matter for entrepreneurship,

[22]This amount is smaller than the unconditional racial gap in the requested business loan amount (\$275,100 of 2010 \$) documented by Blanchflower, Levine, and Zimmerman (2003) using the Survey of Small Business Finances (SSBF) dataset. One reason that accounts for the difference might be firms surveyed by SSBF are older (the average firm age was 13.4 years old in 1993, see Table 1 in Blanchflower, Levine, and Zimmerman (2003)) and more mature than the newly founded firms in my sample. The second reason is that their business debt includes both secured and unsecured business debt.

and bank deregulation can reduce the financing gap in home equity loans. Compared with white entrepreneurs, minority entrepreneurs rarely rely on mortgage debt to finance their business, even if I control many sociodemographic fixed effects. One step bank deregulation can narrow the gap in mortgage debt by around 30%. In the same spirit, Buchak and Jørring (2021) indicate that bank deregulation can reduce racial discrimination in the mortgage lending market because of intensified competition. It is well established that home equity helps homeowners support their businesses (Adelino, Schoar, and Severino 2015; Corradin and Popov 2015; Schmalz, Sraer, and Thesmar 2017). Herkenhoff, Phillips, and Cohen-Cole (2021) find that self-employment without employees and employer business ownership increase with personal credit limits and credit scores. My findings complement their results by showing that bank deregulation can reduce the racial gap in entrepreneurship because of equal access to the mortgage lending market. I also test the effect of bank deregulation on other kinds of debt in Columns (3) and (4). My paper does not find the existence of the racial gap in unsecured consumer credit. One potential reason is that black entrepreneurs are most likely to rely on personal credit cards to support their businesses because they have fewer alternative financing channels.[23] My evidence does not support bank deregulation impacts the usage of credit card debt since its interest rate is exceptionally high compared with other funding sources. Once bank deregulation guarantees equality in other financing markets, such as the mortgage lending market, the expensive credit card might be abandoned as a channel of entrepreneurial financing. Overall, my results show that bank deregulation can reduce financing gaps during the transition into entrepreneurship. Minority entrepreneurs can raise more money to fund their businesses in deregulated states, but this does not necessarily mean they increase their leverage and risks without constraint since I do not find

[23]See 2014 Annual Survey of Entrepreneur for a detailed description.

results in unsecured debt.

Panel B shows the coefficients in equation (6). Generally, I find a similar pattern to racial gaps pictured in Panel A: female entrepreneurs can also benefit from bank deregulation to finance their business using secured business debt and home equity loans. The insignificant results in the credit card debt show that my results are centered around the transition into entrepreneurs but are not driven by the liquidity shocks or relaxation of financial constraints. If some omitted variables drive both entrepreneurial career choice and financing capacity, I would observe the increase in all kinds of debt instead of just the accumulation of business debt and mortgage debt.

Finally, I restrict my sample to entrepreneurs and test whether bank deregulation can reduce the entrepreneurial gaps after being entrepreneurs. Panel C shows that conditional on being entrepreneurs, minority entrepreneurs and female entrepreneurs are still less likely to get access to secured business debt or have less business debt. Bank deregulation can reduce these financing gaps.

### 5.4 Discrimination (Bias) Channel

A consistent finding across the results depicted in Table 6 is that minorities and women have less access to finance even though I control granular fixed effects, and bank deregulation can mitigate this inequality problem. One likely channel explaining the results is that black and female entrepreneurs face discrimination or bias in the traditional financing market. To explore the role of prejudice or bias in the financing market, I test whether bank deregulation differentially affects female and black entrepreneurs in states with high gender imbalance or a discrimination history.

Following Charles and Guryan (2008), Chatterji and Seamans (2012), and Levine, Ru-

binstein, and Levkov (2014), I use several state-level racial discrimination indexes: three state-level historical racial discrimination dummy variables and an intermarriage racial bias index. I test this hypothesis by adding a triple interaction term $Dereg_{s,t} \times Black_i \times High\ Discrimination_{s,t}$ in equation (4). The *High Discrimination* dummy is equal to one under the following four conditions: (1) if a state is a former slave state one year before the Civil War; (2) a state did not repeal anti-miscegenation law until after the U.S. Supreme Court made the decision in Loving v.Virginia in 1967; (3) the racial bias index based on the interracial marriage rate, is above the median value; (4) a state does not have fair housing law until the Fair Housing Act of 1968 is passed by the federal government. Consistent with Becker's argument (Becker 1957), my finding is that bank competition has a larger impact on reducing financial imperfections and improving the ability of blacks to access banking services in states with a greater taste for discrimination. Table 7 shows that in states with historically bad taste against black entrepreneurs, bank deregulation can reduce the racial gap by around 10% in terms of the sample mean, compared with states without social norms of historical discrimination. However, I find that this effect is not significant in states with less taste for discrimination since the coefficient of the interaction term $Dereg_{s,t} \times Black_i$ is not significant. The alternative hypothesis is that reduced gaps are driven by concurrent trends in culture or social norms. If so, inclusive states that are more likely to implement bank deregulation should witness a larger reduction in the gap. My heterogeneous analysis may help to rule out this hypothesis.

[Insert Table 7 about here]

Similarly, I construct four state-level gender imbalance indexes following Duchin, Simutin, and Sosyura (2021) using the SIPP dataset. *Income Imbalance* is constructed as the state-level average income difference between employed men and employed women in 1990 before

the bank deregulation. In the same way, I build *Earning Imbalance*, *Education Imbalance*, and *Employment Imbalance* using the gender gap in earnings, the number of years of received education, and the labor participation ratio. Duchin, Simutin, and Sosyura (2021) find that environmental and educational factors influence CEOs' bias on gender issues. CEOs with high exposure to gender inequality are less likely to allocate capital or resources to female division managers. In the same vein, I argue that bank deregulation is more effective in the community where bankers have a strong bias against female entrepreneurs. To test whether the bias channel works or not, I add an interaction term $Dereg_{s,t} \times Gender_i \times High\ Bias_{s,t}$ in the regressions. The variable *High Bias* is equal to one if the corresponding imbalance measure is above the median value. In Panel B of Table 7, I find that the effect of bank competition is positively correlated with gender bias. I argue that bank competition can help female entrepreneurs reduce bias against them in the financial market.

### 5.5 Heterogeneity Analysis by External Financing Dependence

I examine entrepreneurial entry rates by the external financing dependence of starting a business. If bank deregulation indeed relaxes financial constraints for minorities and women, I will witness that the increase in entrepreneurial transition is plausibly highest in industries relying heavily on external financing. In industries with low external financing dependence, the effect of bank deregulation might be moderate since the barriers to entry to these industries are small. Motivated by this theoretical prediction, I investigate whether the bank deregulation reform has a stronger effect on entrepreneurial gaps in high external financial dependence industries than in low external financial dependence industries.

Table 8 reports the results of the heterogeneity analysis based on external financing dependence. Industries are categorized as *High Dependence* based on the fraction of capital

expenditure funded by external financing. I take advantage of the procedures used in Cetorelli and Strahan (2006) and construct the external financing dependence as the fraction of capital expenditure funded by external financing. Negative values mean that firms do not rely on external financing and have free cash flow, while positive values suggest that firms rely on issuing equity or debt to support investment. This measure is based on the Compustat database. The two-digit SIC classification in Compustat is matched to the industry classification used in the SIPP. *High Dependence* is equal to one if industries have positive external financing dependence and zero otherwise. The estimates imply that the increase in female and minority business formation rates is positively correlated with external financing dependence. Broadly consistent with the empirical finding in Bertrand, Schoar, and Thesmar (2007), who conjecture that bank deregulation triggers more entry in the more bank-dependent sectors in France, my results suggest that female and minority entrepreneurs have improved access to finance, which enables them to be entrepreneurs in capital-intensive industries.

[Insert Table 8 about here]

### 5.6 Business Quality

Thus far, my results present a robust link between bank deregulation and female or minority entrepreneurship but say less about the quality of business formation. I next examine the characteristics of businesses opened by these individuals. Do they found small, transitory ventures that have a negligible impact on economic development? To further investigate the quality of these new ventures, I decompose the entrepreneurship variable into two mutually exclusive variables: a dummy variable equal to one if the new venture hires no less than 25 employees and an indicator variable equal to one if the new business hires fewer than

25 employees. The cutoff of big/small firms is limited by data constraints. In Column (1) of Table 9, I first document that women and minorities are less likely to be owners of big firms. The interaction terms between deregulation and female (minority) suggest that bank deregulation helps female entrepreneurs and minority entrepreneurs found big firms, indicating that bank deregulation can remove entry barriers without worsening the quality of new firms. Column (2) shows that bank deregulation has a weaker effect on small business formation. In Columns (3) and (4), I examine the profit amount. In that case, I define a profitable firm dummy as one with a positive amount of profit and define an unprofitable firm dummy as one if this firm cannot earn a positive profit. I find that bank deregulation increases profitable firms, but makes no changes in unprofitable firm formation. Thus, the main finding from Table 9 indicates these new ventures started by female and minority entrepreneurs are not trivial.

[Insert Table 9 about here]

## 6 Bank Deregulation and Startup Development: Conditional on Starting Businesses

Beyond firm profit and size at firm creation, bank deregulation may also affect subsequent firm performance. It is well documented that black-owned and women-owned businesses are less successful than white-owned and men-owned businesses (Fairlie and Robb 2007, 2009). This section tests whether removing barriers to the financial market can impact the gender and racial gap in the firm's subsequent performance. I re-estimate equation (4) but replace the outcome variable indicating whether individuals transition into entrepreneurs with the firm performance variables to test this hypothesis. I focus on individuals who were already

entrepreneurs when they entered the sample.

$$\begin{aligned} Firm\ Performance_{i,s,\ t+1} =& \beta_1 Dereg_{s,t} \times Minority_i + \beta_2 Dereg_{s,t} \times Gender_i + \\ & \beta_3 Dereg_{s,t} \times Gender_i \times Minority_i + \gamma_1 Minority_i + \\ & \gamma_2 Gender_i + \gamma_3 Gender_i \times Minority_i + FEs + \alpha_{s,t} + \varepsilon_{i,s,t} \end{aligned} \tag{7}$$

I use four variables as measures for firm performance: (1) the amount of firm profit; (2) an indicator variable equal to one if the firm is profitable and zero otherwise; (3) a dummy variable indicating the number of employees in a firm. It is equal to one if the number is no less than 25; (4) *Survive* is a dummy equal to one if the firm is still alive.

Furthermore, I link bank deregulation with economic fluctuation to check the effect of bank deregulation across business cycles by interacting the bank deregulation index with a financial crisis dummy that is equal to one for the 2008 financial crisis and zero otherwise. Iyer et al. (2014) emphasize the importance of access to finance for small firms during the financial crisis. Duygan-Bump, Levkov, and Montoriol-Garriga (2015) show that small firms are more likely to cut employment when they were financially constrained in 2008. Chodorow-Reich (2014) find that losing access to finance leads to between one-third and one-half decrease in employment at small and medium firms from the perspective of financial frictions deriving from asymmetric information. Motivated by these empirical findings, my prediction is that bank deregulation can help minorities and women, especially during the financial crisis, by reducing financial frictions. For instance, their small, financially constrained firms may incur higher borrowing costs, and their financing requests are more likely to be denied during the financial crisis. It is also more challenging for them to switch lenders since they suffer from information asymmetry and lack stable relationships with banks during the crisis. Bank deregulation may help them eliminate this dilemma since competition can improve efficiency

in the banking system and reduce borrowing costs (Rice and Strahan 2010). Table 10 summarizes my results.

[Insert Table 10 about here]

In Table 10, I confirm the existence of gender and racial gaps in firm performance, consistent with prior studies. This gap is stronger during the financial crisis since female and minority firms are more vulnerable. In addition, gender and racial gaps in firm size are narrowed by bank deregulation. But I do not find that deregulation has a significant effect on the survival of firms during regular times when credit supplies are relatively abundant and financial frictions are seemingly low. However, during the crisis period when the credit is in short supply, and the interest rate jumps up tremendously, I find that female and minority firms are more likely to survive since they can access finance in fully deregulated states. Overall, my results underscore the importance of bank deregulation in reducing firm performance gaps. This effect is intertwined with the business cycle. When the economy performs well, bank deregulation can reduce the gender and racial gaps in firm performance, even though the effect is modest. In contrast, bank deregulation can significantly prevent the economic crisis from widening gaps.

# 7 Bank Deregulation and Inequality in Business Equity Accumulation

In the previous sections, I document that bank deregulation can reduce gaps in business formation without worsening the quality of entrepreneurship and subsequent firm performance. The natural question is, what are the consequences of the narrowed gender and racial gaps on well-being? Given that bank deregulation removes the barrier to entry for

financially constrained but talented female and minority entrepreneurs, will the reduced gap in entrepreneurial career choices impact inequality in wealth or income between advantaged groups and disadvantaged groups? Economic theory shows that financial friction leads to persistent disparities between rich people and poor people by depriving poor people of entrepreneurial opportunities (Banerjee and Newman 1993). In the same vein, poor minorities and women are more likely to be financially constrained and thus less likely to be entrepreneurs, further widening the wealth gaps. Therefore, in this section, I investigate the impact of reduced entrepreneurial gaps on wealth inequality between advantaged and disadvantaged groups.

First, I examine the balance sheets of different groups in detail. First, on average, I find that men's net worth (mean value=$183,115) is higher than women's net worth (mean value=$114,503). This gap is larger if I look at the racial disparity. On average, the net worth owned by minorities (mean value=$82,029) is less than one-half of whites' net worth (mean value=$189,324).[24]

Second, I find that keeping everything else unchanged, the gender (racial) gap in business equity accounts for 49% (26%) of the gender (racial) gaps in wealth accumulation, indicating the economic significance of business equity gaps.[25] In other words, if I can close the gender or racial gaps in business equity, I can effectively mitigate 49% of the gender gap in net wealth or 26% of the racial gap in net wealth.

[Insert Table 11 about here]

To investigate the consequence of entrepreneurship on inequality, I do not directly regress net worth on bank deregulation because of omitted variables concern. Besides reducing entrepreneurial gaps, bank deregulation can affect net worth through different channels (see

[24]Net worth is defined as total assets minus total debt.

[25]Business equity is equal to business assets minus business debt.

Célerier and Matray 2019). I focus on the business equity accumulation channel to shut down other channels through which bank deregulation can affect inequality in net worth. Table 11 explores the impact of bank deregulation on the business equity gaps between advantaged entrepreneurs and disadvantaged entrepreneurs. In Column (3), I find that entrepreneurs have seven times larger business equity compared with non-entrepreneurs. Advantaged entrepreneurs have one-time larger business equity than disadvantaged entrepreneurs. The gender or racial gap can be reduced by around 6% or 11% if a state relaxes its bank regulation by one step.[26] A simple back of envelope calculation shows that the effect of the one-step relaxation of bank deregulation on entrepreneurial gaps translates into a 3% decrease in wealth inequality.[27] My estimation can be used as a lower bound since it is conditional on being an entrepreneur and ignores the changes in wealth inequality caused by reduced propensity gap in being an entrepreneur. Overall, my results show that bank deregulation can reduce wealth inequality by giving everyone equal access to finance and equal opportunity to be entrepreneurs. Although lots of papers try to link bank competition with inequality (Beck, Levine, and Levkov 2010), my paper is the first paper documenting the effect of entrepreneurship on reducing inequality.

[26]The reduced gender gap in business equity=0.094 (the coefficient of *Deregulation index*$\times$*Entrepreneur*$\times$ *Female*) /1.644 (the coefficient of *Entrepreneur* $\times$ *Female*)=6%. The reduced racial gap in business equity= 0.112 (the coefficient of *Deregulation index* $\times$ *Entrepreneur* $\times$ *Minority*) /1.032 (the coefficient of *Entrepreneur* $\times$ *Minority*)=11%.

[27]The reduced net wealth gender gap=the fraction of business equity gap in the net worth gap (49%) $\times$ The reduced gender gap in business equity because of bank deregulation (6%)=3%

# 8 Bank Deregulation and Racial Disparities in Access to PPP Loans

It is well documented that minority business owners are discriminated against by banks and less likely to get access to PPP loans even though PPP loans are fully guaranteed by the government, which eliminates the default risks faced by banks (Chernenko and Scharfstein 2021; Erel and Liebersohn 2021; Howell et al. 2021). This disparity reduces the efficiency of PPP loans since these businesses owned by minorities are most in need of PPP loans. Compared with their white counterparts, minority businesses are more likely to be financially fragile before the pandemic and concentrated in industries most hit by the COVID-19. In this section, I test whether bank competition can reduce this disparity in the distribution of PPP loans. Using the PPP loans dataset from the SBA, I find that the predetermined bank deregulation level before the COVID-19 may impact the unequal lending pattern and thus influence the efficiency of the PPP program. In more competitive states, the racial gaps in the probability of getting access to PPP loans and the amount of PPP loans are smaller compared with states whose financial market is less competitive and more regulated.

I use the following specification to test my hypothesis:

$$Y_{z,c,t} = \beta Dereg_{s,t-1} \times MinorityRatio_{z,c,t-1} + \gamma MinorityRatio_{z,c,t-1} + \delta Control_{z,c,t-1} + \alpha_c + \varepsilon_{z,c,t} \tag{8}$$

where $Y_{z,c,t}$ is the take-up rate of PPP loans in the zip code $z$ and county $c$. Take-up rate is the total number of PPP loans in a zip code $z$ divided by the total number of small businesses with less than 500 employees. I also use the total loan amounts divided by the total number of jobs supported by these loans in a zip code as another outcome variable.

$MinorityRatio_{z,c,t-1}$ is the proportion of the minority population in zip code $z$ one year before the COVID-19. $Dereg_{s,t-1}$ is the predetermined bank deregulation index before the COVID-19 at the state level $s$. I also control population and its interaction term with the deregulation index as control variables. I include county fixed effects $\alpha_c$ to absorb local economic conditions that may impact small business employment and revenue. I combine the 2020 PPP loans data with the 2019 Zip code Business Patterns dataset (ZBP)[28]

Table 12 examines the relationship between bank competition and the racial gaps in access to PPP loans. In Columns (1) and (2), I find that business owners in minority communities are less likely to get PPP loans and the loan amounts per supported job they get are smaller. These racial gaps are reduced by bank competition. A robustness (unreported) test finds that this effect is not driven by the demand side of PPP loans. I do not find evidence supporting that bank competition impacts the racial gap in the demand for PPP loans. In Column (3), I use data at the PPP loan level and find that in more competitive states, black owners are more likely to get PPP loans from banks instead of from Fintech companies after controlling for numerous fixed effects. The dependent variable in Column (3) is a dummy variable indicating whether a borrower gets loans from banks. It is equal to zero if a borrower gets loans from Fintech companies. Howell et al. (2021) find that black business owners are more inclined to apply for PPP loans from Fintech companies that do not discriminate against them. Overall, my results suggest that bank competition can reduce the racial gaps in getting access to PPP loans.

[Insert Table 12 about here]

[28]I focus on loans made before 2021 because the PPP program begins to explicitly prioritize lending to businesses owned by minorities in 2021.

# 9 Conclusion

In my paper, I investigate whether access to finance reduces gender and racial gaps in entrepreneurship.

To achieve this goal, I take advantage of two important acts deciding the progress of interstate bank deregulation in the United States as exogenous shocks on the supply of credit directed to disadvantaged entrepreneurs. I document that after bank deregulation, women and minorities are more likely to be entrepreneurs, and the entrepreneurial gender and racial gaps narrow. Consistent with the hypothesis that bank deregulation can remove the barrier to entry for financially constrained individuals, I find that this effect is more pronounced in industries that highly depend on external financing and in economies with bad tastes against women or minorities. Turning to the mechanisms behind my main results, I argue that the direct channel is that bank deregulation reduces the gaps in raising initial capital to support businesses. I also evaluate the quality of these new ventures and find that bank deregulation does not worsen the quality of new businesses.

I also develop a novel measure of discrimination and find that deregulation can reduce complaints about discrimination against banks. This measure may be useful for CFPB as a tool to better monitor the discriminatory treatment of banks. This method may be applied to other settings since unstructured textual data are widespread now. For example, we can use reviews from consumers (such as the complaints filed to the Better Business Bureau (BBB)), employees (Glassdoor provides company reviews from current and former employees), and other stakeholders to detect discriminatory or unfair treatment.

I then show that local bank competition can mitigate the racial gaps in getting access to bank loans. My results indicate that the federal government can take the bank deregulation

level into consideration to improve the distributional efficiency of the PPP program.

Overall, my results suggest that equal access to finance generates equitable economic growth.

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## Figures and Tables

**Figure 1.** Number of FDIC-insured commercial bank branches in the U.S. 1994-2021

This figure shows the total number of insured noninterstate and interstate branches in the U.S from 1994 to 2021. Data are from the FDIC.

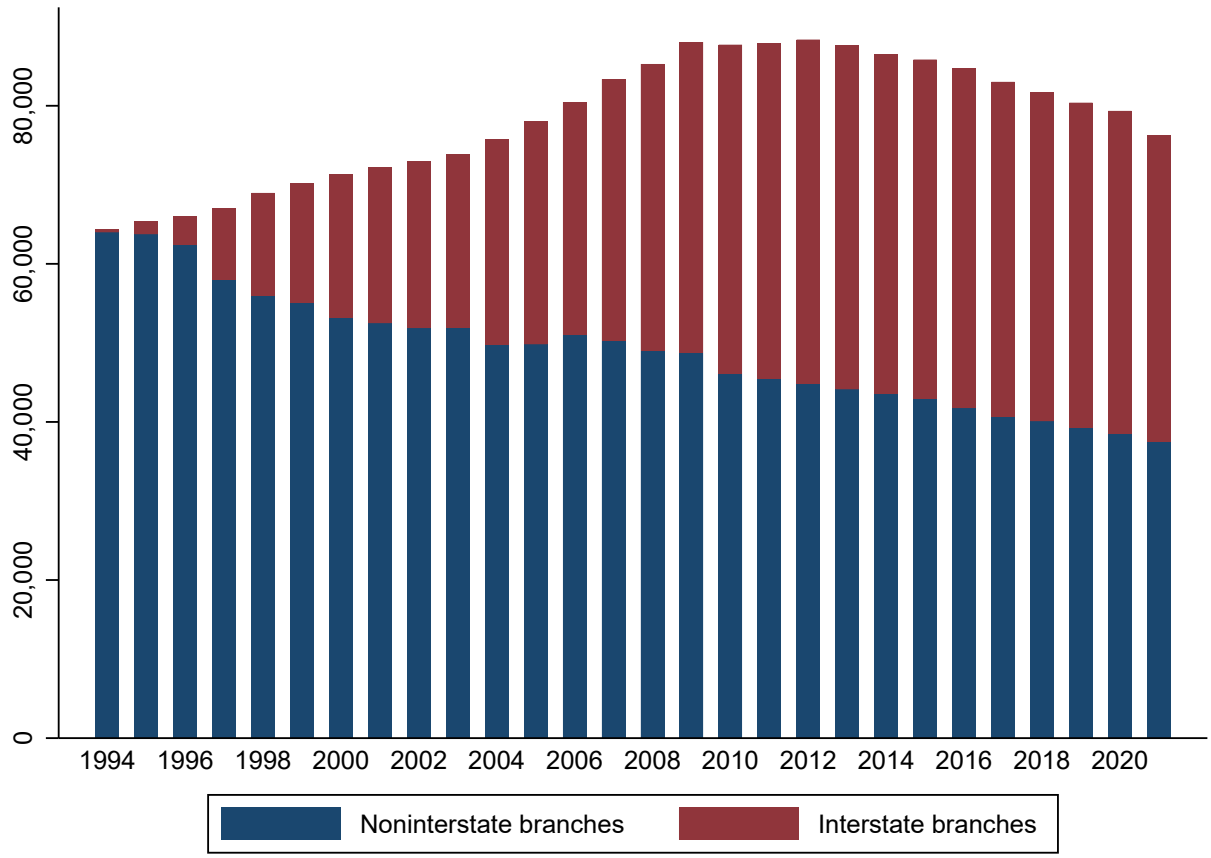
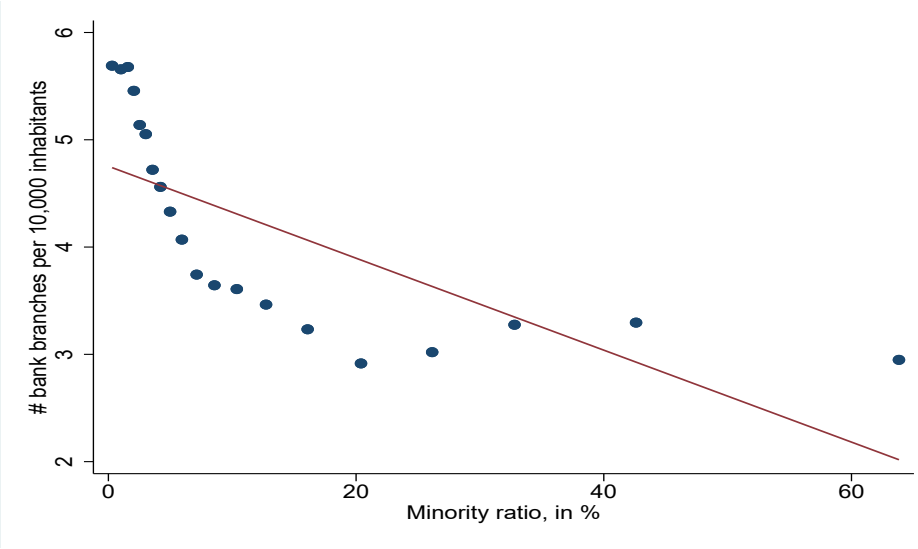
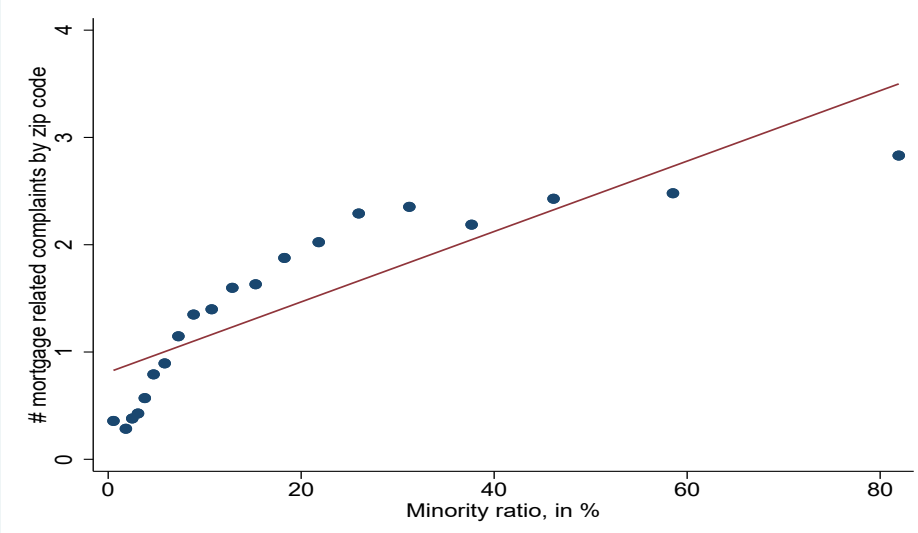


**Figure 2.** The quantity and quality of banking service in minority communities

This figure shows the binned scatter plot of the quantity (Figure 2(a)) and quality (Figure 2(b)) of banking service and minority ratio. The quantity of banking service is measured by the number of bank branches per 10,000 inhabitants at the county level. The quality of banking service is measured by the number of mortgage related complaints filed to the CFPB at the zip code level. The fitted linear regression is presented by the red line. Data are from the Census, CFPB, and FDIC.



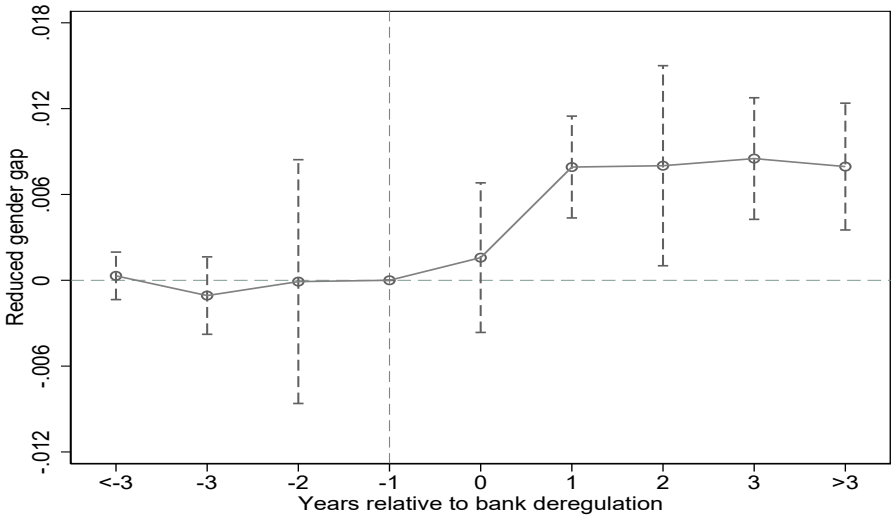

(a) Minority ratio and bank branch density



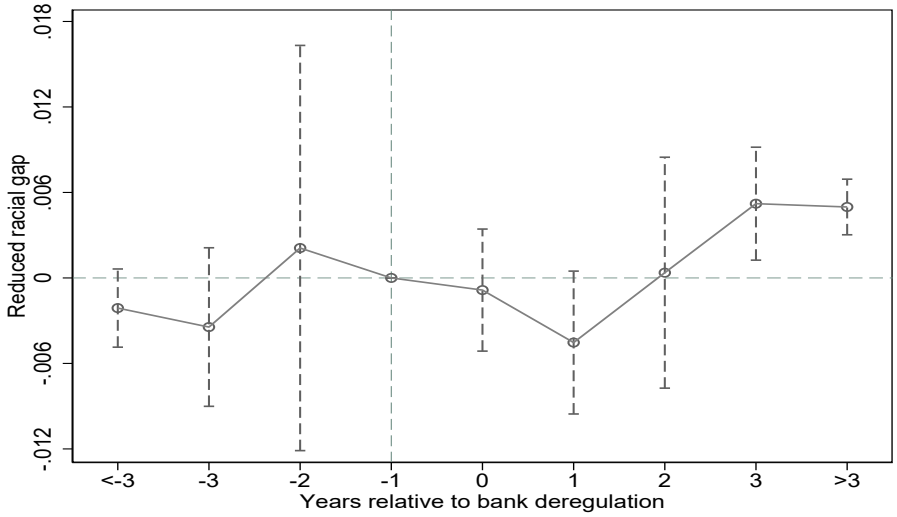

(b) Minority ratio and banking service quality

**Figure 3.** Impact of banking deregulation on entrepreneurial gaps

This figure shows the decrease in the entrepreneurial gender and racial gaps around the implementation of bank deregulation from 1990-2018. I use the same specification as that in equation (4) in section 5.1, except that I replace the bank deregulation index with a set of indicator *variables* $\sum_{t=-3}^{3} D(t)$, where $D(t)$ is equal to one exactly $t$ years before or after the deregulation year. I plot the dynamics of the reduced gender and racial gaps and 95% confidence intervals for $t$ =<-3, -3,. . . ,3, >3. The reference year is $t = -1$ (one year before the deregulation year).




(a) Gender gap




(b) Racial gap

**Table 1.** State interstate branching laws: 1994-2021

This table lists the bank deregulation index, the effective date of the underlying regulatory changes, the status of the following four provisions: minimum age requirement of target bank or branch in the interstate acquisition, permission of de novo interstate banking, allowance of interstate banking by acquiring a single branch or part of a bank, statewide deposit share cap on interstate acquisition and the underlying bank regulation laws. The bank deregulation index is set to zero for states with the most lenient requirement for entry of out-of-state banks. One is added to the index when states add any of the four requirements based on the four provisions I discussed above. In specific, one is added to the index under the following four conditions: (1) if a minimum age requirement of three or more years on the target institution for acquisitions is imposed by a state; (2) if de novo interstate branching is not allowed in a state; (3) Interstate branching through acquiring a single branch or part of a bank is not permitted in a state; (4) the deposit market share cap is less than 30%. The range of this index is from zero to four. The last column shows that the determinant acts that influence regulatory changes and the variation of the index. Data on state interstate branching laws from 1994 to 2005 come from Johnson and Rice (2008). The index from 2005 to 2021 is constructed based on the regulatory changes collected from the Westlaw platform.

| State | Bank Deregulation Index | Effective Date | Minimum Age Requirement of Institution for Acquisitions | Allowance of de novo Interstate Branching | Allow Interstate Branching by Acquiring a Single Branch or Part of an Institution | Statewide Deposit Share Cap on Acquisitions | Acts |
|---|---|---|---|---|---|---|---|
| Alabama | 1 | 5/31/2007 | 5 years | Yes | Yes | 30% | Riegle-Neal |
| Alabama | 3 | 5/31/1997 | 5 years | No | No | 30% | Riegle-Neal |
| Alaska | 1 | 7/21/2010 | 3 years | Yes | Yes | 50% | Dodd-Frank |
| Alaska | 2 | 1/1/1994 | 3 years | No | Yes | 50% | Riegle-Neal |
| Arizona | 1 | 7/21/2010 | 5 years | Yes | Yes | 30% | Dodd-Frank |
| Arizona | 2 | 8/31/2001 | 5 years | No | Yes | 30% | Riegle-Neal |
| Arizona | 3 | 9/1/1996 | 5 years | No | No | 30% | Riegle-Neal |
| Arkansas | 2 | 3/30/2011 | 5 years | Yes | Yes | 25% | Riegle-Neal |
| Arkansas | 3 | 7/21/2010 | 5 years | Yes | No | 25% | Dodd-Frank |
| Arkansas | 4 | 6/1/1997 | 5 years | No | No | 25% | Riegle-Neal |
| California | 2 | 1/1/2012 | 5 years | Yes | No | 30% | Riegle-Neal |
| California | 2 | 7/21/2010 | 5 years | Yes | No | 30% | Dodd-Frank |

*Continued on next page*

**Table 1** – *Continued from previous page*

| State | Bank Deregulation Index | Effective Date | Minimum Age Requirement of Institution for Acquisitions | Allowance of de novo Interstate Branching | Allow Interstate Branching by Acquiring a Single Branch or Part of an Institution | Statewide Deposit Share Cap on Acquisitions | Acts |
|---|---|---|---|---|---|---|---|
| California | 3 | 9/28/1995 | 5 years | No | No | 30% | Riegle-Neal |
| Colorado | 1 | 7/1/2013 | No | Yes | Yes | 25% | Riegle-Neal |
| Colorado | 3 | 7/21/2010 | 5 years | Yes | No | 25% | Dodd-Frank |
| Colorado | 4 | 6/1/1997 | 5 years | No | No | 25% | Riegle-Neal |
| Connecticut | 1 | 6/27/1995 | 5 years | Yes | Yes | 30% | Riegle-Neal |
| Delaware | 2 | 7/21/2010 | 5 years | Yes | No | 30% | Dodd-Frank |
| Delaware | 3 | 9/29/1995 | 5 years | No | No | 30% | Riegle-Neal |
| DC | 0 | 6/13/1996 | No | Yes | Yes | 30% | Riegle-Neal |
| Florida | 0 | 7/1/2011 | No | Yes | Yes | 30% | Riegle-Neal |
| Florida | 2 | 7/21/2010 | 3 years | Yes | No | 30% | Dodd-Frank |
| Florida | 3 | 6/1/1997 | 3 years | No | No | 30% | Riegle-Neal |
| Georgia | 1 | 7/1/2016 | 3 years | Yes | Yes | 30% | Riegle-Neal |
| Georgia | 2 | 7/21/2010 | 3 years | Yes | No | 30% | Dodd-Frank |
| Georgia | 3 | 5/10/2002 | 3 years | No | No | 30% | Riegle-Neal |
| Georgia | 3 | 6/1/1997 | 5 years | No | No | 30% | Riegle-Neal |
| Hawaii | 0 | 1/1/2001 | No | Yes | Yes | 30% | Riegle-Neal |
| Hawaii | 3 | 6/1/1997 | 5 years | No | No | 30% | Riegle-Neal |
| Idaho | 0 | 7/1/2015 | No | Yes | Yes | None | Riegle-Neal |
| Idaho | 2 | 7/21/2010 | 5 years | Yes | No | None | Dodd-Frank |
| Idaho | 3 | 9/29/1995 | 5 years | No | No | None | Riegle-Neal |
| Illinois | 0 | 8/20/2004 | No | Yes | Yes | 30% | Riegle-Neal |
| Illinois | 3 | 6/1/1997 | 5 years | No | No | 30% | Riegle-Neal |
| Indiana | 0 | 7/1/2011 | No | Yes | Yes | 30% | Riegle-Neal |
| Indiana | 1 | 7/1/1998 | 5 years | Yes | Yes | 30% | Riegle-Neal |

*Continued on next page*

**Table 1** – *Continued from previous page*

| State | Bank Deregulation Index | Effective Date | Minimum Age Requirement of Institution for Acquisitions | Allowance of de novo Interstate Branching | Allow Interstate Branching by Acquiring a Single Branch or Part of an Institution | Statewide Deposit Share Cap on Acquisitions | Acts |
|---|---|---|---|---|---|---|---|
| Indiana | 0 | 6/1/1997 | No | Yes | Yes | 30% | Riegle-Neal |
| Iowa | 3 | 7/21/2010 | 5 years | Yes | No | 15% | Dodd-Frank |
| Iowa | 4 | 4/4/1996 | 5 years | No | No | 15% | Riegle-Neal |
| Kansas | 3 | 7/21/2010 | 5 years | Yes | No | 15% | Dodd-Frank |
| Kansas | 4 | 9/29/1995 | 5 years | No | No | 15% | Riegle-Neal |
| Kentucky | 2 | 7/21/2010 | No | Yes | No | 15% | Dodd-Frank |
| Kentucky | 3 | 3/22/2004 | No | No | No | 15% | Riegle-Neal |
| Kentucky | 3 | 3/17/2000 | No | No | No | 15% | Riegle-Neal |
| Kentucky | 4 | 6/1/1997 | 5 years | No | No | 15% | Riegle-Neal |
| Louisiana | 1 | 8/1/2021 | 5 years | Yes | Yes | 30% | Riegle-Neal |
| Louisiana | 2 | 7/21/2010 | 5 years | Yes | No | 30% | Dodd-Frank |
| Louisiana | 3 | 6/1/1997 | 5 years | No | No | 30% | Riegle-Neal |
| Maine | 0 | 1/1/1997 | No | Yes | Yes | 30% | Riegle-Neal |
| Maryland | 0 | 9/29/1995 | No | Yes | Yes | 30% | Riegle-Neal |
| Massachusetts | 1 | 8/2/1996 | 3 years | Yes | Yes | 30% | Riegle-Neal |
| Michigan | 0 | 11/29/1995 | No | Yes | Yes | None | Riegle-Neal |
| Minnesota | 2 | 7/21/2010 | 5 years | Yes | No | 30% | Dodd-Frank |
| Minnesota | 3 | 6/1/1997 | 5 years | No | No | 30% | Riegle-Neal |
| Mississippi | 3 | 7/21/2010 | 5 years | Yes | No | 25% | Dodd-Frank |
| Mississippi | 4 | 6/1/1997 | 5 years | No | No | 25% | Riegle-Neal |
| Missouri | 3 | 7/21/2010 | 5 years | Yes | No | 13% | Dodd-Frank |
| Missouri | 4 | 9/29/1995 | 5 years | No | No | 13% | Riegle-Neal |
| Montana | 1 | 10/1/2019 | 5 years | Yes | Yes | 30% | Riegle-Neal |
| Montana | 2 | 10/1/2013 | 5 years | Yes | Yes | 22% | Riegle-Neal |

*Continued on next page*

**Table 1** – *Continued from previous page*

| State | Bank Deregulation Index | Effective Date | Minimum Age Requirement of Institution for Acquisitions | Allowance of de novo Interstate Branching | Allow Interstate Branching by Acquiring a Single Branch or Part of an Institution | Statewide Deposit Share Cap on Acquisitions | Acts |
|---|---|---|---|---|---|---|---|
| Montana | 3 | 10/1/2011 | 5 years | Yes | No | 22% | Riegle-Neal |
| Montana | 3 | 7/21/2010 | 5 years | Yes | No | 22% | Dodd-Frank |
| Montana | 4 | 10/1/2001 | 5 years | No | No | 22% | Riegle-Neal |
| Montana | 4 | 9/29/1995 | N/A | N/A | N/A | Increases 1% per year from 18% to 22% | Riegle-Neal |
| Nebraska | 1 | 4/7/2012 | No | Yes | Yes | 22% | Riegle-Neal |
| Nebraska | 3 | 7/21/2010 | 5 years | Yes | No | 14% | Dodd-Frank |
| Nebraska | 4 | 5/31/1997 | 5 years | No | No | 14% | Riegle-Neal |
| Nevada | 2 | 7/21/2010 | 5 years | Yes | Limited | 30% | Dodd-Frank |
| Nevada | 3 | 9/29/1995 | 5 years | Limited | Limited | 30% | Riegle-Neal |
| New Hampshire | 0 | 1/1/2002 | No | Yes | Yes | 30% | Riegle-Neal |
| New Hampshire | 1 | 8/1/2000 | 5 years | Yes | Yes | 30% | Riegle-Neal |
| New Hampshire | 4 | 6/1/1997 | 5 years | No | No | 20% | Riegle-Neal |
| New Jersey | 0 | 7/21/2010 | No | Yes | Yes | 30% | Dodd-Frank |
| New Jersey | 1 | 4/17/1996 | No | No | Yes | 30% | Riegle-Neal |
| New Mexico | 2 | 7/21/2010 | 5 years | Yes | No | 40% | Dodd-Frank |
| New Mexico | 3 | 6/1/1996 | 5 years | No | No | 40% | Riegle-Neal |
| New York | 0 | 7/18/2012 | No | Yes | Yes | 30% | Riegle-Neal |
| New York | 1 | 7/21/2008 | 5 years | Yes | Yes | 30% | Riegle-Neal |
| New York | 2 | 6/1/1997 | 5 years | No | Yes | 30% | Riegle-Neal |
| North Carolina | 0 | 7/1/1995 | No | Yes | Yes | 30% | Riegle-Neal |
| North Dakota | 1 | 8/1/2003 | No | Yes | Yes | 25% | Riegle-Neal |
| North Dakota | 3 | 5/31/1997 | No | No | No | 25% | Riegle-Neal |

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**Table 1** – *Continued from previous page*

| State | Bank Deregulation Index | Effective Date | Minimum Age Requirement of Institution for Acquisitions | Allowance of de novo Interstate Branching | Allow Interstate Branching by Acquiring a Single Branch or Part of an Institution | Statewide Deposit Share Cap on Acquisitions | Acts |
|---|---|---|---|---|---|---|---|
| Ohio | 0 | 5/21/1997 | No | Yes | Yes | 30% | Riegle-Neal |
| Oklahoma | 1 | 5/17/2000 | No | Yes | Yes | 20% | Riegle-Neal |
| Oklahoma | 4 | 5/31/1997 | 5 years | No | No | 15% | Riegle-Neal |
| Oregon | 0 | 6/7/2011 | No | Yes | Yes | 30% | Riegle-Neal |
| Oregon | 2 | 7/21/2010 | 3 years | Yes | No | 30% | Dodd-Frank |
| Oregon | 3 | 7/1/1997 | 3 years | No | No | 30% | Riegle-Neal |
| Pennsylvania | 0 | 7/6/1995 | No | Yes | Yes | 30% | Riegle-Neal |
| Rhode Island | 0 | 6/20/1995 | No | Yes | Yes | 30% | Riegle-Neal |
| South Carolina | 2 | 7/21/2010 | 5 years | Yes | No | 30% | Dodd-Frank |
| South Carolina | 3 | 7/1/1996 | 5 years | No | No | 30% | Riegle-Neal |
| South Dakota | 0 | 3/10/2008 | No | Yes | Yes | 30% | Riegle-Neal |
| South Dakota | 3 | 3/9/1996 | 5 years | No | No | 30% | Riegle-Neal |
| Tennessee | 1 | 3/17/2003 | 3 years | Yes | Yes | 30% | Riegle-Neal |
| Tennessee | 1 | 7/1/2001 | 5 years | Yes | Yes | 30% | Riegle-Neal |
| Tennessee | 2 | 5/1/1998 | 5 years | No | Yes | 30% | Riegle-Neal |
| Tennessee | 3 | 6/1/1997 | 5 years | No | No | 30% | Riegle-Neal |
| Texas | 1 | 6/14/2013 | No | Yes | Yes | 20% | Riegle-Neal |
| Texas | 2 | 9/1/1999 | No | Yes | Yes | 20% | Riegle-Neal |
| Texas | 4 | 8/28/1995 | N/A | N/A | N/A | 20% | Riegle-Neal |
| Utah | 1 | 4/30/2001 | 5 years | Yes | Yes | 30% | Riegle-Neal |
| Utah | 2 | 6/1/1995 | 5 years | No | Yes | 30% | Riegle-Neal |
| Vermont | 0 | 1/1/2001 | No | Yes | Yes | 30% | Riegle-Neal |
| Vermont | 2 | 5/30/1996 | 5 years | No | Yes | 30% | Riegle-Neal |
| Virginia | 0 | 9/29/1995 | No | Yes | Yes | 30% | Riegle-Neal |

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**Table 1** – *Continued from previous page*

| State | Bank Deregulation Index | Effective Date | Minimum Age Requirement of Institution for Acquisitions | Allowance of de novo Interstate Branching | Allow Interstate Branching by Acquiring a Single Branch or Part of an Institution | Statewide Deposit Share Cap on Acquisitions | Acts |
|---|---|---|---|---|---|---|---|
| Washington | 1 | 5/9/2005 | 5 years | Yes | Yes | 30% | Riegle-Neal |
| Washington | 3 | 6/6/1996 | 5 years | No | No | 30% | Riegle-Neal |
| West Virginia | 1 | 5/31/1997 | No | Yes | Yes | 25% | Riegle-Neal |
| Wisconsin | 2 | 4/11/2006 | 5 years | Yes | No | 30% | Riegle-Neal |
| Wisconsin | 3 | 5/1/1996 | 5 years | No | No | 30% | Riegle-Neal |
| Wyoming | 1 | 7/1/2013 | No | Yes | No | 30% | Riegle-Neal |
| Wyoming | 2 | 7/21/2010 | 3 years | Yes | No | 30% | Dodd-Frank |
| Wyoming | 3 | 5/31/1997 | 3 years | No | No | 30% | Riegle-Neal |

## **Table 2.** Summary statistics

This table provides mean values for all variables used in the regression analysis from 1990 to 2019. The first four columns show the mean values in four different subsamples: men versus women; white versus minority. The last column provides the mean values in the whole sample. I use the CPI in 2010 to deflate all nominal variables. In Panels A and B, I include all individuals in SIPP at their prime age (between 22 and 60). "New entrepreneur" is a dummy variable equal to one if the individuals make the transition to entrepreneurs within three years after they are interviewed for the first time. "Net worth" is equal to total assets minus total debt. Panel C includes all prime-age individuals who operate businesses the first time they enter the sample and are interviewed.

| Mean value | Men | Women | White | Minority | Total |
|---|---|---|---|---|---|
| *Panel A: Sociodemographics* | | | | | |
| Dummy: New entrepreneur | 0.061 | 0.04 | 0.055 | 0.041 | 0.051 |
| Number of children | 0.791 | 0.865 | 0.737 | 1.045 | 0.828 |
| Family size (number of adults) | 2.146 | 2.088 | 2.057 | 2.261 | 2.117 |
| Age (year) | 37.457 | 38.054 | 38.15 | 36.789 | 37.749 |
| Dummy: Homeowner | 0.629 | 0.639 | 0.69 | 0.499 | 0.634 |
| Dummy: Elementary education | 0.125 | 0.09 | 0.07 | 0.2 | 0.108 |
| Dummy: High school education | 0.316 | 0.297 | 0.307 | 0.306 | 0.307 |
| Dummy: Some college education | 0.298 | 0.333 | 0.322 | 0.3 | 0.315 |
| Dummy: College or more education | 0.261 | 0.279 | 0.301 | 0.194 | 0.27 |
| Dummy: Employed | 0.951 | 0.956 | 0.964 | 0.927 | 0.953 |
| Dummy: Married | 0.575 | 0.531 | 0.58 | 0.488 | 0.553 |
| | | | | | |
| *Panel B: Economic conditions* | | | | | |
| Monthly income | 3,990.43 | 2,767.04 | 3,660.41 | 2,748.02 | 3,391.67 |
| Total personal debt | 58,715 | 48,280 | 63,461 | 37,345 | 53,328 |
| Secured debt | 50,942 | 39,559 | 54,179 | 30,690 | 45,066 |
| Mortgage debt | 44,537 | 33,242 | 47,251 | 25,227 | 38,706 |
| Vehicle debt | 6,732 | 6,515 | 7,112 | 5,544 | 6,619 |
| Unsecured debt | 7,773 | 8,721 | 9,282 | 6,655 | 8,263 |
| Student debt | 3,643 | 4,941 | 4,737 | 3,644 | 4,313 |
| Credit card debt | 2,017 | 2,110 | 2,249 | 1,665 | 2,066 |
| Secured business debt | 414,133 | 126,348 | 318,435 | 128,793 | 263,390 |
| Business equity | 49,150 | 15,510 | 42,536 | 14,826 | 31,785 |
| Net worth | 183,115 | 114,503 | 189,324 | 82,029 | 147,696 |
| *Number of unique individuals* | 166,859 | 159,950 | 230,548 | 96,261 | 326,809 |
| *Percentage* | 51% | 49% | 71% | 29% | 100% |
| | | | | | |
| *Panel C: Firm characteristics* | | | | | |
| Size dummy: Under 25 employees | 0.95 | 0.966 | 0.952 | 0.968 | 0.955 |
| Size dummy: 25-99 employees | 0.037 | 0.024 | 0.035 | 0.023 | 0.033 |
| Size dummy: No less than 100 employees | 0.013 | 0.01 | 0.013 | 0.009 | 0.012 |
| Monthly Profit amount | 6,735.35 | 4,080.20 | 5,942.93 | 5,151.79 | 5,785.22 |
| *Number of unique entrepreneurs* | 26,385 | 14,703 | 32,898 | 8,190 | 41,088 |
| *Percentage* | 64% | 36% | 80% | 20% | 100% |

**Table 3.** Bank deregulation and financial inclusion

Panel A reports OLS results of the effect of bank deregulation on branch coverage in minority communities. The log of the total number of bank branches per capita at the county level is the dependent variable. The deregulation index ranges from zero to four. Zero is fully regulated and four is fully deregulated. Minority ratio is the ratio of residents in each county that are not white. Minority Dummy is equal to one if the counties are in the top quartile of the distribution in terms of minority ratio. I only report the coefficients of interaction terms to keep concise but the model specifications are fully saturated in all columns. Control variables (income per capita, income growth, population, and unemployment rate) are included in columns (2) and (4). Branch density data are from the FDIC. County information is collected from the Census, Bureau of Labor and Statistics, and Bureau of Economic Analysis. Panel B presents results of the effect of bank deregulation on the racial gap in access to bank accounts at the individual level. A dummy variable indicating whether an individual holds a bank account is a dependent variable. Columns (1) to (2) do not include any control, and Columns (3) to (4) include household sociodemographic fixed effects and state-year-income decile joint fixed effects. Household sociodemographic fixed effects include the number of raised children, family size, age, homeownership, education attainment, employment, and marital status of the surveyed household. Data are from the SIPP. Standard errors reported in parentheses are clustered by state. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

**Panel A**: The effect of bank deregulation on the racial gap in bank branch coverage

| *Dep. Var*=Log(branch density per capita) | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Deregulation Index × Minority Ratio | 0.121** | 0.115* | | |
| | (0.056) | (0.058) | | |
| Deregulation Index × Minority Dummy | | | 0.030*** | 0.029*** |
| | | | (0.011) | (0.011) |
| Controls | No | Yes | No | Yes |
| State × Year FE | Yes | Yes | Yes | Yes |
| County FE | Yes | Yes | Yes | Yes |
| Observations | 77,652 | 76,369 | 77,652 | 76,369 |
| $R^2$ | 0.945 | 0.946 | 0.945 | 0.946 |

**Panel B**: The effect of bank deregulation on the racial gap in holding bank accounts

| *Dep. Var*= Holds a bank account | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Minority | -0.093*** | -0.133*** | -0.063*** | -0.055*** |
| | (0.008) | (0.014) | (0.011) | (0.011) |
| Deregulation Index × Minority | | 0.019*** | 0.012*** | 0.011** |
| | | (0.005) | (0.004) | (0.004) |
| State × Year FE | Yes | Yes | Yes | No |
| State × Year × Income decile FE | No | No | No | Yes |
| *Sociodemographics* | | | | |
| Family kids FE | No | No | Yes | Yes |
| Family adults FE | No | No | Yes | Yes |
| Age FE | No | No | Yes | Yes |
| Homeowner FE | No | No | Yes | Yes |
| Education FE | No | No | Yes | Yes |
| Employment FE | No | No | Yes | Yes |
| Marriage FE | No | No | Yes | Yes |
| Observations | 356,517 | 356,517 | 289,578 | 289,454 |
| $R^2$ | 0.025 | 0.026 | 0.084 | 0.107 |

**Table 4.** Bank deregulation and the quality of banking services

Panel A presents OLS results from the regression of log(complaints) on the interaction term Deregulation × Minority Ratio or Deregulation × Minority Dummy, and numerous sets of fixed effects at the five-digit zip code level. Log(complaints) is the logarithm of the total number of mortgage-related complaints reported to the CFPB in a given zip code from 2012 to 2021. The deregulation index ranges from zero to four. Zero is fully regulated and four is fully deregulated. Minority ratio is the ratio of residents in each zip code that are not white for 2012. Minority Dummy is equal to one if a given zip code is in the top quartile of the distribution in terms of minority ratio. I only report the coefficients of interaction terms to keep concise but the model specifications are fully saturated.

Panel B reports OLS results from the same regression used in Panel A except that the dependent variable is the logarithm of the total number or a dummy variable indicating the incidence of mortgage-related complaints about discriminatory treatment filed to the CFPB in a given zip code. Discriminatory treatment is identified from the narrative using a textual analysis method. Standard errors reported in parentheses are clustered by state. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

**Panel A**: The effect of bank deregulation on the racial gap in the quality of banking services

| *Dep. Var*=Log(complaints) | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Deregulation × Minority Ratio | -0.155** | -0.167*** | -0.147*** | | | |
| | (0.060) | (0.039) | (0.053) | | | |
| Deregulation × Minority Dummy | | | | -0.055** | -0.058*** | -0.054*** |
| | | | | (0.024) | (0.013) | (0.019) |
| Control | Yes | Yes | Yes | Yes | Yes | Yes |
| Zip code FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | No | No | Yes | No | No |
| State × Year FE | No | Yes | Yes | No | Yes | Yes |
| MSA × Year FE | No | No | Yes | No | No | Yes |
| Observations | 184,068 | 184,068 | 130,824 | 184,068 | 184,068 | 130,824 |
| $R^2$ | 0.690 | 0.695 | 0.705 | 0.690 | 0.695 | 0.705 |

**Panel B**: The effect of bank deregulation on the racial gap in the complaints about discriminatory treatment

| *Dep. Var*= | Log(discrimination complaints) | | | | **1**(discrimination complaints) | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Dereg×Minority Ratio | -0.044** | -0.057*** | -0.083*** | | -0.060** | -0.073*** | -0.105*** | |
| | (0.021) | (0.018) | (0.019) | | (0.024) | (0.022) | (0.022) | |
| Dereg×Minority Dummy | | | | -0.028*** | | | | -0.040*** |
| | | | | (0.007) | | | | (0.008) |
| Control | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Zip code FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | No | No | No | Yes | No | No | No |
| State × Year FE | No | Yes | Yes | Yes | No | Yes | Yes | Yes |
| MSA × Year FE | No | No | Yes | Yes | No | No | Yes | Yes |
| Observations | 122,712 | 122,712 | 87,216 | 87,216 | 122,712 | 122,712 | 87,216 | 87,216 |
| $R^2$ | 0.254 | 0.256 | 0.264 | 0.264 | 0.247 | 0.249 | 0.257 | 0.257 |

**Table 5.** Entrepreneurship gaps and interstate bank deregulation

This table presents linear probability regressions of the interstate bank deregulation index on entrepreneurial gender and racial gaps. The dependent variable is equal to 1 if the household makes the transition into an entrepreneur (SIPP 1990-2019). The range of the deregulation index is between 0 and 4, where 0 is the least deregulated and 4 is fully deregulated. Columns (1) to (3) do not include any control, and Columns (4) to (6) include household sociodemographic fixed effects and state-year-income decile joint fixed effects. Columns (7) to (8) also contain MSA-year-income decile joint fixed effects. Household sociodemographic fixed effects include the number of raised children, family size, age, homeownership, education attainment, employment, and marital status of the surveyed household. Section 5.1 gives the definition of these variables in detail. Standard errors reported in parentheses are double clustered by state and year. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Female | -0.022*** | -0.026*** | -0.026*** | -0.024*** | -0.029*** | -0.029*** | -0.030*** | -0.031*** |
| | (0.002) | (0.001) | (0.002) | (0.002) | (0.001) | (0.002) | (0.001) | (0.001) |
| Minority | -0.014*** | -0.020*** | -0.020*** | -0.013*** | -0.019*** | -0.019*** | -0.022*** | -0.023*** |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.003) |
| Dereg × Female | | 0.003*** | 0.003*** | | 0.003*** | 0.003*** | 0.003*** | 0.003*** |
| | | (0.001) | (0.001) | | (0.001) | (0.001) | (0.001) | (0.001) |
| Dereg × Minority | | 0.004*** | 0.004*** | | 0.004*** | 0.004*** | 0.003** | 0.004* |
| | | (0.001) | (0.001) | | (0.001) | (0.001) | (0.001) | (0.002) |
| Dereg × Female × Minority | | | -0.000 | | | -0.000 | | -0.001 |
| | | | (0.001) | | | (0.001) | | (0.002) |
| Female × Minority | | | 0.000 | | | -0.000 | | 0.002 |
| | | | (0.002) | | | (0.002) | | (0.002) |
| State × Year FE | Yes | Yes | Yes | No | No | No | No | No |
| State × Year × Income decile FE | No | No | No | Yes | Yes | Yes | Yes | Yes |
| MSA × Year × Income decile FE | No | No | No | No | No | No | Yes | Yes |
| Sociodemographics | No | No | No | Yes | Yes | Yes | Yes | Yes |
| Observations | 326,798 | 326,798 | 326,798 | 325,500 | 325,500 | 325,500 | 172,446 | 172,446 |
| $R^2$ | 0.014 | 0.014 | 0.014 | 0.044 | 0.044 | 0.044 | 0.091 | 0.091 |
| Sample mean | 0.050 | 0.050 | 0.050 | 0.050 | 0.050 | 0.050 | 0.057 | 0.057 |

**Table 6.** Bank competition and entrepreneurial financing gaps

This table shows the effect of bank competition on entrepreneurial financing gaps. Panels A and B present racial and gender gaps in debt changes around the transition into entrepreneurship. They show that bank competition reduced the gender and racial gaps in debt support businesses. The model specifications are fully saturated in all columns. *New Minority* (*Female*) *Entrepreneur* is a dummy variable equal to one if the minority (female) individual is not an entrepreneur in the previous period but transitions into an entrepreneur in this period, and to zero otherwise. Panels A and B present the regression results of equations (5) and (6) of section 5.3, respectively. The dependent variables in Columns (1), (2), (3), and (4) are the logarithm change in secured business debt, mortgage debt, vehicle debt, and credit card debt, respectively. In Panel C, I restrict the sample to entrepreneurs. The dependent variables are debt amount (Columns (1) and (3)) or a dummy variable indicating whether an entrepreneur gets access to debt (Columns (2) and (4)) one year after bank deregulation. Panel C presents that bank deregulation reduces the entrepreneurial gaps conditional on entrepreneurs. Household sociodemographic fixed effects include the number of raised children, family size, age, homeownership, education attainment, employment, and marital status of the surveyed household. Section 5.1 defines these variables in detail. Standard errors reported in parentheses are double clustered by state and year. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

**Panel A**: The effect of bank deregulation on the racial gap in debt changes

| *Dep. Var*= Log(1+$debt_{t+1}$)-Log(1+$debt_t$) | (1) Secured Business Debt | (2) Mortgage Debt | (3) Vehicle Debt | (4) Credit Card Debt |
|---|---|---|---|---|
| New Minority Entrepreneur | -0.663*** | -0.314* | 0.129 | 0.008 |
| | (0.151) | (0.177) | (0.155) | (0.313) |
| New Minority Entrepreneur × Dereg | 0.115* | 0.148** | -0.028 | 0.005 |
| | (0.068) | (0.062) | (0.051) | (0.102) |
| Controls | Yes | Yes | Yes | Yes |
| State × Year × Income decile FE | Yes | Yes | Yes | Yes |
| Sociodemographics | Yes | Yes | Yes | Yes |
| Observations | 282,443 | 289,454 | 289,454 | 289,454 |
| $R^2$ | 0.422 | 0.056 | 0.294 | 0.165 |

**Panel B**: The effect of bank deregulation on the gender gap in debt changes

| *Dep. Var*= Log(1+$debt_{t+1}$)-Log(1+$debt_t$) | (1) Secured Business Debt | (2) Mortgage Debt | (3) Vehicle Debt | (4) Credit Card Debt |
|---|---|---|---|---|
| New Female Entrepreneur | -1.447*** | -0.382** | -0.157 | 0.125 |
| | (0.180) | (0.146) | (0.097) | (0.245) |
| New Female Entrepreneur × Dereg | 0.187*** | 0.127** | 0.082** | 0.005 |
| | (0.069) | (0.058) | (0.035) | (0.089) |
| Controls | Yes | Yes | Yes | Yes |
| State × Year × Income decile FE | Yes | Yes | Yes | Yes |
| Sociodemographics | Yes | Yes | Yes | Yes |
| Observations | 282,443 | 289,454 | 289,454 | 289,454 |
| $R^2$ | 0.425 | 0.040 | 0.294 | 0.165 |

**Panel C**: Bank competition and debt gap among entrepreneurs

| *Dep. Var*= | (1) Log(Secured Business Debt) | (2) **1**(Secured Business Debt) | (3) Log(Mortgage Debt) | (4) **1**(Mortgage Debt) |
|---|---|---|---|---|
| Minority | -0.391* | -0.028** | -0.760** | -0.065** |
| | (0.172) | (0.010) | (0.340) | (0.028) |
| Deregulation Index × Minority | 0.097** | 0.008*** | 0.245* | 0.021* |
| | (0.034) | (0.001) | (0.132) | (0.011) |
| Female | -1.781*** | -0.112*** | -0.574 | -0.053 |
| | (0.343) | (0.021) | (0.440) | (0.036) |
| Deregulation Index × Female | 0.201* | 0.017** | 0.120 | 0.011 |
| | (0.090) | (0.006) | (0.138) | (0.011) |
| State x Year x Income Decile FE | Yes | Yes | Yes | Yes |
| Sociodemographics | Yes | Yes | Yes | Yes |
| Observations | 24,139 | 24,139 | 24,139 | 24,139 |
| $R^2$ | 0.180 | 0.352 | 0.220 | 0.219 |

**Table 7.** Bank deregulation and entrepreneurial entry, by discriminatory social norms

This table examines heterogeneity in entrepreneurial entry based on state-level historical differences in discrimination or bias against minorities or women. Panel A presents the results for minority entrepreneurs, while Panel B presents the results for female entrepreneurs. The dependent variable is the transition into entrepreneurs within three years after bank deregulation. In Panel A, I use four measures as a proxy for discrimination. The *High Discrimination* dummy is equal to one under the following four conditions: (1) if a state is a former slave state one year before the Civil War; (2) a state did not repeal anti-miscegenation law until after the US Supreme Court made the decision in *Loving v. Virginia* in 1967; (3) the racial bias index based on the interracial marriage rate, is above the median value; (4) a state does not have fair housing law until the Fair Housing Act of 1968 is passed by the federal government.
In Panel B, I follow Duchin, Simutin, and Sosyura (2021) and build four gender imbalance dummy variables using the SIPP dataset. *Income imbalance* is the state-level average income difference between employed men and employed women in the year 1990 before the bank deregulation. In the same way, I build *Earning Imbalance*, *Education Imbalance*, and *Employment Imbalance* using the gender gap in earnings, the number of years of received education, and the labor participation ratio. The variable *High Bias* is equal to one if the corresponding imbalance measure is above the median value. The model specifications are fully saturated in all columns, but I only report the coefficients of variables of my main interest to keep concise. Household sociodemographic fixed effects include the number of raised children, family size, age, homeownership, education attainment, employment, and marital status of the surveyed household. Section 5.1 defines these variables in detail. Standard errors reported in parentheses are double clustered by state and year. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

**Panel A**: Entrepreneurial racial gap and bank competition: Evidence of racial discrimination

| *Dep. Var*= Entrepreneur | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *High Discrimination*= | Former Slave State | Anti-miscegenation Law | Interracial Marriage Bias | No Fair Housing Law |
| Dereg × Black × | 0.005*** | 0.005** | 0.004** | 0.004** |

*Continued on next page*

**Table 7** – *Continued from previous page*

| *Dep. Var*= Entrepreneur | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *High Discrimination*= | Former Slave State | Anti-miscegenation Law | Interracial Marriage Bias | No Fair Housing Law |
| High Discrimination | (0.002) | (0.002) | (0.002) | (0.002) |
| Black × High Discrimination | -0.014*** | -0.013*** | -0.014*** | -0.013*** |
| | (0.004) | (0.004) | (0.003) | (0.004) |
| Dereg × Black | 0.000 | 0.001 | 0.001 | 0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Controls | Yes | Yes | Yes | Yes |
| State × Year × Income decile FE | Yes | Yes | Yes | Yes |
| Sociodemographics | Yes | Yes | Yes | Yes |
| Observations | 325,500 | 325,500 | 325,500 | 325,500 |
| $R^2$ | 0.044 | 0.044 | 0.044 | 0.044 |
| Sample Mean | 0.050 | 0.050 | 0.050 | 0.050 |

**Panel B**: Entrepreneurship gender gap and bank competition: Evidence of gender imbalance

| *Dep. Var*= Entrepreneur | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *High Bias*= | Income Imbalance | Earning Imbalance | Education Imbalance | Employment Imbalance |
| Dereg × Gender × High Bias | 0.003** | 0.003*** | 0.008** | 0.002 |
| | (0.001) | (0.001) | (0.003) | (0.003) |
| Gender × High Bias | -0.008*** | -0.008*** | -0.012** | -0.006 |
| | (0.001) | (0.001) | (0.005) | (0.005) |
| Dereg × Gender | 0.003*** | 0.003*** | 0.003*** | 0.003*** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Controls | Yes | Yes | Yes | Yes |
| State × Year × Income decile FE | Yes | Yes | Yes | Yes |
| Sociodemographics | Yes | Yes | Yes | Yes |
| Observations | 325,500 | 325,500 | 325,500 | 325,500 |
| $R^2$ | 0.044 | 0.044 | 0.044 | 0.044 |
| Sample Mean | 0.050 | 0.050 | 0.050 | 0.050 |

**Table 8.** Heterogeneous effects by external financing dependence

This table presents results examining heterogeneity in entrepreneurial entry based on external financing dependence around the bank deregulation reform. The dependent variable is the transition into entrepreneurs within three years after bank deregulation. Industries are categorized as *High Dependence* based on the fraction of capital expenditure funded by external financing. I take advantage of the procedures used in Cetorelli and Strahan (2006) and construct the external financing dependence as the fraction of capital expenditure funded by external financing. Negative values mean that firms do not rely on external financing and have free cash flow, while positive values suggest that firms rely on issuing equity or debt to support investment. This measure is based on the Compustat database. The two-digit SIC classification in Compustat is matched to the industry classification used in the SIPP. *High Dependence* is equal to one if industries have positive external financing dependence and zero otherwise. Household sociodemographic fixed effects include the number of raised children, family size, age, homeownership, education attainment, employment, and marital status of the surveyed household. Section 5.1 defines these variables in detail. Standard errors reported in parentheses are double clustered by state and year. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

| | (1) | (2) | (3) |
|---|---|---|---|
| Deregulation Index × Female × High Dependence | 0.003*** | | 0.002*** |
| | (0.001) | | (0.000) |
| Deregulation Index × Minority × High Dependence | | 0.003*** | 0.002** |
| | | (0.001) | (0.001) |
| Deregulation Index × Female | 0.001** | 0.001** | 0.001** |
| | (0.000) | (0.000) | (0.000) |
| Deregulation Index × Minority | 0.002** | 0.002** | 0.002** |
| | (0.001) | (0.001) | (0.001) |
| Female | -0.005*** | -0.005*** | -0.005*** |
| | (0.001) | (0.001) | (0.001) |
| Minority | -0.007*** | -0.007*** | -0.007*** |
| | (0.001) | (0.001) | (0.001) |
| Controls | Yes | Yes | Yes |
| State × Year × Income decile FE | Yes | Yes | Yes |
| Sociodemographics | Yes | Yes | Yes |
| Observations | 269,749 | 269,749 | 269,749 |
| $R^2$ | 0.644 | 0.644 | 0.644 |
| Sample Mean | 0.050 | 0.050 | 0.050 |

**Table 9.** What types of firms do they found?

This table characterizes new businesses based on employment and profit. In Columns (1) and (2), the transition into entrepreneurship variable in equation (4) is decomposed into two mutually exclusive variables: a dummy variable equal to one if the new venture hires no less than 25 employees, and an indicator variable equal to one if the new business hires less than 25 employees. In Columns (3) and (4), I decompose the dependent variable into two variables: the creation of a profitable firm and the formation of an unprofitable firm based on the profit amount. Household sociodemographic fixed effects include the number of raised children, family size, age, homeownership, education attainment, employment, and marital status of the surveyed household. Section 5.1 defines these variables in detail. Standard errors reported in parentheses are double clustered by state and year. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

| | (1) Big Firm (Employee>=25) | (2) Small Firm (Employee<25) | (3) Profitable Firm | (4) Unprofitable Firm |
|---|---|---|---|---|
| Dereg × Female | 0.001*** | 0.001** | 0.003*** | 0.000 |
| | (0.000) | (0.001) | (0.001) | (0.000) |
| Dereg × Minority | 0.001* | 0.001 | 0.004*** | 0.000 |
| | (0.001) | (0.001) | (0.001) | (0.000) |
| Female | -0.008*** | -0.026*** | -0.029*** | -0.000 |
| | (0.001) | (0.002) | (0.002) | (0.000) |
| Minority | -0.007*** | -0.012*** | -0.020*** | -0.000 |
| | (0.002) | (0.002) | (0.002) | (0.000) |
| State × Year × Income decile FE | Yes | Yes | Yes | Yes |
| Sociodemographics | Yes | Yes | Yes | Yes |
| Observations | 182,959 | 182,959 | 328,654 | 328,654 |
| $R^2$ | 0.037 | 0.041 | 0.044 | 0.031 |

**Table 10.** Bank deregulation and firm performance

This table presents the results of the effect of bank deregulation on firm subsequent performance. *Crisis* is a dummy variable equal to one for the crisis year 2008 and is zero otherwise. *Size* is a dummy variable equal to one if the number of employees in the next year is no less than 25. *Survive* is also a dummy equal to one if the firm is still alive in the next year. Household sociodemographic fixed effects include the number of raised children, family size, age, homeownership, education attainment, employment, and marital status of the surveyed household. Section 5.1 defines these variables in detail. Standard errors reported in parentheses are double clustered by state and year. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

| | (1) Profit Amount | (2) Profit Amount | (3) Profit Dummy | (4) Profit Dummy | (5) Size | (6) Size | (7) Survive | (8) Survive |
|---|---|---|---|---|---|---|---|---|
| Dereg × Female | -297.047 | -319.419 | 0.000 | 0.000 | 0.066*** | 0.065*** | 0.001 | 0.000 |
| | (182.283) | (194.256) | (0.000) | (0.000) | (0.018) | (0.018) | (0.002) | (0.002) |
| Dereg × Minority | -265.652 | -306.127 | 0.000*** | 0.000** | 0.020** | 0.020* | -0.001 | -0.001 |
| | (389.305) | (405.340) | (0.000) | (0.000) | (0.010) | (0.010) | (0.002) | (0.003) |
| Dereg × Minority × Crisis | | 617.562** | | 0.001*** | | 0.000 | | 0.006* |
| | | (306.417) | | (0.000) | | (0.003) | | (0.003) |
| Dereg × Female × Crisis | | 401.154* | | 0.006*** | | 0.007* | | 0.013*** |
| | | (217.978) | | (0.001) | | (0.004) | | (0.003) |
| Female | -108.773 | -84.900 | 0.000 | 0.000 | -0.240*** | -0.240*** | -0.033*** | -0.033*** |
| | (167.972) | (164.737) | (0.000) | (0.000) | (0.056) | (0.056) | (0.005) | (0.006) |
| Minority | -395.294 | -358.726 | -0.001*** | -0.001*** | -0.049* | -0.049* | -0.026*** | -0.024*** |
| | (298.879) | (306.921) | (0.000) | (0.000) | (0.028) | (0.028) | (0.007) | (0.007) |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State × Year × Income decile | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Sociodemographics | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 75,299 | 75,299 | 76,301 | 76,301 | 65,493 | 65,493 | 76,301 | 76,301 |
| $R^2$ | 0.270 | 0.270 | 0.108 | 0.108 | 0.253 | 0.253 | 0.155 | 0.155 |

**Table 11.** Bank deregulation and business equity accumulation

The table shows the natural logarithm of business equity as the dependent variable regressed against gender, minority, bank deregulation index, a dummy variable indicating whether the individual is a business owner, and a set of fixed effects. Business equity is equal to business assets minus business debt. Household sociodemographic fixed effects include the number of raised children, family size, age, homeownership, education attainment, employment, and marital status of the surveyed household. Section 5.1 defines these variables in detail. Standard errors reported in parentheses are double clustered by state and year. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

| *Dep. Var*= Log (business equity+1) | (1) | (2) | (3) |
|---|---|---|---|
| Entrepreneur | 5.104*** | 5.741*** | 7.303*** |
| | (0.101) | (0.158) | (0.147) |
| Deregulation Index × Female × Entrepreneur | 0.145* | | 0.094* |
| | (0.071) | | (0.055) |
| Deregulation Index × Minority × Entrepreneur | | 0.108** | 0.112** |
| | | (0.047) | (0.049) |
| Female × Entrepreneur | -2.016*** | | -1.644*** |
| | (0.079) | | (0.147) |
| Minority × entrepreneur | | -1.286*** | -1.032*** |
| | | (0.121) | (0.134) |
| Controls | Yes | Yes | Yes |
| State × Year × Income decile FE | Yes | Yes | Yes |
| Sociodemographics | Yes | Yes | Yes |
| N | 520,585 | 520,585 | 520,585 |
| $R^2$ | 0.234 | 0.326 | 0.411 |

**Table 12.** Bank deregulation and racial gap in access to PPP loans

The table shows that bank competition can reduce the racial gap in access to PPP loans. The dependent variable in Column (1) is the take-up rate (total number of loans divided by the total number of eligible firms) in a given zip code. In Column (2), the dependent variable is the loan amount per supported job in a given zip code. Column (3)'s dependent variable is a dummy variable indicating whether the loan is originated from banks or Fintech companies using the loan-level data. Standard errors reported in parentheses are clustered by state. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

| *Dep. Var=* | Take-up rate | Loan amount per job | Bank loan dummy |
|---|---|---|---|
| | (1) | (2) | (3) |
| Minority Ratio | -0.225*** | -0.115** | |
| | (0.058) | (0.051) | |
| Deregulation × Minority Ratio | 0.036* | 0.040** | |
| | (0.018) | (0.017) | |
| Black Dummy | | | -0.523*** |
| | | | (0.121) |
| Deregulation × Black Dummy | | | 0.164*** |
| | | | (0.035) |
| Control | Yes | Yes | Yes |
| County FE | Yes | Yes | No |
| Naics code FE | No | No | Yes |
| Loan amount FE | No | No | Yes |
| Loan term FE | No | No | Yes |
| Zip code FE | No | No | Yes |
| Year-month-day FE | No | No | Yes |
| Business type FE | No | No | Yes |
| Business age FE | No | No | Yes |
| Number of jobs FE | No | No | Yes |
| Observations | 33,504 | 36,061 | 1,818,445 |
| $R^2$ | 0.331 | 0.199 | 0.347 |

# Internet Appendix - Not for Publication

**Table A1.** State Interstate Branching Laws: 1994-2021

| State | Changes to State Interstate Branching Laws | Session Law | Effective Date | Minimum Age of Institution (Bank or Branch) for Acquisitions | Allows de novo Interstate Branching | Interstate Branching by Acquisition of Single Branch or Portions of an Institution | Statewide Deposit Cap on Branch Acquisitions |
|---|---|---|---|---|---|---|---|
| Alabama | Allowed de novo branching and branch acquisition | 2007 Ala. Laws 224 | 5/31/2007 | 5 years; ALA. CODE § 5-13B-23(c) | Yes; ALA. CODE § 5-13B-23(e) | Yes; ALA. CODE § 5-13B-23(e) | 30%; ALA. CODE § 5-13B-23(b) |
| Alabama | | 1995 Ala. Laws 115 | 5/31/1997 | 5 years; ALA. CODE § 5-13B-23(c) | No; ALA. CODE § 5-13B-23(d) | No; ALA. CODE § 5-13B-23(e) | 30%; ALA. CODE § 5-13B-23(b) |
| Alaska | | 1993 Alaska Sess.Laws 87 | 1/1/1994 | 3 years; Alaska Stat. §06.05.550 -§06.05.990 | No; Alaska Stat.§06.05.550(b) | Yes; Alaska Stat.§06.05.550(a) | 50%; Alaska Stat.§06.05.548 |
| Arizona | No effective changes in statute. Although it was enacted 9/1/1996, not until 8/31/01 could an out of state bank acquire a single branch (with a minimum 5 year age requirement). Added reciprocity condition for minimum age requirement and branch acquisition. | 1996 Ariz. Sess.Laws 81 | 8/31/2001 | 5 years; reciprocity required; Ariz. Rev. Stat. §6-324 | No; Ariz. Rev. Stat. §6-324 | Yes; reciprocity required; Ariz. Rev. Stat. §6-322(e) | 30%; Ariz. Rev. Stat. §6-328 |
| Arizona | | 1996 Ariz. Sess.Laws 81 | 9/1/1996 | 5 years; reciprocity required; Ariz. Rev. Stat. §6-324 | No; Ariz. Rev. Stat. §6-324 | No; Ariz. Rev. Stat. §6- 322(e) | 30%; Ariz. Rev. Stat. §6-328 |

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**Table A1** – *Continued from previous page*

| State | Changes to State Interstate Branching Laws | Session Law | Effective Date | Minimum Age of Institution (Bank or Branch) for Acquisitions | Allows de novo Interstate Branching | Interstate Branching by Acquisition of Single Branch or Portions of an Institution | Statewide Deposit Cap on Branch Acquisitions |
|---|---|---|---|---|---|---|---|
| Arkansas | Allowed de novo branching and branch acquisition. § 23-48-904 was repealed by Acts of 2011, Act 796 | 2011 Ark. Acts 796 | 3/30/2011 | 5 years; Ark. Code §23-48- 903 - §23-45-102(18) | Yes; Ark. Code §23-48-1001 | Yes; Ark. Code §23-48-1001 | 25%; Ark. Code §23-48-406 |
| Arkansas | | 1997 Ark. Acts 408 | 6/1/1997 | 5 years; Ark. Code §23-48- 903 - §23-45-102(18) | No; Ark. Code §23-48-904 | No; Ark. Code §23-48-904 | 25%; Ark. Code §23-48-406 |
| California | Allowed de novo branching. Cal. Fin. Code §3824 was repealed by Cal. Fin. Code § 1684 | 2011 Cal. Stat. 243 | 1/1/2012 | 5 years; Cal. Fin. Code §1685 | Yes; Cal. Fin. Code §1684(a)(3) | No; Cal. Fin. Code §1684(b)(2) | 30% (per Federal Deposit Insurance Act) |
| California | | 1995 Cal. Stat. 480 | 9/28/1995 | 5 years; Cal. Fin. Code §3825 | No; Cal. Fin. Code §3824(b)(3) | No; Cal. Fin. Code §3824(b)(2) | 30% (per Riegle Neal) |
| Colorado | Allowed de novo branching and branch acquisition | 2013 Colo. Sess.Laws 154 | 7/1/2013 | No; Colo. Rev. Stat. §11-104-201- §11-104- 203 | Yes; Colo. Rev. Stat. §11-104-202(6) | Yes; Colo. Rev. Stat. §11-104-202(6) | 25%; Colo. Rev. Stat. §11-104-202(4) |
| Colorado | | 1995 Colo. Sess.Laws 1355 | 6/1/1997 | 5 years; Colo. Rev. Stat. §11-104-202(2) | No; Colo. Rev. Stat. §11-104-202(6) | No; Colo. Rev. Stat. §11-104-202(6); 11-104-201 | 25%; Colo. Rev. Stat. §11-104-202(4) |
| Connecti-cut | | 1995 Conn. Acts155 | 6/27/1995 | 5 years; Conn. Gen. Stat. §36a-412(a)(1) | Yes; Conn. Gen. Stat. §36a-412(a)(2) | Yes; Conn. Gen. Stat. §36a-412(a)(1) | 30%; Conn. Gen. Stat. §36a-412(a)(1) |
| Delaware | | 1995 Del. Laws112 | 9/29/1995 | 5 years; Del.Code tit. 5§795(7);§795E; §795F | No; Del. Code tit. 5 §795B(c) | No; Del. Code tit. 5 §795B(c) | 30%; Del. Code tit. 5 §795H |
| DC | | 1996 D.C. Stat.11-142 | 6/13/1996 | No; D.C. Code §26-737 | Yes; D.C.Code §26-734 | Yes; D.C.Code §26-734 | 30% (per Riegle Neal) |

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**Table A1** – *Continued from previous page*

| State | Changes to State Interstate Branching Laws | Session Law | Effective Date | Minimum Age of Institution (Bank or Branch) for Acquisitions | Allows de novo Interstate Branching | Interstate Branching by Acquisition of Single Branch or Portions of an Institution | Statewide Deposit Cap on Branch Acquisitions |
|---|---|---|---|---|---|---|---|
| Florida | Allowed de novo branching, branch acquisition and eliminatedminimum age requirement. | 2011 Fla. Laws 194 | 7/1/2011 | No | Yes; Fla. Stat.§658.2953(11)-(c) | Yes; Fla. Stat.§658.2953(11)-(c) | 30%; Fla. Stat.§658.2953(5)-(b) |
| Florida | | 1996 Fla. Laws 168 | 6/1/1997 | 3 years; Fla. Stat.§658.2953(7)-(c) | No; Fla. Stat.§658.2953(5) | No | 30%; Fla. Stat.§658.2953(7)-(b) |
| Georgia | Allowed de novo branching and branch acquisition. | 2016 Ga. Laws, Act 450, § 2-25 | 7/1/2016 | 3 years; Ga. Code §7-1- 628.3(b) | Yes; Ga. Code §7-1-628.8(b) | Yes; Ga. Code §7-1-628.9(a) | 30%; Ga. Code §7-1-628.3(a) |
| Georgia | Reduced minimum age requirement from 5 to 3 years. | 2002 Ga. Laws670 §4 | 5/10/2002 | 3 years; Ga. Code §7-1- 628.3(b) | No; Ga. Code §7-1-628.8 | No; Ga. Code §7-1-628.9 | 30%; Ga. Code §7-1-628.3(a)(2) |
| Georgia | | 1996 Ga. Laws279 §2 | 6/1/1997 | 5 years; Ga.Code §7-1-608,§7-1-622, §7-1- 628.3(b) | No; Ga. Code §7-1-628.8 | No; Ga. Code §7-1-628.9 | 30%; Ga. Code §7-1-628.3(a)(2) |
| Hawaii | Allowed de novo branching, branch acquisition and eliminated minimum age requirement. | 1999 Haw. Sess. Laws 283 §2 | 1/1/2001 | No; Haw. Rev. Stat. §412:12-104 | Yes; Haw.Rev. Stat. §412:12-105(a) | Yes; Haw.Rev. Stat. §412:12-105(b) | 30%; Haw. Rev. Stat. §412:12-106 |
| Hawaii | | 1996 Haw. Sess.Laws 155 | 6/1/1997 | 5 years; Haw. Rev. Stat. §412:12-104 | No; Haw. Rev. Stat. §412-105 | No; Haw. Rev. Stat. §412:12- 105 | 30% (per Riegle Neal); Haw. Rev. Stat. §412:12-106 |
| Idaho | Allowed de novo branching, branch acquisition and eliminated minimum age requirement. | 2015 Idaho Sess.Laws 204 | 7/1/2015 | No | Yes; Idaho Code §26- 1604(1) | Yes; Idaho Code §26- 1604(3) | Statute explicitly states no deposit cap; Idaho Code §26-1606 |

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**Table A1** – *Continued from previous page*

| State | Changes to State Interstate Branching Laws | Session Law | Effective Date | Minimum Age of Institution (Bank or Branch) for Acquisitions | Allows de novo Interstate Branching | Interstate Branching by Acquisition of Single Branch or Portions of an Institution | Statewide Deposit Cap on Branch Acquisitions |
|---|---|---|---|---|---|---|---|
| Idaho | | 1995 Idaho Sess.Laws 99 | 9/29/1995 | 5 years; Idaho Code §26-1605 | No | No; Idaho Code §26- 1604(2) | Statute explicitly states no deposit cap; Idaho Code §26-1606 |
| Illinois | Allowed de novobranching, branch acquisition and eliminatedminimum agerequirement. Added reciprocity condition for minimum age requirement, de novo branching and branch acquisition. | 2004 Ill. Laws 93-965 | 8/20/2004 | No age requirement if reciprocity; 5 years if no reciprocity; 205 Ill. Comp. Stat. 5/21.2 | Yes; reciprocity required; 205 Ill. Comp. Stat. 5/21.4 | Yes; reciprocity required; 205 Ill. Comp. Stat. 5/21.4 | 30%; 205 Ill.Comp. Stat. 5/21.3 |
| Illinois | | 1997 Ill. Laws 90-226 | 6/1/1997 | 5 years; 205 Ill. Comp. Stat. 5/21.2 | No; 205 Ill. Comp. Stat. 5/21.4 | No | 30%; 205 Ill.Comp. Stat. 5/21.3 |
| Indiana | Minimum age requirement was repealed | 2011 Ind. Acts 89 | 7/1/2011 | No | Yes;reciprocity required; Ind. Code §28-2- 18-20 | Yes;reciprocity required; Ind. Code §28-2- 18-21 | 30% (per Federal Deposit Insurance Act) |
| Indiana | Added minimum age requirement. | 1998 Ind. Acts 11 | 7/1/1998 | 5 years; Ind. Code §28-2-17-20.1(b) | Yes;reciprocity required; Ind. Code §28-2- 18-20 | Yes;reciprocity required; Ind. Code §28-2- 18-21 | 30% (per Riegle Neal) |
| Indiana | | 1996 Ind. Acts 171 | 6/1/1997 | No | Yes;reciprocity required; Ind. Code §28-2- 18-20 | Yes;reciprocity required; Ind. Code §28-2- 18-21 | 30% (per Riegle Neal) |
| Iowa | | 1996 Iowa Acts 1056 | 4/4/1996 | 5 years; Iowa Code §524.1805(1) | No; Iowa Code §524.1205(4) | No | 15%; Iowa Code §524.1802(7) |
| Kansas | | 1995 Kan. Sess.Laws 79 | 9/29/1995 | 5 years; Kan. Stat. Ann. §9-541(a) | No | No | 15%; Kan. Stat. Ann. §9-520 |

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**Table A1** – *Continued from previous page*

| State | Changes to State Interstate Branching Laws | Session Law | Effective Date | Minimum Age of Institution (Bank or Branch) for Acquisitions | Allows de novo Interstate Branching | Interstate Branching by Acquisition of Single Branch or Portions of an Institution | Statewide Deposit Cap on Branch Acquisitions |
|---|---|---|---|---|---|---|---|
| Kentucky | Added reciprocity condition for minimum age requirement. | 2004 Ky. Acts 13 | 3/22/2004 | No; reciprocity required; Ky. Rev. Stat. §287.920 | No | No | 15%; Ky. Rev.Stat. §287.920 |
| Kentucky | Eliminated minimum age requirement. | 2000 Ky. Acts 135 | 3/17/2000 | No; reciprocity not required; Ky. Rev. Stat. §287.920 | No | No | 15%; Ky. Rev.Stat. §287.920 |
| Kentucky | | 1996. Ky. Acts 338 | 6/1/1997 | 5 years; Ky. Rev. Stat.§287.920 | No | No | 15%; Ky. Rev.Stat. §287.920 |
| Louisiana | De novo branching and branch acquisition are allowed | 2021 La. Acts 17 | 8/1/2021 | 5 years; La. Rev. Stat. Ann.§6:532(11) | Yes | Yes | 30% (per Federal Deposit Insurance Act) |
| Louisiana | | 1995 La. Acts 1249 | 6/1/1997 | 5 years; La. Rev. Stat. Ann.§6:532(11) | No; La. Rev. Stat. Ann.§6:536(c) | No; La. Rev. Stat. Ann.§6:536(c) | 30% (per Riegle Neal) |
| Maine | | 1996 Me. Laws 628 | 1/1/1997 | No | Yes; reciprocity required; Me.Rev. Stat. Ann.tit. 9B §373(1) | Yes; reciprocity required; Me.Rev. Stat. Ann.tit. 9B §373(1) | 30%; Me. Rev.Stat. Ann. tit. 9B§241(10) |
| Maryland | | 1995 Md. Laws 213 | 9/29/1995 | No | Yes; Md. Code Ann. Fin Inst.§5-1003 | Yes; Md. Code Ann. Fin Inst.§5-1003(2) | 30%; Md. Code Ann. Fin Inst. §5- 1013 |
| Massach-usetts | | 1996 Mass. Acts 238 | 8/2/1996 | 3 years; Mass. Gen. Laws ch.167 §39B | Yes; Mass. Gen. Laws ch.167 §39C | Yes; Mass. Gen. Laws ch.167 §39C | 30%; Mass. Gen. Laws ch.167 §39B |
| Michigan | | 1995 Mich. Pub.Acts 202 | 11/29/1995 | No; Mich. Comp. Laws §487.13702 | Yes; reciprocity required; Mich. Comp. Laws §487.13711(7) | Yes; reciprocity required; Mich. Comp. Laws §487.14107(1) | Statue explicitly states no deposit cap. Mich. Comp. Laws §487.11104(8) |

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**Table A1** – *Continued from previous page*

| State | Changes to State Interstate Branching Laws | Session Law | Effective Date | Minimum Age of Institution (Bank or Branch) for Acquisitions | Allows de novo Interstate Branching | Interstate Branching by Acquisition of Single Branch or Portions of an Institution | Statewide Deposit Cap on Branch Acquisitions |
|---|---|---|---|---|---|---|---|
| Minnesota | | 1997 Minn. Laws 117 | 6/1/1997 | 5 years; Minn. Stat. §49.411(4) | No | No | 30% (per Riegle Neal) |
| Mississip-pi | | 1995 Miss. Laws 304 | 6/1/1997 | 5 years; Miss.Code Ann. §81- 7-8(1) | No | No | 25%; Miss. Code Ann. §81-7-8(2) |
| Missouri | | 1995 Mo. Laws 34 | 9/29/1995 | 5 years; Mo.Rev. Stat.§362.077 | No | No | 13%; Mo. Rev.Stat. §362.915 |
| Montana | 22% Deposit cap on branch acquisitions is repealed | 2019 Mont. Laws 58 | 10/1/2019 | 5 years; Mont. Code Ann. §32-1-370 | Yes; Mont. Code Ann. §32-1-372 | Yes; Mont. Code Ann. §32-1-376 | 30%; Mont. Code Ann. §32-1-370 |
| Montana | Branch acquisition is allowed | 2013 Mont. Laws 138 | 10/1/2013 | 5 years; Mont. Code Ann. §32-1-370 | Yes; Mont. Code Ann. §32-1-372 | Yes; Mont. Code Ann. §32-1-376 | 22%; Mont. Code Ann. §32-1-370 |
| Montana | De novo branching is allowed | 2011 Mont. Laws 64 | 10/1/2011 | 5 years; Mont. Code Ann. §32-1-370 | Yes; Mont. Code Ann. §32-1-372 | No | 22%; Mont. Code Ann. §32-1-370 |
| Montana | Opted in. Allowed branch acquisition with 5 year minimum age requirement, increased state deposit cap by 1% annually to a maximum of 22%. | 2001 Mont. Laws 36 | 10/1/2001 (enacted 1997) | 5 years; Mont. Code Ann. §32-1-370 | No | No | 22%; Mont. Code Ann. §32-1-383 |
| Montana | Opted out | 1995 Mont. Laws 265 §5 | 9/29/1995 | N/A | N/A | N/A | 18%; increases 1% per year up to 22%; Mont. Code Ann. §32-1-383(3) |

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**Table A1** – *Continued from previous page*

| State | Changes to State Interstate Branching Laws | Session Law | Effective Date | Minimum Age of Institution (Bank or Branch) for Acquisitions | Allows de novo Interstate Branching | Interstate Branching by Acquisition of Single Branch or Portions of an Institution | Statewide Deposit Cap on Branch Acquisitions |
|---|---|---|---|---|---|---|---|
| Nebraska | Eliminated minimum age requirement.De novo branching and branch acquisition are allowed. State deposit cap is increased from 14% to 22%. | 2012 Neb. Laws 963 | 4/7/2012 | No | Yes; Neb. Rev. Stat. §8-2104 | Yes; Neb. Rev. Stat. §8-2104 | 22%; ; Neb. Rev. Stat. §8-2106 |
| Nebraska | | 1997 Neb. Laws 351 | 5/31/1997 | 5 years; Neb. Rev. Stat. §8-2104 | No; Neb. Rev. Stat. §8-2105 | No; Neb. Rev. Stat. §8-2105 | 14%; Neb. Rev. Stat. §8-2106 |
| Nevada | | 1995 Nev. Stat. 1555 | 9/29/1995 | 5 years; Nev. Rev. Stat.§666.405(1) | No; Nev. Rev. Stat. §666.410 (Exception forcounties of 100,000 or less) | No; Nev. Rev. Stat. §666.410 (Exception forcounties of 100,000 or less) | 30% (per Riegle Neal) |
| New Hampshire | Eliminated minimum age requirement. | 2001 N.H. Laws 269 | 1/1/2002 | No | Yes; reciprocity required; N.H. Rev. Stat. §384:60 | Yes; reciprocity required; N.H. Rev. Stat. §384:60 | 30%; N.H. Rev. Stat. §384-B:2, §384-B:3 |
| New Hampshire | Allowed de novo branching, branch acquisition, and changed state deposit cap from 20% to 30%. | 2000 N.H. Laws 236 | 8/1/2000 | 5 years; N.H.Rev. Stat. §384:59 | Yes; reciprocity required; N.H. Rev. Stat. §384:60 | Yes; reciprocity required; N.H. Rev. Stat. §384:60 | 30%; N.H. Rev. Stat. §384-B:2, §384-B:3, §383:59 |
| New Hampshire | | 1996 N.H. Laws 288 | 6/1/1997 | 5 years; N.H. Rev. Stat. §384:59 | No | No | 20%; N.H. Rev. Stat. §384:59 |
| New Jersey | | 1996 N.J. Laws 17 §16 | 4/17/1996 | No; N.J. Stat. Ann. §17:9A-133.1 | No | Yes; N.J. Stat. Ann.§ 17:9A-133.1(e) | 30%; N.J. Stat. Ann. §17:9A-133.1(b) |
| New Mexico | | 1996 N.M. Laws 2 | 6/1/1996 | 5 years; N.M. Stat. §58-1C-5(C) | No; N.M. Stat. §58-1C-6 | No; N.M. Stat. §58-1C-6 | 40%; N.M. Stat. §58-1C-5(B) |

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**Table A1** – *Continued from previous page*

| State | Changes to State Interstate Branching Laws | Session Law | Effective Date | Minimum Age of Institution (Bank or Branch) for Acquisitions | Allows de novo Interstate Branching | Interstate Branching by Acquisition of Single Branch or Portions of an Institution | Statewide Deposit Cap on Branch Acquisitions |
|---|---|---|---|---|---|---|---|
| New York | Eliminated minimum age requirement. | 2012 N.Y. Laws 180 | 7/18/2012 | No | Yes; N.Y. Banking Law §223-a | Yes; N.Y.Banking Law §223 | 30% (per Federal Deposit Insurance Act) |
| New York | Allowed de novo branching | 2008 N.Y. Laws 316 | 7/21/2008 | 5 years; N.Y. Banking Law §223-a | Yes; N.Y. Banking Law §223-b | Yes; N.Y.Banking Law §223 | 30% (per Riegle Neal) |
| New York | | 1996 N.Y. Laws 9 | 6/1/1997 | 5 years; N.Y. Banking Law §223-a | No; N.Y.Banking Law §224 | Yes; N.Y. Banking Law §223 | 30% (per Riegle Neal) |
| North Carolina | Three statutes enacted between 1995 and 1999, but the last two contained no effective change. The original act (1995) permitted de novo branching and branch acquisition with reciprocity until 1997. In 1997, North Carolina extended the reciprocity condition until 1999. In 1999, North Carolina made the reciprocity condition permanent by eliminating the clause that reciprocity expire on 6/1/99. | 1995 N.C. Sess.Laws 322 | 7/1/1995 | No; reciprocity required; N.C. Gen. Stat. §53-224.19 | Yes; reciprocity required; N.C. Gen. Stat. §53-224.12 | Yes; reciprocity required; N.C. Gen. Stat. §53-224.13 | 30% (per Riegle Neal) |

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**Table A1** – *Continued from previous page*

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|---|---|---|---|---|---|---|---|
| North Dakota | Allowed de novo branching and branch acquisition. Added reciprocity condition for de novo branching and branch acquisition. | 2003 N.D. Laws 75 §4 | 8/1/2003 | No; reciprocity required; N.D. Cent. Code §6.08.4-04 | Yes; reciprocity required; N.D. Cent. Code §6-08.4-04 | Yes; reciprocity required; N.D. Cent. Code §6-08.4-04 | 25%; N.D. Cent.Code §6-08.3- 03.1 |
| North Dakota | | 1997 N.D. Laws 79 §19 | 5/31/1997 | No; reciprocity required; N.D. Cent. Code §6.08.3-13 | No | No | 25%; N.D. Cent.Code §6-08.3- 03.1 |
| Ohio | | 1997 Ohio Laws 22 | 5/21/1997 | No; Ohio Rev. Code Ann.§1115.05(B) | Yes; Ohio Rev. Code Ann. §1117.01 | Yes; Ohio Rev. Code Ann. §1117.01 | 30%; Ohio Rev. Code Ann.§1115.05(B)-(1)(a) |
| Oklahoma | Allowed de novo branching, branch acquisition, eliminated minimum age requirement, and increased state deposit cap from 15% to 20% in 2000. | 2000 Okla. Sess.Laws 205 §18 | 5/17/2000 | No; Okla. Stat. tit. 6 §501.1(K) | Yes; Okla. Stat. tit. 6 §501.1 | Yes; Okla. Stat. tit. 6 §501.1 | 20%; Okla. Stat. tit. 6 §501.1 |
| Oklahoma | | 1997 Okla. Sess.Laws 120 §1 | 5/31/1997 | 5 years; Okla. Stat. tit. 6 §501.1(K) | No | No | 15%; Okla. Stat. tit. 6 §501.1 |
| Oregon | Allowed de novo branching, branch acquisition, eliminated minimum age requirement. | 2011 Or. Laws 263 §19 | 6/7/2011 | No | Yes; Or. Rev. Stat. §713.270(2) | Yes; Or. Rev. Stat. §713.270(1) | 30% (per Federal Deposit Insurance Act) |

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**Table A1** – *Continued from previous page*

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|---|---|---|---|---|---|---|---|
| Oregon | | 1997 Or. Laws 631 §284 | 7/1/1997 | 3 years; Or. Rev. Stat. §713.270 | No | No | 30% (per Riegle Neal) |
| Pennsylvania | | 1995 Pa. Laws 39 | 7/6/1995 | No; 7 Pa. Stat. Ann. §1602 | Yes; 7 Pa. Stat. Ann. §904 | Yes; 7 Pa. Stat. Ann. §904 & Pa. Stat. Chap. 16 | 30% (per Riegle Neal) |
| Rhode Island | | 1995 R.I. Pub. Laws 82 §45 | 6/20/1995 | No; R.I. Gen.Laws §19-7-3 | Yes; R.I. Gen. Laws §19-7-9 | Yes; R.I. Gen. Laws §19-7-9 | 30% (per Riegle Neal) |
| South Carolina | | 1996 S.C. Acts310 (H.B. 4790) | 7/1/1996 | 5 years; S.C. Code Ann. §34-25-240(c) | No | No | 30%; S.C. Code Ann. §34-25-240 |
| South Dakota | Allowed de novo branching, branch acquisition, eliminated minimum age requirement. | 2008 S.D. Laws 252 | 3/10/2008 | No | Yes; S.D. Codified Laws §51A-7-16 | Yes; S.D. Codified Laws §51A-7-16 | 30% (per Riegle Neal) |
| South Dakota | | 1996 S.D. Laws 280 | 3/9/1996 | 5 years; S.D. Codified Laws §51A-7-16 | No | No | 30% (per Riegle Neal) |
| Tennessee | Reduced minimum age requirement from 5 to 3 years in 2003. | 2003 Tenn Pub. Acts 32 | 3/17/2003 | 3 years; Tenn. Code Ann. §45-2-1403 | Yes; reciprocity required;Tenn. Code Ann. §45-2-1412 | Yes; reciprocity required; Tenn. Code Ann. §45-2-1402(1) | 30%; Tenn. Code Ann. §45-2-1404 |
| Tennessee | Allowed de novo branching. Added reciprocity condition for de novo branching. | 2001 Tenn. Pub.Acts 140 | 7/1/2001 | 5 years; Tenn. Code Ann. §45-2-1403 | Yes; reciprocity required;Tenn. Code Ann. §45-2-1412 | Yes; reciprocity required; Tenn. Code Ann. §45-2-1402(1) | 30%; Tenn. Code Ann. §45-2-1404 |
| Tennessee | Allowed branch acquisition. Added reciprocity condition for branch acquisition. | 1998 Tenn. Pub.Acts 742 | 5/1/1998 | 5 years; Tenn. Code Ann. §45-2-1403 | No | Yes; reciprocity required; Tenn. Code Ann. §45-2-1412(1) | 30%; Tenn. Code Ann. §45-2-1404 |

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**Table A1** – *Continued from previous page*

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|---|---|---|---|---|---|---|---|
| Tennessee | | 1996 Tenn. Pub. Acts 768 | 6/1/1997 | 5 years; Tenn. Code Ann. §45-2-1403 | No | No | 30%; Tenn. Code Ann. §45-2-1404 |
| Texas | Eliminated minimum age requirement. Reciprocity requirements are removed | 2013 Tex. Gen. Laws ch.940 | 6/14/2013 | No | Yes; Tex. Fin. Code Ann. §203.002(a) | Yes; Tex. Fin. Code Ann.§203.002(c) | 20%; Tex. Fin. Code Ann.§203.004 |
| Texas | Allowed de novo branching and branch acquisition. Added reciprocity condition for de novo branching and branch acquisition. No minimum age requirement for states with reciprocity, 5 year minimum age requirement for states with no reciprocity. | 1999 Tex. Gen.Laws 344 | 9/1/1999 | No, if reciprocity; 5 years if no reciprocity for de novo; Tex. Fin. Code Ann. §203.005 | Yes; reciprocity required; Tex. Fin. Code Ann. §203.002(a) | Yes; reciprocity required; Tex. Fin. Code Ann.§203.002(c) | 20%; Tex. Fin. Code Ann.§203.004 |
| Texas | ***Opted out*** | 1995 Tex. Gen.Laws ch. 58 | 8/28/1995 | N/A | N/A | N/A | 20% |
| Utah | Allowed de novo branching. Added reciprocity condition. | 2001 Utah Laws 211 | 4/30/2001 | 5 years; Utah Code Ann. §7-1-703(7) | Yes; reciprocity required; Utah Code Ann. §7-1-702(5)(b) &5(c) | Yes; Utah Code Ann. § 7-1-702(4)(a); Utah Code Ann. §7-1-703(7). | 30% (per Riegle Neal) |

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**Table A1** – *Continued from previous page*

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|---|---|---|---|---|---|---|---|
| Utah | | 1995 Utah Laws 49 | 6/1/1995 | 5 years; Utah Code Ann. §7-1-703(7) | No; Utah Code Ann. §7-1-702(5)(b) | Yes; Utah Code Ann. § 7-1-702(4)(a); Utah Code Ann. §7-1-703(7). | 30% (per Riegle Neal) |
| Vermont | Eliminated minimum age requirement, allowed de novo branching. Added reciprocity condition for de novo branching. | 1999 Vt. Acts & Resolves 153 §2 | 1/1/2001 | No; 8 Vt. Stat. Ann. tit. 205§15202 | Yes; reciprocity required; 8 Vt. Stat. Ann.§15202(b)(2) | Yes; 8 Vt. Stat. Ann.§15202(b)(1) | 30%; 8 Vt. Stat. Ann. §14108 |
| Vermont | | 1995 Vt. Acts & Resolves 142 §4 | 5/30/1996 | 5 years; 8 Vt. Stat. Ann. §654 | No | Yes; 8 Vt. Stat.Ann. §654(b)(2) | 30%; 8 Vt. Stat. Ann. §1015 |
| Virginia | | 1995 Va. Laws301 | 9/29/1995 | No; Va. Code Ann. §6.1- 44.18 | Yes; reciprocity required; Va. Code Ann. §6.1-44.4 | Yes; Va. Code Ann. §6.1-44.5 | 30% (per Riegle Neal) |
| Washing-ton | Allowed de novo branching and branch acquisition. Added reciprocity condition for de novo branching and branch acquisition. | 2005 Wash. Laws348 | 5/9/2005 | 5 years; Wash. Rev. Code §30.04.232 | Yes; reciprocity required;Wash. Rev.Code §30.38.015 | Yes; reciprocity required;Wash. Rev.Code §30.38.015 | 30% (per Riegle Neal); Wash. Rev. Code §30.49.125 |
| Washing-ton | | 1996 Wash. Laws 2 | 6/6/1996 | 5 years; Wash. Rev. Code §30.04.232 | No | No | 30% (per Riegle Neal); Wash. Rev. Code §30.49.125 |
| West Virginia | | 1996 W. Va. Acts 72 | 5/31/1997 | No; W.Va.Code §31A-8D- 4 | Yes; reciprocity required; W.Va. Code §31A-8E-4 | Yes; reciprocity required; W.Va. Code §31A-8E-4 | 25%; W.Va. Code §31A-2-12a |

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**Table A1** – *Continued from previous page*

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|---|---|---|---|---|---|---|---|
| Wisconsin | Allowed de novo branching. Added reciprocity condition for de novo branching. No minimum age requirement for states with reciprocity, 5 year minimum age requirement for states with no reciprocity. | 2005 Wis. Laws 217 | 4/11/2006 | No, if reciprocity; 5 years if no reciprocity; §221.0901(8) | Yes; reciprocity required; Wis. Stat. §221.0904 | No | 30%; Wis. Stat.§221.0901(7) |
| Wisconsin | | 1995 Wis. Laws 336 | 5/1/1996 | 5 years; Wis. Stat.§221.0901(8) | No | No | 30%; Wis. Stat.§221.0901(7) |
| Wyoming | No minimum age requirement. Wyo. Stat. Ann. §13-2-804(c) is repealed | 2013 Wyo. Sess. Laws | 7/1/2013 | No | No | No | 30%; Wyo. Stat. Ann. §13-2-804(b) |
| Wyoming | | 1997 Wyo. Sess. Laws | 5/31/1997 | 3 years; Wyo. Stat. Ann. §13-2-804(c) | No | No | 30%; Wyo. Stat. Ann. §13-2-804(b) |

**Table A2.** Discrimination Complaint Example

| | |
|---|---|
| Date received | 2021/1/28 |
| Product | Mortgage |
| Subproduct | Conventional home mortgage |
| Issue | Applying for a mortgage or refinancing an existing mortgage |
| Consumer complaint narrative | I was denied a mortgage loan from Bank of America for a property in XXXX XXXX, NJ on XX/XX/2021. I haven't received written confirmation yet, but the verbal reasoning is due to my employment history and employment gaps. The loan officer sounded very condescending when she told me that I was denied. It doesn't make sense to me to be denied for that reason alone as my employment history was stated on Day 1 and I was pre-qualified for the loan. To make matters worse, I was denied after having an appraisal done on the property so I was fairly far into the process with a refund unlikely for the $570.00 I was charged for the appraisal.<br><br>I believe that I am being discriminated against because I disclosed my race as XXXX on Section X of the XXXX loan application. I would greatly appreciate it if this could be looked into to ensure that Bank of America didn't discriminate against me by showing that they also denied mortgage loans to people of other races, particularly XXXX people, with similar credit, income or debt-to-income ratio, savings, educational, and employment backgrounds as me.<br><br>Quick summary of my background : I have excellent credit, my credit score is over XXXX. My 2 employment gaps greater than 30 days were related to school. I have a XXXX XXXX XXXX and currently in XXXX XXXX seeking a XXXX. I work full time as a mortgage loan advisor where I earn over $45000.00 annually. I have savings of $30000.00. The house I was looking to purchase cost $180000.00. |
| Company | BANK OF AMERICA, NATIONAL ASSOCIATION |
| State | PA |
| Zip code | 19003 |
| Submitted via | Web |
| Company response to consumer | Closed with monetary relief |

**Table A3.** Do entrepreneurial gaps drive deregulation?

This table tests whether state-level variables can predict the timing of the implementation of bank deregulation. Standard errors are double clustered by state and year.

| | (1) | (2) |
|---|---|---|
| *Dep. Var*= Time to Deregulation | | |
| Female Ratio | -0.015 | 0.009 |
| | (0.039) | (0.041) |
| Minority Ratio | 0.039 | 0.051 |
| | (0.054) | (0.053) |
| Entrepreneur Ratio | | 0.113 |
| | | (0.090) |
| Female Entrepreneur Ratio | | -0.285 |
| | | (0.233) |
| Minority Entrepreneur Ratio | | -0.151 |
| | | (0.202) |
| State FE | Yes | Yes |
| Year FE | Yes | Yes |
| Observations | 1,181 | 1,181 |
| $R^2$ | 0.766 | 0.767 |