MEDICAL INSURANCE AND FINANCIAL INCLUSION: EVIDENCE FROM LOW-INCOME HOUSEHOLDS

[1]MINGMING JI, [2]LIANGLIANG JIANG, [3]LU YIN, [4]HOA VU

[1,2]The Hong Kong Polytechnic University
[3,4]Northwestern University
E-mail: [1]mingming.ji@polyu.edu.hk, [2]liangliang.jiang@polyu.edu.hk, [3]michelle.yin@northwestern.edu, [4]hoa.vu@northwestern.edu

Abstract - We investigate the effect of Affordable Care Act (ACA) on household financial inclusion in the United States. The Medicaid expansion following the staggered implementation of ACA in different states provides an identification to examine the causal impact of the availability of medical insurance on households' decision to be included in mainstream financial services. Using the data from the Survey of Income and Program Participation (SIPP), we find that households eligible for Medicaid expansion are more likely to be banked after the implementation of ACA.

JEL Classification - G21, G18, I18

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I. INTRODUCTION

In the U.S., the Federal Deposit Insurance Corporation (FDIC) provides insurance to depository institutions that allow people to conduct transactions, and also offer a safe place to deposit and build up their savings. Having a bank account can help the family build up credit history and for the economy as a whole, financial inclusion can promote wealth accumulation in the society. Nonetheless, millions of U.S. households are still unbanked. According to the FDIC Survey[1], by 2021 there are approximately 5.9 million (4.5%) U.S. households were unbanked, meaning that no one in the household had a checking or savings account at a bank or credit union. In an economy with well-developed financial systems such as the U.S., being unbanked could be very costly, because people extensively rely on financial institutions to conduct transactions, which makes the use of informal finance less pervasive than in developing countries. The FDIC survey also tries to find out the reasons of people being unbanked. The results show that the main reason for unbanked households not having a bank account is due to not having enough money to meet the minimum balance requirements.

There are many reasons to be poor. According to the World Bank and World Health Organization (WHO), each year there are large numbers of households are being pushed into poverty because they must pay for healthcare out of their own pockets. For many people in the United States, healthcare is a significant source of financial difficulty and one can be easily amplified for low-income families when they do not have medical insurance coverage.

The 2010 Affordable Care Act (ACA), also known as Obamacare, considered as one of the most significant regulatory reforms in U.S. history provides low-income residents with better access to health insurance. We rely on the ACA as a natural experiment to examine the causal relationship between medical insurance and economic inclusion for low-income households. In other words, in this research we try to answer the question whether access to medical insurance can leave the burden of medical expenses and help improve low-income families' financial inclusion (or being banked). We also examine through what channels the ACA directly or indirectly helps improve financial inclusion.

Estimating how medical insurance affects economic inclusion is challenging. First, poverty issues could negatively impact people's health and drive them out of medical insurance. The endogeneity problem driven by reverse causality requires us to use a shock on medical insurance coverage that is exogeneous to both health condition and household income and demand for financial services. The ACA, designed to provide wider and better access to health insurance for US citizens and legal residents, was signed into law in March 2010. There are two major provisions in the ACA that specifically offer health insurance subsidies to lower income households. First, households with an income between 100% and 400% of the federal poverty line are eligible to receive federal subsidies for private health insurance. Second, states have a choice to expand the Medicaid eligibility income threshold to 138% of the federal poverty line. Regarding the state Medicaid expansion, the ACA also stipulated that the federal government would initially pay 100% of the incremental cost of the state-level Medicaid expansion, but this will be scheduled to gradually decrease to 90% in 2020 and beyond. Therefore, states would eventually be responsible for paying 10% of the Medicaid expansion cost. By the end of 2013, only 25 out of 50 US states chose to expand their Medicaid programs and receive the associated federal funding. Between 2014 and 2018, 32 states approved Medicaid expansion. To date, 41 states (including DC) have adopted the Medicaid expansion and still there are 10 states have not approved the expansion. We therefore explored the staggered approval of the Medicaid expansion across different states, and use it as our identification strategy to investigate how the ACA expansion affects the rate of being banked for low-income households.

There are many reasons to be unbanked or underbanked. Existing research has shown that education level, income, age, ethnicity are the key determinants of being unbanked (Rhine et al., 2006; Hogarth and O'Donnell 1997; Kooce-Lewis et al., 1996). When asked why they do not hold a bank account, the majority of households will provide financial-related reasons. We therefore expect that public

policies that help people relieve from financial burdens, will also be helpful for people to join the banking services. Given that the primary objective of the ACA is to expand medical insurance coverage for U.S. households, it is expected that low-income families will particularly benefit from this Act. We therefore also expect that the implementation of ACA will help decrease the unbanked rate for low-income households and thus improve financial inclusion. However, if unbanked households experience improved financial inclusion yet face a limited supply of banking services, the enhanced living standards resulting from better medical insurance coverage may not necessarily promote bank participation. If low-income households continue to rely on informal financial services, there is a need for regulators and policymakers to consider policy interventions to improve the efficiency of financial services.

Since existing research has shown that ACA's impact on improving hospital financial performance may not persist in the long run (Young et al., 2019), it is also important to examine whether affordable healthcare has any long-term impact on household wealth accumulation. At last, while ACA could be seen as instrumental to financial inclusion for low-income families, which allows an estimate of 20 million American's access to medical insurance whom would otherwise uninsured, it also increases the premium payment for average-income families. Therefore, it is also interesting to examine the overall impact of medical expansion provision on financial inclusion in the U.S.

We find a positive and significant effect of Medicaid expansion on households' decision to be banked. Using the data from Survey of Income and Program Participation (SIPP), we construct a sample of the U.S. low-income households from a sample period of 2009 to 2021. Households benefited from Medicaid expansion after the implementation of ACA are 3% more likely to be financially included. The result holds when control for a large set of household characteristics, state-level macroeconomic variables, as well as income decile fixed effects, state fixed effects, and region × year fixed effects.

Our research contributes to the academic literature in several ways. First, we contribute to the literature that investigates the determinants of being unbanked. The literature on being unbanked starts with the seminal work of Caskey (1994) and attracted interest and effort from researchers of many disciplines, including economics, finance, public policy, and sociology. The 2019 FDIC Survey of Household Use of Banking and Financial Services shows that the most common reason for being unbanked are the costs of maintaining a bank account including meeting minimum balance requirements and paying fees for overdrafts and other services. Recently, the focus towards accessing to bank accounts have also been on the racial and ethnic minority groups. Immigration status is another factor shown to determine bank account access (Rhine and Greene, 2006). Since these people are also those who are unlikely to be covered by medical insurance, we discover that the relief on financial burden from medical expenditure can help people better able to open or maintain a bank account. Beyond the literature on socioeconomic and demographic factors that determine the unbanked rates for low-income households, we add to the literature that public policies that help relieve medical expenditures are also instrumental on financial inclusion.

Second, we add to the literature on the financial consequences of the U.S. Affordable Care Act, which is the second order effect of the Medicare expansion. The first order effect of the expanding health insurance is the associated improvement on health outcomes and on state budgets, and hospital financial performance. For example, Gao et al. (2022) in a recent paper show that ACA has significantly reduced credit risk for hospitals through the municipal market. However, the expansion of health insurance coverage also displays other beneficial secondary outcomes that may not be the stated goals of the ACA but clearly has gone well beyond health insurance coverage. The White House provides a literature review on these benefits, including food security, housing security, financial wellbeing, and child support (Moellman, 2020; Himelstein, 2019; Allen et al., 2019; Kuroki and Liu, 2021; Hu et al., 2018; Kuroki, 2020; Brevoort et al., 2017; 2020; Bullinger, 2020; Vogler, 2020). These secondary effects operate through two channels, i.e. income effect and information effect. For example, transitioning from being uninsured to insured helps relax the budget constraints and increase the disposable income to meet other spending needs (i.e. an income effect). Health insurance coverage increase interactions with health professions, through medical advice or educations materials, people are encouraged to have better or healthy lifestyle choices (i.e. an information effect). We add to this literature on the health insurance expansion's impact with potential secondary outcome on financial inclusion. Generally speaking, our research complements the literature on the real effects of accessing to medical insurance.

Finally, we contribute to the broad literature studying financial inclusion. Recent research on financial inclusions have shown that geographic proximity to a financial institutions has influence on household's decision on whether to have a bank account or not (Goodstein and Rhine, 2017). Celerier and Matray (2019) also find that bank branches expansion caused by banking deregulation shocks also increases financial inclusion. Involuntary account closures also affect financial inclusion. Campbell et al. (2012) find that involuntary bank closures are more frequent in counties with low education levels, low wealth levels, high unemployment rates and a large proportion of single mothers. Since these people are likely to be overlapped with the population who are also not covered by medical insurance, we show that the ACA helps alleviate the financial exclusion problems.

II. SAMPLE AND DATA

We collect the Affordable Care Act (ACA) expansion dates data from healthinsurance.org and the Kaiser Family Foundation (www.kff.org) website. Finally, we collect GDP growth and income data from the U.S. Bureau of Economic Analysis, unemployment data from the U.S. Bureau of Labor Statistics, and population data from the U.S. Census Bureau.

We define our dependent variable Bank Account as a dummy variable that equals to one if at least one household member holds either a checking or a savings account, and zero otherwise. Following Celerier and Matray (2019), any interest-earning accounts, including savings accounts, interest-earning checking accounts, money market deposits, and certificates of deposits, are considered as savings accounts. We also build a set of control variables on

household and household head characteristics. Household characteristics include household size, the number of dependent children, and household marital status. Household head characteristics include age, gender, race, education, employment status, and whether household heads are recipients of social security, transferred income, and food stamps.

We collapse individual observations at the household levels, because household members can have access to banking services through one member who owns a bank account from the same household. We focus on low-income households with total household income below twice the poverty threshold. We also remove households whose head is younger than 20 or older than 80. Finally, we have a total sample of 70,899 household-year observations. Following Carey et al. (2020), we remove Washington, D.C., and four states (i.e., Delaware, Massachusetts, New York, and Vermont) that had expanded Medicaid or extended coverage for adults with income up to 100% of FPL before 2014.[2]

The summary statistics of our key household and household head characteristics variables with comparison between banked households and unbanked households. In our sample, there are 28.06% of low-income households are unbanked. Compared to banked households, unbanked households often earn lower monthly income, and are less likely to receive college education. In addition, unbanked household heads are usually black, single, younger, tend to be unemployed and recipients of social programs.

III. EMPIRICAL ANALYSIS AND RESULTS

3.1 Validation Analysis

Before we start our main analysis, we will check the validity of the test. That is, ex ante, the staggered approval of the Medicaid expansion by different states has nothing to do with the unbanked status of the state. Figure 2 displays the unbanked rate (in percentage) of households in U.S. states from the 2009 Federal Deposit Insurance Corporation (FDIC) Survey. As seen, across different states, the unbanked rate ranges from 1.7% (Utah) to 16.2% (Mississippi) with a mean of 6.84%.

By looking at the maps in Figure 1 and 2, we cannot find a similar pattern in terms of the states that approve the Medicaid expansion vs. the states that have high unbanked rate. That is, we do not find signs that states with high unbanked rates tend to approve the Medicaid expansion.

We next conduct regression analysis to validate our perception. Specifically, we test whether the state level households banked rate predicts the timing of ACA expansion by estimating the following regression model.

$$Post\ ACA\ Expansion_{s,t} = \alpha \cdot Banked\ Rate_{s,t-1} + \pi \cdot S_{s,t} + FE + \varepsilon_{s,t} \quad (1)$$

The dependent variable $Post\ ACA\ Expansions,t$ is defined as an indicator variable that equals one if a year is in the post ACA expansion period, and zero otherwise. The independent variable $Banked\ Rates,t-1$ is defined as the percentage of households in state s that holds a checking account or a savings account. To assess if household banked rate accounts for the decision of ACA expansion, we include a series of state-level macroeconomic variables into the econometric models where $S_{st}\epsilon[GDP\ Growth\ rate,GDP\ per\ capita,unemployment\ rate,personal\ income,$

$total\ population]$. We also control for state fixed effects and region × year fixed effects. Table 2 presents the results of the determinants of ACA expansion using OLS regression.

3.2 Empirical Methodology

To test our baseline hypothesis, we use the difference-in-differences (DID) method by relying on the staggered approval of the Medicaid expansion to examine its impact on financial inclusion, i.e., being banked. The analysis is conducted at the household level, where we control for a series of household and state level characteristics. Specifically, we test the following ordinary least squares (OLS) regression model:

$$Bank\ Account_{i,s,t} = \beta \cdot ACA\ Exposure_{i,s,t} + \gamma' \cdot X_{i,s,t} + \Omega' \cdot S_{s,t} + FE + \varepsilon_{i,s,t} \quad (2)$$

where $Bank\ Account_{ist}$ is an indicator variable that equals one if any member in household i located in state s has a bank account in year t, and zero otherwise. Variable $ACA\ Exposureist$ equals one if household i located in state s is exposed to medical expansion in year t, and zero otherwise. A household located in an ACA expansion state and with total income below 138% FPL are beneficiaries of Medicaid expansion. X_{ist} represents a vector of time-varying household traits, including age, gender, education, income, ethnicity, and employment status. S_{st} represents a vector of time-varying state characteristics, including GDP growth rate, GDP per capita, unemployment rate, personal income, and total population. Besides, we also include a series of fixed effects, including income decile fixed effects, state fixed effects, and region × year fixed effects. To adjust for the non-random sampling of SIPP and make our results nationally representative, we use the SIPP weights in our analysis.[3]

Drawing valid inferences from the above model requires that the change in the unbanked rate in expansion and non-expansion states would have been the same in the absence of the ACA. If the trend of unbanked rate is different in expansion states versus non-expansion states, then our estimation strategy would yield biased estimate. To further assess the validity of our identification on the parallel trend assumption, we examine the evolution of the household banking status around the implementation of ACA. We set year zero as the year when a state approved ACA expansion, and run the following regression:

$$Bank\ Account_{i,s,t} = ACA\ Exposure_{i,s} \times \sum_{y=-2}^{3} \beta_y I(t - t^* = y) + X_{i,s,t} + FE + \epsilon_{i,t} \quad (3)$$

The dependent variable Bank Account and control variables are the same as previously defined. The dummy variables $I(t-t*=y)$ measures the year relative to the implementation of ACA, where $t*$ refers to the ACA expansion year of a state s, and y refers to the years before or after Medicaid expansion. We consider a six-year window and plot the coefficient of dummy variables for each year relative to the ACA implementation. As shown in Figure 3, households are more likely to hold a bank account after the ACA implementation, and there is no such pattern before the implementation year. It suggests that the parallel trend assumption is met.

3.3 Results

Table 1 presents the results of our baseline regression based on equation (2). To assess the impact of medical expansion on financial inclusion, we focus on estimating β, the coefficient of $ACA\ Exposure\ ist$. In column 1, we first regress Bank Account on ACA Exposure without any control variables. We can see that there is a positive and significant effect of medical expansion on household banking status. To further control for any unobserved variables, we include state fixed effects, income decile fixed effects, and region × year fixed effects in column 2. State fixed effects can control for time-invariant state characteristics that may affect households' decision to use mainstream financial services, and income decile fixed effects take into account of the impact of income levels on household banking status. Region × year fixed effects remove all unobserved time-varying heterogeneity across Census regions.

In column 3, we further add a set of time-varying state-level macroeconomic variables to take care of any economic conditions across different states. Similarly, the effect of ACA Exposure on household banking status remains positive and significant. Finally, we control for state × income deciles fixed effects in column 4, so that we can compare households from different states but in the same income decile. Throughout all regressions, the coefficients on ACA Exposure remains positive and statistically significant at 1%, suggesting that the ACA expansion is instrumental for household to receive mainstream banking services.

To illustrate the economic impact, we use the coefficient on ACA Exposure in column 4 as an example, where β=0.029 suggesting that households living in the Medicaid expansion states are 3% more likely to have a bank account after the policy implementation than those non-policy-intervention households.

IV. CONCLUSION

We explore the impact of ACA on financial inclusion for low-income families. Specifically, we investigate whether access to medical insurance can alleviate the burden of medical expenses and promote financial inclusion. We use the staggered Medicaid expansion across states as an identification strategy to examine the ACA's effect on banking participation. We find a positive effect of Medicaid expansion under the ACA on banking participation, with households benefiting from the expansion being 3% more likely to be financially included. This holds true after controlling for various household and macroeconomic factors.

Overall, our study suggests how the relief from medical expenses can facilitate bank account ownership and maintenance, and how the ACA impacts beyond health outcomes, affecting financial well-being, particularly among the low-income population.

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Table 1. Regression Results

This table reports the baseline results. The dependent variable Bank Account is defined as an indicator that takes the value of one if a household holds a checking account or a savings account, and zero otherwise. The independent variable is ACA Exposure, which equals one if a household is exposed to Affordable Care Act (ACA) in a specific year, and zero otherwise. Control variables include household variables and state-level macroeconomic variables. In columns 2 and 3, we control for income decile fixed effects, state fixed effects, and region × year fixed effects, where region is the US census region. In column 4, we control for state × income decile fixed effects and region × year fixed effects. All estimates are weighted using the SIPP weights, and standard errors are clustered at the state level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

	(1)	(2)	(3)	(4)
		Bank Account		
ACA Exposure	0.051***	0.025***	0.026***	0.032***
	(3.98)	(3.35)	(3.72)	(4.03)
Household Characteristics				
Household Size		-0.012**	-0.012***	-0.014***
		(-2.68)	(-2.72)	(-2.97)
# of Dependent Children		-0.011**	-0.011**	-0.011**
		(-2.41)	(-2.44)	(-2.27)
Married Couple Household		0.060***	0.060***	0.060***
		(9.82)	(9.87)	(9.93)
Household Head Characteristics				
Household Head Age [30,39]		-0.019**	-0.019**	-0.019**
		(-2.55)	(-2.56)	(-2.58)
Household Head Age [40,49]		-0.013	-0.013	-0.013
		(-1.42)	(-1.42)	(-1.41)
Household Head Age [50.59]		0.005	0.005	0.005
		(0.69)	(0.69)	(0.69)
Household Head Age >60		0.070***	0.069***	0.069***
		(8.42)	(8.36)	(8.25)
State-level Macroeconomic Variables				
GDP Growth Rate (%)			0.001	0.001
			(0.82)	(0.62)
GDP Per Capita (log)			-0.052	-0.047
			(-0.18)	(-0.15)
Unemployment Rate (%)			-0.007	-0.007
			(-1.12)	(-1.15)
Personal Income (log)			-0.039	-0.054
			(-0.12)	(-0.16)
Total Population (log)			0.130	0.165
			(0.31)	(0.37)
Observations	72,550	72,550	72,550	72,550
Adjusted R-squared	0.002	0.179	0.179	0.181
Income Decile FEs	-	Yes	Yes	-
State FEs	-	Yes	Yes	-
Region × Year FEs	-	Yes	Yes	Yes
State × Income Decile FEs		-	-	Yes

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[i] 1 Source: 2021 FDIC National Survey of Unbanked and Underbanked Households, available at: www.fdic.gov/analysis/household-survey/index.html.

2 Though California, Connecticut, and Minnesota are also early adopters of ACA, the three states did not fully expand Medicaid eligibility to 138% FPL until January 1, 2014. We keep the above three states in our analysis.

3 Our finding from the baseline regression does not change without applying the SIPP weights, and the coefficient on ACA Exposure remains positive and significant. The results are not tabulated.