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Credit Supply Shocks and Household Leverage: Evidence from the US Banking Deregulation*

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Abstract

We use a quasi-natural experimental framework provided by the staggered removals of interstate banking restrictions to identify the effect of a credit supply shock on household finances in the US. Banking deregulation is found to have increased the propensity to hold debt, the amount of debt held and the level of leverage. We also find that the deregulation had a more pronounced effect on non-white headed households. Moreover, we show how deregulation increased debt and leverage at the middle and the top of the debt and leverage distributions. The credit supply shock also had a relatively large effect on non-white headed households at the top 20% of the debt distribution.

Keywords: Access to Credit; Banking Competition; Household Finances; Leverage.

JEL classification: G28, D14, J15.

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1 Introduction

Household debt has received a large amount of attention in recent years from both policy makers and researchers. Particular concern has been expressed regarding the increasing levels of debt accumulated at the household level relative to low levels of household saving. Over the past three decades, the level of household debt has increased significantly. For example, in the US, in the third quarter of 2017, household debt stood at $12.96 trillion (FED, 2017), exceeding the pre-recession peak of 2008. In contrast, the personal saving rate in the US has fallen from 11.1% in 1980 to 6.7% in 2017 (US Bureau of Economic Analysis, 2018). The high level of household debt could impact on macroeconomic outcomes and influence the financial fragility of households. Consequently, from a policy perspective, it is important to fully understand the influence of both supply and demand side factors on household debt holding.

We contribute to the literature that explores the real effect of the repeal of the McFadden Act with the Interstate Banking and Branching Efficiency Act (IBBEA). Limited research has been conducted on the implications of changes in supply shocks, as captured by changes to banking regulation, for household finances. Furthermore, the banking sector has been one of the most heavily regulated sectors in the US. We examine the effects of the interstate bank branch deregulation, as measured by an index first compiled by Rice and Strahan (2010), on household liabilities and other measures of their financial position. As shown by Rice and Strahan (2010), this deregulation translated into an increase in the number of bank branch openings, which brought about an increased level of competition in the banking sector. Ultimately, this translated into a lower cost of capital and increased availability of credit for individuals and households. Specifically, we augment models of household debt holding with controls for banking deregulation to formally test whether a credit supply shock has a positive effect on household debt as well as on the level of household leverage. We find that the increased availability of credit led to an increased level of household debt. The positive effect of the banking deregulation on the level of total debt is found to be entirely driven by household secured debt. In

contrast, the results suggest that the effect of the banking deregulation on unsecured debt is statistically insignificant.

An important contribution of our paper relates to the effect of the deregulation on a range of household leverage measures. A household's leverage position indicates the household's ability to maintain repayments on their outstanding debt. We provide evidence that measures of household leverage increased as a result of the interstate bank branching deregulation. In addition, we document, through the application of quantile regression models, how the banking deregulation had differential impacts across the debt and leverage distributions. The results suggest that the banking deregulation had a greater impact at the center of the debt and the leverage distributions, as opposed to at the tails of the distributions.

Furthermore, we also explore whether individuals, who were more likely to be credit rationed before the banking liberalization, benefited from these policies. We build on previous work by Blanchflower et al. (2003) and Duca and Rosenthal (1993), which finds that non-white individuals have a higher probability than white individuals of being credit rationed. They find that non-white families are more likely to be credit constrained than comparable white families. Hence, to further investigate the impact of the credit supply shock, we evaluate the effect of the credit supply shock on the liabilities of white and non-white headed households. Specifically, we explore the effects of the banking deregulation on debt and leverage across different racial groups. We find that the positive effect of the banking deregulation on total debt holding is more pronounced for non-white headed households.

Finally, to gain further insights into the long-term macroeconomic implications of our household level findings, we conclude our empirical analysis by presenting a selection of state level correlations between household debt and economic growth around the latest financial crisis. We find a negative correlation between business cycle expansions and household debt. As expected, this correlation is larger, in absolute value, for the post-crisis period and for those states with a higher level of banking liberalization.

The outline of the paper is as follows: Section 2 presents a review of the existing literature; Section 3 provides a description of the data and the econometric methodology; Section 4 presents the results; and Section 5 provides a discussion of the link between banking liberalization, household debt and economic growth at the state level. Section 6 concludes.

2 Literature Review

We contribute to the household finance literature by exploiting the US interstate banking deregulation as an exogenous supply side shock. This allows us to uncover whether an increase in the availability of credit had a positive effect on household liabilities. In related research, Mian et al. (2017) explore how the financial liberalization of the early 1980s impacted business cycles across the US. Their key result suggests that the stronger the credit supply expansion, the more amplified are business cycles. Our analysis complements such findings and explores whether a household level dimension to such liberalization exists.

This paper links, as well as contributes to, two strands of the finance literature. The first strand deals with analysing the determinants of debt at the household level. Specifically, this strand of the literature explores both the propensity to hold debt and the amount of debt held at the household level. Such studies include Castronova and Hagstrom (2004), Yilmazer and DeVaney (2005), Bertaut et al. (2009) and Brown and Taylor (2014), amongst many others. Many of these studies exploit a life-cycle model to account for demand-based determinants. In this context, age and earnings, as well as a range of household and individual characteristics, are found to be important determinants of debt accumulation. For instance, Malmendier and Nagel (2011) found that individuals born during the US Great Depression of the 1930s are more likely to be risk averse and, therefore, accumulate less debt. The findings of Brown and Taylor (2008) suggest that the poorest and the youngest households in Germany, the UK and the US are the most vulnerable to adverse changes in their financial circumstances given their debt holdings

relative to the level of their financial assets. A related strand of the household finance literature has devoted attention to the rise in household indebtedness with the aim to assess both the macroeconomic sustainability of the debt and the possible link between household liabilities and macroeconomic outcomes. For example, Adelino et al. (2016), using data from the Home Mortgage Disclosure Act and the Internal Revenue Service for the US, find that financial development in the form of mortgage origination increased across all levels of income and not at the sub-prime level, as previously argued by Mian and Sufi (2009). They show that delinquencies increased particularly for middle-income and high-income borrowers. Such findings cast some doubt on the conventional narrative of a link between sub-prime borrowers, the housing market crisis of 2007/8 and the consequent financial crisis.

The second strand of the finance literature that this paper relates to concerns the effects of banking liberalization. This area of research began with Jayaratne and Strahan (1996), who showed how the intrastate branching deregulation in the US significantly increased the rates of real per capita growth in income and output. Following this study, a number of authors have examined how the intrastate branching and interstate banking deregulation events in the US in the 1970s and 1980s had real economic consequences. These studies find that deregulation spurs entrepreneurship (Black and Strahan, 2002), makes state business cycles smaller and more alike (Morgan et al., 2004), allows firm entry and access to bank credit (Cetorelli and Strahan, 2006), promotes creative destruction (Kerr and Nanda, 2009), and increases personal bankruptcy rates (Dick and Lehnert, 2010). Moreover, Rice and Strahan (2010) show that the interstate branching deregulation that occurred in the US in the mid-1990s expanded credit supply by reducing the cost of credit but had no effect on the amount borrowed by small firms. Chu (2018) shows an overall positive causal effect of the deregulation on credit supply in the real estate market.

Our focus is on a different sector of the economy - households rather than firms. Our paper is related to Célérier and Matray (2017) and Tewari (2014). In the former, they find a positive association between interstate deregulation and the probability that households

hold a bank account. This effect was found to be more pronounced amongst households that were previously credit rationed. In the latter, Tewari (2014) explores the effect of intrastate banking deregulation on home ownership and reports an increase in the flow of mortgage lending and the stock of ownership equal to 2% over a five year horizon.[1]

3 Data

3.1 Banking Deregulation

The banking sector has always been one of the most heavily regulated sectors in the US economy. An important piece of US legislation introduced by the McFadden Act of 1927 forbade the geographic expansion of banking activities across states. Each bank was allowed only to branch within the state in which it was headquartered.[2] By 1994, the majority of the states (42 states) did not permit interstate branching. In contrast, the majority allowed interstate banking.[3] Of the eight states that allowed interstate branching, only six allowed it on a reciprocal basis (see, for example, Johnson and Rice 2008). Throughout the 1980s and early 1990s, the US embarked on a process of liberalization of the finance industry. An important part of this liberalization was the 1994 IBBEA, which allowed for unrestricted interstate banking and legalized branching across the US. States had until June 1, 1997, to choose whether to opt-out of the new law's branching

[1] As explained below, our focus is on the interstate deregulation as opposed to the intrastate deregulation explored by Tewari (2014).

[2] The McFadden Act was a highly contested act and "was motivated by the federal government's desire to resolve the ambiguity about the powers of national banks, and preserve the attractiveness of national bank charters and membership in the nascent Federal Reserve System against regulatory competition from state bank regulators. It provided that in states where state branch banking existed, or could exist in the future, both national and state bank members of the Federal Reserve System would be allowed to operate branches within the city limits of the parent bank. This was viewed as a step towards further branching liberalization and greater bank competition at the local level." Rajan and Ramcharan (2016, p. 1846). The act was supposed to address concerns relating to the concentration of financial activity and concerns about the difficulty of supervising large banking operations expanding to multiple states.

[3] Specifically, "(1) interstate banking (acquiring or establishing a charter in a state outside the main bank's home state), (2) interstate branching (acquiring or establishing a branch office, an office which is not separately chartered or capitalized, in a state outside the main bank's home state)", Johnson and Rice (2008, p.85).

provisions, known as the Riegel-Neal Act.[4]

With the IBBEA, states were also allowed to erect barriers to out-of-state entry from the time of enactment in 1994 until the branching trigger date of June 1, 1997. These restrictive measures relate to four different areas: i) the minimum age of the targeted institution (5 years, 3 years or less); ii) *de-novo* interstate branching;[5] iii) acquisition of branches without acquiring the entire bank; and iv) a statewide deposit cap.[6]

Utilizing these four restrictions and following Rice and Strahan (2010), we construct a *5-point* time-varying index, *RSIndex*, that takes the value of 4 when the state is fully regulated and 0 with the highest level of openness towards interstate entry. Specifically, if a state imposed one of the above restrictions, the index takes the value of one, if the restrictions imposed by a state are two then the index takes the value of two and so on.[7]

It is important to acknowledge the potential endogeneity of banking deregulation across states. For example, Kroszner and Strahan (1999) and Rice and Strahan (2010) demonstrate that banking deregulation in the US was correlated with the lobbying power of small banks relative to large banks. However, deregulation was uncorrelated with economic conditions at the time of deregulation. As a consequence, states with relatively few small banks tended to deregulate early.[8]

[4] "Although all fifty states and the District of Columbia have opted into interstate branching, there was considerable debate and activity over whether their state should opt out of interstate branching. The pressure to opt out of interstate branching under IBBEA was based on the small bank versus big bank special interest issues that had thwarted interstate branching in the past. Some argued that interstate branching might imperil smaller communities by siphoning deposits out of the towns and using them to make loans to larger clients in financial centers elsewhere. States that debated opting out included Iowa, Texas, Colorado, Missouri, Oklahoma, Montana, New Mexico, Nebraska, and Kansas, with Texas and Montana opting out initially, though they later opted in", Johnson and Rice (2008, p.87).

[5] Section 613 of the Dodd-Frank Act eliminates the requirement that a state expressly "opt-in" to *de novo* branching. The legislation allows banks to establish branches in any state if the state where the branch is to be established would allow the establishment of a branch by a state bank chartered in that state.

[6] See Rice and Strahan (2010) for a full description of the specific details of these barriers.

[7] To aid interpretation of the results, we reverse the index.

[8] Unfortunately, we cannot formally test this in a similar way to Favara and Imbs (2015), due to a lack of information relating to the type of credit issuer in our data.

3.2 Household Data

Our household level data is drawn from the US Panel Study of Income Dynamics (PSID). The PSID is a longitudinal survey, which began in 1968, and initially included approximately 5,000 families and 18,000 individuals. The main survey was conducted annually until 1997. Since 1997 it has been collected biennially. The PSID contains an extensive range of socio-demographic information relating to households, which enables us to control for a wide variety of explanatory variables. Given that our focus lies on the effect of banking deregulation on household debt accumulation, we focus on information contained in the supplementary wealth modules. These wealth modules were collected in 1984, 1989, 1994 and biannually from 1999 onwards. Given the staggered timings of the banking deregulation, with the majority occurring between 1994 and 1997, we focus on the 1984, 1989, 1994, 1999, 2001, 2003 and 2005 waves of the survey. We restrict the analysis to the pre-financial crisis period due to the timings of the state level deregulations. As is standard in the literature, see for example, Brown and Taylor (2008), we focus on the head of the household and obtain a sample of 13,985 individuals, which corresponds to 41,741 observations. Since the PSID contains information on the state of residence of the household, we are able to merge information on the level of banking deregulation that households experience at a given point of time in a given state.

In line with Yilmazer and DeVaney (2005), Brown and Taylor (2008) and Brown and Taylor (2014), we start by exploring a range of household debt measures. Specifically, we analyse total debt, unsecured debt and secured debt, including both the incidence of holding debt and the level of debt held. Thus, we investigate whether the effects of banking deregulation differ by debt type. Secured debt is based on the responses to the following questions: "Do you have a mortgage on this property?" and "About how much is the remaining principal on this mortgage?"; and "Do you also have a second mortgage?" and "About how much is the remaining principal on this mortgage?" Summary statistics are provided in Table 1 Panel A. Of our sample, 61.7% households do not hold a mortgage. The level of unsecured debt is based on the question: "If you added up all

these [debts/debts for all of your family], about how much would they amount to right now?" These include the levels of non-mortgage debt such as: credit card charges; student loans; medical or legal bills; or loans from relatives. This forms the measure of unsecured debt; 51.3% of households report holding no unsecured debt. Finally, total debt is the summation of secured and unsecured debt. 36.6% of the sample report zero household total debt.

A parametric approach to deal with the issue of non-normality that originates with Burbidge et al. (1988), is to use the inverse hyperbolic sine (IHS) transformation of the dependent variable. For example, Friedline et al. (2015) apply the IHS transformation to data on household wealth. As a consequence of the skewed nature of the debt variables, we apply the IHS transformation to our dependent variables, as follows:

$$asinh(y) = ln(y + (y^2 + 1)^{1/2}). \tag{1}$$

This can be interpreted in the same way as a logarithmic transformation. However, the IHS transformation allows the occurrence of zeros and negative values.[9] Table 1 presents summary statistics relating to the distributions of the dependent variables. The statistics indicate that total debt displays a negative skew, whereas both secured and unsecured debt display positive skewness. Figure 1 presents the distribution of household total debt and Figure 4 shows how the distribution of total debt has changed over time for regulated and deregulated states. Figure 4 suggests that, where there was banking deregulation, the level of debt increased, as represented by a shift to the right and an increase in density, compared to those states where deregulation was not implemented. Figures 5 and 6 provide a better understanding of what drives the shift in total debt. It is evident that this is driven entirely by the increase in secured debt. This is confirmed by Panels B and C in Table 1, where the summary statistics are split by deregulation status: those states which experienced no deregulation at the time of the survey, $RSIndex = 0$; and those states

[9]The IHS transformation was implemented using the *asinh* command in STATA. We have also conducted the analysis using the standard logarithm transformation, $ln(y + 1)$, and obtain similar results. They are available upon request.

which had some deregulation, $RSIndex > 0$.[10] These summary statistics provide some interesting insights. Specifically, debt holdings and the propensity to hold debt are higher in deregulated states. For example, in the non-deregulated states, the probability of any debt holding is 61.5% compared to 65.6% in a state which experienced some deregulation. This pattern is consistent across both unsecured and secured debt holding. In addition, the level of debt is considerably higher in deregulated states ($RSIndex > 0$), as compared to non-deregulated states ($RSIndex = 0$). For example, the average level of total debt is \$34,082 in regulated states compared to \$59,503 in deregulated states.

We also explore the effects of banking deregulation on the leverage of the household. Such measures provide an indication of the household's financial position. This allows us to investigate whether household financial fragility has increased as a result of the credit supply expansion. We use three leverage ratios, which are defined as the proportion of total debt with respect to: i) household income; ii) the house value; and iii) the value of financial assets. The leverage position of the household is an indicator of whether the debt accumulated by the household is at a sustainable or an excessive level.

The measures of leverage are defined as follows:

$$Leverage_{ist} = \frac{Debt_{ist}}{Income_{ist}}; \tag{2}$$

$$Leverage_{ist} = \frac{Debt_{ist}}{HouseValue_{ist}}; \tag{3}$$

and

$$Leverage_{ist} = \frac{Debt_{ist}}{FinancialAssets_{ist}}. \tag{4}$$

The subscripts i, s and t identify the household, state of residence and the year of the survey, respectively. Income refers to the household's total annual income. House value is the self-reported house value and the value of financial assets is defined as the sum of

[10]For example, New Hampshire has an $RSIndex = 0$ in 1997, indicating no deregulation, while there is complete deregulation by 2002, that is, $RSIndex = 4$. This implies that observations relating to New Hampshire from the survey waves 2003 and 2005 are included in Panel B and the data for all other waves are in Panel A.

the household's levels of stocks, savings, bonds and pension wealth. The total debt-to-income ratio is a measure of the household's overall financial position. It has been used extensively in the existing literature, see, for example, Iacoviello (2008), Mian and Sufi (2011) and Philippon and Midrigan (2011). Moreover, this ratio is important because it is used by lenders to determine household repayment capacity. The second measure captures the fact that mortgages tend to be the largest component of household debt. Hence, increases in house values can affect household leverage since new homeowners may have to borrow larger sums to buy a house. For existing homeowners, a wealth channel may be observed. Increases in house prices may make home owners feel richer and they may decide to borrow against their increased collateral to fund spending on consumer goods and services.[11] Finally, we employ the ratio between total debt and the financial assets held by the household. This ratio captures the household's vulnerability to economic shocks, such as becoming unemployed or ill. The value of assets provides an indication of the household's ability to pay down the debt. The smaller (higher) the leverage, defined as the debt-to-asset ratio, the higher (lower) will be the household's resilience to such shocks.

The summary statistics in Table 1 relating to the leverage measures reveal a similar picture to the level of debt held. Across all of the leverage measures, the mean is higher in the deregulated states than in regulated states. Interestingly, for all three measures, the level of skewness is lower and the level of kurtosis is higher in the deregulated states. This suggests a more concentrated distribution and less extreme positive values.

In line with the existing literature, we initially visually explore the effect of banking deregulation on household debt. For brevity, we focus on the propensity to hold debt, the level of total debt held and the total debt-to-income ratio, as presented in Figures 7, 8 and 9, respectively. These figures illustrate the likelihood of holding debt and the level of debt held in the years before and after deregulation, relative to non-deregulated states. There is a significant increase in the propensity to hold debt, in the level of total

[11]The existing literature has provided convincing evidence on the link between house price value, borrowing and, ultimately, consumer spending (see, for example, Adelino et al. (2016) and Mian et al. (2013) for the US and Cloyne et al. (2019) for UK evidence).

debt held as well as in the total debt-to-income ratio. Such patterns are explored in our regression analysis, as detailed below.

3.3 Methodology

The baseline models estimate the effects of the banking deregulation on the probability of holding debt, the level of debt held and leverage. The basic relationship is given by the following equation:

$$y^*_{ist} = \alpha RSIndex_{st} + x^{'}_{ist}\beta + \phi MacroEconomic_{st} + \delta_t + \nu_s + \epsilon_{ist}, \tag{5}$$

where y^*_{ist} is the dependent variable, *RSIndex* is the level of deregulation in state s at time t, and X_{ist} is a vector of household characteristics. The household characteristics in the X vector include head of household characteristics such as age, age squared, gender, ethnicity, education, health, labour market status, marital status as well as household controls such as whether there is a child present in the household, the log of total assets held by the household and home ownership. Summary statistics relating to the control variables are presented in Table 2. $MacroEconomic$ is a vector of state level controls, which includes the unemployment rate, GDP growth and house price growth.[12] ν_s and δ_t are state and year fixed effects, respectively. For each type of debt (total debt, secured debt and unsecured debt), we explore the determinants of the propensity to hold debt by specifying random effects probit models. We also explore the determinants of the amount of debt held and household leverage using random effects tobit models, given that debt is censored. The issues associated with estimating non-linear models with fixed effects are well-known in the existing literature, see, for example, Greene (2004). Hence, following Mundlak (1978), in order to account for potential individual heterogeneity, we include averages of the time varying variables.[13] This empirical strategy has been employed by

[12]House price growth is calculated using the Freddie Mac house price index. State level GDP is from the Bureau of Economic Analysis and the unemployment statistics are collected from the US Bureau of Labor Statistics. The nature of the dataset does not allow us to use more granular data.

[13]These include age, income and financial assets.

for example, Brown et al. (2010) and Brown and Taylor (2014), amongst many others.[14]

4 Results

4.1 Banking Deregulation, Debt and Leverage

Table 3A presents the estimated coefficients relating to the determinants of the probability of holding each type of debt and the determinants of the level of debt held, whilst Table 3B presents the corresponding marginal effects. The results relating to the head of household and household characteristics are in line with the existing literature. Hence, we only comment briefly on these findings. The propensity to hold any type of debt is positively related to household income, being employed and the level of financial assets. The level of education has a significant impact on the propensity to hold all debt types, with college education having a positive impact on the likelihood of holding debt.[15] Similarly, total debt levels are positively associated with age, income and financial assets, whilst being in better health is inversely associated with debt accumulation. Being married, having college level education and home ownership are positively related to total debt levels. The separation of debt into secured and unsecured debt reveals some interesting differences. For example, age is positively related to total debt levels and this effect is driven by the relationship with secured, as opposed to unsecured, debt. Conversely, gender and health status influence unsecured, rather than secured, debt. The dummy variable identifying the race of the respondent is positive and statistically significant for secured debt, but statistically insignificant for unsecured debt and total debt.

Tables 4A and 4B present the estimated coefficients and associated marginal effects,

[14]We obtain similar results when fixed effects linear and logistic regression models are implemented. In line with the previous literature, we have also estimated the model using standard probit and tobit models with the standard errors clustered at the state/year level and obtain similar results. As an additional robustness check, we have also run a censored hurdle model, which separates the decision to hold debt and the level of debt held. As exclusion restrictions, we include risk tolerance from the 1996 wave of the PSID in the hurdle stage. Again, the estimations led to quantitatively and qualitatively similar results.

[15]To control for possible heterogeneity in the effect of banking liberalization in different states, we have also explored controlling for bank branch density using data collected from the Federal Deposit Insurance Corporation (FDIC). The results are qualitatively and quantitatively similar in all specifications and are available upon request.

respectively, relating to the measures of leverage. We find that being white is positively related to the total debt-to-income ratio and the total debt-to-asset ratio. In contrast, an inverse effect is found for the level of leverage, as measured by the total debt to house value. Given the focus on race in the existing literature, in the next section, we explore these race effects in more detail.

Turning attention to our key explanatory variable reveals that, after controlling for both household characteristics and state level macroeconomic conditions, the level of banking deregulation had an impact on the probability of holding debt at the conventional statistical level (see Tables 3A and 3B). Specifically, an increase in banking competition due to the banking deregulation is associated with a higher probability of holding any type of debt. The effect is small in absolute value.[16] However, relative to other variables, this effect corresponds to approximately 1.4 times the impact of a 1% increase in financial asset levels and, approximately, one tenth of the impact of being employed compared to being retired. Splitting total debt into secured and unsecured debt reveals that this relationship is driven by secured, as opposed to unsecured, debt. We also find that the magnitude of the impact is increased, with a one-point increase in the *RSIndex* being associated with a 0.07% increase in the probability of holding secured debt.[17] This result accords with Tewari (2014), who finds that the removal of intrastate banking barriers had a positive effect on home ownership. The deregulation of the banking sector is also found to influence the level of total debt. This relationship is again driven by the amount of secured, as opposed to unsecured, debt. A one-point increase in the deregulation index corresponds to an 8.5% increase in the level of secured debt, holding all other factors constant.[18]

These results indicate that the banking deregulation had a larger impact on the level

[16]As presented in Table 3B, a one-point increase in the *RSIndex* is associated with a 0.005% increase in the probability of holding debt.

[17]In a similar vein to the literature relating to regression discontinuity design, we vary the window around the deregulation to ascertain how sensitive the results are to different bandwidth specifications, see, for example, Imbens and Lemieux (2008). Specifically, we restrict the time window to 1989 - 2001, as opposed to 1984 - 2005. We find consistent results in terms of sign and statistical significance.

[18]Throughout the discussion, the marginal effects of the random effects tobit models relate to the average marginal effect of the independent variable on the expected value of the censored outcome.

of debt relative to the size of the impact on the decision to hold debt. Despite being statistically significant, the impact on the propensity to hold debt is not economically meaningful. In contrast, the impact of the banking deregulation on the levels of total and secured debt held is relatively large and economically meaningful. The lack of statistical significance of the banking deregulation measure on unsecured debt is arguably not surprising. The banking deregulation influenced larger banks, which are more likely to provide mortgages. In contrast, much of the unsecured debt is held in the form of credit cards, which are offered by smaller financial intuitions and are, therefore, less likely to have been affected by the banking deregulation.

Finally, Table 4A presents the estimated coefficients relating to leverage, whilst Table 4B presents the corresponding marginal effects. The results suggest that the deregulation had a significant impact on household leverage in the case of total debt relative to income and total debt relative to house value. The *RSIndex* increased the ratios of total debt-to-income and to house value but did not influence the ratio of total debt to financial assets. The magnitude of the increase is stronger when leverage is measured as a ratio of total income. For example, the marginal effects relating to these impacts indicate that a one-unit increase in the index corresponds to about a 1% (0.5%) increase in the ratio of total debt-to-income (house value).[19]

4.2 Robustness

In this section, we explore the robustness of our results in two ways. Initially, we re-estimate our models using an alternative banking deregulation index. We then go on to present falsification tests to rule out spurious results.

[19]To further explore the impact of *RSIndex* across different groups of households, we interact *RSIndex* with financial assets. We explore whether there is a differential impact of *RSIndex* across the asset distribution. Specifically, we separate financial assets into five categories, one indicating those holding zero financial assets, and quartiles for positive asset amounts. The results indicate that, in general, across the dependent variables, *RSIndex* has a statistically significant impact for those households in the lowest positive asset category, relative to those holding zero assets. This suggests that the banking deregulation gave households with relatively low levels of financial assets access to the credit market, as opposed to those households with higher levels of financial assets, who arguably would have been able to access credit markets even without the deregulation. The results are available upon request.

Krishnan et al. (2014) argue that an important feature of the deregulation was *reciprocity*; some of the states allowed deregulation only when another state was providing similar deregulation terms. Hence, they create a deregulation and reciprocity index, which accounts for this specific feature. This measure of deregulation is an index defined on a six-point scale. It is characterised by the five-point scale, as described in Section 3.1 above, plus an additional point is assigned to states that do not require reciprocity. This additional point leads to an increased pool of out-of-state banks that can expand within their state.

The marginal effects relating to the alternative index are presented in Table A1. The results are in line with the findings discussed above. The deregulation index has a statistically significant impact on the propensity to hold debt and the level of debt held. In accordance with the above analysis, the level of deregulation is positively associated with the propensity to hold any type of debt and the level of total debt held. The deregulation has a larger impact on the level of debt held than on the probability of holding debt. A one-unit increase in the deregulation index increases the propensity to hold any type of debt by 0.009 percentage points and a one-unit increase in the deregulation index is associated with an increase in the level of debt by 11%. As above, the results are driven by secured, as opposed to unsecured, debt.

There is a consistent pattern of results with the leverage measures. The total debt-to-income ratio and total debt to house price value are positively impacted by the deregulation index. For example, a one-unit increase in the deregulation index increases the debt-to-income ratio by 1.1%. On the other hand, the total debt-to-asset ratio is not influenced by the deregulation index.

The credit supply shocks identified by the staggered deregulation of the US banking system could be due to other state level factors, which occurred around the years of the deregulation. To rule out the possibility that these shocks were not truly exogenous to changes in households' financial position, we implement two falsification tests. Firstly, in line with the literature relating to difference-in-differences methods, we explore the

effect of the deregulation in a prior time-period. Specifically, we shift the timing of the deregulation to a period between 1984-1989, at least five years prior to the actual deregulation. We explore whether the deregulation has a statistically significant impact on our dependent variables. The results presented in Panel A of Table A2 suggest that the shifted deregulation fails to have an impact across all the dependent variables.[20] Secondly, we perform a falsification test that incorrectly randomly assigns a value of *RSIndex*, i.e., a score between one and four, to states, which were not deregulated between 1994 and 1999. Panel B in Table A2 presents the results, which are statistically insignificant for this random assignment of the index. This suggests that our results are not driven by unobserved shocks, given that incorrect assignment of deregulation weakens the results, with deregulation generally becoming statistically insignificant. Overall, our baseline results appear to be robust, indicating that the US interstate branching deregulation led to an exogenous expansion in secured credit and household leverage.

4.3 Banking Deregulation, Debt and Leverage and Race

In the previous section, we found that the race variable (*white*) had a significant effect on debt and leverage. The aim of this section is to explore this result in more detail and, specifically, to test whether the banking liberalization had different effects on households based on race. There is a large literature documenting racial discrimination in the credit market. For instance, Blanchflower et al. (2003) find that non-whites have a higher probability than whites of being credit rationed. Peoples and Talley (2001) found that a more competitive market reduces wage discrimination by race following the deregulation of trucking. Investigating deregulation of credit cards in the US market, Chatterji and Seamans (2012) find that access to credit improves particularly among black households. Levine et al. (2014) explore the impact that interstate and intrastate bank deregulation in the US had on racial inequalities, focusing on the racial wage gap. Their results support the notion that a more competitive market reduces racial wage discrimination

[20]The results do not change when the 1994 wave is included.

and enhances the economic opportunities of the more disadvantaged group. They also find that the credit market improvements had an impact on reducing racial prejudices related to labor market opportunities. More recently, Célérier and Matray (2017) explore the effect of the US banking deregulation on unbanked households. Their results show that, following an increase in the density of bank branches in poor counties, there is a lower number of unbanked households. Moreover, they find that the increased credit supply increases the likelihood that low-income households hold a bank account. This effect is more pronounced for individuals, who are more likely to have restricted access to credit, such as black households living in states with historic racial biases.

We further explore the potential heterogenous effects of the banking deregulation. Specifically, to explore whether the deregulation effect differs by race, we interact the *RSIndex* with the variable *white*, which is a dummy variable that takes the value of one if the head of the household is white.[21] Panel A of Table 5A summarises the results relating to the interaction between the deregulation index and the race control, whilst Panel A of Table 5B presents the corresponding marginal effects.[22] The results in Table 5A indicate that the *RSIndex* has a positive impact on total debt holding and that the effect is more pronounced for households with a non-white head. The corresponding marginal effects presented in Table 5B reveal that the *RSIndex* fails to have a statistically significant impact on any debt holding for white headed households. However, for households with a non-white head, a one-unit increase in the *RSIndex* is associated with a 0.009% increase in the probability of holding debt. With respect to the effect of the race interaction on the level of total debt, the effect of the deregulation is more pronounced for the non-white group. For example, the marginal effects reveal that, conditional on being non-white, a

[21] In our sample 58% are white.

[22] It is important to acknowledge the literature concerning the complexity of interpreting interaction effects in non-linear models, see for example, Ai and Norton (2003). In our analysis, we present the marginal effects of the banking deregulation index, when the race indicator takes a value of zero and one. That is, we present the incremental effect of the level of deregulation for both white and non-white groups. These are presented in Panel A of Tables 5B and 6B. Similarly, for the interaction between the deregulation index, race and an indicator of historical discrimination (see below), we present the effect of the deregulation index for each combination of binary indicators. We present the incremental effect of the banking deregulation across the four different permutations of the two binary variables. These are presented in Panels B and C of Tables 5B and 6B.

one-unit increase in the deregulation index increases the level of total debt by 14%. When we split total debt into secured and unsecured debt, the results again confirm that the propensity to hold and the level of secured debt are positively influenced by increased levels of deregulation and that these effects are greater for non-white headed households. This result generally supports the finding of Blanchflower et al. (2003) that a positive credit supply shock has a positive effect on individuals, who were previously more likely to be credit rationed.

Similarly, Table 6A presents the interactions between race and the banking deregulation index for the three leverage measures. The results indicate that the *RSIndex* maintains its positive impact on the debt leverage measures (including the debt-to-asset ratio). The negative interaction term suggests that the deregulation has a smaller effect for white headed households. However, for non-white headed households, the coefficients are small in magnitude. The marginal effects reveal that, conditional on being non-white, a one-unit increase in the *RSIndex* increased the debt-to-income ratio by 1.4% (see Panel A of Table 6B). In comparison, for white headed households, the effect is significantly smaller, with a one-unit increase in the *RSIndex* corresponding to a 0.6% increase and this effect is only significant at the 10% level. Similar results are found across the other leverage measures, with the effects of the deregulation being more pronounced amongst non-white headed households.

To further analyse the impact of the banking deregulation on racial discrimination, we investigate the hypothesis explored by Chatterji and Seamans (2012) that racial discrimination is higher in states with a history of discrimination.[23] We do this by utilizing two discrimination controls. The first one, *slave state*, aims to exploit historical state characteristics. This variable takes the value of one if the state is identified as a state that allowed slavery in 1861. The second variable, *interracial marriage bias state*, measures the difference between actual and predicted interracial marriage rates in 1970, where states are categorized above and below the median.[24]

[23]This hypothesis has been explored by Levine et al. (2014) and Célérier and Matray (2017).
[24]This variable is collected from Levine et al. (2014).

Panels B and C in Tables 5A and 6A report the results when the variables *white* and *RSIndex* are interacted with *slave state* and *interracial marriage bias state*, respectively. In both cases, in accordance with the results in Panel A, the *RSIndex* is still strongly statistically significant and *white* is positive. The interaction *RSIndex* × *slave state* is negative and statistically significant, indicating that the deregulation had a smaller effect in states with a history of racial discrimination. The triple interaction term is statistically significant for total debt and secured debt. The positive sign indicates that the effect of deregulation is smaller for non-white headed households in states with a history of discrimination. This last result contrasts with the findings of Célérier and Matray (2017, p. 23), who explore unbanked households and find that "the gap between black and non-black households reduces more in states with a history of discrimination". It is important, however, to acknowledge the difference in the outcome variables between the two studies.

4.3.1 The Effects of Banking Deregulation across the Debt and Leverage Distributions

To further understanding of the effects of the banking deregulation on household debt and leverage, we explore the effect of banking deregulation using quantile regression analysis. The quantile regression approach allows exploration of the effects of banking deregulation across the entire conditional debt and leverage distributions. Banking deregulation may have different effects at different levels of debt holding or leverage. These results may be masked by focusing solely at the mean (or median), which has generally been the approach adopted in the existing literature, as well as in the previous sections of this paper. As described by Koenker and Bassett Jr (1978), the estimation is conducted by minimizing the following:

$$Min_{\beta \epsilon \mathbb{R}^K} \sum_{t \epsilon (t: y_{ist} \geq x_{ist}\beta)} \theta |y_{ist} - x_{ist}\beta| + \sum_{t \epsilon t: y_{ist} < x_{ist}\beta} (1-\theta)|y_{ist} - x_{ist}\beta| \tag{6}$$

where y_{ist} is the dependent variable, x_{ist} is the k by 1 vector of explanatory variables, β is the coefficient vector and J is the quantile to be estimated. The coefficient vector β differs

depending on the particular quantile being estimated. This approach allows exploration of the impact of the deregulation at different parts of the distributions of the amount of debt held and leverage.[25] This modelling approach sheds light on whether deregulation has differential effects across those households holding relatively large amounts of debt (or with relatively high levels of leverage) and those households holding relatively small levels of debt (or with relatively low levels of leverage). If, for example, the effects of banking deregulation are larger at the bottom of the debt (or leverage) distribution than at the top of the distribution, then deregulation may serve to reduce inequality in access to credit over time.[26]

For brevity, we only present the effect of the banking deregulation index at different points of the debt distributions for total debt and for secured debt, as well as for the three leverage measures.[27] In the first panel of Tables 7 to 8, we present the effect of *RSIndex* and, in the second panel of each table, we include the analysis of the interaction of *RSIndex* with race. Table 7 Panel A presents the results relating to the quantile regression estimates for the level of total debt and shows that the banking deregulation has a differential impact across the total debt distribution. The results reveal that *RSIndex* fails to have an impact at the tails of the total debt distribution. Specifically, *RSIndex* fails to have a statistically significant impact between the 10th and 30th deciles and at the 90th percentile and beyond. This indicates that the banking deregulation impacted the middle part of the total debt distribution up to the 80th decile. This pattern of results is evident in the second panel of the table and the interaction between *white* and the banking deregulation index only attains statistical significance at the 80th and 90th deciles.

Table 7 Panel B presents results relating to secured debt and the pattern of results is similar to total debt. The deregulation index has a statistically significant impact between the 40th and 80th deciles. The largest impact, 0.025, is found at the 40th decile

[25] All analysis is conducted in Stata 15 using the sqreg command with 100 bootstraps.

[26] We conduct the quantile regression analysis on positive debt holding only.

[27] As in the previous analysis, the effect of the deregulation across the entire conditional unsecured debt distribution is found to be statistically insignificant.

and the lowest, 0.016, at the 80th percentile. In addition, the coefficients are statistically significantly different across the debt distributions. This highlights the importance of not just focusing on the impact of the independent variables at the mean of the distribution. Banking deregulation has differential impacts at different parts of the debt distributions in terms of both magnitude and statistical significance. The interaction term in the second part of the table fails to reach statistical significance at any point of the secured debt distribution.

Turning to the leverage measures, the pattern of results differs across the three leverage measures. Table 8 Panel A presents the quantile regression analysis relating to the ratio of total debt-to-income. The results again demonstrate that the *RSIndex* has a positive association with this leverage measure in the middle part of the leverage distribution, specifically from the 30th to the 70th deciles. Interestingly, a positive effect of the banking deregulation is also found at the lower tail of the ratio of total debt-to-income, i.e. at the 10th decile. In contrast, in Table 8 Panel B, *RSIndex* only attains statistical significance at the 80th and 90th deciles of the total debt to house value ratio.

Table 8 Panel B reveals some interesting results. The interactions reveal that *RSIndex* has a positive impact above the 30th decile and that this effect is less prominent for white headed households, as indicated by the negative interaction effect. A similar pattern is found in Table 8 Panel C, where *RSIndex* has a positive impact at the upper-part of the distribution, but the effect is smaller for white headed households. Once again, these results demonstrate the importance of considering the impact of *RSIndex* across the entire conditional leverage distribution, and not just exploring the effects at the mean.

5 Implications for Economic Growth

The findings from our household level analysis presented in Section 4 indicate that the banking deregulation led to increased debt accumulation at the household level, increasing the levels of total debt, secured debt and leverage. These findings may have important consequences for future economic growth. In fact, as highlighted by the household de-

mand channels of credit supply expansion (see, for example, Mian and Sufi (2018) for a comprehensive review), an increase in debt is associated with a future slow-down in economic growth. For instance, Mian and Sufi (2010), Mian et al. (2013) and Dynan (2012) have shown that the sluggish growth in consumption in the years following the 2007-2009 recession can be attributed to the level of outstanding debt in household balance sheets.[28]

Starting from this premise, we investigate the implications of our household level findings for economic growth. Specifically, we explore the effect of household debt on GDP growth at the state level. We focus on GDP growth given that it is the conventional metric adopted to measure overall economic performance.[29] We test whether the increase in household debt following the banking liberalization of the 1980s and the 1990s has implications for economic growth at the state level during the great recession. Our hypothesis is that, in those states where liberalization had a large positive effect on household debt, excessive leverage has contributed to a slower economic recovery, with households experiencing excessive leverage curbing consumption in order to pay back debt.

To test this hypothesis, we initially conduct state level fixed effects analysis with GDP growth as the dependent variable. The set of explanatory variables includes state level macroeconomic controls as well as household debt. We then explore whether there was a differential impact of state level debt on GDP growth across regulated and deregulated states.

Specifically, the second relationship that we estimate is as follows:

$$GDP_{st} = \beta RSIndex_{st} \times Debt_{st} + \phi Controls_{st} + \delta_t + \epsilon_{st}. \tag{7}$$

Firstly, we regress GDP growth on the level of household debt measured at the state level and a set of state level controls including: the growth in the unemployment rate; inequality, as measured by the Gini index; the proportion of the workforce with college

[28]This relationship has been subject to criticism given the statistical challenges in identifying an exogenous shock. In fact, leverage and spending are related directly and indirectly. Leverage increases household borrowing constraints, but leverage may have also psychologically influenced the consumption decisions of the individuals, i.e. households were not technically financially constrained but were reluctant to consume given increased uncertainty regarding the future.

[29]See Gadanecz and Jayaram (2008).

and high school education; an indicator of the financial crisis; and the growth in the house price index.[30] We then interact *RSIndex* with the state level of household debt (leverage), where s indexes states and t indexes time.[31] Focusing on the effects of household debt on GDP growth, we explore three specifications to capture the level of leverage: total debt-to-income, mortgage debt-to-income and credit card debt-to-income. The specification given by equation (7) allows us to explore whether deregulated states are characterised by a higher correlation between GDP growth and household indebtedness and, in addition, whether this relationship changed during the recovery period that followed the financial crisis. To this end, we analyse data over the period 2000-2015, split by pre 2008 and post 2008.

Panel A of Table 9 presents the results of our state level analysis without the interaction terms. Some interesting patterns emerge. First, there is a negative and statistically significant coefficient on all three leverage measures for both sample periods. Second, these correlations exhibit stronger magnitudes, in absolute value, for the period post-crisis. Although the causality nexus is not addressed here, Panel A of Table 9 provides some support to the Mian and Sufi (2010) finding that the economic recovery was hampered by the high level of debt.

The estimates of the interaction terms presented in Panel B are quantitatively very small and statistically insignificant for the period pre-2008. This suggests that the banking competition did not influence the relationship between debt and economic growth in this time period. However, the picture changes completely when we look at the interaction terms for the post crisis period. Here, the coefficients are all statistically significant at the conventional level and, moreover, the magnitudes are economically relevant. These results suggest that household indebtedness is a drag on GDP growth and this effect deepened after the financial crisis, particularly for those states, which fully liberalized their banking system. Our findings are in line with recent evidence by Mian et al. (2017) who show that intrastate liberalization increased the amplitude of business cycles.

[30] Data for the household debt measures are from the New York Fed Consumer Credit Panel/Equifax.

[31] Given that, in the post crisis time period, the *RSIndex* is time-invariant and that we are controlling for state level fixed effects, we do not include this variable independently in the analysis.

6 Conclusion

Household debt has received an extensive amount of attention from both researchers and policy makers, particularly since the financial crisis. There has been considerable concern regarding the financial vulnerability faced by households holding debt yet having low levels of assets to fall back on in times of economic adversity. This paper has contributed to the existing literature by exploring demand and supply factors, which influence household debt holding. Specifically, this paper has exploited longitudinal US household level data, to explore the impact of interstate banking deregulation on household debt accumulation. Our findings suggest that increased access to credit increased household debt accumulation, leading to higher levels of total debt, secured debt and leverage. Moreover, the results from our quantile regression analysis suggest that the banking deregulation had differential impacts across the conditional debt and leverage distributions. This has potentially important policy implications for future banking liberalization, given that it could result in more people accruing excessive amounts of debt. The analysis has also explored the impact of the banking deregulation across different groups in society. The results indicate that the banking deregulation had differential impacts across race, thereby shedding further light on the barriers to accessing credit faced by different groups. The analysis presented in this paper demonstrates that both supply and demand side factors impact household debt accumulation. Our findings highlight an important dimension that policy makers should consider if further banking liberalization is to be implemented.

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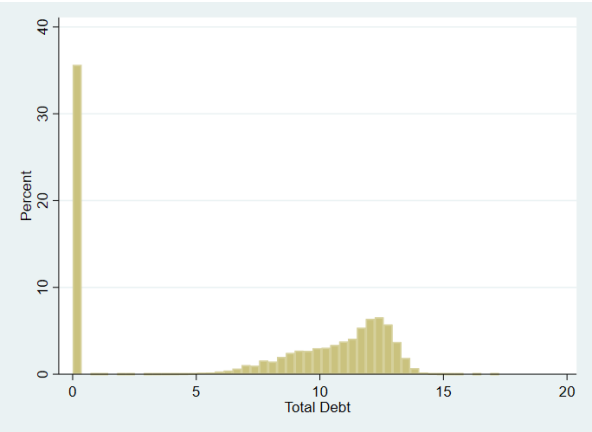

Figure 1: IHS Transformation of Total Debt

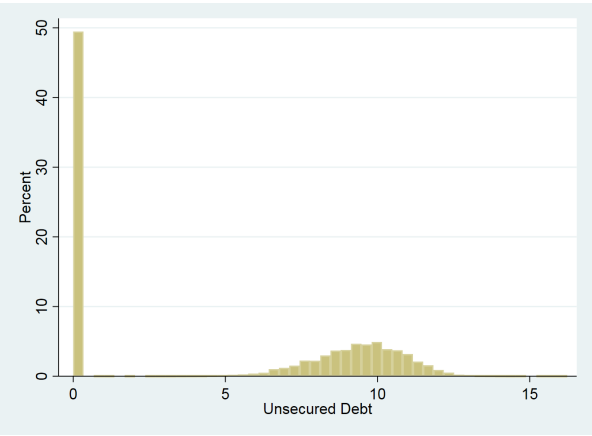

Figure 2: IHS Transformation of Unsecured Debt

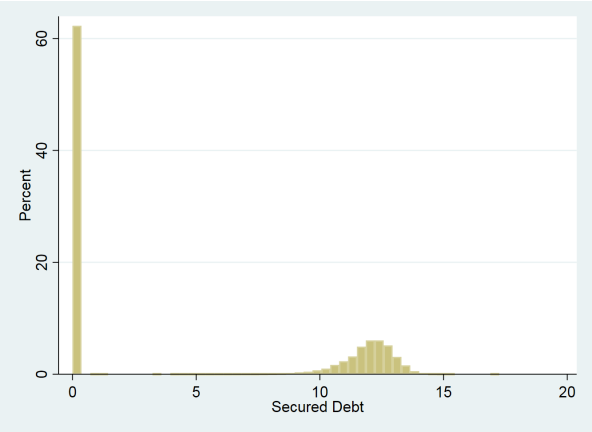

Figure 3: IHS Transformation of Secured Debt

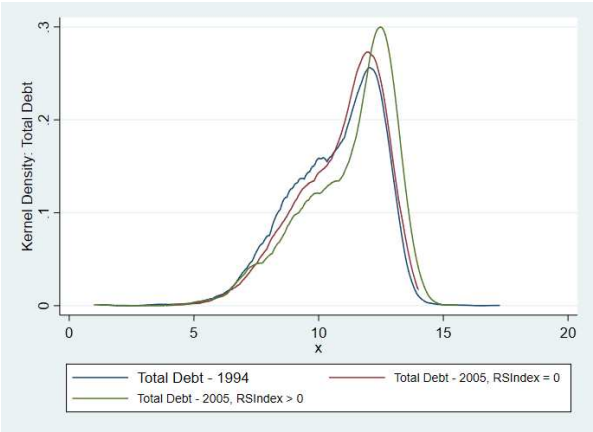

Figure 4: Change in Total Debt Over Time

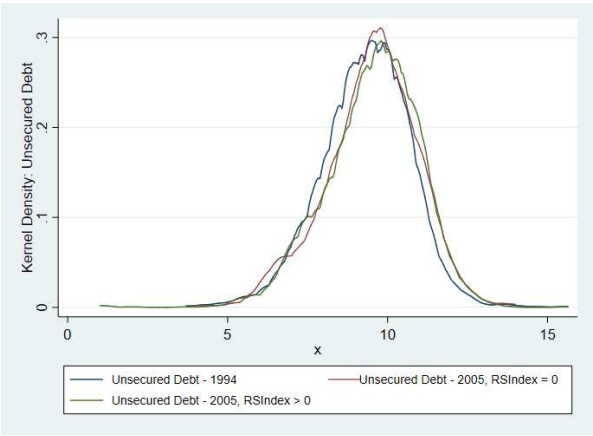

Figure 5: Change in Unsecured Debt Over Time

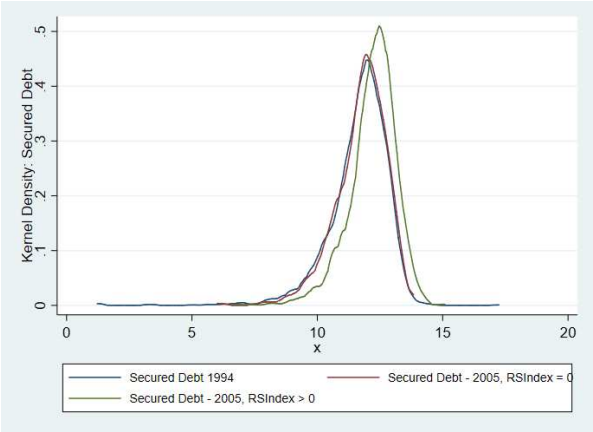

Figure 6: Change in Secured Debt Over Time

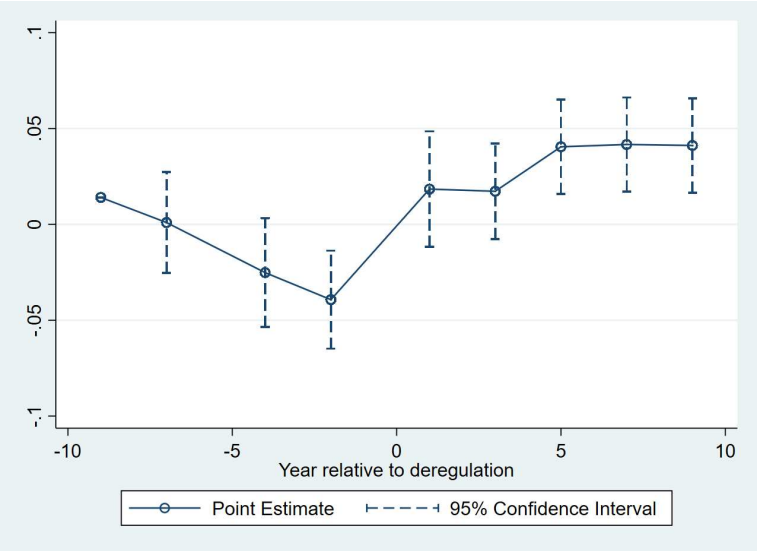

Figure 7: The Impact of Banking Deregulation on the Propensity to hold Debt

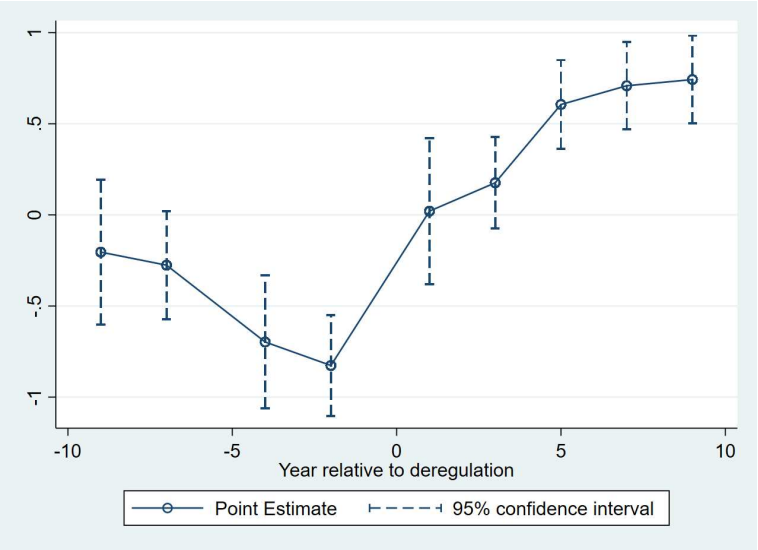

Figure 8: The Impact of Banking Deregulation on the Level of Total Debt

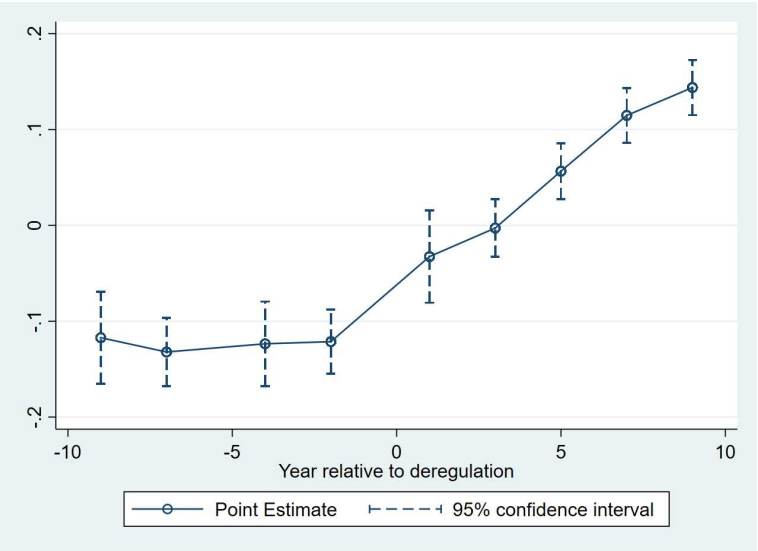

Figure 9: The Impact of Banking Deregulation on the Debt-to-Income Ratio

Table 1: Summary Statistics - Debt holding, Debt Levels and Leverage

Variable	Mean	Std. Dev.	Skewness	Kurtosis	Min.	Max.	N
Panel A: **Full sample**							
Total Debt - Binary	63.4%						41,741
IHS(Total Debt)	6.827	5.395	-0.347	1.332	0	17.251	41,741
Unsecured Debt - Binary	48.7%						41,741
IHS(Unsecured Debt)	4.494	4.72	0.182	1.187	0	15.641	41,741
Secured Debt - Binary	38.3%						41,741
IHS(Secured Debt)	4.51	5.767	0.521	1.315	0	17.25	41,741
Total Debt/Income	0.460	0.630	1.832	8.763	0	7.601	41,741
Total Debt/House Value	0.407	0.372	1.082	7.571	0	4.467	23,945
Total Debt/Financial Assets	0.581	1.066	3.922	22.67	0	11.983	33,238
Panel B: **RSIndex = 0**							
Total Debt - Binary	61.5%						22,530
IHS(Total Debt)	6.442	5.298	-0.267	1.281	0	17.251	22,530
Unsecured Debt - Binary	47.9%						22,530
IHS(Unsecured Debt)	4.324	4.616	0.217	1.207	0	15.641	22,530
Secured Debt - Binary	35.8%						22,530
IHS(Secured Debt)	4.125	5.559	0.630	1.445	0	17.25	22,530
Total Debt/Income	0.386	0.566	2.300	13.452	0	7.601	22,530
Total Debt/House Value	0.381	0.374	1.258	7.780	0	4.467	12,679
Total Debt/Financial Assets	0.529	0.976	3.926	22.849	0	11.849	17,644
Panel C: **RSIndex > 0**							
Total Debt - Binary	65.6%						19,211
IHS(Total Debt)	7.277	5.473	-0.454	1.410	0	15.599	19,211
Unsecured Debt - Binary	49.7%						19,211
IHS(Unsecured Debt)	4.694	4.832	0.136	1.161	0	15.599	19,211
Secured Debt - Binary	41.1%						19,211
IHS(Secured Debt)	4.961	5.972	0.392	1.190	0	15.263	19,211
Total Debt/Income	0.548	0.687	1.435	5.946	0	7.082	19,211
Total Debt/House Value	0.437	0.368	0.902	7.568	0	4.382	11,266
Total Debt/Financial Assets	0.64	1.156	3.832	21.441	0	11.983	15,594

Table 2: Summary Statistics - Explanatory Variables

Variable	Mean	Std. Dev.	Min.	Max.	N
		Independent Variables			
RSIndex	1.088	1.477	0	4	41,741
Age	44.675	16.436	16	101	41,741
Age Squared	226.603	168.559	25.6	1020.1	41,741
Male	68.6				41,741
White	57.7				41,741
IHS(Assets)	7.059	4.918	0	18.518	41,741
Ln(Household Income)	10.645	1.013	4.013	15.347	41,741
College Degree	35.9				41,741
High School	37.3				41,741
Employed	70.9				41,741
Unemployed	5.3				41,741
Not in the labour force (NLF)	10.8				41,741
Child	47.6				41,741
Married	51.5				41,741
Divorced	14.1				41,741
Widow	8.9				41,741
Health	2.483	1.131	0	4	41,741
Own Home	58.8				41,741

Table 3A: Debt holding, debt levels and banking deregulation: Coefficients

	Total Debt		Unsecured Debt		Secured Debt	
	RE Probit	RE Tobit	RE Probit	RE Tobit	RE Probit	RE Tobit
RSIndex	0.0256**	0.0971**	-0.0084	-0.0315	0.0413***	0.2056***
	(0.0126)	(0.0388)	(0.0109)	(0.0539)	(0.0140)	(0.0692)
Age	-0.0010	0.0777***	-0.0127**	-0.0174	0.1463***	0.7932***
	(0.0062)	(0.0204)	(0.0056)	(0.0284)	(0.0076)	(0.0394)
Age Squared	-0.0033***	-0.0215***	-0.0014**	-0.0124***	-0.0161***	-0.0902***
	(0.0006)	(0.0021)	(0.0006)	(0.0029)	(0.0008)	(0.0040)
Male	-0.2379***	-0.8947***	-0.2488***	-1.3003***	-0.0731	-0.2780
	(0.0363)	(0.1267)	(0.0327)	(0.1674)	(0.0490)	(0.2779)
White	0.0605*	0.1680	0.0413	0.1995	0.2115***	1.0040***
	(0.0324)	(0.1086)	(0.0283)	(0.1439)	(0.0396)	(0.2193)
IHS(Assets)	0.0183***	0.0594***	0.0252***	0.1204***	0.0057	0.0424**
	(0.0034)	(0.0108)	(0.0030)	(0.0152)	(0.0038)	(0.0194)
Ln(Income)	0.1107***	0.5219***	0.0668***	0.4299***	0.4050***	2.2488***
	(0.0170)	(0.0568)	(0.0156)	(0.0792)	(0.0227)	(0.1150)
College Degree	0.4471***	1.6153***	0.3413***	1.8741***	0.1607***	0.9338***
	(0.0375)	(0.1270)	(0.0328)	(0.1684)	(0.0466)	(0.2613)
High School	-0.0100	0.0588	0.0376	0.2401	0.0083	0.1500
	(0.0321)	(0.1134)	(0.0290)	(0.1512)	(0.0420)	(0.2360)
Employed	0.2552***	0.9622***	0.1560***	0.8615***	0.2298***	1.0857***
	(0.0428)	(0.1475)	(0.0402)	(0.2098)	(0.0516)	(0.2715)
Unemployed	0.0042	0.0492	-0.1010*	-0.4518	0.0345	-0.0947
	(0.0577)	(0.2011)	(0.0542)	(0.2821)	(0.0769)	(0.4084)
NLF	0.1285***	0.5482***	0.0434	0.3451	0.2143***	0.9881***
	(0.0465)	(0.1635)	(0.0439)	(0.2298)	(0.0601)	(0.3222)
Child	-0.0176	-0.1737**	-0.1053***	-0.5878***	0.3472***	1.5843***
	(0.0250)	(0.0761)	(0.0213)	(0.1043)	(0.0277)	(0.1370)
Married	0.3325***	1.1589***	0.2663***	1.4586***	0.9341***	5.7149***
	(0.0374)	(0.1228)	(0.0332)	(0.1661)	(0.0451)	(0.2422)
Divorced	0.2618***	0.8446***	0.2028***	1.0264***	0.3609***	2.5561***
	(0.0387)	(0.1294)	(0.0346)	(0.1740)	(0.0475)	(0.2609)
Widow	0.3119***	0.8635***	0.2094***	1.0249***	0.7635***	4.7003***
	(0.0562)	(0.1997)	(0.0517)	(0.2706)	(0.0744)	(0.4130)
Health	-0.0704***	-0.2337***	-0.0851***	-0.4517***	0.0123	0.0602
	(0.0109)	(0.0351)	(0.0096)	(0.0483)	(0.0128)	(0.0661)
Own Home	1.2743***	5.6800***	0.0745***	0.3779***		
	(0.0290)	(0.0870)	(0.0238)	(0.1177)		
Constant	-4.0785***	-17.2710***	-2.5067***	-15.0667***	-14.5064***	-86.3395***
	(0.3130)	(1.0720)	(0.2747)	(1.4082)	(0.4510)	(2.4466)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,741	41,741	41,741	41,741	41,741	41,741
Number of ID	13,985	13,985	13,985	13,985	13,985	13,985

Notes: RE denotes random effects. All the specifications include Mundlak corrections for continuous independent variables. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3B: Debt holding, debt levels and banking deregulation: Marginal effects

	Total Debt		Unsecured Debt		Secured Debt	
	RE Probit	RE Tobit	RE Probit	RE Tobit	RE Probit	RE Tobit
RSIndex	0.0051**	0.0720**	-0.0022	-0.0175	0.0070***	0.0852***
	(0.0025)	(0.0288)	(0.0029)	(0.0299)	(0.0024)	(0.0287)
Age	-0.0002	0.0576***	-0.0033**	-0.0096	0.0247***	0.3285***
	(0.0012)	(0.0151)	(0.0015)	(0.0158)	(0.0013)	(0.0163)
Age Squared	-0.0007***	-0.0160***	-0.0004**	-0.0069***	-0.0027***	-0.0374***
	(0.0001)	(0.0015)	(0.0002)	(0.0016)	(0.0001)	(0.0017)
Male	-0.0469***	-0.6635***	-0.0655***	-0.7213***	-0.0123	-0.1151
	(0.0072)	(0.0939)	(0.0086)	(0.0928)	(0.0083)	(0.1151)
White	0.0119*	0.1246	0.0109	0.1107	0.0356***	0.4159***
	(0.0064)	(0.0806)	(0.0074)	(0.0798)	(0.0067)	(0.0909)
IHS(Assets)	0.0036***	0.0440***	0.0066***	0.0668***	0.0010	0.0176**
	(0.0007)	(0.0080)	(0.0008)	(0.0084)	(0.0006)	(0.0080)
Ln(Income)	0.0218***	0.3870***	0.0176***	0.2385***	0.0682***	0.9314***
	(0.0033)	(0.0421)	(0.0041)	(0.0439)	(0.0038)	(0.0478)
College Degree	0.0882***	1.1978***	0.0899***	1.0396***	0.0271***	0.3868***
	(0.0073)	(0.0940)	(0.0086)	(0.0934)	(0.0078)	(0.1083)
High School	-0.0020	0.0436	0.0099	0.1332	0.0014	0.0621
	(0.0063)	(0.0841)	(0.0076)	(0.0839)	(0.0071)	(0.0978)
Employed	0.0503***	0.7135***	0.0411***	0.4779***	0.0387***	0.4497***
	(0.0084)	(0.1094)	(0.0106)	(0.1164)	(0.0087)	(0.1125)
Unemployed	0.0008	0.0365	-0.0266*	-0.2506	0.0058	-0.0392
	(0.0114)	(0.1492)	(0.0143)	(0.1565)	(0.0129)	(0.1692)
NLF	0.0254***	0.4065***	0.0114	0.1914	0.0361***	0.4093***
	(0.0092)	(0.1212)	(0.0116)	(0.1275)	(0.0101)	(0.1334)
Child	-0.0035	-0.1288**	-0.0277***	-0.3261***	0.0585***	0.6562***
	(0.0049)	(0.0564)	(0.0056)	(0.0579)	(0.0046)	(0.0568)
Married	0.0656***	0.8593***	0.0701***	0.8091***	0.1574***	2.3670***
	(0.0073)	(0.0910)	(0.0087)	(0.0921)	(0.0074)	(0.1009)
Divorced	0.0516***	0.6263***	0.0534***	0.5694***	0.0608***	1.0587***
	(0.0076)	(0.0959)	(0.0091)	(0.0965)	(0.0080)	(0.1083)
Widow	0.0615***	0.6403***	0.0552***	0.5685***	0.1286***	1.9468***
	(0.0111)	(0.1480)	(0.0136)	(0.1500)	(0.0124)	(0.1711)
Health	-0.0139***	-0.1733***	-0.0224***	-0.2506***	0.0021	0.0249
	(0.0021)	(0.0260)	(0.0025)	(0.0268)	(0.0022)	(0.0274)
Own Home	0.2513***	4.2119***	0.0196***	0.2096***		
	(0.0050)	(0.0632)	(0.0063)	(0.0653)		
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,741	41,741	41,741	41,741	41,741	41,741
Number of ID	13,985	13,985	13,985	13,985	13,985	13,985

Notes: RE denotes random effects. Table presents marginal effects relating to the Random Effects Tobit and Probit specifications presented in Table 3A. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4A: Household leverage and banking deregulation: Coefficients

	Ratio of Total Debt to Income	Ratio of Total Debt to House Value	Ratio of Total Debt to Assets
RSIndex	0.0152***	0.0065**	0.0082
	(0.0045)	(0.0031)	(0.0086)
Age	0.0136***	-0.0168***	-0.0052
	(0.0024)	(0.0017)	(0.0047)
Age Squared	-0.0029***	0.0003	-0.0023***
	(0.0002)	(0.0002)	(0.0005)
Male	-0.0922***	-0.0566***	-0.2315***
	(0.0147)	(0.0125)	(0.0301)
White	0.0295**	-0.0383***	0.0964***
	(0.0126)	(0.0093)	(0.0246)
IHS(Assets)	0.0042***	-0.0010	-0.0510***
	(0.0012)	(0.0009)	(0.0026)
Ln(Income)	-0.2721***	0.0300***	-0.0018
	(0.0065)	(0.0052)	(0.0139)
College Degree	0.2186***	0.0624***	0.3012***
	(0.0147)	(0.0109)	(0.0294)
High School	0.0009	-0.0051	0.0726***
	(0.0132)	(0.0099)	(0.0270)
Employed	0.0952***	0.0527***	0.0682**
	(0.0171)	(0.0108)	(0.0327)
Unemployed	-0.0191	-0.0100	0.0998**
	(0.0233)	(0.0185)	(0.0500)
NLF	0.0570***	0.0682***	0.0712*
	(0.0190)	(0.0134)	(0.0381)
Child	0.0090	-0.0125**	-0.0111
	(0.0088)	(0.0061)	(0.0167)
Married	0.1388***	0.0703***	0.2084***
	(0.0142)	(0.0117)	(0.0281)
Divorced	0.0940***	0.0694***	0.0347
	(0.0150)	(0.0128)	(0.0302)
Widow	0.0720***	0.0338**	-0.0023
	(0.0234)	(0.0170)	(0.0468)
Health	-0.0200***	-0.0097***	-0.0534***
	(0.0041)	(0.0029)	(0.0080)
Own Home	0.9810***		-0.5344***
	(0.0102)		(0.0196)
Constant	0.1912	-0.2585***	-0.6808***
	(0.1234)	(0.0992)	(0.2180)
Year FE	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Observations	41,741	23,945	33,238
Number of ID	13,985	8,165	11,663

Notes: Table presents estimated coefficients from random effects Tobit model with Mundlak corrections for continuous independent variables. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4B: Household leverage and banking deregulation: Marginal effects

	Ratio of Total Debt to Income	Ratio of Total Debt to House Value	Ratio of Total Debt to Assets
RSIndex	0.0091***	0.0050**	0.0048
	(0.0027)	(0.0023)	(0.0050)
Age	0.0082***	-0.0129***	-0.0031
	(0.0014)	(0.0013)	(0.0027)
Age Squared	-0.0018***	0.0002	-0.0014***
	(0.0001)	(0.0001)	(0.0003)
Male	-0.0555***	-0.0434***	-0.1353***
	(0.0089)	(0.0096)	(0.0176)
White	0.0178**	-0.0294***	0.0563***
	(0.0076)	(0.0071)	(0.0144)
IHS(Assets)	0.0025***	-0.0008	-0.0298***
	(0.0007)	(0.0007)	(0.0015)
Ln(Income)	-0.1639***	0.0230***	-0.0010
	(0.0039)	(0.0040)	(0.0081)
College Degree	0.1317***	0.0479***	0.1761***
	(0.0089)	(0.0084)	(0.0172)
High School	0.0005	-0.0039	0.0424***
	(0.0080)	(0.0076)	(0.0158)
Employed	0.0573***	0.0405***	0.0398**
	(0.0103)	(0.0083)	(0.0191)
Unemployed	-0.0115	-0.0077	0.0583**
	(0.0140)	(0.0142)	(0.0292)
NLF	0.0343***	0.0524***	0.0416*
	(0.0115)	(0.0103)	(0.0223)
Child	0.0054	-0.0096**	-0.0065
	(0.0053)	(0.0047)	(0.0098)
Married	0.0836***	0.0540***	0.1218***
	(0.0086)	(0.0090)	(0.0164)
Divorced	0.0566***	0.0533***	0.0203
	(0.0090)	(0.0098)	(0.0177)
Widow	0.0433***	0.0259**	-0.0014
	(0.0141)	(0.0131)	(0.0274)
Health	-0.0120***	-0.0074***	-0.0312***
	(0.0024)	(0.0022)	(0.0047)
Own Home	0.5907***		-0.3124***
	(0.0062)		(0.0116)
Year FE	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Observations	41,741	23,945	33,238
Number of ID	13,985	8,165	11,663

Notes: Table presents marginal effects relating to the specifications presented in Table 4A. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5A: Household debt and banking deregulation - Race interactions: Coefficients

	Total Debt		Unsecured Debt		Secured Debt	
	RE Probit	RE Tobit	RE Probit	RE Tobit	RE Probit	RE Tobit
Panel A						
RSIndex	0.0458***	0.1903***	0.0105	0.0722	0.0645***	0.4661***
	(0.0148)	(0.0473)	(0.0130)	(0.0651)	(0.0172)	(0.0888)
White	0.1005***	0.3363***	0.0769**	0.3904**	0.2531***	1.4400***
	(0.0358)	(0.1192)	(0.0313)	(0.1589)	(0.0436)	(0.2386)
RSIndex × White	-0.0386***	-0.1586***	-0.0337***	-0.1792***	-0.0392**	-0.4041***
	(0.0147)	(0.0461)	(0.0127)	(0.0632)	(0.0169)	(0.0862)
Panel B: Slave State						
RSIndex		0.2896***		0.1274		0.6477***
		(0.0616)		(0.0843)		(0.1207)
Slave State		0.0731		-0.9429		0.6527
		(0.7904)		(1.0277)		(1.6305)
RSIndex ×Slave State		-0.1894**		-0.1087		-0.3026**
		(0.0745)		(0.1018)		(0.1456)
White		0.4193**		0.4108*		2.1344***
		(0.1646)		(0.2204)		(0.3330)
RSIndex × White		-0.2644***		-0.2278***		-0.6015***
		(0.0636)		(0.0869)		(0.1231)
White × Slave State		-0.1135		-0.0043		-1.3028***
		(0.2228)		(0.2972)		(0.4528)
RSIndex × White × Slave State		0.2106**		0.0837		0.3304*
		(0.0968)		(0.1330)		(0.1806)
Panel C: Interracial marriage bias index						
RSIndex		0.3065***		0.1690**		0.6889***
		(0.0563)		(0.0769)		(0.1094)
Interracial marriage bias		0.0376		-0.6781		1.6079
		(1.6400)		(2.1210)		(3.4229)
RSIndex×Interracial marriage bias		-0.2857***		-0.2481**		-0.5016***
		(0.0754)		(0.1034)		(0.1447)
White		0.4818***		0.4363**		1.9275***
		(0.1474)		(0.1969)		(0.2980)
RSIndex×White		-0.2855***		-0.2657***		-0.6169***
		(0.0588)		(0.0803)		(0.1125)
White×Interracial marriage bias		-0.3430		-0.0860		-1.1665**
		(0.2274)		(0.3028)		(0.4598)
RSIndex×White×Interracial marriage bias		0.3145***		0.2123		0.4704***
		(0.0946)		(0.1300)		(0.1752)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,741	41,741	41,741	41,741	41,741	41,741
Number of ID	13,985	13,985	13,985	13,985	13,985	13,985

Notes: Table presents estimated coefficients. The variable *White* takes the value of one if the respondent is white and zero if the respondent is non-white. *Slave state* takes the value of one if the state is identified as a state that allowed slavery in 1861, zero otherwise. *Interracial marriage bias state* measures the difference between actual and predicted interracial marriage rates in 1970. The following set of variables are included in the *controls*: age and age squared, gender, IHS(assets), ln(income), college degree, high school, employed, unemployed, NLF, child, married, divorced, widow, self assessed health and own home. RE denotes random effects. All the Tobit and Probit specifications include Mundlak corrections for continuous independent variables. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5B: Household debt and banking deregulation - Race interactions: Marginal effects

	Total Debt		Unsecured Debt		Secured Debt	
	RE Probit	RE Tobit	RE Probit	RE Tobit	RE Probit	RE Tobit
Panel A						
White = 0	0.0091***	0.1404***	0.0028	0.0397	0.0108***	0.1851***
	(0.0029)	(0.0349)	(0.0034)	(0.0358)	(0.0029)	(0.0353)
White = 1	0.0014	0.0236	-0.0061*	-0.0597*	0.0044	0.0263
	(0.0028)	(0.0322)	(0.0032)	(0.0336)	(0.0027)	(0.0322)
Panel B: Slave State						
White = 0, Slave State = 0		0.1950***		0.0655		0.1936***
		(0.0415)		(0.0434)		(0.0364)
White = 0, Slave State = 1		0.0672*		0.0094		0.1118***
		(0.0396)		(0.0408)		(0.0355)
White = 1, Slave State = 0		0.0201		-0.0598		0.0226
		(0.0375)		(0.0389)		(0.0400)
White = 1, Slave State = 1		0.0361		-0.0725		0.0358
		(0.0513)		(0.0530)		(0.0553)
Panel C: Interracial marriage bias index						
White = 0, Interracial marriage bias = 0		0.2076***		0.0873**		0.2138***
		(0.0381)		(0.0397)		(0.0342)
White = 0, Interracial marriage bias = 1		0.0138		-0.0390		0.0598
		(0.0434)		(0.0446)		(0.0383)
White = 1, Interracial marriage bias = 0		0.0167		-0.0572		0.0350
		(0.0381)		(0.0394)		(0.0406)
White = 1, Interracial marriage bias = 1		0.0393		-0.0779		0.0199
		(0.0480)		(0.0497)		(0.0514)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,741	41,741	41,741	41,741	41,741	41,741
Number of ID	13,985	13,985	13,985	13,985	13,985	13,985

Notes: Table presents the estimated marginal effects relating to the specifications presented in Table 5A. The variable *White* takes the value of one if the respondent is white and zero if the respondent is non-white. *Slave state* takes the value of one if the state is identified as a state that allowed slavery in 1861, zero otherwise. *Interracial marriage bias state* measures the difference between actual and predicted interracial marriage rates in 1970. The following set of variables are included in the *controls*: age and age squared, gender, IHS(assets), ln(income), college degree, high school, employed, unemployed, NLF, child, married, divorced, widow, self assessed health and own home. RE denotes random effects. All the Tobit and Probit specifications include Mundlak corrections for continuous independent variables. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6A: Leverage level and banking deregulation - Race interactions: Coefficients

	Ratio of Total Debt to Income	Ratio of Total Debt to House Value	Ratio of Total Debt to Assets
Panel A			
RSIndex	0.0241***	0.0122***	0.0317***
	(0.0055)	(0.0041)	(0.0110)
White	0.0456***	-0.0293***	0.1354***
	(0.0138)	(0.0102)	(0.0271)
RSIndex×White	-0.0150***	-0.0082**	-0.0360***
	(0.0053)	(0.0039)	(0.0106)
Panel B: Slave State			
RSIndex	0.0395***	0.0254***	0.0453***
	(0.0071)	(0.0057)	(0.0147)
Slave State	0.0634	-0.0901	-0.295
	(0.0915)	(0.0665)	(0.182)
RSIndex × Slave State	-0.0291***	-0.0250***	-0.0273
	(0.0086)	(0.0070)	(0.0180)
White	0.0606***	-0.0469***	0.119***
	(0.0191)	(0.0149)	(0.0381)
RSIndex × White	-0.0330***	-0.0203***	-0.0481***
	(0.0073)	(0.0058)	(0.0149)
White × Slave State	-0.0231	0.0408**	0.0420
	(0.0258)	(0.0195)	(0.0517)
RSIndex × White × Slave State	0.0380***	0.0220***	0.0224
	(0.0112)	(0.0083)	(0.0221)
Panel C: Interracial marriage bias index			
RSIndex	0.0387***	0.0226***	0.0473***
	(0.0065)	(0.0052)	(0.0134)
Discrimination index	-0.0224	0.00573	-0.2859
	(0.1918)	(0.143)	(0.3557)
RSIndex × Discrimination index	-0.0351***	-0.0231***	-0.0374**
	(0.00873)	(0.0069)	(0.0180)
White	0.0754***	-0.0251*	0.1330***
	(0.0171)	(0.0130)	(0.0339)
RSIndex × White	-0.0345***	-0.0164***	-0.0516***
	(0.0069)	(0.0052)	(0.0137)
White × Discrimination index	-0.0746***	-0.0050	0.0140
	(0.0264)	(0.0195)	(0.0526)
RSIndex × White × Discrimination index	0.0495***	0.0170**	0.0374*
	(0.0109)	(0.0080)	(0.0216)
Year FE	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	41,741	23,945	33,238
Number of ID	13,985	8,165	11,663

Notes: Table presents estimated coefficients from random effects Tobit model with Mundlak corrections for continuous independent variables. The variable *White* takes the value of one if the respondent is white and zero if the respondent is non-white. *Slave state* takes the value of one if the state is identified as a state that allowed slavery in 1861, zero otherwise. *Interracial marriage bias state* measures the difference between actual and predicted interracial marriage rates in 1970. The following set of variables are included in the *controls*: age and age squared, gender, IHS(assets), ln(income), college degree, high school, employed, unemployed, NLF, child, married, divorced, widow, self assessed health and own home. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6B: Leverage level and banking deregulation - race interactions: Marginal effects

	Ratio of Total Debt to Income	Ratio of Total Debt to House Value	Ratio of Total Debt to Assets
Panel A			
White = 0	0.0143***	0.0096***	0.0180***
	(0.0033)	(0.0032)	(0.0062)
White = 1	0.0055*	0.0031	-0.0026
	(0.0030)	(0.0025)	(0.0055)
Panel B: Slave State			
White = 0, Slave State = 0	0.0210***	0.0209***	0.0291***
	(0.0038)	(0.0047)	(0.0094)
White = 0, Slave State = 1	0.0055	0.0004	0.0108
	(0.0036)	(0.0040)	(0.0082)
White = 1, Slave State = 0	0.0044	0.0038	-0.0016
	(0.0036)	(0.0027)	(0.0058)
White = 1, Slave State = 1	0.0098**	0.0016	-0.0042
	(0.0048)	(0.0037)	(0.0078)
Panel C: Interracial marriage bias index			
White = 0, Interracial marriage bias = 0	0.0207***	0.0183***	0.0297***
	(0.0035)	(0.0042)	(0.0084)
White = 0, Interracial marriage bias = 1	0.0019	-0.0004	0.0059
	(0.0039)	(0.0044)	(0.0090)
White = 1, Interracial marriage bias = 0	0.0028	0.0045*	-0.0024
	(0.0036)	(0.0027)	(0.0058)
White = 1, Interracial marriage bias = 1	0.0121***	0.0000	-0.0025
	(0.0045)	(0.0035)	(0.0075)
Year FE	Yes	Yes	Yes
State FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	41,855	23,945	33,238
Number of ID	14,019	8,165	11,663

Notes: Table presents the estimated marginal effects relating to the specifications presented in Table 6A. The variable *White* takes the value of one if the respondent is white and zero if the respondent is non-white. *Slave state* takes the value of one if the state is identified as a state that allowed slavery in 1861, zero otherwise. *Interracial marriage bias state* measures the difference between actual and predicted interracial marriage rates in 1970. The following set of variables are included in the *controls*: age and age squared, gender, IHS(assets), ln(income), college degree, high school, employed, unemployed, NLF, child, married, divorced, widow, self assessed health and own home. RE denotes random effects. All the Tobit and Probit specifications include Mundlak corrections for continuous independent variables. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 7: Debt level and banking deregulation: Quantile analysis

Panel A: Total Debt

	10	20	30	40	50	60	70	80	90
RSIndex	0.0426	0.0116	0.0167	0.0269***	0.0247***	0.0255***	0.0286***	0.0198***	0.0085
	(0.0303)	(0.0203)	(0.0144)	(0.0098)	(0.0081)	(0.0084)	(0.0077)	(0.0070)	(0.0090)
Interaction									
RSIndex	0.0147	0.0087	0.0202	0.0335***	0.0280**	0.0279**	0.0375***	0.0312***	0.0253**
	(0.0368)	(0.0236)	(0.0165)	(0.0119)	(0.0123)	(0.0111)	(0.0098)	(0.0104)	(0.0106)
White	-0.0271	0.0046	0.0344	0.0723**	0.0778***	0.0795***	0.0954***	0.1183***	0.1243***
	(0.0714)	(0.0456)	(0.0344)	(0.0300)	(0.0252)	(0.0236)	(0.0201)	(0.0222)	(0.0240)
RSIndex×White	0.0435	0.0068	-0.0067	-0.0120	-0.0048	-0.0051	-0.0140	-0.0182**	-0.0234***
	(0.0304)	(0.0208)	(0.0159)	(0.0118)	(0.0115)	(0.0107)	(0.0091)	(0.0091)	(0.0090)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26,472	26,472	26,472	26,472	26,472	26,472	26,472	26,472	26,472

Panel B: Secured Debt

	10	20	30	40	50	60	70	80	90
RSIndex	0.0032	-0.0025	0.0156	0.0249***	0.0231***	0.0197**	0.0157*	0.0160*	0.0126
	(0.0230)	(0.0135)	(0.0111)	(0.0096)	(0.0081)	(0.0081)	(0.0089)	(0.0087)	(0.0087)
Interaction									
RSIndex	-0.0001	0.0048	0.0164	0.0144	0.0192	0.0115	0.0164	0.0221**	0.0239**
	(0.0331)	(0.0196)	(0.0147)	(0.0130)	(0.0120)	(0.0108)	(0.0109)	(0.0103)	(0.0118)
White	-0.0103	0.0137	0.0462	0.0330	0.0428*	0.0352*	0.0607***	0.0759***	0.0937***
	(0.0495)	(0.0373)	(0.0303)	(0.0271)	(0.0232)	(0.0207)	(0.0192)	(0.0197)	(0.0219)
RSIndex×White	0.0042	-0.0089	-0.0015	0.0114	0.0078	0.0105	-0.0024	-0.0085	-0.0176
	(0.0272)	(0.0170)	(0.0138)	(0.0111)	(0.0095)	(0.0103)	(0.0082)	(0.0084)	(0.0108)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	15,971	15,971	15,971	15,971	15,971	15,971	15,971	15,971	15,971

Notes: The table presents coefficients. The quantile regression analysis is conducted on positive debt holding only. The variable *White* takes the value of one if the respondent is white and zero if the respondent is non-white. The following set of variables are included in the *controls*: age and age squared, gender, IHS(assets), ln(income), college degree, high school, employed, unemployed, NLF, child, married, divorced, widow, self assessed health and own home. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 8: Leverage and banking deregulation: Quantile regression

Panel A: Total Debt/Income

	10	20	30	40	50	60	70	80	90
RS Index	0.0033*	0.0041	0.0075*	0.0077*	0.0109**	0.0132***	0.0098**	0.0074	0.0078
	(0.0018)	(0.0038)	(0.0042)	(0.0042)	(0.0043)	(0.0041)	(0.0044)	(0.0048)	(0.0070)
Interaction									
RSIndex	0.0022	0.0011	0.0075	0.0061	0.0085*	0.0114**	0.0085	0.0096	0.0119
	(0.0022)	(0.0039)	(0.0047)	(0.0047)	(0.0050)	(0.0055)	(0.0058)	(0.0073)	(0.0087)
White	0.0005	0.0028	0.0155**	0.0190**	0.0270***	0.0329***	0.0392***	0.0535***	0.0856***
	(0.0041)	(0.0066)	(0.0079)	(0.0087)	(0.0089)	(0.0097)	(0.0110)	(0.0142)	(0.0153)
RSIndex×White	0.0019	0.0045	0.0001	0.0030	0.0044	0.0022	0.0016	-0.00276	-0.0086
	(0.0020)	(0.0034)	(0.0041)	(0.0039)	(0.0047)	(0.0050)	(0.0051)	(0.0059)	(0.0074)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	26,472	26,472	26,472	26,472	26,472	26,472	26,472	26,472	26,472

Panel B: Total Debt/House Value

	10	20	30	40	50	60	70	80	90
RSIndex	0.0026	-0.0009	0.0006	-0.0007	0.0036	0.0047	0.0036	0.0087**	0.0089**
	(0.0034)	(0.0039)	(0.0037)	(0.0030)	(0.0031)	(0.0029)	(0.0029)	(0.0036)	(0.0036)
Interaction									
RSIndex	0.0017	0.0042	0.0133**	0.0123**	0.0147***	0.0129***	0.0135***	0.0137***	0.0154***
	(0.0051)	(0.0058)	(0.0056)	(0.0048)	(0.0040)	(0.0040)	(0.0038)	(0.0033)	(0.0048)
White	-0.0003	-0.0145	-0.0069	-0.0136	-0.0095	-0.0138*	-0.0081	-0.0103	-0.0072
	(0.0107)	(0.0119)	(0.0107)	(0.0086)	(0.0082)	(0.0081)	(0.0079)	(0.0087)	(0.0114)
RSIndex×White	0.0008	-0.0064	-0.0163***	-0.0173***	-0.0174***	-0.0145***	-0.0144***	-0.0095***	-0.0101**
	(0.0043)	(0.0051)	(0.0052)	(0.0043)	(0.0039)	(0.0041)	(0.0036)	(0.0033)	(0.0042)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	18,532	18,532	18,532	18,532	18,532	18,532	18,532	18,532	18,532

Panel C: Total Debt/Assets

	10	20	30	40	50	60	70	80	90
RS Index	-0.0018	-0.0048*	-0.0025	-0.0049	-0.0036	-0.0009	-0.0007	0.0015	0.0235
	(0.0018)	(0.0027)	(0.0030)	(0.0032)	(0.0038)	(0.0035)	(0.0047)	(0.0075)	(0.0143)
Interaction									
RSIndex	-0.0002	0.0081	0.0140***	0.0126***	0.0171***	0.0190***	0.0215***	0.0261*	0.0898**
	(0.0031)	(0.0052)	(0.0052)	(0.0047)	(0.0054)	(0.0053)	(0.0069)	(0.0141)	(0.0402)
White	0.0130***	0.0204**	0.0149*	0.0138*	0.0061	-0.0015	0.0004	0.0230	0.1255**
	(0.0050)	(0.0083)	(0.0090)	(0.0080)	(0.0099)	(0.0093)	(0.0124)	(0.0218)	(0.0507)
RSIndex×White	-0.0024	-0.0162***	-0.0222***	-0.0247***	-0.0284***	-0.0263***	-0.0299***	-0.0362***	-0.0830**
	(0.0028)	(0.0043)	(0.0048)	(0.0041)	(0.0049)	(0.0046)	(0.0057)	(0.0118)	(0.0363)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,908	23,908	23,908	23,908	23,908	23,908	23,908	23,908	23,908

Notes: The table presents coefficients. The quantile regression analysis is conducted on positive debt holding only. The variable *White* takes the value of one if the respondent is white and zero if the respondent is non-white. The following set of variables are included in the *controls*: age and age squared, gender, IHS(assets), ln(income), college degree, high school, employed, unemployed, NLF, child, married, divorced, widow, self assessed health and own home. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 9: State level analysis: GDP growth, household debt and banking deregulation

	Pre 2008			Post 2008		
			Panel A			
Debt-to-Income Growth	-0.0715***			-0.3949***		
	(0.0184)			(0.0542)		
Mortgage Debt-to-Income Growth		-0.0485***			-0.3663***	
		(0.0140)			(0.0521)	
Credit Card Debt-to-Income Growth			-0.0810***			-0.2445***
			(0.0246)			(0.0359)
Constant	-0.0336	-0.0367	-0.0001	0.0580	0.0778	-0.0112
	(0.0397)	(0.0400)	(0.0403)	(0.0746)	(0.0745)	(0.0778)
Observations	392	392	392	392	392	392
R-squared	0.394	0.389	0.387	0.425	0.419	0.415
Number of States	49	49	49	49	49	49
			Panel B			
Debt-to-Income Growth	-0.0911***			-0.2318***		
	(0.0317)			(0.0831)		
Debt-to-Income Growth×RSIndex	0.0101			-0.0877**		
	(0.0130)			(0.0341)		
Mortgage Debt-to-Income Growth		-0.0499**			-0.2328***	
		(0.0229)			(0.0728)	
Mortgage Debt-to-Income×RSIndex		0.0009			-0.0750***	
		(0.00986)			(0.0288)	
Credit Card Debt-to-Income Growth			-0.1227***			-0.1470**
			(0.0354)			(0.0573)
Credit Card Debt-to-Income Growth×RSIndex			0.0244			-0.0493**
			(0.0148)			(0.0227)
Constant	-0.0310	-0.0362	0.00561	0.0660	0.0813	-0.00889
	(0.0399)	(0.0401)	(0.0404)	(0.0740)	(0.0739)	(0.0773)
Observations	392	392	392	392	392	392
R-squared	0.396	0.389	0.392	0.436	0.431	0.423
Number of States	49	49	49	49	49	49

Notes: The table presents coefficients. Each regression includes a set of state level controls: the unemployment rate; the Gini index; the proportion of the workforce with college and high school education; an indicator of the financial crash; and house price growth. All models control for state level fixed effects. Standard errors are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

A Appendix

A.1 An Alternative Deregulation Index

Table A1: The determinants of debt holding, debt levels and debt leverage: Alternative Deregulation Index - Marginal effects

	Total Debt		Unsecured Debt		Secured Debt		Debt-to-Income	Debt-to-HV	Debt-to-Asset
	RE Probit	RE Tobit	RE Probit	RE Tobit	RE Probit	RE Tobit	RE Tobit	RE Tobit	RE Tobit
Panel A									
RSIndex 1989	0.0090***	0.1190***	0.0005	0.0082	0.0096***	0.1180***	0.0119***	0.0071**	0.0074
	(0.0030)	(0.0347)	(0.0035)	(0.0360)	(0.0029)	(0.0346)	(0.0032)	(0.0028)	(0.0060)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	41,741	41,741	41,741	41,741	41,741	41,741	41,741	23,945	33,238
Number of ID	13,985	13,985	13,985	13,985	13,985	13,985	13,985	8,165	11,663

Notes: Table presents estimated marginal effects. The following set of variables are included in the *controls*: age and age squared, race, gender, IHS(assets), ln(income), college degree, high school, employed, unemployed, NLF, child, married, divorced, widow, self assessed health and own home. RE denotes random effects, all the Tobit and Probit specifications include Mundlak corrections for continuous independent variables. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

A.2 Falsification Tests

Table A2: The determinants of debt holding, debt levels and debt leverage: Falsification tests - Marginal effects

	Total Debt		Unsecured Debt		Secured Debt		Debt-to-Income	Debt-to-HV	Debt-to-Asset
	RE Probit	RE Tobit	RE Probit	RE Tobit	RE Probit	RE Tobit	RE Tobit	RE Tobit	RE Tobit
Panel A									
RSIndex 1989	-0.0007	-0.0086	-0.0041	-0.0415	0.0026	0.0252	-0.0013	0.0055*	0.0007
	(0.00423)	(0.0450)	(0.0049)	(0.0479)	(0.0037)	(0.0422)	(0.0034)	(0.0033)	(0.0070)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,744	11,757	11,757	11,757	11,757	11,757	11,757	6,364	9,137
Number of ID	7,434	7,443	7,443	7,443	7,443	7,443	7,443	4,086	5,930
Panel B									
RSIndex Random	0.0094	0.1420	0.0025	0.0475	-0.0108	-0.0641	0.0161	0.0199**	0.0042
	(0.0108)	(0.1150)	(0.0093)	(0.1070)	(0.0120)	(0.1200)	(0.0099)	(0.0089)	(0.0180)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	22,607	22,628	22,624	22,628	22,620	22,628	22,628	12,784	17,753
Number of ID	10,583	10,597	10,595	10,597	10,591	10,597	10,597	5,979	8,520

Notes: Table presents marginal effects. The following set of variables are included in the *controls*: age and age squared, race, gender, IHS(assets), ln(income), college degree, high school, employed, unemployed, NLF, child, married, divorced, widow, self assessed health and own home. RE denotes random effects, all Tobit and Probit specifications include Mundlak corrections for continuous independent variables. Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.