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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 risky nonprime Arkansas consumers, which 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 Arkansas consumers are less likely to have consumer debt and, conditional on having debt, have lower, but not much lower, levels of consumer debt than prime Arkansas consumers and nonprime consumers in neighboring states. Types of credit used by nonprime Arkansas consumers tend to differ from those of our 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.

Keywords: Consumer Credit, Access to Credit, Interest Rate Cap, Financial Regulation.

JEL classification: D14, G2

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1. Introduction

Interest rate ceilings have a history going back to antiquity. At least part of the rationale for interest rate limits is a concern that lenders will take advantage of necessitous borrowers. When rate ceilings are set at low levels that make lending unprofitable, however, credit becomes unavailable, especially for consumers having modest means or posing higher credit risk. 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 may be costly in terms of the interest rate or sacrifices in current consumption due to shorter terms to maturity. Recent suggestions that interest rate ceilings for consumer be set no higher than 36 percent rate call for a better understanding of the effects of interest rate limitations on consumers.

This paper examines the effects of the rate ceilings on risky nonprime consumers in Arkansas, the state with the most restrictive rate ceiling in the United States. Arkansas has been a popular place to study the effects of rate ceilings because of its long history of a low, strictly construed constitutional rate ceiling, usually referred to as a usury law. Risky, 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. However, Arkansas consumers used more retail credit, in which higher product prices could compensate for risk bearing. Overall, Arkansas consumers did not have much lower levels of debt at that time than consumers in neighboring states.

Currently consumer finance companies, traditionally a source of credit for risky 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 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 Arkansas consumers with prime Arkansas consumers and nonprime consumers in neighboring states, we find that nonprime Arkansas consumers were less likely to have consumer debt and, conditional on having such debt, have lower amounts of debt than prime Arkansas consumers. Moreover, nonprime Arkansas consumers 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. As the 17 percent Arkansas rate ceiling is very

[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.

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 Arkansas consumers used more finance company auto and retail credit than prime Arkansas consumers and nonprime consumers in neighboring states. Finally, nonprime Arkansas consumers were more likely to owe debt and had greater balances in border counties than in 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. However, findings suggest 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 usury 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 usury 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), up from 10 percent. 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 dealers, retailers, credit unions, and finance companies are still subject to Arkansas's

usury laws.[2] However, the legislative environment 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.[3] 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.[4]

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.[5]

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.[6]

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-

[2] 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.

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

[4] 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).

[5] 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).

[6] 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)). 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 et al. (1989)).[7]

2.3. 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 federal funds rate.[8] When federal funds rate information is not available, we use the 10-year Treasury yield. While initially, in 1936, our first observation regarding the ceiling, the interest rate cap is set at 6, 7, and 8 percent depending on the loan terms (designated by three parallel dots in Figure 1a), in time, the spread between the two series varied in size. As the spread varied, 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 federal funds 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.[9] As noted in the previous section, up until 2011, the interest rate ceiling in Arkansas floated between 5 percent above the fed funds rate to 17 percent, as although most of the 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 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.

[7] 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 et al. (1989)).

[8] Anbil et al. (2021) recently extended the federal funds series back to 1928, thus allowing the observation of an eventful period in the economy.

[9] 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.

2.4. Efforts to Relax Restrictive Rate Regulation

The deterioration in lending conditions in the state at the time 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 usury 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 usury 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 loans more restrictive than the legislature intended.[10] 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

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

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.

2.5. 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.[11] 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 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.[12]

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

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

3. Previous Economic Studies of Usury 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 usury 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 usury 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 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 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

[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 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 usury 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 usury 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 are not severely restrictive, and consumer finance companies operate in all six states that border Arkansas (Lukongo and Miller Jr. (2021)).[17]

[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. (2021) 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. (2021) 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. (2021)) 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.[20]

They analyzed in detail whether proximity to out-of-state lenders influences the rate of installment loan usages. 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.[21]

[18] Lukongo and Miller Jr. (2021) 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. (2021)).

[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] In a previous version of their paper, Lukongo and Miller Jr. (2021) tested whether the distance to an out-of-state lender influenced the number of loans observed. They estimate travel costs for Arkansas residents in perimeter and interior counties and for residents of the counties that border Arkansas. In various regression analyses, they find that the number of consumer finance loans in a county decreases in a statistically significant way as the travel costs to the nearest lender increases.

[21] 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.

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 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 marginal 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). 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 that state than in neighboring states with 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 may 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.[22] 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 bank

[22] 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)).

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 consists of credit originated and held by retailers to finance customers' purchases. Bank personal loans consist of closed-end, non-auto credit held by depository institutions. 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.[23]

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. As 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.[24]

Credit use is influenced by life-cycle stage and income. As consumers establish households and their families grow, they often 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.[25] 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.[26] The dataset contains individual-level data on virtually every debt owed by each consumer. The vari-

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

[24] See Durkin et al. (2016).

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

[26] 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

ables 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.

We use a one percent sample from the total available five percent sample, covering the period between 2012Q1 and 2018Q4. At the end of the fourth quarter of 2018, the CCP totaled about 230 million individuals, holding about $107 billion in consumer finance loans across 78 million accounts 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 the CCP data, 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 more likely to owe debt and had greater average debt than prime consumers (Table 1). Arkansas consumers had a somewhat lower incidence of debt (2.3 percent lower) than nonprime consumers in neighboring states but about the same average amount of debt ($16,889 and $16,754, respectively).

The composition of consumer debt of nonprime Arkansas consumers differed from that of nonprime consumers in neighboring states. Notable is a much lower incidence of nonprime consumer finance loans in Arkansas (39.6 percent lower than that of nonprime consumers in neighboring states). Average consumer finance debt was 12.5 percent lower for nonprime Arkansas consumers than for nonprime consumers in neighboring states. Nonprime Arkansas consumers also had a lower incidence of bank personal loans (despite preemption of banks from the usury ceiling). Those nonprime Arkansas consumers who had bank personal loans have significantly larger personal loan balances than nonprime bank personal loan users in neighboring states (possibly because banks were willing to lend to near prime Arkansas consumers).

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

Lukongo and Miller Jr. (2021) 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. (2021)) 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. (2021), 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 are able to 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 Arkansas consumers largely appear to have substituted other types of credit for consumer finance debt. In addition, nonprime Arkansas consumers 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 Arkansas consumers 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 at 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:

$$DEBT_{it} = a_0 + \Sigma a_{1i} * (STATExRISK)_{it} + b_1 * INC_{jt} + b_2 * INC2_{jt} + b_3 * UNEMP_{jt} + b_4(AGE < 25_{it}) + b_5(AGE25-39_{it}) + b_6(AGE >= 55_{it}) + \Sigma d_t Q_t, \quad (1)$$

$DEBT_{it}$ 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 $AGE < 25$, $AGE25$–39, $AGE40-54$, and $AGE >= 55$, with ages between 40 and 54 being omitted for estimation. Qt 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, bank personal loans, and total consumer credit. Not all consumers use all types of credit. As the credit use data are censored from below, we use a Tobit model for estimation. Regressions 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—the unconditional expected value (Y*), expected value conditional on being uncensored (that is, having a positive balance), and the probability of being uncensored, respectively. The risk category/state indicator variables measure credit balances relative to nonprime consumers in Arkansas.

5.2.1. Consumer Finance Loans

In Arkansas, prime consumers were less likely to be uncensured (that is, have positive balances) than nonprime consumers for consumer finance credit (-5.97 percent). Conditional on having con-

sumer finance credit, prime consumers had less consumer finance debt than nonprime consumers in Arkansas (-$317). 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 Arkansas consumers. For example, prime consumers in Texas were 3.0 percent less likely to have consumer finance credit and had $154 less consumer finance debt than nonprime Arkansas consumers. 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 Texas, for example, a 12.8 percent greater incidence and $596 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.[27] Large credit card issuers locate in states with high or no rate ceilings, which allows 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.

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. Nonprime consumers in Missouri, Oklahoma, 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 sta-

[27] 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).

tistically significant. Nonprime consumers in Louisiana and Mississippi were more likely to have bank credit card balances and have larger balances than nonprime Arkansas consumers 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 Arkansas consumers do not appear to have offset reduced consumer finance debt availability with bank card borrowing. Nonprime Arkansas consumers used less or no more bank card credit than nonprime consumers in bordering states.

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 Arkansas consumers. Nonprime consumers in neighboring states used more, but not appreciably more retail credit than nonprime consumers in Arkansas. The difference in the percentage using retail credit and the amount of retail credit conditional on using such credit between nonprime consumers in Arkansas and each of the neighboring states was very small. The finding that nonprime Arkansas consumers 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. Bank Personal Loans

As discussed above, bank loans are preempted from Arkansas's usury ceiling. Preemption does not appear to have resulted in greater use of bank personal loans by nonprime consumers in Arkansas, however. Prime consumers in Arkansas were more likely to have bank personal loans than nonprime Arkansas consumers, but the difference was small (2.2 percent greater). Conditional on having bank personal loans, prime consumers had larger balances ($996) than nonprime Arkansas consumers.

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

5.2.5. Auto Credit

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 Arkansas consumers. Conditional on having finance company credit, prime consumers had lower balances than nonprime Arkansas consumers. When they had auto debt from banks, prime Arkansas consumers had substantially larger balances than nonprime Arkansas consumers.

In neighboring states, nonprime consumers relied less on auto credit from finance companies than nonprime Arkansas consumers and more on auto credit from banks. Both prime and nonprime consumers in neighboring states generally were less likely to have auto credit from finance companies and more likely to have balances from banks than nonprime Arkansas consumers. (The exceptions were insignificant differences for prime and nonprime consumers in Mississippi and greater incidence of finance company auto debt for nonprime consumers in Texas.)

In contrast, prime and nonprime consumers in neighboring states were more likely to have auto credit from banks than nonprime Arkansas consumers. Conditional on having bank credit, prime and nonprime consumers in neighboring states had larger balances than nonprime Arkansas consumers.

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.[28] 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 have 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 Arkansas consumers 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, larger amount of finance company auto credit may reflect dealers charging higher prices when financing higher risk consumers' auto purchases.

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 nonprime Arkansas consumers. The exceptions, consumers in Missouri and Tennessee, were not statistically significantly different from nonprime Arkansas consumers. Prime Arkansas consumers were slightly more likely to have consumer credit balances than nonprime Arkansas consumers. When they had

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

balances, prime Arkansas consumers had larger balances than nonprime Arkansas consumers. In three states (Louisiana, Oklahoma, and Texas) amounts of debt were substantially greater.

That nonprime consumers in Arkansas having less consumer debt than prime Arkansas consumers and nonprime consumers in neighboring is consistent with credit rationing of higher risk consumers resulting from the binding interest rate ceiling in Arkansas' usury law. Nonprime Arkansas consumers had less consumer finance credit than prime consumers in Arkansas. Nonprime Arkansas consumers had more retail credit and 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 Arkansas consumers had less bank credit than prime Arkansas consumers, a possible consequence of banks' longstanding avoidance of high-risk lending.

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

In this subsection, we examine differences in 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.

$$DEBT_{it} = b_0 + b_1 * INC_{jt} + b_2 * INC2_{jt} + b_3 * UNEMP_{jt} + b_4(AGE < 25_{it}) + b_5(AGE25-39_{it}) + b_6(AGE >= 55_{it}) + d_1 * BORDER_{it} + \Sigma d_t Q_t, \quad (2)$$

$DEBT_{it}$ 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 $AGE < 25$, $AGE25$–39, $AGE40-54$, and $AGE >= 55$ (with ages between 40 and 54 being omitted for estimation). As before INC and $INC2$ are income variables, $UNEMP$ is the unemployment, and Qt 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

Arkansas counties on the border of Missouri and Mississippi are proximate is arguable.[29] We therefore exclude consumers living in counties boarding Missouri and Mississippi from our analysis.[30]

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 (2.9 percent) than nonprime 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 4.4 percent greater for nonprime consumers in border counties. The additional amount of consumer finance debt of nonprime consumers in border counties was relatively small ($261), however (Table 12). Bank personal loans were 2.4 percent more frequent in Arkansas border counties than interior counties, but the additional dollar amount of bank personal loan debt ($848) was much greater than the additional amount of consumer finance debt (Table 13). Both consumer finance loans and bank 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. Conclusions

Interest rate ceilings have a long history. Economic theory and empirical evidence indicate that a rate ceiling results in credit rationing when the ceiling is below the market equilibrium price. Arkansas is notable for its low constitutional usury 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. However, Arkansas consumers used more retail credit and did not have much lower 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 usury ceiling, and widespread preemptions have been granted for bank credit. One recent study found that direct loans from finance companies to Arkansas consumers were almost entirely to consumers in border counties. Such loans were al-

[29] 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).

[30] 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.

most entirely absent in interior counties. Another recent study examining indirect auto lending found that binding ceilings had a small effect on who obtains credit but a large effect on where credit was obtained. Dealers, pricing credit risk through the markup on the sale rather than the interest rate, provided greater shares of auto financing in Arkansas than in neighboring states.

Broad preemption for bank credit and the widespread availability of credit cards potentially provide consumers borrowing opportunities that allow consumers to escape restrictive effects of the low Arkansas rate ceiling. We find that nonprime Arkansas consumers 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 Arkansas consumers 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 Arkansas consumers differs from that used by nonprime consumers in neighboring states. Generally, nonprime consumers in neighboring states use more consumer finance company credit than nonprime Arkansas consumers. 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 bank card credit, bank personal loans, and bank auto credit than nonprime consumers in Arkansas. Bank preemption apparently has not increased credit availability for nonprime Arkansas consumers. For auto credit, Melzer and Schroeder (2017) (p. 4) noted that local dealer involvement has led banks operating in Arkansas to follow lending laws applicable in the dealer's state rather than their home state.

Nonprime Arkansas consumers used more retail and finance company auto credit than nonprime consumers in neighboring states. Retailers and auto dealers in indirect credit may compensate for credit risk in higher product prices and thereby avoid violating the Arkansas usury rate ceiling. Buy here pay here auto dealers are included in these categories and sometimes hold their auto paper in affiliated finance companies.

Finally, nonprime Arkansas consumers were more likely to owe 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.

Credit use can be beneficial when demand for household assets is high and availability of current resources to acquire assets is low. Investments in homes, vehicles, household durables, and education often provide large positive returns over time. Unavailability of credit might result in lower levels of household investment or financial difficulties arising from shortfalls of income or unexpected expenses. Substituting other kinds of credit for the ones in short supply may be costly in terms of the interest rate or sacrifices in current consumption due to shorter terms to maturity.

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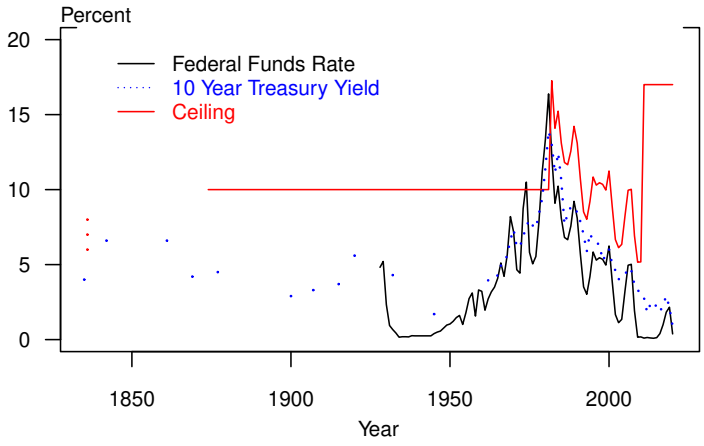
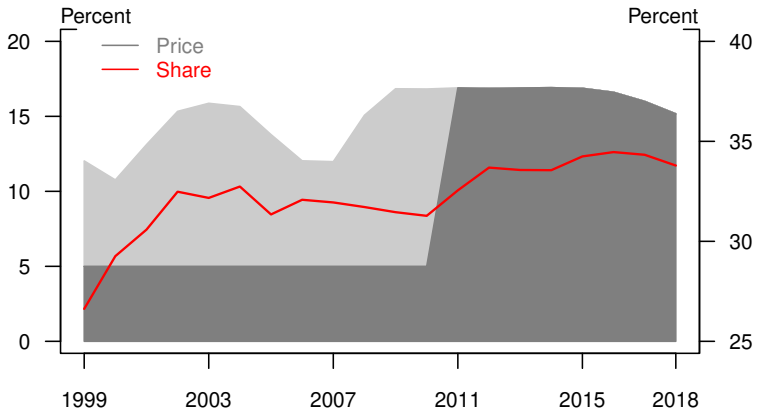
Figure 1. Historical View of The Interest Rate Ceiling in Arkansas and the Share of Consumer Credit Subject to the Rate Ceiling



(a) Arkansas Interest Rate Ceiling Timeline

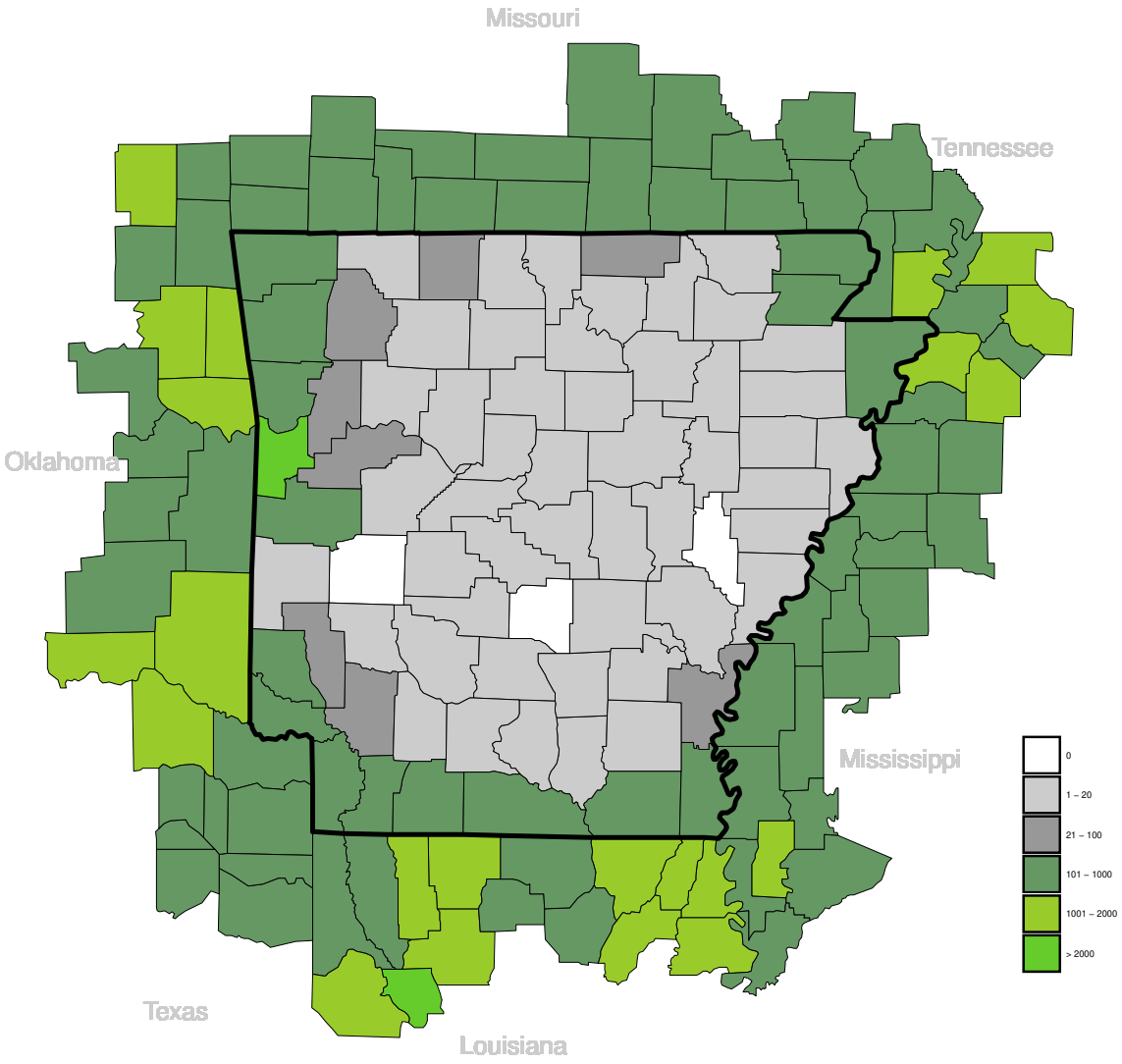


(b) Price and Share of Consumer Credit Subject to the Interest Rate Ceiling

Notes: Figure a) plots the evolution of the rate ceiling in Arkansas (red) shown relative to the federal funds rate (black). We also show the 10-year Treasury yield (dotted blue) for the pre-1928 period, when a federal funds rate was not available. Figure b) plots the share of credit held by lenders subject to the interest rate ceiling (red, right axis). In the grey area (two shades, left axis), we show the price differential, the difference between the interest rate ceiling and the federal funds rate. (Up until 2011, the interest rate ceiling floated between 5 percent above the federal funds interest rate and 17 percent. After 2011, the interest rate ceiling was fixed at 17 percent.)

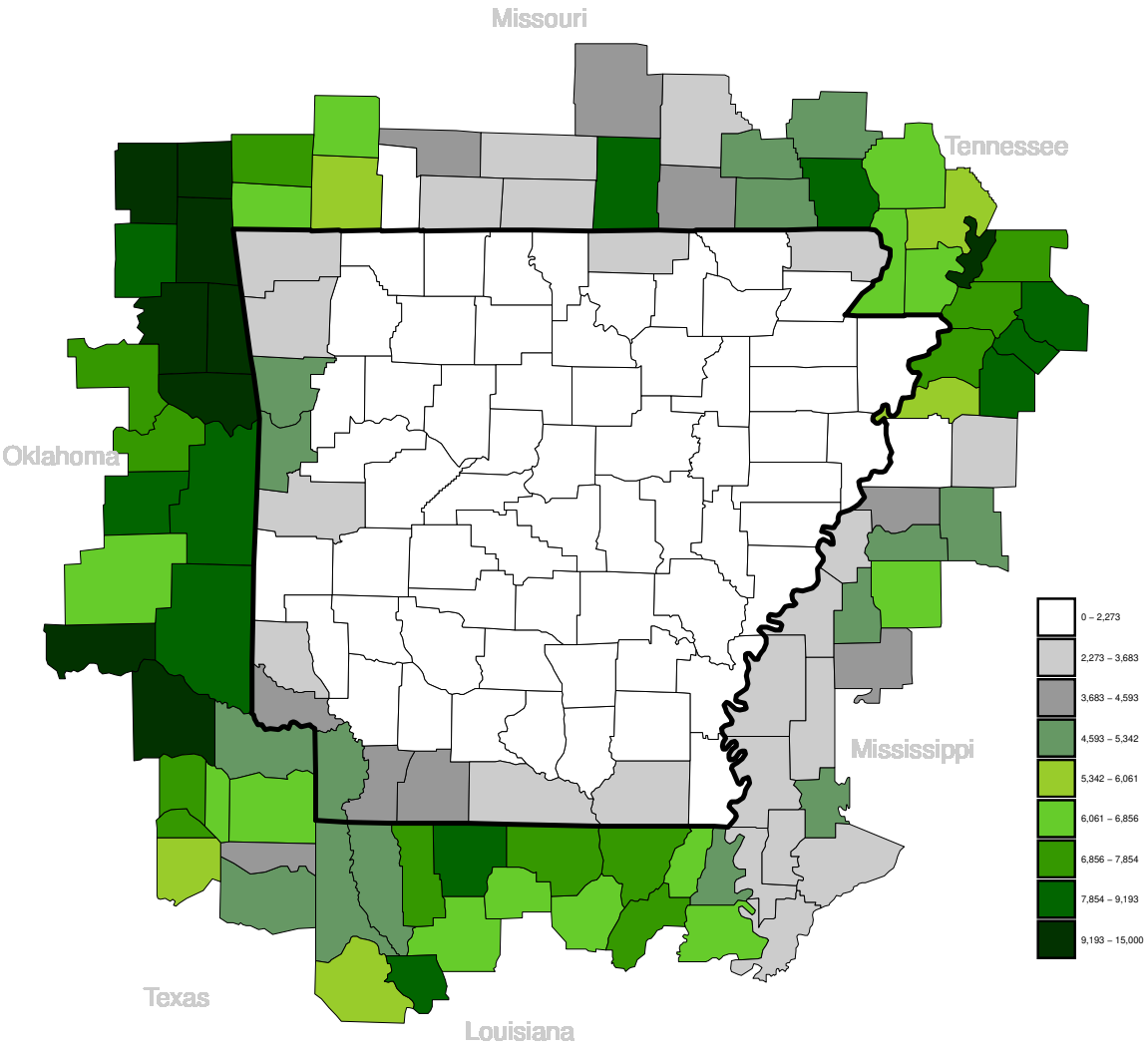
*S*ources: FRED for the federal funds rate and the 10-year Treasury yield post-1962, Goldman Sachs for the previous period, Galchus et al. (1989) for the ceiling rate, authors' calculations based on the Federal Reserve Bank of New York/Equifax Consumer Credit Panel for the share.

Figure 2. Personal Loans in Arkansas and Border Counties. Lukongo and Miller Jr. (2021) found a consumer finance "credit desert" existing in the interior of Arkansas.



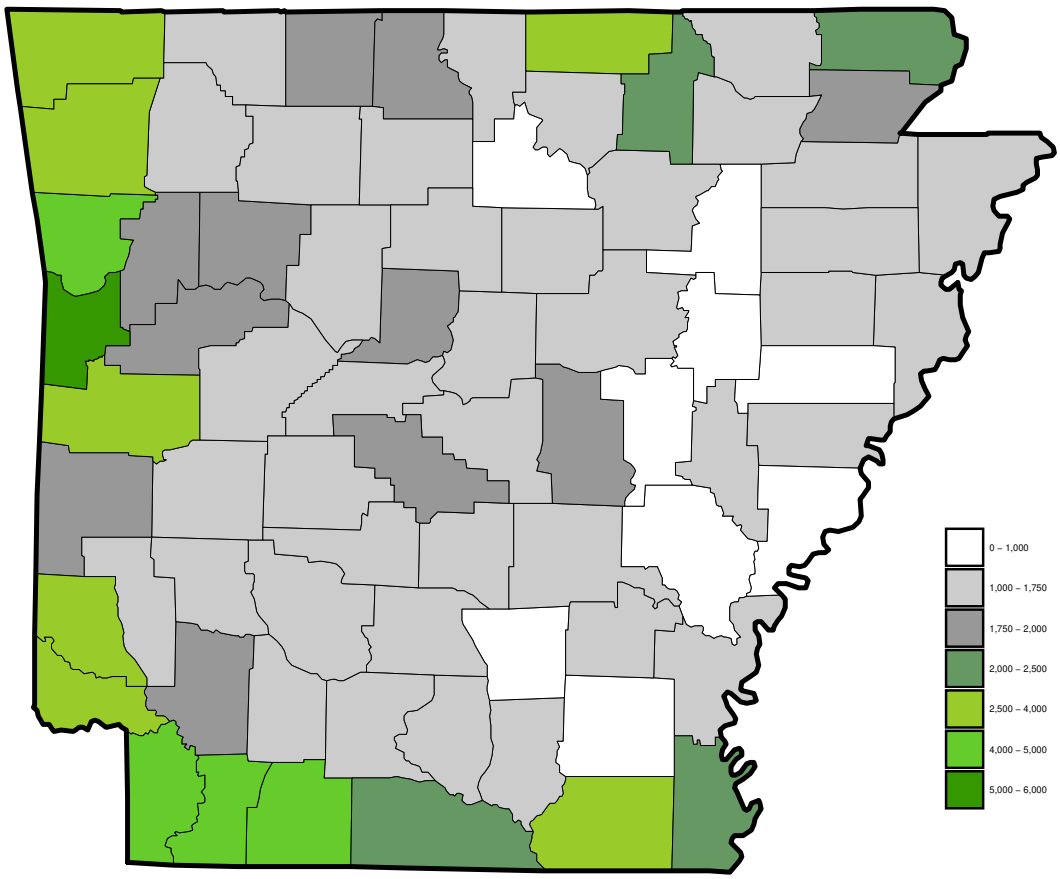
Notes: Number of traditional installment loans per 10,000 population, Arkansas and border counties, September 2013. Source: American Financial Services Association (AFSA).

Figure 3. Personal Loans Held by Subprime Borrowers in Arkansas and Border Counties



Notes: 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



Notes: 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

	Arkansas		Neighbor States		
	Nonprime	Prime	Nonprime	Prime	Memo
Proportion of consumers having consumer debt					
Type of debt					
Total debt	0.881	0.655	0.902	0.670	-2.3
Bank card debt	0.744	0.561	0.747	0.589	-0.4
Consumer finance	0.203	0.085	0.337	0.100	-39.6
Retail	0.421	0.224	0.384	0.229	9.7
Finance company auto	0.388	0.190	0.333	0.147	16.6
Bank auto	0.207	0.188	0.216	0.187	-4.1
Bank personal	0.116	0.091	0.133	0.083	-13.2
Average balance of consumers having consumer debt (dollars)					
Type of debt					
Total debt	16,889	14,897	16,754	14,921	0.8
Bank card debt	4,664	5,096	5,059	5,184	-7.8
Consumer finance	3,150	3,731	3,602	2,761	-12.5
Retail	1,975	1,244	2,143	1,162	-7.9
Finance company auto	14,744	12,893	14,332	13,586	2.9
Bank auto	14,268	13,839	15,928	15,968	-10.4
Bank personal	10,911	13,895	7,685	16,936	42.0

Notes: 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	12,634	21,227
Card	Total bank card debt	3,756	8,062
Consumer finance	Total consumer finance account debt	542	1,977
Retail	Total retail credit debt	477	1,520
Auto	Total auto loan debt	6,536	12,737
Auto finance	Total auto loan debt issued by finance companies	3,275	9,113
Auto bank	Total auto loan debt issued by banks	3,260	8,903
Bank personal	Total bank personal loan debt	1,324	11,277
Explanatory variables			
Nonprime borrowers in Arkansas	Indicator variable (omitted)	.0182	.133
Prime borrowers in Arkansas	Indicator variable	.0339	.181
Nonprime borrowers in Louisiana	Indicator variable	.0337	.181
Prime borrowers in Louisiana	Indicator variable	.0508	.22
Nonprime borrowers in Missouri	Indicator variable	.0388	.193
Prime borrowers in Missouri	Indicator variable	.0835	.277
Nonprime borrowers in Mississippi	Indicator variable	.0221	.147
Prime borrowers in Mississippi	Indicator variable	.0295	.169
Nonprime borrowers in Oklahoma	Indicator variable	.0241	.153
Prime borrowers in Oklahoma	Indicator variable	.0462	.21
Nonprime borrowers in Tennessee	Indicator variable	.0486	.215
Prime borrowers in Tennessee	Indicator variable	.0866	.281
Nonprime borrowers in Texas	Indicator variable	.188	.39
Prime borrowers in Texas	Indicator variable	.296	.457
Border	Indicator variable	.0932	.291
INC	Income (logarithm)	10.7	.237
INC2	Income squared	114	5.08
AGE<25	Age less than 25 years, indicator variable	.0425	.202
AGE25-39	Age 25 to 39 years, indicator variable	.25	.433
AGE40-54	Age 40 to 54 years, indicator variable (omitted)	.279	.449
AGE>=55	Age 55 years or older, indicator variable	.429	.495
UNEMP	Unemployment rate	5.29	1.75

Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

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	-1,744***	-217***	-317***	-.0597***
	(137.872)	(18.352)	(25.496)	(0.005)
Nonprime borrowers in Louisiana	3,289***	769***	770***	.167***
	(127.622)	(28.342)	(28.707)	(0.006)
Prime borrowers in Louisiana	-1,626***	-206***	-297***	-.0563***
	(127.291)	(17.784)	(24.017)	(0.005)
Nonprime borrowers in Missouri	1,322***	244***	279***	.0588***
	(123.103)	(21.560)	(25.387)	(0.005)
Prime borrowers in Missouri	-2,196***	-258***	-391***	-.072***
	(120.106)	(16.944)	(22.684)	(0.004)
Nonprime borrowers in Mississippi	3,043***	691***	703***	.152***
	(130.036)	(28.994)	(29.333)	(0.006)
Prime borrowers in Mississippi	-1,694***	-212***	-309***	-.0583***
	(139.091)	(18.502)	(25.725)	(0.005)
Nonprime borrowers in Oklahoma	3,172***	731***	738***	.16***
	(130.713)	(29.611)	(29.678)	(0.006)
Prime borrowers in Oklahoma	-1,337***	-175***	-248***	-.0475***
	(128.395)	(18.125)	(24.359)	(0.005)
Nonprime borrowers in Tennessee	2,949***	662***	678***	.146***
	(121.534)	(24.488)	(26.291)	(0.005)
Prime borrowers in Tennessee	-1,606***	-204***	-294***	-.0557***
	(117.698)	(17.096)	(22.566)	(0.004)
Nonprime borrowers in Texas	2,637***	571***	596***	.128***
	(108.363)	(18.127)	(21.910)	(0.004)
Prime borrowers in Texas	-808***	-114***	-154***	-.0301***
	(107.904)	(16.605)	(21.225)	(0.004)
ageunder25	-3,793***	-611***	-760***	-.155***
	(83.020)	(13.143)	(16.455)	(0.003)
age25to39	-1,077***	-174***	-216***	-.0441***
	(37.511)	(6.035)	(7.498)	(0.002)
age55andover	-969***	-156***	-194***	-.0396***
	(35.140)	(5.641)	(7.019)	(0.001)
UNEMP	-79.9***	-12.9***	-16***	-.00327***
	(12.832)	(2.069)	(2.571)	(0.001)
INC	-26,438***	-4,262***	-5,296***	-1.08***
	(3,852.799)	(621.335)	(771.878)	(0.158)
INC2	1,141***	184***	229***	.0467***
	(179.992)	(29.027)	(36.060)	(0.007)
Constant	146,717***			
	(20,638.919)			
Sigma	5,975***			
	(46.732)			
Observations	379,471			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.0150			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

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	1,067***	590***	420***	.0423***
	(136.825)	(75.211)	(53.587)	(0.005)
Nonprime borrowers in Louisiana	-874***	-450***	-325***	-.0349***
	(134.154)	(69.490)	(50.093)	(0.005)
Prime borrowers in Louisiana	1,136***	630***	448***	.045***
	(133.391)	(73.218)	(52.182)	(0.005)
Nonprime borrowers in Missouri	482***	261***	186***	.0192***
	(132.798)	(71.609)	(51.185)	(0.005)
Prime borrowers in Missouri	655***	357***	255***	.026***
	(120.067)	(64.463)	(46.117)	(0.005)
Nonprime borrowers in Mississippi	-288*	-152*	-109*	-.0115*
	(147.926)	(77.793)	(55.885)	(0.006)
Prime borrowers in Mississippi	1,297***	723***	514***	.0513***
	(140.744)	(78.103)	(55.568)	(0.006)
Nonprime borrowers in Oklahoma	387**	209**	149**	.0154**
	(156.582)	(84.627)	(60.463)	(0.006)
Prime borrowers in Oklahoma	607***	330***	236***	.0241***
	(127.932)	(69.026)	(49.335)	(0.005)
Nonprime borrowers in Tennessee	-116	-61.4	-44	-.00462
	(128.493)	(68.127)	(48.857)	(0.005)
Prime borrowers in Tennessee	725***	396***	283***	.0288***
	(118.394)	(63.668)	(45.535)	(0.005)
Nonprime borrowers in Texas	807***	442***	315***	.032***
	(111.135)	(59.519)	(42.600)	(0.004)
Prime borrowers in Texas	1,425***	798***	567***	.0563***
	(110.736)	(59.298)	(42.446)	(0.004)
ageunder25	-3,843***	-2,172***	-1,540***	-.152***
	(52.749)	(30.571)	(21.556)	(0.002)
age25to39	-2,314***	-1,307***	-927***	-.0913***
	(46.262)	(26.521)	(18.747)	(0.002)
age55andover	-1,785***	-1,009***	-715***	-.0704***
	(46.933)	(26.288)	(18.654)	(0.002)
UNEMP	-164***	-92.7***	-65.7***	-.00647***
	(15.619)	(8.860)	(6.278)	(0.001)
INC	55,302***	31,250***	22,156***	2.18***
	(4,339.650)	(2,445.229)	(1,734.309)	(0.170)
INC2	-2,498***	-1,412***	-1,001***	-.0985***
	(202.229)	(113.964)	(80.829)	(0.008)
Constant	-302,702***			
	(23,305.533)			
Sigma	9,978***			
	(89.353)			
Observations	379,471			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00130			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

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	-1,281***	-388***	-341***	-.14***
	(58.190)	(19.486)	(16.275)	(0.007)
Nonprime borrowers in Louisiana	-491***	-170***	-141***	-.0569***
	(61.283)	(21.670)	(17.736)	(0.007)
Prime borrowers in Louisiana	-1,264***	-384***	-337***	-.138***
	(55.783)	(19.177)	(15.850)	(0.006)
Nonprime borrowers in Missouri	-160***	-58.4***	-47.2***	-.0189***
	(58.210)	(21.464)	(17.271)	(0.007)
Prime borrowers in Missouri	-1,080***	-338***	-292***	-.12***
	(52.333)	(18.705)	(15.227)	(0.006)
Nonprime borrowers in Mississippi	-129*	-47.5*	-38.3*	-.0153*
	(66.403)	(24.400)	(19.661)	(0.008)
Prime borrowers in Mississippi	-1,180***	-363***	-317***	-.13***
	(59.128)	(19.790)	(16.541)	(0.007)
Nonprime borrowers in Oklahoma	-91.6	-33.9	-27.2	-.0109
	(66.184)	(24.467)	(19.667)	(0.008)
Prime borrowers in Oklahoma	-1,212***	-371***	-324***	-.133***
	(57.233)	(19.449)	(16.153)	(0.006)
Nonprime borrowers in Tennessee	-387***	-136***	-112***	-.0452***
	(56.699)	(20.535)	(16.643)	(0.007)
Prime borrowers in Tennessee	-1,396***	-414***	-367***	-.151***
	(52.571)	(18.558)	(15.170)	(0.006)
Nonprime borrowers in Texas	33.1	12.5	9.96	.00395
	(49.952)	(18.743)	(14.976)	(0.006)
Prime borrowers in Texas	-1,152***	-356***	-310***	-.127***
	(49.741)	(18.252)	(14.708)	(0.006)
ageunder25	-1,719***	-490***	-443***	-.183***
	(35.375)	(9.990)	(9.057)	(0.004)
age25to39	-798***	-228***	-206***	-.0852***
	(18.339)	(5.181)	(4.698)	(0.002)
age55andover	-143***	-40.9***	-37***	-.0153***
	(16.027)	(4.574)	(4.132)	(0.002)
UNEMP	22.9***	6.53***	5.9***	.00244***
	(5.965)	(1.700)	(1.537)	(0.001)
INC	-3,651**	-1,041**	-941**	-.39**
	(1,674.296)	(477.436)	(431.503)	(0.179)
INC2	143*	40.8*	36.9*	.0153*
	(78.060)	(22.259)	(20.118)	(0.008)
Constant	21,671**			
	(8,986.399)			
Sigma	3,182***			
	(20.046)			
Observations	379,471			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00397			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

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

Bank personal loan debt	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
Prime borrowers in Arkansas	6,209***	526***	996***	.0222***
	(1,058.032)	(86.901)	(167.733)	(0.004)
Nonprime borrowers in Louisiana	11,345***	1,075***	1,884***	.0439***
	(1,119.189)	(99.787)	(181.189)	(0.004)
Prime borrowers in Louisiana	6,102***	516***	978***	.0218***
	(1,019.020)	(82.327)	(160.779)	(0.004)
Nonprime borrowers in Missouri	597	44.8	92.4	.00195
	(1,006.454)	(75.084)	(155.429)	(0.003)
Prime borrowers in Missouri	672	50.5	104	.00219
	(1,007.536)	(75.190)	(155.612)	(0.003)
Nonprime borrowers in Mississippi	9,179***	830***	1,502***	.0344***
	(1,141.016)	(100.827)	(184.507)	(0.004)
Prime borrowers in Mississippi	8,538***	761***	1,391***	.0316***
	(1,138.375)	(100.316)	(183.976)	(0.004)
Nonprime borrowers in Oklahoma	5,502***	459***	879***	.0194***
	(1,097.034)	(89.778)	(173.827)	(0.004)
Prime borrowers in Oklahoma	12,212***	1,179***	2,040***	.0479***
	(1,062.668)	(93.352)	(171.055)	(0.004)
Nonprime borrowers in Tennessee	3,428***	273***	540***	.0117***
	(977.487)	(75.209)	(152.248)	(0.003)
Prime borrowers in Tennessee	1,633*	125*	254*	.00541*
	(944.544)	(70.970)	(146.160)	(0.003)
Nonprime borrowers in Texas	6,836***	587***	1,101***	.0247***
	(924.357)	(70.717)	(143.665)	(0.003)
Prime borrowers in Texas	4,947***	408***	787***	.0173***
	(886.164)	(66.617)	(137.094)	(0.003)
ageunder25	-18,784***	-1,733***	-3,096***	-.0715***
	(1,000.263)	(85.859)	(161.017)	(0.003)
age25to39	-6,250***	-577***	-1,030***	-.0238***
	(392.031)	(34.440)	(63.569)	(0.001)
age55andover	-9,971***	-920***	-1,643***	-.038***
	(446.126)	(37.754)	(71.470)	(0.001)
UNEMP	-2.58	-.238	-.426	-9.84e-06
	(108.770)	(10.035)	(17.927)	(0.000)
INC	-162,490***	-14,990***	-26,781***	-.619***
	(36,486.239)	(3,355.119)	(6,006.744)	(0.136)
INC2	6,393***	590***	1,054***	.0243***
	(1,701.169)	(156.575)	(280.153)	(0.006)
Constant	946,837***			
	(195,184.748)			
Sigma	43,439***			
	(2,066.666)			
Observations	379,471			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00419			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

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	566	216	172	.00903
	(394.928)	(150.211)	(119.372)	(0.006)
Nonprime borrowers in Louisiana	2,020***	796***	624***	.0325***
	(412.244)	(160.525)	(126.344)	(0.007)
Prime borrowers in Louisiana	-959**	-355**	-285**	-.0152**
	(398.346)	(147.909)	(118.664)	(0.006)
Nonprime borrowers in Missouri	-232	-87.2	-69.6	-.00368
	(380.955)	(143.639)	(114.548)	(0.006)
Prime borrowers in Missouri	-3,012***	-1,067***	-873***	-.0468***
	(358.923)	(131.582)	(105.981)	(0.006)
Nonprime borrowers in Mississippi	-258	-97.1	-77.5	-.0041
	(433.396)	(163.043)	(130.139)	(0.007)
Prime borrowers in Mississippi	-1,609***	-588***	-475***	-.0253***
	(426.777)	(156.168)	(126.011)	(0.007)
Nonprime borrowers in Oklahoma	3,397***	1,376***	1,068***	.055***
	(575.310)	(225.628)	(177.188)	(0.008)
Prime borrowers in Oklahoma	680*	261*	207*	.0109*
	(386.835)	(147.543)	(117.120)	(0.006)
Nonprime borrowers in Tennessee	-2,606***	-931***	-759***	-.0407***
	(376.583)	(137.877)	(111.157)	(0.006)
Prime borrowers in Tennessee	-2,323***	-835***	-679***	-.0363***
	(363.261)	(133.639)	(107.540)	(0.006)
Nonprime borrowers in Texas	4,546***	1,885***	1,451***	.074***
	(351.737)	(130.800)	(104.459)	(0.006)
Prime borrowers in Texas	1,097***	424***	335***	.0176***
	(337.216)	(128.110)	(101.835)	(0.005)
ageunder25	-12,476***	-4,851***	-3,823***	-.2***
	(388.246)	(106.197)	(95.525)	(0.005)
age25to39	-1,119***	-435***	-343***	-.0179***
	(121.876)	(45.894)	(36.550)	(0.002)
age55andover	-10,949***	-4,257***	-3,355***	-.176***
	(317.695)	(73.317)	(72.220)	(0.003)
UNEMP	-182***	-70.6***	-55.7***	-.00291***
	(44.011)	(16.960)	(13.405)	(0.001)
INC	-41,008***	-15,946***	-12,564***	-.658***
	(12,867.640)	(5,024.753)	(3,951.876)	(0.210)
INC2	1,727***	672***	529***	.0277***
	(600.239)	(234.333)	(184.323)	(0.010)
Constant	235,953***			
	(69,052.268)			
Sigma	23,904***			
	(918.485)			
Observations	379,471			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00514			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

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	8,424***	1,528***	1,768***	.0832***
	(544.800)	(92.601)	(110.538)	(0.005)
Nonprime borrowers in Louisiana	2,801***	432***	551***	.025***
	(587.280)	(89.077)	(114.820)	(0.005)
Prime borrowers in Louisiana	6,238***	1,063***	1,277***	.0593***
	(545.099)	(87.259)	(108.445)	(0.005)
Nonprime borrowers in Missouri	3,533***	556***	701***	.032***
	(538.385)	(81.336)	(105.056)	(0.005)
Prime borrowers in Missouri	7,259***	1,273***	1,503***	.0702***
	(497.996)	(76.350)	(97.476)	(0.004)
Nonprime borrowers in Mississippi	-1,714***	-231***	-321***	-.014***
	(637.104)	(86.179)	(119.462)	(0.005)
Prime borrowers in Mississippi	3,831***	608***	763***	.0348***
	(582.465)	(90.729)	(114.933)	(0.005)
Nonprime borrowers in Oklahoma	8,132***	1,463***	1,700***	.0799***
	(593.389)	(105.560)	(122.637)	(0.006)
Prime borrowers in Oklahoma	12,286***	2,484***	2,696***	.129***
	(529.415)	(95.371)	(109.264)	(0.005)
Nonprime borrowers in Tennessee	-507	-70.8	-96.3	-.00424
	(541.627)	(76.175)	(103.055)	(0.005)
Prime borrowers in Tennessee	7,992***	1,432***	1,668***	.0783***
	(500.925)	(77.926)	(98.498)	(0.004)
Nonprime borrowers in Texas	5,252***	869***	1,063***	.049***
	(483.062)	(70.829)	(93.211)	(0.004)
Prime borrowers in Texas	9,742***	1,834***	2,075***	.0983***
	(478.744)	(71.271)	(92.733)	(0.004)
ageunder25	-10,442***	-2,164***	-2,318***	-.112***
	(321.132)	(66.318)	(71.086)	(0.003)
age25to39	-569***	-118***	-126***	-.00612***
	(153.260)	(31.769)	(34.026)	(0.002)
age55andover	-10,795***	-2,237***	-2,397***	-.116***
	(151.142)	(30.713)	(33.050)	(0.002)
UNEMP	-568***	-118***	-126***	-.00611***
	(56.957)	(11.796)	(12.639)	(0.001)
INC	-32,585*	-6,754*	-7,234*	-.35*
	(17,346.072)	(3,595.451)	(3,851.105)	(0.186)
INC2	1,076	223	239	.0116
	(809.842)	(167.861)	(179.798)	(0.009)
Constant	201,187**			
	(92,967.005)			
Sigma	26,602***			
	(120.303)			
Observations	379,471			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00520			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

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	-6,029***	-1,501***	-1,454***	-.0761***
	(541.509)	(126.930)	(125.976)	(0.006)
Nonprime borrowers in Louisiana	113	32.6	29.2	.00154
	(453.573)	(130.965)	(117.642)	(0.006)
Prime borrowers in Louisiana	-6,989***	-1,699***	-1,667***	-.0871***
	(594.104)	(131.537)	(134.520)	(0.006)
Nonprime borrowers in Missouri	-2,869***	-772***	-718***	-.0378***
	(448.881)	(120.870)	(112.146)	(0.006)
Prime borrowers in Missouri	-11,387***	-2,480***	-2,582***	-.133***
	(706.947)	(133.965)	(148.748)	(0.006)
Nonprime borrowers in Mississippi	-29.2	-8.41	-7.56	-.000398
	(482.003)	(138.771)	(124.831)	(0.007)
Prime borrowers in Mississippi	-6,690***	-1,639***	-1,601***	-.0837***
	(622.483)	(137.928)	(141.174)	(0.006)
Nonprime borrowers in Oklahoma	-1,880***	-518***	-476***	-.0251***
	(559.321)	(157.689)	(143.285)	(0.009)
Prime borrowers in Oklahoma	-11,139***	-2,441***	-2,533***	-.13***
	(744.041)	(139.142)	(155.896)	(0.006)
Nonprime borrowers in Tennessee	-3,847***	-1,010***	-952***	-.05***
	(443.270)	(116.913)	(109.432)	(0.006)
Prime borrowers in Tennessee	-11,560***	-2,507***	-2,616***	-.134***
	(733.855)	(136.755)	(153.387)	(0.006)
Nonprime borrowers in Texas	2,098***	635***	558***	.0292***
	(383.700)	(109.427)	(98.735)	(0.005)
Prime borrowers in Texas	-7,223***	-1,746***	-1,718***	-.0897***
	(556.542)	(123.505)	(125.930)	(0.005)
ageunder25	-11,573***	-2,550***	-2,639***	-.137***
	(665.103)	(104.616)	(131.697)	(0.005)
age25to39	-1,715***	-378***	-391***	-.0203***
	(173.512)	(34.306)	(37.628)	(0.002)
age55andover	-8,113***	-1,787***	-1,850***	-.096***
	(459.011)	(69.103)	(89.681)	(0.003)
UNEMP	82.1	18.1	18.7	.000971
	(51.371)	(11.301)	(11.705)	(0.001)
INC	-59,364***	-13,079***	-13,537***	-.702***
	(14,657.929)	(3,231.304)	(3,340.825)	(0.180)
INC2	2,819***	621***	643***	.0334***
	(682.986)	(150.497)	(155.631)	(0.008)
Constant	299,480***			
	(78,684.420)			
Sigma	25,042***			
	(1,648.473)			
Observations	379,471			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00681			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

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	1,121***	727***	510***	.0178***
	(325.610)	(210.106)	(147.321)	(0.005)
Nonprime borrowers in Louisiana	2,505***	1,652***	1,158***	.0392***
	(352.290)	(231.299)	(162.282)	(0.006)
Prime borrowers in Louisiana	1,581***	1,031***	723***	.025***
	(322.135)	(209.011)	(146.569)	(0.005)
Nonprime borrowers in Missouri	274	176	124	.00438
	(303.322)	(194.314)	(136.246)	(0.005)
Prime borrowers in Missouri	-671**	-426**	-298**	-.0108**
	(321.009)	(205.152)	(143.852)	(0.005)
Nonprime borrowers in Mississippi	1,196***	776***	544***	.0189***
	(363.875)	(235.868)	(165.387)	(0.006)
Prime borrowers in Mississippi	1,786***	1,168***	819***	.0281***
	(372.757)	(243.326)	(170.651)	(0.006)
Nonprime borrowers in Oklahoma	3,928***	2,633***	1,849***	.0607***
	(449.003)	(296.850)	(208.464)	(0.006)
Prime borrowers in Oklahoma	2,246***	1,476***	1,035***	.0352***
	(315.767)	(205.341)	(144.027)	(0.005)
Nonprime borrowers in Tennessee	-307	-195	-137	-.00492
	(301.525)	(192.545)	(135.014)	(0.005)
Prime borrowers in Tennessee	-340	-216	-152	-.00545
	(290.462)	(185.553)	(130.110)	(0.005)
Nonprime borrowers in Texas	4,194***	2,820***	1,980***	.0646***
	(277.759)	(179.183)	(125.741)	(0.004)
Prime borrowers in Texas	2,414***	1,590***	1,115***	.0378***
	(277.259)	(178.539)	(125.212)	(0.004)
ageunder25	-12,211***	-8,175***	-5,735***	-.189***
	(132.160)	(94.134)	(66.732)	(0.004)
age25to39	-4,216***	-2,823***	-1,980***	-.0653***
	(108.091)	(70.454)	(49.452)	(0.002)
age55andover	-7,762***	-5,196***	-3,645***	-.12***
	(109.241)	(70.772)	(49.859)	(0.002)
UNEMP	-189***	-126***	-88.5***	-.00292***
	(35.318)	(23.741)	(16.659)	(0.001)
INC	-44,314***	-29,666***	-20,813***	-.686***
	(10,087.747)	(6,756.275)	(4,740.054)	(0.157)
INC2	1,979***	1,325***	929***	.0306***
	(470.642)	(315.120)	(221.078)	(0.007)
Constant	259,080***			
	(54,097.437)			
Sigma	23,405***			
	(550.628)			
Observations	379,471			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00161			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

Table 11: Tobit Estimation Results and Marginal Effects for Total 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	1,730***	1,188***	835***	.0292***
	(461.239)	(314.170)	(220.699)	(0.007)
ageunder25	-9,727***	-6,639***	-4,663***	-.165***
	(547.475)	(372.080)	(261.387)	(0.009)
age25to39	-4,650***	-3,174***	-2,229***	-.0789***
	(495.006)	(338.941)	(238.145)	(0.009)
age55andover	-6,832***	-4,663***	-3,275***	-.116***
	(412.226)	(278.020)	(195.185)	(0.007)
UNEMP	378*	258*	181*	.00642*
	(218.002)	(147.888)	(103.822)	(0.004)
INC	164,998***	112,628***	79,104***	2.8***
	(41,817.650)	(28,230.119)	(19,811.562)	(0.685)
INC2	-7,450***	-5,086***	-3,572***	-.126***
	(1,938.147)	(1,308.844)	(918.554)	(0.032)
Constant	-901,967***			
	(226,172.162)			
Sigma	21,009***			
	(531.040)			
Observations	17,658			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00165			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

Table 12: Tobit Estimation Results and Marginal Effects for Consumer Finance 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	1,407***	184***	261***	.0435***
	(181.791)	(25.001)	(34.185)	(0.006)
ageunder25	-5,339***	-666***	-973***	-.16***
	(585.419)	(71.995)	(105.780)	(0.017)
age25to39	-1,365***	-170***	-249***	-.0409***
	(211.373)	(26.306)	(38.422)	(0.006)
age55andover	-2,616***	-327***	-477***	-.0784***
	(210.266)	(25.660)	(37.771)	(0.006)
UNEMP	-375***	-46.8***	-68.4***	-.0112***
	(87.708)	(10.913)	(15.958)	(0.003)
INC	-9,456	-1,180	-1,724	-.283
	(18,503.360)	(2,307.845)	(3,372.086)	(0.552)
INC2	351	43.8	64	.0105
	(856.045)	(106.786)	(156.015)	(0.026)
Constant	55,253			
	(100,048.398)			
Sigma	6,864***			
	(205.598)			
Observations	17,658			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00682			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.

Table 13: Tobit Estimation Results and Marginal Effects for Bank Personal Loan Debt For Arkansas Border Counties Excluding Those Bordering Mississippi River And Missouri

Bank personal loan debt	Tobit coefficient	Marginal effects		
		Unconditional expected value (Y*)	Conditional expected value	Probability uncensored
border	4,928***	519***	848***	.0235***
	(1,310.987)	(140.350)	(226.476)	(0.006)
ageunder25	-21,902***	-2,235***	-3,729***	-.102***
	(3,209.674)	(323.721)	(543.123)	(0.014)
age25to39	-6,359***	-649***	-1,083***	-.0297***
	(1,353.460)	(138.104)	(230.176)	(0.006)
age55andover	-10,565***	-1,078***	-1,799***	-.0493***
	(1,261.379)	(126.665)	(212.889)	(0.005)
UNEMP	2,642***	270***	450***	.0123***
	(601.804)	(60.654)	(101.951)	(0.002)
INC	-524,938***	-53,558***	-89,369***	-2.45***
	(94,580.477)	(9,603.464)	(16,052.028)	(0.472)
INC2	24,389***	2,488***	4,152***	.114***
	(4,377.219)	(444.461)	(742.890)	(0.022)
Constant	2,760,951***			
	(511,465.606)			
Sigma	38,141.86***			
	(2,386.11)			
Observations	17,658			
State FE	NO			
Quarter FE	YES			
Pseudo R-squared	0.00395			

Notes: Robust standard errors in parentheses. *, **, and *** denote significance at the 10, 5, and 1% level, respectively.
Source: Federal Reserve Bank of New York/Equifax Consumer Credit Panel.