A New Look at the Effects of the Interest Rate Ceiling in Arkansas

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Abstract

Arkansas has been a popular place to study the effects of rate ceilings because of its exceptionally low interest rate ceiling. This paper examines the effects of the Arkansas rate ceiling on credit use by nonprime consumers in Arkansas, who are especially vulnerable to credit rationing because of the low ceiling. We compare the level and composition of consumer debt of nonprime consumers in Arkansas with that of prime Arkansas consumers and also nonprime consumers in the neighboring states. We find that nonprime consumers in Arkansas are less likely to have consumer debt and, conditional on having debt, have slightly lower levels of consumer debt than prime Arkansas consumers and nonprime consumers in neighboring states. Types of credit used by nonprime consumers in Arkansas tend to differ from those of the comparison groups. Notable is much lower use of consumer finance loans, traditionally an important source of credit for higher risk consumers. This finding suggests rate-based rationing of risky consumers. Also notable is lower use of bank credit despite federal preemption of the rate ceiling for banks. This result is consistent with banks' traditional avoidance of risky lending.

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JEL classification: D14, G2

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1.   Introduction

At least part of the rationale for interest rate limits is a concern that lenders will take advantage of necessitous borrowers. There have been calls by policymakers to consider interest rate ceilings for consumers be set no higher than 36 percent.

When rate ceilings are set at low levels that make lending unprofitable, however, credit becomes unavailable, especially for riskier consumers. Unavailability of credit might result in lower levels of household investment or financial difficulties arising from shortfalls of income or unexpected expenses.[1] Substituting other kinds of credit for the ones in short supply might be costly in terms of the interest rate or sacrifices in current consumption due to shorter terms to maturity.

This paper examines the effects of the rate ceiling on risky nonprime consumers in Arkansas, the state with a 17 percent rate ceiling. Arkansas has been a popular place to study the effects of rate ceilings because of its long history of a low constitutionally imposed rate ceiling. Nonprime consumers are most likely to be affected. Previous studies from the 1960s and 1970s found that strict application of the ceiling resulted in fewer direct lenders, tighter credit standards, and larger loan sizes relative to neighboring states, which had less restrictive rate ceilings. Arkansas consumers, however, used more retail credit, in which higher product prices could compensate for risk bearing. Overall, previous studies found that Arkansas consumers did not have much lower levels of debt than consumers in neighboring states (Lynch, 1968, Blades Jr. and Lynch, 1976, Peterson and Falls, 1981).[2]

Currently consumer finance companies, traditionally a source of credit for nonprime consumers, do not have offices in Arkansas because, being subject to the usury ceiling, they cannot profitably lend to risky consumers. More recent broad preemption for bank credit potentially provides consumers borrowing opportunities that allow consumers to escape restrictive effects of the low Arkansas rate ceiling, but banks historically have avoided riskier, nonprime borrowers. Retailers might assign some finance charges to product prices, but in doing so, retailers could lose prime credit consumers as well as cash-paying customers. Whether risky consumers in Arkansas have been able to find sufficient amounts of credit from exempt sources is not known.

Results of our analysis suggest that nonprime consumers in Arkansas were rationed. Comparing nonprime consumers in Arkansas with prime Arkansas consumers and nonprime consumers in neighboring states, we find that nonprime consumers in Arkansas were less likely to have consumer debt and, conditional on having such debt, have lower amounts of debt than prime Arkansas consumers. Moreover, nonprime consumers in Arkansas were also less likely than nonprime consumers in neighboring states to have consumer debt and owed less consumer debt.

Nonprime consumers in Arkansas tended to use different credit sources than prime Arkansas consumers or risky consumers in neighboring states. Because the 17 percent Arkansas rate ceil-

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[1]See Durkin et al. (2014) chapters 3 and 8 for discussion of credit's role in financing household investment and providing liquidity to bridge temporary shortfalls in funds.

[2]See Durkin, Elliehausen, Staten, and Zywicki (2014) for a summary of these studies' findings. For additional discussion of related studies not limited to Arkansas, see National Commission on Consumer Finance (1972).

ing is very restrictive, consumer finance companies do not have offices in Arkansas. Nonprime consumers in Arkansas were less likely to have consumer finance debt and have lower levels of such debt than nonprime consumers in neighboring states. Banks' exemption from the Arkansas rate ceiling apparently has not stimulated much bank lending to risky consumers. Nonprime consumers in Arkansas had less bank card credit, bank personal loans, and bank auto credit than prime consumers in Arkansas and nonprime consumers in neighboring states. Nonprime consumers in Arkansas used more finance company auto and retail credit than prime Arkansas consumers and nonprime consumers in neighboring states. Finally, nonprime consumers in Arkansas were more likely to owe debt and had greater balances in Arkansas counties bordering other states than in the interior counties of Arkansas. This result is especially significant for consumer finance credit, which is a major source of small, riskier cash loans to nonprime consumers but is not generally available in Arkansas. Our findings suggest, however, that some Arkansas consumers living near the state border might cross state lines to obtain credit from out of state finance companies.

The remainder of this paper proceeds as follows. We begin with a review of current legislation and a history of usury law in Arkansas in Section 2. We review previous economic studies of usury limits in Arkansas in Section 3. In Section 4 we provide details on our research design and data used in this study, while in Section 5 we discuss our empirical analysis and results. Section 6 concludes.

2. A History of Usury Law in Arkansas

Arkansas's rate ceiling is notable not only because it is low but also because it is established by the state's constitution. Strict interpretation of the constitutional interest rate ceiling by the Arkansas Supreme Court hampered efforts to allow exceptions to the ceiling to facilitate lending to risky consumers. Federal preemption of state rate ceilings provides an exception for banks, but non-bank lenders remain subject to Arkansas's low rate ceiling.

2.1. Current Regulation of Interest Rates in Arkansas

In November of 2011, Arkansas voters approved an amendment to the Arkansas Constitution that increased the maximum rate of interest that can be charged on loans or contracts to 17 percent (Ark. Const. Amendment 89, § 3). Federal regulations allow out-of-state national and FDIC-insured banks to charge rates permitted by their home state. While actual and potential entry by out-of-state banks means that rates on bank lending are no longer limited by Arkansas's rate ceiling, interest rates charged by non-banks are still constrained by Arkansas law. Notably, auto deal-

ers, retailers, credit unions, and finance companies are still subject to Arkansas's interest rate laws.[3] The legislative environment, however, was not always this clearly defined. In the next section, we review key aspects of past interest rate regulation in the state.

2.2.   Past Regulation of Interest Rates in Arkansas

In 1836, the Arkansas legislature passed a law limiting the rate of interest that could be charged. The law specified a maximum interest rate of six, seven, or eight percent per annum, depending on the term to maturity.[4] The 1836 limit had little effect because it contained no penalties for interest rates that exceeded the ceiling.

Following the Civil War, a new constitution in 1867 prohibited any law from limiting the interest rate. The intent of this provision was to attract capital for reconstruction.[5]

Restoration of voting rights to ex-confederates led to a change of government and a new constitution in 1874. The 1874 constitution limited the interest rate to 10 percent. The penalty for violations was forfeiture of interest and principal. The constitution did not, however, define what charges are interest and what charges are not; nor did it specify how to calculate the interest rate. These omissions made the interest rate limit vulnerable to evasion. For the next 75 years, the Arkansas Supreme Court tempered the restrictive effect of the limit with permissive interpretations. The court allowed a time-price differential and considered certain service charges as ancillary charges rather than finance charges, for example.[6]

In 1951, the Arkansas legislature passed the Arkansas Installment Loan Law, which codified 75 years of court decisions and provided a maximum fee schedule that depended on the principal amount of the loan contract. By relating the maximum fee to loan amount, the law recognized that many of the costs of installment lending are fixed, making smaller loans relatively more costly per dollar to produce than larger loans.[7]

About a year after the 1951 law, the Arkansas Supreme Court, in a series of decisions, reversed early permissive decisions on evasions and voided exceptions in the 1951 law. In 1953, the legisla-

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[3]Credit unions compete with banks to make loans to lower risk consumers (Feinberg, 2001, Feinberg, 2003, Feinberg and Ataur-Rahman, 2006). Federal credit unions are subject to an 18 percent rate ceiling, which makes lending to riskier consumers unprofitable (National Credit Union Administration, 2021). The ceiling applies to nearly all consumer lending by federal credit unions. The finance company category includes nonbank lenders, commonly referred to as FinTech lenders, that seek to apply technology to improve the lending process. FinTech lenders can make loans with interest rates in excess of a state's usury rate ceiling, but these loans would be made in partnership with out of state banks, with the bank being the originator of the loan. FinTech lenders seeking to make loans on their own are constrained by the rate ceilings in low-rate states like Arkansas.

[4]The lower ceilings were for terms less than 4 months (6 percent) and 4 to 8 months (7 percent). See Galchus, Martin, and Vibhakar (1989).

[5]This consideration was common in southern states at that time. Setting higher rate ceilings than other jurisdictions to attract capital was an established practice in English colonies in America and later in western states of the US. See Homer and Sylla (1996).

[6]Under the time-price legal doctrine merchants may offer a cash price and a higher "time" price. Courts held that the difference between the cash price and the time price was not interest and was therefore not subject to usury laws. The leading US case involving the time-price doctrine is Hogg v. Ruffner, 66 US (1 Black) 115 (1861).

[7]For discussion of the cost structure of installment lending, see Durkin et al. (2014), chapter 5.

ture repealed sections of the Arkansas installment Loan Law that the court had not already declared null and void.

Economic theory predicts, and empirical evidence shows, that low interest rate ceilings ration higher risk borrowers out of the market (National Commission on Consumer Finance, 1972). Naturally, Arkansas's 10 percent rate ceiling was no exception. As inflation accelerated in the late 1960s, rising interest rates made lending at 10 percent increasingly unprofitable in Arkansas. Loanable funds continued to be available in other states that allowed higher interest rates, but credit became unavailable to all but the most creditworthy borrowers in Arkansas (Galchus, Martin, and Vibhakar, 1989).[8]

2.3. Efforts to Relax Restrictive Rate Regulation

The deterioration in lending conditions in the state provided a stimulus in 1973 for the Proposed Amendment 57 to the Arkansas Constitution. The proposed amendment retained the 10 percent rate ceiling but gave the legislature the authority to change the rate ceiling if it deemed that economic conditions warranted relief. Thus, while the proposed amendment would not remove the 10 percent interest rate limit from the constitution, it would have placed the rate ceiling in the hands of the state legislature. Proposed Amendment 57 was on the ballot and was overwhelmingly rejected in the general election on November 5, 1974. Widespread distrust of the state legislature and the prospect of temporary federal preemption apparently contributed to the demise of Amendment 57. Lower interest rates in 1975 and 1976 provided some relief from the restrictive effect of the rate ceiling.

By mid-1977 interest rates began to climb and continued rising to record levels in the early 1980s. As a result of the ensuing restriction of credit from the rate ceiling, in 1982, Arkansas adopted Amendment 60 to its Constitution (Ark. Const. Art. 19, § 13) in 1982. Amendment 60 provided that the "maximum lawful rate of interest on any contract entered into". . . shall not exceed 5 percent per annum above the Federal Reserve Discount Rate at the time of the contract "with a maximum of 17 percent per annum for consumer loans and credit sales."

Language in Amendment 60 was ambiguous, however. In particular, the amendment did not specify whether the ceiling of 5 percent per annum above the discount rate for "any contract" included consumer loans, and the law separately provided for a 17 percent ceiling for consumer loans. The legislative history indicated that the 17 percent ceiling was intended for consumer loans and the 5 percent over the discount rate was intended for other (business) loans. Shortly after the amendment was passed, the Arkansas Supreme Court reversed a lower court decision and ruled that the language of the amendment was such that the rate ceiling for consumer loans was the *lower* of 5 percent over the discount rate or 17 percent, which made the rate ceiling for consumer

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[8]Also, Arkansas retailers raised prices to cover higher credit costs. One study found that retail prices for major appliances were 4 percent to 7 percent higher in Little Rock (which is located in the interior of the state) than in comparable cities outside the state. Arkansas: A Usury Law Dries up Loan Funds, Business Week, September 29, 1973, pp. 73-74 (cited in Galchus, Martin, and Vibhakar, 1989).

loans more restrictive than the legislature intended.[9] At the time of the Supreme Court's ruling, the discount rate was 8.50 percent, which made the rate ceiling for consumer credit 13.5 percent, not 17 percent as the legislature intended.

Following the Arkansas Supreme Court decision, a downward trend in the discount rate caused the Arkansas rate ceiling to become increasingly restrictive. Between September 1984 and September 1986, a decline in the discount rate from 9.00 percent to 5.5 percent reduced the rate ceiling from 14.00 percent to 10.50 percent. The ensuing flow of loanable funds out of Arkansas and reemergence of credit rationing again provoked pressure for replacing Amendment 60 (Galchus and Vibhakar, 2003).

In March 1989, the legislature passed a new constitutional amendment to replace Amendment 60. The new amendment, Amendment 2, provided for a maximum interest rate of 17 percent for consumer loans and a maximum interest rate of 5 percent over the average auction rate of one-year US Treasury bills for business and agricultural loans of $250,000 or less. Loans over $250,000 would have no ceiling. Amendment 2 was presented to voters for approval in the November 1990 general election, but voters overwhelmingly rejected Amendment 2, as they had the proposed amendment in 1974.

2.4. Interstate Banking and Federal Preemption

The advent of interstate banking gave rise to the question whether the laws of the home state or host state determine permissible interest rates for out-of-state banks. The US Supreme Court had ruled in the 1978 Marquette decision that the National Bank Act authorizes a national bank "to charge on any loan" interest at the rate allowed by the laws of the state "where the bank is located." The court also maintained that a bank is located in the state in which it is chartered (that is, the state named in its organization certificate). This ruling meant that out-of-state banks could lend in states at the rates permissible in their home state.

The Office of the Comptroller of the Currency (OCC) provided interpretations to relevant law. Interpreting section 85 of the National Bank Act, in 1988, the OCC advised national banks that they could charge a rate permitted by the state in which the bank is located. The OCC ruled that a national bank is located in the home state of its main office.[10] Therefore, the laws of that state apply to the bank's loan rates. The Federal Deposit Insurance Corporation's interpretation of section 27 of the Federal Deposit Insurance Act, provided the same guidance for state banks as the OCC's guidance for national banks.

This guidance allowed interstate banks to export interest rates permitted by the home in which a bank is located to out-of-state branches. Thus, out-of-state banks could circumvent Arkansas's usury law by configuring the loan process in such a way as to ensure that their home state interest rates would always apply to loans made in Arkansas. Recognizing the threat from out-of-state

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[9]Bishop v. Linkway Stores, Inc., 280 Ark. At 106, 655 S.W.2d 426 (1983).

[10]Marquette Nat. Bank of Minneapolis v. First of Omaha Service Corp., 439 U.S. 299.

banks exporting home state rates to their Arkansas branches, Arkansas bankers and state legislators urged the state's congressional delegation to support federal legislation allowing Arkansas banks to charge the same rates as their out-of-state competitors. Section 731 of the Gramm-Leach-Bliley Act (1999), directed specifically to Arkansas's usury law, addressed this threat. It specified that the highest rate in a state is the greater of the maximum rate allowed by the home state of any branch located in the state, or the rate established by the state. In allowing Arkansas banks to charge the same interest rates as their out-of-state competitors, section 731 leveled the playing field between Arkansas banks and local branches of out-of-state banks.[11]

2.5. Historical Perspective on the Share of Consumer Credit Subject to the Arkansas Interest Rate Ceiling

In this subsection, we examine, from a historical perspective, the interest rate ceiling in Arkansas and its effect on the share of credit that is not exempt from the ceiling (Figure 1).

First, we contrast the historical levels of the interest rate ceiling with the discount rate, that was used for a period in the ceiling level calculation. During the more recent period, starting with 1950, the interest rate ceiling in Arkansas fell under three categories. Between 1950 and 1982, the ceiling was fixed at 10 percent. For the subsequent period, the ceiling was tied to the discount rate and was the lower between 5 plus the discount rate and 17 percent. Starting with 2011, the ceiling was once again fixed, but this time at 17 percent (Figure 1a). As the spread between the ceiling and the discount rate varied, likely so did the share of loans held by lenders subject to the rate ceiling.

Second, examining the most recent change in this spread caused by the 2011 increase in the interest rate ceiling from 5 percent above the discount rate to 17 percent (Figure 1b), we document that the share of credit held by lenders subject to the state's interest rate ceiling in consumer credit, shown in red, indeed rises when lenders are able to charge a higher price.[12] As noted in the previous section, up until 2011, the interest rate ceiling in Arkansas ranged between 5 percent above the discount rate to 17 percent, as although most of consumer loans had to be issued under the first condition, there were circumstances that allowed an interest rate of up to 17 percent. In 2011, however, the interest rate ceiling was fixed at 17 percent. As result, after 2011, we note the discrete jump in the share of consumer loans subject to the interest rate ceiling in total, suggesting there is substitution between consumer credit issued by lenders subject to the interest rate ceiling and those exempted.

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[11]District and circuit court decisions upheld the constitutionality of section 731 (Johnson v. Bank of Bentonville 2000 and 2001).

[12]Consumer credit debt subject to the state's interest rate ceiling consists of consumer finance debt, retail credit, and auto loans issued by finance companies.

3. Previous Economic Studies of Interest Rate Limits in Arkansas

The 1957 Arkansas Supreme Court decision affirming that all forms of credit in the state were subject to the constitutional 10 percent interest rate limit regardless of any actions the state legislature might take (Sloan v. Sears, 228 Arkansas 464, 308 S.W., 2d 802 1957) motivated several studies of the economic effects of the law.

These studies provided evidence that sellers do respond to limitations to the price of credit by raising product prices. For instance, Lynch (1968) compared appliance prices in Arkansas and other states. At that time, most of the larger household appliances were typically purchased using closed-end credit. Lynch found that prices on comparable appliances were several percentage points higher in Arkansas than in cities in surrounding states.[13] In border cities such as Texarkana on the Arkansas-Texas border, Arkansas retail stores reported facing aggressive price competition from Texas retailers. Cash purchasers from the Arkansas side frequently crossed the state line into Texas to purchase appliances in order to avoid subsidizing below-market interest rates for credit purchasers in Arkansas through higher prices for goods.

Lynch (1968) also found relatively few direct lenders offering consumer credit in Arkansas. Those he did find concentrated mainly on automobile lending, which because of the larger loan size and the presence of collateral was more profitable than other types of consumer lending in the controlled environment. Even so, low loan losses on the automobile credit suggested that high-risk borrowers in Arkansas were rationed.

In subsequent research focusing on Texarkana and Fort Smith, on the border respectively with Texas and Oklahoma, Blades Jr. and Lynch (1976) examined the location choices of retail stores in the first sixteen years following the strict application of the 10 percent ceiling in Arkansas. They found that the numbers of credit-oriented retail institutions, such as automobile dealers, furniture and appliance dealers, and department stores, declined on the Arkansas side of the border at Texarkana and increased on the Texas side. This change included both the formation of new retail stores and the relocation of existing stores from Arkansas into Texas. In Fort Smith, on the border with Oklahoma but entirely in Arkansas, initially there had been little commercial development on the Oklahoma side, but this changed in the 1960s with the opening of many new retail establishments there.

By the early 1970s, Fort Smith retail outlets reported facing substantial new competition from retailers in Oklahoma, which previously had not been a concern. Blades Jr. and Lynch (1976) also found that Arkansas retail stores financing customer sales applied higher credit standards, required larger down payments, and offered shorter lending terms than Texas retailers. Arkansas retailers

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[13] Both retail stores and direct lenders could also increase the price of products ancillary to the credit component of the sale, including repair contracts and other closely related products. Comparing lending practices in Little Rock, Arkansas, to Champaign-Urbana, Illinois, which had less restrictive lending laws than Arkansas, the Illinois Law Forum Board of Student Editors (1968) found that lenders in Arkansas were much more aggressive about efforts to sell credit insurance to borrowers and that credit insurance prices were substantially higher in Arkansas even though the covered risks were no higher. This finding suggests that lenders in Arkansas marked up credit insurance prices at that time to offset below-market interest rates.

almost universally charged ceiling rates on purchases they financed. Texas and Oklahoma retailers charged rates higher than the Arkansas ceiling but generally lower than the Texas or Oklahoma ceiling. National retail chains, however, charged rates in compliance with customers' state of residency. Texas retail dealers financed a greater proportion of their sales than Arkansas retailers in the years following strict application of the 10 percent ceiling in Arkansas. Greater credit availability in Texas certainly contributed to this outcome, although there may also have been other contributing factors, including potentially more favorable non-price credit terms in Texas. Blades Jr. and Lynch (1976) also reported that Arkansas retail dealers perceived a reduction in the number of financial institutions willing to buy their installment sales contracts. Reduced competition among the remaining financial institutions on the Arkansas side of the border resulted in the retailers receiving less favorable terms for sales financing.[14]

Peterson and Falls (1981) compared borrowers in Texarkana with borrowers in three local markets in other states with less restrictive rate ceilings. They found that despite restrictions on consumer credit from local sources, Texarkana borrowers did not owe less consumer debt overall.[15] Their sources of credit merely differed. Arkansas borrowers obtained substantially larger shares of credit through retailers than the consumers in other markets, presumably paying higher prices for the goods in the process. They also obtained more credit from out-of-state sources. Whether Arkansas consumers not living in Texarkana and with less convenient access to out-of-state retail credit were able to obtain similar levels of debt is not known. That many Arkansas consumers living near the border chose Texas retailers suggests that the 10 percent Arkansas rate ceiling did not benefit these consumers.

The 2011 amendment to the Arkansas constitution established a 17 percent interest rate ceiling. The revised rate ceiling, however, remains restrictive compared to most other states.[16] Among the sources of credit that are not exempt from the Arkansas rate ceiling are consumer finance companies. Consumer finance companies lend small amounts on an installment basis, generally to higher risk consumers. No consumer finance companies operate in Arkansas. States bordering Arkansas are not severely restrictive, and consumer finance companies operate in all six states that border Arkansas (Lukongo and Miller Jr., 2022).[17]

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[14]Financial institutions eliminated the dealer spread, paid little or no interest on dealer reserves, and purchased paper only with full recourse (which requires the dealer to absorb credit losses). See also Peterson and Falls (1981).

[15]See also Peterson (1983).

[16]Model legislation establishing the consumer finance industry recommended a 42 percent rate ceiling, along with the recommendation that "this rate should be reconsidered after a reasonable period of experience with it". The writers of the model legislation believed that a 42 percent rate would attract sufficient capital to the industry to provide the bulk of necessitous loans without causing much hardship. They were aware that very small loans would require higher rates to be profitable. For discussion, see Robinson and Nugent (1935). Data analyzed by the National Commission on Consumer Finance (1972) (chapter 7) indicate that small loans are unprofitable at 17 percent. Recent data (Chen and Elliehausen, 2020) show that small loans are still unprofitable at 17 percent.

[17]States bordering Arkansas are Oklahoma, Texas, Louisiana, Mississippi, Tennessee, and Missouri.

Lukongo and Miller Jr. (2022) compared consumer finance company borrowing by Arkansas residents with that of residents of bordering states.[18] They found that Arkansas residents had 90.4 installment loans per 10,000 population. Residents in the counties of the six states bordering Arkansas (hereafter, border counties) had 524.5 loans per 10,000 population.

Within Arkansas, Lukongo and Miller Jr. (2022) found that nearly all loans to Arkansas residents were to residents living in counties on the perimeter of the state (perimeter counties). Residents of perimeter counties had 195.0 loans per 10,000 population. In sharp contrast, residents of interior counties in Arkansas had 5.5 loans per 10,000 population. Despite having 55 percent of the population, interior counties accounted for just 3 percent of loans. Figure 2 (from Lukongo and Miller Jr., 2022) clearly shows the differences in installment loan use between border and interior counties.[19]

Because no consumer finance companies operated in Arkansas, residents in border counties crossed state lines to obtain loans from consumer finance companies. Arkansas residents in border counties had many more loans than residents in the interior counties of Arkansas, but Lukongo and Miller Jr. (2018) showed that the distance to an out-of-state lender generally deterred these residents from traveling to seek loans from consumer finance companies.

They analyzed in detail whether proximity to out-of-state lenders influences the rate of installment loan usage. The authors applied spatial economics techniques across two groups, or regimes, of counties. One regime was the 45 interior Arkansas counties. The other regime was the 30 perimeter counties and the 85 counties in counties in states that border Arkansas. Tests rejected the hypothesis that differences were random and supported the alternative that loan usage was geographically clustered. That is, one spatial process is at work in the low-loan use regime consisting of the interior counties of Arkansas, and another spatial process is at work in the high-loan use regime. The Lukongo and Miller Jr. (2018) results are consistent with the notion that consumers will travel up to 45 miles to borrow from an installment loan lender.[20]

Melzer and Schroeder (2017) studied the effect of rate ceilings on the availability of auto credit and the type of lender using matched data on auto registrations, credit bureau records, and auto value estimates between January 2011 and August 2013. Their analysis focused particularly on dealer financing of auto purchases of subprime borrowers (credit score below 650) in Arkansas and neighboring states. They found that a binding rate ceiling has little effect on who receives

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[18]Lukongo and Miller Jr. (2022) obtained loan-level data on characteristics of loans originated by consumer finance companies belonging to the American Financial Services Association (AFSA). These companies held 5.2 million small installment cash loans as of December 13, 2013 (the date for the data analyzed by Lukongo and Miller Jr. (2022)).

[19]Low frequencies of installment loans in Arkansas perimeter counties bordering Mississippi can be attributed by a lack of bridges over the Mississippi River, and low frequencies of loans in perimeter counties bordering Missouri can be attributed to lakes, parks, and forests along the Missouri border.

[20]Lukongo and Miller Jr. (2018) specified separate spatial autoregression models to predict the number of loans per 10,000 population for the interior counties of Arkansas and for the 30 perimeter counties in Arkansas plus the 85 non-Arkansas counties. Explanatory variables were socioeconomic characteristics of county populations and accessibility of out-of-state lenders. Accessibility of out-of-state lenders was based on findings from studies of commuting tolerance thresholds that find the maximum tolerable commuting time to be about 45 minutes, which translates into about a 40 to 50-mile commuting distance. Overall, coefficients in models with the 40 and 45-mile accessibility indicator variables jointly were significantly different for the two regimes. In addition, the 40 and 45-mile accessibility indicator coefficients individually were significantly different for the two regimes.

credit but a substantial effect on who provides credit and terms of credit to the recipients. Dealers finance greater shares of total auto financings when rate ceilings are binding (36 percent of higher risk consumers) than in states with a high or no limit (23 percent of higher risk consumers). They price the credit risk through the markup on the product sale rather than the interest rate. This behavior produces a lower interest rate to comply with the rate ceiling, but the larger markup on the sale of the auto results in a higher loan amount relative to the actual value of the vehicle. Direct lenders do not have this advantage.

4. Research Design and Data

Consumer finance loans have historically been an important source of credit for higher risk borrowers and remain so today. Existing research indicates that rate ceilings have restricted availability of such loans for higher risk consumers in many states (National Commission on Consumer Finance, 1972, chapter 7; Durkin et al., 2014, chapter 11, Consumer Financial Protection Bureau, 2021, Bolen, Elliehausen, and Miller Jr., 2022). The lower the ceiling rate is, the fewer higher risk consumers are able to qualify for the loans. Accordingly, Arkansas's low interest ceiling would be expected to result in greater rationing of nonprime consumers in Arkansas than in neighboring states with their less restrictive rate ceilings for consumer finance loans. Prime consumers in Arkansas might not face rationing, and their lower risk would enable them to qualify for less expensive forms of credit than consumer finance loans. Prime consumers in neighboring states also might qualify for less expensive forms of credit and not need to rely on consumer finance loans.

Whether nonprime consumers in Arkansas are able to obtain sufficient or less expensive types of credit is not clear. Bank credit is largely exempt from the Arkansas interest rate ceiling, but banks have historically avoided riskier, nonprime borrowers.[21] As mentioned, retailers might assign some finance charges to product prices, but in doing so retailers could lose prime consumers as well as cash customers.

4.1. Research Design

We employ a quasi-experimental design comparing data from credit bureau files on the amounts of consumer finance debt and amounts of possible substitutes for consumer finance debt in Arkansas and neighboring states. Possible substitutes include retail credit, bank card credit, closed-end depository institution loans, and auto credit. Auto credit is further broken down into credit from finance companies and from banks.

Consumer finance credit consists primarily of personal loans from finance companies. Bank card credit consists of balances on revolving credit held by depository institutions. Retail credit

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[21]Credit cards have to a great extent replaced closed-end financing for furniture, appliances, and many other household durables. The financial crisis and regulation restricting card issuers risk management practices of credit card issuers (2008-2009) have made obtaining credit cards more difficult for consumers with less than prime credit scores (Elliehausen and Hannon, 2018).

consists of credit originated and held by retailers to finance customers' purchases. Depository institution personal loans consist of closed-end, non-auto credit held by banks and credit unions. Finance company and bank auto credit includes sales finance and direct loans used to finance the purchase of motor vehicles held by finance companies and banks, respectively.[22]

We compare the amount of each type of debt held by nonprime consumers in Arkansas with that held by three groups: (1) prime consumers in Arkansas; (2) nonprime consumers in neighboring states; and (3) prime consumers in neighboring states. We classify consumers with credit bureau scores of less than 680 as nonprime and consumers with credit bureau scores of 680 or greater as prime. Neighboring states are Texas, Oklahoma, Louisiana, Tennessee, Missouri, and Mississippi. Survey evidence shows that finance companies operating in these states have large loan volumes and offer small loans to riskier consumers. Because small loans are not profitable unless interest rates are relatively high (Chen and Elliehausen, 2020), their prevalence in the neighboring states indicates that the neighboring states have less restrictive rate ceilings than Arkansas.[23]

Credit use is influenced by life-cycle stage and income. As consumers establish households and their families grow, they often need to use credit to finance acquisition of consumer durable assets. In later years, adult children leave the household; and households, no longer making large additions to their stock of household durables, use less credit. We account for life-cycle influences with indicator variables for consumers' age (young, two middle age groups, and older consumers). Studies have found that credit use is greatest in middle income groups, and lowest in lower income groups, but income is not collected in credit bureau files. We use annual per capita personal income for the county in which the consumer resides.[24] To account for stability of income we include the annual unemployment rate in the county in which the consumer resides. These variables reflect broad influences from consumers' economic environment on debt holding.

4.2. Data

Data are from the Federal Reserve Bank of New York's quarterly Consumer Credit Panel (CCP), a database on consumers' credit use and payment performance drawn from Equifax credit bureau records. The sample is representative of the population of credit users in each quarter.[25] The dataset contains individual-level data on virtually every debt owed by each consumer. The variables include type of credit, type of lender, origination date, account balance, scheduled monthly payments, delinquency, and adverse events associated with credit accounts. Variables also include year of birth and credit bureau score. Other individual characteristics are not contained in credit bureau files, and therefore are not available for the CCP.

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[22] See Durkin et al. (2014) (chapter 1) for more detailed descriptions of these institution and credit types.

[23] See Durkin, Elliehausen, and Hwang (2016).

[24] Personal income is from the Bureau of Economic Analysis. Unemployment is from the Bureau of Labor Statistics.

[25] The sampling procedure ensures that the same individuals remain in the sample in each quarter and allows for entry and exit into the sample, so that the sample is representative of the target population in each quarter. See Lee and der Klaauw (2010) for a description of the design and content of the CCP. See also https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/data_dictionary_HHDC.pdf

We use a one percent sample from the total available five percent sample, covering the period between 2012Q1 and 2018Q4.[26] At the end of the fourth quarter of 2018, the CCP totaled approximately 231 million individuals with credit scores, holding about $108 billion in consumer finance loans across 79 million accounts owned by 56 million individuals. Nonprime consumers, those with Equifax Risk Scores lower than 680, had 41 percent of consumer finance accounts, but owed 57 percent of consumer finance balances.

5.   Empirical Analysis

To identify possible effects of the interest rate ceiling in Arkansas, we first look at the distribution of debt across different debt categories for nonprime and prime consumers in Arkansas and in neighboring states. We then use a multivariate model to examine individual-level debt holding for each type of debt accounting for credit risk category and the influence of life-cycle stage and income on consumer borrowing. Finally, we investigate the extent to which proximity to out of state consumer finance loans affects Arkansas consumers' holdings of different types of debt, again accounting for credit risk category, life-cycle stage, and income.

5.1.   Incidence and amount of consumer debt, Arkansas and neighboring states

Using our CCP sample, we calculated the incidence and the average amount of debt of borrowers for the last three years in our sample (2016, 2017, and 2018) across debt and credit risk categories. Nonprime consumers were less likely to owe debt than prime consumers, but conditional on having debt, nonprime consumers had considerable amounts of debt (Table 1). Nonprime consumers in Arkansas had a lower incidence of debt (6.72 percent lower) than nonprime consumers in neighboring states, but a higher average amount of debt ($14,809 and $13,650, respectively), perhaps because risky consumers experienced greater credit rationing in Arkansas than in neighboring states.

The composition of consumer debt of nonprime consumers in Arkansas differed from that of nonprime consumers in neighboring states. Notable is a much lower incidence of nonprime consumer finance loans in Arkansas (46.07 percent lower than that of nonprime consumers in neighboring states). However, for those consumers having consumer finance debt, the average amount of consumer finance debt of nonprime consumers in Arkansas was not much different from that of nonprime consumers in neighboring states. Nonprime consumers in Arkansas also had a lower incidence of depository institution personal loans (despite preemption of banks, the major holders of such loans, from the usury ceiling). Those nonprime consumers in Arkansas who had depository institution personal loans have significantly larger personal loan balances than nonprime depository institution personal loan users in neighboring states.[27]

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[26]We start our analysis in 2012, after substantial recovery from the effects of the Global Financial Crisis.

[27]Possibly because banks and credit unions were willing to lend to near prime Arkansas consumers.

Nonprime consumers in Arkansas were more likely than nonprime consumers in neighboring states to have retail and finance company auto credit. The incidence of credit card debt for nonprime consumers in Arkansas was not much different from that of nonprime consumers neighboring states, but nonprime consumers in Arkansas had lower bank card balances.

Lukongo and Miller Jr. (2022) found a consumer finance "credit desert" existing in the interior of Arkansas shown in the first map (Figure 2). Arkansas counties adjacent to one of the neighboring states, which have more permissive rate ceilings than Arkansas, tend to have greater numbers of consumer finance loans than interior counties. We use the full 5 percent CCP sample available to us for the third quarter of 2013 (matching the period used by Lukongo and Miller Jr., 2022) to investigate the geographical concentration of the consumer finance debt reflected in our sample. The second map (Figure 3) compares consumer finance lending to nonprime consumers in Arkansas and neighboring states. The map shows indeed quite clearly far fewer consumer finance accounts per 10,000 nonprime individuals in Arkansas than in neighboring states.

The third map (Figure 4) provides greater detail on geographic distribution of consumer finance loans to nonprime consumers in Arkansas. Like the finance company data analyzed by Lukongo and Miller Jr. (2022), nonprime consumer finance loans in Arkansas tend to be concentrated mostly around the state borders in the CCP data. This observation can be explained by relatively low transaction costs for residents of the border counties drive out of state to obtain consumer finance loans.

Fewer subprime consumer finance loans are found in border areas to the east and north of Arkansas than in areas to the west and south. The Mississippi River is a natural barrier to crossing state lines in the east. In Missouri, to the north, numerous parks, forests, and lakes limit population density. With limited population density, finance companies open fewer offices in an area to achieve scale economies in operations. Less geographic concentration raises consumers' transaction costs of crossing state lines to obtain credit.

These findings suggest that Arkansas's interest rate ceiling impeded consumer finance company lending to higher risk consumers. It appears that nonprime consumers in Arkansas largely appear to have substituted other types of credit for consumer finance credit. In addition, nonprime consumers in Arkansas living near the border of less restrictive neighboring states might have augmented their consumer debt by crossing state lines to borrow from out of state lenders. The next subsection explores these possibilities further considering life-cycle and local economic environment influences on consumer borrowing.

5.2. Regressions comparing consumer lending in Arkansas and neighboring states, by type of credit

Our multivariate model estimates the mean difference in credit use between nonprime consumers in Arkansas and consumers in each other state/credit risk category (Arkansas prime, Louisiana nonprime, Louisiana prime, Missouri nonprime, and so forth). We account for effects of income

and age and include fixed effects for time. As mentioned in the beginning of this section, consumer credit use generally increases with income and decreases with age, reflecting the ability to service debt and life-cycle considerations (Durkin et al., 2014, chapters 2 and 3). Income and unemployment reflect broad influences on consumers' immediate economic circumstances.

The regression model is

$$DEBT_{it} = a_0 + \Sigma a_{1i} \cdot (STATExRISK)_{it} + b_1 \cdot INC_{jt} + b_2 \cdot INC2_{jt} + b_3 \cdot UNEMP_{jt}$$
$$+ b_4 \cdot AGE_{<25_{it}} + b_5 \cdot AGE_{25-39_{it}} + b_6 \cdot AGE_{\geq 55_{it}} + \Sigma d_t Q_t + \varepsilon_{ijt}, \tag{1}$$

$DEBT_{it}$ is the amount of each type of debt owed by an individual consumer i at time t. *STATExRISK* is an indicator variable for the consumer's state of residence and nonprime/prime risk category. Consumers' age is obtained from the credit bureau database and coded in indicator values $AGE_{<25}$, AGE_{25-39}, AGE_{40-54}, and $AGE_{\geq 55}$, with ages between 40 and 54 being omitted for estimation. Q_t is a fixed effect for time.

Other than age and location, credit bureau files do not contain non-credit related information on consumers. Income is included with a quadratic term (INC and $INC2$, respectively) to allow for nonlinearity. The INC and $INC2$ variables are per capita personal income from Bureau of Economic Analysis for the county in which the consumer resides. $UNEMP$ is the unemployment rate from Bureau of Labor Statistics for the county in which the individual lives. Variable definitions and descriptive statistics are presented in Table 2.

We estimate regressions for consumer finance, bank card, retail, finance company auto, bank auto, depository institution personal loans, and total consumer credit. Not all consumers use all types of credit. Because the credit use data are censored from below, we use a Tobit model for estimation. Coefficients were statistically significant. Age variables reflecting life-cycle considerations were statistically significant. They indicated that much younger and older individuals were less likely to have debt than middle-age individuals. The estimated relationship between debt and income was nonlinear. Coefficients for unemployment were significant and generally negative.

Tables 3 through 13 present Tobit (see Tobin, 1958) estimation results by type of credit. The first column in each table contains estimated Tobit coefficients. The second, third, and fourth columns contain the McDonald and Moffitt (1980) decomposition of marginal effects — that is, effects of explanatory variables on the unconditional expected value (Y*), the expected value conditional on being uncensored (that is, having a positive balance), and the probability of being uncensored, respectively.[28] The risk category/state indicator variables measure credit balances relative to nonprime consumers in Arkansas.

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[28] Key to our results interpretation are the latter two columns that show, right to left, the probability of being uncensored, which is the probability of having positive balances and the expected debt amount *conditional* on having positive balances.

5.2.1. Consumer Finance Loans

Results presented in Table 3 show that in Arkansas, prime consumers were less likely to be uncensured (that is, have positive balances) than nonprime consumers for consumer finance credit (-4.27 percent). Conditional on having consumer finance credit, prime consumers had less consumer finance debt than nonprime consumers in Arkansas (-$220). That prime consumers had less consumer finance credit than nonprime consumers is likely due to availability of less expensive alternatives to consumer finance credit for prime consumers. Arkansas's low interest rate ceiling prevented consumer finance companies from charging rates that would make consumer finance loans to riskier nonprime consumers profitable. Banks, which were preempted from the usury ceiling, historically have avoided lending to high-risk consumers. Less risky prime consumers seeking a personal loan might find a bank personal loan available at a lower price than a consumer finance loan.

Prime consumers in neighboring states similarly were less likely to have positive balances and conditional on having debt had lower balances than nonprime consumers in Arkansas. For example, prime consumers in Missouri were 5.24 percent less likely to have consumer finance credit and had $276 less consumer finance debt than nonprime consumers in Arkansas. Again, availability of less expensive alternatives to consumer finance loans is consistent with this finding.

In contrast, nonprime consumers in neighboring states were more likely to have positive balances than nonprime consumers in Arkansas, and when they had consumer finance credit, nonprime consumers in neighboring states had higher consumer finance loan balances. In Oklahoma, for example, a 17.3 percent greater incidence and $749 greater balances than in Arkansas. The small loan laws in neighboring states all had higher rate ceilings for consumer finance loans than the Arkansas usury ceiling. Higher rate ceilings allowed for lending to riskier consumers in these states. These findings point to credit rationing of nonprime consumers in Arkansas, which was greater than any rationing of nonprime consumers in neighboring states.

5.2.2. Bank Credit Card Debt

Once a niche product held primarily by high income consumers, bank credit card holding has become widespread among households. Over time, bank credit cards also became available to higher risk consumers, though recent regulations have made bank credit card credit more difficult for risky consumers to obtain.[29] Large credit card issuers locate in states with high or no rate ceilings, which allows them to charge their home state rates to out of state consumers. Thus, bank credit card issuers can offer credit to Arkansas consumers unconstrained by the Arkansas usury ceiling.

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[29]The Credit Card Responsibility and Disclosure Act (2009) restricted card issuers' ability to raise the interest rate on an account when consumers' behavior on the account suggests that credit risk has increased (risk-based penalty pricing), limited the amount of fees charged for late payments or charges exceeding the credit limit, and restricted the allowed amount of initial and periodic fees (which were commonly used to reduce available credit on credit card programs marketed to subprime consumers). See Canner and Elliehausen (2013) and Elliehausen and Hannon (2018).

Despite bank credit card issuers' ability to charge rates greater than the usury ceiling, nonprime consumers' borrowing in Arkansas lagged behind that of nonprime consumers in three of its six neighboring states in bank credit card debt (Table 4). Nonprime consumers in Missouri and Texas are more likely to have credit card balances and, conditional on having debt, have greater balances than nonprime consumers in Arkansas. Differences for Tennessee are small and not statistically significant. Nonprime consumers in Louisiana were 3.58 percent less likely to have bank credit card balances and have smaller balances ($292 smaller) than nonprime consumers in Arkansas when they owed bank credit card debt. On balance, these findings do not support a hypothesis that nonprime consumers in Arkansas offset reduced availability of consumer finance credit by using more bank credit card debt. Nonprime consumers in Arkansas do not appear to have offset reduced consumer finance debt availability with bank card borrowing.

5.2.3.   Retail Credit

When a seller provides both the product and credit, a seller can offset a shortfall in the finance charge (perhaps due to an interest rate ceiling) by increasing the product price. This action is not unlimited, because this action by the seller risks losing consumers who do not need to rely on the seller for financing.

Prime consumers in Arkansas and in neighboring states were less likely to use retail credit and had lower amounts of retail credit than nonprime consumers in Arkansas (Table 5). Nonprime consumers in neighboring states also used less retail credit and had lower amounts of retail debt than nonprime consumers in Arkansas. For example, nonprime consumers in Louisiana were 5.53 percent less likely to use retail credit and conditional on having such debt, their balances were $135 lower. Differences for Texas are small and not statistically significant. With the exception of Louisiana, the difference in the amount of retail credit conditional on using such credit between nonprime consumers in Arkansas and each of the neighboring states was small – $100 or less. The finding that nonprime consumers in Arkansas did not rely more heavily on retail credit than nonprime consumers in neighboring states suggests that they, for the most part, did not use retail credit to make up for any shortfall in the demand for consumer finance credit.

5.2.4.   Depository Institution Personal Loans

Banks account for most of the personal loans from depository institutions (banks, savings institutions, and credit unions). As discussed above, bank loans are preempted from Arkansas's usury ceiling. Preemption does not appear to have resulted in greater use of personal loans from depository institutions in Arkansas, however. Results presented in Table 6 show that prime consumers in Arkansas were more likely to have personal loans from depository institutions than nonprime consumers in Arkansas, but the difference was small (3.12 percent greater). Conditional on having depository institution personal loans, prime consumers had larger balances ($1,339) than nonprime consumers in Arkansas.

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The incidence of depository institution personal loans among nonprime consumers was slightly greater than in Arkansas. Conditional on using depository institution personal loans, loan balances for nonprime consumers in neighboring states were notably larger than the loan balances of nonprime consumers in Arkansas. Prime consumers in neighboring states were also slightly more likely to use depository institution personal loans, and when they had depository institution personal loans, had larger balances than nonprime consumers in Arkansas.

5.2.5. Auto Credit

Looking at aggregate amounts, auto debt owed by prime consumers in Arkansas was higher than that of nonprime consumers (Table 7). Further analysis shows that prime consumers in Arkansas were less likely to have auto credit from a finance company and more likely to have auto credit from a bank than nonprime consumers in Arkansas (Tables 8 and 9). Conditional on having finance company credit, prime consumers had lower amounts of such debt ($912 lower) than nonprime consumers in Arkansas. In contrast, conditional on having auto credit from a bank, prime Arkansas consumers had larger auto debt than nonprime consumers in Arkansas ($2,179 larger).

With the exception of nonprime borrowers in Louisiana and Texas, nonprime consumers in Arkansas relied more heavily on finance company credit than nonprime consumers in neighboring states. Nonprime consumers in Arkansas were generally more likely to have finance company auto debt and when they had auto debt, owed larger amounts of such debt than nonprime consumers in neighboring states.[30]

The prevalence of dealer financing of auto purchases, either through indirect credit or buy here pay here dealers helps explain how higher risk consumers in Arkansas obtain auto credit despite the fact that these loans are subject to the state usury ceiling.[31] Previous research, including Melzer and Schroeder (2017), indicates that dealers can price credit risk through the markup on the product sale rather than through the interest. As mentioned previously, banks have historically avoided high-risk lending. Furthermore, Melzer and Schroeder (2017) noted that banks purchasing installment sales contracts originated by local dealers tend to follow the lending laws applicable to the dealer's state rather than the laws of the bank's home state. This practice discourages bank lending to higher risk consumers in Arkansas.

The greater reliance of nonprime consumers in Arkansas on finance companies for auto credit is consistent with Melzer and Schroeder (2017)'s finding that a binding rate ceiling has a significant effect on the source of credit. In addition, a larger amount of finance company auto credit might reflect dealers charging higher prices when financing higher risk consumers' auto purchases.

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[30]The exceptions were lower incidence of bank auto debt for nonprime consumers in Mississippi and greater incidence of finance company auto debt for nonprime consumers in Texas.

[31]Some buy here pay here dealers hold installment sales contracts in an affiliated finance company (see Whann, Keith E., 2007).

5.2.6. Total Consumer Debt

Over all types of credit, the incidence and amount of consumer credit for both nonprime and prime consumers in neighboring states were generally greater than that for consumers in Arkansas (Table 10). Prime consumers in Arkansas were more likely to have consumer credit balances than nonprime consumers in Arkansas, and when they did, debt amounts were substantially greater. In most states amounts of debt were markedly greater.

Nonprime consumers in Arkansas had more consumer finance and retail credit than prime consumers in Arkansas. Nonprime consumers in Arkansas had more finance company auto credit, which may be attributed to retailers and dealers' ability to price credit risk through product prices rather than interest rates. Despite preemption of the Arkansas rate ceiling, nonprime consumers in Arkansas had less bank credit than prime Arkansas consumers, a possible consequence of banks' longstanding avoidance of high-risk lending.

5.3. Regressions comparing nonprime consumer lending in Arkansas border and interior counties, by type of credit

Next, we examine differences in nonprime consumer lending within Arkansas between counties in proximity to the state border and counties in the interior of the state. Proximity to the Arkansas' border is defined as being either directly adjacent to the state border or being in a county next to an adjacent county. These counties are designated as border counties.

We estimate Tobit regression models similar to the ones used above, replacing the state/credit risk category indicator variables with an indicator variable for border counties.

$$DEBT_{it} = b_0 + b_1 \cdot INC_{jt} + b_2 \cdot INC2_{jt} + b_3 \cdot UNEMP_{jt} + b_4 \cdot AGE_{<25_{it}}$$
$$+ b_5 \cdot AGE_{25-39_{it}} + b_6 \cdot AGE_{\geq 55_{it}} + d_1 \cdot BORDER_{it} + \Sigma d_t Q_t + \varepsilon_{ijt}, \tag{2}$$

$DEBT_{it}$ is the amount of each type of debt owed by an individual consumer i at time t. $BORDER$ is an indicator variable that equals one if the consumer lives in a border county and zero otherwise. Other variables are as defined earlier. Consumers' age is coded in indicator values $AGE_{<25}$, AGE_{25-39}, AGE_{40-54}, and $AGE_{\geq 55}$ (with ages between 40 and 54 being omitted for estimation). As before INC and $INC2$ are income variables, $UNEMP$ is the unemployment, and Q_t is a fixed effect for time.

As discussed above, Arkansas consumers living in border counties to the east and north face impediments to crossing state lines to obtain credit. The Mississippi River to the east is a natural barrier, and the low population density to the north limits the number of offices that can be operated profitability. Considering evidence from studies of commuting tolerance thresholds, that

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Arkansas counties on the border of Missouri and Mississippi are proximate is arguable.[32] We therefore exclude consumers living in counties boarding Missouri and Mississippi from our analysis.[33]

The estimated regressions are statistically significant. Again, we present the McDonald and Moffitt (1980) decompositions. Overall, nonprime consumers living in border counties were more likely as consumers in interior counties to owe consumer debt (Table 11). For each type of credit, the proportion of nonprime consumers having positive balances was greater in border counties than in interior counties. Conditional dollar amounts of each type of consumer debt were also higher in border counties than in interior counties.

The greatest difference in incidence of debt is for consumer finance loans, which are subject to Arkansas' 17 percent usury ceiling. The proportion of consumer finance loans was 11.5 percent greater for nonprime consumers in border counties. The additional amount of consumer finance debt of nonprime consumers in border counties was relatively moderate ($557), however (Table 12). Depository institution personal loans were 5.07 percent more frequent in Arkansas border counties than interior counties, but the additional dollar amount of such personal loan debt ($1,456) was much greater than the additional amount of consumer finance debt (Table 13). Both consumer finance loans and depository institution personal loans are unsecured closed-end cash loans. Historically, higher risk consumers used consumer finance loans, and less risky consumers used bank personal loans (Juster and Shay, 1964). This risk segmentation in unsecured cash lending likely still exists. The relatively large response of nonprime consumers in border counties with proximate access to consumer finance loans, but small amounts of such credit is consistent with higher risk consumers in border counties crossing state lines to obtain consumer finance loans in states with less restrictive rate ceilings.

6. Conclusion

Interest rate ceilings have a long history. Economic theory predicts, and empirical evidence suggests, that a rate ceiling results in credit rationing when the ceiling is below the market equilibrium price. Arkansas is notable for its low constitutional interest rate ceiling. Previous studies from the 1960s and 1970s found that strict application of the ceiling resulted in a lower number of direct lenders, tighter credit standards, and larger loan sizes and loan amounts relative to neighboring states, which had less restrictive rate ceilings. Arkansas consumers, however, used more retail credit, but had about the same levels of debt than consumers in neighboring states. Also, Arkansas consumers living near state borders crossed state lines to obtain credit.

Since that time, Arkansas relaxed its interest rate ceiling, and widespread preemptions have been granted for bank credit.

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[32] Studies of commuting tolerance thresholds suggest that maximum tolerable commuting times are about 45 minutes, which is about 40 to 50 miles. For discussion, see Lukongo and Miller Jr. (2018).

[33] Including consumers in all border counties and all except border counties except those along the Mississippi River produces somewhat lower effects but does not lead to different conclusions from the ones presented here.

We find that nonprime consumers in Arkansas appear to be rationed. They are less likely to have consumer debt and conditional on having such debt, have lower amounts of debt than prime Arkansas consumers. Nonprime consumers in Arkansas are also less likely than nonprime consumers in neighboring states to have consumer debt and owe less consumer debt.

The types of credit used by nonprime consumers in Arkansas differ from those used by nonprime consumers in neighboring states. Generally, nonprime consumers in neighboring states use more consumer finance company credit than nonprime consumers in Arkansas. This finding is a consequence of rationing in Arkansas due to finance companies being subject to the low-rate ceiling in Arkansas. Nonprime consumers in neighboring states used more depository institution personal loans and bank auto credit than nonprime consumers in Arkansas. Bank preemption apparently has not increased credit availability for nonprime consumers in Arkansas. Nonprime consumers in Arkansas used more retail and finance company auto credit than nonprime consumers in neighboring states. Retailers and auto dealers originating sales finance credit may compensate for credit risk with higher product prices and thereby avoid violating the Arkansas interest rate ceiling.

Finally, nonprime consumers in Arkansas were more likely to have debt and had greater balances in border counties than in interior counties. This result is especially significant for consumer finance credit, which is a major source of small, riskier cash loans to subprime consumers.

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Figure 1. Historical View of The Interest Rate Ceiling in Arkansas and the Share of Consumer Credit Subject to the Rate Ceiling
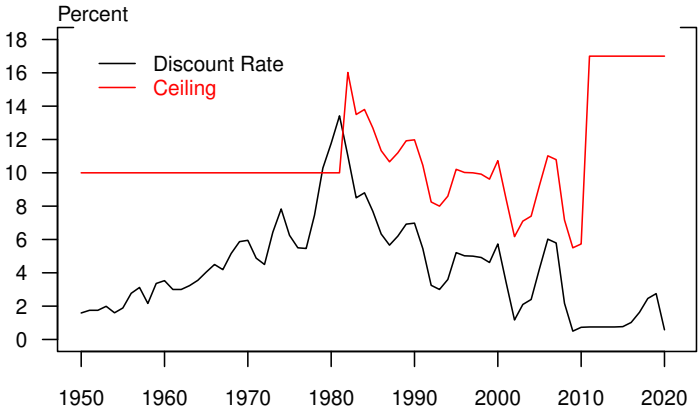
(a) Arkansas Interest Rate Ceiling Timeline
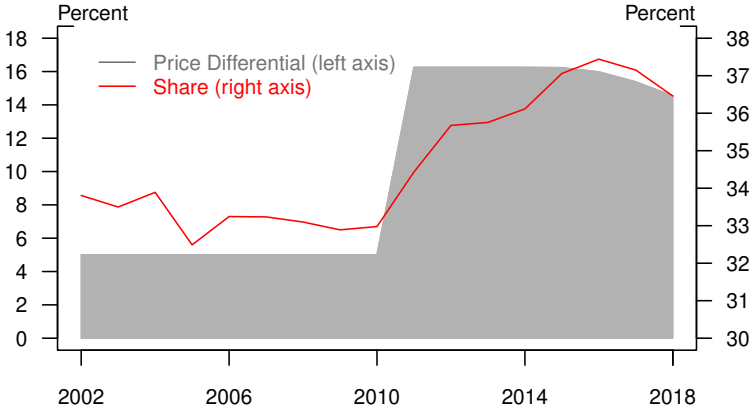
(b) Price and Share of Consumer Credit Subject to the Interest Rate Ceiling

Note: Figure a) plots the evolution of the rate ceiling in Arkansas (in red) shown relative to the discount rate (in black). In figure b), in the grey area (left axis), we show the price differential, the difference between the interest rate ceiling and the discount rate. Up until 2011, the interest rate ceiling was the lower of 5 percent above the discount rate and 17 percent. After 2011, the interest rate ceiling was fixed at 17 percent. The red line (right axis) represents the share of the consumer credit that is subject to the interest rate ceiling. Figure b) highlights that this share increased once the rate ceiling and, implicitly, the price differential that can be charged increased.

Source: FRED for the discount rate and authors' calculations based on the Federal Reserve Bank of New York/Equifax Consumer Credit Panel for the share.

Figure 2. Personal Loans in Arkansas and Border Counties. Lukongo and Miller Jr. (2022) found a consumer finance "credit desert" existing in the interior of Arkansas.
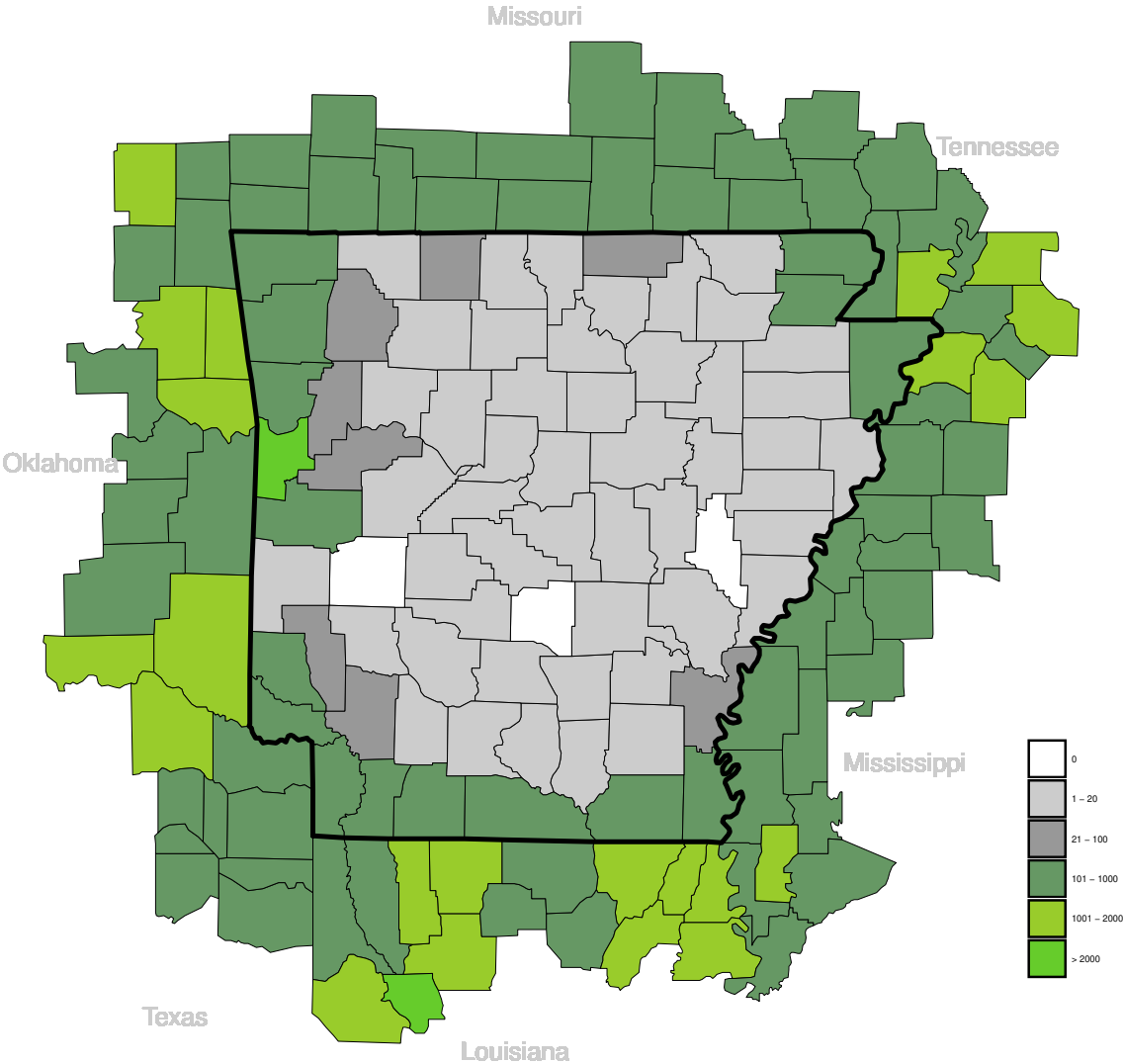
Note: Number of traditional installment loans per 10,000 population, Arkansas and border counties, September 2013. *Source:* American Financial Services Association (AFSA).

Figure 3. Personal Loans Held by Subprime Borrowers in Arkansas and Border Counties
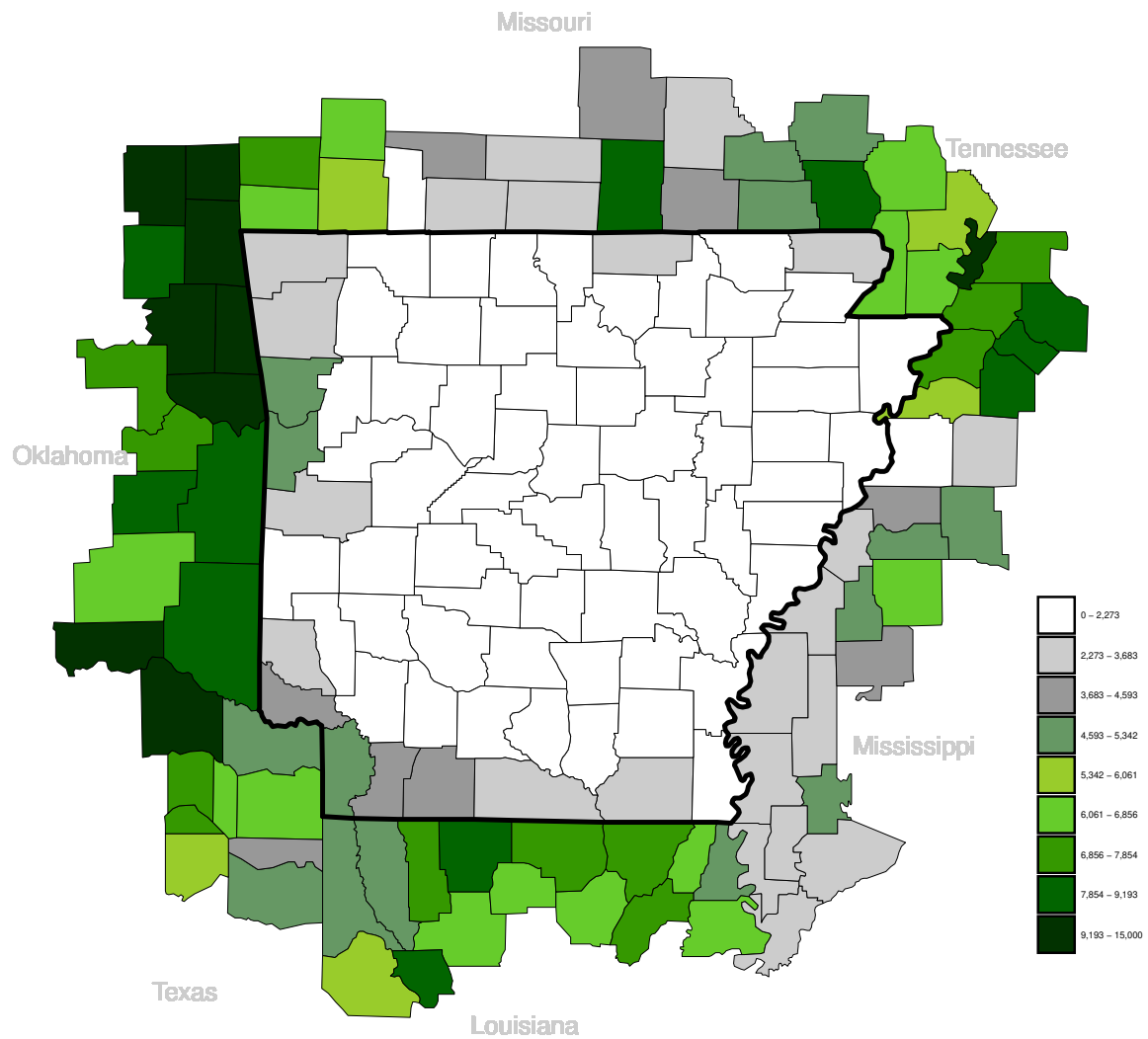
Note: Number of consumer finance trades per 10,000 individuals with credit scores, Arkansas and border counties, 2013Q3. *Source:* Federal Reserve Bank of New York Consumer Credit Panel/Equifax.

Figure 4. Personal Loans Held by Subprime Borrowers in Arkansas and Border Counties – Detailed View
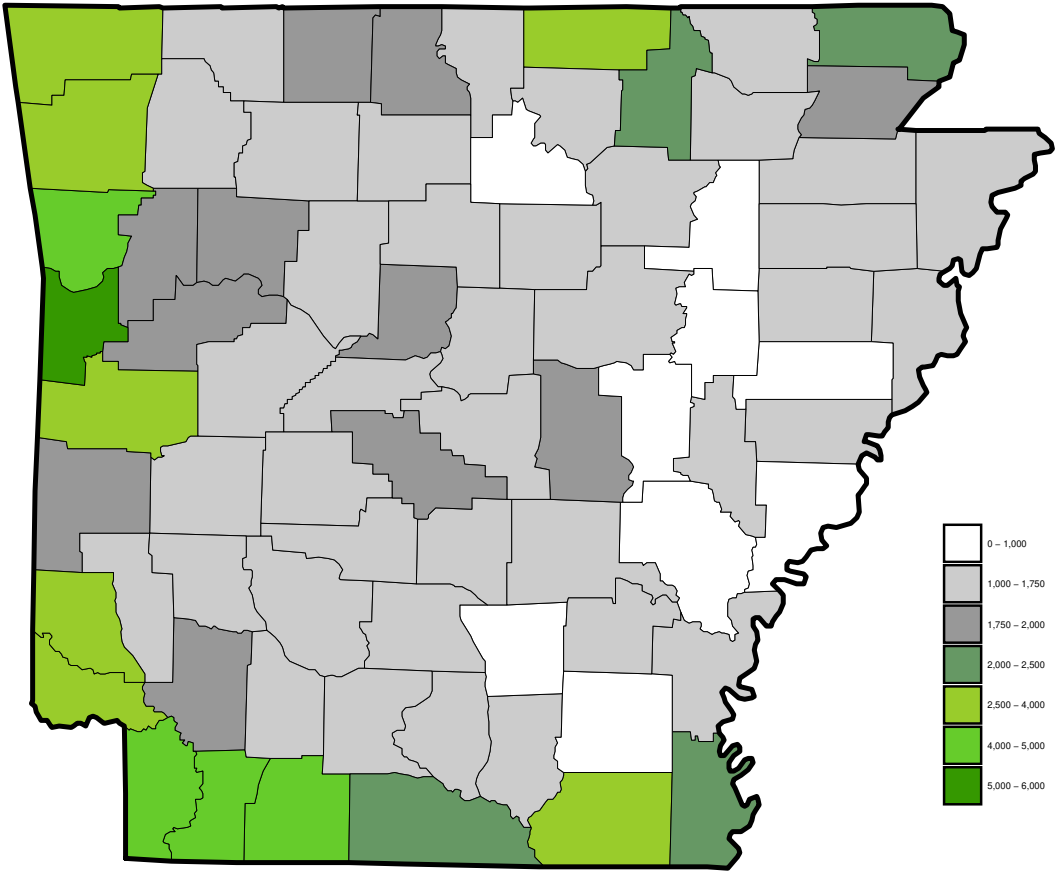
Note: Number of consumer finance trades per 10,000 individuals with credit scores, Arkansas and border counties, 2013Q3. *Source:* Federal Reserve Bank of New York Consumer Credit Panel/Equifax.

Table 1: Proportion of Consumers Having Consumer Debt and Average Amount of Debt for Consumers Owing Debt: Arkansas and Neighboring States

Proportion of consumers having consumer debt	Arkansas		Neighbor States		
	Nonprime	Prime	Nonprime	Prime	Memo
Type of debt					
Total debt	0.707	0.789	0.758	0.768	-6.72
Bank card debt	0.437	0.640	0.436	0.639	0.14
Consumer finance	0.163	0.104	0.303	0.116	-46.07
Retail	0.301	0.264	0.263	0.258	14.49
Finance company auto	0.325	0.228	0.294	0.171	10.61
Bank auto	0.153	0.229	0.157	0.217	-2.67
Depository institution personal	0.096	0.113	0.110	0.099	-12.13
Average balance of consumers having consumer debt (dollars)					
Type of debt					
Total debt	14,809	14,697	13,650	14,737	8.49
Bank card debt	4,658	5,117	4,970	5,196	-6.28
Consumer finance	2,956	3,607	2,944	2,717	0.42
Retail	1,813	1,247	1,943	1,151	-6.70
Finance company auto	13,716	13,024	12,743	13,585	7.64
Bank auto	13,364	13,672	14,623	15,683	-8.61
Depository institution personal	9,395	13,426	6,471	16,196	45.20

Note: The Memo represents the nonprime percentage difference calculated following the formula: Percentage difference=100*(Arkansas-Neighbor)/Neighbor. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

Table 2: Summary Statistics and Variable Descriptions

	Description	Mean	Standard Deviation
Dependent variables			
Total	Total debt	10,422	19,235
Card	Total bank card debt	2,837	7,183
Consumer finance	Total consumer finance account debt	500	1,860
Retail	Total retail credit debt	385	1,358
Auto	Total auto loan debt	5,610	11,651
Auto finance	Total auto loan debt issued by finance companies	2,927	8,334
Auto bank	Total auto loan debt issued by banks	2,683	8,069
Depository institution personal	Total bank and credit union personal loan debt	1,089	9,924
Explanatory variables			
Nonprime borrowers in Arkansas	Indicator variable (omitted)	0.0228	0.149
Prime borrowers in Arkansas	Indicator variable	0.0292	0.168
Nonprime borrowers in Louisiana	Indicator variable	0.0436	0.204
Prime borrowers in Louisiana	Indicator variable	0.0441	0.205
Nonprime borrowers in Missouri	Indicator variable	0.0454	0.208
Prime borrowers in Missouri	Indicator variable	0.0707	0.256
Nonprime borrowers in Mississippi	Indicator variable	0.0301	0.171
Prime borrowers in Mississippi	Indicator variable	0.0265	0.161
Nonprime borrowers in Oklahoma	Indicator variable	0.0331	0.179
Prime borrowers in Oklahoma	Indicator variable	0.0401	0.196
Nonprime borrowers in Tennessee	Indicator variable	0.0607	0.239
Prime borrowers in Tennessee	Indicator variable	0.0747	0.263
Nonprime borrowers in Texas	Indicator variable	0.226	0.418
Prime borrowers in Texas	Indicator variable	0.253	0.435
Border	Indicator variable	0.0989	0.299
INC	Income (logarithm)	10.7	0.238
INC2	Income squared	114	5.09
$AGE_{<25}$	Age less than 25 years, indicator variable	0.0683	0.252
AGE_{25-39}	Age 25 to 39 years, indicator variable	0.264	0.441
AGE_{40-54}	Age 40 to 54 years, indicator variable (omitted)	0.27	0.444
$AGE_{\geq 55}$	Age 55 years or older, indicator variable	0.399	0.49
UNEMP	Unemployment rate	5.35	1.79

Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 3: Tobit Estimation Results and Marginal Effects for Consumer Finance Debt

Consumer finance debt	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
Prime borrowers in Arkansas	-1,268***	-138***	-220***	-.0427***
	(113.575)	(12.657)	(19.788)	(0.004)
Nonprime borrowers in Louisiana	3,286***	686***	731***	.168***
	(95.912)	(18.532)	(20.194)	(0.004)
Prime borrowers in Louisiana	-1,164***	-129***	-203***	-.0397***
	(102.845)	(12.044)	(18.253)	(0.004)
Nonprime borrowers in Missouri	1,661***	277***	337***	.0749***
	(93.394)	(14.495)	(18.302)	(0.004)
Prime borrowers in Missouri	-1,616***	-167***	-276***	-.0524***
	(96.025)	(11.267)	(17.005)	(0.003)
Nonprime borrowers in Mississippi	2,598***	494***	556***	.127***
	(98.924)	(18.384)	(20.615)	(0.005)
Prime borrowers in Mississippi	-1,262***	-138***	-219***	-.0426***
	(113.564)	(12.664)	(19.791)	(0.004)
Nonprime borrowers in Oklahoma	3,356***	707***	749***	.173***
	(95.994)	(18.934)	(20.358)	(0.004)
Prime borrowers in Oklahoma	-856***	-99.1***	-152***	-.0302***
	(103.984)	(12.445)	(18.631)	(0.004)
Nonprime borrowers in Tennessee	3,084***	627***	678***	.156***
	(92.116)	(16.290)	(18.769)	(0.004)
Prime borrowers in Tennessee	-1,051***	-118***	-185***	-.0363***
	(93.474)	(11.434)	(16.869)	(0.003)
Nonprime borrowers in Texas	2,780***	542***	601***	.137***
	(83.612)	(12.039)	(15.924)	(0.003)
Prime borrowers in Texas	-365***	-45.4***	-66.4***	-.0135***
	(83.800)	(10.901)	(15.499)	(0.003)
$AGE_{<25}$	-3,482***	-571***	-702***	-.156***
	(55.011)	(8.799)	(10.929)	(0.002)
AGE_{25-39}	-934***	-153***	-188***	-.0418***
	(29.766)	(4.872)	(5.990)	(0.001)
$AGE_{\geq 55}$	-646***	-106***	-130***	-.0289***
	(28.957)	(4.740)	(5.832)	(0.001)
UNEMP	-78.1***	-12.8***	-15.8***	-.0035***
	(10.003)	(1.640)	(2.017)	(0.000)
INC	-27,827***	-4,562***	-5,611***	-1.24***
	(3,026.145)	(496.290)	(610.220)	(0.136)
INC2	1,205***	198***	243***	.0539***
	(141.500)	(23.206)	(28.534)	(0.006)
Constant	154,116***			
	(16,196.435)			
Sigma	5,526***			
	(38.863)			
Observations	505,965			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.0143			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5% , and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 4: Tobit Estimation Results and Marginal Effects for Bank Card Debt

Bank card debt	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
Prime borrowers in Arkansas	4,052***	1,775***	1,342***	.151***
	(139.870)	(60.025)	(45.670)	(0.005)
Nonprime borrowers in Louisiana	-1,022***	-353***	-292***	-.0358***
	(132.389)	(46.350)	(38.103)	(0.005)
Prime borrowers in Louisiana	3,911***	1,703***	1,290***	.146***
	(135.485)	(56.784)	(43.551)	(0.005)
Nonprime borrowers in Missouri	823***	311***	248***	.0297***
	(130.701)	(48.900)	(39.115)	(0.005)
Prime borrowers in Missouri	3,718***	1,605***	1,219***	.138***
	(125.548)	(49.609)	(38.862)	(0.004)
Nonprime borrowers in Mississippi	-552***	-195***	-160***	-.0195***
	(143.886)	(50.931)	(41.680)	(0.005)
Prime borrowers in Mississippi	4,039***	1,768***	1,337***	.15***
	(143.371)	(62.053)	(47.084)	(0.005)
Nonprime borrowers in Oklahoma	-640***	-225***	-185***	-.0226***
	(146.989)	(51.769)	(42.455)	(0.005)
Prime borrowers in Oklahoma	3,340***	1,418***	1,083***	.124***
	(131.124)	(53.146)	(41.232)	(0.005)
Nonprime borrowers in Tennessee	-57	-20.7	-16.7	-.00203
	(126.078)	(45.724)	(37.044)	(0.004)
Prime borrowers in Tennessee	3,612***	1,552***	1,181***	.134***
	(121.824)	(47.833)	(37.546)	(0.004)
Nonprime borrowers in Texas	851***	322***	256***	.0308***
	(110.741)	(40.584)	(32.736)	(0.004)
Prime borrowers in Texas	4,262***	1,884***	1,421***	.159***
	(115.378)	(43.446)	(34.656)	(0.004)
$AGE_{<25}$	-6,239***	-2,791***	-2,094***	-.235***
	(67.086)	(28.797)	(21.782)	(0.002)
AGE_{25-39}	-2,379***	-1,065***	-798***	-.0895***
	(44.793)	(20.161)	(15.070)	(0.002)
$AGE_{\geq55}$	-1,906***	-853***	-640***	-.0717***
	(45.651)	(20.172)	(15.175)	(0.002)
UNEMP	-225***	-101***	-75.5***	-.00846***
	(14.962)	(6.715)	(5.031)	(0.001)
INC	52,837***	23,640***	17,730***	1.99***
	(4,173.364)	(1,862.392)	(1,397.825)	(0.156)
INC2	-2,337***	-1,046***	-784***	-.0879***
	(194.386)	(86.764)	(65.118)	(0.007)
Constant	-297,991***			
	(22,424.004)			
Sigma	10,516***			
	(88.112)			
Observations	505,965			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00449			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 5: Tobit Estimation Results and Marginal Effects for Retail Credit

Retail credit	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
Prime borrowers in Arkansas	-686***	-171***	-165***	-.0675***
	(50.555)	(13.049)	(12.376)	(0.005)
Nonprime borrowers in Louisiana	-553***	-141***	-135***	-.0553***
	(50.397)	(13.253)	(12.460)	(0.005)
Prime borrowers in Louisiana	-721***	-178***	-173***	-.0707***
	(47.866)	(12.569)	(11.818)	(0.005)
Nonprime borrowers in Missouri	-168***	-46.2***	-42.5***	-.0174***
	(48.514)	(13.458)	(12.330)	(0.005)
Prime borrowers in Missouri	-491***	-127***	-121***	-.0494***
	(44.234)	(12.099)	(11.157)	(0.005)
Nonprime borrowers in Mississippi	-267***	-72***	-67***	-.0275***
	(53.717)	(14.539)	(13.483)	(0.006)
Prime borrowers in Mississippi	-676***	-168***	-163***	-.0666***
	(51.481)	(13.237)	(12.580)	(0.005)
Nonprime borrowers in Oklahoma	-406***	-107***	-100***	-.0412***
	(53.557)	(14.189)	(13.297)	(0.005)
Prime borrowers in Oklahoma	-671***	-167***	-162***	-.0662***
	(49.269)	(12.861)	(12.130)	(0.005)
Nonprime borrowers in Tennessee	-396***	-104***	-98.1***	-.0402***
	(46.711)	(12.705)	(11.750)	(0.005)
Prime borrowers in Tennessee	-822***	-199***	-196***	-.0797***
	(44.397)	(11.891)	(11.068)	(0.005)
Nonprime borrowers in Texas	54.9	15.7	14.2	.00582
	(41.152)	(11.684)	(10.583)	(0.004)
Prime borrowers in Texas	-586***	-149***	-142***	-.0583***
	(41.343)	(11.513)	(10.525)	(0.004)
$AGE_{<25}$	-1,783***	-432***	-425***	-.173***
	(28.054)	(6.693)	(6.615)	(0.003)
AGE_{25-39}	-794***	-192***	-189***	-.0772***
	(16.679)	(4.002)	(3.948)	(0.002)
$AGE_{\geq 55}$	-143***	-34.6***	-34***	-.0139***
	(14.899)	(3.611)	(3.548)	(0.001)
UNEMP	10.8**	2.61**	2.56**	.00105**
	(5.342)	(1.294)	(1.272)	(0.001)
INC	-2,455	-595	-584	-.239
	(1,517.882)	(367.742)	(361.411)	(0.148)
INC2	97.8	23.7	23.3	.00951
	(70.771)	(17.146)	(16.851)	(0.007)
Constant	13,449*			
	(8,146.125)			
Sigma	3,214***			
	(18.999)			
Observations	505,965			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00265			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 6: Tobit Estimation Results and Marginal Effects for Depository Institution Personal Loan Debt

Depository institution	Tobit coefficient	Marginal effects		
personal loan debt		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
Prime borrowers in Arkansas	8,577***	666***	1,339***	.0312***
	(878.766)	(67.241)	(135.881)	(0.003)
Nonprime borrowers in Louisiana	9,243***	730***	1,450***	.0341***
	(847.223)	(63.017)	(129.945)	(0.003)
Prime borrowers in Louisiana	8,791***	686***	1,375***	.0322***
	(829.203)	(61.988)	(127.292)	(0.003)
Nonprime borrowers in Missouri	2,285***	152***	341***	.0074***
	(765.233)	(49.827)	(113.551)	(0.002)
Prime borrowers in Missouri	3,859***	267***	583***	.0129***
	(855.477)	(58.050)	(128.359)	(0.003)
Nonprime borrowers in Mississippi	7,382***	556***	1,143***	.0263***
	(853.328)	(62.614)	(130.547)	(0.003)
Prime borrowers in Mississippi	11,496***	959***	1,834***	.0441***
	(955.628)	(80.868)	(151.702)	(0.004)
Nonprime borrowers in Oklahoma	4,772***	337***	725***	.0162***
	(820.430)	(56.717)	(123.654)	(0.003)
Prime borrowers in Oklahoma	13,512***	1,184***	2,187***	.0538***
	(894.046)	(72.771)	(140.010)	(0.003)
Nonprime borrowers in Tennessee	3,993***	277***	603***	.0134***
	(744.148)	(49.243)	(110.853)	(0.002)
Prime borrowers in Tennessee	4,676***	330***	710***	.0158***
	(740.720)	(49.507)	(110.600)	(0.002)
Nonprime borrowers in Texas	7,221***	542***	1,117***	.0257***
	(724.473)	(47.794)	(107.775)	(0.002)
Prime borrowers in Texas	6,761***	502***	1,042***	.0238***
	(695.387)	(45.233)	(103.048)	(0.002)
$AGE_{<25}$	-13,525***	-1,162***	-2,180***	-.0533***
	(652.443)	(51.916)	(102.623)	(0.002)
AGE_{25-39}	-5,395***	-464***	-870***	-.0213***
	(318.104)	(26.016)	(50.458)	(0.001)
$AGE_{\geq55}$	-8,374***	-719***	-1,350***	-.033***
	(364.886)	(28.882)	(57.284)	(0.001)
UNEMP	-117	-10.1	-18.9	-.000462
	(86.434)	(7.433)	(13.935)	(0.000)
INC	-126,226***	-10,845***	-20,346***	-.497***
	(29,490.591)	(2,527.474)	(4,749.393)	(0.114)
INC2	4,889***	420***	788***	.0193***
	(1,376.687)	(118.082)	(221.772)	(0.005)
Constant	733,203***			
	(157,583.556)			
Sigma	39,820***			
	(1,825.205)			
Observations	505,965			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00348			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 7: Tobit Estimation Results and Marginal Effects for Total Auto Loan Debt

Auto loan debt	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
Prime borrowers in Arkansas	2,816***	971***	804***	.0441***
	(341.246)	(115.022)	(96.023)	(0.005)
Nonprime borrowers in Louisiana	1,534***	513***	430***	.0237***
	(323.855)	(107.184)	(90.281)	(0.005)
Prime borrowers in Louisiana	1,357***	452***	380***	.021***
	(330.575)	(109.737)	(92.315)	(0.005)
Nonprime borrowers in Missouri	184	59.7	50.8	.00282
	(306.026)	(99.032)	(84.298)	(0.005)
Prime borrowers in Missouri	-570*	-181*	-156*	-.00864*
	(292.531)	(93.926)	(80.233)	(0.004)
Nonprime borrowers in Mississippi	-686**	-218**	-187**	-.0104**
	(339.927)	(108.319)	(92.848)	(0.005)
Prime borrowers in Mississippi	614*	201*	170*	.00942*
	(360.867)	(118.247)	(100.082)	(0.006)
Nonprime borrowers in Oklahoma	1,710***	575***	481***	.0265***
	(398.948)	(131.449)	(110.972)	(0.006)
Prime borrowers in Oklahoma	2,901***	1,003***	829***	.0454***
	(326.750)	(110.518)	(92.092)	(0.005)
Nonprime borrowers in Tennessee	-2,312***	-707***	-618***	-.0344***
	(301.040)	(94.019)	(81.271)	(0.005)
Prime borrowers in Tennessee	-3.39	-1.09	-.933	-.0000517
	(296.287)	(95.691)	(81.528)	(0.005)
Nonprime borrowers in Texas	4,411***	1,577***	1,285***	.0699***
	(282.433)	(89.596)	(76.652)	(0.004)
Prime borrowers in Texas	3,079***	1,068***	882***	.0483***
	(274.559)	(89.473)	(75.743)	(0.004)
$AGE_{<25}$	-12,596***	-4,456***	-3,648***	-.199***
	(334.669)	(79.258)	(77.322)	(0.004)
AGE_{25-39}	-1,492***	-528***	-432***	-.0236***
	(108.634)	(36.642)	(30.526)	(0.002)
$AGE_{\geq 55}$	-10,344***	-3,659***	-2,996***	-.164***
	(269.335)	(59.160)	(60.340)	(0.003)
UNEMP	-266***	-94.1***	-77.1***	-.00421***
	(38.239)	(13.300)	(10.958)	(0.001)
INC	-6,582	-2,329	-1,906	-.104
	(11,075.033)	(3,921.437)	(3,208.880)	(0.176)
INC2	217	76.9	63	.00344
	(516.674)	(182.898)	(149.680)	(0.008)
Constant	38,078			
	(59,452.782)			
Sigma	23,521***			
	(788.180)			
Observations	505,965			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00455			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 8: Tobit Estimation Results and Marginal Effects for Bank Auto Loan Debt

Bank auto loan debt	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
Prime borrowers in Arkansas	10,958***	1,739***	2,179***	.0981***
	(475.430)	(73.494)	(92.260)	(0.004)
Nonprime borrowers in Louisiana	892*	104*	159*	.0065*
	(490.122)	(56.613)	(86.967)	(0.004)
Prime borrowers in Louisiana	8,892***	1,326***	1,727***	.0765***
	(474.381)	(67.615)	(89.786)	(0.004)
Nonprime borrowers in Missouri	3,589***	454***	657***	.0277***
	(452.814)	(55.022)	(81.627)	(0.003)
Prime borrowers in Missouri	9,910***	1,524***	1,947***	.087***
	(425.908)	(56.475)	(78.517)	(0.003)
Nonprime borrowers in Mississippi	-1,686***	-181***	-292***	-.0116***
	(521.201)	(56.184)	(90.316)	(0.004)
Prime borrowers in Mississippi	6,342***	874***	1,197***	.0519***
	(509.998)	(70.295)	(95.767)	(0.004)
Nonprime borrowers in Oklahoma	5,600***	754***	1,049***	.0451***
	(487.933)	(64.497)	(90.352)	(0.004)
Prime borrowers in Oklahoma	14,888***	2,655***	3,098***	.143***
	(457.379)	(75.883)	(90.384)	(0.004)
Nonprime borrowers in Tennessee	-921**	-101**	-161**	-.00644**
	(453.871)	(50.469)	(79.502)	(0.003)
Prime borrowers in Tennessee	10,626***	1,670***	2,105***	.0945***
	(428.406)	(57.970)	(79.430)	(0.003)
Nonprime borrowers in Texas	4,741***	622***	879***	.0375***
	(403.034)	(47.080)	(71.698)	(0.003)
Prime borrowers in Texas	12,121***	1,992***	2,443***	.111***
	(404.524)	(50.347)	(73.083)	(0.003)
$AGE_{<25}$	-10,125***	-1,769***	-2,094***	-.0971***
	(244.491)	(42.512)	(50.357)	(0.002)
AGE_{25-39}	-1,087***	-190***	-225***	-.0104***
	(139.922)	(24.455)	(28.935)	(0.001)
$AGE_{\geq 55}$	-10,610***	-1,854***	-2,194***	-.102***
	(142.190)	(24.355)	(28.978)	(0.001)
UNEMP	-703***	-123***	-145***	-.00674***
	(51.513)	(8.992)	(10.646)	(0.000)
INC	-45,925***	-8,025***	-9,497***	-.44***
	(15,492.347)	(2,707.325)	(3,203.792)	(0.149)
INC2	1,755**	307**	363**	.0168**
	(723.557)	(126.443)	(149.631)	(0.007)
Constant	263,682***			
	(83,005.073)			
Sigma	26,853***			
	(112.895)			
Observations	505,965			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00598			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 9: Tobit Estimation Results and Marginal Effects for Finance Company Auto Loan Debt

Finance company auto loan debt	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
Prime borrowers in Arkansas	-3,968***	-890***	-912***	-.0495***
	(424.376)	(91.151)	(95.278)	(0.005)
Nonprime borrowers in Louisiana	830**	212**	202**	.0111**
	(349.664)	(88.499)	(84.964)	(0.005)
Prime borrowers in Louisiana	-4,833***	-1,059***	-1,099***	-.0595***
	(449.607)	(91.981)	(98.684)	(0.005)
Nonprime borrowers in Missouri	-1,996***	-472***	-470***	-.0257***
	(344.396)	(82.238)	(81.336)	(0.005)
Prime borrowers in Missouri	-9,001***	-1,758***	-1,947***	-.103***
	(531.586)	(91.754)	(108.000)	(0.005)
Nonprime borrowers in Mississippi	-500	-123	-120	-.00658
	(371.780)	(91.783)	(89.297)	(0.005)
Prime borrowers in Mississippi	-4,636***	-1,021***	-1,057***	-.0572***
	(488.026)	(99.367)	(107.012)	(0.005)
Nonprime borrowers in Oklahoma	-1,930***	-457***	-455***	-.0249***
	(393.965)	(96.139)	(94.071)	(0.006)
Prime borrowers in Oklahoma	-9,058***	-1,767***	-1,958***	-.104***
	(579.967)	(97.395)	(116.692)	(0.005)
Nonprime borrowers in Tennessee	-3,133***	-719***	-727***	-.0396***
	(344.600)	(79.573)	(79.980)	(0.004)
Prime borrowers in Tennessee	-9,323***	-1,805***	-2,009***	-.106***
	(558.476)	(94.173)	(112.428)	(0.005)
Nonprime borrowers in Texas	2,592***	692***	647***	.0356***
	(311.476)	(75.787)	(74.135)	(0.004)
Prime borrowers in Texas	-5,285***	-1,144***	-1,196***	-.0645***
	(413.667)	(83.922)	(90.281)	(0.004)
$AGE_{<25}$	-12,121***	-2,532***	-2,700***	-.145***
	(599.443)	(86.920)	(115.423)	(0.004)
AGE_{25-39}	-1,801***	-376***	-401***	-.0216***
	(148.658)	(27.563)	(31.379)	(0.001)
$AGE_{\geq55}$	-7,556***	-1,579***	-1,683***	-.0906***
	(378.267)	(54.726)	(72.823)	(0.002)
UNEMP	15.9	3.32	3.54	.000191
	(42.420)	(8.864)	(9.451)	(0.001)
INC	-504	-105	-112	-.00605
	(12,541.820)	(2,620.675)	(2,794.227)	(0.150)
INC2	148	30.9	32.9	.00177
	(583.355)	(121.964)	(129.999)	(0.007)
Constant	-26,014			
	(67,681.956)			
Sigma	23,967***			
	(1,384.178)			
Observations	505,965			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00627			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10% , 5% , and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 10: Tobit Estimation Results and Marginal Effects for Total Debt

Total debt	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
Prime borrowers in Arkansas	4,821***	2,810***	1,985***	.0822***
	(283.218)	(161.429)	(114.426)	(0.005)
Nonprime borrowers in Louisiana	2,525***	1,422***	1,009***	.0435***
	(271.935)	(151.380)	(107.606)	(0.005)
Prime borrowers in Louisiana	5,174***	3,031***	2,140***	.0881***
	(274.153)	(157.347)	(111.447)	(0.005)
Nonprime borrowers in Missouri	1,310***	724***	515***	.0227***
	(245.487)	(133.946)	(95.525)	(0.004)
Prime borrowers in Missouri	3,381***	1,929***	1,366***	.0581***
	(289.087)	(158.545)	(112.980)	(0.005)
Nonprime borrowers in Mississippi	804***	441***	314***	.0139***
	(281.767)	(154.210)	(109.919)	(0.005)
Prime borrowers in Mississippi	5,043***	2,949***	2,083***	.0859***
	(324.509)	(189.832)	(134.170)	(0.005)
Nonprime borrowers in Oklahoma	3,016***	1,712***	1,213***	.0519***
	(321.598)	(178.996)	(127.268)	(0.005)
Prime borrowers in Oklahoma	5,714***	3,374***	2,381***	.097***
	(270.745)	(154.683)	(109.640)	(0.005)
Nonprime borrowers in Tennessee	718***	393***	280***	.0124***
	(240.676)	(130.806)	(93.353)	(0.004)
Prime borrowers in Tennessee	3,356***	1,915***	1,356***	.0577***
	(243.829)	(133.835)	(95.337)	(0.004)
Nonprime borrowers in Texas	4,678***	2,721***	1,923***	.0798***
	(224.269)	(121.291)	(86.542)	(0.004)
Prime borrowers in Texas	5,924***	3,508***	2,475***	.1***
	(229.087)	(124.586)	(88.788)	(0.004)
$AGE_{<25}$	-13,876***	-8,491***	-5,966***	-.233***
	(151.382)	(71.582)	(50.609)	(0.003)
AGE_{25-39}	-4,113***	-2,517***	-1,768***	-.069***
	(93.933)	(55.293)	(38.859)	(0.002)
$AGE_{\geq55}$	-7,325***	-4,482***	-3,149***	-.123***
	(99.313)	(56.501)	(39.603)	(0.002)
UNEMP	-285***	-174***	-122***	-.00478***
	(29.694)	(18.225)	(12.801)	(0.001)
INC	-40,738***	-24,927***	-17,514***	-.683***
	(8,657.224)	(5,294.760)	(3,720.209)	(0.145)
INC2	1,864***	1,140***	801***	.0313***
	(404.210)	(247.159)	(173.662)	(0.007)
Constant	229,410***			
	(46,389.054)			
Sigma	22,843***			
	(484.102)			
Observations	505,965			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00187			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10% , 5% , and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 11: Tobit Estimation Results and Marginal Effects for Total Nonprime Debt for Arkansas Border Counties Excluding Those Bordering Mississippi River and Missouri

Total debt	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
border	3,759***	2,188***	1,546***	.0739***
	(545.135)	(310.708)	(220.271)	(0.009)
AGE$_{<25}$	-10,463***	-5,980***	-4,233***	-.207***
	(712.844)	(387.911)	(276.147)	(0.012)
AGE$_{25-39}$	-6,387***	-3,651***	-2,584***	-.126***
	(607.629)	(334.625)	(237.960)	(0.011)
AGE$_{\geq 55}$	-2,266***	-1,295***	-917***	-.0448***
	(621.542)	(351.101)	(248.907)	(0.012)
UNEMP	628***	359***	254***	.0124***
	(241.803)	(136.731)	(96.923)	(0.005)
INC	203,596***	116,362***	82,363***	4.03***
	(52,244.256)	(29,451.668)	(20,885.213)	(0.986)
INC2	-9,031***	-5,162***	-3,653***	-.179***
	(2,428.036)	(1,369.854)	(971.307)	(0.046)
Constant	-1,143,395***			
	(281,517.631)			
Sigma	19,847***			
	(670.487)			
Observations	10,163			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00389			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 12: Tobit Estimation Results and Marginal Effects for Consumer Finance Nonprime Debt for Arkansas Border Counties Excluding Those Bordering Mississippi River and Missouri

Consumer finance debt	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
border	2,861***	430***	557***	.115***
	(198.480)	(33.191)	(39.650)	(0.008)
$AGE_{<25}$	-4,263***	-562***	-792***	-.159***
	(391.094)	(50.067)	(71.293)	(0.014)
AGE_{25-39}	-1,601***	-211***	-298***	-.0596***
	(219.198)	(28.992)	(40.627)	(0.008)
$AGE_{\geq 55}$	-512**	-67.4**	-95.1**	-.0191**
	(226.221)	(29.836)	(42.036)	(0.008)
UNEMP	-349***	-45.9***	-64.8***	-.013***
	(89.129)	(11.712)	(16.528)	(0.003)
INC	-23,628	-3,113	-4,391	-.88
	(18,070.844)	(2,381.858)	(3,358.031)	(0.674)
INC2	1,090	144	203	.0406
	(839.150)	(110.604)	(155.935)	(0.031)
Constant	122,570			
	(97,303.746)			
Sigma	5,733***			
	(191.770)			
Observations	10,163			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.0136			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.

Table 13: Tobit Estimation Results and Marginal Effects for Depository Institution Nonprime Personal Loan Debt for Arkansas Border Counties Excluding Those Bordering Mississippi River and Missouri

Depository institution	Tobit coefficient	Marginal effects		
personal loan debt		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
border	9,196***	751***	1,456***	.0507***
	(1,688.249)	(140.775)	(267.729)	(0.006)
$AGE_{<25}$	-9,265***	-682***	-1,425***	-.0474***
	(1,961.440)	(141.660)	(299.244)	(0.008)
AGE_{25-39}	-8,444***	-622***	-1,299***	-.0432***
	(1,631.789)	(117.182)	(248.409)	(0.006)
$AGE_{\geq55}$	-7,169***	-528***	-1,103***	-.0367***
	(1,560.462)	(112.618)	(238.054)	(0.006)
UNEMP	3,396***	250***	522***	.0174***
	(689.224)	(49.131)	(104.733)	(0.002)
INC	-514,427***	-37,870***	-79,134***	-2.63***
	(88,111.246)	(6,506.256)	(13,511.222)	(0.516)
INC2	24,033***	1,769***	3,697***	.123***
	(4,101.672)	(302.813)	(628.906)	(0.024)
Constant	2,687,785***			
	(472,700.124)			
Sigma	27,275***			
	(2,771.479)			
Observations	10,163			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00957			

Note: Robust standard errors in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. *Source:* Federal Reserve Bank of New York/Equifax Consumer Credit Panel, Bureau of Labor Statistics for the unemployment rate, and Bureau of Economic Analysis for income information.