Online appendix

"Minimum Wages and Consumer Credit: Effects on Access and Borrowing"

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- Data Description
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Data Description: Sample, Outcome Variable, and Treatment Group Construction

1. Mintel Comperemedia

Data on credit offers come from Mintel Comperemedia, via their Credit Cards and Mortgage & Loan Databases. Mintel collects data from a sample of about 1,000 households each month, surveying household demographic and income characteristics concurrently with compiling information from all mail-based credit and sales advertising, including credit card, mortgage, auto, and unsecured loan offers received by the household during the month, all at the offer level.[1]

Our analyses employ data collected between 2000 and 2015. We limit the sample to households where the head is aged 18-64 in order to exclude retirees and younger teenagers. We exclude teenagers under age 18 (despite their prominence in the minimum wage literature) because they typically do not have credit reports and therefore would typically not receive credit offers (nor would they be included in the credit report data we use in subsequent analyses).

We construct our outcome variables as follows:

- Number of Credit Card Offers: a count of the number of credit card offers reported by a respondent during the month of observation
- Mean Credit Limit: credit card offers typically include a maximum possible credit limit. We take the average of the possible credit limits listed on these offers received by a respondent during the month of observation.
- Fraction of Offers Pre-Approved: Of all of credit card offers received by a respondent during the month of observation, we compute the fraction of all offers that are pre-approved, which means they are firm offers, typically to consumers that have already been pre-screened via a soft credit check that does not influence their credit score.
- Mean Purchase Interest Rate: credit card offers typically report interest rates on new purchases, which are different than interest rates on balance transfers or cash advances. We compute the average interest rate across offers received by a respondent during the month of observation.[2]
- Fraction of Offers with No Annual Fee: we compute the fraction of all credit card offers received by a respondent during the month of observation that do not carry an annual fee.
- Fraction of Offers w/ Fee and No Rewards: we compute the fraction of all credit card offers received by a respondent during the month of observation that do have an annual fee, but do not have any rewards (such as cash back, frequent flier miles, or redeemable points).

To define "minimum wage households" we construct an imputed per person hourly wage and define a family as a "minimum wage household" if that wage is within 60 to 120 percent of the state minimum wage. To calculate the imputed hourly wage, we take the household's self-

[1] For more on the Mintel data as a measure of credit supply, and for more general information about the data source, see Han, Keys, and Li (2018).

[2] The purchase interest rate is the regular purchase interest rate. The data also include information on other rates which may be offered that we do not use in our analysis, including any introductory or promotional teaser rates (for a specific period of time before the regular rate applies), balance transfer rates, cash advance rates, and default rate (the rate the borrower pays upon missing a payment).

reported annual income, adjusted for household size, and divide by 40 hours per week and 52 weeks per year. Income is recorded in discretized bins, so we take the midpoint of each bin. Note that the income information is collected concurrently with the credit offers; historical income information is not available.

To adjust for household size, we use information on the number of household members. However, the data do not include any information on the age or work status of any other family members, so we are unable to observe how many potential wage earners there are in the family. Therefore, we perform our household size adjustment dividing household income by the average number of workers per household for each household size, which we compute using the CPS Annual Social and Economic Supplements from 1999-2015 (the same years of our analysis):[3]

Household size	Average number of workers
1	0.732
2	1.358
3	1.625
4	1.801
5+	1.942

Classifying respondents as "minimum wage households" required a number of methodological assumptions and decisions. We therefore perform a number of robustness checks reported in the appendix, where we relax the assumptions in our primary definition of minimum wage households and use alternate definitions of minimum wage households as follows:

- Respondents whose imputed wages are between 0 and 120% of the state minimum wage.
- To examine heterogeneity in outcomes across the distribution of imputed wages, we also allow for different effects of the minimum wage on respondents whose imputed wages are less than 60% of the minimum wage; 60-90% of the minimum wage; 90-120% of the minimum wage; 120-180% of the minimum wage
- Allow for different effects of the minimum wage on respondents whose incomes are less than $15,000; $15,000 to $30,000; and $30,000 to $50,000
- Respondents who report having less than a high school education.

2. Current Population Survey Unbanked and Underbanked Households Supplement

Data on borrowing via AFS credit products come from the Current Population Survey Unbanked and Underbanked Households Supplement (henceforth, CPS), which has been conducted biennially since 2009 by the Federal Deposit Insurance Corporation in partnership with the U.S. Census Bureau.[4] We use the January 2009, June 2011, June 2013 and June 2015 survey waves. We create indicators for household usage of AFS credit products (payday loans, pawning items at a pawn shop, rent-to-own furniture, and auto title loans) within the past year. We use a one-year lookback because that time frame was asked consistently across all four survey waves. Because the questionnaire changed slightly over time, we harmonize the data

[3] If a household has missing household size, we adjust them by 1.0450, which is the average of the adjustment factors for households of size 1 and 2. This decision was motivated by the fact that in the Mintel data, the average income for households with missing size is within 0.2% of the midpoint between the incomes of households of size 1 and 2.

[4] Information on the supplements can be found at https://www.fdic.gov/householdsurvey/

across survey waves by following Bhutta, Goldin, and Homonoff (2016). Auto title loans are not included in the data set until the 2013 survey wave.

To define "minimum wage households" we use an analogous procedure to that used in the credit offer data, where we construct an imputed per person hourly wage and define a family as a "minimum wage household" if that wage falls within 60 to 120 percent of the state minimum wage. To calculate the imputed hourly wage, we take annual family income over the previous year and divide by total family hours worked over the previous year. Family income is recorded in discretized bins, so we take the midpoint of each bin. Total family hours worked is calculated by summing each primary family members usual hours worked in the prior week, which we annualize by assuming 52 weeks worked. In robustness checks, we relax this assumption on hours by focusing on family income alone.

The CPS collects information on hourly wages for the outgoing rotation group, which is 25 percent of the sample at a given time. In our main analyses we use family income, rather than these reported hourly wages, because it is the only income information available for all CPS households. However, it is possible to exploit the longitudinal linkage of the CPS to gather exact individual hourly wages for respondents for the entire sample, who will be part of the outgoing rotation group and be asked their hourly wage at some point within 0-3 months after the collection of the Unbanked and Underbanked Supplement. One obvious disadvantage of this procedure is timing, since we will be measuring wages over a four-month period rather than at the time of the survey. But an advantage to this approach is we do not need invoke the assumption that everyone works 52 weeks in order to annualize hours worked. To construct this measure of "minimum wage households", we simply record the hourly wage of the head and spouse (if present) and merge in monthly information on state minimum wages in order to identify if the head and/or spouse earns the current minimum wage in their state.

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

Data on credit limits, payment behavior and credit scores come from the Federal Reserve Bank of New York Consumer Credit Panel/Equifax (henceforth, CCP/Equifax).[5] The CCP/Equifax is an individual-level panel dataset of consumer credit reports, obtained from one of the three main credit bureaus in the United States. The data have been collected four times per year (March, June, September and December) since 1999 and consist of a five percent random sample of all U.S. consumers with credit histories. The sampling frame is based on social security numbers, so that once a consumer establishes a credit history and enters the sample, they remain in the sample continuously until death (even if the consumer has no credit activity in a particular quarter). The sample is refreshed each quarter as new individuals establish credit records. The data include detailed information drawn from credit reports, such as loan balances, credit limits, payment status, and the Equifax Risk Score (a type of credit score).

By design, this dataset only includes individuals who have credit reports, and similar to the other analyses, we limit the sample to 18-64 year olds in order to exclude retirees and younger teenagers (who are rarely observed in this dataset). We also eliminate individuals with thin credit records, defined as being in the sample fewer than 4 quarters. We perform all

[5] Additional information about the dataset, including sampling and methodology, can be found in Lee and van der Klaauw (2010) at https://www.newyorkfed.org/research/staff_reports/sr479.html.

analyses on a 30% random sample of the dataset, which represents a 1.5% sample of all individuals with credit reports.

We construct our outcome variables as follows:

- Total credit card limit: the total credit limit across all credit cards held by a consumer, winsorized at the 99th percentile to account for extreme outliers in the data, while those with no credit cards as coded as having limits of zero[6]
- Delinquent on credit card(s): indicator variable that takes a value of 1 if the consumer has one or more credit cards that are 60 or more days past due, and 0 otherwise; those without credit cards as also coded as 0
- Credit score: Equifax Risk Score

The CCP/Equifax has very rich debt information for each individual over time, but limited additional characteristics; only the individual's age and location of residence are available. Without a measure of borrower income, we cannot directly observe whether an individual's income is consistent with working in a minimum wage job as we can in the Mintel and CPS data used in the previous analyses. To overcome this limitation, we proxy for the demographic characteristics and income of the sample member by merging to the data the demographic and economic characteristics of the individual's census block-group of residence, tabulated from the 2000 Census.[7]

Here, we define our "treatment group" focusing on geographic areas with a relatively high fraction of low-educated workers. In our preferred specifications, our treatment group consists of individuals who have ever been observed living in Census block-groups where more than 50 percent of adults over 25 on the census block-group have less than a high school education. We perform a number of robustness checks reported in the appendix, where we estimate various alternate definitions of our "treatment group" consisting of individuals who have ever been observed living in Census block-groups where:

- the imputed hourly wage, based on dividing the median income (by age) by 40 hours a week and 52 weeks a year, is between 60 and 120% of the state minimum wage,
- more than 25% of population is employed in food service or retail jobs,
- more than 55% of the population has a high school degree or less education.

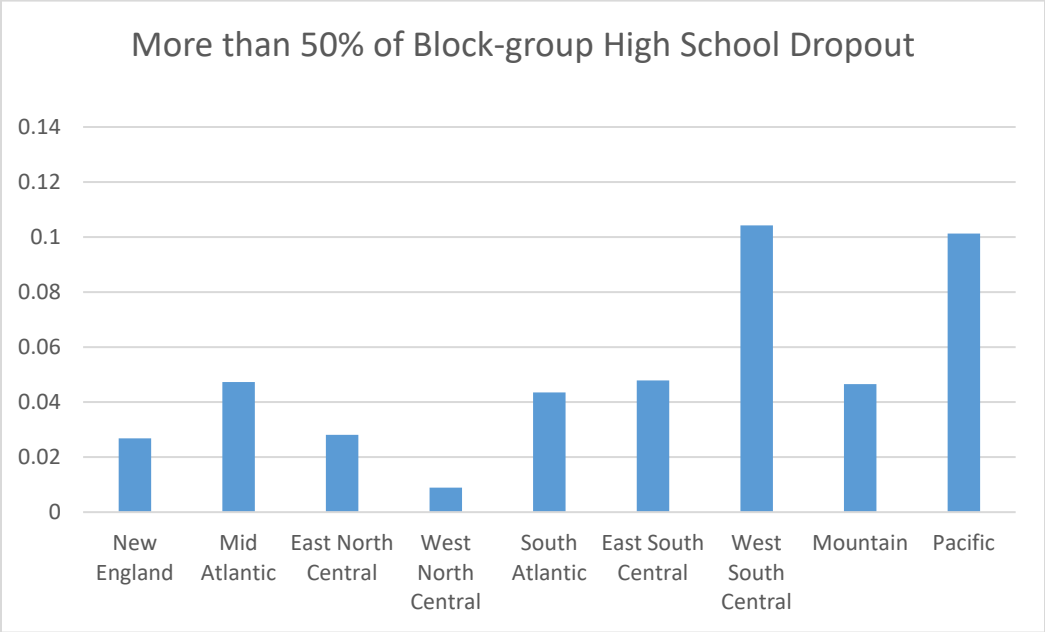
We chose our preferred definition by merging Census block-group information with 2001-2016 data from the Survey of Consumer Finances and estimating a simple regression model of the predictive power of various permutations on education, median incomes, and employment in food or retail services on the probability a household has a head and/or spouse who earns within 60 and 120 percent of the state minimum wage. Our preferred estimate was associated with the highest predictive power. We chose the alternative specifications either to conform to our other data sets (e.g., median income between 60 and 120 percent of the minimum age) or because they had the most predictive power within their variable class (e.g., the share of population employed in food or retail and the population with a high school degree or less).

[6] Winsorizing these values at 95% and 97% yields qualitatively similar results.

[7] Census blocks are typically quite small; for example, in an urban area, they are the equivalent of a single city block. While the US has about 42,000 zip codes, there are over 210,000 census block-groups and 11 million census blocks.

Appendix Figures and Tables

Appendix Figure 1: Regional Representation of Census Blocks, by Type of Block



Notes: Data source is Current Population Survey. Bars represent the share of the Census divisions' Census Blocks in which more than 50% of the blocks residents are high school dropouts.

Appendix Table 1: Financial Characteristics of Minimum Wage Households

	All Households	Households with Minimum Wage Worker
Cash Flows and Assets		
Total Income	$50,727	$23,537
Wage Income	$34,639	$15,218
Net Worth	$103,990	$12,964
Total Assets	$196,851	$27,221
Total Financial Assets	$22,046	$1,970
Total Checking/Savings Assets	$2,639	$657
Owns an auto*	0.86	0.8
Owns a home*	0.68	0.44
Interactions with Credit Markets		
Total Debt	$25,000	$5,516
Debt to Income Ratio	0.51	0.22
Has a credit card*	0.72	0.51
Credit Card Limit	$15,000	$7,800
Credit Card Interest Rate	13.99	14.9
Has an auto loan*	0.32	0.25
Has a mortgage*	0.43	0.24
Has a student loan*	0.16	0.18
Measures of Financial Distress		
Spending Greater than Income*	0.18	0.23
Turned Down for Credit*	0.2	0.24
Credit Constrained*	0.28	0.39
Late on Payments*	0.17	0.21
Late on Payments 60+ Days*	0.07	0.1
Used a Payday Loan*	0.02	0.04
Able to borrow $3000 from Friend/Family*	0.66	0.53
Unbanked*	0.1	0.23

Notes: Data source is Survey of Consumer Finances 2001-2013. Minimum wage workers identified as 60-120% of state minimum wage in wage income as full time worker. Variables expressed as medians, unless noted. * indicates variable expressed as mean. Credit constraints are captured via a positive to response to either (1) being turned down for credit or (2) not applying for credit for fear of being turned down.

Appendix Table 2: Minimum Wages and Other Types of Secured and Unsecured Debt

Panel A: Mintel	Number of Offers, Secured Debt		Number of Offers, Unsecured Debt	
	Auto Loan	Mortgage	Other Loan	Personal Loan
Minimum Wage$_{st-3}$*Minimum	-0.002	0.005	0.018***	0.008**
Wage Household$_i$	(0.0019)	(0.0091)	(0.0032)	(0.0028)
Minimum Wage$_{st-3}$	-0.001	0.097	-0.007	-0.003
	(0.0034)	(0.0634)	(0.0095)	(0.0067)
Minimum Wage Household$_i$	-0.001	-0.218***	-0.149***	-0.079***
	(0.0129)	(0.0508)	(0.0228)	(0.0158)
Mean of Dependent Variable	0.054	0.370	0.211	0.155
N	315,832	315,832	315,832	315,832
Panel B: CCP/Equifax				
	Auto Balances (k=3)	Mortgage Balances (k=3)	Auto Balances (k=12)	Mortgage Bal. (k=12)
Minimum Wage$_{st-k}$	-7	3,148	124	3,743
	(161.6)	(2393.0)	(163.2)	(2047.5)
Mean of Dependent Variable	4,513	33,710	4,680	35,373
N	11,579,606	11,579,606	10,789,504	10,789,504

Notes: Data sources are Mintel Comperemedia and CCP/Equifax. Data are for 2000-2015 in Mintel and 1999-2015 in CCP/Equifax. In Mintel, the sample is households identified as having hourly wage (implied by reported income, adjusted for household size, and full time hours) consistent with minimum wage work. In the CCP/Equifax, the sample is individual who have ever lived on a census block-group where more than 50 percent of the adult population was a high-school dropout in 2000. These analyses are designed to be comparable to Aaronson, Agarwal, and French (2012), however, our samples differ on a number of dimensions. First, their sample consists of credit card borrowers from a single institution, while our consumer credit outcomes analysis uses a random sample of adults with a credit report. Second, their data has information on self-reported incomes which can be used to identify minimum wage workers, while our does not and we must use the educational composition of a neighborhood to identify low-educated workers. Third, their credit card borrowing consists of cards from a single institution, while ours includes all cards from any institution *p<0.05, **p<0.01, ***p<0.001.

Appendix Table 3: Minimum Wages and Credit Card Offers Received, Alternative Lags

	(1) Number of Credit Card Offers	(2) Mean Credit Limit	(3) Fraction of Offers Pre-Approved	(4) Mean Purchase Interest Rate	(5) Fraction of Offers w/ No Annual Fee	(6) Fraction of Offers w/ Fee, No Rewards
One month lag						
Minimum $Wage_{st-1}$* Minimum Wage $Household_i$	0.116**	1878***	0.019***	-0.074	0.044***	-0.023***
	(0.0390)	(325)	(0.0029)	(0.0378)	(0.0042)	(0.0037)
Minimum $Wage_{st-1}$	0.052	44	0.001	0.044	0.003	-0.004
	(0.0408)	(283)	(0.0019)	(0.0305)	(0.0027)	(0.0026)
Minimum Wage $Household_i$	-2.186***	-19827***	-0.120***	1.360***	-0.360***	0.257***
	(0.2414)	(1827)	(0.0185)	(0.2406)	(0.0268)	(0.0242)
N	315,832	133,875	221,017	223,079	224,309	219,990
12 Month lag						
Minimum $Wage_{st-12}$* Min. Wage $Household_i$	0.107**	2492***	0.019***	-0.043	0.049***	-0.028***
	(0.0377)	(486)	(0.0031)	(0.0386)	(0.0045)	(0.0042)
Minimum $Wage_{st-12}$	0.059	354	-0.003	0.04	0.003	-0.007*
	(0.0451)	(364)	(0.0029)	(0.0294)	(0.0033)	(0.0030)
Minimum Wage $Household_i$	-2.102***	-23105***	-0.116***	1.151***	-0.382***	0.285***
	(0.2268)	(2548)	(0.0196)	(0.2367)	(0.0278)	(0.0269)
N	315,832	133,875	221,017	223,079	224,309	219,990

Notes: Data source is Mintel Comperemedia 2000-2015. Displayed are coefficients and standard errors (in parentheses). Minimum Wage Household defined as having an hourly wage (implied by reported income, adjusted by household size, and full time hours) consistent with minimum wage work, as described in text. Sample includes households with working age adults 18-64, and for columns (2)-(6), households who received offers that specified the feature listed in the column heading. Controls include age-group, sex, race/ethnic group, education group, state, and year-month fixed effects and state-month unemployment rates. Dependent variable means are displayed for all observations used in the regression, as well as the mean for the subsample of observations identified as minimum wage households. Standard errors adjusted to allow for clustering at the state level. *p<0.05, **p<0.01, ***p<0.001.

Appendix Table 4: Minimum Wages and Selection into Receiving Credit Offers

	Has Offer With Credit Limit?	Has Offer Specifying Whether or Not Pre-Approved?	Has Offer With Purchase Interest Rate?	Has Offer Specifying Whether or Not Annual Fee?	Has Offer Specifying Whether or Not Fees and Rewards?
$\text{Minimum Wage}_{st-3}$*$\text{Min Wage Household}_i$	0.037***	-0.038***	-0.041***	-0.042***	-0.034***
	(0.0032)	(0.0033)	(0.0028)	(0.0032)	(0.0033)
$\text{Minimum Wage}_{st-3}$	0.002	-0.001	-0.001	-0.001	-0.002
	(0.0043)	(0.0039)	(0.0044)	(0.0039)	(0.0039)
$\text{Minimum Wage Household}_i$	-0.277***	0.165***	0.188***	0.190***	0.138***
	(0.0199)	(0.0211)	(0.0178)	(0.0196)	(0.0216)
N	315,832	315,832	315,832	315,832	315,832

Notes: Data source is Mintel Comperemedia 2000-2015. Displayed are coefficients and standard errors (in parentheses). Minimum Wage Household defined as having an hourly wage (implied by reported income, adjusted for household size, and full time hours) consistent with minimum wage work, as described in text. Sample includes households with working age adults 18-64. Controls include age-group, sex, race/ethnic group, education group, state, and year-month fixed effects and state-month unemployment rates. Standard errors adjusted to allow for clustering at the state level. *p<0.05, **p<0.01, ***p<0.001.

Appendix Table 5: Minimum Wages and Credit Card Limits, Credit Risk and Payment Behavior, Highly Educated Census Block-Groups

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Total Credit Card Limit (k=3)			Delinquency and Risk (k=3) All Borrowers		Delinquency and Risk (k=12) Borrowers with Higher Limits	
	Full Sample	Individuals Without New Cards	Individuals With New Cards	Delinquent on Credit Card(s)	Credit Score	Delinquent on Credit Card(s)	Credit Score
Minimum $Wage_{st-k}$	214*	219**	275	-0.001	0.049	0	0.278
	(83.4)	(79.3)	(179)	(0.0006)	(0.4140)	(0.0004)	(0.5401)
Mean of Dependent Variable	23,443	22,151	33,229	0.041	724.8	0.035	729.3
N	5,526,865	4,882,435	644,430	5,526,865	5,498,896	2,342,145	2,335,689

Notes: Data source is CCP/Equifax 1999-2015. Sample includes adults 18-64. Displayed are coefficients and standard errors (in parentheses). Sample is limited to individuals who have ever resided in a census block-group where more than 75 percent of the population over age 25 had a college degree in 2000. Columns (1) and (4) are estimated on this entire sample. Columns (2) and (3) are estimated on the subsample that did or did not acquire new credit card(s) since one quarter prior, as indicated in the column heading. Column (5) is estimated on the subsample of borrowers with a credit score in both the current and prior quarter. Column (6) is estimated on the subsample of borrowers who have higher total credit card limits in the current period than 12 months prior, and column (7) is estimated on the same sample, but omitting observations with missing credit scores 12 months prior. K refers to the lag on the minimum wage variable, which is three months in columns (1)-(5) and 12 months in columns (6)-(7). Controls includes individual, age-group, state, and quarter fixed effects, demographic and economic characteristics of census-block-group, state-year unemployment rates. Standard errors adjusted to allow for clustering at the state level. *p<0.05, **p<0.01, ***p<0.001.

Appendix Table 6: Minimum Wages and Credit Card Offers Received, Additional Controls

	(1) Number of Offers	(2) Mean Credit Limit	(3) Fraction of Offers Pre-Approved	(4) Mean Purchase Interest Rate	(5) Fraction of Offers w/ No Annual Fee	(6) Fraction of Offers w/ Fee and No Rewards
A. Controls for State Policies						
Minimum Wage$_{st-3}$*Min Wage Household$_i$	0.118**	1879***	0.020***	-0.065	0.045***	-0.024***
	(0.0392)	(359)	(0.0028)	(0.0379)	(0.0042)	(0.0037)
Minimum Wage$_{st-3}$	0.063	112	-0.001	0.042	0.001	-0.005
	(0.0426)	(341)	(0.0022)	(0.0288)	(0.0026)	(0.0026)
Minimum Wage Household$_i$	-2.190***	-19778***	-0.125***	1.299***	-0.361***	0.260***
	(0.2412)	(1960)	(0.0176)	(0.2383)	(0.0265)	(0.0242)
B. Controls for Division-year Fixed Effects, State-year Trends						
Minimum Wage$_{st-3}$*Min Wage Household$_i$	0.113**	1812***	0.020***	-0.062	0.045***	-0.023***
	(0.0397)	(354)	(0.0028)	(0.0385)	(0.0042)	(0.0037)
Minimum Wage$_{st-3}$	0.028	5	-0.007**	0.021	0.003	-0.004
	(0.0625)	(330)	(0.0026)	(0.0419)	(0.0035)	(0.0030)
Minimum Wage Household$_i$	-2.157***	-19450***	-0.124***	1.275***	-0.359***	0.259***
	(0.2449)	(1955)	(0.0179)	(0.2438)	(0.0265)	(0.0243)

[continued on next page]

Appendix Table 6, continued

	(1) Number of Offers	(2) Mean Credit Limit	(3) Fraction of Offers Pre-Approved	(4) Mean Purchase Interest Rate	(5) Fraction of Offers w/ No Annual Fee	(6) Fraction of Offers w/ Fee and No Rewards
C. Control for Minimum Wage Lead						
Minimum Wage$_{st-3}$*Min Wage Household$_i$	0.226**	2661*	0.016	0.326***	0.061***	-0.056***
	(0.0716)	(1112)	(0.0108)	(0.0882)	(0.0115)	(0.0136)
Minimum Wage$_{st-3}$	0.041	-196	-0.004	0.025	0.001	-0.004
	(0.0509)	(340)	(0.0023)	(0.0300)	(0.0030)	(0.0028)
Minimum Wage Household$_i$	-2.132***	-19761***	-0.126***	1.459***	-0.356***	0.247***
	(0.2457)	(1971)	(0.0183)	(0.2615)	(0.0277)	(0.0246)
Minimum Wage$_{st+12}$*Min Wage Household$_i$	-0.114	-755	0.003	-0.402***	-0.016	0.034*
	(0.0656)	(1006)	(0.0108)	(0.0965)	(0.0113)	(0.0130)
Minimum Wage$_{st+12}$	0.024	460	0.006	0.021	0	0.002
	(0.0456)	(253)	(0.0032)	(0.0358)	(0.0031)	(0.0029)
N	315,832	133,875	221,017	223,079	224,309	219,990

Notes: Data source is Mintel Compremedia. Displayed are coefficients and standard errors (in parentheses). Minimum Wage Household defined as having an hourly wage (implied by reported income, adjusted by household size, and full time hours) consistent with minimum wage work, as described in text. Sample includes households with working age adults 18-64, and for columns (2)-(6), households who received offers that specified the feature listed in the column heading. Controls include age-group, sex, race/ethnic group, education group, state, and year-month fixed effects and state-month unemployment rates. In panel A, additional state-year controls include the state EITC rate, maximum AFDC benefits for a family of four, maximum SNAP benefits for a family of four; the fraction of population: receiving SSI benefits, enrolled in Medicaid, enrolled in WIC, receiving free school lunch and/or breakfast; and per capita spending on worker's compensation. In panel B, additional controls for census division by year and state-year trends are included. Standard errors adjusted to allow for clustering at state-level. In Panel C, the 12-month leading value of the minimum wage, along with its interaction with Minimum Wage Household status, is included. *p<0.05, **p<0.01, ***p<0.001.

Appendix Table 7: Minimum Wages and Use of Alternative Financial Services, Additional Controls

	(1) Took out a Payday Loan	(2) Pawned Item at Pawn Shop	(3) Rented Items from Rent-to-Own Store	(4) Took out Auto Title Loan
A. Controls for State Policies				
Minimum Wage$_{st-12}$*Min. Wage Household$_i$	-0.0047*	-0.0052	-0.0055**	-0.0022
	(0.0027)	(0.0038)	(0.0024)	(0.0016)
Minimum Wage$_{st-12}$	-0.0026	0.0017	-0.001	-0.0011
	(0.0022)	(0.0018)	(0.0014)	(0.0026)
Minimum Wage Household$_i$	0.0449*	0.053	0.0544***	0.0221
	(0.0231)	(0.0335)	(0.0200)	(0.0150)
B. Controls for Division-year FE, State-year Trends				
Minimum Wage$_{st-12}$*Min. Wage Household$_i$	-0.0046	-0.0047	-0.0054**	-0.0021
	(0.0028)	(0.0038)	(0.0023)	(0.0017)
Minimum Wage$_{st-12}$	0.0006	0.0006	0.0008	-0.0084***
	(0.0029)	(0.0019)	(0.0019)	(0.0002)
Minimum Wage Household$_i$	0.0450**	0.0523*	0.0549***	0.0216
	(0.0212)	(0.0302)	(0.0173)	(0.0138)
C. Control for Minimum Wage Lead				
Minimum Wage$_{st-12}$*Min. Wage Household$_i$	-0.0071*	-0.0067	-0.0062**	-0.0004
	(0.0040)	(0.0043)	(0.0029)	(0.0034)
Minimum Wage$_{st-12}$	-0.0105***	-0.0016	-0.0019*	-0.0011
	(0.0017)	(0.0014)	(0.0010)	(0.0024)
Minimum Wage Household$_i$	0.0376*	0.0438	0.0472**	0.0171
	(0.0188)	(0.0298)	(0.0180)	(0.0140)
Minimum Wage$_{st+12}$*Min. Wage Household$_i$	0.002	0.0011	0.0017	0.0000
	(0.0024)	(0.0022)	(0.0021)	(0.0025)
Minimum Wage$_{st+12}$	-0.0006	-0.0008	0.0008	0.0015*
	(0.0012)	(0.0009)	(0.0007)	(0.0008)
N	157,896	158,001	157,974	74,488

Notes: Data source is Current Population Survey Unbanked/Underbanked Supplements, 2009, 2011, 2013 and 2015 (column 4 data is for 2013 and 2015 only). Displayed are coefficients and standard errors (in parentheses). Min Wage Household defined as total family income divided by total family hours worked consistent with the minimum wage, as described in text. Controls include age-group, sex, race/ethnic group, education group, and state fixed effects and state-month unemployment rates. In panel A, additional state-year controls include whether or not the state has a payday loan ban, the state EITC rate, maximum AFDC benefits for a family of four, maximum SNAP benefits for a family of four; the fraction of population: receiving SSI benefits, enrolled in Medicaid, enrolled in WIC, receiving free school lunch and/or breakfast; and per capita spending on worker's compensation. In panel B, additional controls for census division by year and state-year trends are included. In panel C, the one-year lead of the minimum wage, along with its interaction with Min Wage Household, are included. Standard errors adjusted to allow for clustering at state-level. *p<0.05, **p<0.01, ***p<0.001.

Appendix Table 8: Minimum Wages and Credit Card Borrowing, Credit Risk and Payment Behavior, Additional Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Total Credit Card Limit (k=3)			Delinquency and Risk (k=3) All Borrowers		Delinquency and Risk (k=12) Borrowers with Higher Limits	
	Full Sample	Individuals Without New Cards	Individuals With New Cards	Delinquent on Credit Card(s)	Credit Score	Delinquent on Credit Card(s)	Credit Score
A. Controls for State Policies							
Minimum Wage$_{st-k}$	352**	325**	426*	-0.005*	0.881*	-0.007***	1.428**
	(103)	(93.0)	(165)	(0.0020)	(0.4209)	(0.0014)	(0.5137)
	11,572,432	10,527,492	1,044,940	11,572,432	11,292,444	2,604,237	2,604,162
B. Control for Minimum Wage Lead							
Minimum Wage$_{st-k}$	474***	438***	728**	-0.006*	0.22	-0.010***	1.830**
	(128)	(116)	(243)	(0.0022)	(0.3584)	(0.0017)	(0.6528)
Minimum Wage$_{st+12}$	-16	-32	-113	-0.001	1.731***	0	0.031
	(91)	(82)	(219)	(0.0015)	(0.4717)	(0.0019)	(0.4393)
N	11,579,606	10,534,324	1,045,282	11,579,606	11,273,837	2,605,312	2,605,237

Notes: Data Source is CCP/Equifax 1999-2015. Sample includes adults 18-64. Displayed are coefficients and standard errors (in parentheses). Columns (1) and (4) are estimated on the entire sample. Column (2) and (3) are estimated on the subsample that did or did not acquire new credit card(s) since one quarter prior, as indicated in the column heading. Column (5) is estimated on the subsample of borrowers with a credit score in both the current and prior quarter. Column (6) is estimated on the subsample of borrowers who have higher total credit card limits in the current period than 12 months prior, and column (7) is estimated on the same sample, but omitting observations with missing credit scores 12 months prior. K refers to the lag on the minimum wage variable, which is three months in columns (1)-(5) and 12 months in columns (6)-(7). Controls includes individual, age-group, state, and quarter fixed effects, demographic and economic characteristics of census-block-group, state-year unemployment rates. In panel A, the additional state-year controls include whether or not the state has a payday loan ban, the state EITC rate, maximum AFDC benefits for a family of four, maximum SNAP benefits for a family of four; the fraction of population: receiving SSI benefits, enrolled in Medicaid, enrolled in WIC, receiving free school lunch and/or breakfast; and per capita spending on worker's compensation. In panel B, the one-year lead of the minimum wage is included as a regressor. Sample is limited to individuals who have ever resided in census block-group where more than 50 percent of the population over age 25 had no high school degree in 2000. Standard errors adjusted to allow for clustering at the state level. *p<0.05, **p<0.01, ***p<0.001.

Appendix Table 9: Minimum Wages and Credit Card Offers Received, Alternative Specifications of Minimum Wage Household

	(1) Number of Credit Card Offers	(2) Mean Credit Limit	(3) Fraction of Offers Pre-Approved	(4) Mean Purchase Interest Rate	(5) Fraction of Offers w/ No Annual Fee	(6) Fraction of Offers w/ Fee, No Rewards
*A. Minimum Wage$_{st-3}$*Imputed Wage$_i$*						
Less than 120% of Minimum Wage	0.158***	2079***	0.020***	-0.081*	0.047***	-0.025***
	(0.0356)	(336)	(0.0025)	(0.0310)	(0.0044)	(0.0040)
Minimum Wage$_{st-3}$	0.083	44	-0.002	0.04	0.002	-0.004
	(0.0430)	(330)	(0.0020)	(0.0293)	(0.0028)	(0.0026)
*B. Minimum Wage$_{st-3}$*Imputed Wage Category$_i$*						
Less than 60% Minimum Wage	0.328***	2667***	0.025***	-0.124	0.057***	-0.032***
	(0.0453)	(628)	(0.0052)	(0.0662)	(0.0065)	(0.0061)
60%-90% Minimum Wage	0.120**	1434*	0.024***	-0.062	0.045***	-0.020***
	(0.0408)	(536)	(0.0049)	(0.0510)	(0.0074)	(0.0046)
90%-120% Minimum Wage	0.073	2209***	0.018***	-0.066	0.053***	-0.030***
	(0.0400)	(399)	(0.0043)	(0.0482)	(0.0056)	(0.0052)
120%-180% Minimum Wage	0.081**	1054***	0.011***	-0.052*	0.038***	-0.019***
	(0.0252)	(260)	(0.0024)	(0.0222)	(0.0027)	(0.0019)
Minimum Wage$_{st-3}$	0.102*	141	-0.003	0.027	-0.001	-0.004
	(0.0438)	(310)	(0.0020)	(0.0297)	(0.0027)	(0.0024)

[Table continued on next page]

Appendix table 9, continued

	(1) Number of Credit Card Offers	(2) Mean Credit Limit	(3) Fraction of Offers Pre-Approved	(4) Mean Purchase Interest Rate	(5) Fraction of Offers w/ No Annual Fee	(6) Fraction of Offers w/ Fee, No Rewards
*C. Minimum Wage$_{st-3}$*Income Category$_i$*						
Less than $15,000	0.210***	2026***	0.020***	-0.206***	0.047***	-0.021***
	(0.0361)	(382)	(0.0041)	(0.0430)	(0.0046)	(0.0041)
$15,000-$30,000	0.089**	759*	0.007*	-0.026	0.035***	-0.011**
	(0.0279)	(318)	(0.0027)	(0.0288)	(0.0034)	(0.0033)
$30,000-$50,000	-0.021	164	0.007***	-0.006	0.024***	-0.006**
	(0.0292)	(308)	(0.0019)	(0.0305)	(0.0022)	(0.0021)
Minimum Wage$_{st-3}$	0.027	-172	-0.004	0.073*	-0.009***	0.001
	(0.0415)	(300)	(0.0022)	(0.0284)	(0.0026)	(0.0023)
*D. Minimum Wage$_{st-3}$*Education$_i$*						
Less than High School Degree	0.196***	1886***	0.015***	-0.05	0.039***	-0.020***
	(0.0356)	(336)	(0.0029)	(0.0451)	(0.0040)	(0.0034)
Minimum Wage$_{st-3}$	0.018	-152	-0.001	0.065*	0.000	-0.001
	(0.0428)	(341)	(0.0020)	(0.0296)	(0.0028)	(0.0029)
N	315,832	133,875	221,017	223,079	224,309	219,990

Notes: Data source is Mintel Comperemedia 2000-2015. Displayed are coefficients and standard errors (in parentheses). Sample includes households with working age adults 18-64, and for columns (2)-(6), households who received offers that specify the feature listed in the column heading. Imputed wages are defined as family income, adjusted by household size, divided by 40*52. Controls include Minimum Wage$_{st-3,}$ age-group, sex, race/ethnic group, education group, state, and year-month fixed effects and state-month unemployment rates. Standard errors adjusted to allow for clustering at state-level. *p<0.05, **p<0.01, ***p<0.001

Appendix Table 10: Minimum Wages and Use of Alternative Financial Services, Alternative Specifications of Minimum Wage Household

	(1) Took out a Payday Loan	(2) Pawned Item at Pawn Shop	(3) Rented Items from a Rent-to-Own Store	(4) Took out an Auto Title Loan
*A. Minimum Wage$_{st-12}$*Imputed Wage$_i$*				
Less than 120% of Minimum Wage	-0.0036	-0.0054	-0.0061**	-0.0025
	(0.0024)	(0.0037)	(0.0023)	(0.0018)
Minimum Wage$_{st-12}$	-0.0027	0.0014	-0.0008	0.0015
	(0.0024)	(0.0019)	(0.0014)	(0.0026)
*B. Minimum Wage$_{st-12}$*Imputed Wage Category$_i$*				
Less than 60% Minimum Wage	-0.0041	-0.0052	-0.004	-0.0033
	(0.0043)	(0.0039)	(0.0032)	(0.0036)
60%-90% Minimum Wage	0.0008	-0.0028	-0.0106***	-0.0005
	(0.0051)	(0.0043)	(0.0028)	(0.0029)
90%-120% Minimum Wage	-0.0111***	-0.0085*	-0.0029	-0.0037*
	(0.0032)	(0.0045)	(0.0038)	(0.0020)
120%-180% Minimum Wage	-0.0078***	-0.0059***	-0.0047***	0.0013
	(0.0028)	(0.0018)	(0.0018)	(0.0019)
Minimum Wage$_{st-12}$	-0.0015	0.0024	-0.0002	0.0013
	(0.0023)	(0.0020)	(0.0014)	(0.0025)

[Table continued on next page]

Appendix Table 10, continued

	(1) Took out a Payday Loan	(2) Pawned Item at Pawn Shop	(3) Rented Items from a Rent-to-Own Store	(4) Took out an Auto Title Loan
*C. Minimum Wage$_{st-12}$*Family Income Category$_i$*				
Less than $15,000	-0.0143***	-0.0104**	-0.0098***	-0.0073**
	(0.0039)	(0.0041)	(0.0022)	(0.0028)
$15,000-$30,000	-0.0113***	-0.0079***	-0.0100***	-0.0051***
	(0.0033)	(0.0022)	(0.0022)	(0.0017)
$30,000-$50,000	-0.0064**	-0.0035	-0.0064***	-0.0028
	(0.0031)	(0.0022)	(0.0017)	(0.0017)
Minimum Wage$_{st-12}$	0.0013	0.0040*	0.0023*	0.0032
	(0.0023)	(0.0023)	(0.0014)	(0.0025)
*D. Minimum Wage$_{st-12}$*Reported Hourly Wage$_i$*				
Hourly Wage (ORG) Equals Minimum Wage	-0.0142**	-0.0098	-0.0134*	0.0023
	(0.0070)	(0.0085)	(0.0078)	(0.0054)
	(0.0025)	(0.0019)	(0.0014)	(0.0025)
*E. Minimum Wage$_{st-12}$*Education$_i$*				
Less than High School Degree	-0.0054**	-0.0068**	-0.0118***	-0.0043*
	(0.0026)	(0.0028)	(0.0029)	(0.0023)
N	157,896	158,001	157,974	74,488

Notes: Data source is Current Population Survey Unbanked/Underbanked Supplements, 2009, 2011, 2013 and 2015 (column 4 data is for 2013 and 2015 only). Displayed are coefficients and standard errors (in parentheses). Imputed wages are defined as total family income divided by total annual family hours worked. Controls include age-group, sex, race/ethnic group, education group, and state fixed effects and state-month unemployment rates. Standard errors adjusted to allow for clustering at the state level. *p<0.05, **p<0.01, ***p<0.001.

Appendix Table 11: Minimum Wages and Credit Card Borrowing, Credit Risk and Payment Behavior, Alternative Sample Construction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Total Credit Limits (k=3)			Delinquency and Risk (k=3) All Borrowers		Delinquency and Risk (k=12) Borrowers with Higher Limits	
	Full Sample	Individuals Without New Cards	Individuals With New Cards	Delinquent on Credit Card(s)	Credit Score	Delinquent on Credit Card(s)	Credit Score
A. Median Income by Age 60-120% of Minimum Wage							
Minimum Wage$_{st-3}$	362.275**	342.255**	506.883**	-0.006**	0.821	-0.004***	1.113**
	(110.1103)	(103.1897)	(187.3037)	(0.0019)	(0.4770)	(0.0024)	(0.4457)
Mean of Dependent Variable	8,262	7,542	15,205	0.125	625.5	0.161	652.1
N	4,263,603	3,863,202	400,401	4,263,603	4,140,962	1,305,167	1,297,646
B. More than 25% Employed in Food Service or Retail							
Minimum Wage$_{st-3}$	268.831*	258.155*	345.982*	-0.003*	0.787	-0.0014	0.935
	(121.0878)	(114.8489)	(154.8193)	(0.0014)	(0.5436)	(0.0010)	(0.4776)
Mean of Dependent Variable	10,891	9,979	18,959	0.112	647.2	0.1271	666.9
N	43,149,742	38,770,237	4,379,505	43,149,742	42,463,746	14,253,733	14,201,241
C. More than 55 percent has High School or Less							
Minimum Wage$_{st-3}$	332.067**	306.769**	435.138**	-0.004**	0.814	-0.004***	1.178*
	(101.1088)	(93.6819)	(134.1910)	(0.0012)	(0.5222)	(0.0010)	(0.5052)
Mean of Dependent Variable	10,227	9,320	18,678	0.110	647.1	0.121	677.5
N	80,169,898	72,403,342	7,766,556	80,169,898	78,764,800	20,999,256	20,998,538

Notes: Data Source is CCP/Equifax 1999-2015. Sample includes adults 18-64. Displayed are coefficients and standard errors (in parentheses) from regressions identical to Table 7 in the main text, but estimated using different sample definitions. In panel A, the sample is limited to individuals who have ever resided in census block-groups where the median income by their age was between 60-120% of the minimum wage in 2000. In panel B, the sample is limited to individuals who have ever resided in census block-groups where more than 25% of the population was employed in food services or retail in 2000. In panel C, the sample is limited to individuals who have ever resided in census block-groups where more than 55% of the population has a high school degree or less education. Standard errors adjusted to allow for clustering at the state level. *p<0.05, **p<0.01, ***p<0.001