The Relationship Between the Unbanked and Payday Loan Consumers

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Disclaimer

The views expressed here are my own and do not necessarily represent those of the Census Bureau.

Introduction

Payday Lending

A payday loan is a small denomination, short-term loan used by borrowers experiencing a cash flow shortage or an expenditure shock.

How it works:

- Borrowers apply for a loan of $100 to $500.
- The borrower is assessed a fee of $10 to $30 for every $100 borrowed.
- For collateral, the borrower writes a post-dated check, endorses a paycheck to the lender, or gives the lender access to their bank account.
- The loan matures within two weeks or at the next payday.
- The principle and fees are due at the maturity date.

Payday Lending

- Most often, the borrower cannot pay back the principle and fees.
- They roll over their payday loan by paying only the fees of the first loan.
- The average borrower takes out 8 payday loans, rolling over their initial loan 7 times.

Payday Lending

Quick facts:

- In 2013, there were 22,000 payday loan establishments.
- In 2013, they issued $27 billion in loans.
- The average loan is $375, and the average amount of fees paid over the life of the loan are $520.

Unbanked Households

- An unbanked household is a household where no member has an active savings or checking account.
- In 2013, about 8% of US households were unbanked, or about 10 millions households were without an active bank account.

Similarities

Payday loan borrowers and the unbanked have similar demographic characteristics.

- Low income
- Minority
- Low educational attainment.
- Female

Research Questions

Research Questions

This research will explore the relationship between the unbanked and payday loan borrowers.

- What impact does being unbanked have on the probability a household uses a payday lender?
- Is the decision to be unbanked made jointly with the decision to use a payday lender?

Review of Literature

Literature

Individuals who are Black, or Hispanic, unemployed, renters, low income, or receive government payments are more likely to be unbanked (Booz- Allen, 1997; Caskey, 1997a; Kennickell et al., 2000; Caskey, 2002; Vermilyea and Wilcox, 2002).

Payday loan households are more likely to have a moderate income, $50,000 or less, unmarried, female, less than a college degree (Bourke, 2012).

Unbanked households receive most of their financial services from check cashers and pawn shops, but out source their needs for short-term loans to payday lenders (Good, 1999; Caskey, 1994)

Data

Data

This research used the microdata from the Unbanked\Underbanked Current Population Survey (CPS) supplements for January 2009, June 2011, and June 2013, linked to the corresponding monthly CPS microdata.

These supplements were sponsored by the FDIC and collected by the Census Bureau with the mission to collect demographic data on the unbanked and underbanked, as well as, reasons for the household's current banking status and information on the household's financial activities.

Data

- There are samples of about 60,000 households for each survey year.
- The supplemental survey data have variables at the household level pertaining to household income, banking status, type of dwelling, etc.
- There are also person level data such as sex, race, age, and educational attainment of each member of the household.
- This analysis restricts the sample to only demographic data of the reference person.
- Individuals labeled as not a family member are treated as their own, separate household for this analysis.
- Samples and subsamples are statistically different across survey years.

Subsamples

Analysis completed on the sample of all households, and subsamples of Hispanic households and Black households.

The Unbanked and Payday Loan Usage by Race

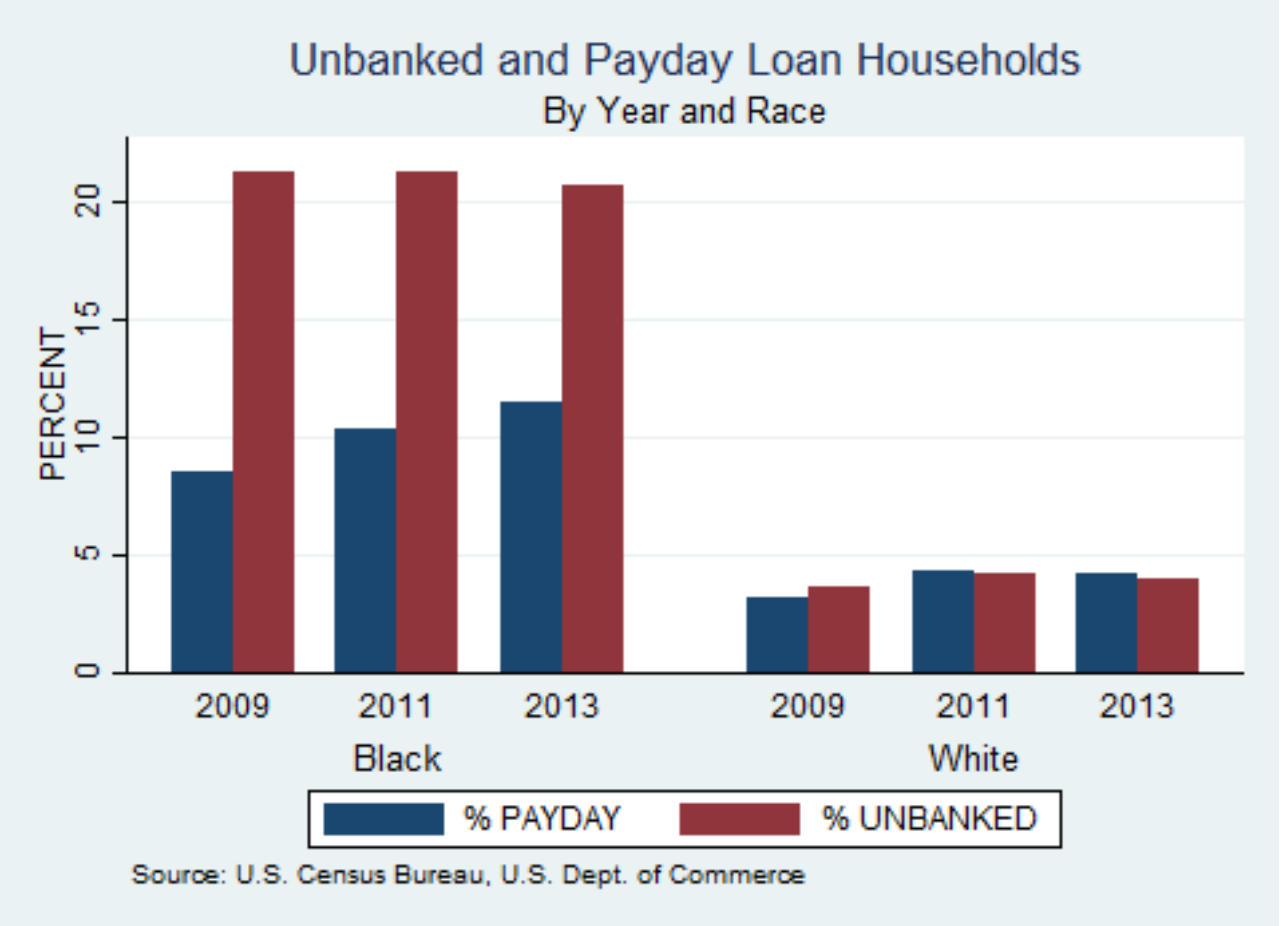

Figure 1: Percent of US White and Black households who are unbanked or have used a payday lender: 2009, 2011, and 2013.

The Unbanked and Payday Loan Usage by Ethnicity

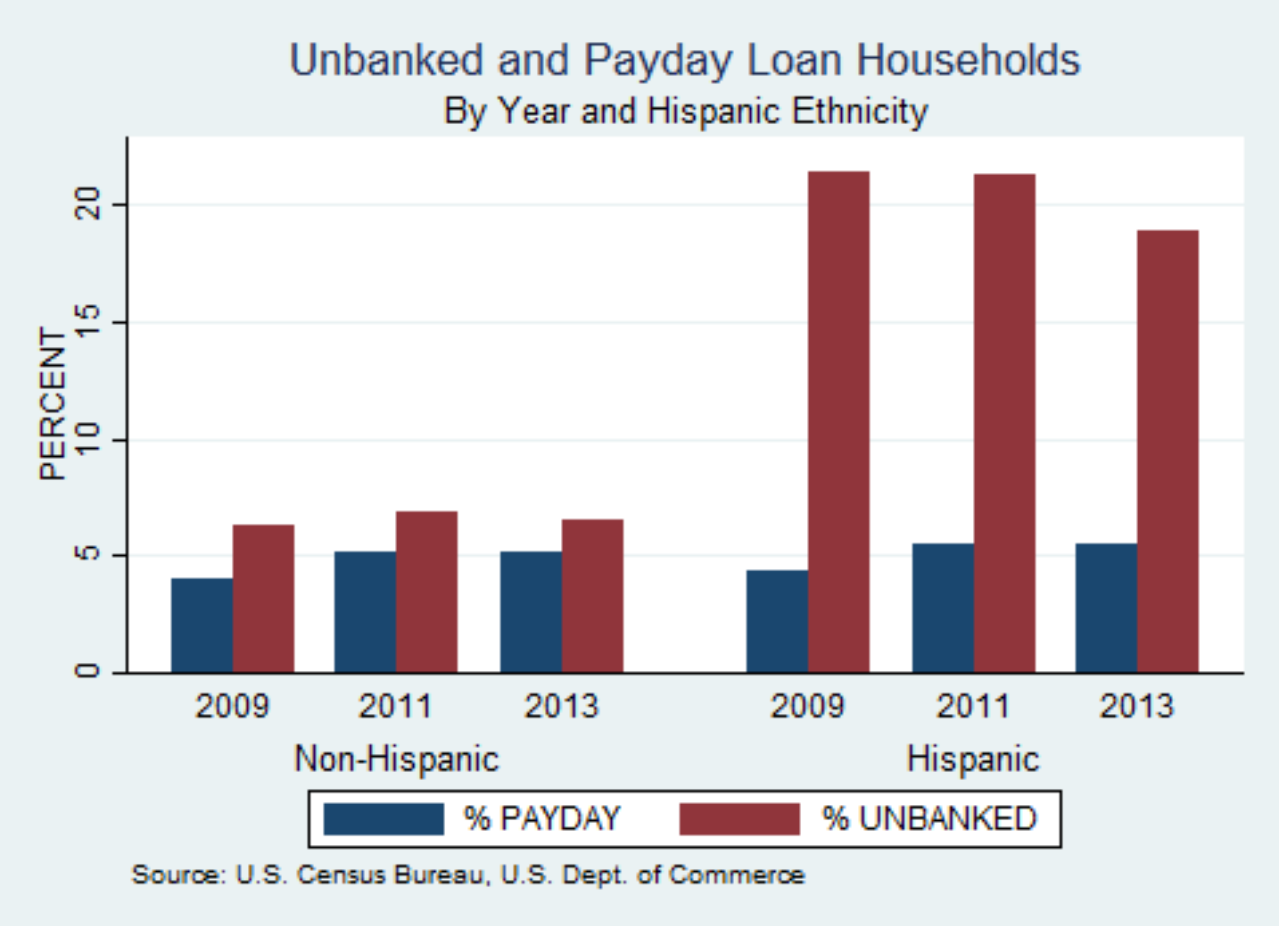

Figure 2: Percent of US Hispanic households who are unbanked or have used a payday lender: 2009, 2011, and 2013.

Variables

Variables of interest:

Dependent Variables

- Unbanked
- Payday

Independent Variables

- Low income, with household income $25,000 or less
- High school diploma or less
- Female reference person
- Married
- Identifies as Black
- Identifies as Hispanic
- Has ever served in the armed forces
- Home owner
- Between the ages of 18 and 25

Descriptive Statistics: 2009

Table 1: Descriptive Statistics 2009

Variables	Payday	Unbanked	All Households	White Households	Black Households	Hispanic Households
Payday	NA	7.07%	3.99%	3.21%	8.56%	4.27%
Unbanked	13.90%	NA	8.22%	3.60%	21.30%	21.45 %
Low income	30.97%	64.01%	21.50%	17.91%	32.53%	30.83%
HS_Diploma	50.95%	78.39%	43.99%	39.39%	51.56 %	65.58%
Female	55.76%	55.37%	49.65%	48.87%	57.84%	47.34%
Married	33.35%	25.22%	46.93%	49.25%	28.21%	48.80%
Black	26.61%	32.68%	12.74%	NA	NA	NA
Hispanic	13.28%	32.84%	13.02%	NA	NA	NA
Ever military	9.11%	5.12%	11.01%	13.11%	8.90%	4.43%
Home Owner	38.82%	23.18%	65.01%	72.39%	45.90%	47.42%
Age25	12.12%	16.68%	10.91%	8.92%	10.56%	13.12%
Female head	40.25%	44.14%	31.00 %	28.64%	47.59%	29.47%
N	2,000	4,000	50,000	34,000	6,000	6,500

Descriptive Statistics: 2013

Table 2: Descriptive Statistics 2013

Variables	Payday	Unbanked	All Households	White Households	Black Households	Hispanic Households
Payday	NA	10.05%	5.16%	4.14%	11.52%	5.53%
Unbanked	15.76%	NA	8.21%	3.94%	20.67%	18.85 %
Low income	34.84%	72.00 %	27.11%	23.15%	41.65%	34.54%
HS_Diploma	45.38%	75.54%	40.89%	36.01%	48.49 %	61.36%
Female	57.48%	55.95%	50.43%	49.10%	59.27%	49.90%
Married	31.60 %	22.30%	45.27%	47.50%	28.39%	45.73%
Black	27.60%	31.85%	12.72%	NA	NA	NA
Hispanic	14.73%	31.91%	14.15 %	NA	NA	NA
Ever military	8.08%	4.17%	9.80%	11.71 %	8.71%	4.17%
Home Owner	38.18%	20.18%	62.76%	70.85%	42.44%	45.33%
Age25	10.17%	15.38%	8.81%	7.55%	10.70%	12.54%
Female head	42.31%	47.24%	31.78 %	29.22%	48.48%	31.12%
N	2,300	3,800	44,000	33,000	5,000	5,700

Empirical Strategy

Empirical Strategy:Bivariate Probability Model

$$Prob\left[Y_{i1}=1, Y_{i2}=1\right]=\Phi(\beta' \mathbf{X_i}) \tag{1}$$

Where Φ is the CDF of the bivariate normal distribution

$\mathbf{Y}_{i1}$= Unbanked

$\mathbf{Y}_{i2}$= Use a payday lender

$\mathbf{X}_i$ a vector of demographic characteristics

Empirical Strategy

Variables of interest:

Dependent Variables

- Unbanked
- Payday

Independent Variables

- Low income, with household income $25,000 or less
- High school diploma or less
- Female reference person
- Married
- Identifies as Black
- Identifies as Hispanic
- Has ever served in the armed forces
- Home owner
- Between the ages of 18 and 25

Recursive Bivariate Probability Model

$$Prob\left[Y_1 = 1, Y_2 = 1\right] = \Phi(\beta' \mathbf{X_i}) \tag{2}$$

where

$$\mathbf{Y}_1 = \begin{cases} 1 & if \quad Y_1^* > 0, \\ 0 & if \quad Y_1^* otherwise, \end{cases}$$

$$\mathbf{Y}_2 = \begin{cases} 1 & if \quad Y_2^* > 0, \\ 0 & if \quad Y_2^* otherwise, \end{cases}$$

$$\begin{cases} Y_1^* = \beta \mathbf{X}_1 + \epsilon_1 \\ Y_2^* = \gamma Y_1^* + \beta \mathbf{X}_2 + \epsilon_2 \end{cases}$$

and

$$\begin{bmatrix} \epsilon_1 \\ \epsilon_2 \end{bmatrix} | \, \mathbf{X} \sim N\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 & \rho \\ \rho & 1 \end{bmatrix} \right)$$

Threats to Identification

$\mathbf{Y_1}^*$=Unbanked, is an endogenous explanatory variable.

Probit equations Y_1^* and Y_2^* have the same covariates. With this lack of variation between the two equations, Y_2^* would be correlated with ϵ_1, preventing the identification of β and γ, *If* these two equations were linear.

Threats to Identification

Considering the endogenous bivariate probit model:

- "However, as specified, consistent and asymptotically efficient parameter estimates are achieved through maximum likelihood estimation of the bivariate probit model "(Arendt and Holm, 2006).
- "As long as there exists a varying exogenous regressor, there is enough variation in the data to identify the parameters" (Wilde, 2000).

Predicted Z score

$$Prob\left[Y_1 = 1, Y_2 = 1\right] = \Phi(\beta' \mathbf{X_i}) \tag{3}$$

where

$$\mathbf{Y}_1 = \begin{cases} 1 & if \quad Y_1^* > 0, \\ 0 & if \quad Y_1^* otherwise, \end{cases}$$

$$\mathbf{Y}_2 = \begin{cases} 1 & if \quad Y_2^* > 0, \\ 0 & if \quad Y_2^* otherwise, \end{cases}$$

$$\begin{cases} Y_1^* = \beta \mathbf{X}_1 + \epsilon_1 \\ Y_2^* = \gamma Y_1^* + \beta \mathbf{X}_2 + \epsilon_2 \end{cases}$$

and

$$\begin{bmatrix} \epsilon_1 \\ \epsilon_2 \end{bmatrix} | \, \mathbf{X} \sim N\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 & \rho \\ \rho & 1 \end{bmatrix} \right)$$

Results

Marginal Effects 2009

Table 3: 2009 Average Marginal Effects

Variables	All Households	Black Households	Hispanic Households
Payday=1 and Unbanked=1			
Low income	0.0308***	0.0081	0.0292
HS_Diploma	0.0273***	0.0053	0.0280
Female	0.0001	0.0043	-0.0073
Married	−0.0072***	-0.0071	-0.0054
Black	0.0547***		
Hispanic	0.0353***		
Ever military	−0.0042*	-0.0048	-0.0120
Home Owner	−0.0384***	-0.0157	-0.0470
Age25	-0.0002	0.0013	0.0014
N	50,000	6,000	6,500

$*p < 0.05; **p < 0.01; ***p < 0.001$

Marginal Effects 2013

Table 4: 2013 Average Marginal Effects

Variables	All Households	Black Households	Hispanic Households
Payday=1 and Unbanked=1			
Low income	0.0377***	0.0791***	0.0628*
HS_Diploma	0.0277***	0.0500**	0.0365*
Female	-0.0008	0.0106	-0.0075
Married	−0.0106***	−0.0339***	−0.0147*
Black	0.0544***		
Hispanic	0.0354***	-0.0252	
Ever military	−0.0083***	-0.0203	-0.0375
Home Owner	−0.0408***	−0.0662**	
Age25	-0.0032	0.0028	0.0013
N	44,000	5,000	5,700

$*p < 0.05; **p < 0.01; ***p < 0.001$

Results

- In 2009, being unbanked decreases the probability that a household uses a payday lender by 13% points.
- in 2013, being unbanked decreases the probability that a household uses a payday lender by 8% points.
- In 2009 and 2013, the correlation coefficient was significantly different from zero, for the sample of all households.
- in 2009 and 2013, the correlation coefficient was not significantly different from zero for the subsamples of Hispanic and Black households.

Research Questions

This research will explore the relationship between the unbanked and payday loan borrowers.

- What impact does being unbanked have on the probability a household uses a payday lender?
  - Unbankedness decreases the probability that a household uses a payday lender for the sample of all households, across all survey years.
- Is the decision to be unbanked made jointly with the decision to use a payday lender?
  - Correlation coefficients are significantly different from zero for the sample of all households, for 2009 and 2013 survey years.

Conclusion

Conclusion

- For all survey years of the samples of all households, the correlation coefficient ρ is significantly different from zero. So I conclude that for the full sample of households, the two probabilities are related and can be estimated simultaneously.
- Being unbanked decreases the probability that a household uses a payday lender.
- Due to the endogeniety between the decision to be unbanked and the decision to use a payday lender, these decisions are statistically dependent.