Credit Cards and Retail Firms: Historical Evidence from the U.S. *

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Job Market Paper

Abstract

Before 1970, almost all short-term consumer credit in the United States was extended by merchants, but now is extended by banks in the form of credit cards. To evaluate the effects of this change on merchants, I start with a simple decomposition to show that the total effect on profits depends on both reductions in cost and changes in markups. I estimate these changes using a natural experiment which exogenously accelerated bank credit card use relative to store credit card use: the 1978 *Marquette* decision. Usury (maximum interest rate) regulation effectively ended nationwide, differently affecting states based on pre-existing regulation of revolving short-term consumer debt. I estimate that a 20% decrease in merchant lending increased net entry (my preferred proxy for merchant profits) by about 4%, more so for small firms. I build a new microdata panel of retail establishments with new data on bank credit card acceptance constructed from archival Yellow Pages. I use heterogeneity in firms' sales growth by whether they accept bank cards to identify a structural model where parameters disciplining costs and competition can each vary flexibly, and recover an estimate of a 2.7% reduction in firms' marginal cost from accepting bank credit cards which is net of writeoffs and swipe fees. I conclude by presenting evidence that cost-reduction is created through banks' lower labor costs and superior risk-bearing capacity versus firms.

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1 Introduction

> "It was the smaller merchants who first came around... The man almost kissed my feet... His accounts receivable were dragging him under...
> The bank would guarantee him payment–within days instead of months–and would take over the role of collecting from the customers... [while] taking a 6 percent cut."
> -Bank of America salesman (Nocera (2013))

> "The telephone rings almost every day, with bankers trying to talk us into changing our policy [of not allowing bank cards]. Our answer is always no, but admittedly we're in a better position than most retailers to resist the pressure."
> -J.C. Penney manager (Hyman (2012a))

Why have bank credit cards become the dominant form of retail payment in the United States? In particular, did this transition benefit firms? More broadly, when should we expect a new technology that unbundles part of the work that firms do (in this case, supplying credit) to benefit firms? This paper addresses these questions through the lens of the historical experience of the growth of bank credit cards in the United States. Before 1970, almost all consumer credit in the United States was extended by merchants directly to consumers, both with magnetic cards and more simple recordkeeping systems. Merchants incurred expenses screening customers for creditworthiness and collecting their receivables. Large retailers viewed these activities as a competitive advantage and a core part of their business, as large automakers today still do (Benetton et al. (2022)). Today, large bank credit card networks are nearly universally accepted by all merchants in the United States. Developing countries continue to rely heavily on merchant credit in the absence of deep financial sectors, further motivating the study of the United States' experience.

This paper estimates the causal effect of an exogenous bank credit card supply increase on outcomes for retail firms, and provides a theoretical framework to decompose changes in profits into changes in markups and changes in costs, where markups summarize the competitive price-setting game between firms. In particular, the net effect of firms' adoption of new credit technology on industry profits can be decomposed into two forces. Firstly, bank credit may be much cheaper to administer than store credit. To the extent that the

resulting surplus is not perfectly captured by banks (as swipe fees charged to merchants) nor consumers (as lower prices), retail firms benefit from this mechanism. Secondly, bank credit cards may remove interoperability frictions associated with store-specific credit cards which tie consumers to specific stores. This intensifies competition between firms, lowering their markups and reducing their profits.

I examine the responses of firm outcomes including lending to customers, profitability, entry, exit, and sales to distinguish these two mechanisms, and find much stronger support for cost-reduction than interoperability. This implies that bank card payment network growth (specifically, in the United States from 1978 to 1983) should be considered a true technological improvement, rather than a transfer from the retail sector to the financial sector. At the most basic level, a bank can extend credit more cheaply than the collection of stores the customer shops at because the bank needs only to screen the customer once, and send one single monthly bill, rather than repeating these activities across all stores. At a more nuanced level, a bank has a large balance sheet and a diverse portfolio of assets that can absorb losses from credit card lending due to adverse economic shocks, while a retailer who experiences a negative local economic shock will face unpaid receivables and declining revenue simultaneously, implying a high price of risk for the retailer.

My identification strategy relies on the unexpected Supreme Court ruling *Marquette* in 1978, which affected states differently based on their pre-existing regulation. The Supreme Court ruled that banks may lend across state lines at the usury (maximum legal interest rate) cap of the banks' headquartered state, *not* the state of residence of the borrower. As discussed in Zinman (2003), Chatterji and Seamans (2012), and Herkenhoff and Raveendranathan (2020), Nocera (2013), and Hyman (2012a), this created a national credit card market at uncapped interest rates nationwide, which was especially impactful in the context of high inflation at the time, which often exceeded state usury limits. Thus, states with *ex-ante* tight usury limits experienced unexpectedly greater growth in bank credit card access relative to states with lax limits. I assume that high- and low-limit states would have progressed on parallel trends absent *Marquette* and defend this assumption in Section 5.4.

To evaluate the effects of bank credit card systems on firms' profits, I construct a novel microdata panel of retailers down the local establishment level by combining firm-level accounting variables from Compustat with Dun & Bradstreet's establishment-level sales data. I then supplement this panel with new hand-collected data on firm acceptance of bank credit cards built using publicly available city directory scans from the US Telephone Directories Yellow Pages collection hosted by the Library of Congress. Using this new panel data, I document several new facts. Firstly, the growth of bank credit card usage spurred by *Marquette* corresponded to a 20% decline in firms' balance sheet receivables, indicating that bank credit was being substituted for store credit. Secondly, I find aggregate positive effects on firm profitability using two measures of economic profits: net entry and accounting profits. The superior data coverage and revealed-preference nature of net entry leads me to prefer it as a measure of true economic profits, and I find a robust positive effect of about 4% on net entry in the clothing retail sector, which I also show for the first time was the dominant use case for both store and bank credit cards in the 1970s. Finally, to tease apart how credit card acceptance and usage affects the dynamics of competition between retailers, I compare the sales growth rates of firms across states which differ by credit card growth (instrumented by pre-*Marquette* regulation), and the triple difference by whether firms were already early-adopters of bank credit cards. I use these estimates as inputs into a structural model in the style of Berry (1994) to separately identify the effects of lower costs and increased competition on the bank card network. I model credit card networks as a dimension of product differentiation between firms, which can also directly affect their cost. I estimate that there is a modest effect of bank credit card networks on competition causing compressed markups, but that this effect is overwhelmed (in the sense that firm profits increase) by lower cost. I estimate the cost reduction to be about 2.7% of marginal cost for accepting firms, comparable to the 4.5% increase in labor productivity in the retail sector caused by barcode scanners as estimated by Basker (2012). I further decompose the effect of *Marquette* into price and cost using the estimated model. I find that the replacement of store credit by bank credit cards due to *Marquette* reduced the average cost in the aggregate retail industry by 57bp, and

further reduced markups by 9bp, for a total price reduction to consumers of 66bp.

Previous economic literature analyzing merchant credit, which I use to mean integration of sales and consumer credit supply within a single firm, has largely focused on settings such as auto lending, where vertical integration of production, sales, and financing is common (Adams et al. (2009), Benetton et al. (2022), Banner (1958)). One key question economists have sought to answer is the causes and consequences of this vertical integration, and various explanations have been proposed including price discrimination (Brennan et al. (1988)), flexibility to respond to financial shocks by adjusting screening criteria (Benetton et al. (2022)), asymmetric information (Stroebel (2016)), and Coase commitment (Murfin and Pratt (2019)). I propose and evaluate another mechanism, which is that bundling credit with sales is a way for firms to capture a consumer base, with the corollary that interoperable credit cards will reduce markups. I compare this effect to that of the bank simply having superior technology for screening, collections, and risk management, finding the latter to be quantiatively more important for explaining the data.

One reason why this is an interesting setting, and different from other markets, is that high merchant acceptance of bank's cards does not imply that merchants are better off from the existence of the bank's network. Merchants complain fiercely about paying high fees to bank credit card networks, but feel coerced into accepting them because exclusion from the network will hurt their sales. Bank networks rebut these accusations by claiming to reduce merchant's costs, which is corroborated by historical accounts and time series trends. One reason why this is important is because if networks primarily gain acceptance by reallocating demand between merchants, then merchants' interests as a bloc will be unaligned with those of banks and consumers. If it is a efficiency improvement neutral with respect to competition, however, then all parties' interests are aligned with respect to the question of whether to move from a store-funded to a bank-funded consumer credit system.

I also contribute to a large literature on the economic effects of consumer financial regulation, including the CARD act (Agarwal et al. (2015), Nelson (2017)) and interest rate caps (Cuesta and Sepulveda (2021), Maimbo and Henriquez Gallegos (2014), Glaeser and

Scheinkman (1998), Chatterji and Seamans (2012), Zinman (2003), Knittel and Stango (2003)), the latter being one of the most popular forms of economic regulation around the world, and indeed throughout human history. I find a novel positive consequence of deregulated interstate banking – the offloading of consumer credit from small merchant's balance sheets onto those of national banks.[1]

This paper is also related to the large and growing literature on the industrial organization of payments including Rochet and Tirole (2003), Edelman and Wright (2015), Wang (2023), Brunnermeier et al. (2023), Agarwal et al. (2020), Huynh et al. (2022), Arango et al. (2015), Evans and Schmalensee (2004). These models typically seek to explain, e.g., the structure and levels of network fees to each side of a multi-sided market in terms of price elasticities. My model is agnostic to the forces determining network fees, and takes as given the outcome of the network game bargaining process, resulting in a cost savings term inclusive of merchant fees paid to the network. These models typically assume that the network is a middleman who garners excessive use of the network through the differentiated fee structure leading to deadweight loss. I take a more reduced-form, aggregate perspective to quantitatively compare such frictions to the benefits of technological improvement in the credit card market, finding the latter to be first order.

At an even higher level, this paper relates to literature on credit expansions including Beck et al. (2008), Beck et al. (2010), Kroszner and Strahan (2014), Jayaratne and Strahan (1998), Kroszner and Strahan (1999), Chong (1991), Schularick and Taylor (2012), Mian and Sufi (2014), Mian et al. (2020), Julia Fonseca and Jialan Wang (n.d.), Herkenhoff et al. (2021), and Müller and Verner (2023). Credit expansions are typically viewed with macroprudential suspicion as a tradeoff between economic growth and risk of recession. My contribution is to evaluate the source and technology of credit supply, rather than the one-dimensional tradeoff of more vs less credit. I argue that credit products offered by specialized and diversified banks offer a superior technology, in terms of cost, to store credit, and are a win-win for firms and

[1] There may of course be other consequences of this change from a macroprudential standpoint – see Beck et al. (2010) and Chong (1991), Del Negro (n.d.), and Nakamura and Steinsson (2014) for macroeconomic frameworks for studying financial integration, a topic beyond the scope of this paper.

consumers.

This paper is organized as follows. Section 3 documents the aggregate trend of the replacement of store credit with bank credit cards. Section 4 presents a theoretical framework to deliver a decomposition of profits into a markup term and a cost reduction term. In particular, this framework is scale-free, nests any model of price-setting conduct, and does not require detailed product market data which is not feasible to collect or analyze at the scale of the aggregate retail sector. A main takeaway is that intensified competition due to interoperability harms merchants, whereas cost reductions help them. Section 5 describes the empirical strategy by which I identify a causal effect of bank credit card supply on retail firms' credit supply and real outcome, and provides justification for the validity of my identifying assumption of parallel trends. Section 6 presents the results of difference-in-difference analyses estimating the degree of substitution between bank-funded and store-funded credit, finding a large crowd-out effect. Section 7 conducts a battery of empirical tests pitting the two distinct mechanisms of cost reduction and interoperability against each other and, taken as a whole, find strong evidence for cost-reduction and little evidence that interoperability is a first-order concern. I conclude in Section 10.

2 Historical Context

Anecdotal evidence from historians suggests that large retail businesses fought against the widespread use of bank credit cards due to fear that interoperability would harm their ability to capture customers. Sears initially did not accept the Bank Americard, as it would cannibalise their own credit card business – they "saw the bank's entry into the credit card business as a form of poaching" (Nocera (2013)). Large retailers especially staunchly resisted accepting bank credit cards. In 1971, the head of J.C. Penney said that "the telephone rings almost every day, with bankers trying to talk us into changing our policy [of not allowing bank cards]. Our answer is always no, but admittedly we're in a better position than most retailers to resist the pressure." (Hyman (2012a)) But while legacy retailers defended their positions

by leveraging their advantage in providing credit, widespread bank card access among consumers, untethered by retailers, enabled new entrants such as Walmart to compete on prices using leaner business models. Anecdotally, "[Walmart founder] Sam Walton had stores and merchandise, but he did not have the capital or expertise to offer credit. The store's low prices reflected the larger lack of service. No free gift wrapping. No complimentary delivery. No money-losing charge accounts. Thought the credit practices didn't win customers, the prices did." Hyman (2012b) These pieces of historical evidence encapsulate the economic forces of networks that I explore in this model: lower costs, but also less ability to capture consumers by excluding competitors from their lending products.

My main analysis focuses on the effect of the deregulation of inter-state lending on the credit supply of retail firms and their subsequent outcomes. According to historical sources, the first-order effect of this deregulation was to allow banks headquartered in states with friendly regulation to lend nationwide, crucially, unencumbered by usury regulation. Laws controlling the rate of interest on loans ("usury rates") are some of the oldest most commonly found forms of economic regulation around the world, by both governments and religous authorities (Glaeser and Scheinkman (1998)). As of 1975, every state except New Hampshire limited the interest that could be charged on personal lending, including credit cards, often below the prevailing rate of inflation (Walter (1998)). As a result, bank credit card lending was a small, unprofitable market.

In 1978, Marquette Bank in Minnesota sued the First National Bank of Omaha, alleging that the interest rate of 18% charged on the Omaha bank's credit cards violated Minnesota's usury limit of 12%, as the First National Bank of Omaha was soliciting credit card applications in Minnesota. The Supreme Court, in a unanimous decision, ruled that since residents of Minnesota could legally go to Nebraska and borrow there, residents of Minnesota "should not be penalized for the convenience of modern mail", in the words of Justice William Brennan (See, e.g, Hyman (2012a)). Bankers, and state legislatures, quickly realized that it was open season for a regulatory race to the bottom. By 1983, 14 states had removed their usury limit. Citibank had moved their formal incorporation to South Dakota, Bank of America to

Delaware, and banks mailed high-interest credit cards to millions of households nationwide. This created a natural experiment: a patchwork of heterogeneously-regulated states abruptly became one national market. In particular, states with restrictive usury laws ex-ante saw a very large change in allowable interest rates and credit supply, relative to states with less restrictive pre-existing regulation.

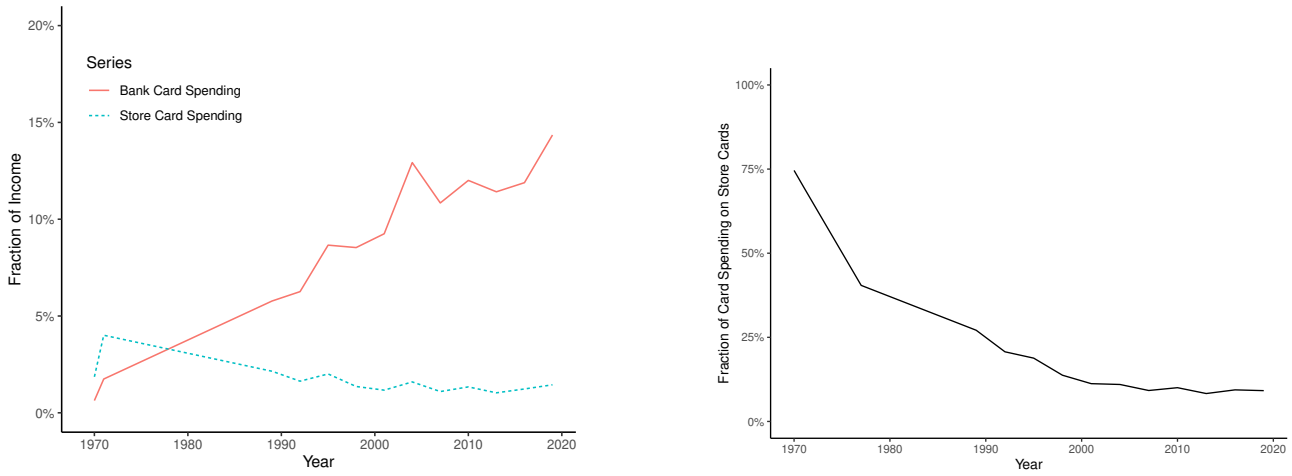
3 Documenting the Transition

This study is the first, to my knowledge, to quantitatively document the transition in consumer credit supply in the United States from merchant lending to bank lending. Since the earliest Survey of Consumer Finance which inquired about revolving credit in 1949, Americans have borrowed from stores to finance even non-durable purchases. In 1949, 35% of households used store charge accounts, 57% of whom carried a balance between months, i.e. used it as a revolving credit line. The average revolving balance was $58, which at the time, and for that population, was a significant amount of money: nearly 10% of median annual income. In 1958, banks began to enter the revolving credit market, starting with Bank of America, which at the time was restricted by interstate banking law to operate only in California. Bank of America issued 50,000 credit cards to residents of Fresno, California, while simultaneously canvassing local businesses to ensure broad acceptance of the cards among merchants.

Figure 1 shows the changing composition of consumers' revolving credit over time. As can be seen the relative amount of credit card spending financed by stores (as opposed to banks[2]), has been steadily declining since 1970. From 1970-1971, nearly 75% of total credit card spending was on store credit cards – as of 2019, that figure is less than 10%. Bank credit cards proceeded to proliferate throughout the 1960s, and in 1970 the SCF added questions about credit cards to the survey for the first time, prefacing the question with "There is a lot of talk about credit cards these days." Since the SCF tracks store credit borrowing in terms of balances, but credit cards in terms of spending amounts, I take the most conservative possible

[2] Following the SCF, I use "banks" to include all financial institutions, not necessarily those with "banking licenses" per se

Figure 1: Credit Card Spending on Bank vs. Store Cards, 1970-2019



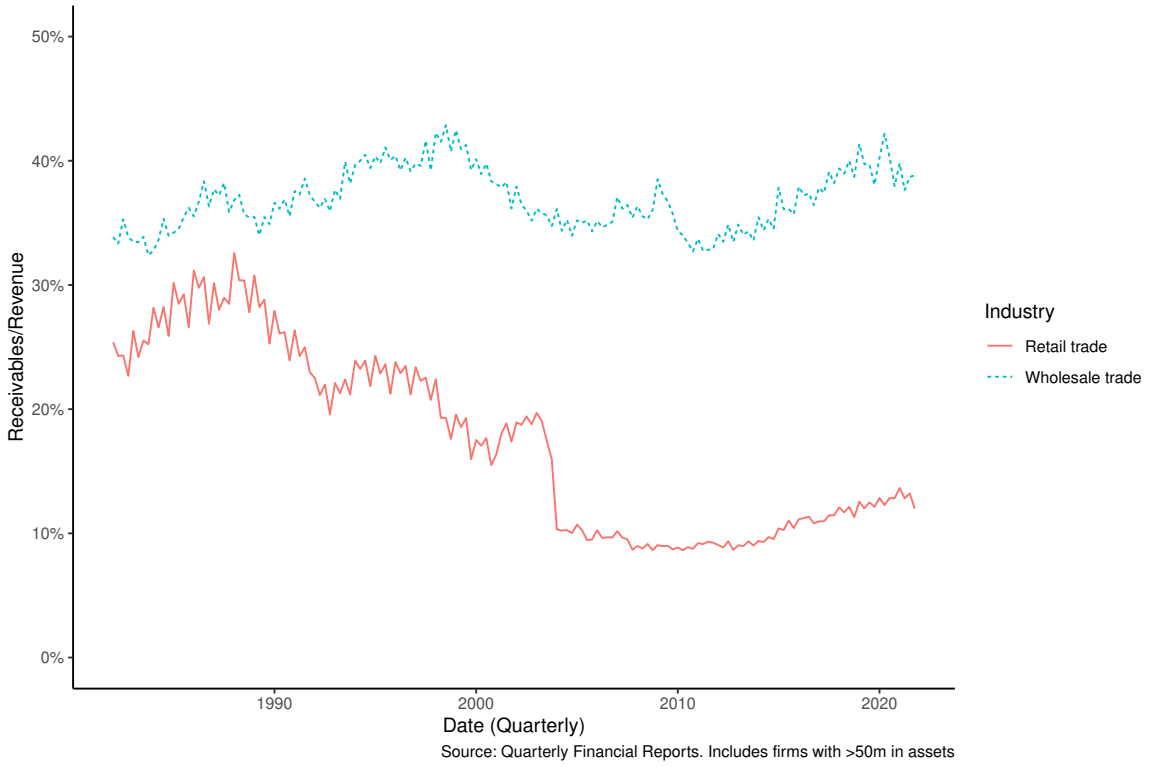
Notes: The figure shows the change in composition of credit card supply since 1970 (the first year in which the SCF inquired about credit cards) normalized by nominal income. "Store Cards" are cards that are only usable at specific stores, i.e. non-interoperable. Interoperable cards with store-specific branding are bank cards. Averages are weighted by SCF sample weights.

approach and only compare store credit card spending to bank credit card spending starting in 1970; the fraction of credit extended by stores early in the sample would be higher if I were to additionally attempt to estimate the flow of spending using store credit.

The transition from store to bank consumer credit also shows up on the aggregate balance sheet of the retail sector. The Census publishes quarterly financial reports based on all firms nationwide with over $50 million in assets, which has tracked receivables in a consistent way since 1980. Figure 2 shows the average quarterly ratio of outstanding receivables against quarterly revenue. In "Retail Trade", which are firms who sell directly to consumers, the fraction of receivables to revenue has fallen from 30% to just over 10% by the mid-2000s. To show that this is plausibly due to the proliferation of bank credit cards among consumers, and not a general intermediation of receivables in the economy, I plot the same series for the "Wholesale Trade" industry which operates with similar economics to retail trade, but sells to firms rather than directly to consumers – this series is relatively flat at nearly 40%.[3]

[3] Note that while the bulk of the decline in the time series of retail lending nationwide occurs from 1990 to 2005, this paper studies a cross-sectional change in retail lending occurring around 1977 to 1986 as described in

Figure 2: Receivables for Retail and Wholesale Firms

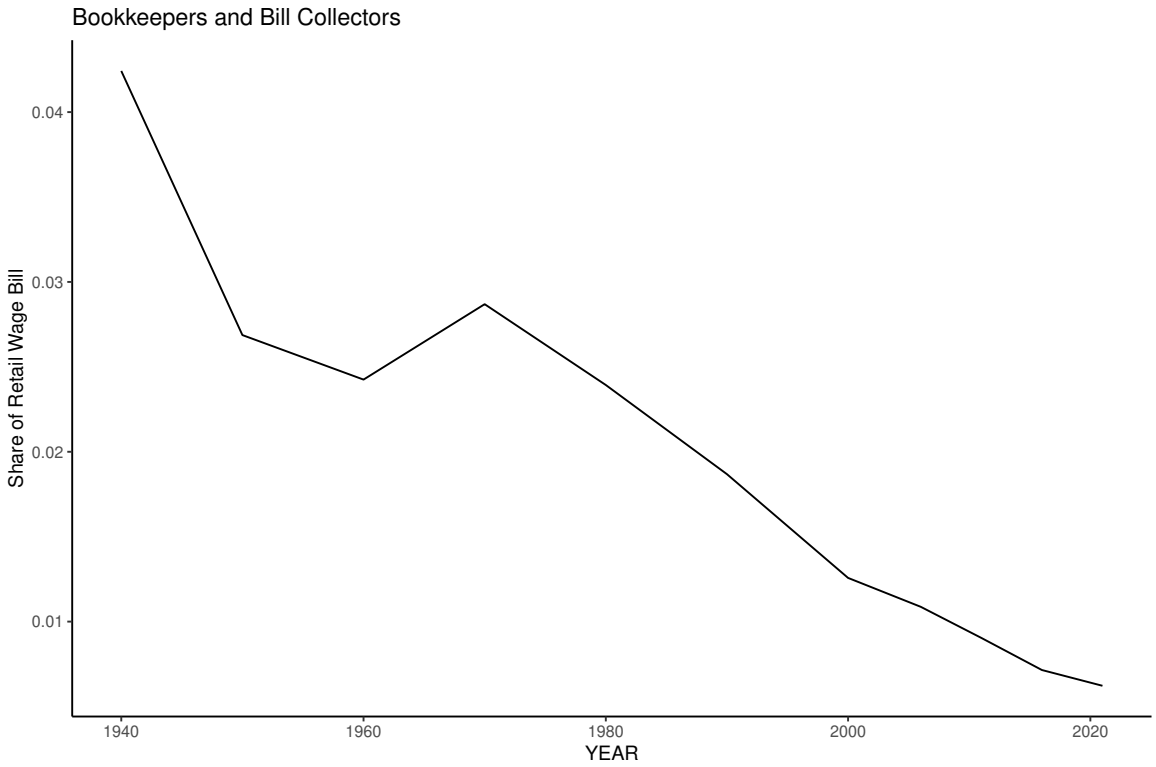


Historical sources also emphasize the importance of the high labor costs of store credit; the merchant interviewed in Nocera (2013) had three full-time employees dedicated to invoicing. The transition away from store credit does in fact show up in the aggregate wage bill of the retail sector – Figure 3 uses census data broken down by wage and industry to show the dramatic decline of two occupations which supported the administration and collection of retail firms' receivables: bookkeepers and bill collectors. Retail firms once spent 4% of their wage bill on workers in these two job roles which has declined by a factor of more than 10. While a decline has also been observed in the Wholesale industry of about 63% since 1960, the decline over that same time period in the retail sector has been more pronounced at 78%.

I conclude this section by considering the international cross-section of countries by composition of consumer credit. This is important because other countries may wish to learn

Section 5 which I argue is causally identified. I therefore stress that the interpretation of the causal evidence is about a *relative* decrease in store credit borrowing in states where bank credit cards expanded faster, at a time when, nationwide, store credit was still a large and growing industry.

Figure 3



Notes: In each year, the denominator is the sum of wages of employees whose industry of employment (1950-standardized codes: IND1950 in IPUMS) is between 636 and 699 (retail trade). The numerator is the sum of wages of such employees whose occupation (1950-standardized codes: OCC1950 in IPUMS) is 320 or 321 (bookkeepers and bill collectors).

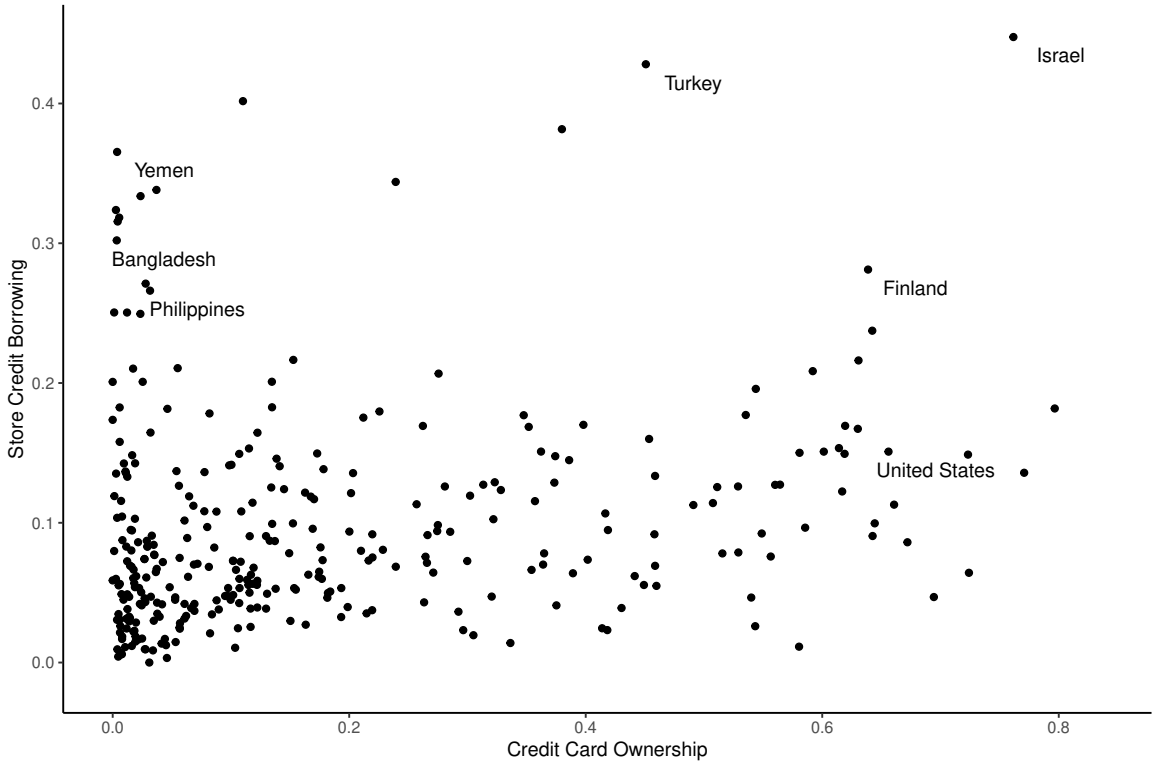
from the experience of the United States when considering the regulation of consumer finance in their own countries. Using the World Bank Findex (See Appendix A for details), I create Figure 4 which shows the distribution of countries by credit card ownership and store credit access with selected annotations. The United States is at the right tail of credit card usage with credit card ownership being more than 4x higher than store credit usage. Many prominent developing countries have much higher rates of store credit borrowing and almost all have much lower usage of credit cards. Therefore, while it may not be the case in the United States today that the cost and risk to businesses of issuing store credit to their customers is first-order, as bank credit cards have come to dominate in the equilibrium which exists in the United States today, the findings herein may be of importance for developing economies weighing the costs and benefits of expanding the consumer credit supply of banks. While Figure 4 does not show an unconditional negative correlation between store credit and bank credit card borrowing as one might expect, this is due to large cross-sectional differences across countries in overall financial development and consumer credit demand. No causal claims can be made from this exercise, but it is instructive to know that the levels of credit card ownership across countries vary from 0 to 80%, and store credit usage from 0 to 45%, and that countries exist at all four extremes (high/high, high/low, etc.).

4 Theoretical Framework

In this section I give a decomposition based on accounting identities to pose the question precisely and sharpen the measurement exercise. In particular, I decompose the change in firm profits into a term due to changes in costs, and a term due to changes in markups. The main theoretical result is that any change in the aggregate profits of the retail industry can be decomposed into a change in markups and a change in costs, appropriately scaled.

Estimating changes in marginal costs and markups separately is challenging, especially in the absence of per-unit price data. I therefore consider the problem in a very general way, without assumptions on the functional form of demand. The model only considers aggregate

Figure 4: Credit Cards and Store Credit Internationally, 2011-2017



Notes: The figure shows the fraction of individuals with access to credit cards (x-axis) and store credit accounts (y-axis) for 329 country-years in the World Bank Global Findex (Demirgüç-Kunt et al. (2021)). Selected annotations are the author's.

revenues ($P \times Q$) and aggregate costs ($C \times Q$), a highly attractive feature when working with data aggregated at the level of firms and industries, rather than product-level data with detailed product characteristics and prices with strong assumptions about the patterns of substitution between a large number of products at the scale of the entire retail sector.

Instead of assuming a specific model of rebates and preferences across payment methods, (as in, e.g., Rochet and Tirole (2003), Edelman and Wright (2015) and Wang (2023)) I assume that the introduction of new payment technology moves from one equilibrium denoted by t to a new equilibrium denoted by $t+1$ where the levels of costs and competition (markups) are allowed to vary arbitrarily. Retailers' marginal cost, net of all fees and risks, is denoted C_t and the outcome of strategic interactions and price-setting behavior between firms is summarised by the percentage markup μ_t.

This fixes ideas and clearly defines the quantities that must be estimated in Section 7. While the evidence in Section 6 is clear that bank cards outcompeted store cards, it is not clear whether this transition benefitted or harmed firms in the retail industry. The two-sided market literature (see, e.g., Rochet and Tirole (2003), Bourguignon et al. (2014), and Wang (2023)) emphasizes that a credit card network need not benefit merchants (the less price-elastic side of the market) even when all merchants choose to join voluntarily, due to the negative externality imposed by one firm on another when it joins the network and steals business from its neighbor. The model presented herein will formalize this intuition in a very general way and suggest specific predictions which can be taken to the data to determine which of these two major effects, interoperability or cost-reduction, dominates.

4.1 Decomposition

Let the marginal cost of a retailer be C_t. Define μ to be the markup above marginal cost such that $P_t = (1+\mu_t)\, C_t$. "Financial technology" may arbitrarily change C_t and μ_t, e.g. by interoperability of credit cards reducing consumer frictions to substituting between merchants. $Q(P)$ is an arbitrary demand function assumed to be constant over time. The following

accounting identity holds, firm-by-firm and in the aggregate:

$$\underbrace{\frac{(P_{t+1}-C_{t+1})\,Q_{t+1}-(P_t-C_t)\,Q_t}{P_tQ_t}}_{\Delta\text{Profit rate}} = \underbrace{\mu_{t+1}}_{\text{New markup}} \times \underbrace{\frac{P_{t+1}Q_{t+1}}{P_tQ_t}}_{\Delta\text{Revenue}} - \underbrace{\mu_t}_{\text{Old markup}} \tag{1}$$

Let $\Delta\mu$, ΔC, and ΔRevenue represent the changes in μ, C, and PQ respectively; $\Delta\mu = \mu_{t+1} - \mu_t$, $\Delta C = \frac{C_{t+1}}{C_t} - 1$, and $\Delta\text{Revenue} = \frac{P_{t+1}Q_{t+1}}{P_tQ_t} - 1$. Then linearizing Equation 1 to a first-order approximation around $\Delta\text{Revenue} = 0$ and $\Delta\mu = 0$ gives the following decomposition of profit changes into markup and revenue changes:

$$\Delta\text{Profit rate} \approx \mu_t \Delta\text{Revenue} + \Delta\mu \tag{2}$$

In order to decompose this further into explicit changes in cost, let the market equilibrium elasticity of demand be σ such that $\frac{\partial Q}{\partial P}\frac{P}{Q} = -\sigma < 0$. Crucially, I make no assumption about the relationship between the market-level elasticity of aggregate demand σ and the price-setting behavior of any one firm which is summarized by the markup μ. Then we can rewrite the change in revenue in terms of change in cost, obtaining:

$$\Delta\text{Profit rate} \approx -(\sigma - 1)\,\mu_t \Delta C + \Delta\mu \tag{3}$$

This holds firm-by-firm as well as in the aggregate. The main insight from this decomposition is that when a technology changes both markups and costs, the effect on profits is a horse race between the two. Holding markups fixed, the only other variable in the model that can exist to explain a profit increase is therefore a cost decrease. Crucially, this decomposition implies that the change in revenue can be interpreted separately from the change in markups without any product-level information on unit prices and quantities. This decomposition is useful because the changes in dollar profits, dollar revenues and dollar accounting costs can be measured without needing to take a stand on substitution patterns between an extremely large variety of goods on the scale of the entire retail sector. Therefore every term in this composition can be directly calculated from accounting data for firms where it is available.

Dollar profits can also be proxied for by net entry (which is exactly true in, e.g., Hopenhayn (1992) and Melitz (2003)) when accounting data is not available, as I do in Section 7.1.

A limitation of this very general framework is that without any assumptions imposed on the demand function, it does not imply any particular quantitative mapping from a change in costs to a change in revenues. Backing out a quantitative estimate of costs requires further assumptions, an exercise which I perform in Section 8, estimating a cost reduction of 2.7%.

5 Empirical Strategy

5.1 The Unexpected Deregulation of Usury Limits

To estimate the effect of lending technology on store profits and store markups requires an instrument that satisfies an exclusion restriction, namely that it not affect store profits or markups by any channel other than via its effects on lending technology. I do this by examining a narrow regulatory shock which only affected the supply of consumer credit cards, not other forms of credit, was not anticipated, and was a shock to the cross section of entire markets, in this case states. As discussed in Section 3, the *Marquette* decision by the US Supreme Court in 1978 provides such an ideal shock.

Zinman (2003) shows that previously-strict states saw a 4pp increase in credit card holding relative to previously-lax states between 1977 and 1983. Following Zinman (2003), I define states as "treated" if the 1977 usury rate limit was less than 18%, which was the most common prevailing usury rate limit at the time. "Treated" states are therefore Arkansas, Connecticut, Hawaii, Minnesota, New Jersey, Oregon, Pennsylvania, South Dakota, and Washington. I extend this work by showing the downstream consequences of credit card access on real economic variables in the resulting equilibrium.

I choose not to exploit variation in other state-level regulations, such as restrictions on intra- or inter-state branching which were gradually removed by states generally throughout the 1980s.The objective of this paper is to narrowly identify the causal effect of consumer

credit cards, separately from business lending and other forms of household lending such as mortgage and auto debt. Previous studies from Jayaratne and Strahan (1998) and Mian et al. (2020) have exploited the pattern of state-level deregulation of intra-state and inter-state branching restrictions to examine the macroeconomic effect of greater credit supply for households and businesses alike. I complement this literature by narrowly identifying the causal effects of one type of credit (household credit cards), rather than the macroeconomic effect of credit supply broadly. It is also important to note that state-level deregulation actions are frequently endogenous responses of legislators to industry pressure.

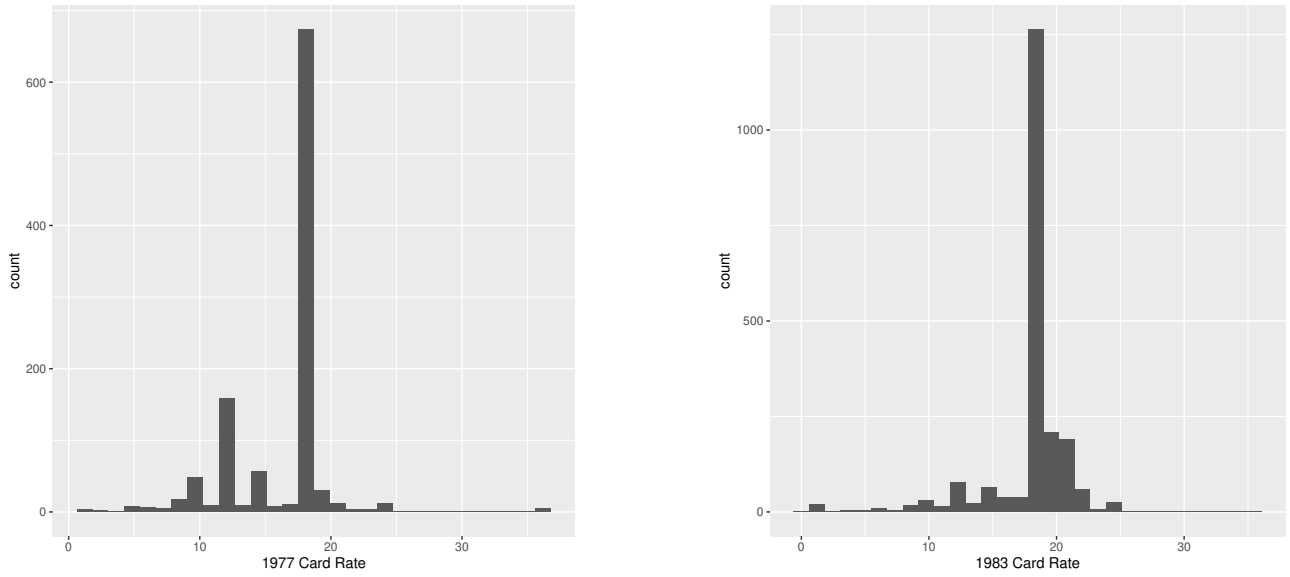
5.2 Relevance of Usury Limits

The most common usury rate in 1977 was 18%. The most direct evidence that this constraint was binding is that credit card interest rates in 1977 displayed extreme bunching at this limit, as shown by Figure 5. Bunching is also observed at 12% and 15%, two other salient usury limits. By 1983, almost no bunching at the extremely strict 12% and 15% limits is observed whatsoever, and a significant mass of credit cards appear above the now-irrelevant 18% cap. Bunching continues to be observed at 18%, which Knittel and Stango (2003) argue is due to collusion at this focal point, but is clearly no longer a binding cap, broadly. It is important to note that even if usury rates do not bind in equilibrium, their existence in the presence of uncertain inflation can still reduce credit supply.

Usury regulation was especially potent due to the prevalence of inflation at the time. In the U.S. today, personal loan interest rate ceilings are often set at 36%. In the 1970s and 80s, inflation and the federal funds rate reached as high as 17%, higher than the usury rate in any of the states I consider "treated". Figure 6 shows the time series of state average usury rates, compared to the rate of inflation and federal funds. We can be highly confident, therefore, that the effect of *Marquette* to deregulate these usury limits was material.

One might ask, then, why bank credit cards did not proliferate in the 1960s, when inflation was much lower. To a first order, the answer is that they did, but from a baseline of zero

Figure 5: Changes in bunching at usury rates



Notes: The figure shows the empirical distribution of bank credit card interest rates in the 1977 and 1983 Surveys of Consumer Finance. Since state-level identifiers are not available in 1977, only the nationwide distributions are shown. The most popular usury rates in 1977 were 12%, 15%, and 18%. Usury rates were effectively abolished nationwide in 1978.

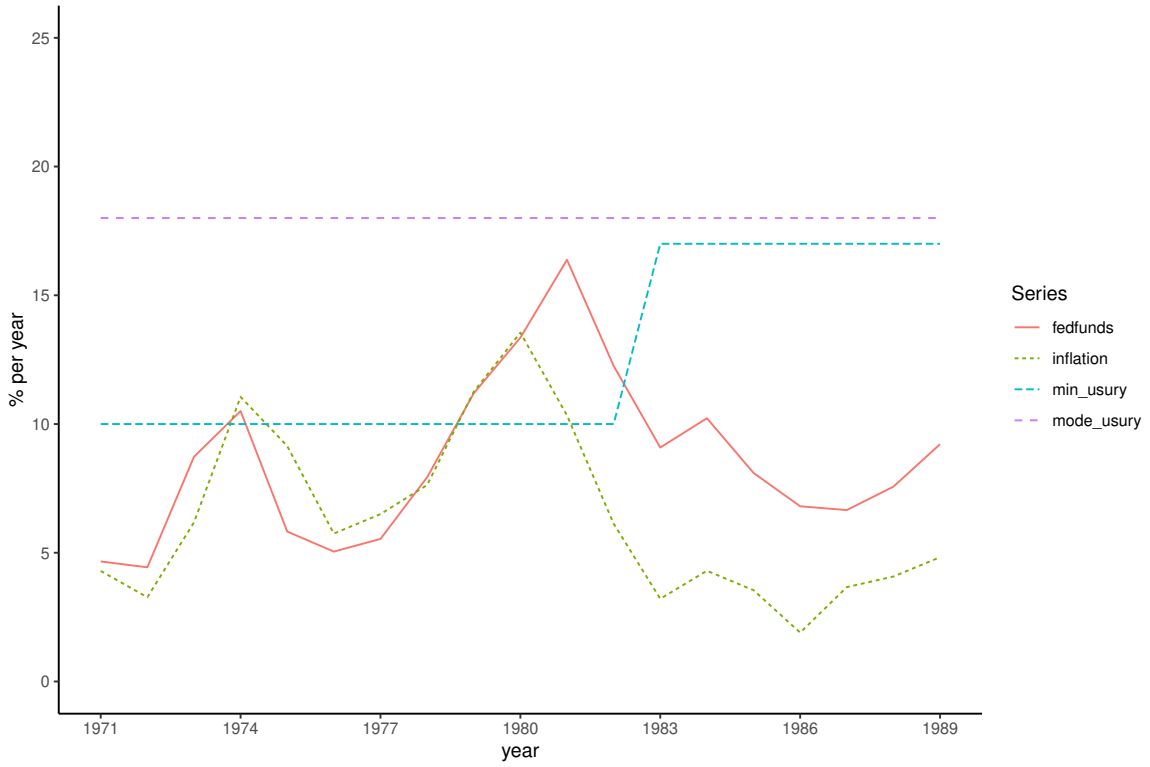
and facing significant inertia associated with the implementation of any new technology. Bank credit cards were indeed first introduced in the low-inflation environment of 1958-1959 in California and New York, and grew to the point of generating regulatory suspicion by 1969.[4] But their growth was hampered by the technological challenge of controlling fraud and authorizing large purchases in real-time. Indeed, it was not until 1971 that the first bank digital information system was able to connect bank branches to make lending decisions in real time.[5]

Figure 7 shows the growth in total credit card lending in the United States scaled by nominal GDP, as well as the fraction of such lending originating in states without usury limits as of 1982. Credit card lending was barely $50 billion in 1976, and grew to $500 billion by 1990. Prior to 1982, less than 20% of credit card lending originated in no-limit states – by 1988 this

[4] See "Chase Bank Lists Credit Plan Gain" (1959) and "Law to Curb Unsought Credit Cards Foreseen" (1969), Appendix E

[5] Birmingham Trust National Bank: https://www.abandonedalabama.com/birmingham-trust-national-bank/

Figure 6: Usury Rates and Inflation, 1970-1990

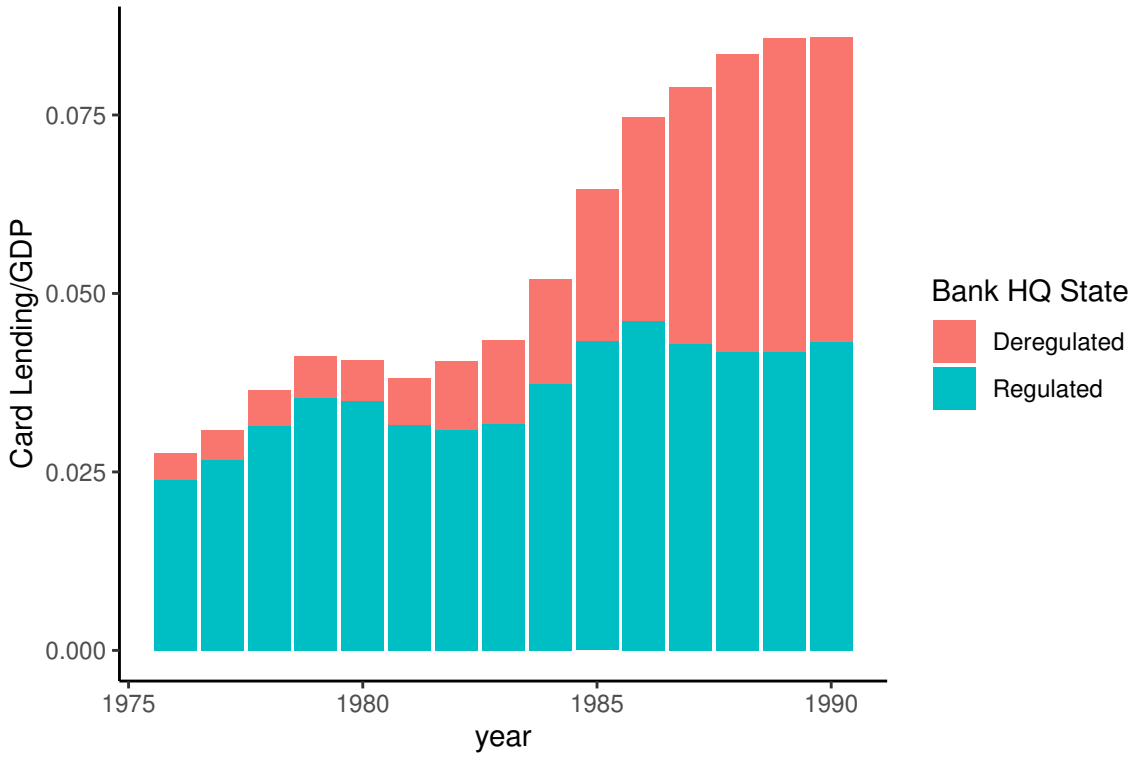


Notes: The figure shows the timing of state-level usury deregulation in response to *Marquette* in 1978, alongside the inflation and federal funds rates, a lower bound of banks' marginal cost of funds.

fraction had grown to over 50%. The growth of credit card lending also displays a notable kink after the deregulation of state-level usury limits, suggesting that usury deregulation played an important part in the rapid growth of credit card lending during the 1980s. In aggregate, the quantity of credit card lending scaled by nominal GDP more than tripled during this period, and almost all of the growth can be attributed to banks headquartered in deregulated states.

Importantly, I do not argue that this particular evidence is itself informative about the causal effects of bank credit cards on retail firms. The reason is that Call Reports data is aggregated by the location of the lending bank, not the customer who borrows. These locations may not be the same, and indeed the content of the unexpected regulatory shock was to enable inter-state lending. Therefore I do not hypothesize that banks located in states with strict usury rates in 1977 would increase their credit card lending in response to *Marquette*, but

Figure 7: Credit Card Growth



Notes: The figure shows the aggregate growth in credit card lending by banks in the United States as recorded in the Call Reports. Deregulated states are those who abolished usury limits by 1982: Arizona, Delaware, Illinois, Idaho, Montana, Nevada, New Hampshire, New Jersey, New Mexico, Oregon, South Dakota, Utah, and Wisconsin. Arizona removed its usury limit in 1981 and New Hampshire had no limit as of at least 1971; each other such state removed its usury limit in 1982.

rather that banks located in high-limit or no-limit states would increase credit card lending across state borders to consumers in states in which tight usury limits still bind local banks. This particular evidence is important for establishing the relevance of the shock, but is not in itself useful for identifying its causal effect. This evidence is also useful to establish the time window in which the financial system re-optimized in response to *Marquette*, justifying my decision to focus mainly on changes from 1977 to 1983.

Another point which is crucial to the relevance of the instrument is that usury regulation disproportionately held back bank lending relative to store lending. This is because merchants have historically always been able to get around usury regulation by charging a different cash vs. credit price, as well as by using credit to drive sales even if lending itself is unprofitable.

A bank which loses money on lending will not lend, whereas a merchant may choose to take losses on credit in order to sell a high-markup product. For this to be true it is critical that credit is a loss-leader for products in the store credit card market. To show this, I compare credit card interest rates by lender in Figure A4. I find that a large fraction of almost 30% of store credit cards carry zero interest, compared to only 5% of bank credit cards, suggesting that stores subsidize consumer credit, presumably in order to drive sales. This is not undone by differences in fees (which are similar between the two card types (Bureau (2022)), or compensation for greater bank card risk (store credit cards have *higher* charge-off rates (Bureau (2019)). The distributions of interest rates conditional on being positive are similar between the two types of lender. Existing studies of vertical integration between manufacturing, sales, and consumer finance have noted that captive lenders may charge higher or lower interest rates than standalone lenders. When external finance is scarce, captive lenders may offer cheap credit as a "competitive weapon" to increase their market share vis-a-vis smaller competitors (Banner (1958)). Indeed, General Motors has faced regulatory scrutiny for the anticompetitive effects caused by its ownership of General Motors Acceptance Corporation, which exclusively financed purchases of General Motors vehicles.[6] Alternatively, captive finance lenders may offer higher rates as compensation for higher risk, if they find it optimal to target segments of the market where the parent manufacturer has larger market power (generally the low-credit-quality segment (Benetton et al. (2022)). Captive finance companies may also have asymmetric information about credit quality and charge lower rates for that reason (Stroebel (2016)). In the setting of U.S. credit card lending, the evidence from Bureau (2019) that store cards have higher risk, and Figure A4 that they charge lower rates, the competitive story is most consistent with the evidence: stores offer credit to consumers in order to close sales with customers who would choose not to purchase if only cash were accepted.

[6] Emich Motors Corporation and U. S. Acceptance Corporation v. General Motors Corporation, 229 F.2d 714, 1956

5.3 Main Estimating Equations

My key equations for identifying the causal effect of bank credit card access on economic outcomes are of the form:

$$Y_{it} = \alpha_i + \gamma_t + \beta_{t \neq 1977} \cdot \mathbb{1}\left[ru_{i,1977} < 18\right] + \varepsilon_{it} \tag{4}$$

Where Y_{it} are real outcome variables of interest, α_i are state fixed effects, γ_t are year fixed effects, $\mathbb{1}\left[ru_{i,1977} < 18\right]$ is an indicator equal to one if the state had a usury limit lower than 18% in 1977. ε_{it} are error terms. β_t are the outcomes of interest, which represent causal effects in year t, normalized to 0 in 1977. This design relies on the timing of the shock: as soon as the *Marquette* decision was announced in 1978, the First National Bank of Omaha was immediately able to expand its credit card operations in neighboring Minnesota (a treated state), and others soon followed in other treated states. The sharpness of the timing of this deregulatory shock creates a natural placebo/falsification test of pre-trends, and allows me to naturally compare short-run and long-run effects. The fact that this estimation procedure produces a set of point estimates across time also creates a natural check of the reasonability of the estimates by whether they are relatively smooth over time, a further robustness check.

In the firm-level analysis conducted in Section 6, many firms have sales across multiple treated and untreated states. For such firms, I calculate the "Treated" variable as the sales-weighted average "Treatment" across sales locations. I also include firm fixed effects.

To more narrowly test the hypothesis that any changes are due to bank credit cards displacing store credit cards, I focus on the clothing retail industry. As shown in Table A1, clothing was the predominant use of credit cards in the 1970s. I estimate the following triple-differences specification, where j further disaggregates the data by sub-industry, focusing on β_1, t as the series of outcomes of interest:

$$Y_{ijt} = \alpha_{ij} + \gamma_t + \beta_{1,t\neq 1977} \cdot \mathbb{1}\left[ru_{i,1977} < 18, SIC2_j \in 56xx\right] + \beta_{0,t\neq 1977} \cdot \mathbb{1}\left[ru_{i,1977} < 18\right] + \varepsilon_{ijt} \tag{5}$$

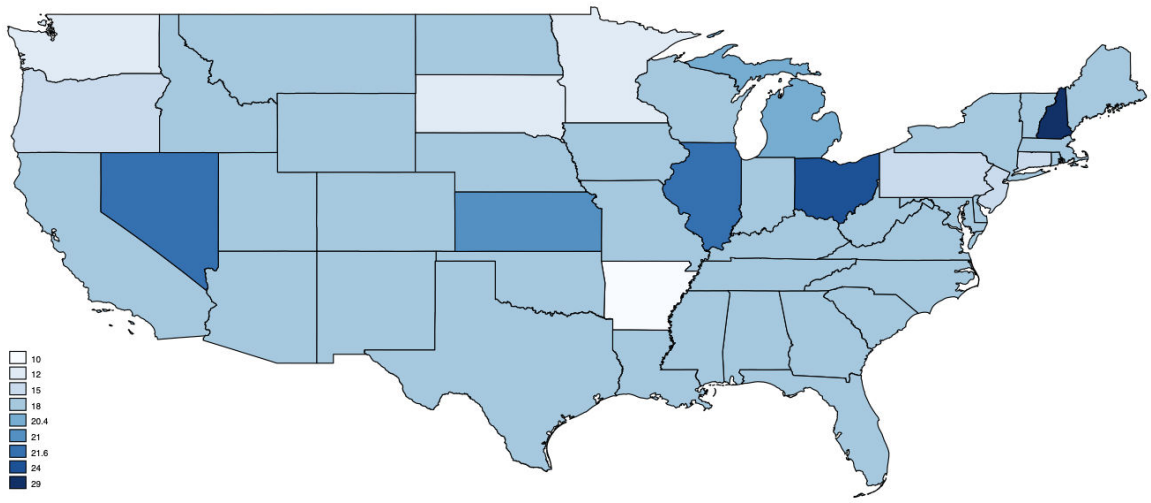
This specification, by design, differences out any general equilibrium effects on either the supply side and demand side. Typically, financial economists believe that access to credit relieves entrepreneurial financial constraints and enables business formation. The assumption that I make in order to identify the effect of credit cards as instruments for transactions, separately from relieving entrepreneurs' budget constraints and changing customers' demand, is that these macroeconomic effects are not systematically different across sub-industries of retail in the same way that industries differ in usage of credit cards – in particular, that the clothing retail industry relied on credit cards at this time uniquely more than other retail sub-industries. This empirical test is therefore more appropriate for testing whether the effect of credit cards depends on whether they are used to transact business, separate from whether they relieve credit constraints: a relief of budget constraints would induce higher consumption on all categories of goods, even on goods where the credit card is not used to transact business, because the overall budget constraint is relaxed. This triple difference is therefore preferable for evaluating the causal effect of interest when sufficient data is available, as it is in the case of net entry.

5.4 Validity of Parallel Trends Assumption

I assume that all relevant outcome variables would have evolved in treated and untreated states in parallel in the absence of the 1978 *Marquette* decision. This subsection provides evidences and arguments supporting this assumption.

Firstly, there was no clear geographic pattern to usury regulation in 1977. Figure 8 shows the usury rate in each state as of 1977. High- and low-usury limit states are roughly equally prevalent in coastal and inland regions, northern and southern regions, and eastern and western regions.

Figure 8: State Usury Rates, 1977



Notes: The figure shows the usury rate (maximum legal interest rate) for consumer lending in each state as of 1977.

Secondly, the state of usury regulations in 1977 was uncorrelated with other measures of subsequent financial deregulation. Mian et al. (2020) calculate an aggregate index of deregulation from 1970-1990 and show that it predicts increases in credit growth generally. The correlation between my binary measure of treatment and the Mian-Sufi-Verner index of deregulation is -0.04, suggesting that any effect due to the effective interest rate deregulation of *Marquette* was orthogonal to any subsequent deregulation decisions on the part of state legislatures. There is also no clear relationship between states which are "treated" from the perspective of household credit card access and states which chose to deregulate their own banks in 1982-1983: only New Jersey, Oregon, and South Dakota had both restrictive usury laws ex-ante in 1977 and also removed their usury limits in 1982-1983.

Another concern one might have is that the Volcker disinflation of the early 1980s might have caused an increase in credit supply in states with lower usury rates, independent of *Marquette* – since usury rates are nominal, lower inflation would disproportionately affect states with low nominal rates. However, given the fact that states in which credit cardholding increases are orthogonal to states in which credit card issuance increases, I conclude that growth in inter-state lending is primarily responsible for this growth. If the cause were

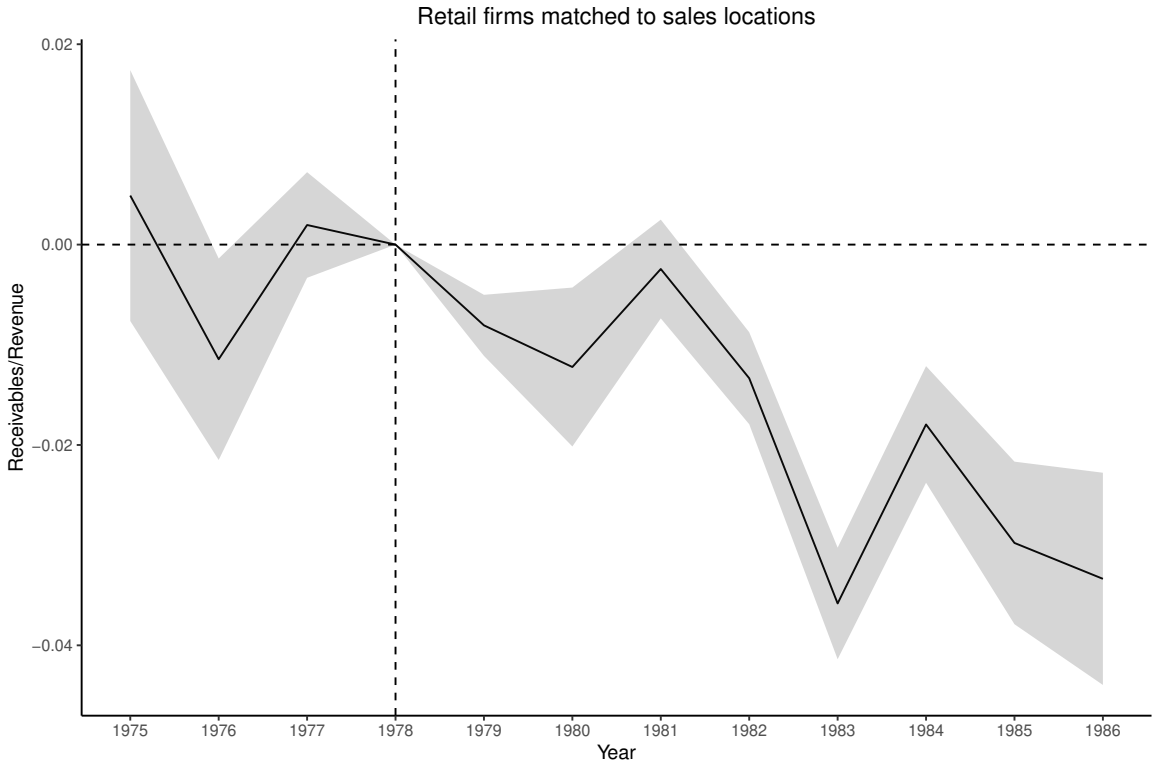
disinflation, we would expect to see banks in low-limit states expanding credit within that state; rather we see an increase in cardholding in affected states financed by banks in other states, exporting their usury limits to affected states as became allowable by *Marquette*.

Finally, in my main difference-in-difference analyses I report the estimated coefficients on the treatment prior to the treatment time, which can be visually inspected for obvious violations of parallel trends.

6 Effect on Store Credit Supply

To estimate the magnitude of the reduction in firm lending, I perform a difference-in-difference analysis using Compustat firms linked to sales locations in Dun & Bradstreet. Firm and year fixed effects are included, so this analysis estimates the relative change in credit extended to customers based on where the firm's sales occur.

Figure 9: Difference-in-Difference of Lending by Stores



Notes: Sample of 195 retail firms based on accounting data from Compustat linked to sales locations in Dun & Bradstreet. 95% confidence intervals are shown in shaded bands. The year of *Marquette*, when bank credit card lending increased more in "Treated" states, is denoted with a dashed vertical line. Default standard errors are shown, and robustness to state-level correlation is analyzed in Appendix D.

As can be seen, after the treatment there is a significant decrease in the amount of credit extended by stores to their customers from a base rate of 20% by about 4% by 1983. This is, if anything, likely to *understate* the effect, because as the historical accounts discussed in Section A emphasize, smaller firms were more likely to benefit from accepting bank cards, and thus engage in this substitution, than were large firms. The bulk of the change is also observed after 1981 – the average coefficient in the first 3 years after the treatment date is 73 basis points, whereas the average coefficient from 1982 through 1986 is 2.5%. This is consistent with the fact that bank credit card lending accelerated most after 1981, as shown by Figure 7, when large banks including Bank of America and Citibank relocated their headquarters to no-limit states.

To estimate the crowd-out that bank credit imposes on store credit, I compare the estimates

of the increase in bank credit to the decrease in store credit. As shown in Figure 1, the levels of spending in 1977 on bank and store cards were almost 1-to-1, meaning that comparisons of their percentages are equivalent to comparisons of their dollar values. The firm-side 1977 to 1983 estimate of a 3.6% (Figure 9) decrease in store credit is directly comparable to the consumer-side 1977 to 1983 estimate of a 5.5% (Table 1), yielding a crowd-out estimate of 3.6/5.5 = 65%.

I rely on estimates produced by Zinman (2003)[7] to calculate the increase in bank credit card supply from the consumer side, and complement them with original estimates from the firm side to estimate the extent to which bank credit crowded out store credit.

Table 1: Growth in Bank Credit Card Access

Dependent Variable:	Bank Card Rate	Has Bank Card	Has Any Credit Card
Variables			
Treat x Post	1.39***	0.055**	0.011
	(0.37)	(0.025)	(0.021)
Fixed-effects			
State	Yes	Yes	Yes
Year	Yes	Yes	Yes
Observations	1,936	6,059	6,059

Standard errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Notes: Selected estimates from Zinman (2003). The estimates compare households by state in the 1977 vs. 1983 SCF. "Treated" states are those with usury limits below 18% in 1977.

As can be seen, bank credit card access increased substantially by 5.5 percentage points in the more-affected states from a mean of 38%, an increase of 14%. Bank card interest rates also increased significantly by 1.4 percentage points from a mean of 16.4%, which is consistent with a binding price cap relieving a supply-side constraint. Interestingly, the fraction of consumers with access to any credit card, store or bank, stayed constant. This is consistent with bank cards substituting for store cards among consumers who had previously used store cards.

[7] These estimates rely on nonpublic SCF state-of-residence data.

7 Effect on Firm Profits

A key takeaway from the model is that the effect of interoperable credit card systems on merchant profits is *ex-ante* uncertain. I therefore estimate the effects of store-to-bank credit substitution using two measures of profitability: accounting profits and net entry. I measure accounting profits by calculating net income margins in firms for which these data are available (the Compustat sample), and measure net entry of firms using County Business Patterns. I also consider heterogeneous effects by industry according to the importance of credit card payments across industries. Both analyses confirm the result that the entry of bank cards, and reduction in store lending, are associated with higher profitability of retail firms.

Each analysis has its strengths and weaknesses. Accounting data has the advantage of being interpretable directly in units of profit margins, tightly connecting the magnitude of estimates in this analysis to the model. The availability of data on receivables for these firms, and the analysis in Section 6, also facilitates a natural comparison of the magnitude of the profitability change against the magnitude of the change in lending. Unfortunately, since accounting data is only available for 195 large retail firms in 1978, the power of the analysis of accounting profits has low power. Firm profits are extremely noisy, and driven by many factors much more important than credit card receivables and merchant discount fees. If administrative costs and credit chargeoffs were 10% of receivables, and the fees charged to merchants by bank credit card networks were zero, we would expect the effect on the firm's aggregate profit margins to only be 36 basis points. Furthermore, there are many issues with interpreting accounting profits as economic profits, the most salient of which are (1) the inability to track marginal costs separately from total costs, (2) the importance of intangible assets and expectations of future profits.

In order to overcome the difficulties in interpreting accounting profits as economic profits, I turn to another dataset which has much higher power, but where profits and receivables are not directly observable: the County Business Patterns, which is collected by the US Census Bureau and includes all formal establishments in the United States since 1947 (Eckert et al.

(2022)). I rely on changes in net entry of firms as a sufficient statistic for increases in net profitability of pre-existing firms, as is the case in Hopenhayn (1992) and all models which inherit its structure such as Melitz (2003). The CBP dataset is suited for this purpose as it includes counts of firms by narrow 4-digit SIC industry codes-cross-employment category. While this analysis is unable to speak to the quantitative relationship between net entry and profitability, it is more suited to making statistically powerful statements about whether the effect on net entry, which must have the same sign as the effect on profits, is negative or positive. This analysis has the added advantage of being able to control for any changes to entrepreneurial credit (supply-side) constraints by comparing the clothing retail industry, where cards are most used, to other retail industries which face the same supply-side shocks. These substantial advantages lead me to interpret this analysis as the most powerful and relevant test of whether bank credit cards made the retailer industry better off in general.

In another analysis, I compare the attributes of firms which do and do not adopt bank credit cards, according to my novel Yellow pages data. The cost-reduction mechanism predicts that firms' incentive to adopt bank cards should increase when privately supplying credit is more expensive. Historically, large and geographically-diversified retailers like J.C. Penney were among the last to accept bank credit cards (Hyman (2012a)). I bring this prediction to my newly-collected data on merchant acceptance from the Yellow Pages and show that within narrowly-defined industry-by-city categories, firms with low geographic diversification were more likely to be early adopters of bank cards. Conversely, the competition mechanism predicts that the firms with the most incentive to adopt cards are those where competition between retailers is the tightest. I proxy for the competition between retailers by sales levels on the assumption that retailers with smaller market shares face tighter competition, an assumption which is true in most discrete-choice models of demand. Contrary to the predictions of this mechanism, I find that merchants with higher sales, and therefore less elastic demand, are more likely to adopt bank cards, ceteris paribus.

I also compare the survival rates and sales growth of bank-card-adopting and non-adopting firms in treated and untreated states following the *Marquette* shock. In contrast to

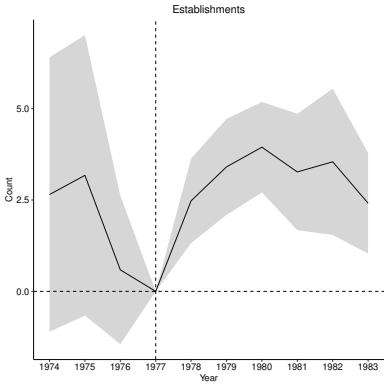
the demand-steering story, I find that the relative sales of accepting firms in treated states *decreased*. However, their length of survival increased. This is another piece of evidence inconsistent with demand-steering and consistent with cost-reduction.

Finally, I consider evidence for two specific channels by which bank cards may reduce cost, which are labor cost reductions and the ability for bank cards to effectively insure firms against credit risk in their customer base. I find that bookkeepers' and bill collectors' share of retail firms' aggregate wage bill decreased from 4% to less than half a percent from 1940 to 2020, and that treated states had a 3% higher relative rate of survival in the 1983 recession than firms in untreated states.

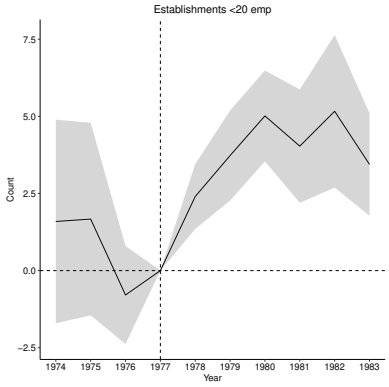
7.1 Net Entry

To overcome the limitations of accounting data, namely (1) the discrepancy between accounting profits and economic profits and (2) the small universe of retail firms with 1970s-era accounting data available, I analyze net entry of firms as my preferred sufficient statistic for economic profits. This allows me to extend my sample to retail firms of all sizes which are accounted for in the Census County Business Patterns, and to do heterogeneity within narrowly-defined industries. Following the evidence in Table A1, I compare the clothing retail industry to all other industries using the triple-difference specification of Equation 5.

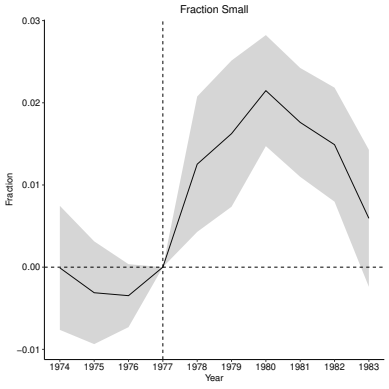
Figure 10: Triple-Difference Analysis of Establishment Counts by Size: Clothing Retail Industry



(a) Establishments



(b) Small Establishments (<20 emp)



(c) Fraction small

Notes: This graph shows the results of equation 5 for number of establishments by 2-digit SIC code-county. Standard errors are clustered by state. The omitted year is 1977, the year before *Marquette*.

As can be seen, there is an economically and statistically significant increase in the number of firms operating in the clothing retail industry in treated states after *Marquette*. The average retail industry in the average county at this time had 91 establishments (see Appendix A3), so the entry of about 4 firms represents nearly a 4% increase in the number of firms. Furthermore, the firms entering are relatively small, and small firms do not appear to grow to keep the distribution of firm sizes the same – there is an increase of 2%, from a mean of 90%, in the fraction of firms which have less than 20 employees. This is consistent with a channel of cost reduction being economies of scale, which predicts that firms of a smaller scale will benefit more from being able to outsource credit supply functions to large banks.

7.2 Accounting Profits

I calculate the annualized growth in accounting Net Income ("NI") margin over revenue, which I call "Profit growth", as $\text{Profit growth}_i = \left(\frac{NI_{i,1983} - NI_{i,1977}}{Revenue_{i,1977}}\right)^{1/(1983-1977)}$ to closely follow the decomposition in Equation 1. I include the 185 firms who have positive net income as of 1977. I then estimate the effect of bank credit cards using the cross-sectional analogue of

Equation 4, where the 2-digit SIC code of firm i is denoted j:

$$\text{Profit growth}_i = \alpha_j + \beta \times \textit{Treated}_i + \varepsilon_i \tag{6}$$

Table 2: Difference-in-Difference of Accounting Profits

Dependent Variable:	Change in Profit Rate
Model:	(1)
Variables	
Treated	0.021*
	(0.013)
Fixed-effects	
2-digit SIC	Yes
Fit statistics	
Observations	185
R^2	0.066

Clustered (Firm) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Table 2 reports the results of estimating Equation 6. The point estimate is a 2.1% increase in profit growth, with a p-value just below 0.1. This analysis suffers from lower power than that of all establishments due to the poor availability of accounting data in the 1970s, but is included for completeness. Nonetheless, these results are at least able to rule out at the 95% level that the growth in bank credit cards hurt firms by more than 50 basis points of total profits.

7.3 Which Firms Adopt Bank Cards?

The pattern of which firms choose to adopt bank cards also contains information about the incentives for bank card usage by firms. Recall that there are two main competing explanations: increasing demand or reducing cost. What predictions do these two explanations make about the pattern of adopting firms? To answer this question, I argue (1) geographically concentrated

firms have higher cost reduction from accepting cards, and (2) higher market share firms have lower incentive to increase demand. I argue that (1) is true because firms that are diversified across geography can bear the loss of writeoffs at one location more easily if they are diversified against economic shocks in any one specific location. I argue (2) is true because demand is more elastic when market share is lower – indeed in a wide class of demand systems (Berry (1994)), price elasticity is $-\alpha p_i (1 - s_i)$, where s_i is market share.

Which holds true in the data? To answer this question I individually link firms from the Dun & Bradstreet dataset to manually-collected Yellow Pages records of bank card acceptance using the methodology in Appendix B. This gives me a panel of 2,956 firms in 283 phonebook regions from 1970 to 1985. For each firm, I observe (1) its sales in each year, (2) its 4-digit SIC code, (3) its address, (4) cross-ownership linkages between establishments of the same firm, and (5) whether or not it accepts bank credit cards. I then estimate the following equation using OLS:[8]

$$A_{ijct} = \alpha_{jct} + \beta_1 \log\left(SLS_{ijct}\right) + \beta_2 Single_{ijct} + \varepsilon_{ict} \tag{7}$$

Where A_{ict} is an indicator variable for whether firm i in 2-digit SIC code j in city c in year t accepts bank cards. α are fixed effects, SLS are sales, and "Single" is an indicator for whether the establishment is the only establishment of the firm (as opposed to one branch of a multi-establishment firm). Errors ε are assumed to be correlated within 2-digit SIC code j. Only firms with sales verified by Dun & Bradstreet are included in the regression. 18% of firms in the sample are single-establishment.

Table 3 reports the results of estimating Equation 7. Larger firms, not smaller firms, are more likely to accept bank cards, which is the opposite of what a demand-steering story would predict. Furthermore, single-establishment firms are 4% more likely to accept cards relative to multi-establishment firms with the same per-establishment sales. Finally, controlling for age has no effect on these coefficients, and we observe that firms older by 1 year on average are

[8] Since marginal effects are of interest here and no predictions are made, OLS is appropriate and Logit would perform no better (Angrist et al. (2008)).

about 1% more likely to accept cards. The results support for the cost-reduction story vis-a-vis the competition story: firms with higher sales, but lower geographic diversity, are more likely to accept bank cards.

Table 3: Which Firms Adopt Bank Cards?

Dependent Variable:	Accepts Bankcard	
Log sales	0.0447***	0.0439***
	(0.0127)	(0.0125)
Single establishment	0.0434*	0.0457*
	(0.0187)	(0.0194)
Age		0.0115***
		(0.0030)
SIC-City-Year	Yes	Yes
Observations	1,973	1,973
R^2	0.26	0.27

Clustered (SIC-2dig) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

8 Structural Model: Estimating the Cost Reduction

The general theoretical framework presented in section 4 is extremely broad and does not make any assumption about the price-setting competitive game between firms, capturing it with a single parameter μ which summarizes the percentage markup. That model does not allow me to quantitatively estimate the change in cost that is attributable to a switch to bank credit card technology. In this section, I add structure to the model by building a structural model of price-setting competition between firms, where credit card networks represent a source of product differentiation that can be adjusted counterfactually.

8.1 Assumptions of the Model

I follow the general workhorse framework of Berry (1994) to define the decision problems of consumers and firms, with an additional source of product differentiation at the group level, as in Mansley et al. (2019), which in this case is taken to be the credit card networks. Specifically, there is a continuum of consumers of measure one indexed by i in each market who observe possible utility from choosing among each discrete option j available in the market. This utility takes the form:

$$u_{ij} = \delta_j + \varsigma(g(j)) + (1 - \sigma)\,\varepsilon_{ij} \tag{8}$$

Where the mean utility δ_j is given by

$$\delta_j = \alpha_j + \xi_j \tag{9}$$

Where p_j is the price charged by firm j, ξ_j are flexible fixed effects representing the mean quality of each firms' product, $\varsigma(g(j))$ is a product differentiation term indexed by $g(j)$ which is the credit card network used by the firm, and ε_{ij} is a random shock distributed type-1 extreme value at the individual level. Following Mansley et al. (2019), I further assume that $\varsigma(g(j))$ takes the unique distribution, conditional on σ, such that $\varsigma(g(j)) + (1 - \sigma)\,\varepsilon_{ij}$ is also distributed type-1 extreme value. I choose this nesting structure because it parsimoniously captures the notion that firms who both accept the same bank credit card must compete more fiercely over the same group of customers. When two firms j and $-j$ are on the same credit card network they share $g(j) = g(-j)$. The consumers that highly value each of their purchase experiences therefore will be the same group of consumers, requiring them to compete more fiercely with each other, but not more fiercely with firms that do not accept the card. σ is a free parameter which I estimate subject to $0 < \sigma < 0$ and can flexibly control the degree to which credit card networks actually are a degree of product differentiation between firms. If credit card networks do not actually change the product differentiation between firms, I would recover $\sigma = 0$, if consumers were perfectly segmented by their cardholding choices and never

shopped at a store other than one which accepts their preferred card I would recover $\sigma \approx 1$. On the supply side, firms optimally set prices to maximize their profits while facing a demand curve which slopes downward due to $\alpha < 0$. Given the model of demand, market shares of each firm are given by

$$s_j = \frac{exp\left(\frac{\delta_j}{1-\sigma}\right)}{D_g^{\sigma} \sum_g D_g^{1-\sigma}}$$

Where the D_g for each credit product g is equal to

$$D_g = \sum_{k \in g} \exp \frac{\delta_k}{1-\sigma}$$

Firm j's first order condition is therefore

$$\left(p_j - c_j\right)^{-1} = \frac{\partial s_j}{\partial p_j} = \frac{\alpha}{1-\sigma} s_j \left(1 - \sigma \bar{s}_{j|g} - (1-\sigma)\, s_j\right)$$

I close the model with an assumption about cost and quality. In this model, cost and quality are not separately identified – an increase in product quality of x is equivalent to a cost reduction of αx. Therefore I assume that product quality ξ is held constant across counterfactuals, but that cost c_j may change. In particular, the cost c_j is normalised to 1, but changes if the firm accepts the bank credit card. A fraction $f(g)$ of consumers use credit card network g. The firms' cost is $1 + \zeta f(g(j))$. Therefore the base cost of the industry with all g being singleton networks (single store card networks) is the numeraire of the model.

8.2 Identifying the Model using Causal Sales Responses

To estimate these model, I first construct a sample of establishments which appear in the Yellow Pages as accepting or not accepting bank credit cards (as described in Appendix B) and which appear in 1977 with verified revenue values and survive at least 2 years. For each establishment, I calculate the annual average sales growth $Salesgrowth_i = (\log(SLS_{tmax}) - \log(SLS_{1977}))\ /\ (tmax -$

[9] $tmax$ is the last year the establishment is observed. I winsorize the growth rate at +100% per year.

Then, I estimate the effect of the *Marquette* shock in 1978 on these establishments using the estimating equation:

$$Salesgrowth_{isj} = \beta_0 Treated_s + \beta_1 Accept_i + \beta_2 Accept_i \times Treated_s + \gamma \log(SLS_{1977}) + \alpha_j + \varepsilon_{isj} \tag{10}$$

For outcome variable Y of establishment i in state s and 4-digit SIC-code j. State and industry fixed effects are included. ε_{isj} are errors, clustered at the state level in accordance with the treatment (Abadie et al. (2017)). β_0 represents the treatment effect of bank card growth on establishment' sales who do not initially accept the bank card, and β_2 is the degree to which this chance in sales is different for accepting establishments. β_1 represents the extent to which bank-card-accepting establishments outperform non-bank-card-accepting establishments overall. It is important to stress that the coefficient β_1 does not have a causal interpretation: as shown in Table 3, there is endogeneity in which establishments choose to accept bank credit cards – higher-sales establishments are more like to accept. β_1 is therefore uninformative for estimation of the model.

Table 4 reports the results of Equation 10 estimated at the establishment-level. The most useful of these results for identifying the model is β_2, the heterogeneity in sales responses to the growth of bank credit cards, which will be crucial for separately identifying the effect of markups from the effect of costs. The intuition behind this is that if bank credit cards reduce markups by easing substitution between firms on the bank credit card network, those already on the network have to lose sales and compress their markups simultaneously. A quantitative model is needed to interpret this evidence because a competing firm reducing their cost (by switching to the bank card network) will already imply some amount of reduction in a firm's sales. The model is therefore needed to quantitatively disentangle how much of the sales response would already be expected by the reduction in cost; any sales reduction beyond that is then explained by the model as tighter competition.

To build the model, I use data from 252 markets where Yellow Pages data can be merged

Table 4: Effects of Bank Card Expansion on Adopting Establishments

Dependent Variables:	Sales growth (Log)
Model:	(1)
Variables	
Treated	0.00267*
	(0.00078)
Accept	0.0327***
	(0.0024)
Accept × Treated	-0.0477***
	(0.0084)
Fixed-effects	
SIC (4 digit)	Yes
Fit statistics	
Observations	434
R^2	0.282
Within R^2	0.00675

Clustered (State) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

to Dun & Bradstreet. I match the median market structure in terms of number of competing firms, realistic heterogeneity in market shares, bank card acceptance, and consumer bank card usage. I then estimate σ and ζ via Simulated Method of Moments by matching the observed responses of bank card usage, store receivables, and sales from the *Marquette* shock (i.e., match the regressions already shown). I note that, importantly, I modify the standard procedure (Mansley et al. (2019)) to correctly match data on sales (Price x Quantity) instead of market shares (Quantity) which the standard method assumes are observed.

8.3 Estimation Results

Table 5 reports the results of estimating the model using the Simulated Method of Moments to match the causal effects of the *Marquette* shock on the median retail market in 1978. My estimate of $\sigma = 0.07$ implies that about 7% of the variation in product differentiation in this

market is due to variation in the credit card networks. My estimate of $\zeta = -0.074$ implies that with 37% bank credit card usage among consumers, the total cost reduction among firms who switch is 2.7% of marginal cost.

Table 5: Estimation Results

Parameters

Parameter	Value	Method
α	-4	Literature
σ	0.071	Moments
ζ	-0.074	Moments
N Firms	7	Observed
N Bank Networks	1	Observed
Top Firm Share	47%	Observed
Firm Store Card Share	83%	Observed
Consumer Bank Card Share	37%	Observed
Target Moments (My Estimates)		
Moment	Model	Data
Δ Store Card Share	-20%	-20%
Δ Bank Card Share	+5.5%	+5.5%
Δ $SLS_{Notaccept}$	+27bp	+27bp
Δ SLS_{Accept}	-4.8%	-4.8%

Is this quantitative value of 2.7% cost savings reasonable? Consider that the average firm did about 20% of their sales on store credit in 1980 (Figure 2), so this represents savings of about 15% if this bill. With merchant discount fees (swipe fees charged to merchants by the card issuer) of about 4% at time period, that implies that between labor and writeoffs, merchants were losing nearly 20% of the price of an additional sale by extending credit. While perhaps striking, this number is not obviously too high. Labor costs spent on bookkeepers on bill collectors were 2.5% in 1980 (Figure 3), if half of that was actually used on the 20% of sales that were on credit then that already accounts for over 6%, implying stores were writing off 14% of their receivables. According to the CFPB,[10] private label credit card charge-off rates reached 18% in 2010.

Another way to put these estimates into perspective is to use the model to decompose the simulated effect of *Marquette* into price effects due to competition (the network structure of

[10] Bureau (2022)

credit card acceptance) vs. costs (the estimated effect of that network structure on costs). To do this, I calculate prices and cost levels for four factual and counter-factual equilibria in Table 6 using the structural model. Column (1) is the "factual" equilibrium of the un-treated states, and column (2) is the "factual" equilibrium of the treated states, the difference being that the usage of bank cards among consumers, and the acceptance of bank cards among retailers, exogenously increased. The markup is the difference between the cost change and the price change. As can be seen from columns (1) and (2), I estimate that the combination of higher bank card use and lower store card use, reduced the average cost basis of the retail industry by about 57bp, and further reduced markups by 9bp, creating total price reduction of 66bp.

Another way to see this effect is to use the model to estimate two new equilibria where only cost changes, or only competition changes to predict the counterfactual effects of these two changes in isolation. Column (3) calculates the counterfactual equilibrium where costs stay the same, but the network structure of demand changes by increasing the firms who accept the bank credit card, and must now compete more fiercely with other firms who also accept the bank card. In this equilibrium, markups drop by 21 basis points, with the same costs by construction. Column (4) calculates the counterfactual equilibrium where costs change, but the network structure of demand is held constant. Average costs decrease by 57bp, but average markups slightly increase overall due to the cost reduction accumulating at firms with relatively higher market shares and more differentiated products. Overall, this exercise confirms that, quantitatively, cost reduction was the more important force relative to competition intensification in this historical episode of bank credit card technology adoption.

Table 6: Decomposing the Effect of Bank Cards

Variable	Baseline	Treated (Marquette)	No Cost Changes	Only Cost Changes
	(1)	(2)	(3)	(4)
Price Index	1.24	-66bp	-21bp	-45bp
Cost Index	0.99	-57bp	0	-57bp
Markup	0.25	-9bp	-21bp	+12bp

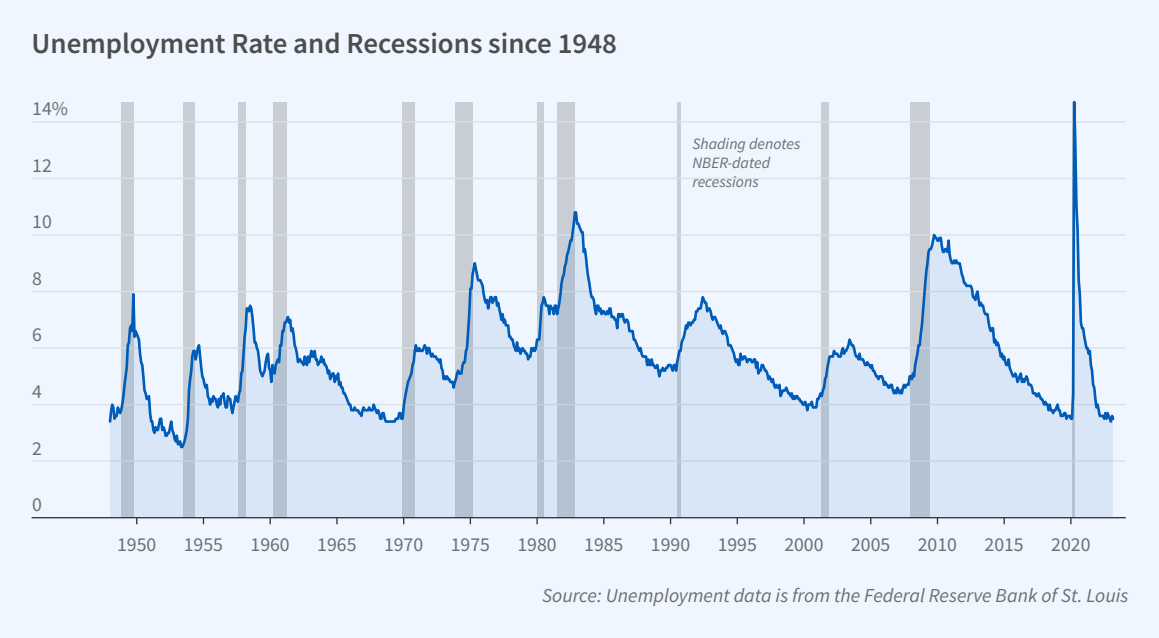
9 Risk Sharing as a Mechanism for Lower Cost

Why might banks have a lower cost to extend credit than firms? In this section I investigate two specific sources of cost reduction in the model: labor efficiency and risk sharing. The most obvious source of cost reduction is that banks administer one account per customer, screening and collecting from them once, rather than ten stores screening and collecting from each customer ten times. Figure 3 reports evidence for labor costs: the share of the retail wage bill paid to bookkeepers and bill collectors has steadily declined from over 4% in 1940 to less than half a percent in 2020, representing substantial labor savings for retail businesses. But besides the standard explanations of economies of scale and specialization, one interesting and distinctly *financial* reason for cost reduction is that banks are able to diversify credit losses across space and time, unlike small merchants. Since negative demand shocks are strongly correlated with negative household balance sheet shocks, a risk-averse firm will have a high demand for insurance against credit losses specifically in the states of the world where they expect lower demand from their customer base. A national bank, however, has ample opportunities to diversify, and is a natural seller of insurance against shocks. By accepting a bank card, a merchant therefore effectively buys insurance from the bank against credit defaults.

To test this mechanism, I look at establishment exits, which are a measure of firms' exposure to risk. The cases of the 1975 and 1983 recessions, which occurred before and after *Marquette*, present a good environment to test this mechanism. 1983 in particular was the second-largest recession of the 20th century, with unemployment rates reaching nearly 11%, as Figure 11 shows. I run my difference-in-difference analysis in each year, not just the recession, for completeness, but I am primarily interested in the coefficients on treatment in the year of the recession, 1983. My measure of risk is the exit rate of retail establishments in the Dun and Bradstreet database. I choose this measure rather than change in sales because I am interested in the impact of the combination of lower sales and higher writeoffs at the same time on a measure of firm's real profits and economic decisionmaking, and establishment exit rate is an

ideal measure of the real impact of recession risk on firms.

Figure 11: Unemployment Rate and Recessions since 1948



Source: NBER

I use the following analogue of Equation 4, with heterogeneity by firm size (single-establishment or multi-establishment. 19% of establishments are part of a multi-establishment firm).

$$P\left[Exit\right]_{it} = \alpha_{sjt} + \gamma \times \log\left(SLS\right)_{it} + \beta \times Treat_s \times Recession_t \times Single_i + ... + \varepsilon_{it} \tag{11}$$

Where establishment i is in state s and industry j at time t. $Treat_i$ is 1 if the state had a usury limit below 18% in 1978. $Recession_t$ indicator for either 1983 or 1975 depending on the specification, and $Single_i$ is an indicator for single-establishment. "..." denote the lower-order interactions, and Std. errors are clustered by state (Abadie et al. (2017)). Estimation is with OLS[11]. The regression is estimated separately on all industries, and on high-adoption industries, defined as 2-digit SIC code 56, clothing retail.

[11] Logit performs no better for marginal effects which are the object of interest here, Angrist et al. (2008)

Table 7 reports the results of Equation 11. Overall, higher-sales establishments are more likely to survive, confirming intuition. During the recession, single-establishments fail at a much higher rate than branches, which also confirms intuition. This holds true regardless of whether the states saw an increase in bank card usage (treatment), and pre- and post-Marquette. The difference appears with the 1983 recession, post-Marquette, when single-establishment firms survived at a 2.3% higher rate in treated states relative to untreated states. In high adoption industries, this is even higher at 3.2%.

Table 7: Effect on Retail Establishment Exit Rates in Recessions

Dependent Variable:	Firm Exit			
Recession Year:	**1983 (Post-Marquette)**		**1975 (Pre-Marquette)**	
Industries:	All Retail	High-Adoption	All Retail	High-Adoption
Variables				
Log(Sales)	-0.0028***	-0.0041***	-0.0028***	-0.0041***
	(8.81×10^{-5})	(0.0001)	(8.79×10^{-5})	(0.0001)
Single x Recession	0.0502***	0.0604***	0.0390***	0.0310***
	(0.0037)	(0.0040)	(0.0030)	(0.0018)
Treated x Recession x Single	-0.0234**	-0.0319***	-0.0081	-0.0080
	(0.0089)	(0.0103)	(0.0123)	(0.0082)
Fixed-effects				
State-Time-Industry	Yes	Yes	Yes	Yes
Fit statistics				
Observations	15,472,478	5,439,879	15,472,478	5,439,879
R^2	0.53539	0.51616	0.53534	0.51605
Within R^2	0.00166	0.00313	0.00156	0.00291

Clustered (State) standard errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

The 1975 recession was also historically significant as seen in Figure 11, but occurred before *Marquette*, making it a good placebo test of the hypothesis that these differences were caused by the growth in bank credit and decline in store credit induced by *Marquette*. No differential response in establishment exit rates are observed in this pre-treatment recession.[12]

[12] This analysis suggests another test, which is to examine whether the risk reduction which evidently accrued to firms shows up in the defaults on banks' balance sheets instead using Call Report data. Unfortunately, this

Overall, this evidence is consistent with bank credit cards underwriting a costly source of economic risk to firms.

10 Conclusion

Credit expansions are generally viewed through the perspective of more vs less credit. I draw attention to the fact that the suppliers and technologies use to supply credit matter greatly to this debate. In particular, specialized credit suppliers such as banks may be superior at such activities for reasons such as economies of scale and the diversification of risk. While merchants may continue to bemoan the outsourcing of their function as credit suppliers in the economy, the evidence presented here suggests that merchant discount fees are far less than the cost to perform screening and collection activities in-house, and that small merchants are those who benefit most.

analysis is not possible using data which are available to me for reasons discussed in Section 5.4: Call Report data is organized at the lending institution level, not at the borrower level. It is therefore not possible with public Call Reports to break out bank lending into lending to borrowers in treatment vs. lending to borrowers in control states.

References

Abadie, Alberto, Susan Athey, Guido W. Imbens, and Jeffrey Wooldridge, "When Should You Adjust Standard Errors for Clustering?," November 2017.

Adams, William, Liran Einav, and Jonathan Levin, "Liquidity Constraints and Imperfect Information in Subprime Lending," *American Economic Review*, March 2009, *99* (1), 49–84.

Agarwal, Sumit, Souphala Chomsisengphet, Neale Mahoney, and Johannes Stroebel, "Regulating Consumer Financial Products: Evidence from Credit Cards *," *The Quarterly Journal of Economics*, February 2015, *130* (1), 111–164.

_ , Wenlan Qian, Yuan Ren, Hsin-Tien Tsai, and Bernard Yin Yeung, "The Real Impact of FinTech: Evidence from Mobile Payment Technology," March 2020.

Angrist, Josh, Pischke, and J^rn-Ste§en, *Mostly Harmless Econometrics: an Empiricist's Companion* 2008.

Arango, Carlos, Kim P. Huynh, and Leonard Sabetti, "Consumer payment choice: Merchant card acceptance versus pricing incentives," *Journal of Banking & Finance*, June 2015, *55*, 130–141.

Banner, Paul H., "Competition, Credit Policies, and the Captive Finance Company," *The Quarterly Journal of Economics*, May 1958, *72* (2), 241–258.

Basker, Emek, "Raising the Barcode Scanner: Technology and Productivity in the Retail Sector," *American Economic Journal: Applied Economics*, July 2012, *4* (3), 1–27.

Beck, Thorsten, Asli Demirguc-Kunt, Luc Laeven, and Ross Levine, "Finance, Firm Size, and Growth," *Journal of Money, Credit and Banking*, October 2008, *40* (7), 1379–1405.

_ , Ross Levine, and Alexey Levkov, "Big Bad Banks? The Winners and Losers from Bank Deregulation in the United States," *The Journal of Finance*, 2010, *65* (5), 1637–1667. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1540-6261.2010.01589.x.

Benetton, Matteo, Sergio Mayordomo, and Daniel Paravisini, "Credit Fire Sales: Captive Lending as Liquidity in Distress," March 2022.

Berry, Steven T., "Estimating Discrete-Choice Models of Product Differentiation," *The RAND Journal of Economics*, 1994, *25* (2), 242–262. Publisher: [RAND Corporation, Wiley].

Bourguignon, Hélène, Renato Gomes, and Jean Tirole, "Card Surcharges and Cash Discounts: Simple Economics and Regulatory Lessons," *Competition Policy International*, 2014.

Brennan, Michael J., Vojislav Maksimovics, and Josef Zechner, "Vendor Financing," *The Journal of Finance*, 1988, *43* (5), 1127–1141. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1540-6261.1988.tb03960.x.

Brennecke, Claire, "Information Acquisition in Antebellum U.S. Credit Markets: Evidence from Nineteenth-Century Credit Reports," September 2016.

Brunnermeier, Markus K., Nicola Limodio, and Lorenzo Spadavecchia, "Mobile Money, Interoperability and Financial Inclusion," *Working Papers*, 2023. Number: 696 Publisher: IGIER (Innocenzo Gasparini Institute for Economic Research), Bocconi University.

Bureau, Consumer Financial Protection, "The Consumer Credit Card Market," August 2019.

_ , "Credit Card Late Fees," March 2022.

Chatterji, Aaron K. and Robert C. Seamans, "Entrepreneurial finance, credit cards, and race," *Journal of Financial Economics*, October 2012, *106* (1), 182–195.

Chong, Beng Soon, "The Effects of Interstate Banking on Commercial Banks' Risk and Profitability," *The Review of Economics and Statistics*, 1991, *73* (1), 78–84. Publisher: The MIT Press.

Cuesta, José Ignacio and Alberto Sepulveda, "Price Regulation in Credit Markets: A Trade-Off between Consumer Protection and Credit Access," September 2021.

Demirgüç-Kunt, Asli, Leora Klapper, Dorothe Singer, and Saniya Ansar, "The Global Findex Database 2021," 2021.

Eckert, Fabian, Ka leung Lam, Atif R. Mian, Karsten Müller, Rafael Schwalb, and Amir Sufi, "The Early County Business Pattern Files: 1946-1974," October 2022.

Edelman, Benjamin and Julian Wright, "Price Coherence and Excessive Intermediation *," *The Quarterly Journal of Economics*, August 2015, *130* (3), 1283–1328.

Evans, David S. and Richard Schmalensee, *Paying with Plastic, second edition: The Digital Revolution in Buying and Borrowing*, second edition ed., Cambridge, Mass: The MIT Press, December 2004.

Glaeser, Edward L. and José Scheinkman, "Neither a Borrower Nor a Lender Be: An Economic Analysis of Interest Restrictions and Usury Laws," *The Journal of Law and Economics*, April 1998, *41* (1), 1–36. Publisher: The University of Chicago Press.

Herkenhoff, Kyle F. and Gajendran Raveendranathan, "Who Bears the Welfare Costs of Monopoly? The Case of the Credit Card Industry," January 2020.

Herkenhoff, Kyle, Gordon M. Phillips, and Ethan Cohen-Cole, "The impact of consumer credit access on self-employment and entrepreneurship," *Journal of Financial Economics*, July 2021, *141* (1), 345–371.

Hopenhayn, Hugo A., "Entry, Exit, and firm Dynamics in Long Run Equilibrium," *Econometrica*, 1992, *60* (5), 1127–1150. Publisher: [Wiley, Econometric Society].

Huynh, Kim P., Gradon Nicholls, and Oleksandr Shcherbakov, "Equilibrium in two-sided markets for payments: Consumer awareness and the welfare cost of the interchange fee," Working Paper 2022-15, Bank of Canada Staff Working Paper 2022.

Hyman, Louis, *Borrow: The American Way of Debt*, illustrated edition ed., New York: Vintage, January 2012.

_ , *Debtor Nation: The History of America in Red Ink*, reprint edition ed., Princeton, NJ: Princeton University Press, October 2012.

Jayaratne, Jith and Philip E. Strahan, "Entry Restrictions, Industry Evolution, and Dynamic Efficiency: Evidence from Commercial Banking," *The Journal of Law and Economics*, April 1998, *41* (1), 239–274. Publisher: The University of Chicago Press.

Julia Fonseca and Jialan Wang, "How Much Do Small Businesses Rely on Personal Credit?"

Knittel, Christopher R. and Victor Stango, "Price Ceilings as Focal Points for Tacit Collusion: Evidence from Credit Cards," *American Economic Review*, December 2003, *93* (5), 1703–1729.

Kroszner, Randall S. and Philip E. Strahan, "What Drives Deregulation? Economics and Politics of the Relaxation of Bank Branching Restrictions*," *The Quarterly Journal of Economics*, November 1999, *114* (4), 1437–1467.

_ **and** _ , "Regulation and Deregulation of the US Banking Industry: Causes, Consequences, and Implications for the Future," in "Economic Regulation and Its Reform: What Have We Learned?," University of Chicago Press, June 2014, pp. 485–543.

Maimbo, Samuel Munzele and Claudia Alejandra Henriquez Gallegos, "Interest Rate Caps Around the World: Still Popular, But a Blunt Instrument," October 2014.

Mansley, Ryan, Nathan Miller, Connor Ryan, and Matt Weinber, "Notes on the Nested Logit Demand Model," 2019.

Melitz, Marc J., "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity," *Econometrica*, 2003, *71* (6), 1695–1725. Publisher: [Wiley, Econometric Society].

Mian, Atif, Amir Sufi, and Emil Verner, "How Does Credit Supply Expansion Affect the Real Economy? The Productive Capacity and Household Demand Channels," *The Journal of Finance*, 2020, *75* (2), 949–994. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/jofi.12869.

_ **and** _ , "What Explains the 2007–2009 Drop in Employment?," *Econometrica*, 2014, *82* (6), 2197–2223. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.3982/ECTA10451.

Murfin, Justin and Ryan Pratt, "Who Finances Durable Goods and Why It Matters: Captive Finance and the Coase Conjecture," *The Journal of Finance*, 2019, *74* (2), 755–793. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/jofi.12745.

Müller, Karsten and Emil Verner, "Credit Allocation and Macroeconomic Fluctuations," June 2023.

Nakamura, Emi and Jón Steinsson, "Fiscal Stimulus in a Monetary Union: Evidence from US Regions," *American Economic Review*, March 2014, *104* (3), 753–792.

Negro, Marco Del, "Aggregate risk and risk sharing across United States states and across European countries." Ph.D., Yale University, United States – Connecticut. ISBN: 9780599252844.

Nelson, Scott Thomas, "Private information and price regulation In the US credit card market." Thesis, Massachusetts Institute of Technology 2017. Accepted: 2017-05-11T19:59:54Z.

Nocera, Joe, *A Piece of the Action: How the Middle Class Joined the Money Class*, reissue edition ed., New York: Simon & Schuster, October 2013.

Rochet, Jean-Charles and Jean Tirole, "Platform Competition in Two-Sided Markets," *Journal of the European Economic Association*, June 2003, *1* (4), 990–1029.

Rosenbaum, Paul R., *Design of Observational Studies* Springer Series in Statistics, New York, NY: Springer, 2010.

Schularick, Moritz and Alan M. Taylor, "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008," *American Economic Review*, April 2012, *102* (2), 1029–1061.

Stroebel, Johannes, "Asymmetric Information about Collateral Values," *The Journal of Finance*, 2016, *71* (3), 1071–1112. _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.1111/jofi.12288.

Walter, Dorothy B., *The Cost of Personal Borrowing in the United States, Various Years*, Financial Pub Co, March 1998.

Wang, Lulu Y, "Regulating Competing Payment Networks," 2023.

Zinman, Jonathan, "The Impact of Liquidity on Household Balance Sheets: Micro Responses to a Credit Card Supply Shock," January 2003.

Appendices

A Description of Data Sources

A.1 Survey of Consumer Finance

To evaluate long-run trends in household revolving credit use, I rely on the Survey of Consumer Finances ("SCF"). One of the most widely-used series' in household finance research, the SCF has been administered continuously since 1947, surveying approximately 3,000-6,000 households per wave in a repeated cross-section. The survey was conducted annually from 1947-1965, 1969-1971, in 1977, and every three years from 1983-2019. I construct detailed series of credit card spending and balances by type of lender from the public SCF files available on the Federal Reserve website and ICPSR.[13]

Table A2 shows key summary statistics of the SCF data from 1970-2019. The key variables I choose to report are pre-tax income, bank and store credit card spending and balances, store credit balances, primary card interest rate[14], and auto and mortgage debt balances. Newer SCF releases cover larger samples, so the aggregate statistics are mainly representative of recent years – accordingly, I separately calculate summary statistics for the pre-1990 period, which is the main period of interest for this study. Overall, monthly bank credit card spending and balances dominate those of store credit cards and store balances, and neither are particularly large compared to auto and mortgage debt balances in the aggregate. Prior to 1990, however, store credit cards and store credit accounts were much closer to those of bank cards. For households in the bottom quartile of income, credit card balances are also a much larger share of their overall borrowing, averaging nearly as much as auto loans.

A.2 Public Use Microdata: US Census and PSID

I gather data on key household outcomes from Integrated Public Use Microdata Samples ("IPUMS") including the US Census and the Panel Study of Income Dynamics, the longest-running representative longitudinal study of U.S. households. I use the US Census to calculate aggregate trends in employment and wages in the retail sector to support the argument that firms choose to adopt bank credit cards in order to reduce marginal costs, particularly labor costs. I show in Appendix Figure 3 that in 1940, over 4% of the wage bill of the retail industry was paid to bookkeepers and bill collectors, while this fraction has declined smoothly to less than 50 basis points by 2020. These cost-savings are a key ingredient of the model in Section 4.

I use the PSID to analyse the prevalence of consumer bankruptcy in Section 6. I restrict attention to household-year observations between 1970 and 1995 which yields 20,823 unique households. The average annual hazard rate of bankruptcy in this time period is 0.18%, which compares reasonably to the 0.44% bankruptcy rate in 2020[15] given the steady increase in credit card usage since.

I also rely on the US Census for the Quarterly Financial Reports[16], which are surveys

[13] The key credit card variables are named x411-x427, x7132, and x7575 in modern releases

[14] The SCF only inquires about the interest rate on the card on which the respondent has the largest balance.

[15] 544,463 cases among 123.6 million households. Source: UScourts.gov.

[16] https://www.census.gov/econ/qfr/mmws/current/qfr_pub.pdf

of firms with over $50 million which have been collected quarterly since 1947. These data, crucially, include aggregate receivables and revenues by industry. From these data, Figure 2 shows the decline in receivables for retail companies which is not mirrored by changes in wholesale companies.

A.3 World Bank Global Findex

To put the United States experience of credit cards in international context, I compare the United States to other countries in the World Bank Global Findex (Demirgüç-Kunt et al. (2021)). This dataset is based on representative samples of over 125,000 households per year in a 123-country panel. The latest public release includes two key variables of interest, store credit usage and credit card ownership, for 329 country-years.

A.4 Cost of Personal Borrowing in the United States

The key independent variable for my main causal analysis is the state of usury regulation in each state in 1977, the year before the Supreme Court *Marquette* decision, which effectively allowed unlimited interest rates on credit cards nation-wide. These data are recorded in the annual volumes Cost of Personal Borrowing in the United States, and have been digitized and generously shared by Rob Seamans (see Chatterji and Seamans (2012)). Chatterji and Seamans (2012) find that state-level usury rates predict transitions to self-employment using the Current Population Survey, particularly so for black men, and specifically in areas with greater historic racial barriers to borrowing and business entry. They conclude that access to credit cards relieved financial constraints and allowed black men to borrow on credit cards and become entrepreneurs. This does not violate my exclusion restriction, because using Equation 5 I can isolate the effect of credit cards as a transaction mechanism from that of credit cards as a relief to entrepreneurial budget constraints. The most common usury rate in 1977 was 18%, and all states but New Hampshire had some usury cap.

A.5 FRED

I obtain the rates of inflation and federal funds from the series FPCPITOTLZGUSA and FEDFUNDS from the Federal Reserve Bank of St. Louis Economic Data ("FRED") at annual frequency. These are used to make a relatively simple point that a usury cap of 18% was extremely strict in the context of 15% inflation, and that usury rates below that were below bank marginal cost.

A.6 Call Reports

I obtain Call Reports data from the Federal Reserve Bank of Chicago in order to document trends in credit card lending by origin bank. Using these data, I aggregate total credit card lending by origin bank state and show in section 5.4 that nationwide credit card growth did indeed accelerate after the 1978 *Marquette* decision, and that this boom in consumer lending was indeed driven by banks headquartered in states without usury limits.

A.7 Compustat

In order to measure the substitution of bank credit for store credit, I use data from 1970-1990 on the universe of retail firms (SIC codes 5200-5999) which fit Compustat's inclusion criteria. For each firm, I calculate its ratio of receivables to revenue in each period to measure the amount of credit extended to its customers. Then, I manually match Compustat firms to sales locations in Dun & Bradstreet with the help of research assistant Sarah Anderson. I then calculate a measure of treatment for each firm as the fraction of its sales which are in treated states. I then apply this treatment variable to the difference-in-differences analysis in Section 7. There are a total of 195 firms which fit the inclusion criteria for this analysis. The average receivables-to-revenue ratio in the panel is 21.8%.

A.8 Dun and Bradstreet

I obtain data on sales by business establishment from the Dun and Bradstreet establishment-level database, accessed via the Stanford Graduate School of Business library. These data are used to identify entry, exit, sales, industry, and location of retail establishments across the United States, and are used in the construction of the data set described in Appendix B. Dun & Bradstreet, formerly R.G. Dunn & Company and even earlier as the Mercantile Agency, has been in the business of collecting information and compiling reports assessing the creditworthiness of individuals and businesses in the United States since 1841, making it one of the oldest and most deepest registries of information on business establishments that exists (Brennecke (2016)). The csv data files available via the Stanford Graduate School of Business extend back to 1969.

A.9 U.S. Telephone Directories

I collect novel data on firms' credit card acceptance decision using the US Telephone Directory collection from the US Library of Congress.[17]. Appendix B describes the collection of this data, which involves a combination of manual and automated techniques. Banks and firms have a strong incentive to convince customers that their cards are useful and will be accepted at many businesses, and therefore are motivated to make these data as comprehensive as possible.

From these data, I identify the firms most likely to be early adopters of bank cards and their characteristics, which are informative about the mechanisms which incentivize firms to accept bank cards. Table A1 shows the fraction of firms by industry which adopt bank cards in the 1970s, and compares to the primary uses of store and bank cards reported by households in the 1970 SCF. These results motivate the heterogeneity analyses by industry in Section 7. These data are also the basis of empirical tests in Sections 8.2 and 8.2 which seek to distinguish between the two major mechanisms of cost-reduction and payment friction reduction.

[17] Available at https://www.loc.gov/collections/united-states-telephone-directory-collection/

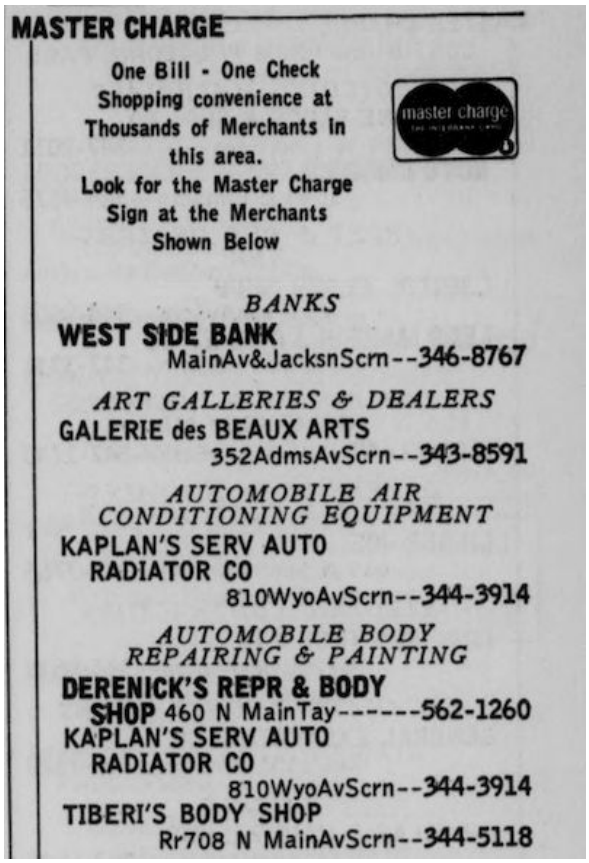


Figure A1: Examples of USTD Data

A.10 County Business Patterns

I collect data on establishment counts across the size distribution of businesses from the US Census' County Business Patterns. These data available are available at an annual frequency since 1946 (Eckert et al. (2022)). These data are suitable for examining heterogeneous effects across the size distribution of firms, and aggregate net entry of firms which I argue is a sufficient statistic for economic profits. I aggregate data by year, county, and 2-digit SIC code. Of particular interest is the clothing retail industry, where I hypothesize that the effect of bank credit cards should be apparent, if it exists. As Table A1 shows, clothing was the predominant use of both store and bank credit cards as of 1970. The clothing retail industry is characterised by a larger number of establishments, but fewer total employees, than other similarly-defined industries, indicating a larger fraction of smaller businesses. The second panel of Table A1 is

compiled from the Survey of Consumer Finance. For each customer, I sort them into primary bank card or primary store card users based on which card (if either is present) they report spending a higher dollar value on, and then categorize them by their reported primary use of the card.

Table A1: Usage of Bank Cards Across Industries, 1970-1977

Industry	Fraction Accepting	Firms Accepting
Clothing	14.38%	67
Auto	10.72%	46
Furnishing	15.53%	34
Restaurants	3.95%	17
Hardware	11.11%	9
Dept. Stores	20.59%	7
Food	0.82%	2

Source: D&B, USTD

Card use	Store cards	Bank cards
Clothing	82%	46%
Misc.	4%	21%
Appliances	5%	4%
Recreation items	3%	3%
Household goods	3%	2%
Hardware	2%	1%
Travel		19%

Source: SCF

Notes: The first panel describes the fraction of firms across (2-digit SIC code) industries which accept bank credit cards in the US Telephone Directories data. Construction of these data using Dun & Bradstreet and the US Telephone Directories is described in Appendix B. The second panel describes the fraction of consumers in the Survey of Consumer Finance who identify each given use as their "primary use" of store credit cards and bank credit cards.

B US Telephone Directory Data Collection

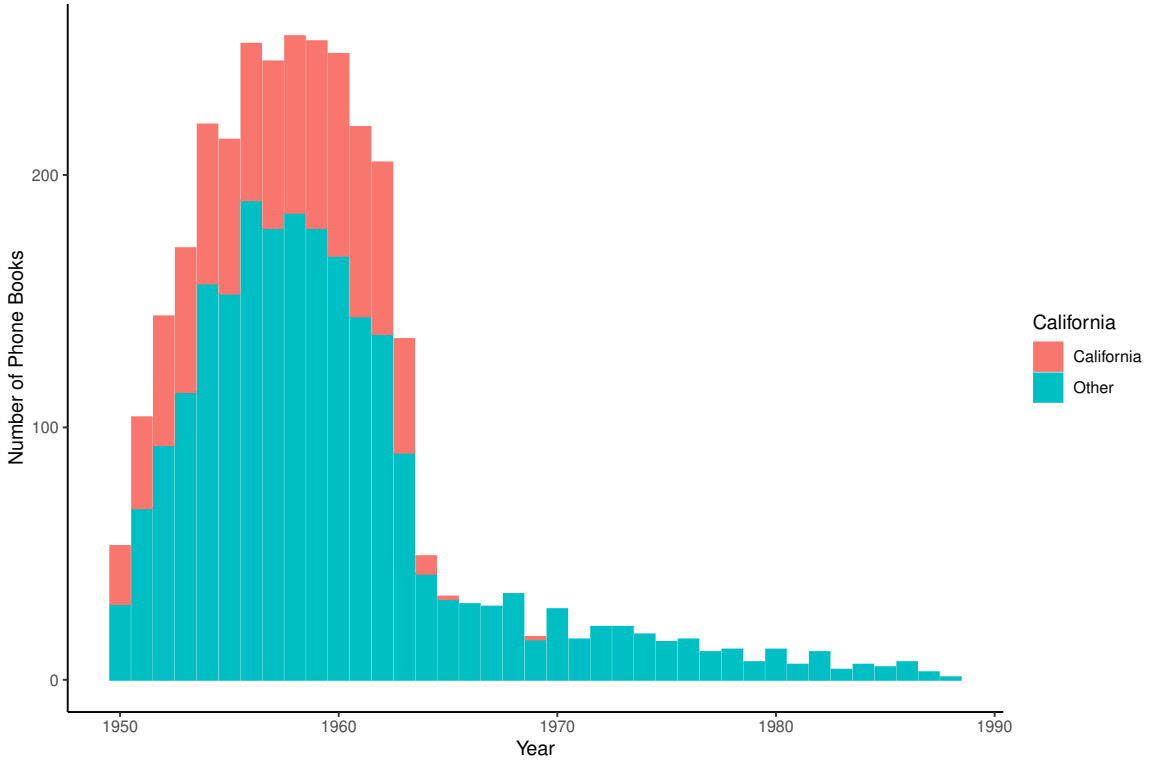
Phonebook coverage: The Dun and Bradstreet (D&B) database was filtered for the states and years covered by the selected phonebooks, resulting in a dataset of 1,974,721 company-years which could conceivably have appeared in phonebooks. The index sections of each phonebook was manually inspected to generate a list of municipalities covered by each phonebook; the list of municipalities for each phonebook area was not found to vary across years. A merge was performed between the list of localities and the D&B dataset, using a concatenated city-state merge index. This generated a binary indicator for each D&B company-year, representing whether or not the company-year is geographically and temporally covered by any of the selected phonebooks. 141,119 (7.2%) company-years were found to be covered by at least one phonebook. Of the 418 municipalities covered by the phonebooks, 281 (67.6%) were not represented by any company-years in the D&B dataset. This is justified by the fact that the phonebook municipality listings contain sub-municipality-level locations, including bodies of water and airports. These locations are all within municipalities listed in both the phonebooks and D&B, such that they are redundant. Furthermore, some municipalities listed in the phonebooks are very small settlements (population <1,000) that are unlikely to have any commercial establishments.

Company matching: Individual companies listed under the "Credit Card" portion of each phonebook's Yellow Pages were manually transcribed to create a dataset of 510 company-years. Each of these company-years represent a merchant that accepted interoperable credit cards in that given year. Other listings pertaining to credit (credit unions, credit reporting agencies, branches of the credit-offering bank, credit card supply or technology companies) were excluded. The phonebook listings are assumed to be a nearly exhaustive list of merchants who accepted credit cards, as both credit card companies and merchants have strong economic incentives to publicize their offerings. Only one credit card plan, Cap Charge Account Plan, noted that the phonebook listing was a partial member list; this plan only appeared in one phonebook. Information represented in the dataset of merchants includes the company's name, phone number, whether the listing was in bold or large font (presumed to represent paid marketing), the industry / sector the company was listed under, and the credit card plan in which it participated. This list of credit-card-accepting merchants was then merged with D&B dataset to identify which D&B-listed company-years accepted credit cards. The initial merge used a concatenated year-phone number merge index, where the phone number used was the last seven digits of the phone number provided. This was done to remove noise from area codes or other phone dialing prefixes that sometimes appeared in the D&B dataset. From this merge, 366 (72%) company-years from the phonebook data were matched with a record in the D&B dataset. Manual comparisons of company names confirmed that the records were all correctly matched. The remaining 142 merchant-years were manually matched with D&B records based on company names, street addresses, and industries, yielding another 47 confident matches. Ultimately, 81.3% of the merchant-year observations in phonebooks were matched with a D&B record. The remainder likely did not have a match because the merchant-year predated DB's database (starting in 1970), or D&B did not record the business as operational in the corresponding year. Finally, the matching phonebook records were merged back into the D&B database. A total of 410 firms were found to have a matching phonebook listing under a card-accepting merchant. Finally, the D&B dataset was filtered to only include cities, 4-digit SIC codes, and years in which at least one firm was found that is

confirmed to accept the bank credit card, resulting in a population of 2,956 firms from 1970 through 1977. 1,177 of these firms exist as of 1977, i.e. at the time of the *Marquette* shock, of which 525 have verified sales data.

Company matching was performed by research assistant Sarah Anderson. I (Joseph Hall) specified the procedure, audited a random subsample of results, and accept responsibility for any remaining errors.

Figure A2: USTD Coverage Over Time



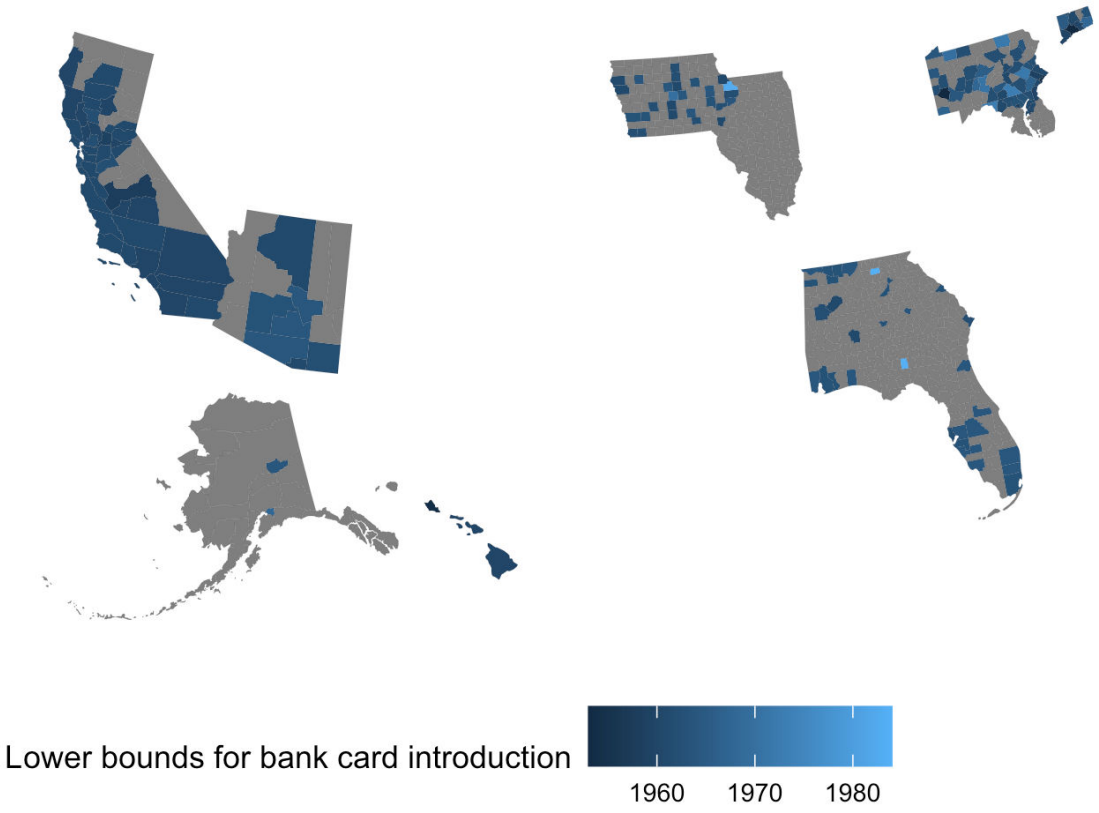
Notes: This figure shows the number of phone books available from the U.S. Telephone Directories collection of the Library of Congress by year since 1950, categorized by state.

Representativeness of Yellow Pages Sample

Variable	In Sample	Not In Sample
Avg Employment ('000)	57	11
Avg Establishments	4,195	847
Avg Small Establishments	3,778	771
Avg Retail Establishments	1,311	279
Employment Growth '47-'59	47%	38%
Total Employment (M)	110	32
Total Establishments ('000)	735	257
Counties	178	3,107

Notes: The table compares counties included vs. excluded from the US Telephone Directories Yellow Pages collection. Where not otherwise stated, variables are as of 1959. The source of employment and establishment statistics is the County Business Patterns dataset.

Figure A3: USTD Coverage and Bank Card Introduction Dates Across US Counties



Notes: Counties included in the USTD Collection are marked in shades of blue according to the lower bound of possible introduction dates of bank credit cards.

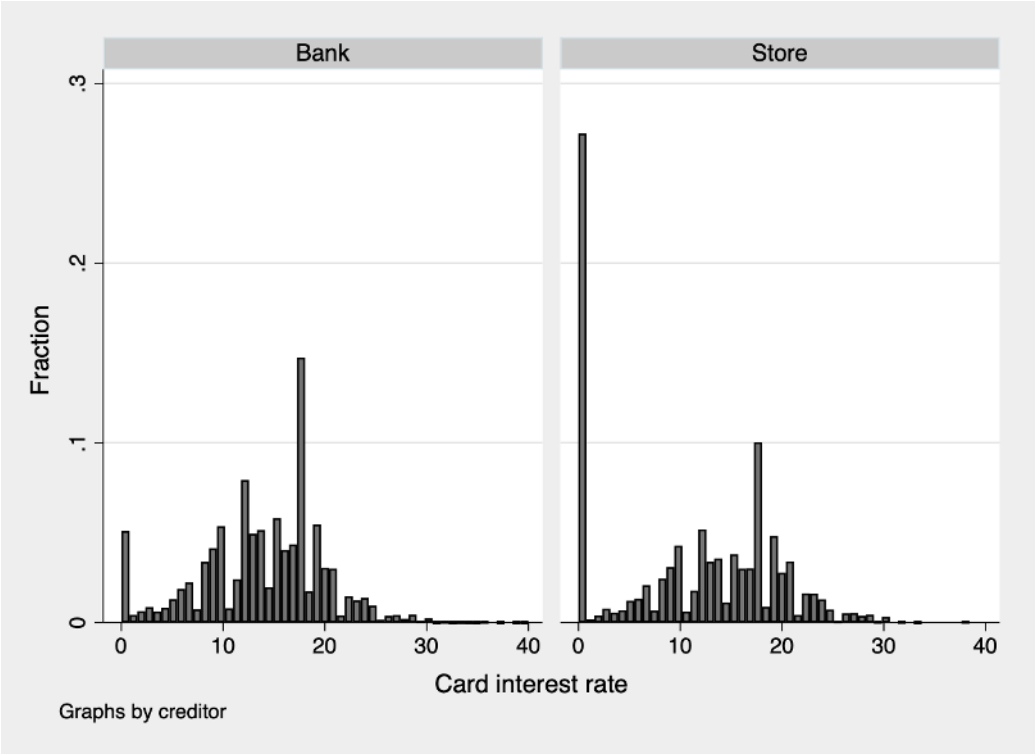
C Summary Statistics

Table A2: SCF, 1970-2019

Variable	Mean	P5	P50	P95	Count
All					
Year	2003	1970	2001	2019	68,392
Pre-tax income	65,088	4,500	41,000	1,550,000	67,770
Bank card spending	652	0	100	9,700	59,271
Store card spending	80	0	0	600	59,370
Bank card balance	1,692	0	0	8,800	61,467
Store card balance	210	0	0	900	61,819
Primary card interest rate	10	0	12	22	49,697
Store credit balance	100	0	0	0	52,160
Auto loan balance	2,971	0	0	17,000	62,527
Mortgage balance	48,747	0	0	373,000	62,686
Pre-1990					
Year	1986	1970	1983	1989	17,982
Pre-tax income	30,609	1,500	16,000	200,000	17,360
Bank card spending	187	0	0	1,000	8,861
Store card spending	70	0	0	400	8,960
Bank card balance	362	0	0	1,000	11,057
Store card balance	168	0	0	646	11,409
Primary card interest rate	18	10	18	21	3,193
Store credit balance	38	0	0	300	1,750
Auto loan balance	1,235	0	0	5,149	12,117
Mortgage balance	15,011	0	0	60,518	12,276
Bottom Quartile by Income					
Year	2002	1970	2001	2019	16,274
Pre-tax income	13,261	2	12,000	26,000	16,274
Bank card spending	139	0	0	800	14,116
Store card spending	29	0	0	120	14,140
Bank card balance	647	0	0	3,100	14,788
Store card balance	99	0	0	489	14,811
Primary card interest rate	6	0	0	22	11,511
Store credit balance	64	0	0	0	12,529
Auto loan balance	1,010	0	0	7,900	15,054
Mortgage balance	9,371	0	0	63,000	15,054

Notes: This table reports summary statistics for the Survey of Consumer Finance data from 1970-2019. Means are weighted by SCF sample weights. For surveys with multiple imputation, only the first implicate is used. Counts reflect non-missing data, which change between variables due to either invalid responses or changes in the composition of questions in the survey over time. Panel 3, "Bottom Quartile by Income" includes respondents in the bottom quartile of income for their respective survey year. Dollar amounts are nominal, i.e. not inflation-adjusted.

Figure A4: Credit Card Interest Rates



Notes: The figure shows the distribution of credit card rates reported in the SCF. Respondents are grouped by whether their largest balance is held on a store or bank credit card; they report the interest rate on that credit card.

Table A3: County Business Patterns Summary Statistics, 1967-1997

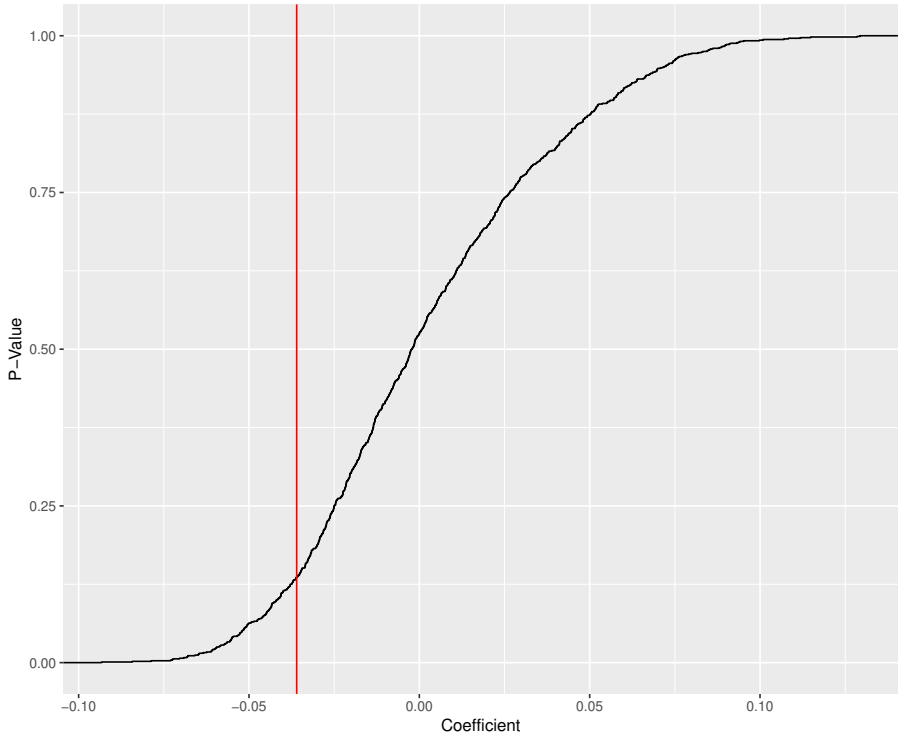
Variable	Mean	P5	P50	P95	Count
All					
Year	1985	1972	1985	1996	3,541,007
Employees	1066	0	39	3758	3,541,007
Establishments	82	2	15	286	3,541,007
Establishments <20emp	70	0	12	246	3,541,007
Establishments 20-49emp	7.1	0	0	25	3,541,007
Clothing retail					
Year	1984	1972	1984	1996	68,151
Employees	696	0	75	3242	68,151
Establishments	91	2	22	381	68,151
Establishments <20emp	85	2	22	353	68,151
Establishments 20-49emp	5.1	0	0	24	68,151

Notes: This table reports summary statistics for County Business Patterns, 1967-1997. An observation is a 2-digit SIC code in a county in a year. Clothing Retail is defined as 2-digit SIC code 56.

D Robustness Checks

A potential concern is that errors are correlated between firms selling in the same state (e.g. demand shocks at the state-level). Because firms sell in multiple states, this is not easily overcome by clustering errors at the state-of-sales level as Abadie et al. (2017) would typically prescribe because the outcome variable (receivables/revenue) exists at the firm level. I address by using permutation testing at the state-of-sales level (Rosenbaum (2010)). I estimate the distribution of β_{1983} under the null hypothesis that usury rates were randomly assigned across states in 1977 and had no effect on receivables-to-revenue ratio. To do this, I randomly sample 1,000[18] random possible treatment vectors, considering 1,000 alternative ways that usury rates could have been assigned in 1977. Then, I re-calculate the treatment at the firm level as described in Section A.7 and estimate Equation 4 on the counterfactual data, which is calculated on the counterfactual vector of treatments but keeping the true vector of outcomes. Figure A5 shows the results of this exercise and shows where the empirical coefficient falls in the null distribution.

Figure A5: Permutation Test of β_{1983}



Notes: The black CDF represents the distribution of β_{1983} under the null hypothesis that usury rates are unrelated to the receivables-to-revenue ratio. The red line represents the empirical point estimate of β_{1983}.

[18] I would obtain Fisher-exact P-values using this procedure if I were to iterate across all 50-choose-9 = 2,505,433,700 counterfactual treatment permutations.

E Additional Historical Sources

CHASE BANK LISTS CREDIT PLAN GAIN

Report Shows Benefits to Merchants Honoring Its Store Charge Cards

The Chase Manhattan Bank reported yesterday that its retail charge credit plan, now eight months old, has 5,000 merchant members with about 5,750 stores. Some 300,000 customers hold credit cards under the plan.

Clinton W. Schwer, vice president, said the average sales volume for the third quarter was expected to be more than $1,000,000 a month.

Men's and women's wear stores, Mr. Schwer said, have produced the greatest volume of sales under the plan. Department stores, household goods stores and jewelry, appliance and shoe stores have been other important users.

Use of the Chase Manhattan Credit Plan, Mr. Schwer said, has tended to increase average sales for "practically every" merchant member. A ladies' variety store's average cash sale during the first six months, he noted, was $4.50. During the same period, he said, the store made about 1,000 sales under the plan. These averaged $13.95. A small department store's cash sale average was $5.86. By using the credit plan, it increased the average on about 1,000 sales to $21.83.

New Accounts Gained

Mr. Schwer said 40 per cent of the merchants who joined the plan in the first quarter represented new accounts for the bank.

He noted that the bank recently had added a method whereby credit card holders can pay automobile, casualty and fire insurance premiums under the plan. Insurance brokers or agents have card holders sign a sales slip for the amount of the insurance premium. The holder is billed at the end of the month for the premium as well as other purchases made during the period.

The plan also has been extended to optometrists, Mr. Schwer said.

In another report, the Chase Manhattan said its savings deposits had increased $29,000,000, or 6 per cent to $529,000,000 during the first six months of 1959. A year before, they were $451,000,000.

The bank said the number of depositors increased from 343,290 to 354,603 and the average balance for each account from $1,374 to $1,480 during the 1959 first half.

Law to Curb Unsought Credit Cards Foreseen

They Fuel Inflation, Spur Bankruptcy, Aid Crime, Witnesses Tell Senate Panel

WASHINGTON — A Senate panel is ready to brand unsolicited credit cards as a plastic menace amid growing signs Congress is prepared to vote stricter controls or ban them from the mails entirely.

Witnesses before the Senate's financial institutions subcommittee have accused unsolicited bank credit cards of causing bankruptcies, fueling inflation, invading privacy and adding a new and lucrative arm to organized crime.

But the two federal agencies most concerned with the problem—the Federal Trade Commission and the Federal Reserve Board—are divided on the issue and the Nixon Administration has backed away from an earlier call for an outright ban on mass credit-card mailings.

Controls Predicted

Sen. William Proxmire (D-Wis.), who has just completed his second hearing in two years on problems caused by the cards, predicted in an interview the Senate will pass controls of some kind next year.

A stumbling block, however, Proxmire said, is the fear a total ban would provide an undeserved windfall for firms already in the credit-card field by insulating them from effective future competition.

"But unless we bring unsolicited credit cards under control," Proxmire said, "we are likely to produce a nation of credit drunks.

"It is ironic that in these inflationary times commercial banks continue to send out still more credit cards urging the consumer to buy more at a time of 18% a year interest.

"For those who are prudent, the credit card could be a convenient device. But for the less prudent, or unsolicited credit card could spell disaster."

Robert L. Meade, legislative-affairs director of the President's Committee on Consumer Interests, blamed the credit cards for a 50% rise in mail-fraud cases in recent years.

Meade's testimony that organized crime has put a $100 black market price tag on stolen cards was backed up by Brooklyn's district attorney who said racketeers charge about $300 for forged identity IDs to facilitate use of stolen cards.

The official, Eugene Gold, said organized racketeers have used stolen cards to pay for transportation around the country and to obtain illegally hundreds of thousands of dollars worth of merchandise.

But while Meade said problems caused by the cards are serious, he called for further study before Congress acts.

"The Nixon Administration is going to study this problem to death," Proxmire commented. He said Meade in a hearing three months ago had put the Administration on record as finally opposing the practice of mailing unsolicited cards.

The Proxmire bill would require a credit-card issuer to first determine the credit worthiness of people receiving the cards. It would authorize the Federal Reserve Board to issue regulations to control the indiscriminate distribution of cards.

It would also limit a consumer's liability — if the card is lost or stolen — to no more than $50.

But Andrew F. Brimmer, a member of the Board of Governors of the Federal Reserve System, testified he does not believe the board is the proper body to take on that job.

Brimmer said he is not convinced that any law is needed and added:

"There have been no developments to date that, in the board's judgment, would warrant preempting this method of card distribution."

Rep. James M. Hanley (D-N.Y.) has introduced a simpler bill which would ban unsolicited credit cards from the mails unless they are sent by registered mail and the sender agrees to pay return postage if the card is rejected.

Figure A6: Selected Newspaper Articles, 1959-1969