

An Analysis of Whether State Minimum Wages Affect the Use of Financial Products Among Low-Income Households

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Abstract: In recent years, many U.S. states have begun instituting their own minimum wage policies to address uniform increased costs of living, rising income inequality and a stagnant federal minimum wage. In addition, historical exclusion from mainstream banking, racially discriminatory lending policies, and financial industry deregulation have contributed to the withdrawal of low-income workers and communities of color from mainstream banking, accompanied by increased rates of alternative financial service (AFS) use, such as check cashers and payday lenders. This research paper explores the relationship between state-level minimum wage policy changes and the use of alternative financial services among low-income Americans, specifically unbanked and underbanked households (those without a bank account and those who use AFS, respectively). Using publicly-available data, including the Federal Deposit Insurance Corporation's (FDIC) National Survey of Unbanked and Underbanked Households, we apply multiple regression analyses to test our hypothesis that state-level minimum wage increases will raise the earnings of low-wage workers, resulting in a decrease in their households' utilization of AFS, as well as a reduction in the number of unbanked individuals. Despite our base models illustrating support for our hypothesis, our models lose all statistical significance once we control for demographic and socioeconomic covariates. While our primary research question remains to be answered, our analysis has shed light on important and relevant socioeconomic forces that can determine how and why certain types of households come to be, and remain, un- or underbanked.

Introduction

In response to rising income inequality, increasing costs of living, and a stagnant federal minimum wage, many U.S. states have instituted their own minimum wage increases, with 19 states increasing wage levels in 2017-2018 alone (National Employment Law Project 2020). The federal minimum wage is a long-standing economic policy tool intended to boost worker wages and serves as an anti-poverty measure. And yet, low-income workers and communities of color have increasingly relied upon alternative financial services (AFS), such as check cashers and payday lenders, to access basic financial services due to historical exclusion from mainstream banking, banking deregulation, and racially discriminatory lending policies (NerdWallet). Can this anti-poverty policy intervention increase financial inclusivity and decrease one's reliance on risky lending practices? This research paper seeks to answer this question by exploring how state-level minimum wage increases affect the use of traditional and alternative financial services among low-income Americans, specifically unbanked and underbanked households.¹

By examining how minimum wage increases affect low-wage workers' finances and choice of financial services, this research can provide additional empirical evidence on: (i) how and why people use AFS and/or come to be unbanked, (ii) to what extent low wage people are financially excluded from banking services versus voluntarily opting-out of such services and (iii) how minimum wages affect the economic and financial well-being of low-income people.

We hypothesize that minimum wage increases will raise the earnings of low-wage workers, resulting in a decrease in their households' utilization of AFSs (resulting in a decrease in underbanked individuals), as well as a reduction in the number of unbanked individuals. However, we remain cautious as these effects may be muted due to the significant segment of this population that selects not to use mainstream banks due to historical mistrust in these companies and not as a result of a lack of financial means.²

While the results of our analysis ultimately don't show a consistent or significant relationship between minimum wage and utilization of mainstream financial services, other variables in our regression models, such as having health insurance, did serve as significant predictors of un- and underbanked status. Our constraints on data and, by extension, methodology signal to us that this is an area ripe for further inquiry and primary data collection.

¹ Those without a bank account and those who use alternative financial services, respectively

² Although AFS are commonly perceived to be predatory and exploitative because of high interest rates and user fees, those who use AFS, especially Black and Latinx Americans, may choose to do so because of mistrust they hold in mainstream banking institutions as a result of historical exclusion and exploitation by these institutions. For instance, in the period leading up to the financial and foreclosure crisis of 2008, lenders and banks, such as Wells Fargo, who previously avoided Black and Latinx neighborhoods and denied these groups home mortgages used a new financing mechanism, securitized lending, to target people of color with subprime mortgages. As a result, the rate of subprime mortgages for home purchase for Latinx and Black Americans was approximately double the rate for white Americans in 2006.

With 21 states expected to raise their minimum wages in 2020 alone (Werschkul 2019), we believe the timing of this research presents a window for policy change. These findings may facilitate a more robust understanding of how the income- and employment-effects of minimum wage increases influence how low-wage workers and their households interact with the financial services industry, helping policymakers to make decisions and advance policies that both address income inequality and protect low-wage families from experiencing inadequate, unfair, and exploitative financial services.

Related Literature

The effects of minimum wage increase on low-wage households' spending and savings behavior, in general, is an under-explored phenomenon. To date, no published analysis has been conducted to evaluate the effects of minimum wage increases and un/underbanked status. However, in 2012 Aaronson, Agarwal, and French published the first empirical paper on the spending responses of minimum wage increases, finding that minimum wage increases significantly boost household income and spending of minimum wage workers. More recently, a 2018 Federal Reserve working paper concludes that higher minimum wages led to improved credit scores and reduced usage of payday loans of low-income workers (Hogarth, Anguelov, and Lee 2004). Relatedly, higher minimum wages make low-income households more appealing to mainstream creditors, as this study found that minimum wage increases raise the number of credit card offers sent by lenders to low-income households and increase the favorability of their terms, such as increased credit card limits (Dettling 2017).

Due to this relative lack of prior research, we sought to develop an understanding of our research topic, sample population, variables, and general policy environment, we then focused our attention on developing a better understanding the employment- and wage-effects of minimum wage increases in general, as well as the consumption and savings behavior of the unbanked and underbanked.

The effects of minimum wage change on low-wage workers

The Fair Labor Standards Act (FLSA) of 1938 established the policy foundation for federal minimum wage for the private and public sector. Since its increase from \$6.55 to \$7.25 in 2009, the federal minimum wage has not changed over the past 10 years, which lead to more and more states and local governments implementing their own higher minimum wages. The effects of these wage increases have been the subject of numerous economic studies, producing mixed results on our understanding of the net benefits of such a policy on the well-being of low-wage workers and their households.

Early research on the *employment effects* of minimum wage increases found consistent evidence of job loss effects on low-skilled workers (Neumark 2015). The most commonly cited negative effects of the minimum wage are the belief that wage increases induce automation (i.e. the substitution away from human labor) and the substitution of low-skilled workers in favor of

high-skilled workers. However, newer empirical analysis methods shifted the debate away from negative effects to minimal to no effects of minimum wage increases on low-wage employment. As a result, the empirical research remains inconclusive and the debate surrounding whether minimum wage increases result in low-income workers losing their jobs continues.

With regard to the *income* effects of minimum wage increases, economic theory suggests that wage increases lead to significant net gains in income (Reich, Alegretto, and Montialoux 2017). However, this does not always correspond with increased purchasing power for many retailers have been found to respond to wage increases by raising prices, causing nominal spending to rise, especially in localities with higher levels of minimum wage workers (Cooper, Luengo-Prado, and Parker 2019). Additionally, minimum wage hikes have been found to delay pay raises, increase payroll taxes, and reduce eligibility for means-tested benefits, which further reduce the net benefits and medium-run class mobility of low-skilled workers (Card and Kruger 1993, Freeman 1996, Clemens and Wither 2019).

To further add to the complexity of this analysis, we also found that these effects vary further whether or not a state is bound to the federal minimum wage. Van Dam and Siegel find only *mild income* effects using *state* effective minimum wages (2020). In contrast, they find notable *income* effects and corresponding *disemployment* effects when they utilize the adjustments in *federal* minimum wages (Baskaya and Rubinstein 2012). Finally, although there is little evidence of heterogeneity in the effect by age, gender, income, and race, wage increases appear concentrated among those who already have a job (Lopresti and Mumford 2016, Siegel and Van Dam 2020).

Who are the Unbanked?

As of 2016, seven percent of adults in the United States are unbanked (Rhine and Green 2006). Low-wage earners who are underbanked are often precluded from using traditional banking products due to economic barriers, such as high minimum checking balances or overdraft fees (Rhine and Green 2013). Families are significantly more likely to become unbanked when there is a decline in family income, loss of employment, or loss of health insurance (Rhine and Green 2013). Finally, many prior studies agree that underbanked individuals are more likely than average to be non-white, unemployed single-parents and less likely to own their home or hold advanced degrees. However, families also choose to be unbanked due to the history discrimination within traditional financial services, as well as lack of physical access to financial institutions (e.g., the location of prevalence of bank branches in a community or neighborhood) (Hogarth, Anguelov, and Lee 2004).

Who are the Underbanked?

While there are many similarities between unbanked and underbanked individuals (i.e. both groups demonstrate lower financial literacy than those who participated in mainstream financial institutions and are more likely to be unemployed), these groups are not one and the same.

Individuals tend to use AFS after they have exhausted their options in the financial mainstream. In fact, inclusion in mainstream financial services—such as by owning a checking account—is found to protect individuals from ever having used and/or chronically using AFS regardless of their income level. Furthermore, evidence suggests AFS utilization is associated with carrying more debt, having lower credit scores, and struggling to pay bills, and delaying medical treatment. In addition, living in a community with a higher percentage of poverty was related to using alternative financial services with increased frequency (Friedline and Kepple 2017).

Additionally, traditional banks do not always provide services that the financially insecure need. For example, physical banks are not typically open seven days a week and take several days to clear checks, but they withdraw seven days (Servon 2017).

Data & Methods

We contribute to the discussion on the minimum wage’s role in household decision-making by regressing changes in minimum wage on the proportion of un- and underbanked households in U.S. states. We use a random- and time effects model on a longitudinal panel dataset containing 255 observations over the years 2009, 2011, 2013, 2015, and 2017.

Econometric analyses that include state-by-state variation in outcome variables commonly use a Fixed Effects estimation strategy. In our comparison of results produced by OLS, Fixed Effects, and Random Effects models, however, we found that a Random Effects model produced the most consistent results. We believe this to be the case for two reasons. First, our outcome of interest, the proportion of a state’s population that is pushed out of or excluded from mainstream banking, has a heterogenous distribution across our sample. That is, error terms between state clusters exhibit a statistically significant degree of correlation, and therefore cannot reliably be modeled as “unique” individual clusters. Second, as much of the literature on panel data analysis points out, fixed effects often produce unstable results when key elements of the model vary only slightly over time (Borenstein et. al., 2009)—a trend we observe quite uniformly in the minimum for most of our observations. As is standard practice in determining the more suitable of these two models, we performed the Durbin-Wu-Hausman test on our specifications and found that in all cases, the probability of correlation between Fixed Effects’ state-clustered error terms is not significantly different from zero.

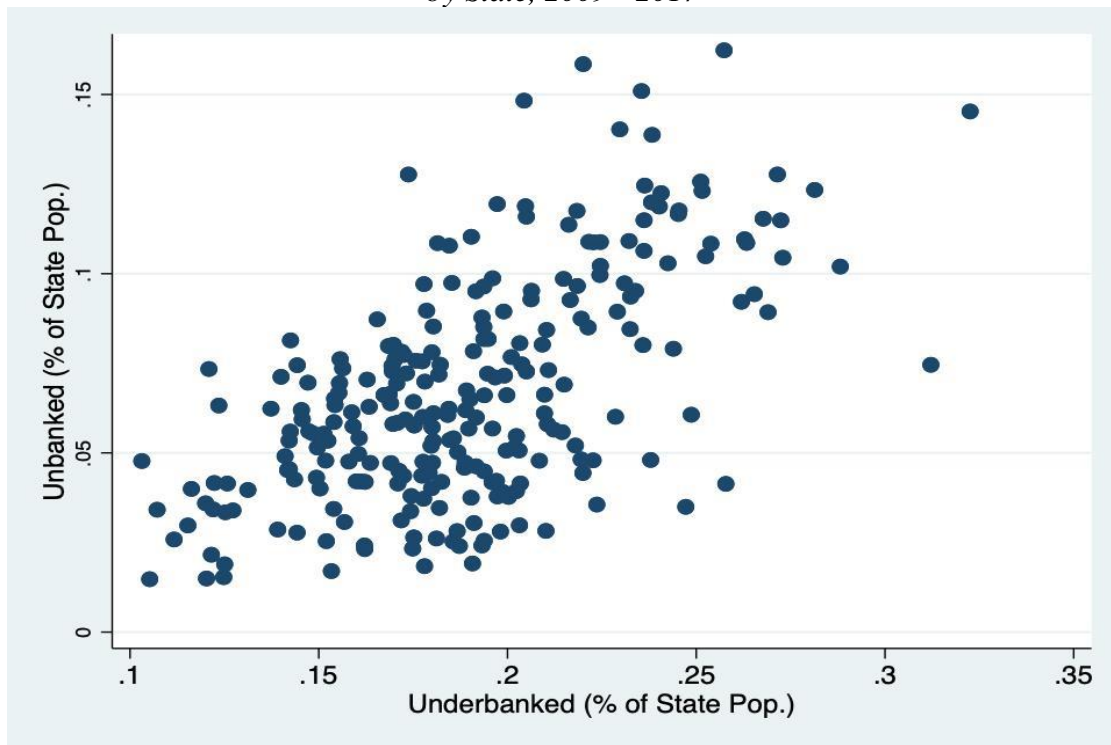
Outcome Variables: Un- and Underbanked Households

Our dependent variables, the proportion of unbanked and underbanked households in a state, come from the Federal Deposit Insurance Corporation’s (FDIC) National Survey of Unbanked and Underbanked Households. These two measures plotted against one another, show a strong positive, linear correlation (See Figure 1). Given the strength of this relationship, we choose to estimate our models by separating these outcome measures. Our underlying hypothesis is that the small differences in standard error between these two characteristics will result in meaningfully different estimates.

Starting from 2009, FDIC conducted a National Survey of Unbanked and Underbanked Households that aims to measure *household* use of mainstream banking and AFS. The raw survey data comes with the household as the unit with survey weight and provides geographic information of state and metropolitan statistical area (MSA) for further data compilation purposes. Throughout the five survey periods (2009, 2011, 2013, 2015, and 2017), the survey questions evolves into different versions, but we only included response data for questions that remained unchanged throughout the years, which included the share of unbanked and underbanked households³, and our control variable, household marriage status⁴.

FIGURE 1

Proportion of Population Reporting Unbanked Against Proportion Reporting Underbanked by State, 2009 - 2017



Primary Predictor Variable: Minimum Wage

Our primary independent variable, minimum wage, has been tracked and compiled in a publicly available dataset which we retrieved from the U.S. Department of Labor. This dataset reports

³ The 2009 survey has a different definition of underbanked from the rest of the survey periods. In 2009, underbanked refers to the following AFS options: check cashing, money order, payday loan, rent-to-own service, pawn shop loan, and refund anticipation loan; and starting from 2011, the AFS category has changed to check cashing, money order, remittance, payday loan, rent-to-own service, pawn shop loan, refund anticipation loan, and auto title loan.

⁴ The FDIC survey captures more types of households than ACS, including married couple, unmarried female-headed family, unmarried male-headed family, female individual, male individual and other.

non-farm real minimum wage in each U.S. State by year beginning in 1968. We also cross-reference this information with the Economic Policy Institute's Minimum Wage Tracker to ensure there were no errors in our tabulation. Data on our outcomes of interest were collected by the FDIC only for the years 2009 - 2017; for that reason, we only use minimum wage data for over this time period,⁵ inflation-adjusted to 2018 dollars. We further weight these values to account for local variations in cost of living.

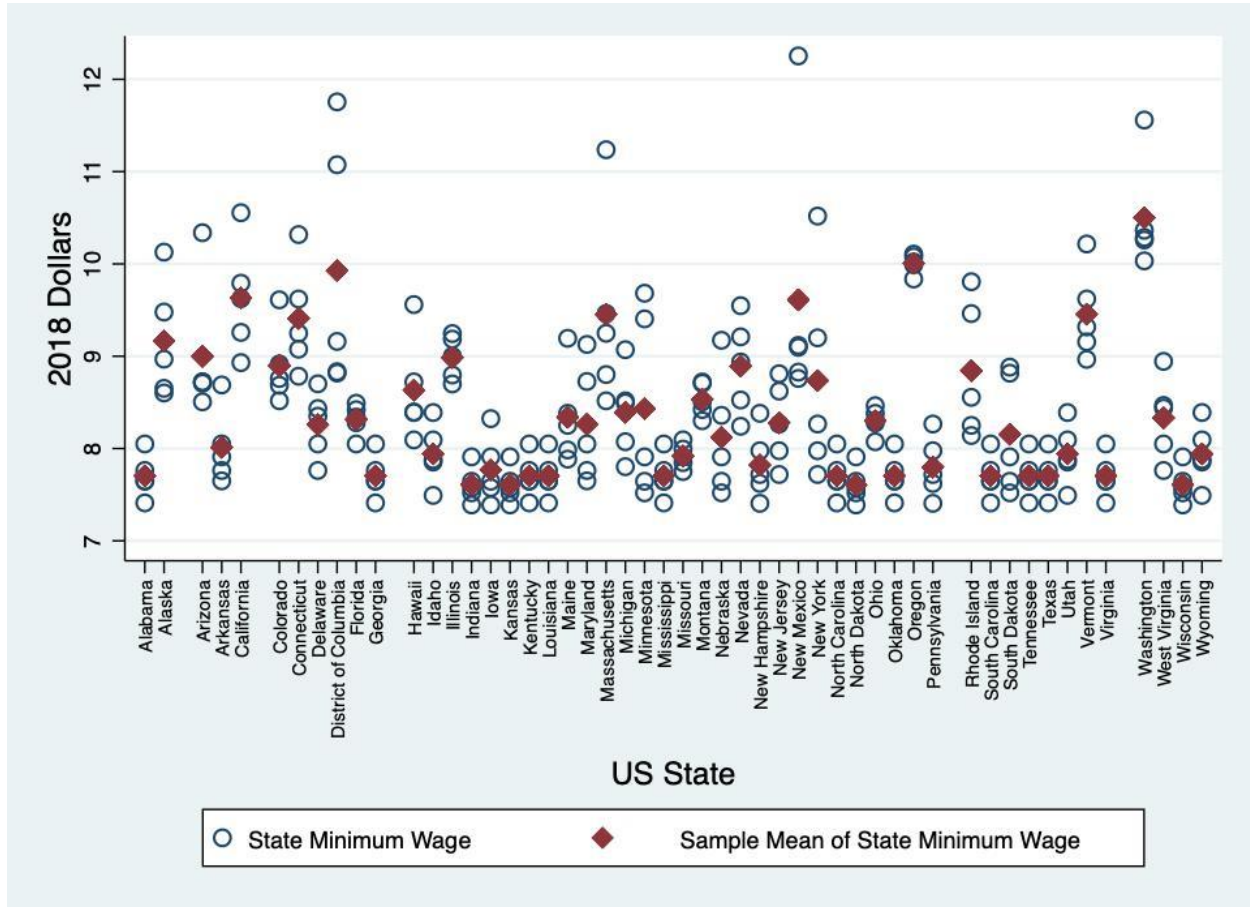
Some states and localities have different minimum wages depending on business establishments' employment size, or whether employees earn tips from work. An example: in 2017 New York City's minimum wage for large employers (classified as those with 11 or more employees) was set at \$13, and for small employers (10 employees or fewer), it was \$12; meanwhile, the rest of New York State operated under a uniform minimum wage of \$10.40. We account for these large, locality-specific variations, described below. We do not, however, account for the smaller variations that arise as a function of employer size—a choice driven by absence of available data.

To address these localized variations, we construct a weighted average minimum wage for the state. To do this we use ACS data to estimate a locality's share of employees in minimum-wage-intensive and compare it to the state's total number of employees working in the same set of sectors. We used the following sectors (as categorized by the North American Industry Classification System) as those most often associated with low-wage employment: construction, manufacturing, transportation, warehousing, utilities, arts and entertainment, recreation, accommodation, food services and public administration.

Minimum wage has been converted to the 2018-dollar amount, using the annualized regional CPI provided by the U.S. Bureau of Labor Statistics (BLS). The CPI data are published at city, MSA, or region level, which better reflect the labor market and urban economic activities. However, as the rest of the variables of the data frame are reflected at the state level, we elect to use annualized regional CPI to adjust for inflation. In Figure 2 we show the distribution of state minimum wage levels and their means over for the observations in our sample period.

⁵ Source: Changes in Basic Minimum Wages in Non-Farm Employment Under State Law: Selected Years 1968 to 2018. (n.d.). Retrieved from <https://www.dol.gov/agencies/whd/state/minimum-wage/history>.

FIGURE 2
 Minimum Wage Levels and Corresponding Means by State,
 2018 Dollars



Controls

We include the following state-level demographic and socioeconomic controls from both FDIC’s survey and the American Community Survey (ACS): proportion of population who self-identify as non-Hispanic white, the Gini index, total number of households, household median income, proportion of households headed by unmarried women, proportion of population with limited English proficiency, insurance coverage rate, and legally allowable maximum interest rates for payday loans⁶. We report summary statistics on these controls in Table 1.

The ACS is a survey conducted by The U.S. Census Bureau and published yearly. The survey reports information about demographics across the United States and releases the estimates at different geographic levels. The survey covers business and economy, education, employment, families and living arrangements, government, health, housing, income and poverty, population

⁶ This variable is not taken from the FDIC or from ACS; rather, we source this from the Center for Responsible Lending, a US-Based consumer finance advocacy organization.

and people, and race and ethnicity. We use the state-level ACS 1-year survey data for most of the control variables in our dataset.

Finally, we use data from the Center for Responsible Lending on state-by-state payday lending laws, which reports the maximum allowable APR for each state. The Center for Responsible Lending constructs this value from a theoretical \$300, two-week loan borrowed at rates advertised by a state's largest payday lending institutions. We use this value as a proxy for the regulatory stringency toward financial services in a state, as state-level usury laws are commonly understood to constrain lenders' ability to impose excessively high interest rates on borrowers (Carter et al, 2015).

To validate the robustness of these controls in our model, we carried out our final regressions with each control substituted for a reasonable proxy and chose those which produced the most consistent; finally, we conducted factor analysis on the full set of variables and their proxies in order to validate our conclusions.

Demographics. *Proportion of population identifying as non-Hispanic white:* this measure produced more consistent results than proportion of population black, Hispanic, Asian, and all of their possible combinations. *Gini index:* we made no attempt to replace this with any proxy; we assume its validity given extensive empirical social scientific literature which relies on the measure as a control in its models. *Total number of households:* we also attempted total population; we opt for *total number of households* for its consistency of results and because it aligns with the units of analysis measured in our outcome variable. *Proportion of households with an unmarried female head:* the only reasonable substitute captured by the FDIC's survey is the proportion of households headed by unmarried men. We do not attempt to replace this variable in our analysis, as the theory underlying female heads' inclusion does not apply to male heads of household. *Proportion population with limited English proficiency:* we used as a reasonable alternative the proportion of a state's population who is foreign-born, and separately the proportion of those who moved from abroad in the previous 12 months. Neither of these measures, however, reflect the same subset of individuals we sought to capture in the proportion of those who self-identify as having limited English proficiency.

Financial Factors. *Household median income:* we replace this variable with population-level median income and GDP per capita, again finding the household measure to be more appropriate for the unit of analysis captured in our outcome variable. *Insurance coverage rate:* we could find no reasonable alternative against which to test this variable's validity for inclusion. As we discuss in our findings, however, we find an unexpectedly strong and large relationship between this variable and our outcomes of interest.

Regulation. *Legally allowable maximum interest rates on payday loans:* we attempted to construct our own measure of regulatory stringency by using the statutory rates in each state. Because the statutory rate is in some places theoretically unlimited, we also constructed a

dummy variable identifying states in which this was the case and interacted the dummy with the statutory rate in each state. We find the Center for Responsible Lending’s standardized construction to be a more reliable prediction term in our final estimations.

Summary Statistics

Our final data frame is a balanced data set covering the 50 states and District of Columbia, with 255 observations covering the years 2009, 2011, 2013, 2015 and 2017. As illustrated in Table 1, the share of unbanked households per state ranges from 1.48% (Vermont in 2017) to 16.23% (Mississippi in 2009), with an average of 6.74% per state and a standard deviation of 0.031. The share of underbanked households varies from 10.3% (Wisconsin in 2013) to 32.26% (Mississippi in 2013), with an average of 18.93% per state and a standard deviation of 0.039. We note that the 2009 underbanked rate can be underreported compared to the rest of the years’ observations due to the expansion of underbanked term definition in the later survey years.

After converting to the 2018-dollar values, the adjusted state-level minimum wage ranges from \$7.39 to \$12.25 U.S. dollar (New Mexico in 2017), with an average of \$8.37 and a standard deviation of 0.889. The distribution of the minimum wage is skewed downward because almost one-third of the states are bound by the federal minimum wage.

TABLE 1
Summary Statistics

VARIABLES	N	Mean	SD	Min	Max
Unbanked (% of State Pop.)	255	0.0674	0.0310	0.0148	0.162
Underbanked (% of State Pop.)	255	0.189	0.0392	0.103	0.323
State Minimum Wage, in 2018 dollars	255	8.376	0.889	7.389	12.25
State-Level Payday Lending Rate Cap	255	2.913	2.235	0.100	6.770
Uninsured (% of State Pop.)	255	0.133	0.0513	0.0320	0.263
White (% of State Pop.)	255	0.704	0.160	0.222	0.951
Limited English Proficiency (% of State Pop.)	255	0.0560	0.0405	0.00708	0.198
Single Unmarried Female-Headed Households (Per Capita)	255	0.117	0.0252	0.0630	0.190
Log of State Median Household Income	255	10.97	0.164	10.64	11.30
Log of State Minimum Wage	255	2.120	0.1000	2.000	2.506

In 2017, the latest year of observation in our data, the share of unbanked households ranged from 1.47% in Vermont to 15.84% in Mississippi, and the share of underbanked households ranged from 10.57% to 24.87% in Nevada. Over the five survey periods, states including Vermont,

Utah, New Hampshire, Maine, Wisconsin and Hawaii have consistently lower share (<5%) of unbanked households; while Georgia and Mississippi have higher share (>10%) of unbanked households. Meanwhile, the share of underbanked households ranged from 10.52% in Vermont to 24.97% in Nevada. Minnesota is the only state that has consistently lower share (<15%) of underbanked households throughout the five survey years. In Alabama, Louisiana, Mississippi, Oklahoma, and Texas, and District of Columbia, the share of underbanked households has always been higher than 20%.

Findings

We report the results of our analysis in Tables 2 & 3 through four incremental specifications:

- i. Our base model, which tests the relationship solely between minimum wage change and unbanked/underbanked rates.
- ii. Our base model with the following demographic controls: the log of the number of households in a state, the percentage of a state's population that self-reports race as non-Hispanic white, the percentage of a state's population with limited English proficiency, and the proportion of a state's households that are headed by single, unmarried women.
- iii. We add the state's uninsured rate and median household income to our demographic controls.
- iv. Finally, we control for a state's regulatory stance on AFS by using maximum legally allowable APR.

Unbanked

Table 2 reports the results of our analysis on unbanked households.

None of our models find a statistically significant relationship between state minimum wage and proportion of unbanked households. Our controls introduced in Models (2) - (4), however, do present evidence of an explanatory relationship. Notable among these control variables is the proportion of households headed by single unmarried women. In each regression for which it is included, it remains a statistically significant predictor of household unbankedness. This regressor's coefficient is also of notable magnitude: for every 1% increase in a state's proportion of single-female-headed households, our preferred model predicts an approximately 13% increase in that state's proportion of unbanked households.

The proportion of the population who are uninsured in models (3) and (4) also presents a notable relationship, statistically significant at the 1% level. The magnitude of the predictive relationship here is even more notable: for every 1% increase in the state's proportion of uninsured population, the model predicts a .17% increase in the proportion of unbanked households.

TABLE 2Estimates of minimum wage's influence on *unbanked rates* in U.S. States

VARIABLES	(1) Base Model	(2) Demographics	(3) Financial Factors	(4) Regulation
Minimum Wage	-0.0106 (0.0161)	-0.0181 (0.0144)	-0.0108 (0.0125)	-0.00988 (0.0128)
Number of Households		0.00447 (0.00293)	0.000219 (0.00150)	7.52e-05 (0.00153)
Non-Hispanic White, % of population		-0.0797** (0.0326)	-0.0654*** (0.0157)	-0.0636*** (0.0156)
Limited English Proficiency, % of pop.		-0.307*** (0.0983)	-0.152** (0.0630)	-0.153** (0.0635)
Single female heads of household, per capita		0.113** (0.0520)	0.130*** (0.0474)	0.129*** (0.0480)
Gini Index		0.627*** (0.179)	0.615*** (0.0761)	0.637*** (0.0853)
Median Income			-0.0594*** (0.0117)	-0.0580*** (0.0121)
Uninsured, % of population			0.171*** (0.0417)	0.171*** (0.0414)
APR				0.000411 (0.000684)
2011	0.00514*** (0.00190)		0.000307 (0.00203)	0.000288 (0.00205)
2013	0.00284 (0.00236)		-0.00495* (0.00257)	-0.00498* (0.00259)
2015	-0.00376 (0.00245)		-0.00570* (0.00305)	-0.00583* (0.00313)
2017	-0.00873*** (0.00308)		-0.00907** (0.00378)	-0.00931** (0.00385)
Random Effects	YES	YES	YES	YES
Time Effects	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Underbanked

Table 3 reports our results on the rate of underbankedness in a state using the four models described above.

Like our findings for unbanked households, we find no statistically significant relationship between minimum wage and the proportion of underbanked households using any of our models.

Unlike our estimations on unbanked households, we observe no significant contribution from the per-capita rate of single, female-headed households. The percentage of residents with limited English proficiency in a state demonstrates the largest predictive power of any relationship found in our study: a 1% increase in the proportion of a state's population with limited English proficiency is associated with a .45% *decrease* in the rate of underbankedness.

Even more notable is the contribution of the uninsured rate in a state in models (3) and (4): for every 1% increase in the state's proportion of uninsured population, the model predicts a .33% increase in the proportion of underbanked households.

TABLE 3Estimates of minimum wage's influence on *underbanked rates* in U.S. States

VARIABLES	(1) Base Model	(2) Demographics	(3) Financial Factors	(4) Regulation
Minimum Wage	0.00586 (0.0187)	-0.000866 (0.0179)	0.00946 (0.0179)	0.0119 (0.0183)
Number of Households		0.00189 (0.00421)	-0.00287 (0.00329)	-0.00333 (0.00354)
Non-Hispanic White, % of population		-0.159*** (0.0453)	-0.126*** (0.0285)	-0.121*** (0.0297)
Limited English Proficiency, % of pop.		-0.456*** (0.135)	-0.320** (0.129)	-0.323** (0.128)
Single female heads of household, per capita		0.161 (0.104)	0.168 (0.113)	0.169 (0.114)
Gini Index		0.0861 (0.237)	0.155 (0.156)	0.219 (0.159)
Median Income			-0.0440** (0.0216)	-0.0399** (0.0203)
Uninsured, % of population			0.327*** (0.0686)	0.328*** (0.0677)
APR				.0012153 (.0013038)
2011	0.0174*** (0.00445)		0.0129*** (0.00461)	0.0129*** (0.00460)
2013	0.0134*** (0.00416)		0.00861** (0.00421)	0.00850** (0.00428)
2015	0.0110*** (0.00402)		0.0218*** (0.00501)	0.0214*** (0.00498)
2017	-0.00644 (0.00466)		0.00755 (0.00577)	0.00685 (0.00572)
Random Effects	YES	YES	YES	YES
Time Effects	YES	YES	YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Limitations

The limitations of our study arise largely due to a lack of primary data as well as the structure and availability of existing data. Within our scope study, our chief constraints are: (i) The FDIC survey data and its structure: importantly, it does not fully capture frequency of AFS use by respondents, which we believe would be an illuminating factor but is currently omitted from our analysis. (ii) The current state of minimum wage policy across the United states: differences across states vary in timing, implementation, and degree—which is difficult to reconcile with statistical methods that account for state-level exogenous variation.

There are three challenges in our FDIC data which we are unable to remedy but must nonetheless acknowledge: (i) as noted above, its ability to measure of AFS use frequency; (ii) its unit of analysis (household rather than individual); and (iii) a syntactical change in a crucial question in the year 2009. First, FDIC’s survey asks respondents whether a member of the household, in the last twelve months, has used AFS. It does not ask respondents to recall the *number* of occasions on which a service was utilized. If the data contained more complete information on frequency of use, we believe our analysis would present a more compelling causal estimate of the minimum wage’s impact on mainstream financial participation. Similarly, because the FDIC captures information at the household level, it further conceals the frequency of AFS use in a given state, particularly in cases where multiple adults reside in the same household. Finally, we acknowledge that in a single year of our sample’s survey data, 2009, there was a syntactical change to a question which asked households whether they used AFS. While it’s possible this may introduce bias into our estimates, the FDIC indicates in the survey’s metadata that the change should not warrant concern over inclusion in future analyses. Additionally, as this is our base year (and ensuing years saw larger minimum wage changes) and affects only one of the years in our sample, we do not believe this should raise serious doubts about the strength of our findings.

There are two chief limitations in the available minimum wage data which constrain its predictive power in our models. First, minimum wage increases were small or flat in the United States for all of the years in our sample period (refer back to Figure 1, which shows the narrow range of the distribution over the period). Because wage changes do not vary significantly over time in most states, our final estimates do not produce a meaningful predictive estimate of changes in banking participation. Recent proposals in many states and localities seek to set their minimum wage at levels much higher than what we observe in our sample period. As data on these large shifts in minimum wage become available in 2020 and beyond, analyses exploring this relationship should become riper for inquiry. Finally, the full set of reasons an individual may choose to use alternative financial services are diverse, and no dataset fully captures the breadth of variables that may be drivers of this behavior. We therefore acknowledge that our analysis likely excludes variables which may be critical to understanding the role of minimum wage as a driver of banking behavior.

Discussion & Policy Implications

While the results of our paper do not indicate a strong relationship between minimum wage and the rate of unbanked and underbanked households in the United States, the findings of this report suggest several noteworthy implications for social and financial policy. First, our hypothesis—that minimum wage increases will reduce the rate of un- and underbankedness by raising incomes and increasing low wage workers' capacity to utilize mainstream banking products—may still be true. The null results we found of the effect of minimum wages on the rate of unbanked and underbanked households may reflect the fact that only a limited number of states have minimum wages at a level that may actually protect the standard of living of low wage

workers—21 states do not have minimum wages above the \$7.25 federal level, 34 states have minimum wages less than nine dollars and only 13 states have minimum wages over ten dollars; most of these wage increases have been legislated within the last three years, meaning only a handful have actually been implemented as of 2020. Since the 1970s, workers have faced stagnant wages, even as overall productivity and CEO salaries have been rising (Benmelech, Bergman, and Kim 2019). Boosting workers' wages to a level that keeps pace with the growing economy, ensures financial stability, and addresses income inequality would likely reduce the reliance of marginalized and low-income communities on alternative banking products that prey on their vulnerable economic status and financially exploit them for profit. State and federal policymakers should take seriously the need for higher wages and implement policies to ensure workers are paid their fair share of wages.

Second, there is a consistently significant relationship between health insurance coverage and the rate of unbanked and underbanked households. This finding is in line with existing empirical evidence showing that households are more likely to become unbanked when there is a decline in family income, loss of employment, or loss of health insurance (Green and Rhine 2013). With nearly half of all Americans receiving health insurance through their employers, the loss of a job means not only will households lose income, but many will likely lose important health benefits as well (Kaiser Family Foundation 2018). Without health insurance and a steady income, medical costs can rapidly rise and compel households to turn to alternative financial services to finance medical needs, putting households at increased risk of financial exploitation and excessive debt. Further, even for low wage workers with jobs, disparities in health insurance coverage still exist—as of 2018, 24% of full-time workers below the poverty line were covered by an employer plan compared to 48% of those whose incomes fall between 100-250% of the federal poverty line (Rae, Claxton, Levitt, and McDermott 2019).

The relationship between employment, health insurance coverage, and usage of AFS highlights how social and economic forces can reinforce and compound the financial and social exclusion and marginalization many Americans face. This relationship suggests that public policies that create a stronger social safety net for Americans, such as making health insurance more affordable and accessible to all, can potentially play important roles in reducing the risk of financial exploitation through alternative financial institutions. For instance, policymakers should consider alternative health insurance models such as a single payer system that provides health insurance to all individuals regardless of employment or income status, to protect Americans from facing not only high healthcare costs but also from encountering predatory financial services and exploitative banking practices.

Lastly, our results do not indicate a strong relationship between the regulation of payday loans, such as APR caps, and the rate of unbanked and underbanked households. Existing evidence on whether regulation of alternative financial services has actually led to a reduction in AFS is also unclear (Friedline and Kepple 2017). This lack of a significant relationship suggests that the regulation of alternative financial institutions may not be a highly effective policy to protect

marginalized and low-income communities from the exploitative and predatory practices of AFS, and AFS regulation should be a second order concern to policymakers. Instead, policymakers should focus on social policies that expand affordable healthcare access and boost wages to keep pace with growing economic activity in order to prevent Americans from turning to these institutions in the first place.

Future Research

Further evaluation of the effects of minimum wage increases on use of alternative financial services should also be done following a longer implementation period of state-level minimum wage increases in order to ensure enough time has passed such that effects can be instituted and observed. Furthermore, additional data with more detailed information of the financial behavior and degree of household banking access households are also an important factor to include in any analysis on how and why households use certain banking/financial products and our inability to obtain such data was a key limitation to our study. Finally, additional research on the relationship between health insurance coverage and use of alternative financial services should be conducted to further explain the potential causal relationship between these variables and how they relate to each other.

Conclusion

Stagnant wages, rising income inequality and exploitative and racially discriminatory financial practices are some of the defining economic policy challenges of this era. Whether increases in state minimum wages affect choice of financial tools among lower-income households remains an important research question and warrants further investigation with more robust data. In addition to the outstanding economic implications of this research question, such as the actual behavioral effects of minimum wage increases, though, there are important social policy implications that have arisen from our research. The relationship between health insurance coverage and the rate of unbanked and underbanked households reveals the incontrovertible link between economic and social forces and how these factors reinforce one another and result in disparate outcomes among different populations. Instead of relying solely on economic policies, such as banking regulation or income adjustments, to prevent and reduce disparate financial outcomes, policymakers must be sure to consider the varying social and health factors such as healthcare costs and access and health insurance policies that affect and are affected by financial practices and economic policies. While our primary research question remains to be answered, our research has shed light on important and relevant socioeconomic forces that can determine how and why certain types of households come to be, and remain, un- or underbanked.

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