Tracing the Trajectory of Financial Development and Consumption Dynamics: Evidence from United States

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Abstract

We assemble a new county-level panel on retail spending, income, and demographics for almost all U.S. counties from 1969-1994 and link it to the staggered relaxation of intrastate branching restrictions to study how financial development shapes consumption dynamics. We show that bank integration robustly raises consumption growth more in initially poor counties than in rich ones, narrowing spatial consumption inequality even as it widens spatial income inequality and depresses deposit growth in poorer areas, in line with key predictions of the incomplete-markets model. We then use crises and local natural disasters to trace consumption responses to aggregate and idiosyncratic shocks, finding that post-deregulation deleveraging by constrained regions amplifies downturns, while improved access to formal finance brings local disaster consumption responses close to complete insurance. Together, these results provide direct empirical tests of three benchmark macro frameworks and demonstrate that financial integration can simultaneously compress consumption gaps, reshape savings patterns, and reallocate risk across space in ways that are first-order for debates on inequality, financial stability, and place-based policy.

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1 Introduction

We use newly digitized, economy-wide data on U.S. county-level consumption to revisit a core question in macro-finance: how does financial development reshape who consumes, who saves, and who bears risk in the United States? Building on the staggered relaxation of intrastate branching restrictions from the 1970s through the early 1990s, we combine a standard quasi-experimental design with an unusually granular panel on retail spending, income, and demographics that covers almost the entire map of U.S. counties over 1969–1994. This setting allows us to move beyond aggregate moments and ask how increasing market completeness through banking integration changes the cross-section of consumption and income growth across space, and how it alters the way local economies transmit aggregate and idiosyncratic shocks.

Our first set of results provides a direct test of the hypothesis in Krueger and Perri (2006) that financial development can compress consumption inequality even as income inequality widens. Using a difference-in-differences framework with rich county and state-by-year fixed effects, we show that deregulation systematically boosts consumption growth in counties that started out poor relative to richer counties in the same state and year. At the same time, income growth in these initially poor counties falls relative to richer areas, and deposit growth tilts even more strongly toward already wealthy counties. Financial development thus reallocates resources in a way that narrows spatial gaps in consumption while accentuating spatial gaps in income and savings, offering clean, spatially disaggregated evidence on a central mechanism in incomplete-markets models.

We then turn to the dynamic role of finance during downturns and local shocks. Motivated by Eggertsson and Krugman (2012) and Guerrieri and Lorenzoni (2017), we ask whether the same banking reforms that expanded credit in normal times amplified deleveraging dynamics in crises. We document that the consumption gains of poorer counties after deregulation largely vanish in post-crisis years, consistent with a tightening of borrowing constraints that deepens regional downturns.

Finally, building on the complete-insurance tests of Cochrane (1991) and Townsend (1994), we combine our consumption data with county-level information on natural disasters. Before deregulation, local shocks translate into meaningful drops in consumption; after deregulation, these effects are almost fully attenuated, indicating that improved access to formal financial institutions substantially enhances risk-sharing.

By bringing together a new county-level consumption dataset, a well-identified source of variation in financial development, and a unified empirical framework, the paper delivers some of the first

direct, spatially granular tests of three benchmark macroeconomic models. In doing so, it shows that banking deregulation in the United States not only mattered for aggregate growth and volatility, but fundamentally reconfigured the geography of consumption, income, savings, and insurance-implications that speak directly to current debates on regional inequality, financial stability, and the design of place-based policies.

We conduct a battery of tests that suggest the robustness of our key findings. First, we re-estimate our main specifications in a sample restricted to bordering counties. While our baseline design includes granular fixed effects – county fixed effects and state×year fixed effects – in this alternative design we additionally include county-pair×year fixed effects, where a county-pair consists of two adjacent counties located in different states. This specification absorbs time-varying shocks at the border-region level that affect the bordering counties in a pair in a given year. Moreover, we show that bordering and non-bordering counties have similar observable characteristics, and that treated counties and control counties are well balanced before deregulation.

Beyond this border design, we confirm that our results are robust to several further checks. They are stable when we address recent concerns about staggered difference-in-differences designs, when we augment the regressions with additional control variables, and when we replace the rank measure with the log of 1969 income per capita. We also conduct two placebo exercises in which we randomly assign deregulation years and, separately, randomly permute the poverty ranking variable. In both cases, the resulting coefficient distributions are centered around zero, and none of the placebo estimates approaches the magnitudes we find in the actual data. These patterns indicate that our results are unlikely to be driven by spurious correlations.

The main contribution of this paper is to leverage novel county-level consumption data to provide direct empirical tests of three prominent macroeconomic models. In doing so, we speak to four strands of the literature. First, we contribute to empirical work that examines how financial development shapes consumption and income distributions. While work on the consumption distribution is limited, our analysis is related to Beck, Levine and Levkov (2010), who focus on the effect of the banking deregulation on the income distribution. Importantly, our papers highlight different dimensions of inequality. Beck, Levine and Levkov (2010) focus on state-level inequality among households, finding that financial development can decrease this type of inequality by increasing the wages of unskilled workers. In contrast, we focus on spatial inequality across locations and find that financial development

can widen income disparities among counties.[1]

Second, we relate to the literature on consumption responses to idiosyncratic and aggregate shocks. Investigating household-level idiosyncratic shocks, Cochrane (1991) finds that U.S. households experience significant consumption drops following involuntary job loss or long illnesses. On the other hand, studies in developing countries such as Townsend (1994) find that household consumption is affected little by own income or sickness due to informal risk-sharing networks. Examining U.S. regional idiosyncratic exposures to the Great Financial Crisis, Mian, Rao and Sufi (2013) reject the complete risk-sharing hypothesis and find that locations with lower income and higher pre-existing debt levels experience deeper consumption contractions, consistent with Eggertsson and Krugman (2012). We contribute to this literature by investigating the role of financial development on the relationship between consumption and shocks.

Third, our study extends the work on the impact of banking deregulation. Prior research has shown that removing restrictions on banking can improve bank performance (Jayaratne and Strahan, 1998) and has examined effects on economic growth (Jayaratne and Strahan, 1996; Huang, 2008), economic volatility (Morgan, Rime and Strahan, 2004; Demyanyk, Ostergaard and Sørensen, 2007), corporate lending (Rice and Strahan, 2010), corporate innovation (Hombert and Matray, 2017), entrepreneurship (Black and Strahan, 2002; Kerr and Nanda, 2009), gender wage inequality (Black and Strahan, 2001), financial inclusion and household wealth accumulation (Célerier and Matray, 2019), as well as mortgage markets and house prices (Tewari, 2014; Favara and Imbs, 2015; Landier, Sraer and Thesmar, 2017). We contribute to this well-established literature by providing a first analysis of how banking deregulation shapes spatial inequality.

Finally, we connect to the descriptive literature on spatial inequality. Gaubert et al. (2021) document long-run trends in income inequality across U.S. states and counties between 1960 and 2019, combining administrative and survey data. They show that per capita pre-tax incomes have diverged across states since the late 1990s, and across counties since the late 1970s, consistent with our findings. The authors argue that the rise in regional dispersion has outpaced the increase in aggregate interpersonal inequality (Autor, 2014; Piketty, Saez and Zucman, 2018). These trends have implications for place-based policies Austin, Glaeser and Summers (2018). Our analysis informs this literature by examining how financial development contributes to these spatial dynamics.

This paper proceeds as follows. Section 2 describes the Survey of Buying Power data and

[1] In a working paper, Angeloni, Kasinger and Tantasith (2021) explore the U.S. county-level spatial correlation between indicators for bank performance and economic growth from 1990 to 2019.

compares it to aggregate statistics from other sources. Section 3 outlines the empirical strategy. Section 4 presents the results, followed by robustness and placebo tests in section 5. Section 6 concludes.

2 Data

This paper presents novel data from the Survey of Buying Power on consumption, income, and demographics at the county level between 1969 and 1994. The Survey of Buying Power has been published by the Sales and Marketing Management magazine. Its main purpose was to assist businesses in market analysis. We digitize the data from the hard copies of the September issues of the magazine, a labor-intensive process requiring careful extraction and verification of tables from decades-old printed material. Figure D.1 shows examples of these hard copies. A detailed description of the variables we obtain is provided in Appendix D.1. Although the exact data collection methods are proprietary, the magazine's notes indicate that several hundred thousand dollars are invested each year to develop the data contained in the annual publication.[2]

To the best of our knowledge, this dataset is the first comprehensive outline of consumption at the county level for the period. In contrast, other widely used data for consumption (primarily the Consumer Expenditure Survey (CEX)) is not available on the county level. Data on income at the county level could be constructed from sources such as the Statistics of Income (SOI) tax return data, but access is restricted. Appendix D.2 provides a detailed overview of datasets previously available to researchers for consumption and income measures.

2.1 Data Coverage

We begin by describing the coverage of the Survey of Buying Power. Table A.1 reports the year-wise coverage of counties, where year refers to calendar year. The dataset spans from 1969 to 1994, with two missing years, 1988 and 1989. For these two years, the hard copies of the survey were not available to us when digitizing the dataset. In a given year, on average, data on 3,066 out of 3,112 counties (98.52%) is available.[3] One special case is the year 1975, when only 2,275 counties are present in the data. Excluding this year, the average number of counties rises to 3,101 or 99.65%. Thus, in a given year, with the exceptions of 1975, 1988, and 1989, we have comprehensive coverage on the county level.

Table A.2 describes the state-wise coverage of counties. The number of counties in each state is

[2]These costs are primarily covered by firms that advertise in the magazines.
[3]Note that we exclude Alaska and the District of Columbia (DC), as data is not available at the county level.

calculated as the average number of counties for all years available between 1969 and 1994, excluding 1975. We observe county-level data for 49 states. On average, at most one county is missing per state. Consequently, the Survey of Buying Power offers nearly complete county-level coverage for every state, with the exceptions of Alaska and DC.

Figure A.1 offers a visual perspective on this coverage. The map depicts the percentage of years each county appears in the data, with darker colors representing higher coverage. We observe that 98% of counties are present in more than 95% of the years in our data, and 70% of counties are present in all years in our data. This visually reinforces the near-complete temporal and geographic coverage documented in Tables A.1 and A.2.

2.2 Summary Statistics

We describe the summary statistics of the Survey of Buying Power in Table 1. We report both the levels in 1994 as well as the year-on-year growth rates across years, our main object of interest. In 1994, the annual median retail spending is $6,293 per capita; this measure is our proxy for total consumption.[4] In terms of individual consumption categories, median food and restaurant spending are $1,442 and $579. Survey participants spend $1,480 on vehicles, $265 on drugs, $214 on home durables, and $671 fall under general merchandise spending. The median income is $13,355 per capita. We also observe demographic statistics. The median county has a population of 24 thousand, and the median age is 36 years. In terms of growth rates across years, the median rate for retail spending is 6.13%. The ones for spending on food, restaurants, vehicles, drugs, home durables, and general merchandise range from 5.88% (for general merchandise) to 8.47% (for vehicles). The median year-on-year growth rate for income is similarly 7.17%.

2.3 Data Validation

We next assess how aggregate statistics from the Survey of Buying Power align with those from alternative data sources. Figure A.2 shows that population measures in the survey closely track census data. This correspondence holds both at the county level (Figure A.2a) and when aggregated across counties over time (Figure A.2b). Turning to growth rates, Figure A.3 compares aggregate growth in the survey with growth rates primarily drawn from the U.S. Bureau of Labor Statistics. In particular, Figure A.3a compares survey retail spending growth to nominal GDP growth, revealing a strong correlation of 80% and similarly timed fluctuations. Figure A.3b demonstrates that retail spending growth is

[4]Throughout the paper, we express amounts in current USD per capita.

also highly correlated (72%) with aggregate nominal consumption growth, again exhibiting consistent temporal patterns.[5] For specific spending categories – vehicles, food, and durables – the survey data can be directly matched to separate aggregate time series (Figures A.3d to A.3f). Correlations range from 62% for food and durables to 82% for vehicles, with the series exhibiting consistent co-movements over time. Overall, these comparisons indicate that both population and consumption growth measures in the Survey of Buying Power are closely aligned with aggregate statistics from sources such as the U.S. Bureau of Labor Statistics.[6]

2.4 Additional Data

Our analysis primarily relies on the Survey of Buying Power. To further investigate the effect of banking deregulation on deposits, we use historical FDIC Summary of Deposits data. This data precedes the data found on the website of the FDIC and spans 1981–1993.[7] We analyze total deposits at the bank×county×year level.[8]

To study how consumption patterns respond to idiosyncratic shocks, we incorporate data on local disasters for the years 1970-1994, obtained from ASU Center for Emergency Management and Homeland Security (2025). For each year, we compute the standardized disaster property damage per capita from the previous year. This data is available at the county×year level.

3 Empirical Strategy

Our data allows us to test the implications of three key macroeconomic models. In particular, we investigate predictions on how financial development shapes granular consumption patterns, both across space and in response to aggregate and idiosyncratic shocks. In this section, we initially describe the well-established exogenous variation in financial development that we utilize. We then outline the construction of our county-level poverty rank, which we require to measure heterogeneous treatment effects of financial development across space. Lastly, we set up our regression framework.

[5] An alternative consumption measure is waste generation ("garbage"), which shows a lower correlation with survey retail growth (46%) and differs in level, yet the two series display broadly similar fluctuations over time (Figure A.3c).

[6] Waldo and Fuller (1977) draw similar conclusions. The authors compare the Survey of Buying Power data with population data from the U.S. Census Bureau and spending data from the U.S. Department of Commerce, finding a close alignment, with differences smaller than one percent. They also interview magazine purchasers from a list supplied by the publisher and conclude that the survey is "widely known and respected" (p. 66).

[7] We obtain this data from the website of Christa Bouwman.

[8] Here, bank refers to the high holder, identified by the variable RSSD9348.

3.1 Banking Deregulation

We build on a well-established literature examining the effects of banking deregulation in the U.S. Until the 1970s, most states restricted the geographical expansion of banks both within and across state borders. Over the 1970s, 1980s, and early 1990s, states permitted unrestricted intrastate branching in a staggered fashion. Our analysis focuses on these full intrastate branching reforms. Table B.2, column 2, reports the year each state allowed unrestricted intrastate branching. Two additional banking reforms are often studied in the literature. First, some states permitted intrastate branching only through mergers and acquisitions (M&A) (Table B.2, column 1), usually preceding full intrastate deregulation. Second, some states allowed interstate banking in the form of cross-state ownership of banks. Table B.2, column 3, reports the year each state first entered an interstate banking agreement.[9] In our robustness tests, we show that our results hold if we examine these two alternative forms of banking deregulation, intrastate M&A branching, and interstate banking. Berger, Demsetz and Strahan (1999) and Kroszner and Strahan (1999) provide more details on causes of U.S. banking deregulation.

3.2 Poverty Rank

To examine heterogeneous treatment effects across space, we construct a relative poverty rank measure, denoted $\text{Rank}_{c,1969}$, that captures a county's (c) income position within its state (s) in 1969. For each state, we first order counties by per capita income, assigning the richest county an ordinal position of zero and the poorest county an ordinal position of $N_s - 1$, where N_s is the number of counties in the state. We then divide this ordinal position by $N_s - 1$, which effectively normalizes the ordinal position. By construction, the richest county in the state has a rank of zero, while the poorest county in the state has a rank of one.

$$\text{Rank}_{c,1969} = \frac{\text{OrdinalPosition}_{c,1969}}{\text{N}_s - 1} \tag{1}$$

Table 1 describes the summary statistics of the rank measure. The measure has a mean and median of 0.50, and a standard deviation of 0.29. It is time-invariant. Figure 1 shows the rank distribution geographically. Consistent with the within-state design, we observe large geographic variation within a state.[10]

[9] These agreements did not allow full integration of acquired banks' branches into the acquirer's out-of-state operations. The process of interstate deregulation was completed with the 1994 Interstate Banking and Branching Efficiency Act (IBBEA), which mandated all states to permit interstate branching by 1997.

[10] Income in 1969 is a strong predictor of future income, see Figure B.2 and Table B.1.

3.3 Regression

We employ a difference-in-difference (DID) estimation strategy to examine the heterogeneous effects of banking deregulation, based on counties' 1969 relative poverty rank:

$$\Delta \text{LN(Retail)}_{c,s,t} = \alpha + \beta \text{Rank}_{c,1969} \times \text{Post}_{s,t} + \theta_c + \theta_{s,t} + \varepsilon_{c,s,t} \tag{2}$$

Our main measure of consumption growth is $\Delta \text{LN(Retail)}_{c,s,t}$, the standardized difference in the natural logarithm of total retail spending per capita in county c in state s at year t. $\text{Post}_{s,t}$ is an indicator defined as one if the state has fully deregulated intrastate branching. $\text{Rank}_{c,1969}$ is the relative poverty rank measure defined in section 3.2. Our main coefficient of interest is β, which captures whether the effect of banking deregulation on retail spending growth differs systematically with a county's initial poverty status. A positive β would imply that poorer counties (higher rank) experience stronger growth in retail spending after deregulation relative to richer counties in the same state and year. Standard errors are clustered on the county level. In our main specification, we include county fixed effects (θ_c) and state×year fixed effects ($\theta_{s,t}$), but we show robustness to other sets of fixed effects. The county fixed effects control for county-specific time-invariant differences. The state×year fixed effects control for time-varying shocks on the state-level, time-invariant state-level characteristics, and nationwide aggregate shocks. The granularity of our data allows us to improve upon previous studies of banking deregulation that rely on state×year outcomes and, for example, cannot account for time-varying shocks at the state level. While our fixed effects framework controls for a broad set of potential confounding factors, we ultimately require the parallel trends assumption to hold. This ensures that the estimate is not influenced by pre-existing trends. While this assumption is untestable, we document parallel pre-trends in an event study analysis.[11]

4 Results

4.1 Consumption Growth

We begin our analysis by empirically testing the key prediction of Krueger and Perri (2006) that financial development narrows consumption inequalities. To study this hypothesis, we examine the heterogeneous treatment effect on consumption growth rates by the ex-ante poverty ranking, utilizing

[11] Baker, Larcker and Wang (2022) offer a detailed overview of challenges associated with the standard difference-in-difference estimator and discuss potential solutions. We show that our results are robust to adjusting for these concerns.

our regression framework in equation 2. Table 2 presents the results. Column 1 describes the results using the simplest specification. We sequentially add fixed effects, estimating our strictest specification in column 7, which includes county fixed effects and state×year fixed effects. Our estimate of interest, the interaction between the rank variable and the post variable, is consistently positive and statistically significant across all columns. Using the strictest specification, we find that the coefficient on the interaction term is 0.1920, explaining collectively with the fixed effects 25% of the variation in the growth rate of consumption. This means that after the banking deregulation, counties that were poorer in 1969 (had a higher rank) experienced significantly stronger consumption growth relative to richer counties within the same state and year. We also observe that before the deregulation, poorer counties had lower consumption growth relative to richer counties.

In terms of magnitude, a 10-percentile difference in rank corresponds to 0.1920x0.1=0.0192 standard deviations of higher consumption growth. Given that the standard deviation of consumption growth is 0.1219, this translates into a 4% higher growth rate relative to the median of 6.13% ((0.0192x0.1219)/0.0613). Thus, the heterogeneous effect of banking deregulation is robust across specifications, statistically significant, and economically meaningful.

We supplement our analysis by calculating the effect of banking deregulation for separate income groups. We categorize counties into six groups, splitting the 1969 income distribution at the cutoffs of the 10th, 25th, 50th, 75th, and 90th percentiles. Thus, counties in the first group (up until the 10th percentile) are the poorest counties, and counties in the last group (90th percentile and above) are the richest counties in 1969. Figure 2a depicts the coefficients of our regression equation; counties above the 90th percentile are the reference group. We find a clear pattern: Counties in lower income groups are more likely to experience positive post-deregulation growth than counties above the 90th percentile, and the difference is statistically significant. In Figure 2b, where the regression is run separately for each income group without a reference group, we observe that the effect for the richest counties (above the 90th percentile) is not statistically different from zero, indicating that our findings in Figure 2a are not driven by a decline in consumption growth rates in the highest income group.

Additionally, we regress the consumption growth rate on the rank variable separately for each state and each year. Figure B.1 depicts the cumulative distribution functions of coefficients separately for pre- and post-deregulation years. We observe that the post-deregulation distribution first-order stochastically dominates the pre-deregulation distribution. Additionally, the difference in means of the coefficient distributions pre- and post is statistically significant. This indicates that, across all states

and years, the relationship between consumption growth and the rank variable systematically shifted upward following deregulation.

4.2 Dynamic Response

Next, we investigate the dynamic response of consumption growth rates over time. This corresponds to equation 2 but additionally includes specific dummies for pre- and post-periods. Figure 3 depicts the results. The figure indicates that pre-trends are unlikely to drive our results; the parallel trends assumption is thus likely to hold. We also observe that the relative increase in consumption growth rates appears immediately after the deregulation and persists thereafter.

4.3 Consumption Categories

Besides the aggregate retail consumption, the Survey of Buying Power separately reports spending on food, restaurants, vehicles, drugs, home durables, and other general merchandise. We can thus separately examine the effect of banking deregulation on different categories of spending. Our results in Table 3 show that ex-ante poorer counties experience a stronger consumption growth across all spending categories except vehicle spending, relative to richer counties. The largest effects are observed for general merchandise spending (coefficient = 0.1975; a 10–percentile difference in poverty rank corresponds to 10% higher growth relative to the median), restaurants (0.2641; 7% relative to the median), and drugs (0.1810; 7%), followed by home durables (0.0975; 5%) and food (0.1112; 3%). These findings indicate that the heterogeneous effect of deregulation is broadly distributed across categories and is not driven by any single type of spending.

4.4 Income Growth

We test two additional predictions of the Krueger and Perri (2006) model. Initially, we investigate how financial development affects income inequality, examining the effect on the standardized income growth rate in our framework. Table 4 describes the results, sequentially adding fixed effects, estimating our strictest specification in column 7, which includes county fixed effects and state×year fixed effects. The estimate of interest, the interaction between the rank variable and the post variable, is consistently negative and statistically significant across all columns. In the strictest specification, the coefficient on the interaction term is -0.1759. Jointly with the fixed effects, the interaction term explains 27% of the variation in the income growth rate. We conclude that after the banking deregulation, counties that were poorer in 1969 (had a higher rank) experienced significantly lower income growth relative to

richer counties in the same state and year. Before the deregulation, poorer counties had higher growth in income relative to richer counties. The economic magnitude of the income effect is around half of the consumption effect. A 10-percentile difference in rank corresponds to a 2% lower income growth relative to the median of 7.17%. We conclude that while the banking deregulation contributed to narrowing consumption inequality, it contributed to widening income inequality, in alignment with the model.

4.5 Deposit Growth

According to the model, poorer areas tend to act as consumers, while richer areas tend to act as savers. We explore the model's prediction that financial development reinforces this divergence in savings behavior. To test this, we examine the outcome of the standardized deposit growth rate. To this end, we analyze the historical Summary of Deposits Data by the FDIC on the bank×county×year level. We run equation 3, where b indicates bank, c county, s state, and t year. In its strictest specification, the regression includes county fixed effects (θ_c) and bank×state×year fixed effects ($\theta_{b,s,t}$).

$$\Delta \text{LN(Deposits)}_{b,c,s,t} = \alpha + \beta \text{Rank}_{c,1969} \times \text{Post}_{s,t} + \theta_c + \theta_{b,s,t} + \varepsilon_{b,c,s,t} \tag{3}$$

Table 5 depicts our results, sequentially adding stricter fixed effects, estimating the strictest specification in column 3. The coefficient on the interaction between rank and post is negative and statistically significant across all specifications. This suggests that after banking deregulation, counties that were poorer in 1969 experienced significantly lower deposit growth relative to richer counties. This pattern was already present before the banking deregulation, but it got exaggerated afterwards. Thus, our findings are also consistent with the savings predictions of Krueger and Perri (2006).

4.6 Aggregate Shocks

We next investigate how the relationship between financial development and consumption patterns shifts during aggregate shocks. Eggertsson and Krugman (2012) predict that in times of economic crisis, consumers have to deleverage, which further reduces their consumption and worsens the crisis. To test this hypothesis, we run the following regression, where Crisis_t is an indicator equal to one if the year t-1, t-2, or t-3 experienced an economic crisis. Our main coefficient of interest is β_1, which examines the heterogeneous effect of banking deregulation by poverty rank separately for post-crisis years. If the hypothesis of Eggertsson and Krugman (2012) holds, we expect that in post-crisis years, poorer

counties experience a weaker consumption growth than richer counties, relative to non-post-crisis years. In other words, we expect β_1 to be negative.

$$\begin{aligned}\Delta \text{LN(Retail)}_{c,s,t} = \alpha + \beta_1 \text{Rank}_{c,1969} \times \text{Post}_{s,t} \times \text{Crisis}_t + \beta_2 \text{Rank}_{c,1969} \times \text{Post}_{s,t} \\ + \beta_3 \text{Rank}_{c,1969} \times \text{Crisis}_t + \theta_c + \theta_{s,t} + \varepsilon_{c,s,t}\end{aligned} \tag{4}$$

Table 6 describes the results. Column 2 shows that while in non-post-crisis years the coefficient remains positive and statistically significant at 0.3784, in post-crisis years, the coefficient is negative and statistically significant at -0.3188. This indicates that the consumption growth increase that poorer counties get from deregulation in usual times is substantially reduced following a crisis. In column 3, we separately investigate three periods of economic crisis: the post-crisis years of 1975, 1980, and 1990. We observe that for each of these crises, the coefficient is negative, statistically significant, and similar in magnitude to the pooled effect. Leveraging our granular county-level data, our results provide empirical support for the model of Eggertsson and Krugman (2012).

4.7 Idiosyncratic Shocks

Finally, we examine how financial development affects consumption patterns during idiosyncratic shocks (Cochrane, 1991; Townsend, 1994). To implement the classical test of complete insurance, we utilize county×year data on local disasters. We obtain a standardized measure of disaster damage per capita, test the impact of this shock proxy on consumption growth, and examine how the relationship is affected by banking deregulation using the regression equation 5.

$$\begin{aligned}\triangle \text{LN(Retail)}_{c,s,t} = \alpha + \beta_1 \text{Disaster Damage Per Capita}_{c,s,t-1} \\ + \beta_2 \text{Disaster Damage Per Capita}_{c,s,t-1} \times \text{Post}_{s,t} + \varepsilon_{c,s,t}\end{aligned} \tag{5}$$

Table 7 reports the results. In column 1, we regress consumption growth only on disaster damage per capita. The estimated coefficient is negative, small in magnitude, and statistically insignificant – consistent with the complete insurance hypothesis. In column 2, once we include the interaction with the post-deregulation indicator, a different pattern emerges. Prior to banking deregulation, local shocks significantly reduced consumption growth, indicating incomplete insurance. After deregulation, however, consumption growth significantly increased in response to local shocks. A formal test confirms that the sum of these two coefficients is not statistically different from zero (F = 0.67, p = 0.415),

indicating that the post-deregulation effect fully offsets the pre-deregulation shock, consistent with complete insurance being achieved after banking reforms. Taken together, these findings suggest that banking deregulation played a key role in improving risk-sharing and moving the U.S. economy closer to complete insurance.[12]

5 Robustness and Placebo

5.1 Bordering Counties

Our main specifications include granular fixed effects such as county fixed effects and state×year fixed effects. This allows us to control for key identification concerns such as time-invariant county characteristics, time-invariant state characteristics, nationwide aggregate shocks, and time-varying shocks on the state level. In this section, we demonstrate that our results are robust to focusing only on bordering counties, following a design by Huang (2008). Figure 4 depicts county-border pairs that are included in our regression. We include only land bordering counties in the sample with deregulation dates at least five years apart. For instance, we compare a county in New York, which introduced banking deregulation in 1976, to a bordering county in Pennsylvania, which introduced deregulation in 1990. We limit the sample to a five-year window before and after the first county in the county-pair implemented deregulation. The resulting data is on the county×county-pair(p)×year level, as a county can have multiple bordering counties. The resulting regression equation 6 is close to our main specification, but includes, in our strictest specification, county-pair×year fixed effects ($\theta_{p,t}$) in addition to county fixed effects (θ_c) and state×year fixed effects ($\theta_{s,t}$). By including county-pair×year fixed effects, we control for time-varying shocks specific to a border region that affect both counties in the pair in a given year (e.g., local labor market changes). Thus, the identification comes from within-pair, across-county variation. Figures C.2 and C.3 show that bordering and non-bordering counties exhibit comparable characteristics. Figures C.4 and C.5 illustrate that treatment counties (where the banking deregulation was implemented) and control counties (where the banking deregulation was not yet implemented) are well balanced prior to banking deregulation.

$$\Delta \text{LN(Retail)}_{c,p,s,t} = \alpha + \beta \text{Rank}_{c,1969} \times \text{Post}_{s,t} + \theta_{p,t} + \theta_c + \theta_{s,t} + \varepsilon_{c,p,s,t} \tag{6}$$

We demonstrate that our results are robust to exclusively focusing on bordering counties. Table 8

[12] Table C.4 demonstrates that the results are robust to including different fixed effects.

repeats Table 2, which depicts the effect on consumption inequality, on the border sample. In columns 1 to 7, we sequentially add fixed effects; column 7 includes the strictest fixed effect specification described in equation 6. As expected, the coefficient on the interaction between the rank variable and the post variable is consistently positive and statistically significant across all columns. In the strictest specification, we find that the coefficient on the interaction term is 0.4730, explaining collectively with the fixed effects 59% of the variation in consumption growth rates. Table 9 replicates Table 6, which investigates the response to the consumption growth rate differentially by post-crisis years. Similar to the full sample, the coefficient on the interaction of rank and post is positive and statistically significant (1.6489), while in post-crisis years, the consumption growth increase that poorer counties get from deregulation in usual times is substantially reduced (-1.6293). In column 3, we separately investigate three periods of economic crisis; while for 1975 and 1990 the coefficients remain negative and statistically significant, for 1980, the coefficient is negative but statistically insignificant. This could be due to a decrease in statistical power as we reduce our sample size. Summarizing, these findings provide confidence that our results are robust to a granular border design.

5.2 Other Robustness and Placebo Tests

We provide a battery of further robustness and placebo tests. First, we examine robustness to other types of deregulation. In our main analysis, we focus on the full intrastate branching deregulation. Table B.3 additionally explores reforms that permitted intrastate branching only through M&As (column 2) and reforms that permitted interstate banking (column 4). We observe that the coefficients remain positive and statistically significant if we investigate these two types of reforms separately. They are around half to three-quarters in size relative to the coefficient of the full intra-branch deregulation, suggesting that these reforms were less influential for consumption growth. Indeed, when we include the full intra-branch deregulation indicator in these regressions, the coefficients on the alternative reforms are either negative and statistically significant (for the M&A reforms) or insignificant (for the interstate reforms). This suggests that once we control for the main reform, the additional variation from these narrower reforms does not contribute positively to consumption growth.

Furthermore, we adjust for concerns that may arise due to the staggered nature of our difference-in-difference design. Table C.1 presents the results from the stacked regression. The data is on the county×year×cohort level, where each deregulation year presents a cohort. The controls are states that were deregulated after 1994. All regression models incorporate interactions between the baseline fixed effects and the cohort indicator variable. This inclusion ensures that our estimates represent

weighted averages of differences between treatment and control groups within each cohort, mitigating the potential issue of bad comparisons. We find that our key results on the consumption growth rate and the effect in post-crisis years are robust.

We conduct two minor additional robustness tests. In Table C.2, we control for population and median age in the county, both individually as well as interacted with the post indicator. We find that our consumption growth rate coefficient remains positive and statistically significant. In Table C.3, we replace the rank variable by the standardized natural logarithm of income per capita in a given county in 1969 or year t. As expected, we find that a higher income in 1969 or year t is associated with a lower consumption growth rate post deregulation.

Finally, we conduct two placebo tests. First, we replace the deregulation year with a placebo deregulation year, which is a random integer drawn uniformly between 1960 and 1996. If the randomly drawn integer is within five years of the original deregulation year, we replace the placebo year with the true deregulation year minus or plus six years, depending on whether the placebo year was before or after the original deregulation year. We repeat this exercise 3,500 times. Figure C.1a depicts the kernel density of the resulting coefficients associated with the interaction term of the rank variable and the placebo post variable. Second, we replace the rank variable in each state with a placebo variable that is a random number between zero and one from the continuous uniform distribution. We repeat this exercise 3,500 times. Figure C.1b plots the kernel density of the coefficients associated with the interaction term of the placebo rank variable and the post variable. The distributions of these coefficients are centered around zero, and none of the estimated placebo coefficients has a magnitude greater than the one reported in Table 2, column 7. This suggests that our results are unlikely to be spurious.

6 Conclusion

In conclusion, we provide a novel dataset on consumption, income, and demographics at the county level between 1969 and 1994. To the best of our knowledge, this is the first comprehensive information on consumption at the county level for this period. We combine this data with the staggered introduction of state-level banking deregulation to empirically test three key macroeconomic models. First, we find evidence that financial development narrows consumption inequalities, in alignment with Krueger and Perri (2006). Supporting two more predictions of the model, financial development increases income inequalities and reinforces the divergence in savings behavior between poorer and richer areas. Second,

our data confirms the hypothesis of Eggertsson and Krugman (2012) that during aggregate shocks, consumers deleverage, reduce consumption, and thereby worsen the crisis. Third, we demonstrate that banking deregulation played a key role in improving risk-sharing, moving the U.S. economy closer to complete insurance under idiosyncratic shocks. To summarize, our results provide a comprehensive empirical validation of how financial development shapes granular consumption patterns, both across space and in response to aggregate and idiosyncratic shocks.

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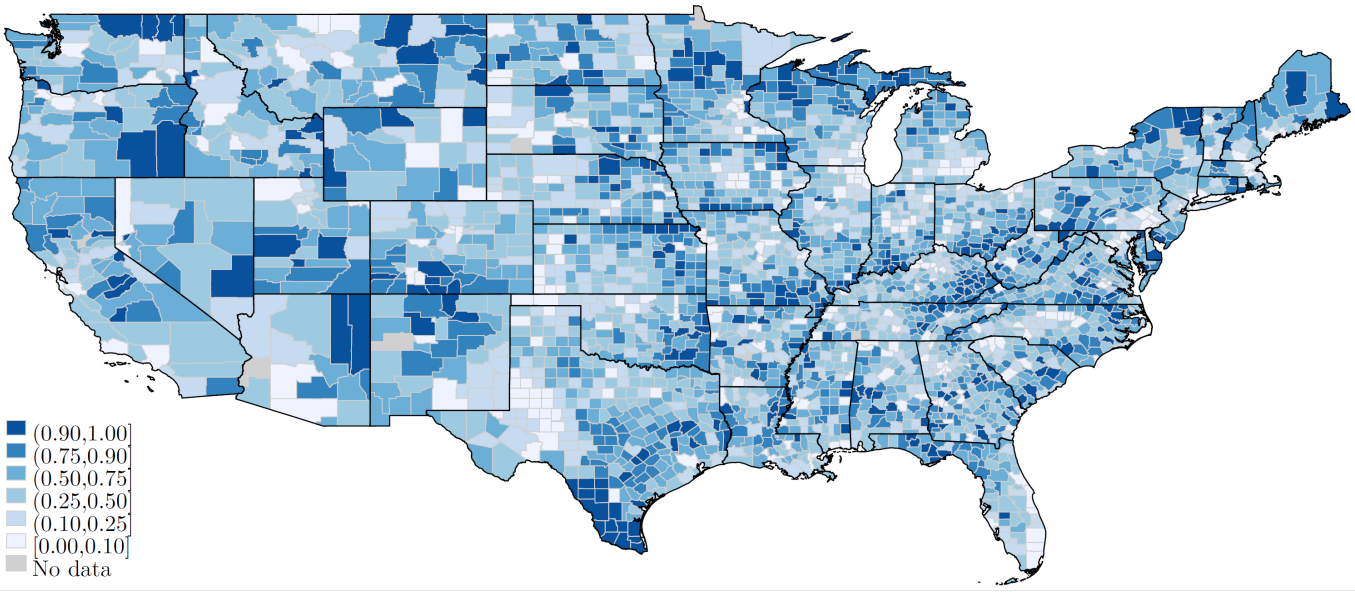
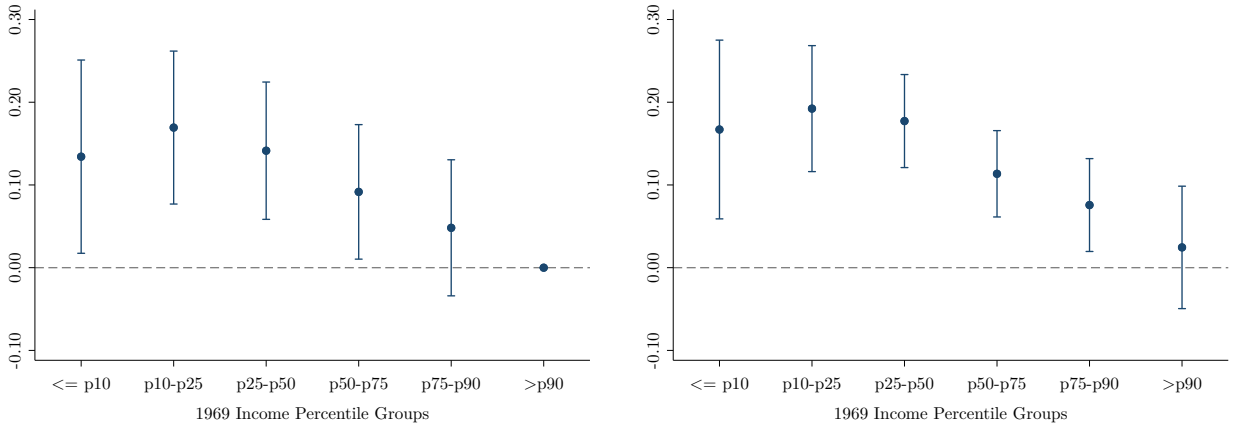
Figures

Figure 1: Distribution of Relative Rank Within State



Notes: This figure depicts the county-level relative rank, which refers to the within state rank based on the income distribution in 1969. A higher rank indicates a lower 1969 income.

Figure 2: Heterogeneity by Income Group



(a) With Reference Group

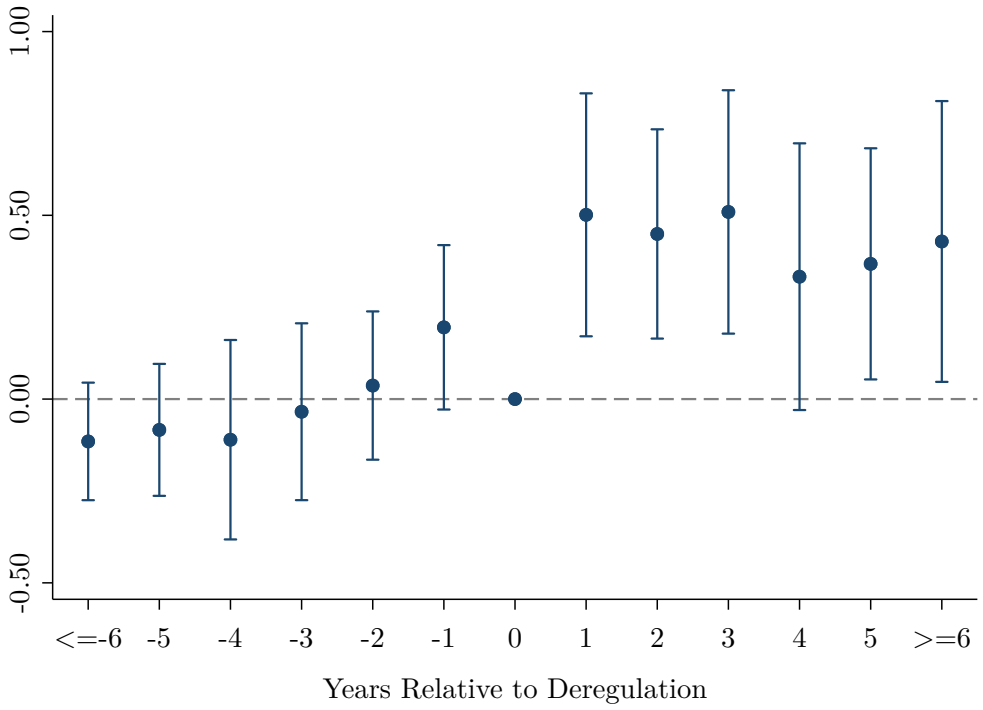
(b) Without Reference Group

Notes: This figure depicts the coefficients from equation 7 and 8. Figure 2a depicts the coefficients for each income group, relative to the highest income group. Figure 2b depicts the coefficients for each income group separately, without a reference group. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. Income-Group$^{i}_{c,1696}$ is an indicator equal to one if the county falls into the respective income range i in 1969. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. The data is on the county×year-level. It is limited to the five years before and after the banking deregulation. The figure shows 95% confidence intervals. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level.

$$\Delta\text{LN(Retail)}_{c,s,t} = \alpha + \beta_i \sum_{i \neq > p90} \text{Income-Group}^{i}_{c,1969} \times \text{Post}_{s,t} + \theta_c + \theta_{s,t} + \varepsilon_{c,s,t} \tag{7}$$

$$\Delta\text{LN(Retail)}_{c,s,t} = \alpha + \beta_i \sum_{i} \text{Income-Group}^{i}_{c,1969} \times \text{Post}_{s,t} + \gamma_i \sum_{i \neq > p90} \text{Income-Group}^{i}_{c,1969} + \varepsilon_{c,s,t} \tag{8}$$

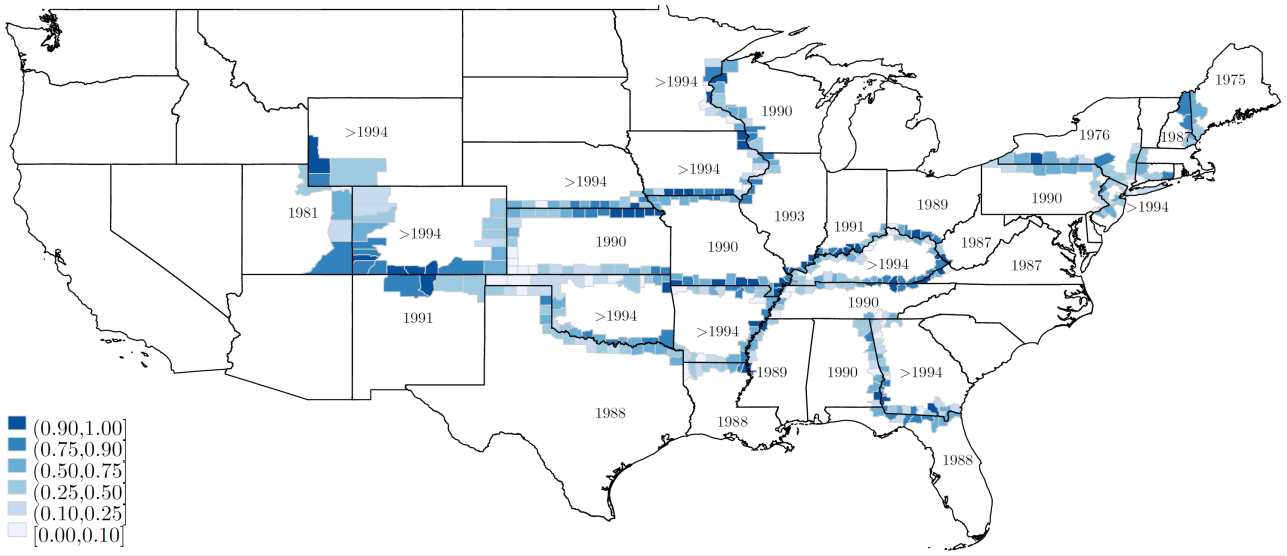
Figure 3: Dynamics



Notes: This figure depicts the coefficients from equation 9, the dynamic equivalent of Table 2. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Ind$_{s,t}$ is an indicator equal to one if the year relative to the banking deregulation equals t. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. Crisis$_t$ is an indicator equal to one if the year t-1, t-2, or t-3 had an economic crisis according to the NBER. The data is on the county×year-level. The figure shows 99% confidence intervals. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level.

$$\Delta\text{LN(Retail)}_{c,s,t} = \alpha + \sum_{t=-K}^{T} \beta_t \text{Rank}_{c,1969} \times \text{Ind}_{s,t} + \gamma_1 \text{Rank}_{c,1969} \times \text{Crisis}_t + \gamma_2 \text{Rank}_{c,1969} \times \text{Post}_t \times \text{Crisis}_t + \theta_c + \theta_{s,t} + \varepsilon_{c,s,t} \tag{9}$$

Figure 4: Sample of Bordering Counties



Notes: This figure depicts the county-level relative rank, which refers to the within state rank based on the income distribution in 1969, for bordering counties. A higher rank indicates a lower 1969 income. Only land bordering counties with deregulation dates at least five years apart are included in the sample.

Tables

Table 1: Summary Statistics

Levels in 1994	p25	p50	p75	Mean	SD	N
Spending: Retail (USD pc)	4,537	6,293	8,273	6,576	2,869	3,069
Spending: Food (USD pc)	1,137	1,442	1,739	1,462	509	3,057
Spending: Restaurants (USD pc)	377	579	801	628	367	3,060
Spending: Vehicles (USD pc)	868	1,480	2,121	1,550	948	2,967
Spending: Drugs (USD pc)	185	265	344	271	125	2,935
Spending: Home Durables (USD pc)	116	214	373	274	218	2,795
Spending: General Merchandise (USD pc)	217	671	1,119	747	590	2,851
Income (USD pc)	11,811	13,355	15,042	13,646	2,922	3,038
Population (thousand)	11.00	23.80	59.20	74.52	155.65	3,069
Age (years)	33.60	35.70	37.80	35.65	3.60	3,069
Rank (0 to 1)	0.25	0.50	0.75	0.50	0.29	3,069
Growth Rates						
Spending: Retail (%)	0.0140	0.0613	0.1125	0.0617	0.1219	65,612
Spending: Food (%)	0.0016	0.0613	0.1236	0.0636	0.1684	65,105
Spending: Restaurants (%)	0.0078	0.0738	0.1330	0.0695	0.2020	47,652
Spending: Vehicles (%)	-0.0165	0.0847	0.1648	0.0704	0.2325	63,937
Spending: Drugs (%)	-0.0025	0.0647	0.1313	0.0706	0.2498	62,294
Spending: Home Durables (%)	-0.0219	0.0601	0.1466	0.0703	0.2886	62,662
Spending: General Merchandise (%)	-0.0102	0.0588	0.1203	0.0554	0.2981	62,929
Income (%)	0.0415	0.0717	0.1100	0.0760	0.0684	64,246
Population (%)	0.0000	0.0073	0.0217	0.0103	0.0349	65,612

Notes: This table describes the summary statistics for levels in 1994 and the year-on-year growth rates across years. Spending and income are calculated in current USD per capita (pc). Population is in thousands and age in years. All variables except Rank are winsorized on the 1st and 99th percentile. Appendix D.1 describes variable definitions in detail. We focus on six sub-groups of retail spending, following the Survey of Buying Power. These sub-groups are considered the primary channels of distribution of consumer goods. Aggregate retail spending of the six categories might not equal total retail spending since this variable includes additional store types not shown in these categories.

Table 2: Effect of Rank on Retail Spending Growth

Dep Var: $\triangle$LN(Retail)$_{c,s,t}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rank$_{c,1969}$ x Post$_{s,t}$	0.1677***	0.1675***	0.1635***	0.1627***	0.1938***	0.1894***	0.1920***
	(0.0365)	(0.0360)	(0.0356)	(0.0357)	(0.0399)	(0.0395)	(0.0371)
Post$_{s,t}$	-0.1586***	-0.1685***	-0.0471**	-0.0240	-0.1796***	-0.0359	
	(0.0190)	(0.0189)	(0.0222)	(0.0271)	(0.0202)	(0.0277)	
Rank$_{c,1969}$	-0.1074***	-0.1067***	-0.1011***	-0.1002***			
	(0.0132)	(0.0122)	(0.0130)	(0.0121)			
State FE		✓		✓			
Year FE			✓	✓		✓	
County FE					✓	✓	✓
State x Year FE							✓
R-squared	0.00	0.00	0.10	0.11	0.03	0.13	0.25
Observations	38,162	38,162	38,162	38,162	38,162	38,162	38,162

Notes: This table describes the relationship between the growth in retail spending and the 1969-income rank after the banking deregulation. The regression is based on equation 2. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. The data is on the county×year-level. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Table 3: Effect of Rank on Spending Growth by Type

Dep Var: $\triangle$LN(Spending)$_{c,s,t}$	Retail (1)	Food (2)	Restaurants (3)	Vehicles (4)	Drugs (5)	Durables (6)	General (7)
Rank$_{c,1969}$ x Post$_{s,t}$	0.1920***	0.1112***	0.2641***	0.0116	0.1810***	0.0975**	0.1975***
	(0.0371)	(0.0388)	(0.0418)	(0.0467)	(0.0400)	(0.0455)	(0.0470)
County FE	✓	✓	✓	✓	✓	✓	✓
State x Year FE	✓	✓	✓	✓	✓	✓	✓
R-squared	0.25	0.19	0.20	0.28	0.13	0.17	0.13
Observations	38,162	37,871	27,729	37,379	36,609	36,938	37,012

Notes: This table describes the relationship between the growth in different types of spending and the 1969-income rank after the banking deregulation. The regression is based on equation 2. The dependent variable $\triangle$LN(Spending)$_{c,s,t}$ is the standardized growth in the respective spending type per capita. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. The data is on the county×year-level. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Table 4: Effect of Rank on Income Growth

Dep Var: $\triangle$LN(Income)$_{c,s,t}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rank$_{c,1969}$ x Post$_{s,t}$	-0.1665***	-0.1655***	-0.1739***	-0.1752***	-0.1682***	-0.1790***	-0.1759***
	(0.0393)	(0.0362)	(0.0354)	(0.0355)	(0.0403)	(0.0395)	(0.0384)
Post$_{s,t}$	-0.2485***	-0.2877***	0.1352***	0.1868***	-0.2849***	0.1892***	
	(0.0222)	(0.0207)	(0.0254)	(0.0345)	(0.0224)	(0.0355)	
Rank$_{c,1969}$	0.1891***	0.1902***	0.2024***	0.2041***			
	(0.0130)	(0.0118)	(0.0130)	(0.0117)			
State FE		✓		✓			
Year FE			✓	✓		✓	
County FE					✓	✓	✓
State x Year FE							✓
R-squared	0.02	0.03	0.12	0.12	0.04	0.13	0.27
Observations	37,432	37,432	37,432	37,432	37,432	37,432	37,432

Notes: This table describes the relationship between the growth in income and the 1969-income rank after the banking deregulation. The regression is based on equation 2. The dependent variable $\triangle$LN(Income)$_{c,s,t}$ is the standardized growth in income per capita. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. The data is on the county×year-level. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Table 5: Effect of Rank on Deposit Growth

Dep Var: $\triangle$LN(Deposit)$_{b,c,s,t}$	(1)	(2)	(3)
Rank$_{c,1969}$ x Post$_{s,t}$	-0.1039**	-0.1029**	-0.1405***
	(0.0459)	(0.0460)	(0.0513)
Rank$_{c,1969}$	-0.1386***	-0.1375***	
	(0.0348)	(0.0347)	
Bank x Year FE	✓		
State x Year FE	✓		
Bank x State x Year FE		✓	✓
County FE			✓
R-squared	0.29	0.31	0.35
Observations	44,280	44,280	44,280

Notes: This table describes the relationship between the growth in deposits and the 1969-income rank after the banking deregulation. The regression is based on equation 2. The dependent variable $\triangle$LN(Deposits)$_{c,s,t}$ is the standardized growth in deposits. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. Data is on the bank×county×year-level. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Table 6: Retail Spending Under Aggregate Shocks

Dep Var: $\triangle$LN(Retail)$_{c,s,t}$	(1)	(2)	(3)
Rank$_{c,1969}$ x Post$_{s,t}$	0.1920***	0.3784***	0.3759***
	(0.0371)	(0.1062)	(0.1091)
Rank$_{c,1969}$ x Post$_{s,t}$ x Crisis$_t$		-0.3188***	
		(0.1060)	
Rank$_{c,1969}$ x Crisis$_t$		0.0939***	
		(0.0225)	
Rank$_{c,1969}$ x Post$_{s,t}$ x Crisis(1975)			-0.3020***
			(0.1131)
Rank$_{c,1969}$ x Post$_{s,t}$ x Crisis(1980)			-0.3816***
			(0.1050)
Rank$_{c,1969}$ x Post$_{s,t}$ x Crisis(1990)			-0.3386**
			(0.1354)
Rank$_{c,1969}$ x Crisis(1975)			0.1574***
			(0.0283)
Rank$_{c,1969}$ x Crisis(1980)			0.0328
			(0.0236)
Rank$_{c,1969}$ x Crisis(1990)			0.1202
			(0.0885)
County FE	✓	✓	✓
State x Year FE	✓	✓	✓
R-squared	0.25	0.25	0.25
Observations	38,162	38,162	38,162

Notes: This table describes the relationship between the growth in retail spending and the 1969-income rank after the banking deregulation, separately for crisis and non-crisis years. The regression is based on equation 2. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. Crisis$_t$ is an indicator equal to one if the year t-1, t-2, or t-3 had an economic crisis according to the NBER. Crisis(year) is an indicator equal to one if year-1, year-2, or year-3 had an economic crisis. The data is on the county×year-level. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Table 7: Retail Spending Under Idiosyncratic Shocks

Dep Var: $\triangle$LN(Retail)$_{c,s,t}$	(1)	(2)
Disaster Damage Per Capita$_{c,s,t-1}$	-0.0094	-0.0154**
	(0.0059)	(0.0064)
Disaster Damage Per Capita$_{c,s,t-1}$ x Post$_{s,t}$		0.0258*
		(0.0140)
County FE	✓	✓
State x Year FE	✓	✓
R-squared	0.24	0.24
Observations	61,878	61,878

Notes: This table provides a test for complete insurance, based on equation 5. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. Disaster Damage Per Capita$_{c,s,t-1}$ is the standardized disaster property damage per capita in the previous year and trimmed on the 1st and 99th percentiles. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. The data is on the county×year-level. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Table 8: Effect of Rank on Retail Spending Growth (Bordering Counties)

Dep Var: $\triangle$LN(Retail)$_{c,p,s,t}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rank$_{c,1969}$ x Post$_{s,t}$	0.4192***	0.4800***	0.4001***	0.3799***	0.3055***	0.4847***	0.4730***
	(0.1104)	(0.1110)	(0.1116)	(0.1114)	(0.1175)	(0.0840)	(0.1740)
Post$_{s,t}$	-0.0653	-0.0957	-0.0716				
	(0.0588)	(0.0596)	(0.0637)				
Rank$_{c,1969}$	-0.1043**	-0.1032**	-0.0893*	-0.1445***			
	(0.0474)	(0.0458)	(0.0456)	(0.0509)			
County-Pair FE		✓	✓	✓			
Year FE			✓				
State x Year FE				✓	✓		✓
County-Pair x Year FE					✓	✓	✓
County FE						✓	✓
R-squared	0.01	0.08	0.13	0.31	0.54	0.48	0.59
Observations	5,028	5,028	5,028	5,028	5,028	5,028	5,028

Notes: This table describes the relationship between the growth in retail spending and the 1969-income rank after the banking deregulation, using only bordering counties described in Figure 4. We focus on county pairs (p) where deregulation occurred at least five years apart, and we examine county-year observations within a five-year window before and after the first county in the pair implemented deregulation. The regression is based on equation 2. The dependent variable $\triangle$LN(Retail)$_{c,p,s,t}$ is the standardized growth in retail spending per capita. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. The data is on the county×county-pair×year-level. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Table 9: Effect of Rank on Retail Spending Growth by Crisis (Bordering Counties)

Dep Var: $\triangle$LN(Retail)$_{c,s,t}$	(1)	(2)	(3)
Rank$_{c,1969}$ x Post$_{s,t}$	0.4730***	1.6489***	1.6697***
	(0.1740)	(0.5476)	(0.5551)
Rank$_{c,1969}$ x Post$_{s,t}$ x Crisis$_t$		-1.6293***	
		(0.5788)	
Rank$_{c,1969}$ x Crisis$_t$		0.1641	
		(0.1277)	
Rank$_{c,1969}$ x Post$_{s,t}$ x Crisis(1975)			-1.9335***
			(0.5304)
Rank$_{c,1969}$ x Post$_{s,t}$ x Crisis(1980)			-0.9319
			(0.6970)
Rank$_{c,1969}$ x Post$_{s,t}$ x Crisis(1990)			-1.6867***
			(0.6058)
Rank$_{c,1969}$ x Crisis(1975)			0.4543*
			(0.2438)
Rank$_{c,1969}$ x Crisis(1980)			-0.0831
			(0.1890)
Rank$_{c,1969}$ x Crisis(1990)			0.1675
			(0.1407)
State x Year FE	✓	✓	✓
County-Pair x Year FE	✓	✓	✓
County FE	✓	✓	✓
R-squared	0.59	0.59	0.59
Observations	5,028	5,028	5,028

Notes: This table describes the relationship between the growth in retail spending and the 1969-income rank after the banking deregulation, separately for crisis and non-crisis years, using only bordering counties described in Figure 4. We focus on county pairs (p) where deregulation occurred at least five years apart, and we examine county-year observations within a five-year window before and after the first county in the pair implemented deregulation. The regression is based on equation 2. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. Crisis$_t$ is an indicator equal to one if the year t-1, t-2, or t-3 had an economic crisis according to the NBER. Crisis(year) is an indicator equal to one if year-1, year-2, or year-3 had an economic crisis. The data is on the county×year-level. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

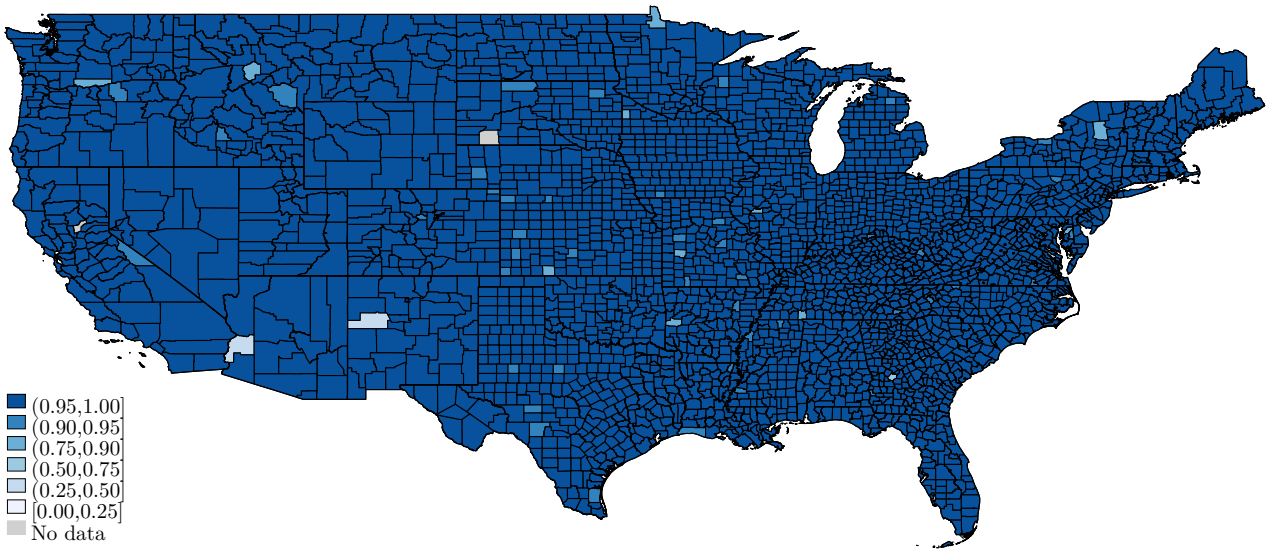
Online Appendix for:

"How does Banking Integration Affect Consumption Inequality?"

Appendix A Data

A.1 Survey Validation

Figure A.1: Year-Wise Coverage of Counties



Notes: This figure depicts the percentage of data points populated for each county. The percentage is calculated by dividing the number of times each county appears in the sample with 24 (the number of years in the data). A value of 1 indicates all 24 years are populated. 98% of counties have more than 95% of the data populated, and 70% of counties have all 24 years populated in the sample.

Table A.1: Year-Wise Coverage of Counties

Year	# Obs	Percent	Cum.
1969	3,090	4.20	4.20
1970	3,089	4.20	8.40
1971	3,091	4.20	12.60
1972	3,094	4.20	16.80
1973	3,098	4.21	21.01
1974	3,104	4.22	25.23
1975	2,275	3.09	28.32
1976	3,106	4.22	32.54
1977	3,100	4.21	36.75
1978	3,105	4.22	40.97
1979	3,106	4.22	45.19
1980	3,100	4.21	49.41
1981	3,102	4.22	53.62
1982	3,105	4.22	57.84
1983	3,103	4.22	62.06
1984	3,108	4.22	66.28
1985	3,097	4.21	70.49
1986	3,106	4.22	74.71
1987	3,104	4.22	78.93
1988	-	0.00	78.93
1989	-	0.00	78.93
1990	3,106	4.22	83.15
1991	3,101	4.21	87.36
1992	3,095	4.21	91.57
1993	3,098	4.21	95.78
1994	3,108	4.22	100.00
Total	73,591	100.00	

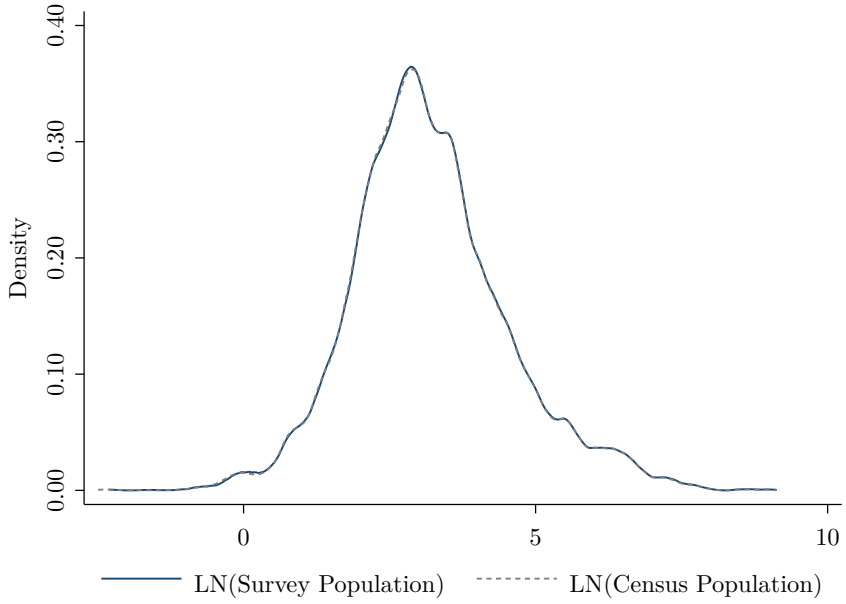
Notes: This table describes the number of county-observations in a given year. Two years, 1988 and 1989, are missing. The hard copies of the survey were not available for these two years when digitizing the dataset. Two states, Alaska and DC, are excluded from the table.

Table A.2: State-Wise Coverage of Counties

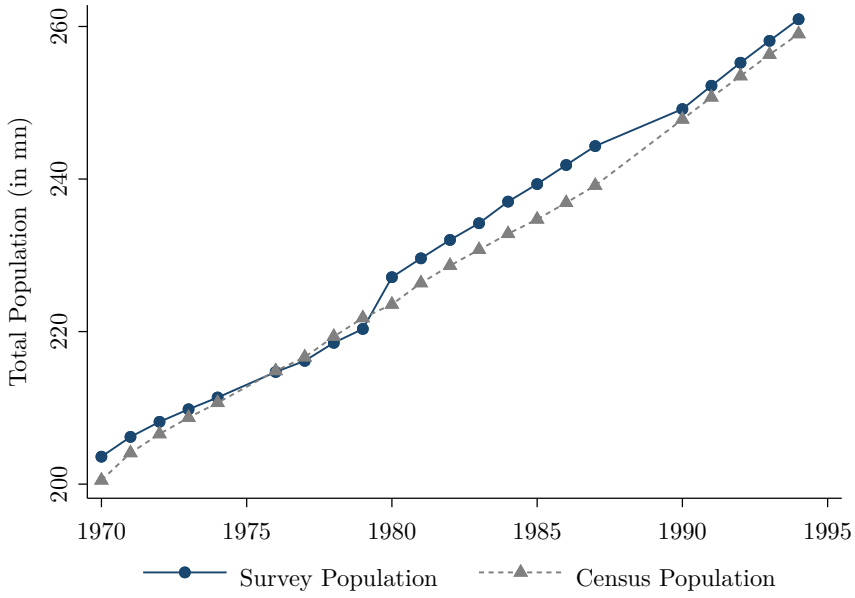
	# Counties			
State	Data	Census	Missing	Notes
Alabama	67	67	-	
Arizona	14	15	1	La Paz county
Arkansas	75	75	-	
California	57	58	1	Yuba county
Colorado	63	64	1	City & county of Broomfield
Connecticut	8	8	-	
Delaware	3	3	-	
Florida	67	67	-	
Georgia	159	159	-	
Hawaii	4	5	1	Kalawao county
Idaho	44	44	-	
Illinois	102	102	-	
Indiana	92	92	-	
Iowa	99	99	-	
Kansas	104	105	1	Clark county
Kentucky	120	120	-	
Louisiana	64	64	-	
Maine	16	16	-	
Maryland	24	24	-	
Massachusetts	14	14	-	
Michigan	83	83	-	
Minnesota	87	87	-	
Mississippi	82	82	-	
Missouri	115	115	-	
Montana	56	56	-	
Nebraska	93	93	-	
Nevada	17	17	-	
New Hampshire	10	10	-	
New Jersey	21	21	-	
New Mexico	33	33	-	
New York	62	62	-	
North Carolina	100	100	-	
North Dakota	53	53	-	
Ohio	88	88	-	
Oklahoma	77	77	-	
Oregon	36	36	-	
Pennsylvania	67	67	-	
Rhode Island	5	5	-	
South Carolina	46	46	-	
South Dakota	66	66	-	
Tennessee	95	95	-	
Texas	253	254	1	16 counties, data missing for 1 year
Utah	29	29	-	
Vermont	14	14	-	
Virginia	132	133	1	Poquoson city & Manassas city (1 year available)
Washington	39	39	-	
West Virginia	55	55	-	
Wisconsin	72	72	-	
Wyoming	23	23	-	
US-(AK & DC)	3,105	3,112	7	

Notes: This table describes the number of county observations in a given state. Two states, Alaska (AK) and DC, are excluded from the table. The number of counties in each state is calculated as the average value of the number of counties for all years available between 1969 and 1994 excluding 1975 (see Table A.1).

Figure A.2: Comparison with Aggregate Population Statistics



(a) Across Counties

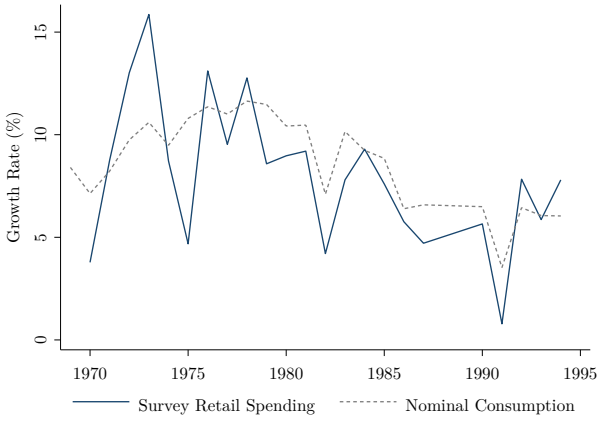


(b) Across Time

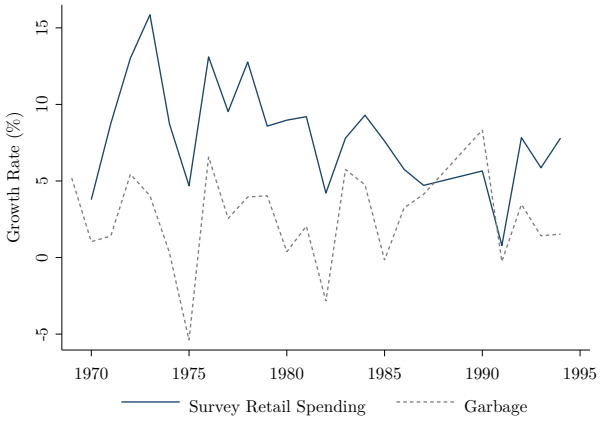
Notes: This figure depicts the relationship between population statistics from the survey and the census across counties in Figure A.2a and across time in Figure A.2b. Figure A.2a is based on data on the county-year level, Figure A.2a on the year-level.

Figure A.3: Comparison with Aggregate Growth Statistics

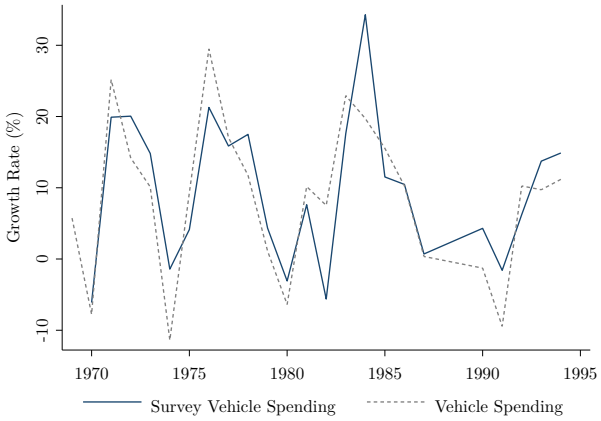
(a) Nominal GDP Growth (Corr: 80%)



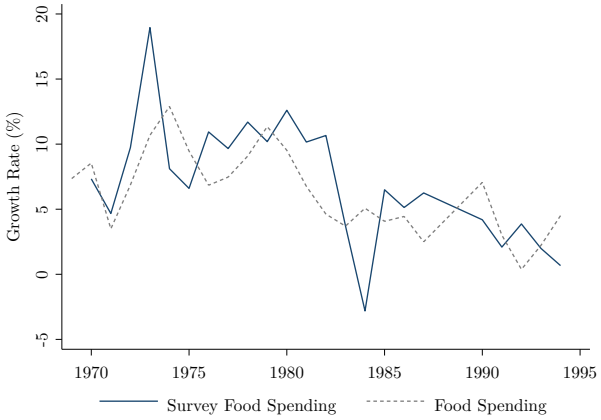
(b) Nominal Consumption Growth (Corr: 72%)



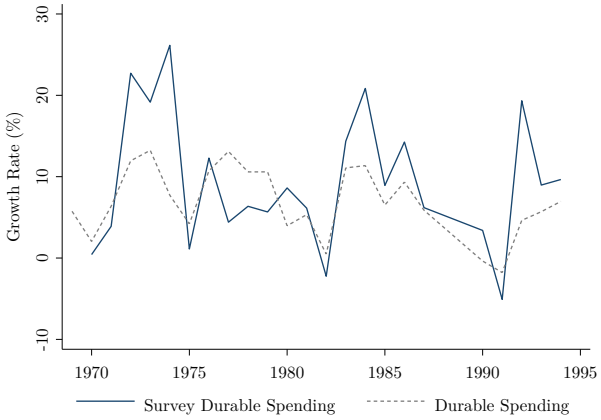
(c) Garbage Growth (Corr: 46%)



(d) Vehicle Spending Growth (Corr: 82%)



(e) Food Spending Growth (Corr: 62%)

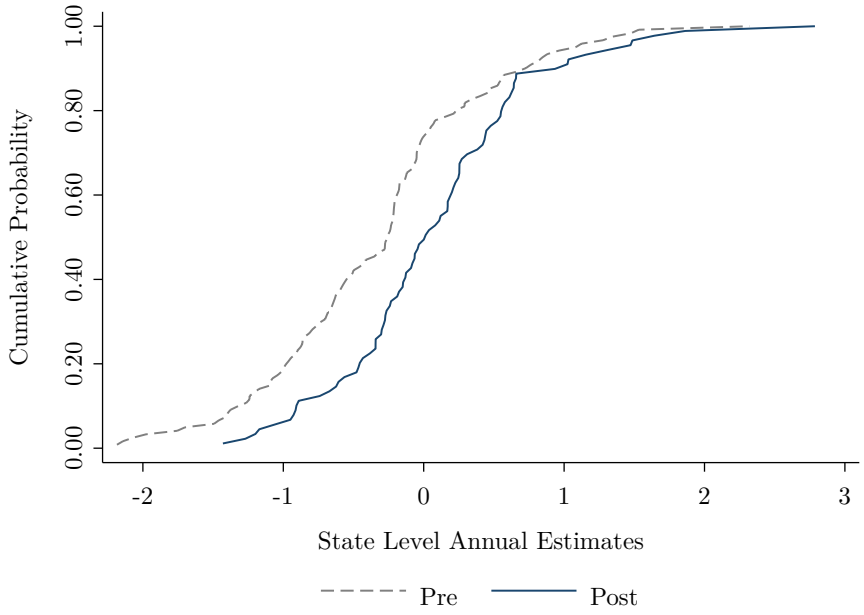


(f) Durable Spending Growth (Corr: 62%)

Notes: This figure depicts the relationship between aggregate growth rates across time in the survey and in external data sources.

Appendix B Supplementary Analysis

Figure B.1: Comparison of Coefficients Pre and Post Deregulation

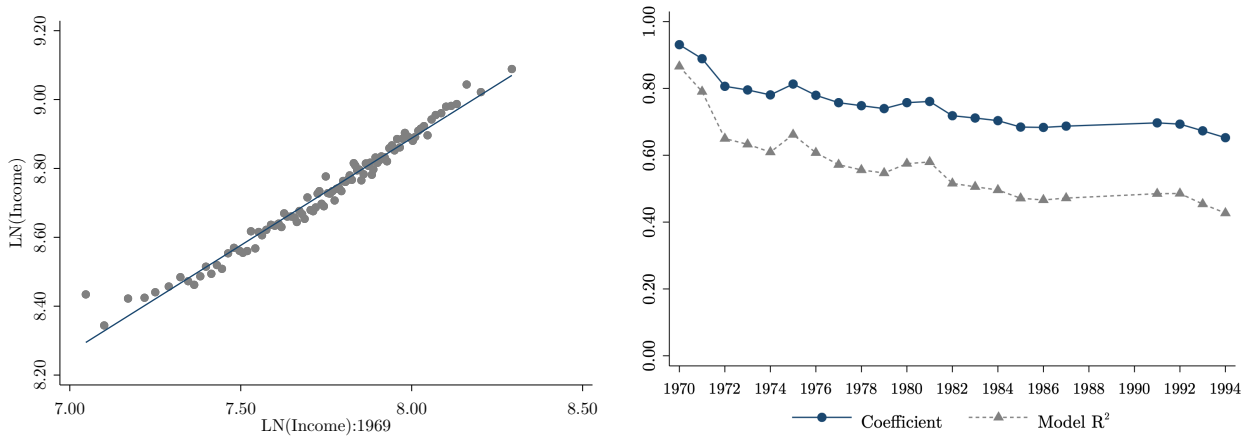


Notes: This figure depicts the coefficients from equation B.1, which regresses the growth in retail spending on the 1969-income rank in each state and each year, separately before and after the banking deregulation. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is growth in retail spending per capita, standardized by state and year. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. The data is on the county×year-level. It is limited to the five years before and after the banking deregulation. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The table depicts the distribution of coefficients in each state and year, as well as a t-test for differences in these estimates by before and after the deregulation.

$$\Delta \text{LN(Retail)}_{c,s,t} = \alpha_{s,t} + \beta_{s,t} \times \text{Rank}_{c,1969} + \varepsilon_{c,s,t} \tag{B.1}$$

	Mean	SE	T-Statistic	P-Value
Pre	-0.32	0.07		
Post	0.07	0.08		
Pre-Post	-0.40	0.11	-3.72	0.00

Figure B.2: 1969 Income and Future Income



(a) Scatter Plot

(b) Time Varying Predictive Ability

Notes: This figure describes the relationship between 1996 and future income. Figure B.2a plots the natural logarithm of income per capita in year t against the natural logarithm of income per capita in 1969, applying 100 equal-sized bins. Figure B.2b depicts the coefficients and R-squared of annual regressions of the natural logarithm of income per capita in year t against the natural logarithm of income per capita in 1969. Both measures are standardized in the respective year. The data is on the county×year-level. All variables are winsorized at the 1st and 99th percentile within a given year.

Table B.1: 1969 Income and Future Income

Dep Var: $\text{LN(Income)}_{c,t}$	(1)	(2)	(3)
$\text{LN(Income)}_{c,1969}$	0.6223***	0.6444***	0.6025***
	(0.0103)	(0.0104)	(0.0143)
Year FE		✓	
State x Year FE			✓
R-squared	0.08	0.93	0.94
Observations	64,919	64,919	64,918

Notes: This table describes the relationship between 1969 and future income. The regression is based on equation B.2. The dependent variable $\text{LN(Income)}_{c,t}$ is the natural logarithm of income per capita of county c in year t. The independent variable $\text{LN(Income)}_{c,1969}$ is the natural logarithm of income per capita of county c in 1969. The data is on the county×year-level. Both variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

$$\text{LN(Income)}_{c,t} = \alpha + \beta \text{LN(Income)}_{c,1969} + \varepsilon_{c,t} \tag{B.2}$$

Table B.2: Years of Banking Deregulation by State

State	Intrastate branching through M&A	Full Intrastate branching permitted	Interstate banking permitted
Alabama	1981	1990	1987
Alaska	<1970	<1970	1982
Arizona	<1970	<1970	1986
Arkansas	1994	>1994	1989
California	<1970	<1970	1987
Colorado	1991	>1994	1988
Connecticut	1980	1988	1983
Delaware	<1970	<1970	1988
District Of Columbia	<1970	<1970	1985
Florida	1988	1988	1985
Georgia	1983	>1994	1985
Hawaii	1986	1986	>1994
Idaho	<1970	<1970	1985
Illinois	1988	1993	1986
Indiana	1989	1991	1986
Iowa	>1994	>1994	1991
Kansas	1987	1990	1992
Kentucky	1990	>1994	1984
Louisiana	1988	1988	1987
Maine	1975	1975	1978
Maryland	<1970	<1970	1985
Massachusetts	1984	1984	1983
Michigan	1987	1988	1986
Minnesota	1993	>1994	1986
Mississippi	1986	1989	1988
Missouri	1990	1990	1986
Montana	1990	>1994	1993
Nebraska	1985	>1994	1990
Nevada	<1970	<1970	1985
New Hampshire	1987	1987	1987
New Jersey	1977	>1994	1986
New Mexico	1991	1991	1989
New York	1976	1976	1982
North Carolina	<1970	<1970	1985
North Dakota	1987	>1994	1991
Ohio	1979	1989	1985
Oklahoma	1988	>1994	1987
Oregon	1985	1985	1986
Pennsylvania	1982	1990	1986
Rhode Island	<1970	<1970	1984
South Carolina	<1970	<1970	1986
South Dakota	<1970	<1970	1988
Tennessee	1985	1990	1985
Texas	1988	1988	1987
Utah	1981	1981	1984
Vermont	<1970	<1970	1988
Virginia	1978	1987	1985
Washington	1985	1985	1987
West Virginia	1987	1987	1988
Wisconsin	1990	1990	1987
Wyoming	1988	>1994	1987

Notes: This table describes the years of the banking deregulation of restrictions on geographic expansion, by state.

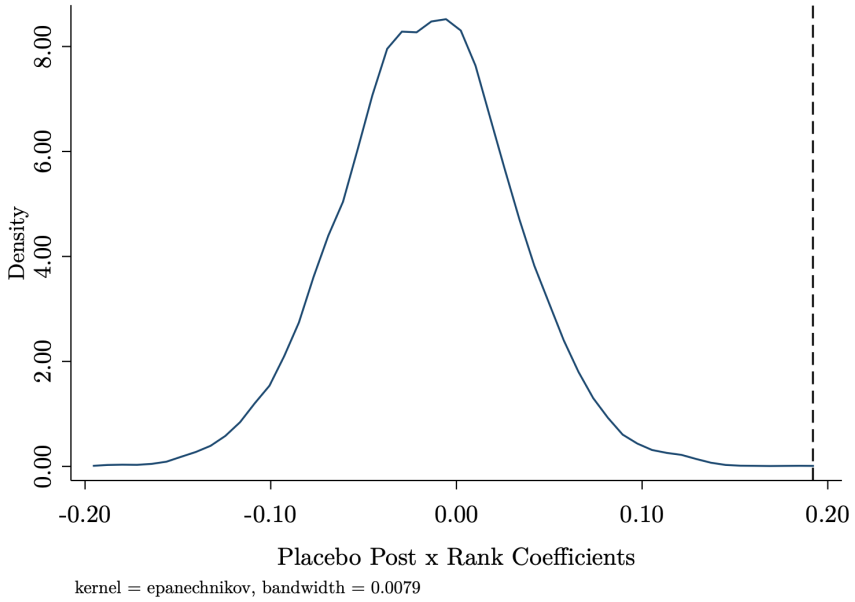
Table B.3: Types of Deregulation

Dep Var: $\triangle$LN(Retail)$_{c,s,t}$	(1)	(2)	(3)	(4)	(5)
Rank$_{c,1969}$ x Post(Main)$_{s,t}$	0.1920***		0.3060***		0.1687***
	(0.0371)		(0.0605)		(0.0455)
Rank$_{c,1969}$ x Post(M&A)$_{s,t}$		0.1048***	-0.1265**		
		(0.0314)	(0.0504)		
Rank$_{c,1969}$ x Post(Inter)$_{s,t}$				0.1557***	0.0265
				(0.0311)	(0.0330)
County FE	✓	✓	✓	✓	✓
State x Year FE	✓	✓	✓	✓	✓
R-squared	0.25	0.25	0.25	0.25	0.25
Observations	38,162	38,162	38,162	38,162	38,162

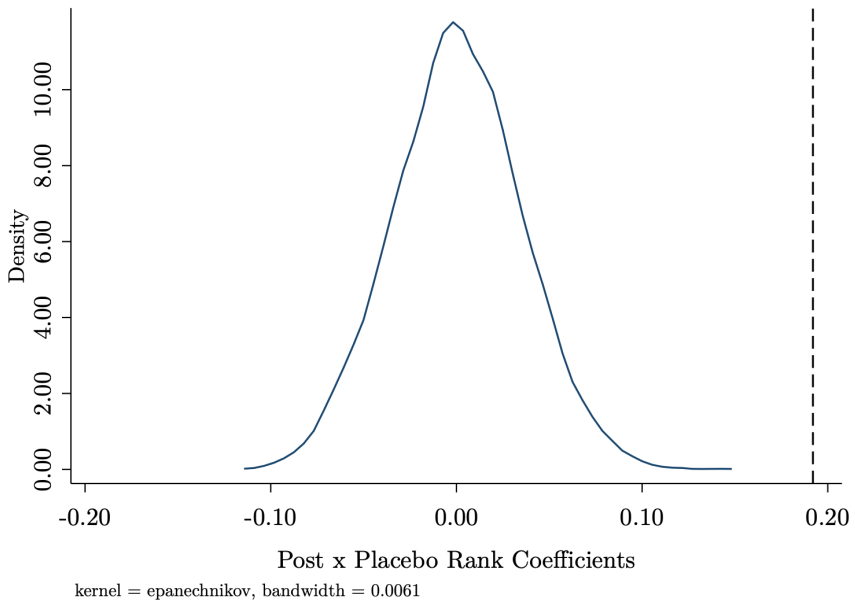
Notes: This table describes the relationship between the growth in retail spending and the 1969-income rank after different types of banking deregulation. The regression is based on equation 2. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post(Main)$_{s,t}$ is an indicator variable that is one in the years after the state s experienced the banking deregulation used in Table 2. Post(M&A)$_{s,t}$ is an indicator variable that is one in the years after the state s experienced the banking deregulation related to M&A. Post(Inter)$_{s,t}$ is an indicator variable that is one in the years after the state s experienced the inter-state banking deregulation. The data is on the county×year-level. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Appendix C Robustness and Placebo Tests

Figure C.1: Placebo Test



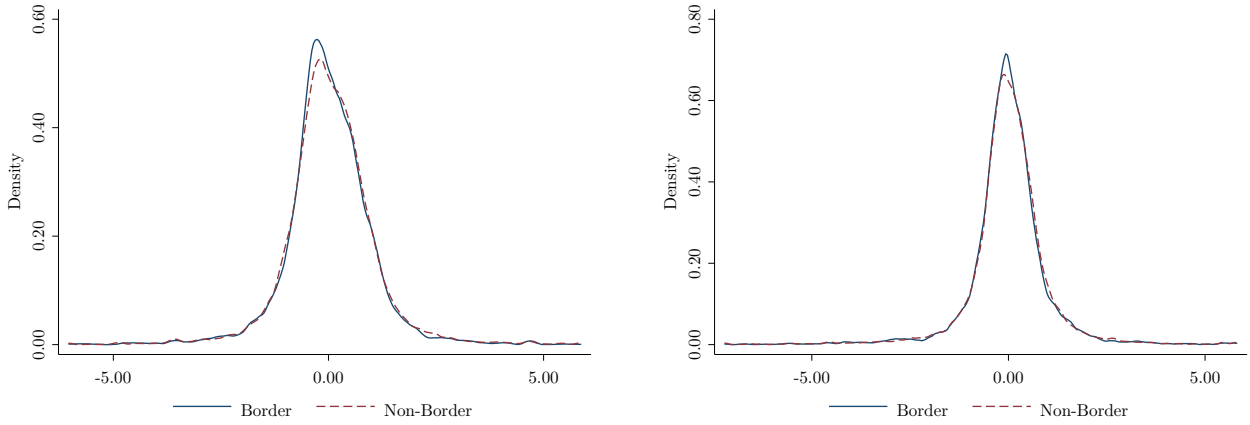
(a) Placebo Deregulation Date



(b) Placebo Relative Rank

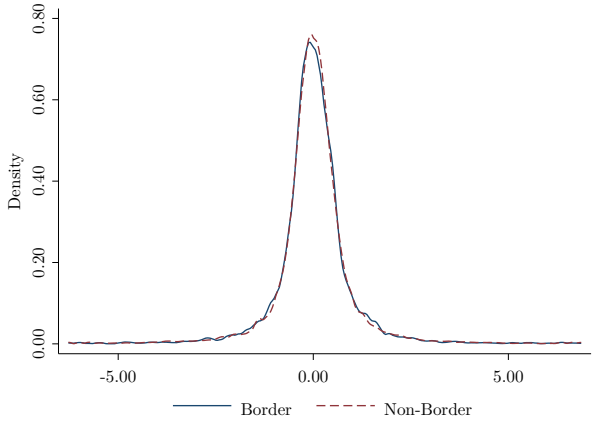
Notes: This figure depicts placebo tests for the relationship between the growth in retail spending and the 1969-income rank after the banking deregulation. Figure C.1a replaces the post indicator by a random variable. Figure C.1b replaces the rank variable by a random variable. We run the regression 3,500 times and plot the kernel density of the resulting coefficients. The gray lines indicate the baseline coefficient from column 7 of Table 2.

Figure C.2: Comparison of Bordering and Non-Bordering Counties (1/2)

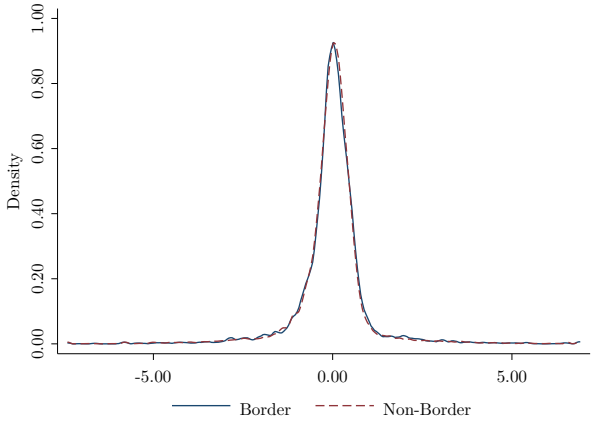


(a) Income Growth

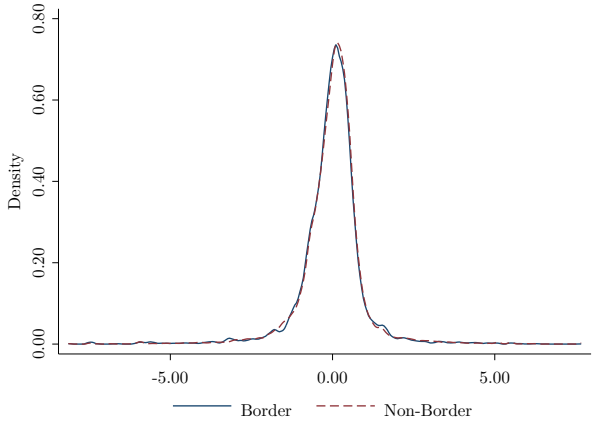
(b) Retail Spending Growth



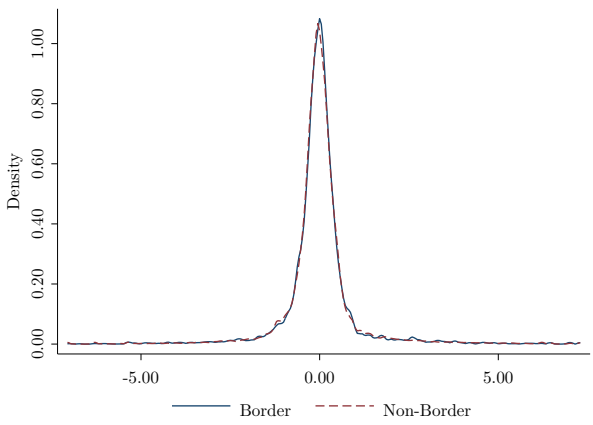
(c) Food Spending Growth



(d) Restaurant Spending Growth



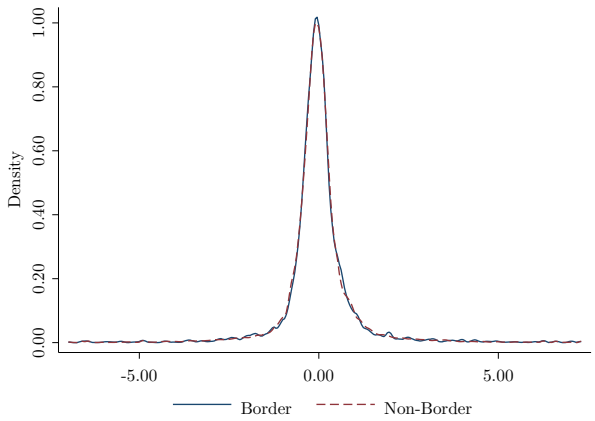
(e) Vehicle Spending Growth



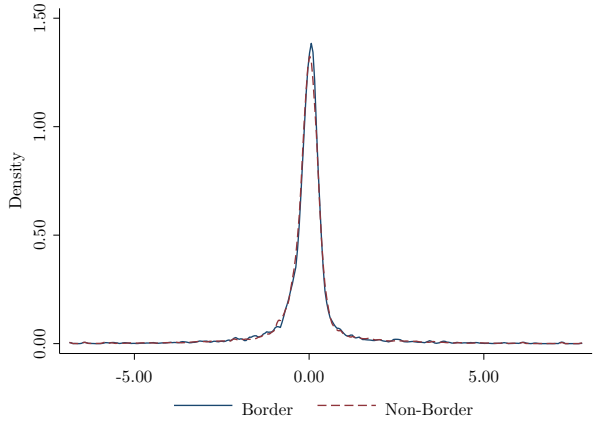
(f) Drug Spending Growth

Notes: This figure depicts densities of bordering and non-bordering counties for the variables in the summary statistics Table 1. Spending growth variables are standardized and winsorized at the 1st and 99th percentiles. LN(Population) and age are winsorized at the same levels. We condition the sample on $\text{Post}_{s,t}$ equal to zero, so before the banking deregulation.

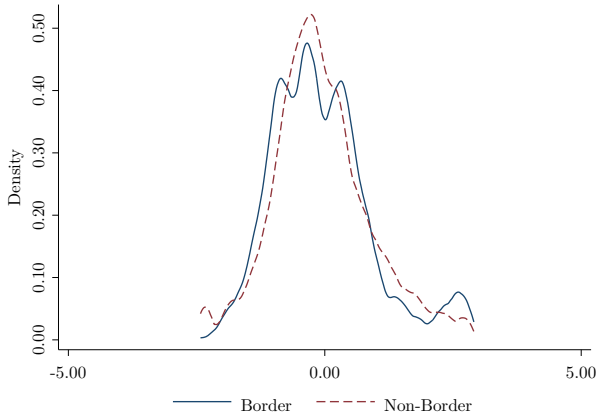
Figure C.3: Comparison of Bordering and Non-Bordering Counties (2/2)



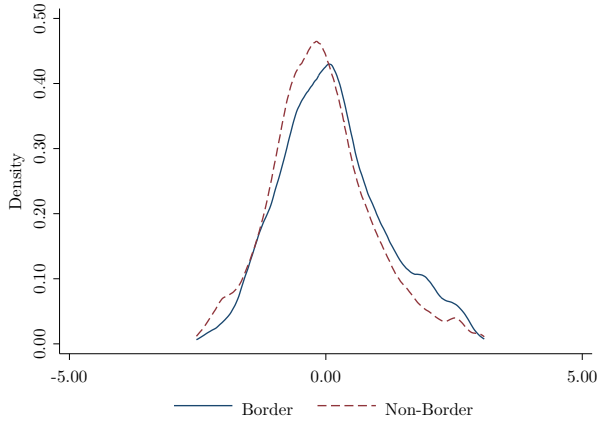
(a) Home Durable Spending Growth



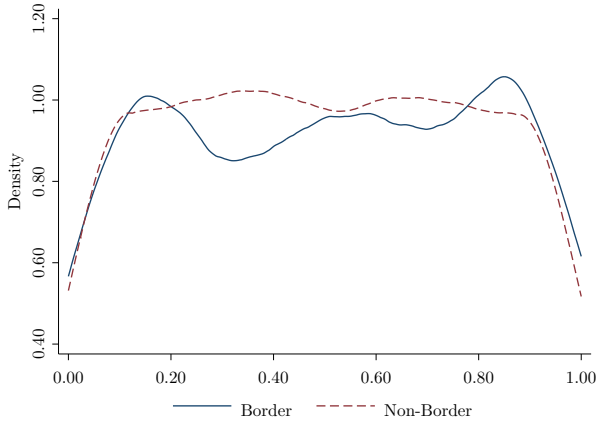
(b) General Merchandise Spending Growth



(c) LN(Population)



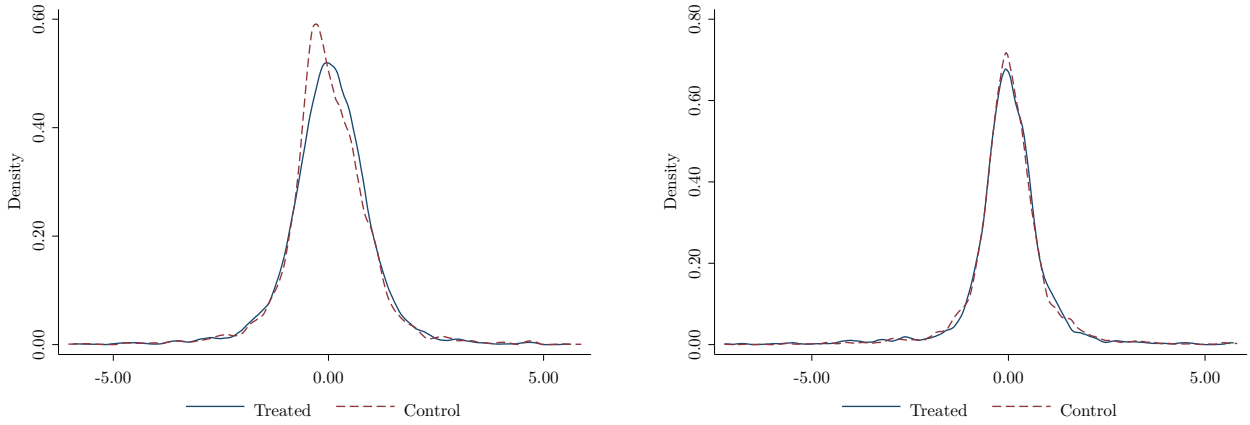
(d) Age



(e) Rank (1969)

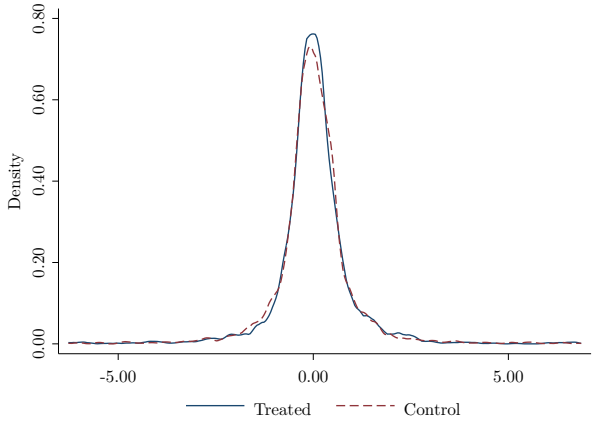
Notes: This figure depicts densities of bordering and non-bordering counties for the variables in the summary statistics table 1. Spending growth variables are standardized and winsorized at the 1st and 99th percentiles. LN(Population) and age are winsorized at the same levels. We condition the sample on $\text{Post}_{s,t}$ equal to zero, so before the banking deregulation.

Figure C.4: Comparison of Treated and Control Counties (1/2)

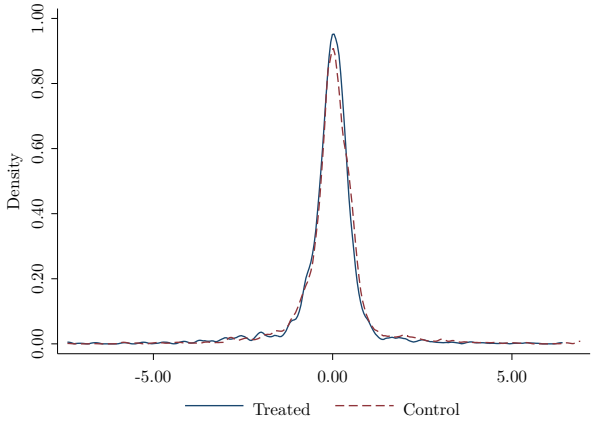


(a) Income Growth

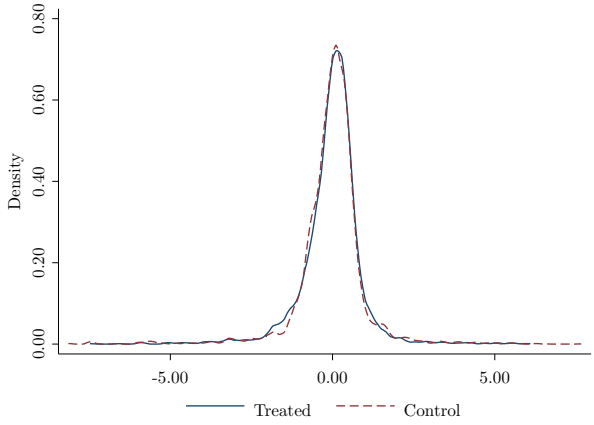
(b) Retail Spending Growth



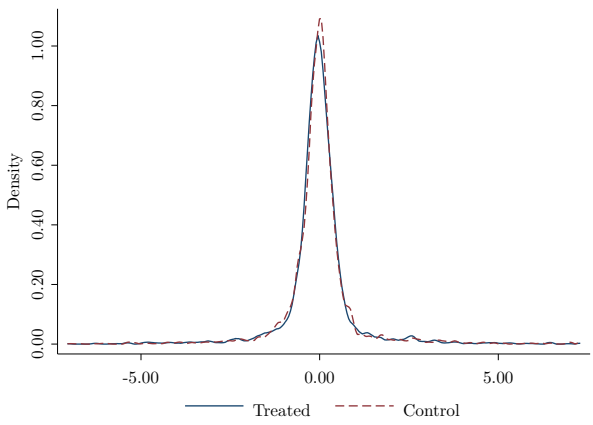
(c) Food Spending Growth



(d) Restaurant Spending Growth



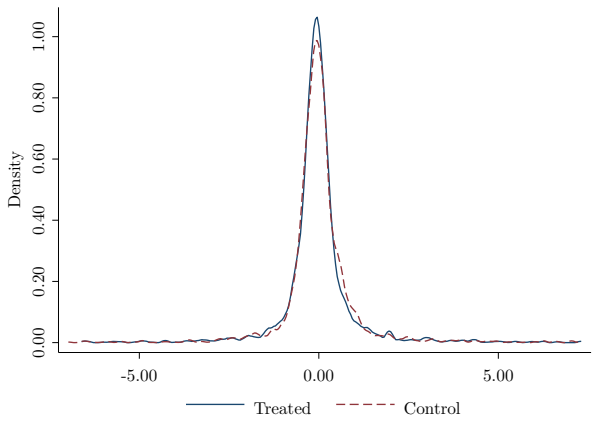
(e) Vehicle Spending Growth



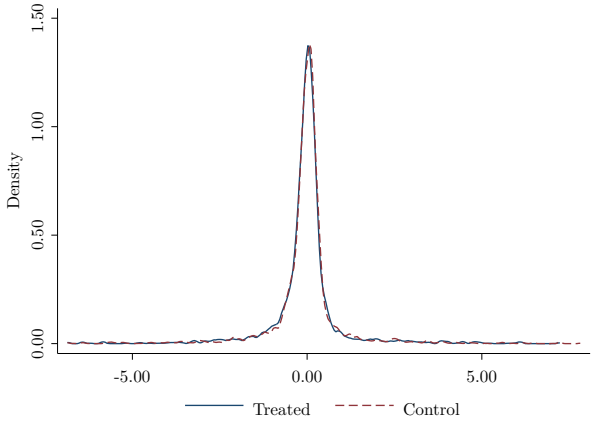
(f) Drug Spending Growth

Notes: This figure depicts densities of treatment and control counties for the variables in the summary statistics Table 1. Spending growth variables are standardized and winsorized at the 1st and 99th percentiles. LN(Population) and age are winsorized at the same levels. We condition the sample on $\text{Post}_{s,t}$ equal to zero, so before the banking deregulation.

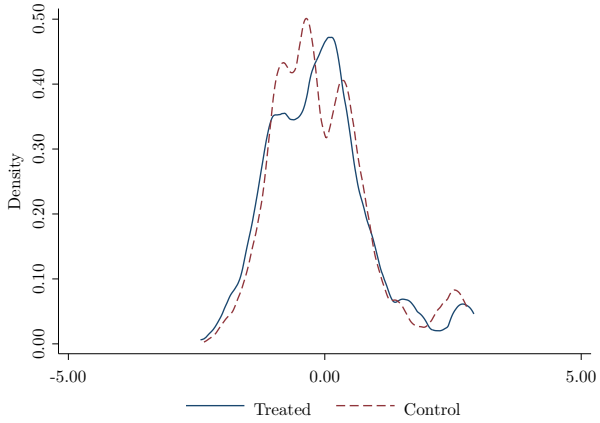
Figure C.5: Comparison of Treated and Control Counties (2/2)



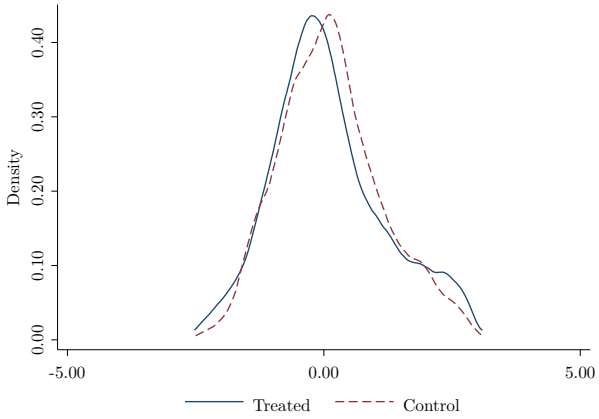
(a) Home Durable Spending Growth



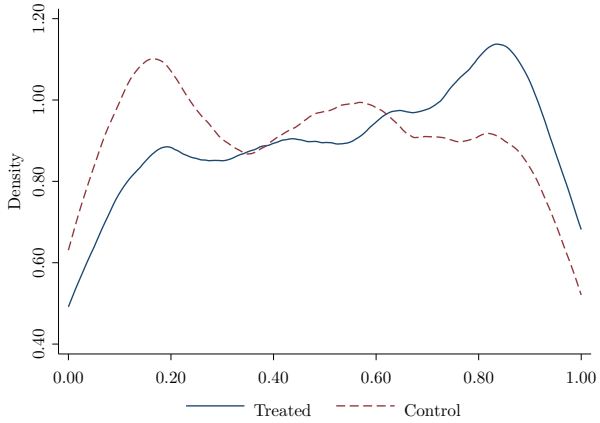
(b) General Merchandise Spending Growth



(c) LN(Population)



(d) Age



(e) Rank (1969)

Notes: This figure depicts densities of treatment and control counties for the variables in the summary statistics Table 1. Spending growth variables are standardized and winsorized at the 1st and 99th percentiles. LN(Population) and age are winsorized at the same levels. We condition the sample on $\text{Post}_{s,t}$ equal to zero, so before the banking deregulation.

Table C.1: Robustness: Stacked Regressions

Dep Var: $\triangle$LN(Retail)$_{c,s,t}$	(1)	(2)	(3)	(4)
Treat$_s$ x Rank$_{c,1969}$ x Post$_{s,t}$	0.1305**	0.1292**	0.2832**	0.2781**
	(0.0592)	(0.0563)	(0.1363)	(0.1350)
Rank$_{c,1969}$ x Post$_{s,t}$	0.0615	0.0557	0.0953	0.0865
	(0.0462)	(0.0429)	(0.0856)	(0.0809)
Treat$_s$ x Rank$_{c,1969}$ x Post$_{s,t}$ x Crisis$_t$			-0.2643**	-0.2556*
			(0.1307)	(0.1312)
Treat$_s$ x Rank$_{c,1969}$ x Crisis$_t$			0.1008**	0.0973**
			(0.0401)	(0.0411)
Rank$_{c,1969}$ x Post$_{s,t}$ x Crisis$_t$			-0.0545	-0.0473
			(0.0765)	(0.0743)
Rank$_{c,1969}$ x Crisis$_t$			-0.0069	-0.0088
			(0.0332)	(0.0336)
County x Cohort FE	✓	✓	✓	✓
State x Year x Cohort FE	✓	✓	✓	✓
R-squared	0.22	0.22	0.22	0.22
Observations	291,948	270,217	291,948	270,217

Notes: This table describes the relationship between the growth in retail spending and the 1969-income rank after the banking deregulation, using a stacked regression approach. The regression is based on equation 2. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. Treat$_s$ is an indicator equal to one if the state is treated in that cohort. Crisis$_t$ is an indicator equal to one if the year t-1, t-2, or t-3 had an economic crisis according to the NBER. The data is on the county×year× cohort-level. Each deregulation year represents a cohort. The controls are states that get deregulated after 1994. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Table C.2: Robustness: Other Control Variables

Dep Var: $\triangle$LN(Retail)$_{c,s,t}$	(1)	(2)	(3)	(4)
Rank$_{c,1969}$ x Post$_{s,t}$	0.1920***	0.2008***	0.2618***	0.2982***
	(0.0371)	(0.0403)	(0.0459)	(0.0471)
Median Age$_{c,t}$ x Post$_{s,t}$		-0.0104		0.0042
		(0.0173)		(0.0184)
Median Age$_{c,t}$		0.0492**		0.0367
		(0.0243)		(0.0244)
LN(Population)$_{c,t}$ x Post$_{s,t}$			0.0545***	0.0808***
			(0.0166)	(0.0178)
LN(Population)$_{c,t}$			-0.5457***	-0.4488***
			(0.0871)	(0.1369)
County FE	✓	✓	✓	✓
State x Year FE	✓	✓	✓	✓
R-squared	0.25	0.24	0.25	0.24
Observations	38,162	29,327	38,162	29,327

Notes: This table describes the robustness for the main result in Table 2 to additional control variables. The regression is based on equation 2. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. Rank$_{c,1969}$ is the relative rank of the county c in terms of the 1969 income, within a given state. A higher rank corresponds to a lower relative income. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. Median Age$_{c,t}$ is the standardized median age in county c at time t. LN(Population)$_{c,t}$ is the standardized natural logarithm of the population in county c and time t. The data is on the county×year-level. Outcome variables, Median Age$_{c,t}$, and LN(Population)$_{c,t}$ are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Table C.3: Robustness: Income Instead of Rank

Dep Var: $\triangle$LN(Retail)$_{c,s,t}$	(1)	(2)
LN(Income)$_{c,1969}$ x Post$_{s,t}$	-0.0772***	
	(0.0155)	
LN(Income)$_{c,t}$ x Post$_{s,t}$		-0.0955**
		(0.0387)
LN(Income)$_{c,t}$		0.0644*
		(0.0371)
County FE	✓	✓
State x Year FE	✓	✓
R-squared	0.25	0.25
Observations	38,162	37,790

Notes: This table describes the robustness for the main result in Table 2 to replacing rank with income measures. The regression is based on equation 2. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. LN(Income)$_{c,1969}$ is the standardized natural logarithm of income per capita in county c in year 1969. LN(Income)$_{c,t}$ is the standardized natural logarithm of income per capita in county c in year t. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. The data is on the county×year-level. Outcome variables and income measures are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Table C.4: Robustness: Retail Spending Under Idiosyncratic Shocks

Dep Var: $\triangle$LN(Retail)$_{c,s,t}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Damage PC$_{c,s,t-1}$	-0.0379***	-0.0345***	-0.0365***	-0.0333***	-0.0307***	-0.0297***	-0.0154**
	(0.0059)	(0.0059)	(0.0057)	(0.0057)	(0.0062)	(0.0060)	(0.0064)
Damage PC$_{c,s,t-1}$ x Post$_{s,t}$	0.0210*	0.0231*	0.0221*	0.0224*	0.0233*	0.0230*	0.0258*
	(0.0126)	(0.0126)	(0.0125)	(0.0125)	(0.0130)	(0.0130)	(0.0140)
Post$_{s,t}$	-0.0263***	-0.0923***	0.0147*	-0.0159	-0.0902***	-0.0155	
	(0.0072)	(0.0111)	(0.0077)	(0.0157)	(0.0111)	(0.0157)	
State FE		✓		✓			
Year FE			✓	✓		✓	
County FE					✓	✓	✓
State x Year FE							✓
R-squared	0.00	0.00	0.09	0.09	0.03	0.12	0.24
Observations	61,878	61,878	61,878	61,878	61,878	61,878	61,878

Notes: This table provides a test for complete insurance, based on equation 5. The dependent variable $\triangle$LN(Retail)$_{c,s,t}$ is the standardized growth in retail spending per capita. Damage Per Capita (PC)$_{c,s,t-1}$ is the standardized disaster damage per capita in the previous year and trimmed on the 1st and 99th percentiles. Post$_{s,t}$ is an indicator variable that is one in the years after the state s experienced banking deregulation. The data is on the county×year-level. Outcome variables are winsorized at the 1st and 99th percentile within a given year. The standard errors are clustered on the county level. $***$, $**$ and $*$ indicate significance at the 1%, 5% and 10% levels.

Appendix D Additional Discussions

D.1 Survey of Buying Power: Variable Definitions

We are primarily interested in consumption. To proxy for consumption, we examine consumer spending measures at retail stores from the Survey of Buying Power. These measures exclude taxes and financing charges collected from consumers, providing a clean proxy for consumption that is not influenced by changes in tax rates or financing practices. These measures also exclude spending that was refunded and include spending by individuals who do not reside within the geographic area but spend in it. Because the Survey of Buying Power is business-oriented, it refers to the spending measures as retail sales, representing the seller's side of the transaction. Figure D.1 depicts examples of the original hard copies of the survey.[13]

Retail Spending. Our primary measure of total consumption is based on the variable "Total Retail Sales" (in thousand USD) in the survey. This variable reflects spending at establishments primarily engaged in retail trade. Spending on repairs and other services provided by these establishments is included. Spending at wholesale and service-only establishments is excluded.

Spending by Category. We proxy for six different types of consumption, following the classification in the Survey of Buying Power. The classification reports six major store groups, which reflect the primary channels of distribution for consumer goods in local markets. A given store group represents the cumulative sales of all products or services handled by this store type. For example, food stores might also sell personal care products or nonprescription drugs. Aggregate spending at the six major store groups does not equal the total retail spending for a given area, since retail spending includes additional store types not included in the six categories. In the survey, all six variables are reported in thousands of USD.

- **Category 1: Food.** Our measure of food consumption is based on the variable "Food Store Sales" (Standard Industry Classification (SIC) 54) in the survey. It refers to spending at retail stores primarily engaged in selling food for home preparation and consumption. Included in this category are grocery stores, meat and fish markets, fruit and vegetable markets, etc.

- **Category 2: Restaurants**. Our measure of consumption from restaurants is based on the variable "Eating and Drinking Place Sales" (SIC 58). This variable includes spending at establishments selling prepared foods and drinks for consumption on the premises or for takeout, as well as lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption, caterers, institutional food services, stands at stadiums, amusement parks, and airports, fast-food restaurants, wine bars, nightclubs, etc.

- **Category 3: Vehicles.** Our measure of consumption of vehicle goods is based on the variable "Automotive Dealer Sales" (SIC 55). It includes spending at retail establishments selling automobiles, new and used, domestic and imported. In addition, it includes spending at auto and home supply stores (tire dealers, parts and accessories stores), boat dealers, recreational vehicle dealers, motorcycle dealers, and miscellaneous automotive dealers selling aircraft, etc. It excludes spending at gasoline service stations.

- **Category 4: Drugs.** Our measure of consumption of drugs is based on the variable "Drugstore Sales" (SIC 591). It reflects spending at establishments engaged in the retail sale of prescription

[13]The following variable definitions are based on the descriptions in the 1991 Survey of Buying Power edition.

drugs, proprietary drugs, and nonprescription medicines. Stores in this category may also carry several related lines, such as cosmetics, toiletries, or tobacco.

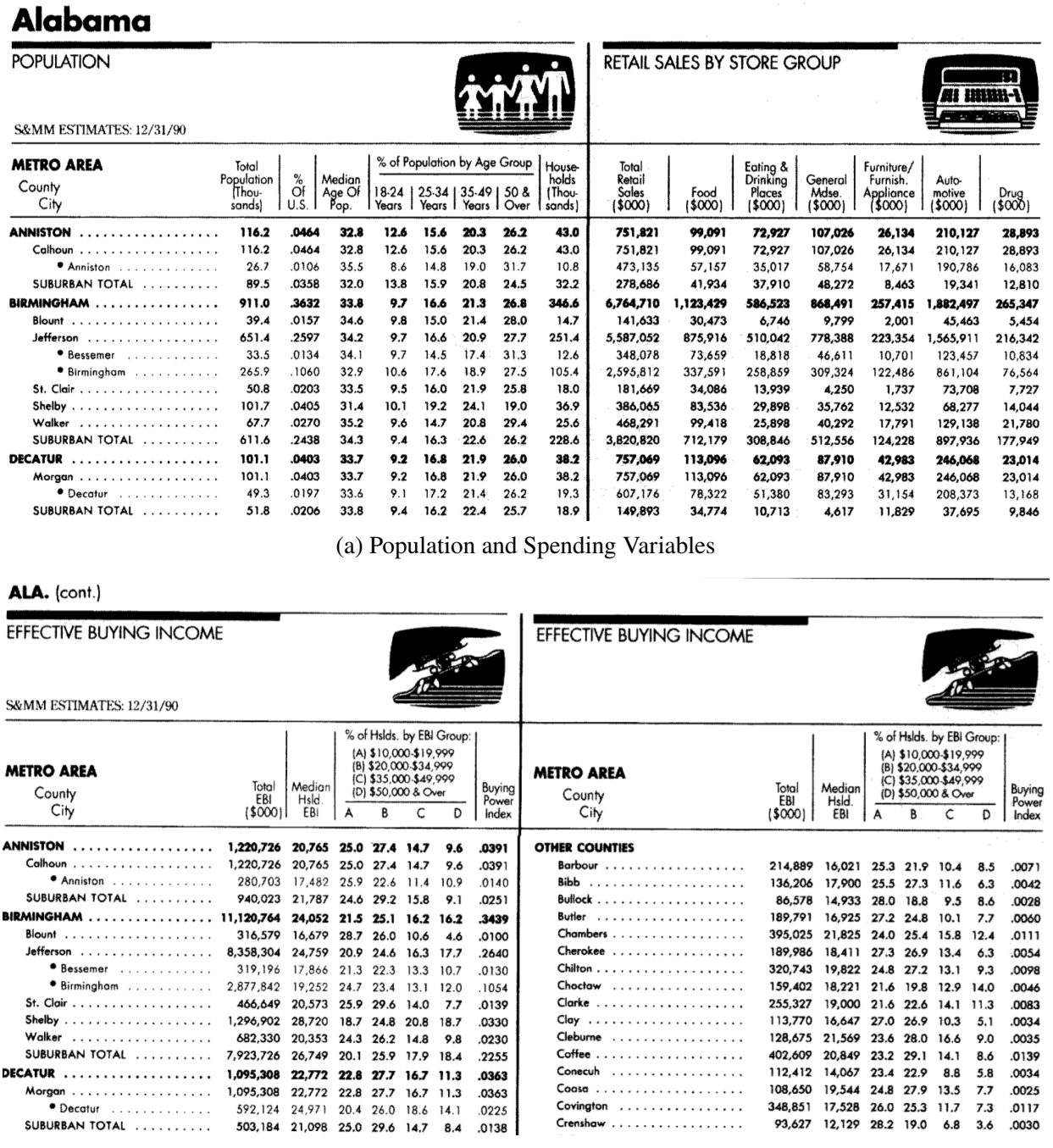
- **Category 5: Home Durables.** Our measure of consumption of home durables is based on the variable "Furniture, Home Furnishings, and Appliance Store Sales" (SIC 57). This category includes spending on furniture, floor coverings, curtains, household appliances, and electronics such as radios, televisions, and computer hardware, as well as computer software.

- **Category 6: General Merchandise.** Consumption in this category is measured using the variable "General Merchandise Store Sales" (SIC 53). It captures spending at retail stores that sell multiple lines of merchandise, including dry goods, apparel and accessories, housewares, hardware, and food. Stores in this category include department stores, limited-price variety stores, general stores, catalog showrooms, etc.

Income. To proxy for income, we utilize the variable "Effective Buying Income" (EBI) in the survey. This is the aggregate of wages and salaries, other labor-related income (e.g., employer contributions to private pension funds), proprietor's income, rental income, dividend income, interest income, and transfer payments (e.g., pensions and welfare assistance), minus personal taxes (federal, state, and local), non-tax payments (fines, fees, penalties) and personal contributions to social insurance. This can also be referred to as after-tax or disposable income.

Population. Total population is a head count estimate of all people living in a given geographic area at the end of the calendar year. It includes people living in group quarters, such as colleges, hospitals, institutions, and nursing homes, as well as armed forces personnel permanently assigned to the area.

Figure D.1: Survey of Buying Power Examples



Alabama

POPULATION

S&MM ESTIMATES: 12/31/90

RETAIL SALES BY STORE GROUP

METRO AREA / County / City	Total Population (Thousands)	% Of U.S.	Median Age Of Pop.	% of Population by Age Group: 18-24 Years	25-34 Years	35-49 Years	50 & Over	Households (Thousands)	Total Retail Sales ($000)	Food ($000)	Eating & Drinking Places ($000)	General Mdse. ($000)	Furniture/ Furnish. Appliance ($000)	Automotive ($000)	Drug ($000)
ANNISTON	**116.2**	**.0464**	**32.8**	**12.6**	**15.6**	**20.3**	**26.2**	**43.0**	**751,821**	**99,091**	**72,927**	**107,026**	**26,134**	**210,127**	**28,893**
Calhoun	116.2	.0464	32.8	12.6	15.6	20.3	26.2	43.0	751,821	99,091	72,927	107,026	26,134	210,127	28,893
• Anniston	26.7	.0106	35.5	8.6	14.8	19.0	31.7	10.8	473,135	57,157	35,017	58,754	17,671	190,786	16,083
SUBURBAN TOTAL	89.5	.0358	32.0	13.8	15.9	20.8	24.5	32.2	278,686	41,934	37,910	48,272	8,463	19,341	12,810
BIRMINGHAM	**911.0**	**.3632**	**33.8**	**9.7**	**16.6**	**21.3**	**26.8**	**346.6**	**6,764,710**	**1,123,429**	**586,523**	**868,491**	**257,415**	**1,882,497**	**265,347**
Blount	39.4	.0157	34.6	9.8	15.0	21.4	28.0	14.7	141,633	30,473	6,746	9,799	2,001	45,463	5,454
Jefferson	651.4	.2597	34.2	9.7	16.6	20.9	27.7	251.4	5,587,052	875,916	510,042	778,388	223,354	1,565,911	216,342
• Bessemer	33.5	.0134	34.1	9.7	14.5	17.4	31.3	12.6	348,078	73,659	18,818	46,611	10,701	123,457	10,834
• Birmingham	265.9	.1060	32.9	10.6	17.6	18.9	27.5	105.4	2,595,812	337,591	258,859	309,324	122,486	861,104	76,564
St. Clair	50.8	.0203	33.5	9.5	16.0	21.9	25.8	18.0	181,669	34,086	13,939	4,250	1,737	73,708	7,727
Shelby	101.7	.0405	31.4	10.1	19.2	24.1	19.0	36.9	386,065	83,536	29,898	35,762	12,532	68,277	14,044
Walker	67.7	.0270	35.2	9.6	14.7	20.8	29.4	25.6	468,291	99,418	25,898	40,292	17,791	129,138	21,780
SUBURBAN TOTAL	611.6	.2438	34.3	9.4	16.3	22.6	26.2	228.6	3,820,820	712,179	308,846	512,556	124,228	897,936	177,949
DECATUR	**101.1**	**.0403**	**33.7**	**9.2**	**16.8**	**21.9**	**26.0**	**38.2**	**757,069**	**113,096**	**62,093**	**87,910**	**42,983**	**246,068**	**23,014**
Morgan	101.1	.0403	33.7	9.2	16.8	21.9	26.0	38.2	757,069	113,096	62,093	87,910	42,983	246,068	23,014
• Decatur	49.3	.0197	33.6	9.1	17.2	21.4	26.2	19.3	607,176	78,322	51,380	83,293	31,154	208,373	13,168
SUBURBAN TOTAL	51.8	.0206	33.8	9.4	16.2	22.4	25.7	18.9	149,893	34,774	10,713	4,617	11,829	37,695	9,846

(a) Population and Spending Variables

ALA. (cont.)

EFFECTIVE BUYING INCOME

S&MM ESTIMATES: 12/31/90

EFFECTIVE BUYING INCOME

METRO AREA / County / City	Total EBI ($000)	Median Hsld. EBI	% of Hslds. by EBI Group: (A) $10,000-$19,999 (B) $20,000-$34,999 (C) $35,000-$49,999 (D) $50,000 & Over: A	B	C	D	Buying Power Index
ANNISTON	**1,220,726**	**20,765**	**25.0**	**27.4**	**14.7**	**9.6**	**.0391**
Calhoun	1,220,726	20,765	25.0	27.4	14.7	9.6	.0391
• Anniston	280,703	17,482	25.9	22.6	11.4	10.9	.0140
SUBURBAN TOTAL	940,023	21,787	24.6	29.2	15.8	9.1	.0251
BIRMINGHAM	**11,120,764**	**24,052**	**21.5**	**25.1**	**16.2**	**16.2**	**.3439**
Blount	316,579	16,679	28.7	26.0	10.6	4.6	.0100
Jefferson	8,358,304	24,759	20.9	24.6	16.3	17.7	.2640
• Bessemer	319,196	17,866	21.3	22.3	13.3	10.7	.0130
• Birmingham	2,877,842	19,252	24.7	23.4	13.1	12.0	.1054
St. Clair	466,649	20,573	25.9	29.6	14.0	7.7	.0139
Shelby	1,296,902	28,720	18.7	24.8	20.8	18.7	.0330
Walker	682,330	20,353	24.3	26.2	14.8	9.8	.0230
SUBURBAN TOTAL	7,923,726	26,749	20.1	25.9	17.9	18.4	.2255
DECATUR	**1,095,308**	**22,772**	**22.8**	**27.7**	**16.7**	**11.3**	**.0363**
Morgan	1,095,308	22,772	22.8	27.7	16.7	11.3	.0363
• Decatur	592,124	24,971	20.4	26.0	18.6	14.1	.0225
SUBURBAN TOTAL	503,184	21,098	25.0	29.6	14.7	8.4	.0138

EFFECTIVE BUYING INCOME

METRO AREA / County / City	Total EBI ($000)	Median Hsld. EBI	% of Hslds. by EBI Group: (A) $10,000-$19,999 (B) $20,000-$34,999 (C) $35,000-$49,999 (D) $50,000 & Over: A	B	C	D	Buying Power Index
OTHER COUNTIES							
Barbour	214,889	16,021	25.3	21.9	10.4	8.5	.0071
Bibb	136,206	17,900	25.5	27.3	11.6	6.3	.0042
Bullock	86,578	14,933	28.0	18.8	9.5	8.6	.0028
Butler	189,791	16,925	27.2	24.8	10.1	7.7	.0060
Chambers	395,025	21,825	24.0	25.4	15.8	12.4	.0111
Cherokee	189,986	18,411	27.3	26.9	13.4	6.3	.0054
Chilton	320,743	19,822	24.8	27.2	13.1	9.3	.0098
Choctaw	159,402	18,221	21.6	19.8	12.9	14.0	.0046
Clarke	255,327	19,000	21.6	22.6	14.1	11.3	.0083
Clay	113,770	16,647	27.0	26.9	10.3	5.1	.0034
Cleburne	128,675	21,569	23.6	28.0	16.6	9.0	.0035
Coffee	402,609	20,849	23.2	29.1	14.1	8.6	.0139
Conecuh	112,412	14,067	23.4	22.9	8.8	5.8	.0034
Coosa	108,650	19,544	24.8	27.9	13.5	7.7	.0025
Covington	348,851	17,528	26.0	25.3	11.7	7.3	.0117
Crenshaw	93,627	12,129	28.2	19.0	6.8	3.6	.0030

(b) Income Variables

Notes: This figure depicts examples of the 1991 Survey of Buying Power. Bold font indicates a state or metro area. Medium font indicates a county or suburban area. Light font indicates city data.

D.2 Overview of Previously Available Data

Current Population Survey (CPS). The key dataset that researchers have used when investigating historical income in the U.S. is the Current Population Survey (CPS). It is conducted jointly by the U.S. Census Bureau and the Bureau of Labor Statistics. The survey has been running continuously since the early 1960s, providing detailed income data; since 1977, the state of residence has been available. While some information is provided monthly, income is collected annually, and no consumption data is available. Each year, around 60,000 households are interviewed in a repeated cross-section. The data is designed to be nationally representative. Some larger states have sufficiently large samples to be reasonably representative, though smaller states are less reliable. The CPS is not representative at the county level. For example, Beck, Levine and Levkov (2010) use this survey to investigate the impact of banking deregulation on state-level income inequality. State information is available, but county-level information is not.

Consumer Expenditure Survey (CEX). A second key dataset is the Consumer Expenditure Survey (CEX). It is conducted by the Bureau of Labor Statistics and the Census Bureau. The survey was first fielded in 1960–61 and 1972–73, and has been collected continuously since 1980. It is conducted annually, with both an Interview Survey (households interviewed quarterly for up to five quarters) and a Diary Survey (households keeping two one-week diaries). It captures detailed household expenditures, along with income and demographic data, and is typically analyzed as a repeated cross-section. Each year, about 7,000 to 8,000 households complete the survey. The CEX is nationally representative, but the sample size is too small to provide reliable estimates at the state or county level. For example, Krueger and Perri (2006) use this survey to examine aggregate income and consumption inequality patterns. State-level information is available, but county-level information is not publicly available.

Panel Study of Income Dynamics (PSID). Third, we have the Panel Study of Income Dynamics (PSID). It is conducted by the University of Michigan's Institute for Social Research. The survey began in 1968 and continues today. Data is collected annually until 1997 and biennially thereafter. The PSID collects information on income, demographics, and limited consumption data. Critically, prior to 1999, consumption data referred to only food purchases. Unlike the CPS and CEX, it is a true longitudinal panel survey, following original households and their descendants. The survey began with about 5,000 households. The PSID sample is nationally representative, but it is not representative at the state or county level. State-level information is available, but county-level information is not publicly available.

Survey of Income and Program Participation (SIPP). A fourth dataset is the Survey of Income and Program Participation (SIPP). It is conducted by the U.S. Census Bureau. The survey was first launched in 1984 and continues, though with periodic redesigns. It is organized into multi-year panels, with households interviewed every four months for three to four years. The SIPP contains detailed information on income, demographics, and some consumption data. Sample sizes in the 1980s and 1990s ranged from about 12,000 to 20,000 households per panel. The survey is nationally representative, though the sample is too small for most state-level estimates and not representative at the county level. State-level information is available, but county-level information is not publicly available.

Survey of Consumer Finances (SCF). Finally, the Survey of Consumer Finances (SCF) is another important dataset. It is sponsored by the Federal Reserve Board, with data collection conducted by the National Opinion Research Center (NORC) at the University of Chicago since 1992, while earlier waves also involved the Treasury Department. The SCF was first conducted in 1946 and ran annually until 1971; after a gap, it has been conducted on a triennial basis since 1983. The survey contains detailed information on household income, but does not collect comprehensive consumption data. It deliberately oversamples wealthy households to capture the top of the distribution. Each wave

surveys about 3,000 to 4,500 households. The SCF is nationally representative, but not representative at the state or county level, and location information is anonymized.

Statistics of Income (SOI). In addition to household surveys, researchers also rely on the Statistics of Income (SOI) tax return data, which are compiled by the Internal Revenue Service's Statistics of Income Division. Public-use files are available from 1960 onward, with larger internal-use microdata samples available from 1979. The SOI is annual, covering every tax year. It contains detailed income data from tax returns, though it provides limited demographic information and no consumption data. Internal-use files typically include over 100,000 tax returns per year, with oversampling of high-income filers. The data is nationally representative and can be tabulated at the state or county level, but is publicly available in aggregate only after 1989.