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Technology, Opportunity & Access: Understanding Financial Inclusion in the U.S.

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Abstract

Although the United States is regarded as having a well-developed and deep financial system, financial inclusion continues to be a challenge for many communities and households. Using four databases with over 4 million data points and a Principal Component Analysis (PCA) methodology, we developed the Financial Inclusion Metropolitan Index (FIMI) for 251 Metropolitan Statistical Areas, to help us identify the main determinants behind financial inclusion. The results from the multi-dimensional index (FIMI) show that technology is the most important contributor to financial inclusion in U.S. metropolitan areas, specifically mobile, internet and computer access, as well as digital account access and use. Results from a separate individual-level analysis confirm the importance of technology, race, citizenship and inequality as key determinants of financial inclusion in the U.S. However, we also find that they are less apt at explaining other financial outcomes such as uptake of savings accounts, being a lasting participant of formal financial sector or using alternative financial services.

Keywords: financial inclusion, unbanked, underbanked, technology, CRA, MSA

JEL: D1, D6, I3, 016, G21 R10, R20.

1 Introduction

In the U.S., increasing access to financial services has been a key policy objective for several decades. Policymakers have tried to guarantee that the most vulnerable groups in society have fair and equitable access to financial services by lowering barriers to participation, increasing financial literacy, eliminating discriminatory practices and improving the regulatory landscape. For the purposes of this paper, financial inclusion is defined as the degree to which willing participants have access to financial services and the rate of uptake of formal finance as opposed to nonbank Alternative Financial Services (AFS).

From a developmental perspective, there is consensus that increasing financial inclusion can reduce poverty and enhance well-being. Generally speaking, increasing access to financial services allows individuals to invest in education, start and expand businesses, and mitigate financial risk. From a macroeconomic perspective, expanding financial services can increase savings, human capital investment, adoption of new technologies, and thus economic growth. In addition, given the high correlation between low-income populations and barriers to financial services, reversing these restrictions could also reduce poverty and improve income inequality. From a microeconomic perspective, to the extent that financial inclusion promotes savings and borrowing, households can smooth consumption, cope with emergencies and improve their balance sheets.

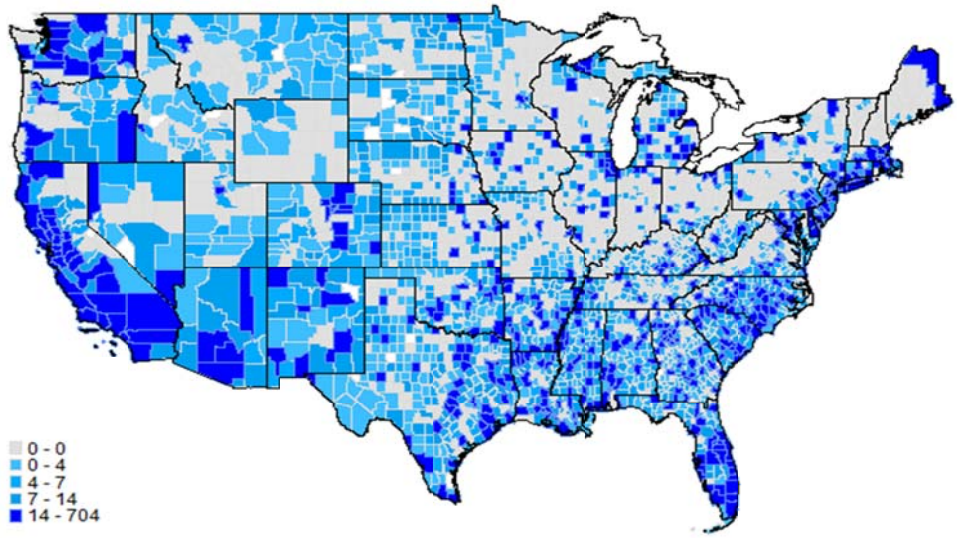
The result of over a half-century effort to reduce financial exclusion is a byzantine regulatory framework overseen by multiple agencies. For example, the Fair Credit Reporting Act regulates the collection, dissemination, and use of consumer information.[1] Discrimination based on race, color, religion, national origin, sex, marital status, or age violates the Equal Credit Opportunity Act (ECOA).[2] In addition, the Fair Housing Act makes many discrimination practices in home financing illegal. More recently, the Credit Card Accountability Responsibility and Disclosure Act of 2009 restricts subprime credit card lending. Meanwhile, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 requires lenders to consider consumers' ability to repay before extending mortgage credit.

Several measures have been passed with the specific goal of increasing financial inclusion. The Community Reinvestment Act (CRA) was passed in 1977 to reduce discriminatory practices in low-income neighborhoods, a practice known as redlining, by encouraging commercial banks and savings institutions to help meet the needs of borrowers in all segments of their communities, including low and moderate income neighborhoods. The law mandates that all banking institutions that receive Federal Deposit Insurance Corporation (FDIC) insurance be evaluated by federal banking agencies to determine if they offer credit in a manner consistent with safe and sound operations in the communities in which they are chartered to do business.

Adding to the complexity of the law, the Federal Financial Institutions Examination Council (FFIEC) coordinates interagency information about CRA ratings of banks from the four responsible agencies: Federal Reserve, FDIC, Office of the Comptroller of the Currency (OCC) and Office of Thrift Supervision (OTS).

1:: See for example Turner (2003).
2:: See Department of Justice www.justice.gov/crt/about/hce/housing_ecoa.php

Map 1
Number of CRA-Designated Tracks in County



Source: BBVA Research & SNL Financial

Through the Riegle Community Development and Regulatory Improvement Act of 1994, Congress created the Community Development Financial Institutions Fund (CDFI Fund) to invest and provide assistance to CDFIs–banks, credit unions, funds and corporations—whose primary mission is to provide loans, investments, financial services and technical assistance to underserved populations and communities.[3]

The effectiveness of these regulations has been mixed and the Chair of the Federal Reserve, Janet Yellen, recently stated that "we [w]ill continue to look to see whether there are ways in which implementation can be improved."[4] As far back as 2000, Congress directed the Federal Reserve to study the CRA's effectiveness.[5] The study found that since the CRA's enactment, lending to low and moderate income (LMI) families had increased, but it was not possible to associate all of the increase to the CRA. In addition, efficiency gains in risk analysis and prediction have increased the pool of potential borrowers, which suggests that the increase in lending to LMI communities is a function of more efficient credit markets, and not only the CRA. Other studies confirm that increased lending could relate more to financial innovation than regulation.[6] Some studies have even argued that the CRA contributed to the excessive lending prior to the Great Recession, while others defend the current model but suggest that improvements in efficiency are needed to sustain the initiative.

For researchers and policymakers in developed economies, one of the biggest challenges is identifying financially excluded areas. For example, Marshall (2004) finds that in Britain and the U.S., financial exclusion relates to prices, inadequate services and the fact that no one is supplying products to certain segments of the population. Moreover, financial exclusion tends to be concentrated in disadvantaged groups and around a small

3: For more information see http://www.cdfifund.gov/index.asp
4: For more information see Yellen (2015)
5: See Federal Reserve (2000)
6: See for example Taylor and Silver (2009)

number of depressed urban areas. As a result, developed economies can be overlooked given that their financial sectors are comparatively large and far-reaching, and incomes tend to be higher on average.[7]

In addition, many other factors that are correlated with financial inclusion are also associated with poverty, education levels, access and costs of healthcare and race. This implies that when measuring financial inclusion, it is necessary to include a broad set of indicators. Particularly in advanced economies, relying on simple metrics, such as account ownership or proximity to a physical branch can produce inaccurate conclusions. Similarly, viewing financial inclusion at the aggregate-level could oversimplify the challenges at regional and local levels.

After developing a comprehensive mixed-source database, we analyzed the main factors that determine individual-level and MSA-level financial inclusion. Based on these findings we constructed the Financial Inclusion Metropolitan Index (FIMI) for 251 Metropolitan Statistical Areas (MSAs) in order to properly identify less inclusive areas and pinpoint what factors are behind the low levels of inclusiveness. In constructing an index that incorporates supply and demand-side indicators at the regional level, our model builds on a multifaceted approach a la Demirguc-Kunt, Asli and Klapper (2013), who used principal component analysis to identify financial inclusion across a rich country-level dataset. The framework follows a similar two-stage estimation approach, but extends it to the sub-national level in the U.S. and includes technology as additional factor. While there are surveys at the MSA-level that measure the unbanked, underbanked and AFS use, to our knowledge, there have been no previous attempts to produce a two-stage, five-factor model of financial inclusion at the MSA-level. Our results confirm high-levels of heterogeneity across MSAs and suggest that technology, demographics and macroeconomic foundations are the most important determinants of financial inclusion.

The remainder of the paper is organized as follows. Section 2 presents an overview of existing literature. Section 3 describes the dataset, its construction and the underlying factors that determine financial inclusion. Section 4 presents the index methodology and results. Section 5 describes the regression results. In conclusion, section 6 summarizes our findings and presents policy options available to combat financial exclusion.

7: The Global Microscope, which evaluates the conditions and enablers of expanded access to finance to establish a benchmark across countries, focuses only on low- and middle-income countries. For more information see www.eiu.com/microscope2014

2 Literature Review

Financial inclusion has gained relevancy over the last two decades as another paramount element in development economics, on par with education, healthcare, property rights and infrastructure, as a way to increase economic growth and reduce poverty. For the purposes of this paper, financial inclusion is defined as the degree to which willing participants have access to financial services and the rate of uptake of formal finance as opposed to nonbank financial services. Having access requires willingness from banks to provide convenient products and services to all individuals that demand finance. Ideally, the products are affordable and cost effective to the provider, and delivery happens in a convenient and efficient manner. Formal financial services include basic deposit products, checking accounts and savings accounts. The degree of inclusion would be higher if the relationship between the client and the bank includes more sophisticated products. In addition, we define the relationship between the client and the bank to be long-term when individuals have had an account for longer than 12 months. Nonbank AFS are those provided by institutions that operate outside the federally insured system. These services include money transmitters, car title lenders, pawn shops and rent-to-own stores (Bradley et al., 2009).

Today, countries around the world and international organizations have embraced financial inclusion. For example, at the 2009 G20 Summit in Pittsburgh (G20, 2009), members made financial inclusion one of their goals. By late 2013, more than 50 national-level policy-making and regulatory bodies had publicly committed to financial inclusion strategies for their countries. Moreover, in October 2013 the World Bank stated that universal access to basic transaction services was an important milestone toward full financial inclusion.

From a macroeconomic perspective, there is evidence that supports a positive correlation of financial deepening with economic growth (King and Levine, 1993) and employment (Pagano and Pica, 2012). There is some debate regarding the conditions needed for this result: quality of institutions, efficiency of financial regulation and macroeconomic stability, as benefits may not be achievable if there are large inefficiencies in other sectors of the economy that offset the benefits of higher financial deepening (Loayza and Ranciere, 2006). In addition, financial intermediation below or above certain thresholds could have negative effects on economic performance, as some researchers have pointed out after the 2008 global financial crisis, implying an inverted U-shaped relationship (Arcand, Berkes, and Panizza, 2012). In these cases, too much finance–-e.g. excessive risk-taking and lending—could generate bubbles that may lead to economic or financial crises. Still, there seems to be a case that greater financial intermediation lowers transaction costs and improves the distribution of capital and risk across the economy.

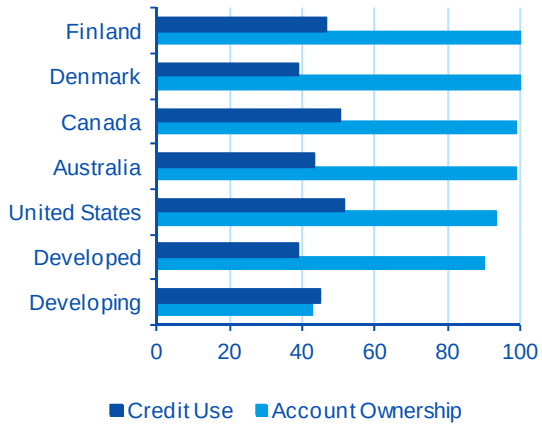
In terms of financial well-being, financial inclusion has the potential to increase savings and borrowing, which would also enhance wealth and boost investment. In both cases, financial inclusion will be both wealth and output-enhancing as the returns to capital are greater when capital is scarce. In addition, greater financial inclusion is associated with financial stability (Han and Melecky, 2013) and poverty reduction (Clarke, Xu, and Zhou, 2006). Financial inclusion can also broaden the financial sector's customer base in times of stress and improve the efficiency of other public policies aimed at maintaining macroeconomic stability, by smoothing consumption cycles and reducing credit constraints for the poor who lack credit history and collateral. Last but not least, financial inclusion can stimulate investment in underfunded enterprises which tend to belong to lower income groups.

From a microeconomic perspective, researchers have mainly focused on analyzing specific programs to understand the implications of financial inclusion. In general, these studies find that financial inclusion holds a positive relationship with self-employment, business activities (Augsburg, de Haas, Harmgart, and Meghir, 2012), household consumption (Banerjee, Duflo, Glennerster, and Kinnan, 2010), and welfare. Regarding credit, evidence suggests that small businesses benefit from greater access to credit. However, the effects on welfare tend to be more contentious (Banerjee, Duflo, Glennerster, and Kinnan, 2013).

Most studies find positive effects on savings, as individuals are able to smooth consumption and build working capital (Ahsraf, Karlan, and Yin, 2010). Moreover, micro-insurance is also perceived as a positive way to mitigate risks and cope with shocks that make it difficult for poor people to escape poverty (Karlan, Osei-Akoto, Osei, and Udry, 2014). More recent studies on payments and mobile money find that financial inclusion reduces transaction costs and improves the ability to share risks (Aker, Boumnijel, McClelland, and Tierney, 2011). At the same time, improvements in education, specifically financial education and literacy, can lead to higher voluntary financial participation. However, it is unclear if the results of specific programs could be replicated elsewhere, whether self-selection is leading to biased conclusions, and if a few highly successful cases are enough to claim that increasing financial inclusion can reduce poverty on a massive scale. Ultimately financial inclusion is unlikely to be a substitute for education or healthcare.

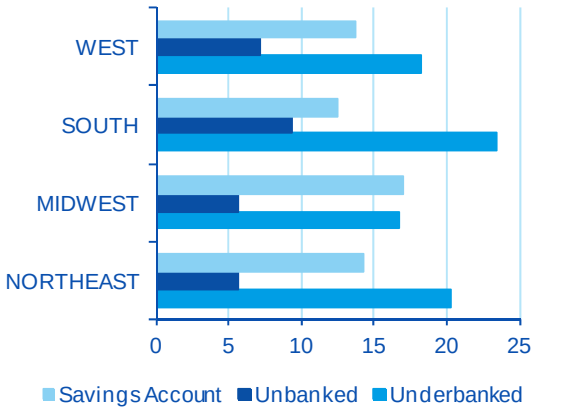
A new wrinkle in the approach to promote financial inclusion has gained momentum in the past decade. Advancements in technology have opened new doors that were previously closed to financial institutions and other players. In Kenya, for example, M-Pesa, a mobile phone-based money transfer and microfinancing service launched in 2007, represents the benchmark of how millions of people that had no access to financial services can be given access to transfer services using mobile devices.[8] Despite several examples of successful microcredit programs, there is no guarantee that they can be replicated in other markets or implemented on a larger scale, particularly in developed economies.

Chart 1
Account Ownership and Share w/ Mortgage (%)



Source: World Bank & BBVA Research

Chart 2
Unbanked, Underbanked & Savings by Region (%)

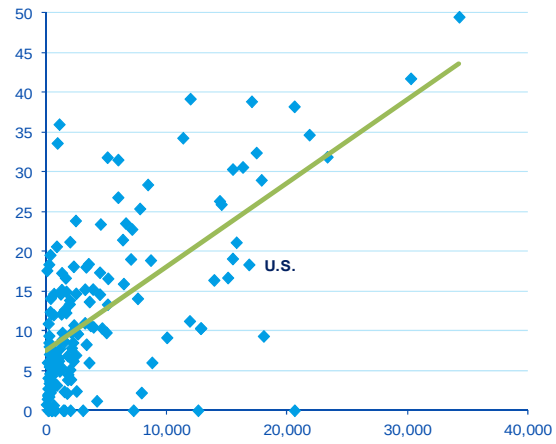


Source: BBVA Research & FDIC

8: See for example Jack and Suri (2010)

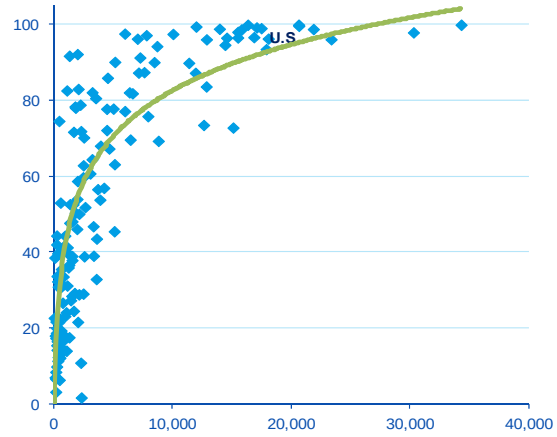
In terms of financial inclusion, the U.S. lags behind other developed countries. As one of the most developed nations in the world, the U.S. has the largest and one of the most advanced financial systems in both absolute and relative terms, yet the benefits of a large and sophisticated financial system do not accrue to the entire population. According to the World Bank Global Financial Inclusion database, 94 percent of people in the U.S. have a bank account. Although high compared to other developing countries, the U.S. ranks 23rd out of 38 high-income nations, for which data is available. For adults in the poorest 40 percent of households (Chart 1), the share of those without a bank account in the U.S. is more than eight times higher than in the U.K., Canada or Australia. The U.S. also exhibits a high degree of heterogeneity across incomes and regions. For example, the proportion of households with accounts reaches 30 percent for the lowest income group compared to almost complete inclusion for the highest income group.[9] Moreover, a survey in the U.S. of unbanked and underbanked households[10] revealed that financial inclusion was not consistent with its high-income development metrics. In fact, there are 16.7 million unbanked individuals in the U.S., meaning that they do not have access to a traditional financial deposit account, and an additional 50.9 million adults are underbanked and have used AFS (Chart 2).

Chart 3
Account Ownership and GNI Per Capita (% & Current $US)



Source: World Bank & BBVA Research

Chart 4
Mortgage Owners and GNI Per Capita (% & Current $US)



Source: World Bank & BBVA Research

9: For more information see World Bank (2012a)
10: For more information see FDIC (2013)

3 Determinants of Financial Inclusion

3.1 Data Description

The dataset used in estimating FIMI and identifying individual-level factors is large and diverse. Despite the seemingly favorable macroeconomic environment, like many U.S. economic challenges, there remain high degrees of heterogeneity across regions, income and demographics, thus requiring a careful approach to fully understand this largely unobservable phenomenon. Based on theory, there is sufficient precedent to include income, inequality, urbanization, and physical infrastructure. Connectivity (Sarma, 2008) and barriers such as cost and inconvenience (Allen et al., 2012) also influence financial inclusion. Immigrant status and proper documentation can act as a barrier to the financial sector for non-citizens while economic participation and health insurance deserve to be included based on the impact that these barriers can have on voluntarily exclusion. These indicators exhibit a statistically meaningful relationship to account ownership, strengthening the basis for including them. Although the level of development and the depth of the financial sector are less differentiated across MSAs than would likely be observed in a cross-country analysis, included are variables such as population growth, gross domestic product (GDP) per capita, education and the ratio of number of individuals that are 65 and older to working-age population. Taken together, these variables should cover a nontrivial amount of the determinants of financial inclusion

Other variables related to financial development were included, such as number of households with current credit balances (student, auto and mortgage), ratio of household credit balances to GDP and survey-based measures of financial barriers (high fees, trust and identification). Rapid growth in financial innovation and the success of programs that target the financially excluded via mobile or digital channels has led us to consider technology as an additional dimension of financial inclusion. As a result, we included variables such as digital banking use, internet penetration and mobile access.

Since there is no comprehensive sub-national dataset that covers all of these aspects, we developed a database of close to 400 series that could explain financial exclusion at the MSA-level. The data draws from 4 million observations ranging from MSA measures of GDP to constructed household measures of income inequality such as the Gini coefficient. Seven data sources were used to construct this dataset: American Community Survey (ACS), FDIC National Survey of Unbanked and Underbanked Households, U.S. Department of Transportation Federal Highway Administration, SNL Financial: Business Intelligence Services, Bureau of Economic Affairs (BEA) and Census Bureau. Tables 26 to 30 in Appendix 1 present the list of variables used in the estimation.

To produce a more precise and unbiased index (Basu, 2008), we filtered the database based on two exclusion criteria. First, we excluded variables based on redundancy, missing data, no variation, noise and established theory. This results in a dataset of close to 100 potential explanatory variables. Second, to create more robustness, to avoid biases and to ensure that all the included variables improve our understanding of financial inclusion, we estimated the relationship that each variable has on being unbanked or being a long-term user of traditional financial services. Controls for confounding factors such as race, income and education were included. We excluded all variables that were insignificant above a 20 percent threshold, based on the p-value of a two-sided t-test, in both regressions. This process resulted in a dataset of 80 explanatory variables.[11]

11: As a robustness check, two other sets of variables were estimated using a single criteria (unbanked and long-term banked)

The FDIC survey constrained the number of possible MSAs to 251. Nonetheless, this sample covers 86 percent of the 318 million individuals that live in the U.S., 66 percent of the 381 MSAs, and accounts for 92 percent of the population living in MSAs. The smallest MSA in the sample is Victoria, TX, which has a population of 97 thousand; the largest MSA is New York-Newark-Jersey City, which has a population of 19.9 million.[12]

3.2 Empirical Underpinnings of Financial Inclusion

To effectively incorporate the idiosyncratic factors that affect financial inclusion in the U.S. and maintain consistency with our definition of financial inclusion, we chose five factors to define U.S. financial inclusion: *Demographics, Financial Sector Development (Supply-side), Macroeconomic Foundations (Development and Inclusion), Consumer Preferences (Demand-side)* and Technology. In this section, we present findings that support our inclusion of the components of these five factors and why these components are essential to identifying MSA-level financial inclusion. These findings reflect a mix of ad hoc econometric models (OLS, Probit & Ordered Logit) and descriptive statistics.

Table 1
Descriptive Data U.S.

		U.S.		
		μ	σ	IQR
Demographics	Age	38.3	2.6	2.6
	African-American	10.9%	10.7%	13.0%
	Hispanic Population	14.4%	17.2%	12.1%
	Invidual Income ($K)	20.4	3.9	5.0
	Non-citizen	4.9%	4.3%	3.7%
	White	68.4%	18.5%	24.6%
Financial	Branches (per sqmi)	0.7	0.01	0.01
	Credit per HH ($K)	90.8	22.1	25.0
	Unbanked (Fees)	2.2%	2.6%	3.2%
	Unbanked (ID)	1.4%	2.5%	2.1%
	Unbanked (Trust)	2.6%	3.0%	3.7%
Development	Population Growth*	1.1	1.2	1.3
	Real GDP per Capita	43.3	13.7	15.6
	Real GDP per Capita*	0.37	1.27	1.16
	Gini	0.501	0.0	0.0
	Health Insurance Cov.	85.6%	5.2%	7.2%
	Participation Rate	49.9%	4.0%	5.3%
	Income Gap**	17.0	6.0	3.7
	Education***	38.2%	6.3%	8.4%
Preferences	AFS Credit Use	16.7%	9.0%	11.3%
	AFS Transaction Use	32.7%	11.9%	15.4%
	Bank Closed (Income)	0.3%	1.5%	0.0%
	Demand Deposit Act.	75.4%	10.8%	12.8%
	Savings Act.	14.2%	7.9%	9.5%
	Remmittances	0.4%	1.1%	0.0%
Technology	Used Digital Product	19.8%	9.5%	13.4%
	Internet Access	81.8%	5.7%	6.8%
	Mobile Access	45.5%	6.5%	7.6%
	Smartphone Access	54.7%	12.3%	16.1%

Table 2
Descriptive Data by Census Region

		Northeast	Midwest	South	West
Demographics	Age	40.0	38.3	38.2	37.3
	African-American	7.3%	8.2%	18.3%	2.9%
	Hispanic Population	8.8%	5.4%	14.1%	28.1%
	Invidual Income ($K)	23.3	21.7	18.8	20.1
	Non-citizen	4.1%	2.6%	4.6%	8.4%
	White	78.7%	81.4%	62.9%	57.9%
Financial	Branches (per sqmi)	0.54	0.76	0.66	0.89
	Credit per HH ($K)	89.6	76.8	85.3	116.4
	Unbanked (Fees)	1.3%	1.9%	2.6%	2.2%
	Unbanked (ID)	0.9%	0.9%	1.5%	1.9%
	Unbanked (Trust)	1.9%	1.9%	2.9%	3.3%
Development	Population Growth*	0.3	0.5	1.7	1.4
	Real GDP per Capita	46.6	44.7	42.0	42.2
	Real GDP per Capita*	0.62	0.50	0.13	0.50
	Gini	49.9	49.3	50.1	51.0
	Health Insurance Cov.	90.7%	89.1%	82.5%	83.9%
	Participation Rate	52.1%	52.0%	48.3%	49.0%
	Income Gap**	17.4	16.6	15.5	19.9
	Education***	39.5%	38.9%	35.9%	40.5%
Preferences	AFS Credit Use	11.1%	14.2%	20.3%	16.6%
	AFS Transaction Use	31.6%	28.5%	37.1%	30.1%
	Bank Closed (Income)	0.6%	0.1%	0.3%	0.3%
	Demand Deposit Act.	78.1%	78.5%	73.5%	73.8%
	Savings Act.	14.8%	17.1%	12.5%	13.8%
	Remmittances	0.8%	0.1%	0.4%	0.6%
Technology	Used Digital Product	16.1%	19.3%	20.3%	21.4%
	Internet Access	84.9%	82.8%	78.8%	84.0%
	Mobile Access	41.9%	45.5%	45.2%	48.1%
	Smartphone Access	52.1%	52.7%	56.2%	55.6%

* 5-year annualized growth; ** Ratio of 90th percentile to 10th percentile; *** Some college coursework
Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census

12: The FDIC Underbanked supplement which despite having 53,405 respondents, had limited geographic coverage -251 of 381 MSA

To better understand the variability in the dataset and potential drivers of financial inclusion, Tables 1 and 2 present a set of key variables for the entire U.S. and Census regions while Tables 23 to 25 in Appendix 1 present descriptive data for key variables by population size, race and household income. The data indicates large heterogeneity across all dimensions. For example, financial inclusion is lower in the South and West, in larger cities, within non-Asian minorities, and among lower-income households. Likewise, access to technology is more limited in smaller cities, among Blacks and Hispanics, for poorer individuals and in regions with older populations.

The Probit models measure how internet access, education, relative income and race impact the probability of being unbanked, using AFS products or having a savings or demand deposit account, assuming that 0 indicates failure and 1 indicates success. The labels are considered in the positive sense, meaning that we assign a value of 1 for unbanked despite the fact that this outcome could be normatively assessed to be a "failure". The estimation takes on the functional form:

$$\Pr(y_i \neq 0 \mid x_j) = \Phi(x_j\beta) \quad (1)$$

where Φ is the standard cumulative normal function and β is the estimated parameter. To avoid spurious post-estimation inferences, robust standard errors are calculated. Marginal effects are reported as the derivative of the probability *Pr* of the dependent variable y_i with respect to the regressors x_j.[13]

3.2.1 Demographics

Ethnic and racial diversity, growing inequality and a legacy of immigration in the U.S. necessitate the inclusion of a demographic component in the financial inclusion index. Also incorporated in the demographic factor are variables that explain the key socioeconomic factors that underlie demographics in the U.S. In terms of family structure, 39 percent of the individuals in our sample are married and 65 percent own their home, while the average household family has three children (Table 1). The association between marriage and banking status is clear, and aside from racial and ethnic indicators, marital status has the highest correlation with financial inclusion (Charts 5 & 6). In fact, regression results (Table 3) suggest that a five percentage point higher marriage rate is associated with a three percent lower unbanked rate whereas having a 1.8 percent higher share of individuals with some college education only decreases the rate of unbanked by 1.7 percent, suggesting that household formation could explain banking status more aptly than education. Surprisingly, unlike having a bank account, a greater share of married individuals in the MSA does not positively impact savings account penetration (Table 3). Nevertheless, core family structure variables are included given the advantages dual-income households have in pooling resources, accessing the banking sector and saving for life-changing purchases such as a house or car. Increasing an MSA's marriage rate by 5 percent raises median individual income by $2,227. In addition, to the direct effects that more sound family structures would have on financial inclusion, there are also likely to be second and third order benefits.

13: See Aldrich and Nelson (1984)

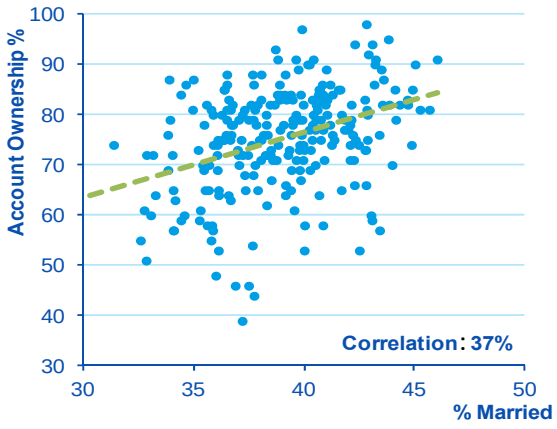
Table 3
MSA-Level Marital Status Regressions, Account Ownership and AFS Use

		(1)	(2)	(3)
	Dependent Variables	Unbanked	Underbanked	Savings Account
Independent Variables				
married[5]		-0.604***	-0.400	0.249
		(0.149)	(0.268)	(0.217)
black[3]		0.0719	0.122**	-0.00695
		(0.0446)	(0.0591)	(0.0495)
medinctot[4]		3.55e-07	8.74e-07	3.79e-06**
		(1.17e-06)	(1.96e-06)	(1.90e-06)
some_college[2]		-0.369***	-0.455***	-0.0437
		(0.0704)	(0.109)	(0.113)
Constant		0.435***	0.500***	-0.0159
		(0.0732)	(0.114)	(0.0860)
Observations		251	251	251
Adjusted R-squared		0.294	0.164	0.038
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

1: Each column represents an independent OLS regression with standard errors in parentheses
2: Share of individuals with some college coursework completed
3: Share of population represented by each race or ethnicity
4: Average median individual income
5: Share of currently married individuals (non-divorced or non-widowed)
Source: BBVA Research

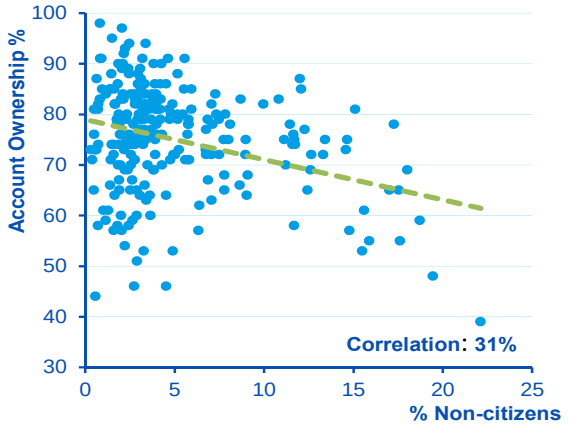
The ebbs and flows in an individual's banking life-cycle can impact involuntary and voluntary banking participation. Consequently, we include multiple measures for age. Intuitively, for individuals who are younger than 18 years old, the benefit of financial products is lower than older individuals that are in the life-cycle phase of having children and forming households. In fact, it may even be economically rational to not have a bank account in the early phases of the financial life-cycle. Likewise, for the oldest cohort, who has the largest relative accumulated savings and assets, banking products may not be needed and thus are less valuable. Ultimately, underlying differences in fertility rates, household formation, childbearing preferences and life-expectancies could lead to differences in financial uptake. In essence, it may not be equally beneficial for all age groups to incur the marginal costs of obtaining additional finance, leading to large differences across individuals.

Chart 5
Marital Status & Account Ownership (% Share of Individuals in MSA)



Source: BBVA Research, IPUMS & FDIC

Chart 6
Citizenship Status & Account Ownership (Share of Individuals in MSA, %)



Source: BBVA Research, IPUMS & FDIC

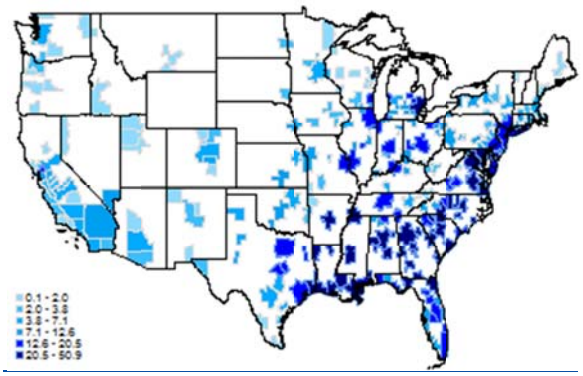
In terms of economic well-being, from a historical perspective, the percentage of people in poverty in 2013 was 14.5 percent, which is significantly lower than the 22.2 percent in 1960, but higher than the 13.2 percent average since 1970.[14] This implies that at most, expanding access to finance over the last four decades helped to limit a potential increase in poverty rates, but it is unclear that it has diminished poverty or is the only factor affecting poverty rates. Moreover, in 2013, the median value of net worth for families with financial holdings in the 20th percentile of income was $6.1 thousand, slightly lower than the $6.4 thousand in 1992–adjusting for inflation.[15] In other words, while the U.S. has been implementing policies aimed at boosting financial inclusion more aggressively and earlier than many other countries, it is unclear that these strategies have been successful.

For some immigrant families, barriers associated with being a new immigrant or non-citizen can also impact the ability to access the traditional financial sector. On average, five percent of the population is non-citizens, and have lived in the U.S. for an average of two years. We include a control variable for the country of origin, as seven percent of the U.S. population has immigrated from developing countries (Table 26). Where an individual has immigrated from could influence banking sector trust, as many developing countries suffer from weak institutions and fragile financial systems. However, our regressions show that after controlling for income, ethnicity, education and citizenship status, it seems that having a five percentage point larger share of the population emigrating from an emerging market is associated with a 3.8 percentage point reduction in the share of unbanked (Table 3). One explanation could be the increasing share of immigrants from Asia, which are less likely to be unbanked. In terms of identification barriers, we find that a five percentage point increase in the citizenship rate in a MSA is associated with a 6.6 percentage point reduction in the unbanked rate, reflecting the legal implications of being a U.S. citizen (Table 4).

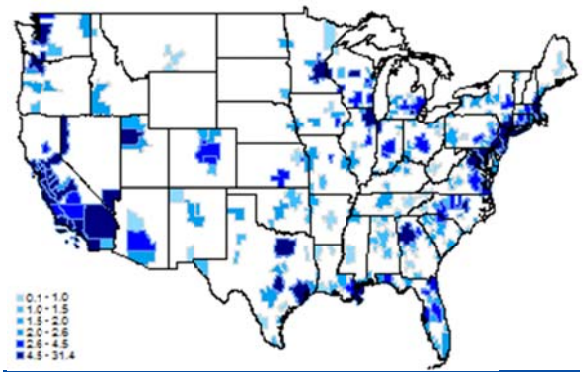
14: See for example http://www.census.gov/hhes/www/poverty/data/historical/people.html
15: See http://www.federalreserve.gov/econresdata/scf/scfindex.htm

MSA Racial Concentrations of Black, White, Hispanic & Asian
(Share of Individuals in MSA, %)

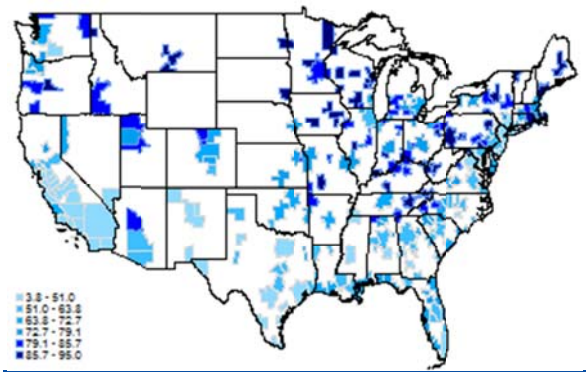
Map 2
Black



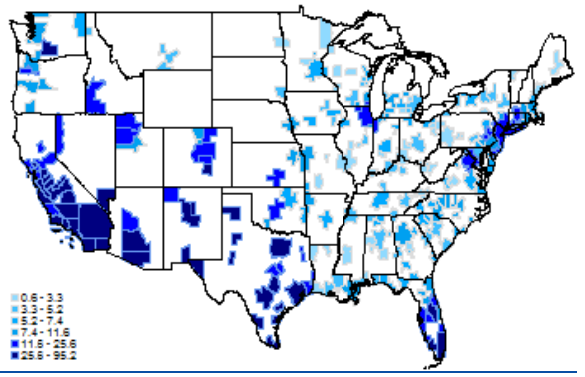
Map 3
Asian



Map 4
White



Map 5
Hispanic



Source: BBVA Research, IPUMS, FDIC & Census

The data also confirms that race is still a major factor in determining the rate of unbanked in a MSA. On average, 11 percent of the population in MSAs is Black, 14 percent is non-White Hispanic, three percent is Asian and 68 percent is White (Table 1, Maps 2 to 5). At the low end of the distribution, there are MSAs with nearly no diversity, while in other cases there are MSAs that are nearly equally represented across racial groups (Table 23). In terms of the effect that the racial mix of a MSA has, our regression results show that a 10 percentage point increase in the share of Whites reduces the unbanked rate by 1.5 percentage points, while a similar increase in the share of Blacks increases the unbanked rate by 1.8 percentage points. The rate increases after controlling for Hispanics. A greater share of Hispanics, if citizenship is not controlled for, increases the unbanked rate whereas once citizenship is controlled, a greater share of Hispanics is associated with a higher unbanked

rate.[16] For Asians, the impact on the unbanked is insignificant. Ultimately, this confirms that race is a factor, but also suggests that the racial mix of an area can influence the level of financial inclusion. (Table 4)

Table 4
MSA-Level Regressions on Impact that Demographics Has on Being Unbanked

	(1)[7]	(2)[7]	(3)[7]	(4)[7]	(5)[7]	(6)[7]
Independent Variables						
some_college[2]	-0.292***	-0.329***	-0.299***	-0.331***	-0.325***	-0.314***
	(0.0593)	(0.0647)	(0.0704)	(0.0724)	(0.0674)	(0.0726)
black[2]	0.210***	0.201***			0.181***	
	(0.0342)	(0.0346)			(0.0338)	
hispanic[2]	0.125***	0.0657				0.0515
	(0.0459)	(0.0465)				(0.0328)
emrging_mkt[4]	-0.0643					
	(0.0821)					
not_citizen[5]		0.157	-0.230	0.269*	0.362***	
		(0.158)	(0.172)	(0.140)	(0.114)	
white[2]			-0.152***			
			(0.0325)			
medinctot[6]			-5.94e-07	-1.95e-06*	-1.29e-06	-1.76e-06
			(1.15e-06)	(1.16e-06)	(1.11e-06)	(1.16e-06)
asian[2]				-0.0234		
				(0.0626)		
Constant	0.149***	0.161***	0.316***	0.228***	0.187***	0.223***
	(0.0246)	(0.0259)	(0.0325)	(0.0264)	(0.0275)	(0.0261)
Observations	251	251	251	251	251	251
Adjusted R-squared	0.300	0.301	0.281	0.208	0.298	0.199

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

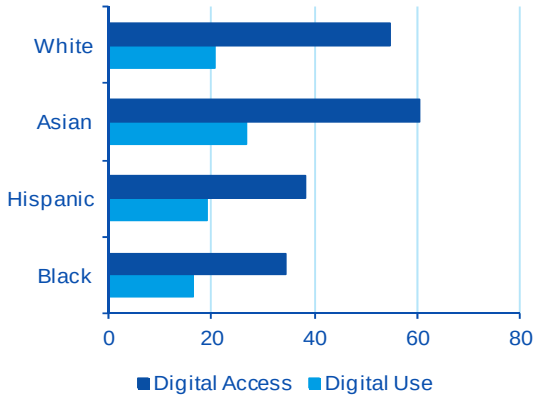
1: Each column represents an independent OLS regression with standard errors in parentheses
2: Share of individuals with some college coursework completed
3: Share of population represented by each race or ethnicity
4: Share of individuals who immigrated from a IMF designated emerging market country
5: Share of individuals self-identified as non-citizens
6: Average median individual income
7: Share of unbanked is the dependent variable In all regressions
Source: BBVA Research

Although significant strides have been made to lower the divide among races and ethnicities,[17] our sample suggests that barriers to financial services, consumption of nonbank finance and digital usage are evident in the racial cross-sections. Asians, unlike other racial minority groups, have higher shares of non-U.S. citizens and a majority (52.7 percent) with some college coursework—the only ethnic group above 50 percent (Table 24). Higher education and income levels could explain why Asians tend to have higher access and usage rates of

16: It is important to note that in the equation that measure the impact that the share of Hispanics have on the rate of unbanked, after controlling for citizenship, the coefficient on Hispanic is only significant beyond 50 percent based on a two-sided t-test
17: See for example Fry and Kochhar (2014)

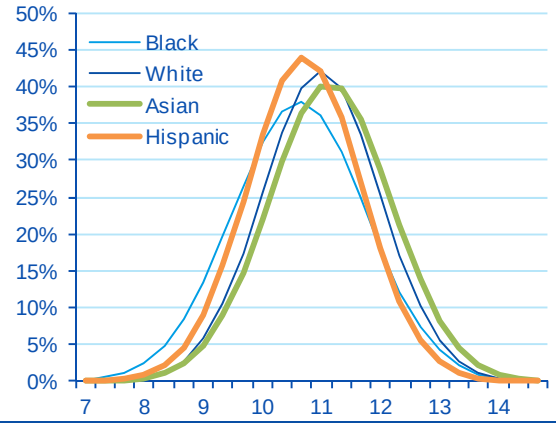
digital banking relative to other ethnic groups. In fact, Asians' adoption of digital banking products, internet, mobile devices and smartphones stands at a higher rate than that of Whites (Chart 7). Despite higher rates of non-citizens, Asians rarely cite identification as a barrier to the traditional financial sector whereas 4.2 percent of Hispanics, who also have a large number of individuals that are not citizens, cite identification as an issue —27 times more than Asians (Table 24).

Chart 7
Digital Use by Race (Share of Individuals, %)



Source: BBVA Research & FDIC

Chart 8
Income Distribution by Race



Source: BBVA Research & IPUMS

Nationally, the difference between the percentage of individuals citing fees and those citing trust as a reason for being unbanked is small, yet differences across races can be large, highlighting that race could be a determinant of financial inclusion regardless of income or education. For example, Blacks cite fees (6.9 percent) as a reason for being unbanked at a much higher rate than Hispanics (5.1 percent) despite having similar incomes (Table 24 & Chart 8). Moreover, counter to what we would anticipate, given that citing fees as a reason for being unbanked should decline with higher income, the share of Blacks citing fees as the reason for being unbanked is higher than the lowest income quintile for all races. Blacks are also more likely to say that trust is a barrier to account ownership. This could indicate that non-institutional discrimination may still exist despite public and private efforts to increase access and reduce perceived biases.

Table 5
Individual-Level Probit Regressions on Inequality, Race and Education Impacts on Financial Inclusion

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Dependent Variables	Unbanked	Savings Account	Long-Term Banked	Unbanked (Low-Income)	Unbanked (High-Income)	Long-Term Bankd (High-Income)	Savings (High-Income)	Savings (Low-Income)	Long-Term Banked (Low-Income)
Independent Variables										
relative_inc[2]		-0.0367***	0.0182***	0.0250***	-0.0616***	-0.0156***	0.00546***	0.0159***	0.0167***	0.0541***
		(0.00106)	(0.00113)	(0.00120)	(0.00342)	(0.00178)	(0.00189)	(0.00242)	(0.00421)	(0.00441)
int_access[3]		-0.0713***	0.0531***	0.223***	-0.0975***	-0.0442***	0.204***	0.0749***	0.0432***	0.233***
		(0.00150)	(0.00275)	(0.00192)	(0.00245)	(0.00169)	(0.00230)	(0.00533)	(0.00306)	(0.00295)
age		0.00136***	0.00167***	-0.000253	0.00178***	-0.000346	0.00183***	0.00336***	0.00405***	0.00169***
		(0.000259)	(0.000366)	(0.000315)	(0.000414)	(0.000377)	(0.000506)	(0.000740)	(0.000467)	(0.000465)
agesq[4]		-3.98e-05***	-3.59e-06	3.62e-05***	-5.54e-05***	-8.44e-06*	-4.90e-06	-3.20e-05***	-2.11e-05***	2.89e-05***
		(2.73e-06)	(3.55e-06)	(3.13e-06)	(4.26e-06)	(4.38e-06)	(5.49e-06)	(7.92e-06)	(4.23e-06)	(4.49e-06)
black[5]		0.0249***	-0.00262	-0.0442***	0.0401***	0.0106***	-0.0407***	0.0174	-0.0199**	-0.0481***
		(0.00363)	(0.00724)	(0.00573)	(0.00620)	(0.00376)	(0.00739)	(0.0115)	(0.00901)	(0.00878)
education[6]		-0.0169***	0.0115***	0.0108***	-0.0213***	-0.0124***	0.00867***	0.0148***	0.00823***	0.0134***
		(0.000403)	(0.000623)	(0.000544)	(0.000659)	(0.000469)	(0.000689)	(0.000995)	(0.000781)	(0.000834)
hispanic[7]		0.00743**	0.0518***	-0.00197	0.00733	0.00671*	0.0136*	0.0561***	0.0478***	-0.0154*
		(0.00368)	(0.00738)	(0.00579)	(0.00632)	(0.00376)	(0.00739)	(0.0116)	(0.00930)	(0.00891)
white[8]		-0.0477***	-0.00438	0.0429***	-0.0650***	-0.0306***	0.0160**	0.000381	-0.0117	0.0687***
		(0.00369)	(0.00711)	(0.00575)	(0.00626)	(0.00384)	(0.00742)	(0.0113)	(0.00885)	(0.00879)
asian[9]		-0.0752***	-0.0450***	0.0460***	-0.0940***	-0.0565***	0.00155	-0.0639***	-0.0243**	0.103***
		(0.00595)	(0.00857)	(0.00725)	(0.00969)	(0.00743)	(0.00865)	(0.0132)	(0.0112)	(0.0120)
Observations		113,112	113,112	113,112	56,945	56,167	56,167	56,167	56,945	56,945

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1: Each column represents an independent Probit regression with standard errors in parentheses
2: Ratio of individuals' income to median MSA or non-MSA income
3: Access to internet
4: To incorporate the non-linear affects that age has on financial consumption, included is a squared age coefficient
5: Dummy variable which is equal to 1 if the individual is Black and 0 if not
6: Categorical variable of educational attainment (1=9TH GRADE ; 2=10TH GRADE ; 3= 11TH GRADE; 4=12TH GRADE NO DIPLOMA ; 5=HIGH SCHOOL GRAD-DIPLOMA OR EQUIV (GED) ; 6= SOME COLLEGE BUT NO DEGREE; 7= ASSOCIATES ; 8=BACHELOR'S DEGREE (EX: BA, AB, BS); 9=MASTER'S DEGREE (EX: MA, MS, MEng, Med) ; 10=DOCTORATE DEGREE (EX: PhD, EdD)
7: Dummy variable which is equal to 1 if the individual is Hispanic and 0 if not
8: Dummy variable which is equal to 1 if the individual is White and 0 if not
9: Dummy variable which is equal to 1 if the individual is Asian and 0 if not
Source: BBVA Research

It is important to note that our analysis confirms that race remains a determining factor of whether or not an individual is banked. In fact, as a control, all estimations include an indicator for race. In terms of the impact, the first column of Table 5 shows that Blacks have a 2.5 percent higher probability of being unbanked whereas Asians and Whites have a 7.5 percent and 4.8 percent lower probability of being unbanked, respectively. For Hispanics, the impact is not significantly different from zero. For low-income individuals, the gap among races increases in magnitude, as the probability of Asians being unbanked declines by 9.4 percent whereas for Blacks the probability increases to 4.0 percent (Table 5).

In terms of AFS use, summary statistics reveal that both Blacks and Hispanics are more frequent users of AFS products. Specifically, Blacks and Hispanics are 1.8 and 1.6 times more likely, respectively, than other races to use some form of AFS product such as check cashing, money order, pawn shop, remittances, payday loans, refund anticipation loan, title loan or non-bank pre-paid cards (Table 6).

Table 6
Minority AFS Use

	Underbanked	# of AFS used	Check Cash	Money Order	Pawn Shop	Remittances	Payday Loans	Refund-anticipation loan	Title Loan	AFS Transaction	AFS Credit
Blacks	32.9%	1.4	21.8%	47.1%	8.2%	9.9%	11.9%	9.2%	4.1%	51.7%	26.5%
Hispanics	29.0%	1.4	17.8%	35.4%	17.6%	5.2%	9.8%	5.1%	2.8%	40.6%	17.6%

Source: BBVA Research & FDIC

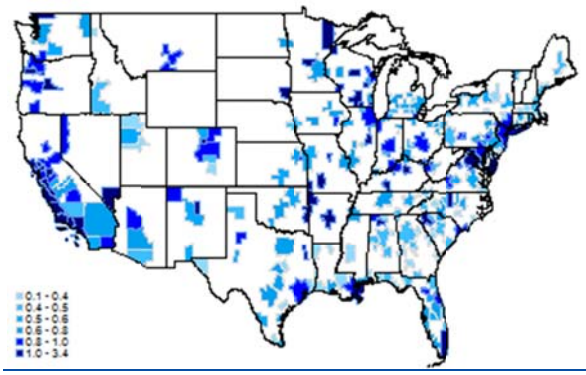
3.2.2 Financial Sector Development (Supply-side)

Despite the fact that the U.S. financial sector is more homogenous than would be expected in a developing economy or cross-country study, it is still important to identify and control for financial depth and accessibility. In the sample, the number of households with current credit balances per capita, total balances on credit products such as auto, student and mortgage loans and credit cards are used as proxies for supply and access to finance. This provides a broad view of credit availability and borrowing in MSAs. In the sample, average mortgage debt per household is $137,000, and slightly more than three in every four households has at least one type of credit balance. In addition, there are seven branches per 10 square miles, the equivalent to 27 branches per 100,000 people (Table 27, Appendix 1).

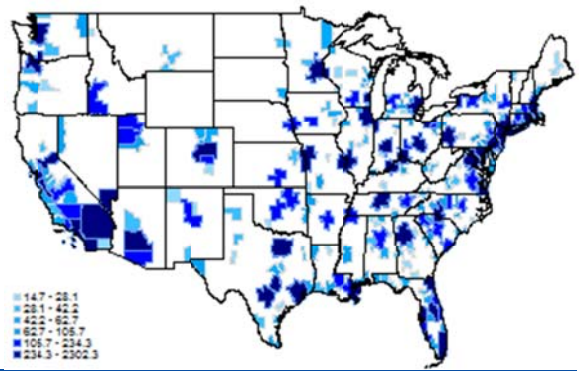
One of the largest observed differences across MSA population size is the gap in credit balances between larger cities, which seem to have a higher propensity to borrow, and smaller cities, which maintain smaller balances (Table 23). This could reflect higher relative costs of being in large cities where house prices are higher, which results in average household balances that are 25 percent larger than small cities. For example, in 2014, the median price for existing single-family homes in the top 50 MSAs by income per capita was 1.8 times that in the lowest 50 MSAs, while the ratio for the top 10 vs. the lowest 10 was almost three times. In addition, since MSA size and income are positively correlated, larger MSAs are more likely to have larger average loan balances. For example, a Fed survey of the economic well-being of households shows that households with income greater than $100,000 are 1.4 times more likely to have a credit card than households with less than $40,000.[18]

MSA Branch Presence and Average Household Balances

Map 6
Branches per Sq. Mile



Map 7
Average Households Credit Balance (Thousands)



Source: BBVA Research, SNL & Census

In terms of geographic coverage, in our sample, the Northeast has 20 percent fewer branches per square mile than the South and 40 percent less than the West, and despite this, has fewer individuals claiming to have used AFS products (Table 2). In spite of higher concentrations across Census regions, our analysis reveals that the relationship between branches per square mile and financial inclusion is straightforward: a greater concentration of branches does not change the financial inclusiveness of an area. After controlling for income, education,

18: See for example Federal Reserve 2015

population and inequality, we find that increasing branches per capita does not explain lower rates of unbanked, underbanked, savings account ownership or intensity of AFS use (Table 7). This could underlie factors such as real estate costs and critical mass needed to achieve economies of scale. This adds to the findings that low geographic coverage may not necessarily cause higher exclusion.

Table 7
MSA-Level Regressions on Impact that Branches Have on Account Ownership and AFS Use

		(1)	(2)	(3)	(4)	(5)
	Dependent Variables	Unbanked	Underbanked	Long-term Banked	Number of AFS Used	Savings Account
Independent Variables						
branches_persqmi		-0.00707	-0.0111	0.0142	-0.0402	-0.00477
		(0.00562)	(0.0115)	(0.00902)	(0.0399)	(0.00924)
some_college[3]		-0.452***	-0.446***	0.487***	-0.560**	0.240***
		(0.0785)	(0.0902)	(0.0943)	(0.248)	(0.0712)
black[4]		0.140***	0.163***	-0.189***	-0.0620	-0.0463
		(0.0375)	(0.0428)	(0.0488)	(0.140)	(0.0429)
population[5]		2.79e-09***	7.18e-11	-3.28e-09***	2.45e-09	-3.39e-09**
		(9.23e-10)	(1.38e-09)	(1.21e-09)	(3.83e-09)	(1.47e-09)
gini_s[2]		0.526***	0.132	-0.480	0.821	-0.986***
		(0.194)	(0.270)	(0.313)	(0.856)	(0.245)
Constant		-0.0298	0.296**	0.921***	1.176***	0.555***
		(0.0818)	(0.126)	(0.153)	(0.431)	(0.122)
Observations		251	251	251	250	251
Adjusted R-squared		0.264	0.152	0.153	0.002	0.065

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1: Each column represents an independent OLS regression with standard errors in parentheses
2: MSA-level Gini Coefficients are estimated using individual-level data from the ACS
3: Share of individuals with some college coursework completed
4: Share of population represented by each race or ethnicity
5: MSA population estimates were calculated based on individual-level survey estimates
6: Branches per square mile from SNL Branch-level data and square mile from FHWA
Source: BBVA Research

Table 8
Impact of Financial Liberalization

	(1)	(2)
	Less than 1 account per 2 individuals	More than 1 account per 2 individuals
Independent Variables		
acct_percap[1]	0.569**	0.178
	(0.255)	(0.198)
Constant	3.571***	3.505***
	(0.0759)	(0.153)
Observations	232	19
Adjusted R-squared	0.020	-0.017

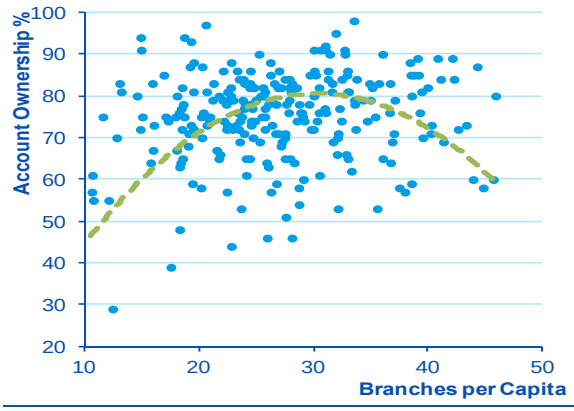
1: Basic demand deposit accounts per capita
Source: BBVA Research

On excess financial liberalization, an overheated financial sector may negatively impact an economy and lead to lower financial inclusiveness in MSA (Charts 9 & 10). Our regression results show that in MSAs with less than one account per two individuals, increasing accounts per capita by 10 percentage points increases GDP per capita by five percent. In MSAs with more than one account per two individuals, the impact is associated with a two percent reduction in GDP per capita (Table 8). This implies increasing returns to financial liberalization up to a point, but thereafter there could be diminishing returns to growth from greater per capita account ownership. This result supports empirical findings (Cecchetti and Kharroubi, 2012) that suggest a U-shaped relationship between financial liberalization and growth.

3.2.3 Macroeconomic Foundations (Development and Inclusion)

Given the importance of a strong macroeconomic foundation and the non-linear effects that weak institutions have on individual behavior and well-being, we include a diverse set of indicators such as college education levels, health insurance coverage, income distribution, participation and unemployment rates and growth measures. In the sample, 38 percent of individuals in MSAs have some college education while the health insurance coverage rate is 86 percent (Table 1). Labor market indicators and human capital are particularly relevant to being unbanked. In terms of correlation, college education is negatively associated with the unbanked (Chart 11); similarly, health insurance coverage is negatively related to the unbanked. As expected, higher unemployment increases the number of unbanked individuals while higher participation lowers the number (Chart 12).[19]

Chart 9
Account Ownership & Branches per Capita (%, per 100,000 residents)

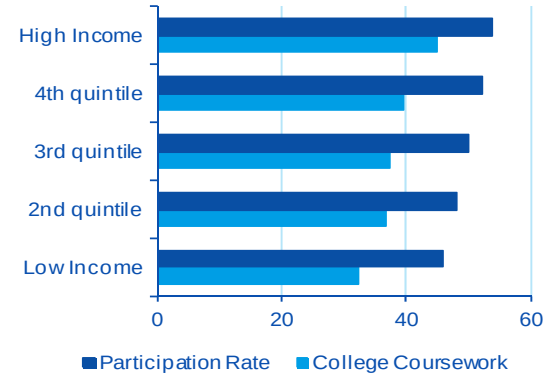


Note: GDP displayed as natural logarithm
Source: BBVA Research, SNL, B.E.A. & Census

Chart 10
Real GDP per Capita & Accounts per Capita (Natural logarithm, number)

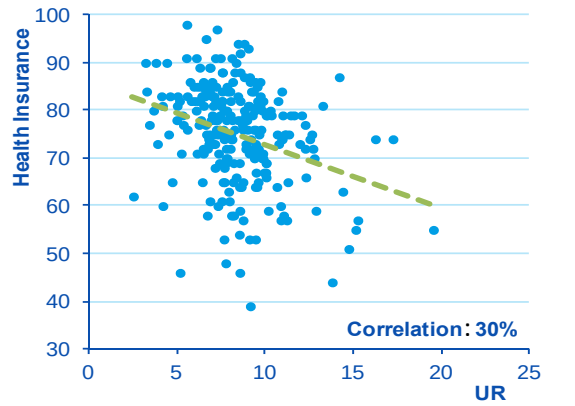
Note: GDP displayed as natural logarithm
Source: BBVA Research, SNL, B.E.A. & Census

Chart 11
College Education and Labor Market Participation by Income (%)



Source: BBVA Research, IPUMS & FDIC

Chart 12
Unemployment Rate and Health Insurance (Share of Individuals in MSA, %)



Source: BBVA Research, IPUMS & FDIC

19: Note that statistics may not match official statistics given that estimates are based on the 2013 American Community Survey

In terms of how macroeconomic factors influence banking participation, labor market indicators tend to show greater impacts on banking participation than classic macro-level indicators such as GDP per capita, population growth or urban density. For instance, a two percentage point reduction in the unemployment rate is associated with a 1.6 percentage point reduction in the share of unbanked whereas neither per capita GDP nor its growth rate over the last five years have a significant impact (Table 9). Higher labor participation also leads to lower unbanked rates across MSAs. In the case of population, the sign of the coefficient changed depending on the specification. Nevertheless, in most cases it is insignificant.

Table 9
MSA-Level Macroeconomic Impacts Regressions on Being Unbanked

	(1)	(2)	(3)	(4)	(5)
Independent Variables					
gdp_percap[2]	-0.000354				
	(0.000278)				
gdp_percap_yy[2]		-0.000313			
		(0.00287)			
UR[3]			0.784***		
			(0.195)		
part_rate[3]				-0.591***	
				(0.121)	
RBT_5y[4]					0.00577**
					(0.00266)
Constant	0.0898***	0.0748***	0.00856	0.370***	0.0678***
	(0.0145)	(0.00455)	(0.0157)	(0.0629)	(0.00482)
Observations	251	251	251	251	251
Adjusted R-squared	0.002	-0.004	0.089	0.136	0.009

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

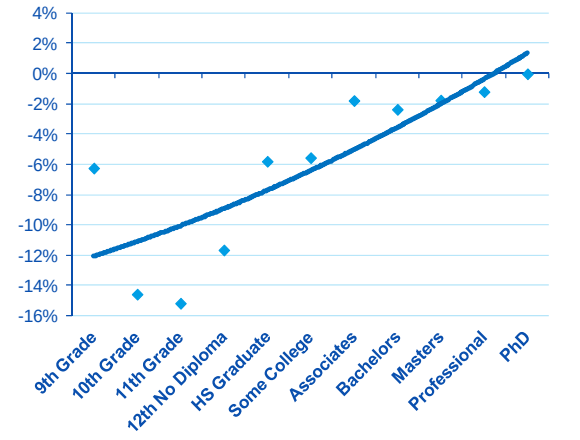
1: Each column represents an independent OLS regression with standard errors in parentheses
2: GDP in 2009$
3: Statistics calculated using individual-level survey data
4: Five-year annualized growth rate (%)
Source: BBVA Research

Education is also a key factor in identifying financial inclusion in the U.S. On average, 38.2 percent of the population has completed some college education, but there are large differences across race and ethnicity (Table 1). For example, 22.5 percent of Hispanics and 33.5 percent of Blacks have completed some college coursework, but for Asians and Whites the share is 52.7 percent and 44.8 percent, respectively (Table 24). However, the larger the size of the MSA the smaller the gap between racial groups. In fact, only cities with greater than one million people have more than 40 percent of their population which has completed some college coursework (Table 23). Income also tends to be a strong determinant in the education gap, as only 25 percent of individuals with less than $22,000 in annual income have attended a tertiary school whereas more than half of the individuals with greater than $87,000 in annual income have some level of higher education (Table 25).

Education and perceptions of the banking sector can also impact participation in formal finance. While there are many indirect and second order effects from education, keeping all else constant, increasing education attainment by one year from high school onwards only reduces the probability of being unbanked by 1.1 percent

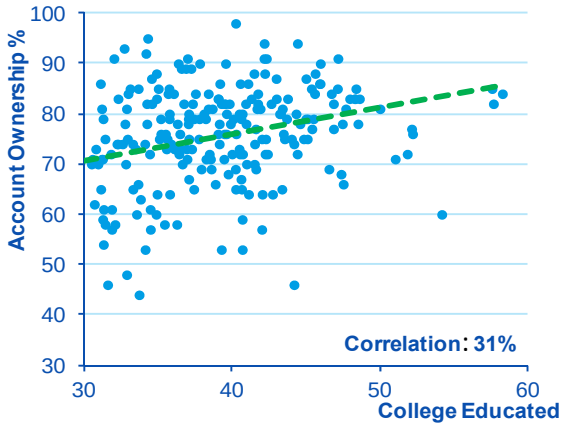
(Table 10). In addition, in terms of post-secondary benefits, an additional year of schooling reduces that probability of being unbanked by 1.2 percent whereas having internet access reduces the probability of being unbanked by 6.4 percent (Table 10). A break point exists between high school graduates and non-graduates, as getting a diploma reduces the probability of being unbanked by significantly more than other major education attainments (4.8 percent) (Chart 13). Even still, these same individuals would be three times less likely to be unbanked just by having internet access.

Chart 13
Impact of Internet Access on Savings by Educational Attainment



Source: BBVA Research

Chart 14
College Educated and Account Ownership (%)



Source: BBVA Research

Not surprisingly, the impact that education has on the probability of being unbanked is more significant for individuals with lower educational attainment. In fact, for those with a bachelor's degree or above the impact is indistinguishable from zero. At the MSA-level, increasing the share of college-educated individuals has a positive impact on financial inclusion, suggesting that increasing overall attainment is positive on the aggregate and that there could be knowledge spillovers from the higher educated to the lower educated. Our regression results show that having a higher share of individuals with some college education reduces the share of unbanked by 3.3 percent, which is the largest marginal impact of any covariate in this regression. Having a higher share of college educated individuals at the MSA-level remains the most important factor under different specifications (Table 4). Like many other institutional factors, education clearly has benefits beyond the individual that needs to be identified in any effective financial inclusion strategy.

In terms of the attachment to the formal financial sector, it appears that, like the unbanked, education influences being a long-term participant (*sticking*) in the formal financial sector. However, the benefits to higher education are less significant in determining attachment to formal finance than decreasing the probability of being unbanked. For instance, increasing attainment from a master's degree to a PhD does not significantly impact the likelihood of being a long-term banking participant whereas increasing each level of high school educational attainment increases the probability of remaining in the formal financial sector by 1.5 percent (Table 9). For savings, the relationship to education is unique in that there is no significant marginal effects for high school educated individuals, but there is a negative marginal effect for increasing from a master's degree to a PhD, and a significant positive effect on having a savings account for those who fall within the range of having a high school diploma but not a post-baccalaureate degree. The disparity could underlie the earning and consumption

differentials across life-cycles, income distribution and debt burdens amongst degree holders. Unlike the relationship with being unbanked, education does not seem to have as far-reaching effects on *sticking* to the financial sector at the MSA level.

Table 10
Restricted Individual-Level Probit Regressions on Impact of Internet Access, Inequality, Race and Age on Being Unbanked by Education Level

	(1)	(2)	(3)	(4)
	All Levels	High School (No Diploma)	High School (Diploma)	College Educated
Independent Variables				
int_access	-0.0741***	-0.139***	-0.109***	-0.0664***
	(0.00151)	(0.00940)	(0.00325)	(0.00147)
relative_inc[2]	-0.0370***	-0.121***	-0.0528***	-0.0300***
	(0.00105)	(0.00815)	(0.00251)	(0.00100)
age	0.00148***	0.00977***	-0.000534	0.000678***
	(0.000261)	(0.00168)	(0.000575)	(0.000249)
agesq[4]	-4.31e-05***	-0.000187***	-4.40e-05***	-2.98e-05***
	(2.75e-06)	(1.73e-05)	(6.00e-06)	(2.64e-06)
black[5]	0.0628***	0.0970***	0.103***	0.0566***
	(0.00151)	(0.0106)	(0.00341)	(0.00146)
education[6]	-0.0186***	0.0167***	-0.0553***	-0.0203***
	(0.000398)	(0.00568)	(0.00582)	(0.000624)
Observations	113,112	6,892	34,091	104,552

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

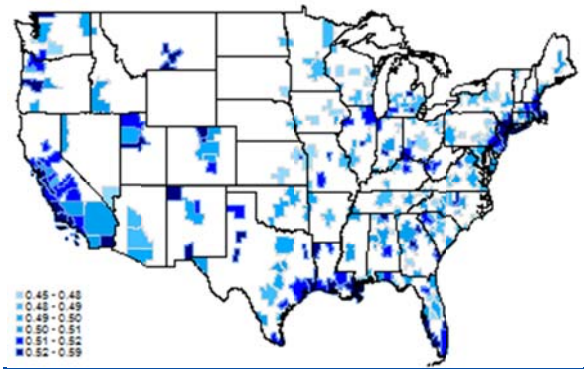
1: Each column represents an independent Probit regression with standard errors in parentheses
2: Ratio of Individuals income to median MSA or non-MSA income
3: Access to internet
4: To incorporate the non-linear affects that age has on financial consumption, included is a squared age coefficient
5: Dummy variable which is equal to 1 if the individual is Black and 0 if not
6: Categorical variable of educational attainment (1=9TH GRADE ; 2=10TH GRADE ; 3= 11TH GRADE; 4=12TH GRADE NO DIPLOMA ; 5=HIGH SCHOOL GRAD-DIPLOMA OR EQUIV (GED) ; 6= SOME COLLEGE BUT NO DEGREE; 7= ASSOCIATES ; 8=BACHELOR'S DEGREE (EX: BA, AB, BS) ; 9=MASTER'S DEGREE (EX: MA, MS, MEng, Med) ; 10=DOCTORATE DEGREE (EX: PhD, EdD)
7: Individual unbanked status; dummy variable that equals 1 if individual is unbanked and 0 if not
Source: BBVA Research

Recent empirical evidence shows that inequality may in fact negatively affect U.S. socioeconomic outcomes.[20] Fundamental to this paper, however, is the question as to whether income inequality, or the distribution of income, influences financial inclusion. Over the past 60 years, as per capita GDP has increased, income inequality measured by the Gini coefficient has also risen from a low of 0.39 in 1968 to 0.48 in 2013.[21] In terms of how inequality is distributed, for MSAs with more than one million people, Las Vegas, NV had the lowest Gini coefficient at 0.47 whereas San Jose, CA had the highest at 0.53 (Map 8). A closer look across MSAs shows the income gap between the 90th percentile and the 10th percentile is large for the smallest and largest MSAs (Table 23).

20: See for example Kopczuk, Saez and Song (2010)
21: See Census Buraeu; http://www.census.gov/hhes/www/income/data/historical/inequality/#

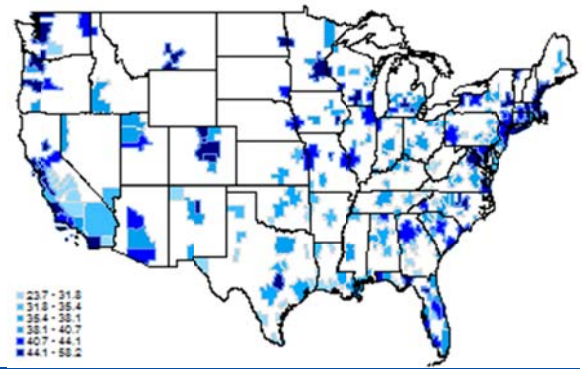
The only region consistent with what is commonly known as the Kuznets curve is the Midwest (Charts 15 to 18), which has the hypothesized U-shaped relationship between economic development and income inequality. This could reflect a more homogeneous industry mix and the fact that income inequality tends to be lower than in other regions.

Map 8
MSA Gini Coefficients



Source: BBVA Research & IPUMS

Map 9
MSA Share of Individuals with Some College (%)



Source: BBVA Research & IPUMS

Based on MSA-level data, we examined how local-level conditions can affect resident's financial outcomes. After controlling for education, race, population size and income, our results show that a five percentage point increase in the Gini coefficient is associated with a 2.5 percentage point increase in the share of unbanked individuals (Table 11). Income, which cross-country studies have shown to impact financial inclusiveness, is highly insignificant. These results suggest that in the U.S., inequality rather than income influences the share of unbanked in an area. These results hold even after controlling for regional effects (Table 11).

In terms of AFS use, it seems that the link between income inequality and AFS use is less direct. In fact, estimating identical regressions with the share of underbanked as the dependent variable, which underlies AFS usage, suggests that neither income nor income inequality impacts AFS use. After controlling for regional effects, the results are even more tenuous (Table 11). Likewise, the impact that income inequality has on being attached to the formal financial sector (long-term banked) is also insignificant. This confirms that AFS fulfill a need regardless of income and inequality and will proliferate when traditional providers are not capable or willing to do so.

Gini Coefficient and GDP per Capita (Kuznets Curve) by Region (Midwest, Northeast, South & West)

Chart 15
Midwest

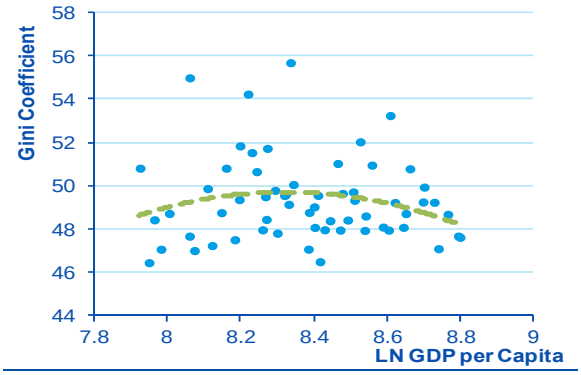


Chart 16
South

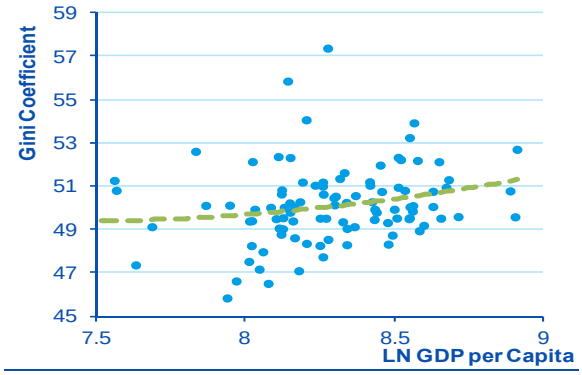


Chart 17
Northeast

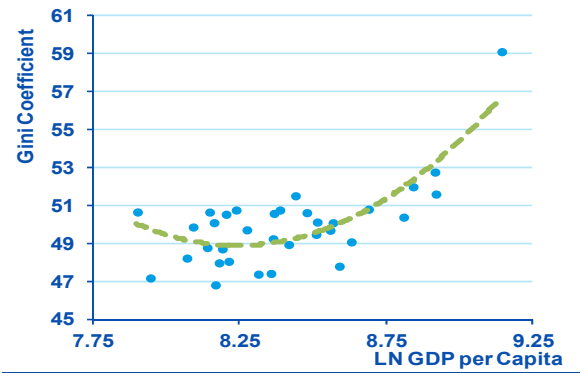
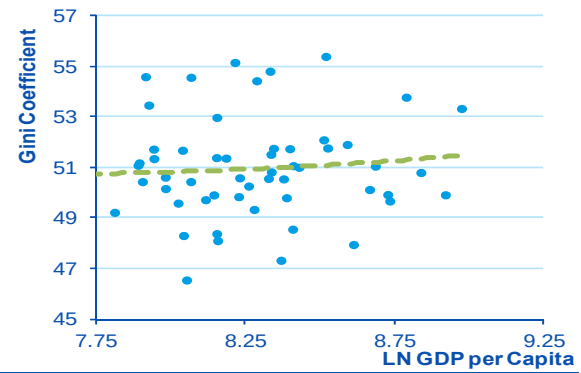


Chart 18
West



Source: BBVA Research, IPUMS, SNL, B.E.A. & Census

Similar to our findings at the MSA-level, gaps in relative income impact individual's financial behavior and the probability of not having a basic deposit account.[22] The regressions show that a 10 percentage point reduction in the relative income of the top half would result in a 1.6 percent increase in the probability of being unbanked whereas a 10 percentage point increase in relative income for the bottom half would reduce the probability of being unbanked by a factor four times greater (6.2 percent) (Table 5). Likewise increasing relative income for the bottom half would increase the probability of remaining in the formal financial sector for over a year (*sticking*) by 5.4 percent and having a savings account by 1.7 percent. For higher relative incomes, a 10 percentage point increase in the relative income could increase the probability of having a savings account by 1.6 percent, but would only have a marginal impact on *sticking* to the financial sector (Table 5). Ultimately, our results show that redistributive policies may not significantly alter savings. However, the impact on financial inclusion could be large, as the benefits to low-income earners are greater than the costs.

22: Relative income at the individual-level measures how far each individuals income is from the median

Table 11
MSA-Level Regressions: Impact of Inequality, Race and Education on Account Ownership and AFS

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dependent Variables	Unbanked	Unbanked	Underbanked	Underbanked	Savings Account	Savings Account	Long-term Banked	Long-term Banked	Number of AFS Used	Number of AFS Used
Independent Variables											
gini_s		0.531***	0.430**	0.119	-0.0609	-1.035***	-0.906***	-0.499	-0.343	0.807	0.432
		(0.194)	(0.195)	(0.270)	(0.270)	(0.241)	(0.256)	(0.312)	(0.298)	(0.868)	(0.943)
some_college[3]		-0.416***	-0.448***	-0.435***	-0.380***	0.143	0.103	0.392***	0.421***	-0.437	-0.518
		(0.0823)	(0.0858)	(0.115)	(0.117)	(0.107)	(0.108)	(0.126)	(0.129)	(0.331)	(0.339)
black[4]		0.144***	0.183***	0.172***	0.132**	-0.0362	0.000850	-0.196***	-0.233***	-0.0337	-0.165
		(0.0374)	(0.0478)	(0.0427)	(0.0547)	(0.0428)	(0.0575)	(0.0488)	(0.0680)	(0.135)	(0.183)
population[5]		3.23e-09***	2.72e-09***	1.61e-10	-2.37e-10	-4.67e-09***	-4.44e-09***	-4.47e-09***	-3.81e-09***	3.86e-09	3.71e-09
		(1.15e-09)	(1.05e-09)	(1.58e-09)	(1.44e-09)	(1.69e-09)	(1.65e-09)	(1.24e-09)	(1.24e-09)	(4.35e-09)	(4.97e-09)
inctot[6]		-7.28e-07	-4.19e-07	-3.40e-07	-4.20e-07	1.65e-06	1.64e-06	1.89e-06	1.49e-06	-2.72e-06	8.10e-07
		(8.57e-07)	(8.58e-07)	(1.32e-06)	(1.34e-06)	(1.16e-06)	(1.20e-06)	(1.32e-06)	(1.37e-06)	(3.85e-06)	(4.01e-06)
2.gereg[7]			-0.000949		-0.0396**		0.0253		0.00644		0.113**
			(0.0108)		(0.0174)		(0.0171)		(0.0160)		(0.0526)
3.gereg[7]			-0.00121		0.00174		-0.00571		-0.00127		0.157***
			(0.0130)		(0.0196)		(0.0157)		(0.0189)		(0.0541)
4.gereg[7]			0.0230**		-0.0103		0.00646		-0.0270*		0.125**
			(0.0114)		(0.0176)		(0.0142)		(0.0144)		(0.0504)
Constant		-0.0283	0.0163	0.300**	0.388***	0.561***	0.502***	0.918***	0.850***	1.189***	1.193***
		(0.0797)	(0.0801)	(0.124)	(0.125)	(0.118)	(0.125)	(0.151)	(0.147)	(0.430)	(0.459)
Observations		251	251	251	251	251	251	251	251	250	250
Adjusted R-squared		0.263	0.273	0.149	0.171	0.071	0.080	0.154	0.158	-0.001	0.017

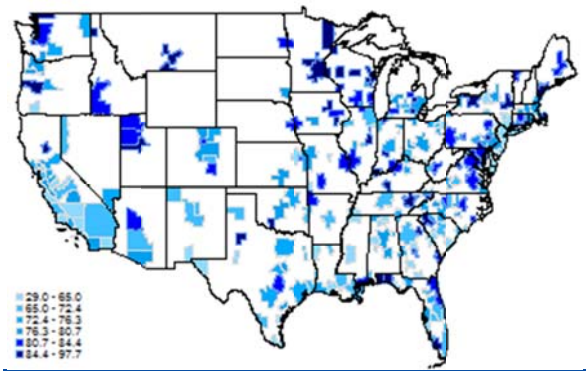
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1: Each column represents an independent OLS regression with standard errors in parentheses
2: MSA-level Gini coefficients are estimated using individual-level data from the ACS
3: Share of individuals with some college coursework completed
4: Share of population represented by each race or ethnicity
5: MSA population estimates were calculated based on individual-level survey estimates
6: Average individual income
7: Region Dummies equal 0 or 1 for the four Census Regions (Northeast, Midwest, South and West)
Source: BBVA Research

3.2.4 Consumer Preferences (Demand-side)

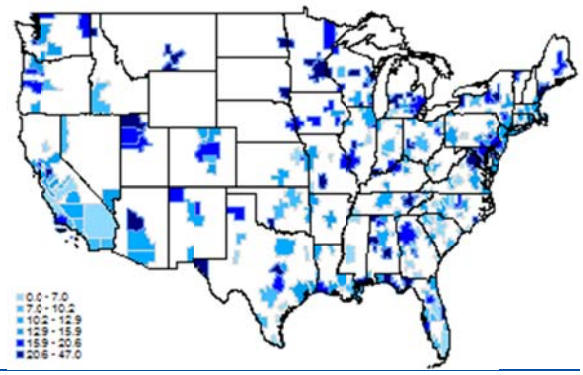
Measuring demand-side conditions, or the willingness to bank, can be done in a variety of ways. In this study, we focus on account penetration, banking preferences, deposit growth and propensity to use various AFS products. For AFS use, 33 percent of the sample used transaction-based products such as money orders, check cashing services or a non-bank money order, while 17 percent used credit-based products, which include pawning, payday loans, rent-to-own or title loans (Table 1). Not surprisingly, a higher use of AFS products is correlated with not having a bank account (Table 29, Appendix 1). In terms of account penetration, on average, 75 percent of individuals in a MSA have some form of deposit account, 70 percent have a checking account and 14 percent have a savings account, while 10 percent have both. In terms of dispersion, the share of individuals across MSAs with basic deposits, checking accounts, savings accounts and both checking and savings ranges from 30 to 98 percent, 29 to 95 percent, zero to 47 percent and zero to 34 percent, respectively.

Map 10
MSA Demand Deposit Account Ownership (%)



Source: BBVA Research & FDIC

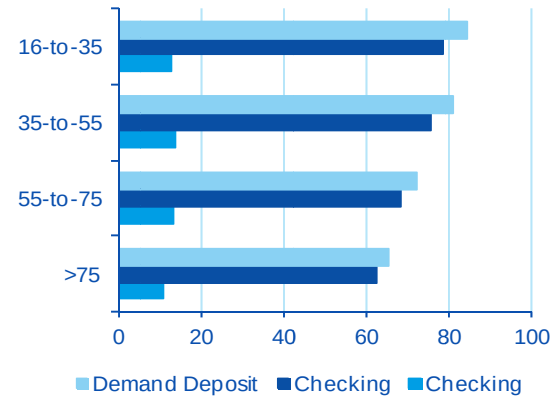
Map 11
MSA Savings Account Ownership (%)



Source: BBVA Research & FDIC

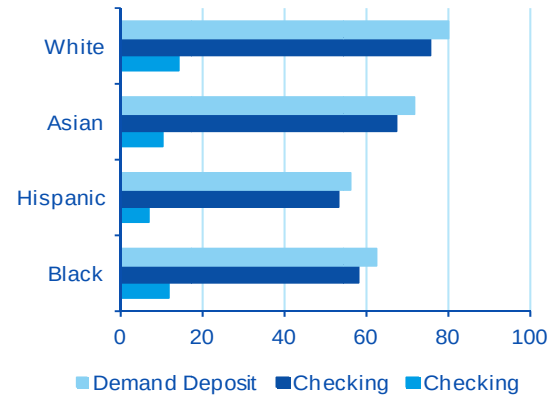
While some MSAs have account ownership rates that rival the most developed nations (>90 percent), there are other MSAs such as Madera, CA and McAllen, TX that have account ownership rates that more closely resemble developing economies (<40 percent). This confirms the existence of large heterogeneities in account ownership and overall inclusiveness across the U.S. despite having high living standards and a well-developed financial sector. Areas that rank low in terms of the number of branches per square mile, such as Naples, FL and Santa Cruz, CA, surprisingly do not use AFS products at higher rates than other MSAs with more far-reaching branch presences. Likewise, MSAs like Little Rock, AR and Las Vegas, NV have higher than average AFS use despite having nearly twice as many branches per square mile than the average MSA. Overall, as discussed previously, the relationship between AFS use and branch penetration is weak.

Chart 19
Account Ownership by Age (Share of Individuals, %)



Source: BBVA Research & FDIC

Chart 20
Account Ownership by Race (Share of Individuals, %)



Source: BBVA Research & FDIC

In terms of AFS use, being Black, having lower educational attainment and being well below the MSA median income increases the probability of being underbanked by 13.7 percent, 2.1 percent and 1.6 percent,

respectively. Likewise, for individuals with less than a high-school diploma, the marginal impact of increasing relative income or boosting educational attainment reduces the propensity to use AFS products (Table 5).

In order to better understand AFS usage and frequency, we estimate an order Logit regression, for which the dependent variable is frequency of AFS use, based on a standard specification, where the probability *Pr* of a given observation is:

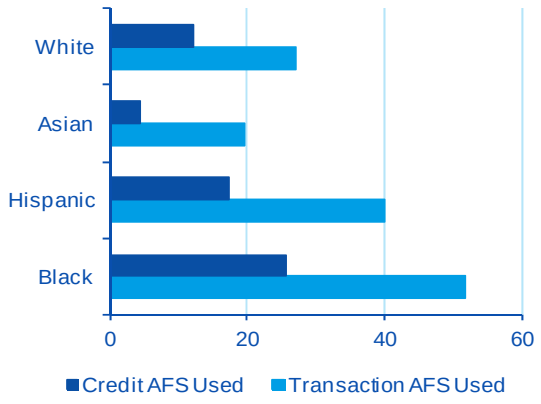
$$\Pr(AFS\ Use_j = i) = \Pr(k_{i-1} < \beta_{1x1j} + \beta_{2x2j} \ldots . + \beta_{kxkj} + u_j \leq k_i) \quad (2)$$

Where the dependent variable ($AFS\ Use_j$) is number of AFS products used and *i* is a discrete variable ranging from zero to three. The difference between zero and one captures usage, while more than one should capture frequency or intensity of usage (0=no AFS use, 1=one product, 2=two products, 3=three or more products). Vector $\mathbf{X}_i$ includes the exogenous variables, β is the estimated coefficient, k_i is the observed usage and u_j is an error term. The ordered logistic takes the functional form:

$$\Pr(AFS\ Use_j = i) = \frac{1}{1+\exp(-k_i+\mathbf{X}_i\beta)} - \frac{1}{1+\exp(-k_{i-1}+\mathbf{X}_i\beta)} \quad (3)$$

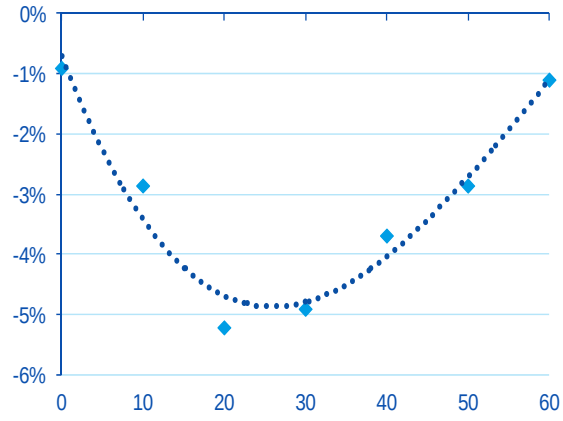
Across the intensive and extensive margins, increasing relative income, internet access and race have disparate effects on AFS usage and intensity. Overall, higher relative income and education levels reduces the probability of using AFS by 1.9 percent and two percent, respectively. In terms of race, both Blacks and Hispanics are five percent and 1.7 percent more likely to use AFS products while Whites and Asians are 6.4 percent and 10.1 percent less likely. In terms of the intensive margins, in all cases, the marginal impact diminishes when moving from using one product to multiple products, but the direction of the impact remains the same. In other words, factors do not increase the intensive marginal as much as the extensive margin. This suggests incremental use of AFS products (Tables 12 & 13).

Chart 21
AFS Credit and Transactions Use by Race (Share of Individuals, %)



Source: BBVA Research & FDIC

Chart 22
Impact that Increasing Relative Income Has on Multiple AFS Use by Income Decile (% Impact & Income Distribution)



Source: BBVA Research

Table 12

Individual-Level Ordered Logit Regressions on the Impact that Internet Access, Inequality, Race and Age Have on Multiple AFS Use

	(1) One use AFS	(2) Two uses AFS	(3) Three uses AFS
Independent Variables			
relative_inc[2]	-0.0189***	-0.00736***	-0.00304***
	(0.00103)	(0.000418)	(0.000186)
int_access[3]	0.0692***	0.0270***	0.0112***
	(0.00240)	(0.00100)	(0.000477)
age	0.00188***	0.000732***	0.000303***
	(0.000316)	(0.000124)	(5.16e-05)
agesq[4]	-4.55e-05***	-1.77e-05***	-7.34e-06***
	(3.20e-06)	(1.28e-06)	(5.53e-07)
black[5]	0.0502***	0.0196***	0.00811***
	(0.00535)	(0.00210)	(0.000893)
hispanic[6]	0.0167***	0.00653***	0.00270***
	(0.00539)	(0.00211)	(0.000872)
white[7]	-0.0639***	-0.0250***	-0.0103***
	(0.00535)	(0.00213)	(0.000899)
asian[8]	-0.101***	-0.0395***	-0.0163***
	(0.00686)	(0.00275)	(0.00118)
education[9]	-0.0201***	-0.00785***	-0.00325***
	(0.000498)	(0.000228)	(0.000118)
Observations	92,164	92,164	92,164

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1: Each column represents the results from a single Ordered Logit regression with standard errors in parentheses
2: Ratio of individuals income to median MSA or non-MSA income
3: Access to internet
4: To incorporate the non-linear affects that age has on financial consumption, included is a squared age coefficient
5: Dummy variable for which is equal to 1 if the individual is Black and 0 if not
6: Dummy variable for which is equal to 1 if the individual is Hispanic and 0 if not
7: Dummy variable for which is equal to 1 if the individual is White and 0 if not
8: Dummy variable for which is equal to 1 if the individual is Asian and 0 if not
9: Categorical variable of educational attainment (1=9TH GRADE ; 2=10TH GRADE ; 3= 11TH GRADE; 4=12TH GRADE NO DIPLOMA ; 5=HIGH SCHOOL GRAD-DIPLOMA OR EQUIV (GED) ; 6= SOME COLLEGE BUT NO DEGREE; 7= ASSOCIATES ; 8=BACHELOR'S DEGREE (EX: BA, AB, BS) ; 9=MASTER'S DEGREE (EX: MA, MS, MEng, Med) ; 10=DOCTORATE DEGREE (EX: PhD, EdD)
10: Individual AFS use status; dummy variable that equals 1 if individual has used AFS product in last 12 months and 0 if not
Source: BBVA Research

Table 13

Individual-level Ordered Logit Regressions on the Impact that Internet Access, Inequality, Race, Age and Account Ownership Have on Multiple AFS Use

	(1) One use AFS	(2) Two uses AFS	(3) Three uses AFS
Independent Variables			
dd_act[11]	0.00863	-0.00558	-0.00305
	(0.00682)	(0.00441)	(0.00241)
relative_inc[3]	0.0355***	-0.0229***	-0.0125***
	(0.00366)	(0.00236)	(0.00134)
int_access[4]	-0.0256***	0.0165***	0.00904***
	(0.00867)	(0.00560)	(0.00307)
age	-0.00655***	0.00423***	0.00231***
	(0.00124)	(0.000801)	(0.000443)
agesq[5]	0.000118***	-7.66e-05***	-4.19e-05***
	(1.37e-05)	(8.81e-06)	(4.97e-06)
black[6]	-0.0900***	0.0582***	0.0318***
	(0.00655)	(0.00420)	(0.00249)
education	0.0291***	-0.0188***	-0.0103***
	(0.00172)	(0.00111)	(0.000660)
Observations	21,868	21,868	21,868

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1: Each column represents the results from a single Ordered Logit regression with standard errors in parentheses
2: Dummy variable which is equal to 1 if the individual has a demand deposit account and 0 if not
3: Ratio of individuals income to median MSA or non-MSA income
4: Access to internet
5: To incorporate the non-linear affects that age has on financial consumption, included is a squared age coefficient
6: Dummy variable for which is equal to 1 if the individual is Black and 0 if not
7: Categorical variable of educational attainment (1=9TH GRADE ; 2=10TH GRADE ; 3= 11TH GRADE; 4=12TH GRADE NO DIPLOMA ; 5=HIGH SCHOOL GRAD-DIPLOMA OR EQUIV (GED) ; 6= SOME COLLEGE BUT NO DEGREE; 7= ASSOCIATES ; 8=BACHELOR'S DEGREE (EX: BA, AB, BS) ; 9=MASTER'S DEGREE (EX: MA, MS, MEng, Med) ; 10=DOCTORATE DEGREE (EX: PhD, EdD)
8: AFS intensity is measured by categorical variable (0=no AFS products used; 1= one product used; 2= two products used; 3= three of more products)
Source: BBVA Research

On savings, inequality is the most important determinant. Neither branches per capita, the income gap between the 90th percentile and 10th percentile, GDP per capita, annual GDP per capita growth over the last five years, participation rate nor the unemployment rate, explains savings account penetrations at the MSA-level. Not surprisingly, we find that growth in aggregate savings balances positively and significantly impacts the share of individuals to reportedly have a savings account (Table 14). Positive spillover effects from savings account

ownership in MSAs with strong savings culture, network effects or regional spillovers from asset growth price and income to savings could underlie this result.

Table 14
MSA-Level Regressions on Impact that Inequality, Race, Age and Account Ownership Has on Savings

	(1)	(2)	(3)	(4)	(5)	(6)
Independent Variables						
gini_s[7]	-1.035***					
	(0.241)					
some_college[2]	0.143	0.0634	0.0683	0.118	0.0635	0.0771
	(0.107)	(0.125)	(0.115)	(0.118)	(0.118)	(0.118)
black[3]	-0.0362	-0.0295	-0.0445	-0.0428	-0.0380	-0.0391
	(0.0428)	(0.0424)	(0.0437)	(0.0437)	(0.0431)	(0.0439)
population[8]	-4.67e-09***	-3.78e-09***	-4.11e-09***	-4.21e-09***	-2.39e-09*	-4.23e-09***
	(1.69e-09)	(1.44e-09)	(1.51e-09)	(1.54e-09)	(1.36e-09)	(1.57e-09)
inctot[6]	1.65e-06	7.92e-07	1.16e-06	1.05e-06	1.29e-06	1.05e-06
	(1.16e-06)	(1.17e-06)	(1.21e-06)	(1.22e-06)	(1.21e-06)	(1.22e-06)
UR[10]		-0.206				
		(0.256)				
gdp_percap_5y[9,11]			-0.00292			
			(0.00405)			
ratio90_10[12]				-0.00130		
				(0.000901)		
savings_products_tot_yy[13]					0.00173***	
					(0.000599)	
branches_per_cap[14]						-15.40
						(68.60)
Constant	0.561***	0.116**	0.0877***	0.0931***	0.0639**	0.0905**
	(0.118)	(0.0469)	(0.0309)	(0.0309)	(0.0300)	(0.0364)
Observations	251	251	251	251	251	251
Adjusted R-squared	0.071	0.008	0.006	0.013	0.047	0.004

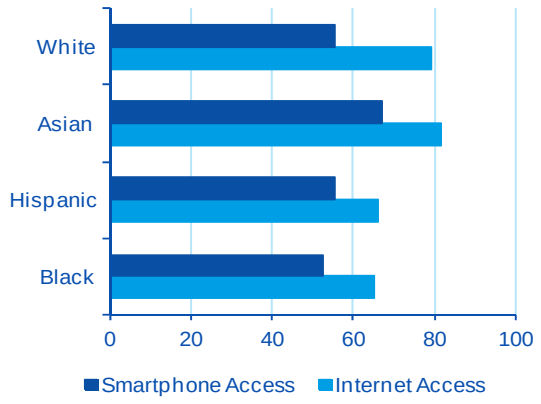
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1: Each column represents an independent OLS regression with standard errors in parentheses
2: Share of individuals with some college coursework completed
3: Share of population represented by each race or ethnicity
4: Share of individuals who immigrated from a IMF designated emerging market country
5: Share of individuals self-identified as non-citizens
6: Average individual income
7: MSA-level Gini Coefficients are estimated using individual-level data from the ACS
8: MSA population estimates were calculated based on individual-level survey estimates
9: GDP in 2009$
10: Statistics calculated using individual-level survey data
11: Five-year annualized growth rate (%)
12: Ratio of income levels in top ten percent of the income distribution to bottom ten percent of the income distribution
13: Growth in MSA-level savings deposits
14: Branches per capita based on SNL Branch-level data and individual-level population estimates
15: Share of individuals with a savings account is dependent variable In all regressions
Source: BBVA Research

3.2.5 Technology

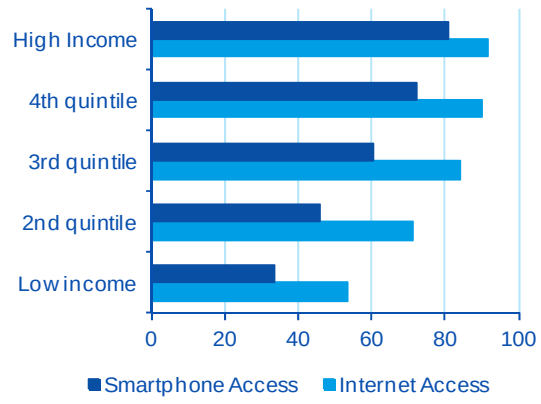
To have a better understanding of how the rapid pace of financial disruption impacts financial inclusion, we include proxies for technology. The availability of the data was limited at the MSA-level, but aggregated individual measures of internet, mobile and computer access, digital preferences as well as low-income technology penetration are incorporated. In the sample, 82 percent of individuals have internet and computer access, 46 percent have mobile access and 55 percent have smartphone access. Excluding mobile, these variables show a strong correlation to being unbanked and slightly less so to being underbanked. For digital usage, 50 percent of the sample has access to digital accounts while 20 percent have used a digital banking product (Table 30, Appendix 1). Like account penetration, the dispersion of digital usage and access is significant, as the distribution spans from eight to 84 percent for digital access and zero to 45 percent for digital usage. As expected, only 64% of low-income individuals have less access to computers and internet. However, for these low-income individuals, digital account access (60 percent) is higher than the national average (Chart 24), and even MSAs with limited digital account access have at least 29 percent of individuals with access to digital banking products. This may reflect that younger individuals who are digital natives account for a greater share of the low-income group. [23]

Chart 23
Internet and Smartphone Access by Race (Share of Individuals, %)



Source: BBVA Research, FDIC & IPUMS

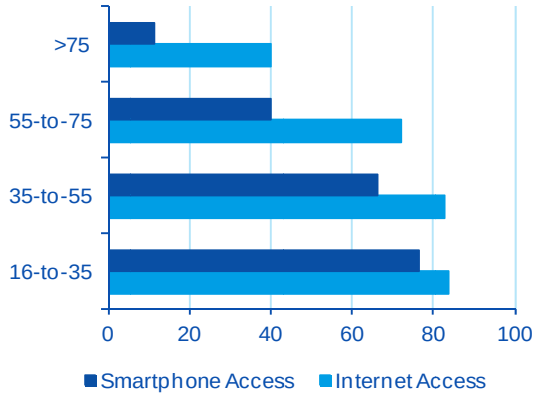
Chart 24
Internet and Smartphone Access by Income (Share of Individuals, %)



Source: BBVA Research, FDIC & IPUMS

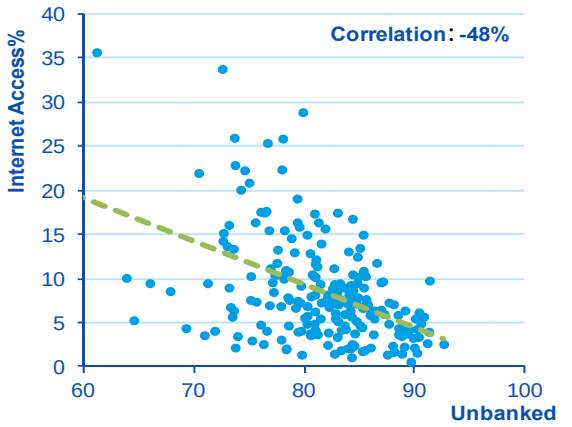
23: See Federal Reserve (2015)

Chart 25
Internet and Smartphone Access by Age (Share of Individuals, %)



Source: BBVA Research, FDIC & IPUMS

Chart 26
Internet Access and Unbanked (Share of Individuals in MSA, %)

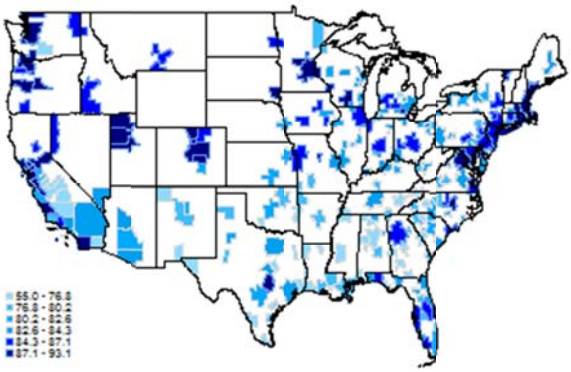


Source: BBVA Research & IPUMS

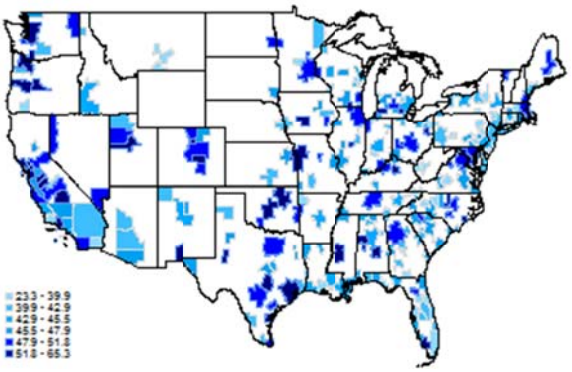
Regarding the distribution of technology, despite the U.S. ranking near or above most developed countries at the aggregate level, some MSAs are more similar to the most developed countries whereas other MSAs would rank closer to middle- and low-income countries.[24] For example, average internet penetration in the top ten MSAs is 91.5, which would be similar to countries with the highest internet penetration. Conversely, for the bottom 10 MSAs average penetration is 66 percent, which would be 50 percent above the world's median. For mobile access, the average for the top MSAs is 59 percent whereas for the bottom MSAs the average is 31 percent.[25] This compares to a world average of around 49.9 percent (Maps 12 to 15).[26]

MSA Access to Technology & Use (Internet, Mobile, Digital Account & Digital Account Use)

Map 12
Internet Access (%)

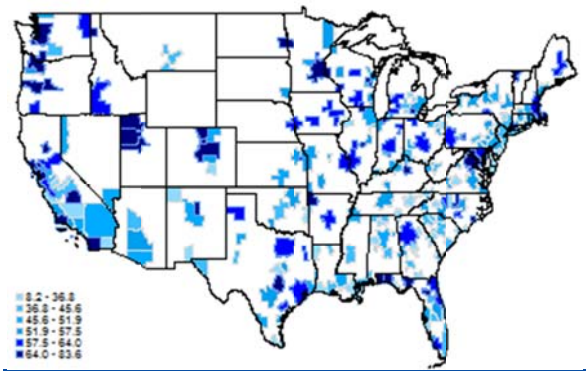


Map 13
Mobile Access (%)

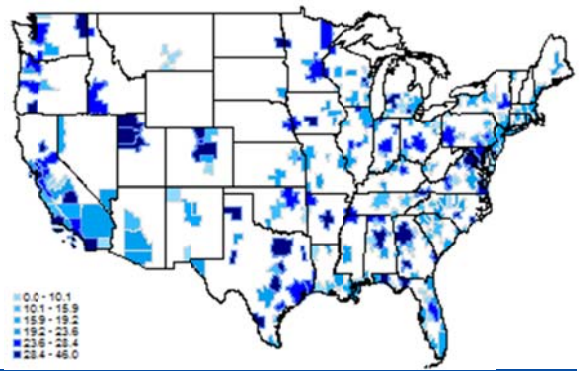


24: For more details see World Development Indicators http://data.worldbank.org/data-catalog/world-development-indicators
25: Lawrence, KS ; Bremerton-Silverdale, WA ; Boulder, CO ; Colorado Springs, CO ; Bridgeport-Stamford-Norwalk, CT
26: For more details see http://www.gsma.com

Map 14
Digital Account Access (%)



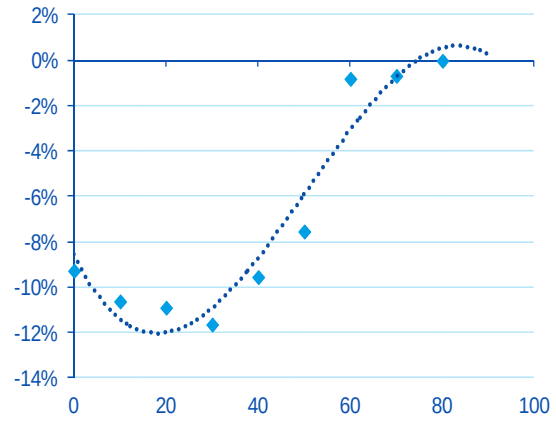
Map 15
Digital Account Use (%)



Source: BBVA Research, IPUMS, FDIC & Census

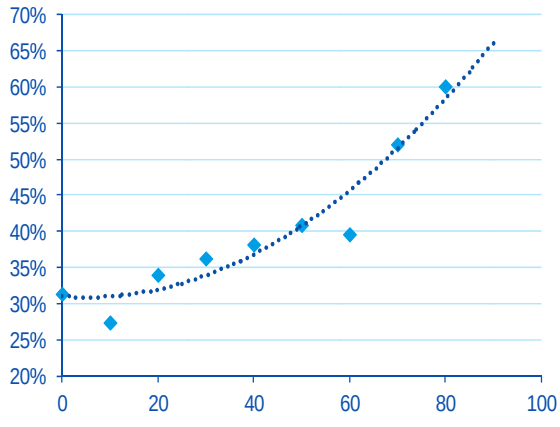
Our results show that technology in the U.S. is a strong determinant of financial inclusion and can greatly reduce the probability of being unbanked and possibly increase the probability of remaining in the traditional financial sector. However, the relationship between internet access, income and the probability of being unbanked is not symmetric (Table 5). Giving internet access to individuals well below the poverty line could reduce the probability of not having an account by 9.8 percent whereas for the entire population the impact of having internet is 7.1 percent (Table 5). Underlying the relationship of internet access, income and being unbanked is an S-shape (Chart 27). In other words, for low-income individuals, having internet access greatly reduces the probability of being unbanked, but the benefit diminishes quickly for the middle income group and is effectively zero for the highest income earners. However, unlike the probability of being unbanked, which is greatly reduced by access to technology, the probability of using AFS increases with internet access (Table 5).

Chart 27
Impact that Internet Access Has on Being Unbanked by Income Decile (% Impact & Income Distribution)



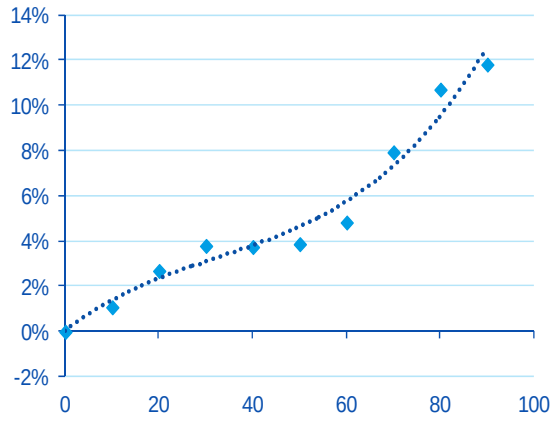
Source: BBVA Research

Chart 28
Impact that Internet Access Has on Individual's *Stickiness* by Income Decile (% Impact & Income Distribution)



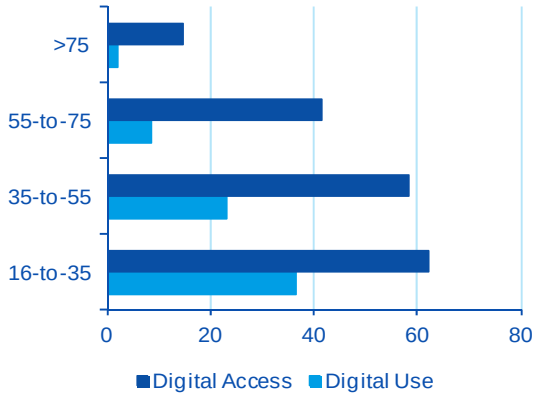
Source: BBVA Research

Chart 29
Impact that Internet Access Has on Savings by Income Decile
(% Impact & Income Distribution)



Source: BBVA Research

Chart 30
Digital Use by Age
(Share of Individuals, %)



Source: BBVA Research & FDIC

Regarding the probability of remaining in the traditional financial sector, having internet access has a positive impact across all groups, but is larger for the high-income group than for low-income earners (Chart 28). Even though middle income earners are not the main beneficiaries in either case, internet access nontrivially impacts both the probability of being unbanked and *sticking* to the formal financial sector. This could reflect greater access to mobile banking and digital platforms (Table 5).

Mobile and smartphone access paints a similar picture to the internet; greater access to technology leads to unquestionable increases in the chances of having a bank account. Specifically, each smartphone or mobile phone given to a low-income individual could reduce the probability of being unbanked by 6.3 percent and 6.4 percent, respectively (Table 15). Similarly, mobile and smartphone access increases the probability of being underbanked by 10.3 percent and 5.8 percent, respectively (Table 16).

Table 15

Restricted Individual-Level Probit Regressions on the Impact Smartphone Access Has on Being Unbanked by Income

	(1)	(2)	(3)
	Unrestricted	Low Income	Low Income
Independent Variables			
relative_inc[2]	-0.0372***	-0.0456***	-0.0486***
	(0.00107)	(0.00291)	(0.00294)
smartphone[3]	-0.0597***	-0.0805***	
	(0.00155)	(0.00261)	
age	0.000428	0.000778*	0.00212***
	(0.000270)	(0.000430)	(0.000423)
agesq[4]	-3.39e-05***	-5.00e-05***	-5.92e-05***
	(2.84e-06)	(4.44e-06)	(4.39e-06)
black[5]	0.0695***	0.105***	0.106***
	(0.00152)	(0.00248)	(0.00249)
education[6]	-0.0207***	-0.0270***	-0.0292***
	(0.000400)	(0.000651)	(0.000646)
mobile_phone			-0.0652***
			(0.00271)
Observations	113,112	59,153	59,153

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1: Each column represents an independent Probit regression with standard errors in parentheses
2: Ratio of individuals income to median MSA or non-MSA income
3: Access to smartphone (FDIC Underbanked Survey)
4: Access to mobile phone (American Community Survey)
4: To incorporate the non-linear affects that age has on financial consumption, included is a squared age coefficient
5: Dummy variable which is equal to 1 if the individual is Black and 0 if not
6: Categorical variable of educational attainment (1=9TH GRADE ; 2=10TH GRADE ; 3= 11TH GRADE; 4=12TH GRADE NO DIPLOMA ; 5=HIGH SCHOOL GRAD-DIPLOMA OR EQUIV (GED) ; 6= SOME COLLEGE BUT NO DEGREE; 7= ASSOCIATES ; 8=BACHELOR'S DEGREE (EX: BA, AB, BS) ; 9=MASTER'S DEGREE (EX: MA, MS, MEng, Med) ; 10=DOCTORATE DEGREE (EX: PhD, EdD)
7: Individual unbanked status; dummy variable that equals 1 if individual is unbanked and 0 if not
Source: BBVA Research

Table 16

Individual-Level Probit Regressions on the Impact of Internet Access, Inequality, Race and Age on AFS Use

	(1)	(2)	(3)	(4)	(5)	(6)
	Unrestricted	Low Income	High School Diploma or Lower	Unrestricted	Unrestricted	Unrestricted
Independent Variables						
relative_inc[2]	-0.0160***	0.0313***	-0.0142***	-0.0158***	-0.0174***	-0.0194***
	(0.00138)	(0.00400)	(0.00275)	(0.00138)	(0.00140)	(0.00139)
int access[3]	0.0816***	0.0728***	0.0740***			0.0676***
	(0.00313)	(0.00376)	(0.00455)			(0.00321)
age	0.00222***	0.00348***	0.00441***	0.00235***	0.00319***	0.00242***
	(0.000430)	(0.000532)	(0.000695)	(0.000429)	(0.000426)	(0.000430)
agesq[6]	-5.34e-05***	-6.26e-05***	-7.51e-05***	-5.43e-05***	-6.11e-05***	-6.00e-05***
	(4.30e-06)	(5.16e-06)	(6.83e-06)	(4.30e-06)	(4.27e-06)	(4.32e-06)
black[7]	0.119***	0.0857***	0.0804***	0.114***	0.112***	0.123***
	(0.00311)	(0.00418)	(0.00525)	(0.00309)	(0.00309)	(0.00309)
education[8]	-0.0217***	-0.0179***	-0.0167***	-0.0199***	-0.0203***	-0.0241***
	(0.000675)	(0.000907)	(0.00178)	(0.000661)	(0.000672)	(0.000681)
mobile_phone[5]				0.119***		
				(0.00364)		
smartphone[4]					0.0576***	
					(0.00265)	
dd_act[9]						0.0730***
						(0.00298)
Observations	113,112	59,153	40,983	113,112	113,112	113,112

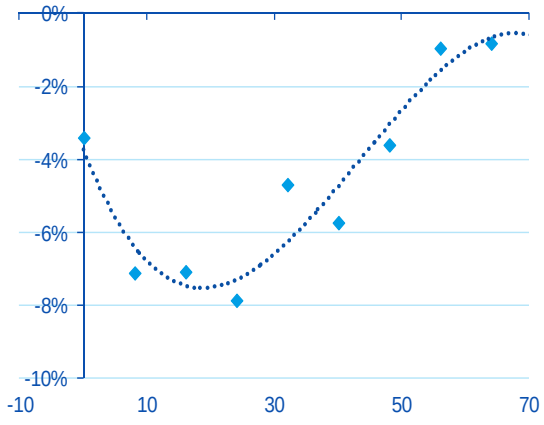
Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1: Each column represents an independent Probit regression with standard errors in parentheses
2: Ratio of Individuals income to median MSA or non-MSA income
3: Access to internet
4: Access to smartphone (FDIC Underbanked Survey)
5: Access to mobile phone (American Community Survey)
6: To incorporate the non-linear affects that age has on financial consumption, included is a squared age coefficient
7: Dummy variable which is equal to 1 if the individual is Black and 0 if not
8: Categorical variable of educational attainment (1=9TH GRADE ; 2=10TH GRADE ; 3= 11TH GRADE; 4=12TH GRADE NO DIPLOMA ; 5=HIGH SCHOOL GRAD-DIPLOMA OR EQUIV (GED) ; 6= SOME COLLEGE BUT NO DEGREE; 7= ASSOCIATES ; 8=BACHELOR'S DEGREE (EX: BA, AB, BS) ; 9=MASTER'S DEGREE (EX: MA, MS, MEng, Med) ; 10=DOCTORATE DEGREE (EX: PhD, EdD)
9: Dummy variable which is equal to 1 if the individual has a demand deposit account and 0 if not
10: Individual AFS use status; dummy variable that equals 1 if individual has used AFS product in last 12 months and 0 if not
Source: BBVA Research

Given this evidence, linking technology with financial inclusion, it would seem that internet access could provide a more even economic foundation for low-income individuals and for the socioeconomically disadvantaged, which could have even greater effects on financial inclusion. In fact, in 1995, research from the National Telecommunications and Information Administration revealed that "many of the groups that are most disadvantaged in terms of absolute computer and modem penetration are the most enthusiastic users of on-line services that facilitate economic uplift and empowerment." In 2013, a similar report suggested that "despite the tendency most have developed for accessing the internet from home, approximately 30 percent of the 119

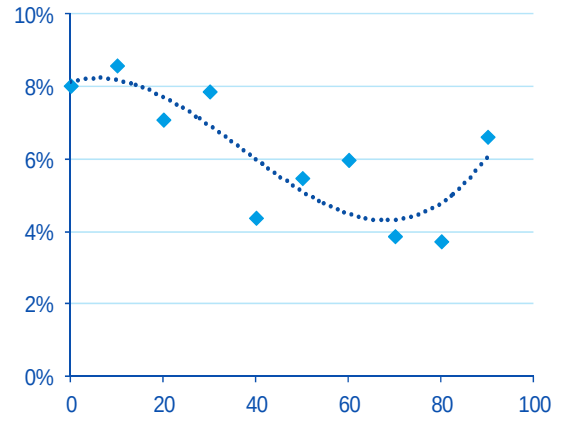
million households represented in the CPS did not use the internet at home, which contributed to the persistence of the digital divide."[27]

Chart 31
Impact Smartphone Access Has on Being Unbanked by Income Decile (% Impact & Income Distribution)



Source: BBVA Research

Chart 32
Impact Internet Access Has on Being Underbanked by Income Decile (% Impact & Income Distribution)



Source: BBVA Research

In 2012, the government launched a program to provide subsidized basic mobile and smartphone services to low-income individuals.[28] With this program and the organic increase in low-income mobile and smartphone usage, there is ample opportunity for a smartphone-based policy. According to the OECD, the U.S. ranked as the 12th highest among 34 countries in broadband prices per megabit per second of advertised speed. In addition, for a fixed broadband basket of high speed (54 GB/90 hours per month - 45 Mbit/s and above), the U.S. ranked as the 4th most expensive country among 34 nations. This implies that costs in the U.S. are almost twice as those in the Nordic countries where 100 percent of the adult population had a bank account.[29]

Given how important technology is in reducing financial inclusion, it would seem obvious that increasing access to mobile and internet would be highly beneficial. As mobile access for low-income individuals is nearly twice that of smartphones, it seems that a mobile and not a smartphone-centric strategy could maximize existing infrastructure and tools. Over the long-run, banks, through cost-effective and accessible app-based strategies, could target low-income groups via smartphones and digital channels.

27: See National Telecommunications and Information Administration (1995 & 2013)
28: https://www.fcc.gov/encyclopedia/low-income-broadband-pilot-program
29: See the World Bank (2014)

4 Financial Inclusion Metropolitan Index: A Multi-Dimensional Approach

4.1 Model Overview

In the previous section, we discussed the main determinants of financial inclusion, using what to our knowledge represents the first attempt to construct a multi-sourced financial inclusion dataset based on micro-level data and aggregate MSA-level indicators. With the comprehensive database in hand and an understanding of the determinants of financial inclusion, the next step is to map financial inclusion in order to enrich the understanding at the individual-level with a relative ranking of MSA financial inclusiveness. This ranking and multi-step estimation will allow us to identify areas that are less inclusive, and determine what factors are behind the lack of inclusion. Using Principal Component Analysis (PCA) is an efficient and straightforward way to deal with the scope of the dataset and minimize potential bias from underlying correlation amongst covariates. This approach results in a MSA-level indicator of financial inclusion that we refer to as the Financial Inclusion Metropolitan Index (FIMI).[30]

Although it is possible to estimate the principal components in one stage with the entire set of variables, the large number of observations and the possibility of having a strong underlying relationship between explanatory factors supported the use of a two-stage PCA approach. The two-stage estimation reduces the probability of including redundant variables or factors, which would reduce the likelihood that the estimates are properly identifying the latent factor. Simply, high levels of correlation amongst explanatory variables or factors can lead to biased estimates. Components are ordered in terms of relative importance, implying that the first component explains the greatest amount of variation whereas the last component explains the least amount of variation.

In addition to the empirical underpinnings for a two-stage estimate of financial inclusion (Mishra, 2007), disaggregating the index has practical value. Creating the components provides an intuitive framework for drawing conclusions about the determinants of financial inclusion. These factors provide a better understanding of the relative importance of the five determinants of financial inclusion, which can enhance policy responses. For example, knowing whether consumer demand is the underlying factor contributing to the low level of financial inclusion rather than insufficient technology or insufficient supply of financial services allows for targeted solutions. This would improve the probability of successfully reducing financial inclusion in highly distressed areas and among marginalized groups.

The model is linearly determined by five factors: *Demographics*, *Financial Sector Development (Supply-side)*, *Macroeconomic Foundations (Development and Inclusion), Consumer Preferences (Demand-side) and Technology,* that were selected based on our findings in section 3. Each component relates to overall financial inclusion (FI_i):

$$FI_i = \omega_1 Y_i^{Dem} + \omega_2 Y_i^{Fin} + \omega_3 Y_i^{Devel} + \omega_4 Y_i^{Pref} + \omega_5 Y_i^{Tech} + \epsilon_i \qquad (4)$$

by a weight (ω); taken together, these components are designed to explain total financial inclusiveness in a given area (*i*). The geographic component (*i*) denotes each of the 251 MSAs estimated in the sample. Each

30: For more information on PCA see for example I.T. Jolliffe (2002).

weight is a function of the underlying factors Y^n where *n* refers to each of the five factors: $Y_j^{Dem}, Y_j^{Fin}, Y_j^{Devel}$, Y_j^{Pref}, Y_j^{Tech}.

$$Y_j^{Dem} = \frac{\lambda_{1j} P_1^{Dem} + \cdots + \lambda_{ij} P_{ij}^{Dem}}{\lambda_{1j} + \cdots + \lambda_{ij}} \quad (5)$$

$$Y_j^{Fin} = \frac{\lambda_{i1} P_1^{Fin} + \cdots + \lambda_{ij} P_{ij}^{Fin}}{\lambda_{1j} + \cdots + \lambda_{ij}} \quad (6)$$

$$Y_j^{Devel} = \frac{\lambda_{i1} P_1^{Devel} + \cdots + \lambda_{ij} P_{ij}^{Devel}}{\lambda_{1j} + \cdots + \lambda_{ij}} \quad (7)$$

$$Y_j^{Pref} = \frac{\lambda_{i1} P_1^{Pref} + \cdots + \lambda_{ij} P_{ij}^{Pref}}{\lambda_{1j} + \cdots + \lambda_{ij}} \quad (8)$$

$$Y_j^{Tech} = \frac{\lambda_{i1} P_1^{Tech} + \cdots + \lambda_{ij} P_{ij}^{Tech}}{\lambda_{1j} + \cdots + \lambda_{ij}} \quad (9)$$

In the first stage, the eigenvalues (λ) for each component are estimated using a reduced set of explanatory values. Although there is precedent for retaining all the components for the second stage, we exclude components that do not explain a significant portion of the overall variance or show little correlation with survey-based measures of financial inclusion or exclusion to ensure consistency between the final estimate and our definition of financial inclusion. The final index includes three of the 10 demographic components, four of 15 financial components, three of 16 economic development components, four of 19 for consumer preference components and two of 15 for the technology component.

The process to identify financial inclusion in the second stage follows the same methodology as the first stage. The 16 components, retained from the first-stage estimates, are re-estimated. Similar to the first stage, only the principal components that explain a significant portion of the variation are retained for the final index. The five retained components are weighted based on the reduced set of overall variation explained by these principal components. In descending order of importance, these factors should entirely explain financial inclusion in a given MSA. Equation 10 shows the final index:

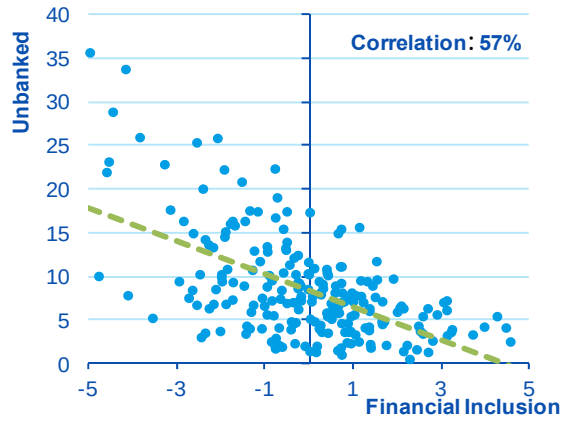
$$FI_i = \frac{\lambda_{dem1} P_1^{Dem} + \cdots + \lambda_{techi} P_i^{Tech}}{\lambda dem_1 + \cdots + \lambda tech_i} \quad (10)$$

where P_i represents the i^{th} principal component from the first stage.

As a robustness check, we replicated this processes for three financial inclusion proxies: unbanked, long-term banked and both. While the complete set of variables is different in each case, some key variables remain the same in all three instances. (See Tables 31 & 32 for results, Appendix 2)

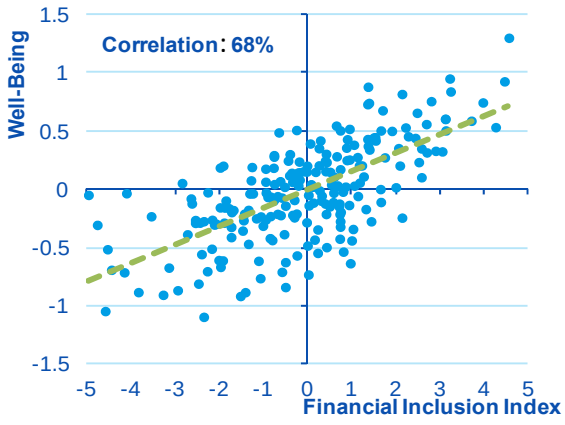
4.2 Results

Chart 33
Financial Inclusion Metropolitan Index (FIMI) & Unbanked (Share of Individuals in MSA (%) & FIMI)



Source: BBVA Research & FDIC

Chart 34
Financial Inclusion Metropolitan Index (FIMI) & Unbanked (Normalized Index of Economic *Well-Being* Indicators & FIMI)



Source: BBVA Research & FDIC

Our results confirm that of the five factors—*Demographics*, *Financial Sector Development*, *Macroeconomic Foundations, Consumer Preferences and Technology*—technology contributes the most to financial inclusion (See Table 17). The greatest contributors to this component are access to internet, computer, low-income mobile phones and digital accounts, as well as use of digital financial products. MSAs that have strong demographic factors such as high home ownership and marriage rates, a livable wage, college education and smaller families have higher than average inclusion scores. In terms of the macro-environment, share of population with post-secondary education, health insurance coverage, foundation of strong labor market certainty,[31] higher than average per capita GDP growth and a manageable urban model[32] were associated with higher financial inclusion. Although financial sector development was not among the most important factors, access to basic credit products does have a large impact on financial inclusion. In addition, demand for financial products was the least important contributor to FIMI. In total, technology, demographics and macroeconomic development explain more than three-fourths of the first component of FIMI.[33]

31: For example, low unemployment and support ratio (working age population/population 65+)
32: For example, persons per square mile and average vehicle miles driven
33: Results from the PCA estimation are presented in Table 21

Table 17
PCA Results for Final Estimation of Financial Inclusion Metropolitan Index (FIMI)

	Comp1	Comp2	Comp3	Comp4	Comp5
Independent Variables					
dem1	0.310***	-0.432***	0.0767	0.138	0.109
	(0.0605)	(0.0497)	(0.131)	(0.0982)	(0.136)
dem2	0.161***	0.276***	-0.299**	-0.0732	0.409**
	(0.0524)	(0.0652)	(0.143)	(0.295)	(0.200)
dem3	0.308***	0.222***	0.308	-0.220	-0.279
	(0.0439)	(0.0694)	(0.199)	(0.274)	(0.177)
fin1	0.305***	-0.427***	0.0329	0.155**	-0.0263
	(0.0599)	(0.0483)	(0.139)	(0.0646)	(0.0946)
fin2	0.296***	0.346***	-0.0241	0.0583	0.187
	(0.0520)	(0.0524)	(0.0953)	(0.0997)	(0.117)
fin3	0.0144	-0.0686	0.130	-0.381*	0.406
	(0.0449)	(0.0727)	(0.339)	(0.226)	(0.400)
fin4	-0.0771*	-0.0223	0.262	0.595**	0.319
	(0.0458)	(0.0810)	(0.486)	(0.252)	(0.286)
devel1	0.352***	0.187***	0.203	0.303*	0.0630
	(0.0384)	(0.0684)	(0.252)	(0.182)	(0.225)
devel2	-0.300***	0.183***	0.281*	0.132	0.206
	(0.0411)	(0.0684)	(0.149)	(0.261)	(0.336)
devel3	-0.0596	0.341***	-0.0701	0.196	-0.513**
	(0.0583)	(0.0587)	(0.218)	(0.214)	(0.249)
demand1	-0.381***	0.0719	0.102	-0.100	0.0868
	(0.0283)	(0.0659)	(0.119)	(0.135)	(0.255)
demand2	-0.000564	-0.314***	0.402***	-0.130	-0.258
	(0.0572)	(0.0660)	(0.147)	(0.346)	(0.189)
demand3	0.153***	-0.00535	-0.168	-0.282	-0.0795
	(0.0420)	(0.0721)	(0.271)	(0.237)	(0.623)
demand4	0.159***	0.0926	0.372	-0.374	0.208
	(0.0443)	(0.0767)	(0.315)	(0.323)	(0.252)
tech1	0.382***	0.257***	0.143*	0.0686	-0.0779
	(0.0402)	(0.0604)	(0.0830)	(0.133)	(0.115)
tech2	-0.196***	0.135*	0.488***	-0.0305	-0.0464
	(0.0444)	(0.0757)	(0.0891)	(0.402)	(0.245)
Observations	251	251	251	251	251

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

1: Columns represents a regressions that measures how each underlying factor contributes to the variation of each component with significance in explaining the variation in parentheses
2: Eigenvalue for components with significance in explaining the overall variation in parentheses
Source: BBVA Research

Table 18
Correlation Matrix for Financial Inclusion Metropolitan Index (%)

	FIMI
Internet Access	83.55
Computer Access	80.64
Deposit Acct.	57.82
HH w/ Credit	50.46
Mobile Phone	27.3
Checking and Deposit Acct.	26.14
Branches per Capita	22.8
Savings Acct.	18.14
Branches per sq mile	5.18
Underbanked	-33.75
Unbanked	-53.67

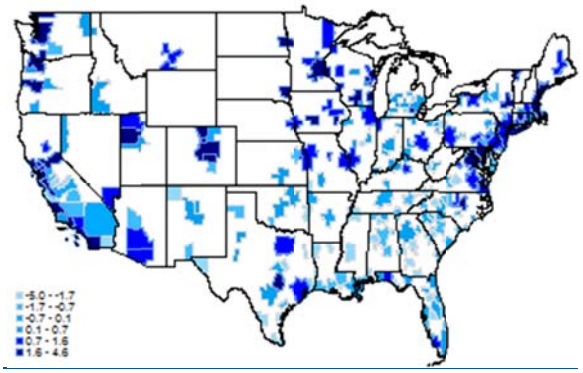
Source: BBVA Research

To highlight the contributions to the overall index, we present correlations matrices to survey-based measures of financial inclusion that have a strong relationship between FIMI and the number of households with a credit product (50.4 percent) and that are unbanked (Chart 33). FIMI's correlations to underbanked rates (-33.7 percent), the number of branches per square mile (22.8 percent) and share of households with a savings account (18.1 percent) were low (Table 18).Meanwhile, the correlations between FIMI and underlying technology factors like internet (83.5 percent) and computer access (80.6 percent) were the highest. A strong positive correlation between FIMI and a weighted average of home ownership, marriage, a livable wage, college education and a small family, implied that "well-being" and overall living standards can also influence financial inclusion (Chart 34).[34]

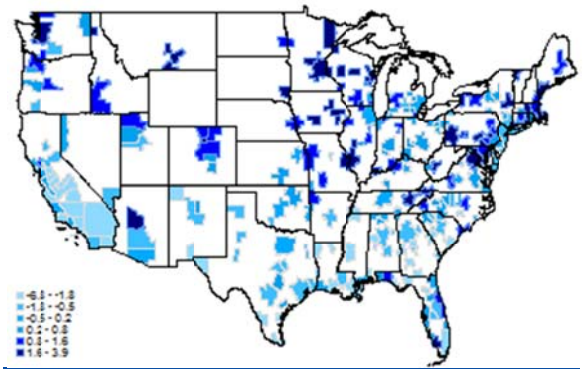
34: Using the survey-based measure for unbanked produces a similar result: 43 percent

Financial Inclusion Metropolitan Index (FIMI) Components by MSA

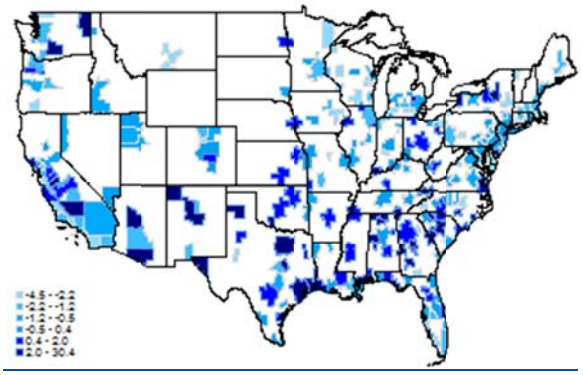
Map 16
Financial Inclusion Metropolitan Index (FIMI), by MSA



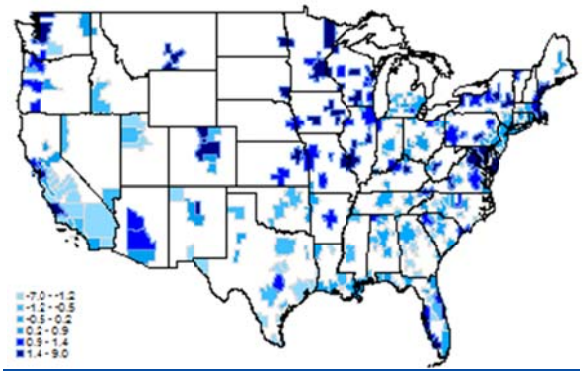
Map 17
Demographics



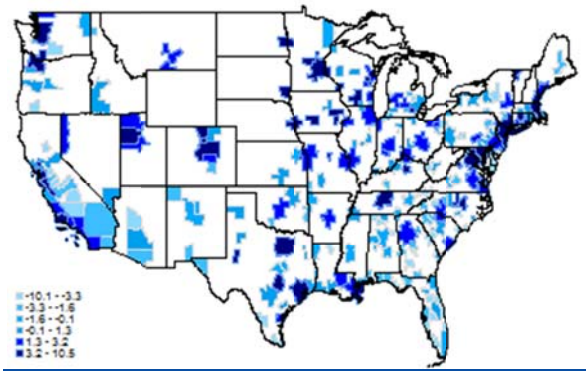
Map 18
Consumer Preferences (Demand-side)



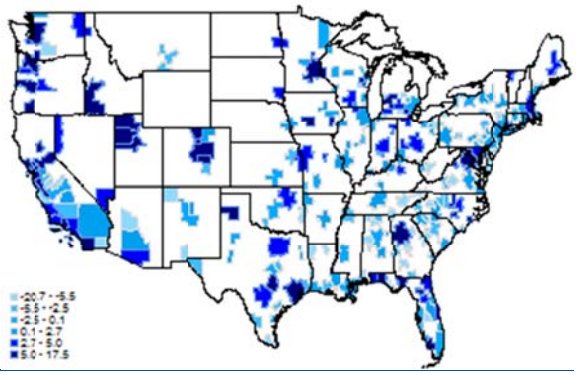
Map 19
Financial Sector Development (Supply-side)



Map 20
Macroeconomic Foundations (Development and Inclusion)



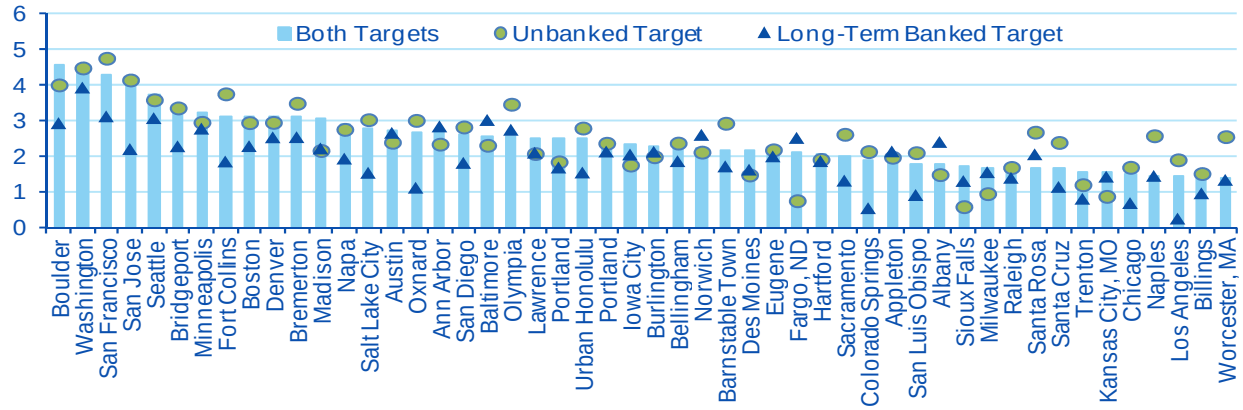
Map 21
Technology



FIMI Component scores are based on normalized values
Source: BBVA Research

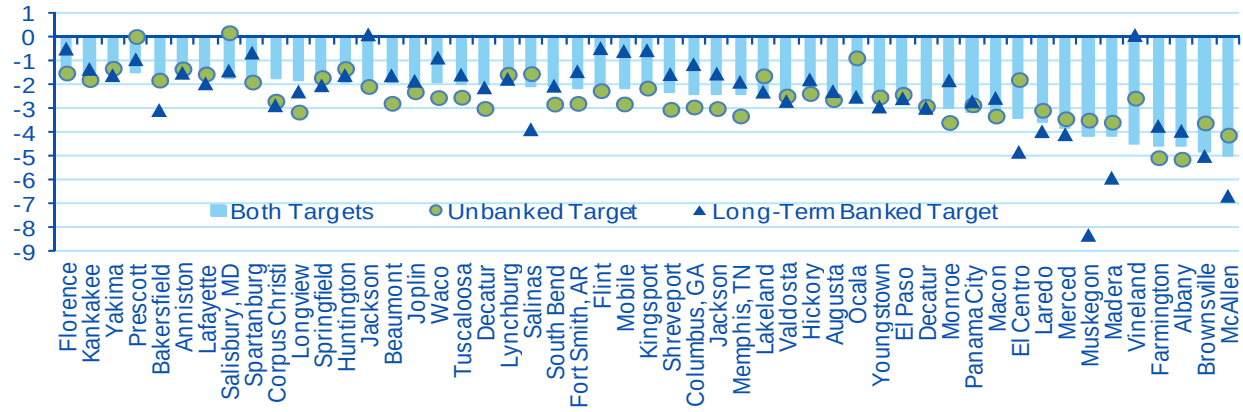
According to our multi-dimensional index, Boulder, CO is the most financially inclusive MSA in the country (see Table 19 for complete rankings). Boulder's fundamentals are broad-based, as the city ranks near the top in macroeconomic foundations, financial sector development and technology. The demand for alternative financial products is relatively low and is balanced out by high account ownership rates and growth in deposit-based products. The second most inclusive MSA is Washington D.C., which also has strong economic underpinnings, a highly accessible financial sector and high technology contribution. San Francisco, CA, San Jose, CA and Seattle, WA make up the remaining three MSAs in the top five for highest levels of financial inclusion (Table 19 & Chart 35).

Chart 35
Financial Inclusion Metropolitan Index (FIMI), Top 50



Note: Robustness checks included for comparison purposes. FIMI component scores are based on normalized values
Source: BBVA Research

Chart 36
Financial Inclusion Metropolitan Index (FIMI), Bottom 50



Note: Robustness checks included for comparison purposes. FIMI component scores are based on normalized values
Source: BBVA Research

For the least inclusive MSAs, issues with barriers, access to finance and economic development were present. McAllen, TX, which ranked last, has high levels of AFS use, a developmental ranking in the bottom quartile and account ownership rates similar to developing countries such as Bolivia, Ghana or Indonesia. Likewise, Brownsville, TX ranks as the second least inclusive MSA with similar problems to access, barriers and development, but on the contrary, has less frequent use of non-traditional finance (AFS). Both ranked in the lowest decile in terms of technology and nearly one in five residents is a non-citizen. The third and fourth lowest ranked MSAs according to FIMI were Albany, GA and Farmington, NM, which ranked poorly in terms of macroeconomic conditions and demographics. The high correlation between race and financial exclusion also explains the low ranking, as these areas have some of the highest concentrations of Blacks (Albany, GA) and Native Americans (Farmington, NM) across MSAs. Unlike the other MSAs in the bottom, in Vineland-Bridgeton, NJ, deindustrialization and the shift to services underlie the low ranking, resembling declines across the manufacturing-intensive areas (Table 19 & Chart 36).

A broader perspective reveals that nearly 70 percent of the top 25 most inclusive MSAs are either in Colorado, on the West Coast or in college towns. In fact, Austin, TX, which is the highest-ranked southern MSA, benefits from strong developmental underpinnings and top 10 ranking in terms of technology. The vast majority of other high-ranking MSAs are associated with strong economic foundations, technology or both. For example, Bridgeport, CT and Minneapolis, MN, which rank amongst the most inclusive areas, are ranked at the top in terms of macroeconomic environment while Lawrence, KS and Salt Lake City, UT rank high in technology. Despite the higher than average financial inclusion, strong fundamentals, technology potential and financial depth, these MSAs, on average, have usage rates of AFS products near 15 percent. This means that being financially inclusive may not eliminate AFS usage, as nearly one in seven individuals in this group uses some type of alternative financial product (Table 19).

Absent from the list of the top MSAs is a non-trivial share of the large MSAs in the South, Southeast and Rustbelt. For example, the three largest MSAs in Texas—Houston, Dallas and San Antonio—are outside the top 30 percent of our FIMI ranking. Miami, FL and Atlanta, GA, the two largest Southeastern MSAs, also fall outside of the top third of MSAs. A common feature among these MSAs is a low-ranking *Demographic* component and/or *Financial Sector Development* component. Although all MSAs in the Rust Belt, excluding Chicago, IL, rank outside of the top 50, most exhibit average scores across components, suggesting no disproportionate weaknesses. In other words, conditions are neither exemplary nor deprived, which could relate to a more homogenous industry and occupation composition. In fact, the only categories below average relate to digital product use and access. The higher ranking for Chicago, IL reflects higher education attainment, greater access to technology and digital banking use (Table 19).

These results confirm a large degree of financial inclusion heterogeneity across MSAs even if the U.S. compares strongly against other countries. As unwelcome as this news may be, identifying these shortcomings presents a valuable opportunity for change.

Table 19

Financial Inclusion Metropolitan Index (FIMI) Ranking

	FIMI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
Boulder	4.6	3	1	3	41	3	16.0%	3.0%	CO
Washington	4.4	30	4	6	94	23	20.0%	4.0%	DC
San Francisco	4.3	133	17	11	58	9	12.0%	5.0%	CA
San Jose	4.0	135	135	2	38	35	12.0%	4.0%	CA
Seattle	3.7	36	11	14	74	16	16.0%	3.0%	WA
Bridgeport	3.2	35	92	1	22	46	10.0%	4.0%	CT
Minneapolis	3.2	8	25	10	68	29	12.0%	4.0%	WI
Fort Collins	3.1	53	15	38	60	1	14.0%	3.0%	CO
Boston	3.1	47	67	9	45	44	15.0%	6.0%	NH
Denver	3.1	43	18	17	157	20	15.0%	7.0%	CO
Bremerton	3.1	13	31	124	164	0	21.0%	0.0%	WA
Madison	3.0	45	2	8	40	66	8.0%	7.0%	WI
Napa	2.9	80	54	30	101	4	6.0%	6.0%	CA
Salt Lake City	2.8	105	197	18	99	12	13.0%	3.0%	UT
Austin	2.7	88	81	21	91	6	16.0%	1.0%	TX
Oxnard	2.7	143	169	55	36	31	13.0%	6.0%	CA
Ann Arbor	2.6	106	62	20	15	11	15.0%	0.0%	MI
San Diego	2.6	170	134	49	42	28	17.0%	3.0%	CA
Baltimore	2.6	68	28	27	115	59	24.0%	5.0%	MD
Olympia	2.5	14	29	167	130	51	6.0%	0.0%	WA
Lawrence	2.5	183	66	12	176	7	22.0%	0.0%	KS
Portland	2.5	79	56	15	69	19	17.0%	4.0%	WA
Urban Honolulu	2.5	149	148	35	57	32	20.0%	4.0%	HI
Portland	2.4	17	5	51	88	93	13.0%	2.0%	ME
Iowa City	2.3	38	36	19	12	26	14.0%	0.0%	IA
Burlington	2.3	28	48	23	31	58	15.0%	1.0%	VT
Bellingham	2.2	70	12	54	10	107	5.0%	0.0%	WA
Norwich	2.2	7	110	44	149	134	30.0%	2.0%	CT
Barnstable Town	2.1	0	3	149	20	86	18.0%	0.0%	MA
Des Moines	2.1	10	21	26	89	21	17.0%	6.0%	IA
Eugene	2.1	92	45	110	116	15	13.0%	1.0%	OR
Fargo	2.1	54	38	4	192	42	22.0%	7.0%	ND
Hartford	2.1	55	85	28	75	143	17.0%	6.0%	CT
Sacramento	2.0	171	88	108	124	27	22.0%	6.0%	CA
Colorado Springs	1.9	111	124	70	181	24	17.0%	10.0%	CO
Appleton	1.8	1	65	39	11	17	3.0%	0.0%	WI
San Luis Obispo	1.8	165	13	59	30	83	21.0%	0.0%	CA
Albany	1.7	32	16	61	29	117	10.0%	2.0%	NY
Sioux Falls	1.7	22	22	7	108	82	19.0%	5.0%	SD
Milwaukee	1.7	136	46	48	73	126	11.0%	7.0%	WI
Raleigh	1.7	57	99	40	13	52	12.0%	5.0%	NC
Santa Rosa	1.6	137	64	89	233	2	13.0%	5.0%	CA
Santa Cruz	1.6	181	160	71	1	64	10.0%	0.0%	CA
Trenton	1.5	154	115	16	146	102	31.0%	10.0%	NJ
Kansas City	1.5	52	41	45	161	57	20.0%	12.0%	MO
Chicago	1.5	155	75	53	82	88	14.0%	8.0%	IL
Naples	1.5	26	20	211	24	25	12.0%	0.0%	FL
Los Angeles	1.4	236	195	43	78	76	17.0%	9.0%	CA
Billings	1.4	31	14	56	32	208	11.0%	2.0%	MT

Table 19 (continues from previous page)

Financial Inclusion Metropolitan Index (FIMI) Ranking

	FIMI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
Worcester	1.4	23	155	93	64	132	22.0%	2.0%	MA
Ogden	1.4	67	224	74	154	18	10.0%	6.0%	UT
Omaha	1.4	48	43	31	179	97	23.0%	6.0%	IA
St. Louis	1.4	39	26	77	103	104	19.0%	4.0%	MO
Cedar Rapids	1.4	12	9	36	19	146	12.0%	4.0%	IA
Durham	1.3	160	76	13	165	37	26.0%	9.0%	NC
Richmond	1.3	93	53	63	93	121	21.0%	4.0%	VA
St. Cloud	1.2	16	82	29	123	165	12.0%	0.0%	MN
La Crosse	1.2	41	24	22	14	196	6.0%	0.0%	MN
Philadelphia	1.2	108	108	50	135	122	21.0%	7.0%	MD
New Haven	1.2	117	136	64	25	164	11.0%	8.0%	CT
New York	1.2	201	146	33	133	116	19.0%	10.0%	PA
Phoenix	1.1	195	68	105	80	119	14.0%	16.0%	AZ
Reading	1.1	19	158	150	126	129	29.0%	3.0%	PA
Virginia Beach	1.1	156	117	72	177	87	28.0%	8.0%	NC
Green Bay	1.0	4	39	68	105	163	13.0%	3.0%	WI
Chico	1.0	167	90	210	140	39	22.0%	0.0%	CA
Tucson	1.0	164	116	199	221	54	31.0%	6.0%	AZ
Las Vegas	1.0	207	172	114	160	61	25.0%	7.0%	NV
Harrisonburg	1.0	192	187	34	47	55	21.0%	8.0%	VA
Vallejo	0.9	212	161	120	43	36	7.0%	0.0%	CA
Duluth	0.9	2	10	146	28	140	6.0%	0.0%	MN
York	0.9	6	84	145	120	141	25.0%	6.0%	PA
Waterloo	0.9	11	37	91	83	123	15.0%	2.0%	IA
Crestview	0.9	63	89	174	172	13	32.0%	4.0%	FL
Eau Claire	0.9	9	69	88	2	136	4.0%	4.0%	WI
Dallas	0.9	158	167	32	216	43	28.0%	8.0%	TX
Pittsburgh	0.9	25	55	102	81	114	23.0%	5.0%	PA
Rochester	0.8	59	59	121	112	130	17.0%	2.0%	NY
Columbia	0.8	223	63	5	4	81	9.0%	4.0%	MO
Columbus	0.8	112	83	47	198	48	25.0%	7.0%	OH
Lexington	0.7	129	33	41	96	75	19.0%	8.0%	KY
Harrisburg	0.7	34	30	80	127	154	14.0%	5.0%	PA
Bangor	0.7	61	114	188	46	72	18.0%	1.0%	ME
Houston	0.7	196	211	24	223	34	29.0%	11.0%	TX
Miami	0.7	224	128	129	52	150	14.0%	7.0%	FL
Springfield	0.7	125	200	136	65	170	22.0%	9.0%	MA
Santa Maria	0.7	238	225	25	50	47	6.0%	16.0%	CA
Jacksonville	0.7	130	122	138	128	63	30.0%	2.0%	FL
Albuquerque	0.7	176	86	151	214	127	24.0%	11.0%	NM
Coeur dAlene	0.7	15	98	182	114	68	17.0%	0.0%	ID
Providence	0.7	113	129	97	62	152	16.0%	6.0%	MA
Spokane	0.7	122	119	156	222	50	17.0%	15.0%	WA
Boise City	0.6	66	183	118	110	40	16.0%	7.0%	ID
Provo	0.6	174	242	66	95	5	10.0%	2.0%	UT
Atlanta	0.6	190	159	76	204	22	27.0%	9.0%	GA
Oklahoma City	0.6	131	170	67	178	149	24.0%	8.0%	OK
Champaign	0.6	56	40	111	119	169	23.0%	6.0%	IL
Wausau	0.6	5	27	85	129	101	27.0%	0.0%	WI
Cleveland	0.5	116	71	62	147	131	17.0%	6.0%	OH
Springfield	0.5	33	6	126	159	109	22.0%	0.0%	IL
Louisville	0.5	50	79	86	168	103	26.0%	5.0%	KY
Salem	0.5	145	196	160	180	45	15.0%	7.0%	OR
Wichita	0.4	89	72	100	206	145	23.0%	10.0%	KS
Lubbock	0.4	175	145	87	184	133	27.0%	4.0%	TX
Santa Fe	0.4	91	7	130	76	100	31.0%	5.0%	NM
Lansing	0.4	198	120	81	63	79	21.0%	6.0%	MI
Indianapolis	0.4	104	140	42	167	80	17.0%	10.0%	IN
Palm Bay	0.4	74	32	237	209	74	19.0%	6.0%	FL
Reno	0.4	157	185	73	106	65	18.0%	11.0%	NV
Kalamazoo	0.3	127	127	123	27	69	22.0%	0.0%	MI
Dayton	0.3	96	112	107	199	67	25.0%	9.0%	OH
Midland	0.3	180	144	0	23	90	19.0%	9.0%	TX
Grand Rapids	0.3	62	181	79	90	30	12.0%	4.0%	MI

Table 19 (continues from previous page)

Financial Inclusion Metropolitan Index (FIMI) Ranking

	FIMI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
San Antonio	0.3	185	207	90	171	78	26.0%	8.0%	TX
Allentown	0.3	71	107	142	97	144	18.0%	4.0%	NJ
Detroit	0.3	132	147	99	109	128	18.0%	8.0%	MI
Pensacola	0.2	83	191	208	102	53	32.0%	0.0%	FL
Jacksonville	0.2	188	233	122	225	41	29.0%	4.0%	NC
Toledo	0.2	134	130	101	208	70	20.0%	9.0%	OH
Tallahassee	0.2	214	166	168	139	10	27.0%	0.0%	FL
Janesville	0.2	37	113	161	86	98	18.0%	2.0%	WI
Bloomington	0.1	150	179	65	3	194	22.0%	1.0%	IN
Springfield	0.1	73	73	109	61	139	13.0%	5.0%	MO
Tulsa	0.1	115	175	94	195	77	21.0%	11.0%	OK
Oshkosh	0.1	101	58	46	7	217	0.0%	0.0%	WI
Akron	0.1	121	101	82	55	187	7.0%	8.0%	OH
Fort Wayne	0.1	69	142	147	92	73	9.0%	7.0%	IN
Tampa	0.0	110	51	177	118	159	19.0%	5.0%	FL
Gainesville	0.0	217	137	144	175	38	9.0%	17.0%	FL
Deltona	0.0	65	52	249	111	96	18.0%	1.0%	FL
Stockton	0.0	222	236	209	190	106	11.0%	10.0%	CA
Davenport	0.0	78	60	83	196	124	17.0%	12.0%	IL
Little Rock	0.0	177	47	69	183	105	24.0%	10.0%	AR
Buffalo	0.0	81	42	137	187	200	12.0%	9.0%	NY
Altoona	0.0	18	95	200	71	142	21.0%	0.0%	PA
Roanoke	0.0	60	19	162	148	186	24.0%	0.0%	VA
Atlantic City	-0.1	84	194	125	70	193	35.0%	2.0%	NJ
Charlotte	-0.2	138	133	60	197	112	28.0%	8.0%	SC
Charleston	-0.2	21	34	98	202	221	27.0%	7.0%	WV
Rockford	-0.2	76	182	154	182	49	22.0%	9.0%	IL
Syracuse	-0.2	163	80	112	174	125	26.0%	7.0%	NY
Cincinnati	-0.2	118	91	52	166	158	20.0%	9.0%	OH
Bowling Green	-0.2	95	131	178	185	84	31.0%	0.0%	KY
Savannah	-0.2	203	163	135	107	135	27.0%	6.0%	GA
Nashville	-0.3	146	141	37	153	85	19.0%	9.0%	TN
Riverside	-0.3	227	235	205	121	111	18.0%	9.0%	CA
Greeley	-0.3	72	188	113	98	95	17.0%	12.0%	CO
Johnson City	-0.3	20	105	225	67	214	14.0%	5.0%	TN
Orlando	-0.3	200	186	115	142	94	22.0%	10.0%	FL
Bend	-0.3	58	93	163	53	56	23.0%	2.0%	OR
Utica	-0.3	90	0	217	212	162	33.0%	12.0%	NY
Greenville	-0.4	87	49	191	144	156	23.0%	5.0%	SC
Racine	-0.4	49	109	187	37	215	12.0%	7.0%	WI
Evansville	-0.4	27	106	148	205	202	24.0%	5.0%	IN
Fayetteville	-0.4	44	162	127	100	89	25.0%	4.0%	MO
Medford	-0.4	182	61	216	21	33	22.0%	0.0%	OR
Huntsville	-0.5	166	94	103	226	176	17.0%	11.0%	AL
Athens	-0.5	208	221	141	33	243	14.0%	7.0%	GA
Killeen	-0.5	179	226	139	59	155	6.0%	17.0%	TX
Fayetteville	-0.5	209	193	165	240	8	36.0%	14.0%	NC
Binghamton	-0.5	126	157	171	56	181	4.0%	13.0%	NY
New Orleans	-0.5	213	165	58	85	157	16.0%	13.0%	LA
Fresno	-0.6	241	241	198	191	137	24.0%	16.0%	CA
Hagerstown	-0.6	109	118	193	246	60	36.0%	10.0%	WV
Niles	-0.6	100	87	155	9	192	6.0%	0.0%	MI
Scranton	-0.6	77	77	192	162	205	38.0%	2.0%	PA
Charleston	-0.6	218	126	78	113	91	14.0%	9.0%	SC
Lancaster	-0.7	42	151	132	122	224	21.0%	8.0%	PA
Victoria	-0.7	107	203	106	104	184	28.0%	2.0%	TX
Pueblo	-0.7	86	138	204	150	185	29.0%	4.0%	CO
Baton Rouge	-0.7	194	201	57	188	92	20.0%	19.0%	LA
Knoxville	-0.8	29	123	164	152	233	12.0%	3.0%	TN
Dover	-0.8	152	216	195	136	167	15.0%	17.0%	DE
North Port	-0.8	114	8	241	18	207	5.0%	2.0%	FL
Amarillo	-0.8	173	174	84	247	14	41.0%	22.0%	TX
Asheville	-0.8	64	103	170	39	174	8.0%	2.0%	NC
Montgomery	-0.8	206	143	157	210	110	30.0%	6.0%	AL
Winston	-0.8	99	177	173	137	173	24.0%	7.0%	NC
Gulfport	-0.9	140	176	201	219	203	33.0%	10.0%	MS
Erie	-0.9	178	215	166	16	223	12.0%	0.0%	PA
Michigan City	-0.9	24	164	222	48	148	18.0%	3.0%	IN
Kingston	-0.9	141	199	189	66	209	18.0%	10.0%	NY

Table 19 (continues from previous page)

Financial Inclusion Metropolitan Index (FIMI) Ranking

	FIMI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
Columbia	-1.0	184	152	96	232	172	27.0%	13.0%	SC
Canton	-1.0	85	173	176	228	120	26.0%	9.0%	OH
Birmingham	-1.0	169	149	143	156	166	24.0%	6.0%	AL
Myrtle Beach	-1.0	82	78	228	169	115	24.0%	13.0%	NC
Johnstown	-1.0	75	44	233	6	190	11.0%	0.0%	PA
Warner Robins	-1.0	123	178	226	245	218	28.0%	7.0%	GA
Greensboro	-1.1	187	102	116	49	199	12.0%	8.0%	NC
Lawton	-1.1	168	198	181	229	175	29.0%	4.0%	OK
Modesto	-1.1	221	238	172	207	177	14.0%	12.0%	CA
Monroe	-1.1	46	111	218	87	62	35.0%	0.0%	MI
Lake Charles	-1.2	151	150	92	243	160	31.0%	17.0%	LA
Port St. Lucie	-1.3	94	192	240	155	161	28.0%	13.0%	FL
Topeka	-1.3	144	35	153	203	178	26.0%	7.0%	KS
Chattanooga	-1.3	98	171	140	237	225	15.0%	11.0%	TN
Cape Coral	-1.3	124	70	239	141	151	19.0%	6.0%	FL
Saginaw	-1.3	128	132	190	134	231	21.0%	4.0%	MI
Las Cruces	-1.3	237	229	185	84	227	5.0%	18.0%	NM
Visalia	-1.4	230	240	227	44	118	35.0%	4.0%	CA
Florence	-1.4	142	50	245	241	210	30.0%	4.0%	AL
Kankakee	-1.5	189	212	183	227	113	26.0%	16.0%	IL
Yakima	-1.5	202	230	213	230	228	24.0%	9.0%	WA
Prescott	-1.5	40	74	247	235	216	39.0%	0.0%	AZ
Bakersfield	-1.5	246	245	212	224	195	21.0%	21.0%	CA
Anniston	-1.6	204	180	244	173	99	35.0%	0.0%	AL
Lafayette	-1.7	211	153	117	151	179	24.0%	16.0%	LA
Salisbury	-1.7	199	23	231	8	219	10.0%	9.0%	DE
Spartanburg	-1.7	186	206	194	213	198	33.0%	7.0%	SC
Corpus Christi	-1.7	225	219	75	193	108	50.0%	16.0%	TX
Longview	-1.8	172	190	104	242	153	35.0%	16.0%	TX
Springfield	-1.9	161	189	175	5	197	21.0%	0.0%	OH
Huntington	-1.9	97	96	221	138	206	20.0%	11.0%	OH
Jackson	-1.9	120	100	184	35	212	14.0%	7.0%	MI
Beaumont	-1.9	197	218	131	211	191	27.0%	15.0%	TX
Joplin	-1.9	147	97	179	194	171	32.0%	15.0%	MO
Waco	-1.9	205	222	134	248	183	33.0%	22.0%	TX
Tuscaloosa	-2.0	235	202	159	218	238	27.0%	9.0%	AL
Decatur	-2.0	139	121	119	54	138	11.0%	10.0%	IL
Lynchburg	-2.0	148	156	169	117	240	19.0%	10.0%	VA
Salinas	-2.0	245	232	158	170	213	28.0%	4.0%	CA
South Bend	-2.1	193	184	152	125	211	18.0%	26.0%	MI
Fort Smith	-2.1	159	104	207	143	236	26.0%	9.0%	AR
Flint	-2.2	119	227	220	215	189	4.0%	7.0%	MI
Mobile	-2.2	215	205	203	189	226	27.0%	13.0%	AL
Kingsport	-2.3	51	57	234	238	229	19.0%	6.0%	VA
Shreveport	-2.3	229	154	128	145	235	31.0%	14.0%	LA
Columbus	-2.4	232	217	196	217	180	34.0%	4.0%	GA
Jackson	-2.4	234	204	133	186	147	28.0%	14.0%	MS
Memphis	-2.4	233	208	95	201	168	24.0%	20.0%	TN
Lakeland	-2.4	191	214	246	51	230	18.0%	3.0%	FL
Valdosta	-2.5	231	231	202	17	201	8.0%	10.0%	GA
Hickory	-2.5	103	210	238	132	241	25.0%	7.0%	NC
Augusta	-2.6	220	228	214	249	222	32.0%	25.0%	SC
Ocala	-2.6	102	213	250	200	71	5.0%	15.0%	FL
Youngstown	-2.6	153	125	219	26	245	12.0%	8.0%	PA
El Paso	-2.7	239	239	186	234	204	39.0%	8.0%	TX
Decatur	-2.9	162	139	224	236	246	22.0%	16.0%	AL
Monroe	-3.0	226	209	229	158	237	28.0%	10.0%	LA
Panama City	-3.1	219	168	230	220	239	6.0%	18.0%	FL
Macon	-3.3	240	223	206	239	232	31.0%	23.0%	GA
El Centro	-3.4	248	243	180	77	249	31.0%	0.0%	CA
Laredo	-3.5	244	249	232	163	182	25.0%	5.0%	TX
Merced	-3.8	247	246	242	244	244	31.0%	26.0%	CA
Muskegon	-4.1	210	248	215	34	247	17.0%	8.0%	MI
Madera	-4.2	250	244	223	79	248	7.0%	34.0%	CA
Vineland	-4.4	216	237	236	251	188	42.0%	29.0%	NJ
Farmington	-4.5	228	220	197	250	250	51.0%	23.0%	NM
Albany	-4.6	243	234	243	231	220	25.0%	22.0%	GA
Brownsville	-4.8	242	247	248	72	242	0.11	0.1	TX
McAllen	-5.0	249	250	235	131	234	22.0%	36.0%	TX

Note: FIMI Index Scores Are Based on Normalized Values
Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census

5 Conclusions and Recommendations

The Financial Inclusion Metropolitan Index (FIMI) is, to our knowledge, the first attempt to model financial inclusion at the MSA-level, beyond survey-based statistics, using a large database constructed from five latent factors:—*Demographics*, *Financial Sector Development (Supply-side)*, *Macroeconomic Foundations (Development and Inclusion), Consumer Preferences (Demand-side) and Technology*.

The results from the two-stage model indicate that technology is the main contributor to financial inclusion. Macroeconomic development and demographics were also found to have significant effects on financial inclusion while consumer preferences and financial sector development were less relevant. Our findings also confirm that despite the high level of development and broad scope of the U.S. financial system, there is a large degree of heterogeneity at the regional level. MSAs in Colorado, on the West Coast and in college towns ranked as the most inclusive areas. Throughout the analysis, citizenship, education, race and income inequality persistently showed sizable importance.

Despite covering 92% of the population living in MSAs, the index does not rank all 381 MSAs and is only available for one year, per data availability. Having access to data for all MSAs across time will help to better understand issues related to convergence, lagged effects, mobility and cohort effects. While there are many ways to systematically select the variables to include in the latent factors, the steps taken to construct our financial inclusion index guarantee consistency and lower the potential for bias. In any case, our robustness checks suggest that a different selection would not have significantly altered the results. Having different sources for loan-level data and account ownership could affect the measurement of financial inclusion. However, this issue is less consequential given that account ownership and access to basic deposit accounts, which are sourced from a richer survey, are more relevant than loan products.

Our results have policy implications. First, the fact that financial inclusion is dependent on a multitude of overlapping factors, ranging from deposit account ownership to internet access to labor force participation, requires a multi-faceted approach. Banks by themselves cannot improve financial inclusion. This implies the need for a strategic plan that integrates governmental organizations, financial institutions, non-profit organizations and certain non-financial business with a clear understanding impact on how each of these stakeholders can have on the factors that affect financial inclusion. In essence, greater access to financial services would be enhanced if accompanied by increased internet access, education and better employment opportunities.

Second, an efficient way to reduce financial inclusion would be to promote ubiquitous access to internet, putting it at par with education, retirement and disability insurance, transportation infrastructure, electricity, water and sewage. Due to advancements in technology, big data and behavioral theory, the way traditional institutions and financial disruptors engage with unbanked and underbanked consumers is making access to the internet or mobile services a more viable option than branches. With the proliferation and adoption of information technology and exponential growth in financial innovation, the potential for digital and technology-based banking to change the way we view financial inclusion is also significant. As our analysis shows, access to technology can boost AFS use, rather than reduce it. Nevertheless, from a policy perspective, the benefits from technology are not exclusive to financial inclusion, as for example, greater internet access will improve education, which itself plays a crucial role in determining economic opportunity.

Future opportunities for research include measuring the impact that recent regulatory changes, the fintech revolution and the prolonged period of low interest rates have had on the supply of nontraditional financial services from both banks and nonbanks, and the pace at which customers migrate from banks to nonbanks and vice-versa. In addition, randomized experiments can test how different subsidization rates increase of the use internet, and mobile devices and how this impacts financial inclusion. Similarly, different stakeholders could implement pilot programs whereby the disadvantaged groups benefit from different sources of well-being initiatives. Extending our ranking to a more detailed geographic level such as counties, Public Use Microdata Areas (PUMAs) or zip codes would enhance the implementation and effectiveness of these programs.

For example, bundled offerings that give mobile phones to low- and moderate-income groups with pre-loaded banking apps that have access to non-profit financial services companies based on alternative credit reporting could increase financial inclusion while also enhancing overall well-being. For this to happen, there needs to be close cooperation and coordination between banks, computer and telecommunication companies, regulators and nonprofit organizations.

Efforts as those suggested above would help to better understand financial inclusion, solidify current efforts to increase financial inclusion in the U.S. and increase social awareness and community involvement on an issue that is vital to boost economic opportunities, well-being and overall success in the 21st century.

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Appendix 1

Table 23
Descriptive Data by MSA Population Size

		Less than 200K	200K to 320K	300K to 500K	500K to 1M	Greater than 1M
		μ	μ	μ	μ	μ
Demographics	Age	38.7	38.6	38.4	38.2	37.6
	African-American	8.5%	8.4%	12.1%	10.8%	14.7%
	Hispanic Population	11.6%	13.6%	15.0%	15.7%	15.9%
	Invidual Income ($K)	19.0	19.8	19.4	20.5	23.3
	Non-citizen	3.3%	4.2%	4.9%	5.2%	6.9%
	White	74.6%	72.5%	67.6%	66.8%	60.9%
Financial	Branches (per sqmi)	0.72	0.75	0.75	0.65	0.73
	Credit per HH ($K)	78.8	85.9	84.8	95.3	109.1
	Unbanked (Fees)	1.2%	1.6%	2.8%	2.9%	2.3%
	Unbanked (ID)	0.6%	1.4%	1.5%	2.2%	1.2%
	Unbanked (Trust)	2.1%	2.0%	2.9%	3.6%	2.2%
Development	Population Growth*	0.8	0.9	1.4	1.4	1.2
	Real GDP per Capita	38.6	40.1	39.6	43.0	55.5
	Real GDP per Capita*	0.55	0.55	-0.01	0.20	0.55
	Gini	0.4985	0.5022	0.5049	0.4999	0.4993
	Health Insurance Cov.	85.5%	85.8%	84.4%	86.2%	85.8%
	Participation Rate	49.4%	49.6%	48.8%	49.5%	52.1%
	Income Gap**	18.2	16.7	16.2	16.6	17.3
	Education***	35.9%	37.7%	37.1%	38.9%	41.2%
Preferences	AFS Credit Use	16.3%	19.8%	16.5%	17.3%	14.0%
	AFS Transaction Use	31.2%	33.9%	33.8%	33.6%	30.9%
	Bank Closed (Income)	0.5%	0.3%	0.3%	0.2%	0.1%
	Demand Deposit Act.	74.8%	77.1%	74.3%	74.4%	76.5%
	Savings Act.	15.9%	15.1%	13.9%	13.3%	13.0%
	Remittances	0.2%	0.2%	0.5%	0.4%	0.8%
Technology	Used Digital Product	18.4%	18.5%	19.7%	19.2%	22.7%
	Internet Access	80.3%	80.9%	81.0%	82.1%	84.7%
	Mobile Access	43.7%	44.6%	46.5%	45.3%	47.2%
	Smartphone Access	49.6%	51.6%	56.5%	56.4%	59.1%

* 5-year annualized growth; ** Ratio of 90th percentile to 10th percentile; *** Some college coursework
Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census

Table 24
Descriptive Data by Race

		Black	Hispanic	Asian	White	Other
Demographics	Age	34.8	29.9	36.7	41.3	27.4
	Invidual Income ($K)	14.4	14.0	20.0	24.6	13.5
	Non-citizen	3.8%	23.8%	26.8%	1.5%	3.6%
Financial	Unbanked (Fees)	6.9%	5.1%	0.3%	1.0%	5.8%
	Unbanked (ID)	2.9%	4.2%	0.2%	0.6%	1.6%
	Unbanked (Trust)	6.6%	6.1%	0.5%	1.2%	7.3%
Development	Gini	0.50	0.49	0.55	0.53	0.55
	Health Insurance Cov.	82.1%	71.4%	85.4%	89.7%	83.6%
	Participation Rate	52.7%	60.7%	60.8%	58.7%	54.9%
	Income Gap**	17.2	14.0	22.0	16.7	28.8
	Education***	33.5%	22.5%	52.7%	44.8%	30.5%
Preferences	AFS Credit Use	26.6%	17.4%	4.3%	12.6%	24.6%
	AFS Transaction Use	51.9%	40.3%	19.2%	27.5%	43.2%
	Bank Closed (Income)	0.7%	0.3%	0.0%	0.1%	0.0%
	Demand Deposit Act.	62.4%	56.5%	72.3%	80.1%	65.6%
	Savings Act.	11.7%	7.2%	10.6%	14.2%	12.5%
	Remmittances	1.5%	4.5%	1.4%	0.2%	0.3%
Technology	Used Digital Product	16.5%	19.1%	26.9%	20.4%	17.1%
	Internet Access	73.8%	76.0%	92.0%	86.1%	83.3%
	Mobile Access	43.4%	45.3%	47.7%	46.5%	50.9%
	Smartphone Access	52.7%	55.8%	67.1%	55.5%	49.4%

* 5-year annualized growth; ** Ratio of 90th percentile to 10th percentile; *** Some college coursework
Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census

Table 25
Descriptive Data by Income

		1st Quintile	2nd Quintile	3rd Quintile	4th Quintile	5th Quintile
Demographics	Age	38.5	39.0	38.3	37.2	37.3
	African-American	21.4%	15.2%	12.0%	9.7%	8.2%
	Hispanic Population	21.6%	23.2%	19.4%	16.2%	11.4%
	Invidual Income ($K)	8.00	16.00	23.20	31.20	40.30
	Non-citizen	8.9%	9.5%	7.6%	6.2%	4.9%
	White	49.5%	54.7%	61.6%	66.5%	70.4%
Financial	Unbanked (Fees)	6.2%	2.3%	0.6%	0.2%	0.1%
	Unbanked (ID)	3.44%	1.43%	0.30%	0.04%	0.07%
	Unbanked (Trust)	6.7%	2.7%	0.8%	0.3%	0.2%
Development	Gini	33.0%	30.6%	34.6%	35.7%	51.2%
	Health Insurance Cov.	77.5%	77.9%	83.0%	88.4%	92.0%
	Participation Rate	30.2%	48.3%	60.0%	68.9%	69.1%
	Income Gap**	9.7	6.5	8.0	9.5	22.7
	Education***	25.3%	28.8%	36.1%	42.3%	51.6%
Preferences	AFS Credit Use	22.3%	17.9%	13.4%	9.4%	5.9%
	AFS Transaction Use	43.1%	35.1%	29.0%	24.3%	21.8%
	Bank Closed (Income)	0.5%	0.2%	0.1%	0.0%	0.0%
	Demand Deposit Act.	57.7%	70.9%	80.1%	86.9%	87.5%
	Savings Act.	6.9%	10.0%	13.7%	17.5%	20.5%
	Remittances	1.1%	1.3%	0.8%	0.5%	0.5%
Technology	Used Digital Product	8.9%	14.8%	22.1%	28.2%	33.1%
	Internet Access	59.3%	72.4%	83.9%	90.9%	95.6%
	Mobile Access	37.7%	39.2%	42.1%	46.0%	53.2%
	Smartphone Access	33.4%	45.9%	60.3%	72.2%	80.8%

* 5-year annualized growth; ** Ratio of 90th percentile to 10th percentile; *** Some college coursework
Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census

Table 26
Descriptive Statistics for Demographics Component

	mean	sd	p5	p95	Corr to Underbanked	Corr to Unbanked
Home Ownership Rate (%)	64.9	6.1	52.9	73.3	-9	-15
Marriage/Divorce/Nvr Married (%)	38.9	3.1	33.9	43.8	-25	-41
Hispanic (%)	14.5	17.3	1.9	53.2	11	26
Black (%)	11.0	10.7	0.4	34.9	25	31
Non-Citizens (%)	4.9	4.3	0.7	15.1	-3	20
Income HH ($)	20000.0	3875.5	14000.0	27000.0	-25	-35
Average family size	3.0	0.3	2.7	3.7	11	35
Median/Average Age	38.2	2.5	34.4	41.9	-11	-29
Average Time of Immigrants in US (years)	2.2	1.7	0.5	5.7	-7	10
Population From Emerging Markets (%)	7.0	6.8	1.0	21.6	-3	16
White Share of Population (%)	68.2	18.5	32.0	91.3	-24	-41
Asian Share of Population (%)	3.1	4.4	0.6	9.2	-13	-8
Ratio of Population 16 to 30 (%)	21.0	2.9	16.7	26.6	-9	3
Share of Females w/ account (%)	75.2	12.7	51.9	92.8	-2	-49
Share of Males w/ account (%)	75.0	12.9	50.9	93.8	-15	-54

Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census; sd=standard deviation, p5=percentile 5%, p95=percentile 95%; Corr=correlation coefficient

Table 27
Descriptive Statistics for Financial Sector Development (Supply-side) Component

	mean	sd	p5	p95	Corr to Underbanked	Corr to Unbanked
Avg HH Balance Auto_Loan ($)	14000.0	857.4	12000.0	15000.0	13	10
Avg HH Student_Loan ($)	22000.0	3183.4	18000.0	28000.0	-6	-2
Avg HH Mortgage Loan ($)	140000.0	37000.0	100000.0	210000.0	-12	-1
Avg HH Total Crd ($)	91000.0	22000.0	66000.0	140000.0	-12	0
Branches per Square Mile	0.7	0.5	0.2	1.4	-15	-15
Branches per capita	27.0	7.5	14.9	40.3	-1	-16
HH w current balance as share of HH	71.2	5.6	59.5	78.1	-20	-39
HH w current balance ex mort as share of HH	63.5	4.9	52.9	69.6	-19	-41
HH w current balance revolving as share of HH	54.8	5.5	45.8	63.7	-29	-46
Demand Deposit Balance GrowthTo Pop	19.7	218.7	-35.9	58.3	9	4
Money Market Balance Growth (non-int)To Pop	32.5	354.0	-38.5	69.1	10	5
Credit Products excluding Mortgages as Share of GDP	14.1	3.3	9.3	19.8	-1	-8
Reason Unbanked (Fees) (%)	2.3	2.6	0.0	7.8	1	56
Reason Unbanked (Trust) (%)	2.7	3.1	0.0	9.4	9	68
Reason Unbanked (ID) (%)	1.4	2.6	0.0	5.2	17	55

Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census; sd=standard deviation, p5=percentile 5%, p95=percentile 95%; Corr=correlation coefficient

Table 28
Descriptive Statistics for Macroeconomic Foundations (Development and Inclusion) Component

	mean	sd	p5	p95	Corr to Underbanked	Corr to Unbanked
Savings Balance GrowthTo Pop	18.9	215.6	-38.4	59.2	8.4	3.8
Savings/GDP	28.2	7.9	17.8	43.5	-4.8	-13.0
Real GDP per Cap ($ Thousands)	43.4	13.6	27.4	66.9	-10	-7.7
5y Real GDP Growth (%)	0.4	1.3	-1.4	2.2	-3.8	3.7
Higher Education Share (%)	38.2	6.3	28.4	48.3	-35.0	-42.0
Share of Individuals Health Insurance (%)	85.5	5.2	76.8	92.1	-28.0	-40.0
DVMT by Freeway	31.5	12.4	7.8	50.4	-16	-6
Individuals per square mile	1524.0	828.3	553.0	3066.6	-20	-7.4
Long-term Unbanked (%)	6.2	5.8	0	17.5	16.0	93.0
Participation rate (%)	49.9	4	43.6	56.4	-24.0	-37.0
Support Ratio	174.2	36.2	122.9	240.8	-20.0	-23.0
Unemployment Rate (%)	8.4	2.4	4.6	12.7	17.0	30.0
Population Growth (year-over-year %)	1.1	1.2	-0.4	3.0	0.0	0.1
Gini Coeficient	0.50	0.02	0.47	0.54	-0.08	0.02
Income Ratio 10th to 50th pctile	17.0	6.0	11.7	26.2	-3.1	-9.8

Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census; sd=standard deviation, p5=percentile 5%, p95=percentile 95%; Corr=correlation coefficient

Table 29
Descriptive Statistics for Consumer Preferences (Demand-side) Component

	mean	sd	p5	p95	Corr to Underbanked	Corr to Unbanked
Demand Deposit Balance Growth (year-over-year %)	12.4	10.0	-2.6	29.5	-7.4	-23
Money Market Balance Growth (year-over-year %)	17.6	12.6	-2.5	41.4	4.3	-6.9
Savings Balance Growth (year-over-year %)	10.6	9.6	-2.8	26.3	-3.4	-13
Demand Deposit Accts (%)	75.1	10.7	55.1	90.4	-11.0	-62.0
Demand Deposit Savings Accts (%)	14.1	7.8	3.3	27.8	-3.4	-22.0
Demand Deposit Both (%)	10.4	6.1	0.8	21.5	-9.3	-18.0
Banked Greater than 12 months (%)	90.4	7.1	77.1	100	-8.4	-85.0
Check Cash Nonbank (%)	1.1	2.4	0	4.5	12.0	30.0
Money Order Nonbank (%)	7.8	6.5	0	18.3	59.0	34.0
Refund Anticipation LoanUse (%)	5.4	4.7	0	16.2	41.0	29.0
Rent 2 Own Use (%)	5.5	5	0	15.6	51.0	26.0
AFS Use Credit (%)	16.9	9	4.8	34.9	67.0	31.0
AFS Use Transactions (%)	32.8	11.8	16.6	52.7	70.0	40.0
Reason Unbanked (No Money) (%)	4.4	4.5	0	13.1	22.0	86.0
Demand Deposit Checking (%)	70.5	11	50.3	85.8	-11.0	-53.0

Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census; sd=standard deviation, p5=percentile 5%, p95=percentile 95%; Corr=correlation coefficient

Table 30
Descriptive Statistics for Technology Component

	mean	sd	p5	p95	Corr to Underbanked	Corr to Unbanked
Internet Access (%)	81.8	5.8	72.6	90.2	-36.0	-49.0
Computer Access (%)	81.7	5.9	71.1	90.4	-38.0	-50.0
Mobile Access (%)	45.5	6.5	34.4	56.5	1.0	-8.5
Smart Phone Access (%)	54.6	12.1	33.7	71.1	5.0	-13.0
Account Access Digital (%)	50.4	13.9	25.7	71.7	-2.6	-41.0
Account Digital Account Use (%)	19.7	9.5	5.1	37.5	13.0	-12.0
Low Income Smart Phone Access (%)	36.1	16.8	0.0	64.7	10.0	-0.3
Low Income Internet Access (%)	64.3	7.3	52.2	76.5	-34.0	-43.0
Low Income Computer Access (%)	63.6	7.6	50.7	76.0	-35.0	-44.0
Low Income Digital Access (%)	59.9	18.4	28.7	90.2	-11.0	-59.0

Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census; sd=standard deviation, p5=percentile 5%, p95=percentile 95%; Corr=correlation coefficient

Appendix 2

Table 31

Financial Inclusion Metropolitan Index (FIMI) Alternative Ranking*

	FI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
Utica	7.4	192	1	1	49	177	32.6%	12.2%	NY
Washington	3.9	30	5	20	32	32	19.7%	4.2%	DC
Baltimore	3.0	84	19	21	76	52	23.9%	5.5%	MD
San Francisco	3.0	9	2	12	143	34	12.1%	5.5%	CA
Seattle	3.0	39	15	25	57	21	15.6%	3.4%	WA
Boulder	2.9	89	12	5	70	8	15.5%	2.6%	CO
Ann Arbor	2.8	75	190	3	67	6	14.6%	0.0%	MI
Minneapolis	2.8	94	105	10	44	36	12.2%	3.7%	MN
Olympia	2.7	108	46	65	14	71	5.8%	0.0%	WA
Austin	2.6	38	108	34	34	5	15.6%	1.4%	TX
Norwich	2.6	87	94	9	89	144	29.9%	2.2%	CT
Bremerton	2.5	90	59	24	72	2	20.9%	0.0%	WA
Denver	2.5	53	27	32	93	24	15.4%	7.3%	CO
Fargo, ND	2.5	162	221	11	3	12	21.6%	6.7%	ND
Albany	2.4	128	236	23	43	79	10.5%	2.2%	NY
Boston	2.3	43	40	6	137	83	15.0%	6.2%	MA
Bridgeport	2.3	33	43	26	84	100	10.1%	4.0%	CT
Madison	2.2	101	116	4	138	109	7.5%	7.1%	WI
Appleton	2.1	161	205	16	38	16	2.5%	0.0%	WI
Burlington	2.1	150	133	8	25	63	15.3%	0.6%	VT
Green Bay	2.1	210	220	53	6	171	13.2%	3.4%	WI
Lawrence	2.1	114	229	7	31	18	22.3%	0.0%	KS
Portland	2.1	206	238	31	50	89	12.6%	1.7%	ME
San Jose	2.1	2	8	36	164	62	12.0%	4.3%	CA
Duluth, MN	2.0	250	187	79	20	58	6.3%	0.0%	MN
Eugene	2.0	144	97	91	29	19	13.3%	1.5%	OR
Iowa City	2.0	141	224	13	23	31	14.0%	0.0%	IA
St. Louis, MO	2.0	197	144	47	51	86	19.1%	4.3%	MO
Santa Rosa	2.0	35	39	48	79	30	13.1%	4.9%	CA
Napa	1.9	27	23	54	30	13	6.3%	5.7%	CA
Bellingham	1.8	73	60	50	45	157	5.0%	0.0%	WA
Fort Collins	1.8	133	48	27	120	4	14.1%	3.3%	CO
Hartford	1.8	48	47	28	128	159	16.8%	6.5%	CT
Reading	1.8	105	98	112	1	106	28.9%	2.6%	PA
Barnstable Town	1.7	177	183	22	117	156	17.8%	0.0%	MA
Portland	1.7	52	66	63	78	29	16.6%	3.8%	OR
Richmond	1.7	125	61	60	105	107	21.3%	4.2%	VA
San Diego	1.7	18	14	46	127	48	17.2%	3.5%	CA
Des Moines	1.6	130	78	37	59	26	16.7%	6.4%	IA
Milwaukee	1.6	81	80	49	116	138	11.0%	7.2%	WI
Omaha	1.6	98	103	29	47	59	23.4%	6.1%	NE
Salt Lake City	1.5	49	20	72	65	20	13.3%	2.7%	UT
Urban Honolulu	1.5	26	7	15	46	90	19.6%	4.4%	HI
Hagerstown	1.4	168	69	123	145	11	35.5%	10.5%	MD
Kansas City, MO	1.4	117	131	44	132	92	19.6%	11.8%	MO
Naples	1.4	36	138	209	91	14	11.6%	0.0%	FL
Raleigh	1.4	62	112	55	40	76	12.3%	4.6%	NC
Durham	1.3	68	96	51	87	25	26.1%	9.5%	NC
New Haven	1.3	51	57	30	159	165	10.8%	7.8%	CT
Rochester	1.3	158	239	62	80	128	17.1%	2.5%	NY
Sacramento	1.3	37	9	119	113	54	22.3%	6.0%	CA
St. Cloud	1.3	196	203	35	4	191	12.4%	0.0%	MN
Sioux Falls	1.3	189	164	17	33	105	18.7%	4.9%	SD
Springfield	1.3	237	233	69	16	75	22.0%	0.0%	IL
Worcester, MA	1.3	70	90	14	106	166	21.6%	2.3%	MA
York	1.3	191	83	94	64	88	25.3%	5.5%	PA
La Crosse	1.2	224	223	18	35	197	6.5%	0.0%	WI
Columbus	1.1	97	121	42	124	49	25.4%	7.2%	OH
Eau Claire	1.1	238	240	58	63	99	4.4%	3.7%	WI
Louisville/Jefferson County, K	1.1	176	204	74	69	97	26.1%	5.2%	KY
Oxnard	1.1	21	4	82	193	45	12.9%	6.4%	CA
Philadelphia	1.1	77	62	81	101	135	21.3%	7.1%	PA
Santa Cruz	1.1	32	36	33	171	51	10.2%	0.0%	CA
Billings	1.0	207	117	103	11	223	10.9%	1.9%	MT
Chico	1.0	91	74	141	125	35	22.1%	0.0%	CA
Roanoke	1.0	184	129	89	56	142	24.2%	0.0%	VA
Wausau	1.0	216	227	41	55	73	27.5%	0.0%	WI
Champaign	0.9	199	188	93	135	145	22.7%	5.8%	IL
Coeur dAlene	0.9	236	156	129	7	67	17.4%	0.0%	ID

Table 31 (continues from previous page)

Financial Inclusion Metropolitan Index (FIMI) Alternative Ranking*

	FI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
Crestview	0.9	137	145	203	15	7	32.0%	3.8%	FL
Dallas	0.9	34	72	86	149	33	27.7%	7.7%	TX
Dayton	0.9	182	208	92	39	61	25.4%	8.7%	OH
Janesville	0.9	170	212	135	12	84	17.8%	2.1%	WI
Pittsburgh	0.9	230	210	78	71	72	22.7%	4.7%	PA
San Luis Obispo	0.9	60	16	38	196	151	21.1%	0.0%	CA
Virginia Beach	0.9	116	44	61	161	96	27.5%	7.9%	VA
Waterloo	0.9	235	214	110	48	91	15.4%	2.4%	IA
Bangor	0.8	228	201	107	88	78	18.1%	1.1%	ME
Cedar Rapids	0.8	173	215	56	81	133	12.4%	3.9%	IA
Cleveland	0.8	151	119	71	111	158	17.2%	6.4%	OH
Harrisburg	0.8	139	153	39	139	202	13.6%	4.7%	PA
Jacksonville	0.8	107	88	128	96	56	29.6%	1.9%	FL
Jacksonville	0.8	118	155	176	5	9	28.5%	4.1%	NC
Lexington	0.8	120	65	101	77	42	18.7%	8.2%	KY
Little Rock	0.8	188	79	83	147	27	24.4%	10.4%	AR
Ogden	0.8	112	34	77	21	17	10.4%	6.4%	UT
Providence	0.8	66	67	45	144	174	15.7%	5.9%	RI
Springfield	0.8	79	93	52	141	199	21.9%	9.3%	MA
Springfield	0.8	218	186	104	10	125	13.3%	4.9%	MO
Trenton	0.8	29	35	73	204	160	31.0%	9.7%	NJ
Chicago	0.7	41	32	97	178	131	13.6%	7.7%	IL
Johnson City	0.7	245	225	151	36	189	13.7%	4.8%	TN
Vallejo	0.7	28	22	66	224	69	7.3%	0.0%	CA
Colorado Springs	0.6	80	30	40	216	139	16.8%	9.8%	CO
Atlanta	0.5	58	92	132	119	22	27.3%	9.0%	GA
Houston	0.5	24	38	130	168	37	28.9%	11.2%	TX
Michigan City	0.5	222	234	201	53	43	17.8%	2.6%	IN
Phoenix	0.5	40	3	153	170	148	14.4%	15.7%	AZ
Tallahassee	0.5	122	176	170	19	1	27.2%	0.0%	FL
Tucson	0.5	47	41	177	205	95	30.6%	5.7%	AZ
Wichita	0.5	93	87	100	142	137	22.8%	10.2%	KS
Charleston	0.4	246	191	117	73	217	27.2%	7.3%	WV
Detroit	0.4	102	95	121	103	146	18.3%	8.2%	MI
Grand Rapids	0.4	171	228	70	24	47	11.7%	3.7%	MI
Lubbock	0.4	78	147	169	129	102	27.1%	3.6%	TX
Palm Bay	0.4	119	114	181	90	153	18.5%	5.9%	FL
Pensacola	0.4	175	150	163	60	65	32.4%	0.0%	FL
Scranton	0.4	183	193	88	97	168	38.3%	2.0%	PA
Stockton	0.4	15	17	206	109	113	11.2%	10.3%	CA
Albuquerque	0.3	63	28	154	221	132	24.0%	11.2%	NM
Birmingham	0.3	223	163	124	126	60	24.2%	5.7%	AL
Buffalo	0.3	147	244	64	118	225	12.4%	8.6%	NY
Harrisonburg	0.3	83	82	111	194	28	21.1%	8.2%	VA
Knoxville	0.3	226	198	144	13	211	12.2%	3.0%	TN
Las Vegas	0.3	20	21	200	160	112	25.0%	7.2%	NV
New York	0.3	16	26	68	223	167	19.1%	9.6%	NY
Oshkosh	0.3	217	231	19	42	212	0.0%	0.0%	WI
Salem	0.3	45	49	155	85	140	15.0%	7.0%	OR
Charlotte	0.2	85	136	120	86	94	28.1%	7.8%	NC
Fayetteville	0.2	100	139	204	181	74	35.8%	14.0%	NC
Jackson	0.2	242	124	106	102	233	13.6%	6.9%	MI
Los Angeles	0.2	3	11	109	225	111	17.2%	9.0%	CA
Montgomery	0.2	186	128	167	100	101	30.1%	5.6%	AL
Niles	0.2	211	242	127	68	176	6.2%	0.0%	MI
Oklahoma City	0.2	76	107	116	217	150	23.5%	8.2%	OK
San Antonio	0.2	46	68	99	199	103	26.4%	8.0%	TX
Toledo	0.2	205	195	136	157	121	20.2%	9.5%	OH
Bowling Green	0.1	195	181	140	92	53	30.7%	0.0%	KY
Deltona	0.1	136	152	218	179	70	18.4%	1.5%	FL
Greenville	0.1	156	54	195	95	110	23.4%	4.7%	SC
Indianapolis	0.1	99	173	118	163	93	17.1%	10.5%	IN
Monroe	0.1	248	213	85	9	55	34.8%	0.0%	MI
Spokane	0.1	143	55	166	121	80	16.8%	15.0%	WA
Tampa	0.1	64	192	165	134	162	18.8%	5.2%	FL
Vineland	0.1	54	126	244	244	183	42.3%	28.9%	NJ
Akron	0.0	163	172	59	232	222	6.6%	7.8%	OH
Allentown	0.0	88	123	96	151	164	18.4%	4.5%	PA
Boise City	0.0	135	148	150	158	46	15.8%	6.7%	ID

Table 31 (continues from previous page)

Financial Inclusion Metropolitan Index (FIMI) Alternative Ranking*

	FI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
Kalamazoo	0.0	190	241	114	153	82	22.2%	0.0%	MI
Savannah	0.0	129	102	173	155	123	26.8%	6.3%	GA
Tulsa	0.0	159	151	137	203	38	21.4%	11.0%	OK
Warner Robins	0.0	187	177	227	22	209	28.4%	6.7%	GA
Winston	0.0	152	160	134	122	108	24.2%	7.3%	NC
Fayetteville	-0.1	127	158	138	62	50	24.7%	4.0%	AR
Gulfport	-0.1	194	115	211	41	192	33.0%	9.6%	MS
Miami	-0.1	4	24	180	229	190	13.6%	7.1%	FL
Provo	-0.1	82	51	98	17	10	10.1%	1.6%	UT
Santa Fe	-0.1	59	75	139	74	68	31.4%	5.5%	NM
Asheville	-0.2	154	217	84	110	163	8.1%	2.1%	NC
Atlantic City	-0.2	67	135	157	154	200	35.1%	2.1%	NJ
Columbia	-0.2	113	216	2	201	181	9.0%	3.7%	MO
Davenport	-0.2	185	209	102	130	198	16.9%	11.7%	IA
Huntsville	-0.2	134	77	133	148	188	17.2%	11.4%	AL
Lansing	-0.2	111	218	43	177	180	20.6%	5.9%	MI
Nashville	-0.2	95	125	67	115	119	18.5%	9.4%	TN
Pueblo	-0.2	140	142	161	37	207	28.8%	4.2%	CO
Saginaw	-0.2	244	245	162	18	205	20.7%	4.1%	MI
Syracuse	-0.2	153	226	57	108	152	26.4%	7.4%	NY
Bloomington	-0.3	202	247	75	114	193	21.6%	1.4%	IL
Lawton	-0.3	103	141	213	27	77	28.9%	4.1%	OK
Racine	-0.3	126	178	192	52	220	11.9%	7.1%	WI
Rockford	-0.3	115	202	168	133	23	22.0%	9.0%	IL
Cincinnati, OH	-0.4	181	207	76	213	204	20.3%	9.3%	OH
Fort Wayne	-0.4	178	230	184	99	64	9.4%	7.2%	IN
Reno	-0.4	44	50	108	174	114	17.8%	10.9%	NV
Baton Rouge	-0.5	213	110	145	197	98	19.9%	19.1%	LA
Chattanooga, TN	-0.5	212	166	131	94	221	15.3%	10.8%	TN
Columbia	-0.5	172	174	80	220	186	27.1%	12.9%	SC
Flint	-0.5	239	249	196	2	178	3.6%	6.9%	MI
Florence	-0.5	215	170	228	28	185	29.9%	3.5%	AL
Kingsport	-0.5	251	199	199	98	187	19.1%	6.4%	TN
Victoria	-0.5	106	120	190	190	44	28.3%	2.2%	TX
Altoona	-0.6	241	211	156	191	122	20.8%	0.0%	PA
Mobile	-0.6	198	132	220	182	170	27.2%	13.4%	AL
New Orleans	-0.6	96	64	152	219	179	16.0%	13.3%	LA
Spartanburg	-0.6	157	189	178	207	147	32.8%	7.4%	SC
Amarillo	-0.7	55	85	159	185	15	41.0%	22.4%	TX
Evansville, IN	-0.7	243	194	194	26	201	24.3%	4.9%	IN
Bend	-0.8	160	109	193	75	39	22.7%	2.4%	OR
Greeley	-0.8	72	52	122	58	161	16.9%	12.5%	CO
Lake Charles	-0.8	229	89	198	150	227	30.6%	17.5%	LA
Orlando	-0.8	42	149	143	189	141	22.4%	10.3%	FL
Port St. Lucie	-0.8	69	140	217	165	134	28.2%	13.0%	FL
Santa Maria	-0.8	12	13	95	167	41	5.9%	15.5%	CA
Athens	-0.9	110	99	187	215	245	14.1%	7.0%	GA
Gainesville	-0.9	109	130	175	195	87	9.1%	17.4%	FL
Killeen	-0.9	74	71	189	54	210	6.2%	17.5%	TX
Lancaster	-0.9	142	167	125	156	214	20.9%	7.5%	PA
Prescott	-0.9	131	165	222	8	226	38.5%	0.0%	AZ
Riverside	-0.9	22	6	202	227	129	17.7%	8.7%	CA
Waco	-0.9	61	175	183	183	104	33.2%	22.3%	TX
Greensboro	-1.0	92	146	115	187	215	11.9%	7.6%	NC
Visalia	-1.0	17	53	240	123	3	35.1%	4.4%	CA
Binghamton	-1.1	204	179	113	200	208	4.1%	13.1%	NY
Canton	-1.1	231	246	174	136	136	26.2%	8.9%	OH
Johnstown	-1.1	249	219	171	169	206	11.2%	0.0%	PA
Kingston	-1.1	104	104	87	175	244	17.5%	10.2%	NY
Myrtle Beach	-1.1	180	143	208	228	169	24.5%	13.5%	SC
Columbus, GA	-1.2	155	162	221	112	117	34.4%	3.6%	GA
Topeka	-1.2	138	222	126	214	173	26.4%	6.8%	KS
Dover	-1.3	164	56	164	208	228	15.3%	16.8%	DE
Charleston	-1.4	121	106	90	233	143	14.0%	8.5%	SC
Fort Smith, AR	-1.4	201	113	219	166	184	25.8%	8.6%	AR
Kankakee	-1.4	123	154	160	209	116	25.8%	16.4%	IL
Medford	-1.4	86	111	172	198	66	21.8%	0.0%	OR
Modesto	-1.4	23	42	230	218	155	14.1%	11.8%	CA
Salisbury, MD	-1.4	132	31	185	180	236	9.7%	9.4%	MD

Table 31 (continues from previous page)

Financial Inclusion Metropolitan Index (FIMI) Alternative Ranking*

	FI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
Anniston	-1.5	234	197	236	162	124	35.1%	0.0%	AL
Erie	-1.5	166	237	147	131	232	12.1%	0.0%	PA
Jackson	-1.5	219	157	146	235	120	28.5%	14.3%	MS
Shreveport	-1.5	209	137	142	188	218	31.0%	13.7%	LA
Tuscaloosa	-1.5	220	159	197	104	234	27.3%	9.5%	AL
Beaumont	-1.6	148	91	214	226	130	26.7%	15.2%	TX
Huntington	-1.6	247	185	207	176	203	19.8%	10.9%	WV
Midland	-1.6	56	118	158	239	57	19.2%	9.2%	TX
North Port	-1.6	71	171	210	140	243	5.3%	1.8%	FL
Yakima	-1.6	25	63	238	146	195	24.0%	9.0%	WA
Fresno	-1.7	19	18	234	237	127	23.9%	15.5%	CA
Lynchburg	-1.7	214	168	105	184	238	18.8%	10.0%	VA
Hickory	-1.8	208	200	212	173	231	25.3%	6.8%	NC
Joplin	-1.8	169	243	179	212	115	31.7%	14.6%	MO
Monroe	-1.8	240	134	231	211	149	28.4%	9.5%	LA
Memphis, TN	-1.9	124	122	186	240	118	24.2%	20.1%	TN
Lafayette	-2.0	203	86	191	206	182	24.5%	15.9%	LA
South Bend	-2.0	165	127	182	238	230	18.3%	25.9%	IN
Springfield	-2.0	221	248	149	66	224	21.0%	0.0%	OH
Cape Coral	-2.1	50	180	225	222	229	18.6%	6.0%	FL
Decatur	-2.1	232	250	205	82	81	11.3%	10.3%	IL
Augusta	-2.2	193	76	223	230	235	32.1%	25.4%	GA
Lakeland	-2.3	65	182	224	172	219	18.5%	3.1%	FL
Longview	-2.3	145	70	232	192	85	34.8%	16.1%	TX
El Paso	-2.5	11	232	216	107	175	38.7%	7.6%	TX
Macon	-2.5	174	100	235	248	216	31.2%	22.9%	GA
Ocala	-2.5	200	206	242	61	237	5.2%	15.0%	FL
Panama City	-2.7	179	196	241	152	241	6.1%	17.7%	FL
Valdosta	-2.7	167	169	229	186	194	7.9%	10.3%	GA
Corpus Christi	-2.9	57	84	148	247	126	49.8%	16.4%	TX
Decatur	-2.9	225	73	237	202	239	21.7%	16.4%	AL
Youngstown	-2.9	227	235	188	236	242	12.5%	8.5%	OH
Las Cruces	-3.0	31	45	226	231	240	4.9%	17.6%	NM
Bakersfield	-3.1	14	10	239	243	172	20.9%	20.9%	CA
Farmington	-3.7	146	33	248	83	248	51.0%	23.2%	NM
Albany	-3.9	149	184	246	249	154	25.2%	22.0%	GA
Salinas	-3.9	5	29	215	246	246	27.5%	3.8%	CA
Laredo	-4.0	8	101	249	210	40	24.6%	5.3%	TX
Merced	-4.0	7	37	247	242	247	30.7%	26.0%	CA
El Centro	-4.8	1	58	243	234	251	30.6%	0.0%	CA
Brownsville	-5.0	10	161	250	245	196	10.6%	10.1%	TX
Madera	-5.9	13	25	233	250	250	7.5%	33.8%	CA
McAllen	-6.6	6	81	251	251	213	22.2%	35.7%	TX
Muskegon	-8.3	233	251	245	241	249	16.6%	7.9%	MI

Note: Alternative specification using explanatory factors that significantly impact being a long-term participant of the financial sector. FIMI Index Scores Are Based on Normalized Values

Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census

Table 32

Financial Inclusion Metropolitan Index (FIMI) Alternative Ranking*

	FI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
San Francisco	4.8	17	4	10	194	13	12.1%	5.5%	CA
Washington	4.5	33	8	5	158	30	19.7%	4.2%	DC
San Jose	4.2	4	20	3	214	35	12.0%	4.3%	CA
Boulder	4.0	106	40	4	211	6	15.5%	2.6%	CO
Fort Collins	3.8	120	61	52	192	2	14.1%	3.3%	CO
Seattle	3.6	39	23	16	178	21	15.6%	3.4%	WA
Bremerton	3.5	105	65	154	88	5	20.9%	0.0%	WA
Olympia	3.5	111	52	187	122	47	5.8%	0.0%	WA
Bridgeport	3.4	34	83	2	230	22	10.1%	4.0%	CT
Boston	3.0	46	68	11	207	36	15.0%	6.2%	MA
Denver	3.0	61	35	20	95	27	15.4%	7.3%	CO
Minneapolis	3.0	110	164	14	184	31	12.2%	3.7%	MN
Oxnard	3.0	25	6	61	216	83	12.9%	6.4%	CA
Salt Lake City	3.0	42	25	17	153	8	13.3%	2.7%	UT
Barnstable Town	2.9	243	183	177	232	18	17.8%	0.0%	MA
Napa	2.8	30	48	32	151	20	6.3%	5.7%	CA
San Diego	2.8	18	13	39	210	25	17.2%	3.5%	CA
Urban Honolulu	2.8	27	12	37	195	44	19.6%	4.4%	HI
Santa Rosa	2.7	37	51	103	19	1	13.1%	4.9%	CA
Naples	2.6	47	155	207	228	58	11.6%	0.0%	FL
Sacramento	2.6	36	10	101	128	32	22.3%	6.0%	CA
Worcester, MA	2.6	92	107	126	188	54	21.6%	2.3%	MA
Austin	2.4	35	124	23	161	28	15.6%	1.4%	TX
Bellingham	2.4	63	130	55	242	37	5.0%	0.0%	WA
Portland	2.4	221	250	69	164	45	12.6%	1.7%	ME
Santa Cruz	2.4	28	42	94	251	74	10.2%	0.0%	CA
Ann Arbor	2.3	57	215	21	237	10	14.6%	0.0%	MI
Baltimore	2.3	101	22	25	137	68	23.9%	5.5%	MD
Ogden	2.3	88	26	66	98	16	10.4%	6.4%	UT
Eugene	2.2	124	146	114	136	14	13.3%	1.5%	OR
Madison	2.2	96	187	15	212	52	7.5%	7.1%	WI
Colorado Springs	2.1	80	16	84	71	15	16.8%	9.8%	CO
Lawrence	2.1	60	223	22	76	7	22.3%	0.0%	KS
Norwich	2.1	100	118	65	103	77	29.9%	2.2%	CT
San Luis Obispo	2.1	56	77	56	222	29	21.1%	0.0%	CA
Appleton	2.0	175	219	54	241	9	2.5%	0.0%	WI
Burlington	2.0	134	179	30	221	26	15.3%	0.6%	VT
Hartford	1.9	55	79	28	177	108	16.8%	6.5%	CT
Los Angeles	1.9	2	18	35	174	88	17.2%	9.0%	CA
Portland	1.9	53	140	12	183	17	16.6%	3.8%	OR
Deltona	1.8	179	112	250	141	66	18.4%	1.5%	FL
Iowa City	1.8	97	239	24	240	33	14.0%	0.0%	IA
Vallejo	1.8	29	31	122	209	38	7.3%	0.0%	CA
Chicago	1.7	41	41	58	170	75	13.6%	7.7%	IL
Phoenix	1.7	38	3	83	172	118	14.4%	15.7%	AZ
Raleigh	1.7	69	126	43	239	49	12.3%	4.6%	NC
Tucson	1.6	48	29	202	31	51	30.6%	5.7%	AZ
Albany	1.5	128	233	79	223	89	10.5%	2.2%	NY
Billings	1.5	193	182	57	220	107	10.9%	1.9%	MT
Chico	1.5	77	120	217	112	24	22.1%	0.0%	CA
Coeur dAlene	1.5	223	159	186	138	34	17.4%	0.0%	ID
Des Moines	1.5	149	117	26	163	43	16.7%	6.4%	IA
Miami	1.5	7	28	129	200	109	13.6%	7.1%	FL
New York	1.5	21	39	29	119	87	19.1%	9.6%	NY
Palm Bay	1.4	172	72	244	43	41	18.5%	5.9%	FL
Provo	1.4	44	37	41	157	11	10.1%	1.6%	UT
Salem	1.4	45	54	159	72	12	15.0%	7.0%	OR
Las Vegas	1.3	22	27	117	92	59	25.0%	7.2%	NV
Richmond	1.3	135	82	73	159	131	21.3%	4.2%	VA
Riverside	1.3	20	2	201	131	104	17.7%	8.7%	CA
Albuquerque	1.2	67	24	142	38	148	24.0%	11.2%	NM
New Haven	1.2	58	62	72	227	135	10.8%	7.8%	CT
Reading	1.2	116	97	166	126	120	28.9%	2.6%	PA
Trenton	1.2	31	36	13	106	115	31.0%	9.7%	NJ
St. Cloud	1.1	160	234	45	129	48	12.4%	0.0%	MN
Boise City	1.0	121	153	113	142	40	15.8%	6.7%	ID
Milwaukee	1.0	86	127	48	179	137	11.0%	7.2%	WI
Philadelphia	1.0	90	85	46	117	97	21.3%	7.1%	PA
St. Louis, MO	1.0	205	168	91	149	116	19.1%	4.3%	MO

Table 32 (continues from previous page)

Financial Inclusion Metropolitan Index (FIMI) Alternative Ranking*

	FI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
Stockton	1.0	14	15	213	62	160	11.2%	10.3%	CA
York	1.0	209	88	170	132	170	25.3%	5.5%	PA
Bangor	0.9	218	197	211	206	60	18.1%	1.1%	ME
Crestview	0.9	123	138	180	80	42	32.0%	3.8%	FL
Kansas City, MO	0.9	132	142	42	91	78	19.6%	11.8%	MO
Omaha	0.9	102	115	34	73	95	23.4%	6.1%	NE
Providence	0.9	74	104	118	190	110	15.7%	5.9%	RI
Springfield	0.9	76	94	157	187	105	21.9%	9.3%	MA
Fargo, ND	0.8	117	227	7	60	63	21.6%	6.7%	ND
Jacksonville	0.8	113	86	144	124	82	29.6%	1.9%	FL
La Crosse	0.8	196	238	33	238	94	6.5%	0.0%	WI
Santa Fe	0.8	87	169	128	176	113	31.4%	5.5%	NM
Virginia Beach	0.8	118	32	89	75	90	27.5%	7.9%	VA
Allentown	0.7	115	122	155	155	122	18.4%	4.5%	PA
North Port	0.7	147	141	238	234	84	5.3%	1.8%	FL
Pensacola	0.7	152	123	224	150	70	32.4%	0.0%	FL
Rochester	0.7	148	226	131	140	92	17.1%	2.5%	NY
Spokane	0.7	136	30	148	30	50	16.8%	15.0%	WA
Atlantic City	0.6	89	139	136	182	127	35.1%	2.1%	NJ
Cedar Rapids	0.6	194	225	44	233	129	12.4%	3.9%	IA
Greeley	0.6	82	57	127	154	62	16.9%	12.5%	CO
Green Bay	0.6	214	235	80	147	102	13.2%	3.4%	WI
Sioux Falls	0.6	186	217	9	144	61	18.7%	4.9%	SD
Dallas	0.5	32	74	27	36	100	27.7%	7.7%	TX
Duluth, MN	0.5	248	241	149	224	150	6.3%	0.0%	MN
San Antonio	0.5	43	49	85	81	76	26.4%	8.0%	TX
Atlanta	0.4	65	95	77	48	55	27.3%	9.0%	GA
Eau Claire	0.4	230	240	108	250	121	4.4%	3.7%	WI
Harrisburg	0.4	167	181	96	125	143	13.6%	4.7%	PA
Houston	0.4	24	33	18	29	86	28.9%	11.2%	TX
Pittsburgh	0.4	238	198	111	171	126	22.7%	4.7%	PA
Reno	0.4	49	50	74	146	80	17.8%	10.9%	NV
Springfield	0.4	244	232	150	93	134	22.0%	0.0%	IL
Columbia	0.3	68	237	6	248	19	9.0%	3.7%	MO
Grand Rapids	0.3	150	218	88	162	39	11.7%	3.7%	MI
Medford	0.3	130	148	223	231	69	21.8%	0.0%	OR
Tampa	0.3	79	189	178	134	106	18.8%	5.2%	FL
Wichita	0.3	95	98	100	46	140	22.8%	10.2%	KS
Cape Coral	0.2	78	145	240	111	71	18.6%	6.0%	FL
Columbus	0.2	98	178	47	54	64	25.4%	7.2%	OH
Kingston	0.2	140	45	208	186	114	17.5%	10.2%	NY
Oklahoma City	0.2	73	56	63	74	168	23.5%	8.2%	OK
Pueblo	0.2	144	133	199	102	153	28.8%	4.2%	CO
Salisbury, MD	0.2	174	70	237	244	172	9.7%	9.4%	MD
Waterloo	0.2	228	206	112	169	124	15.4%	2.4%	IA
Bend	0.1	200	149	158	199	56	22.7%	2.4%	OR
Champaign	0.1	163	216	123	133	141	22.7%	5.8%	IL
Detroit	0.1	127	102	97	143	103	18.3%	8.2%	MI
Durham	0.1	72	160	8	87	125	26.1%	9.5%	NC
Johnson City	0.1	237	188	232	185	174	13.7%	4.8%	TN
Lansing	0.1	91	213	92	189	53	20.6%	5.9%	MI
Lubbock	0.1	50	147	78	68	155	27.1%	3.6%	TX
Cleveland	0.0	183	134	68	105	85	17.2%	6.4%	OH
Harrisonburg	0.0	54	96	31	205	133	21.1%	8.2%	VA
Indianapolis	0.0	109	190	38	85	67	17.1%	10.5%	IN
Kalamazoo	0.0	158	236	134	225	98	22.2%	0.0%	MI
Myrtle Beach	0.0	226	135	233	83	101	24.5%	13.5%	SC
Prescott	0.0	199	165	249	17	138	38.5%	0.0%	AZ
Altoona	-0.1	242	209	215	181	164	20.8%	0.0%	PA
Tallahassee	-0.1	85	166	195	113	65	27.2%	0.0%	FL
Warner Robins	-0.1	153	152	228	7	191	28.4%	6.7%	GA
Wausau	-0.1	220	245	106	123	96	27.5%	0.0%	WI
Akron	-0.2	170	170	95	197	151	6.6%	7.8%	OH
Binghamton	-0.2	219	105	175	196	93	4.1%	13.1%	NY
Bowling Green	-0.2	151	200	184	67	158	30.7%	0.0%	KY
Buffalo	-0.2	157	228	153	65	161	12.4%	8.6%	NY
Charlotte	-0.2	94	177	67	55	145	28.1%	7.8%	NC
Janesville	-0.2	177	229	172	166	119	17.8%	2.1%	WI
Lexington	-0.2	107	151	40	156	152	18.7%	8.2%	KY

Table 32 (continues from previous page)

Financial Inclusion Metropolitan Index (FIMI) Alternative Ranking*

	FI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
Louisville/Jefferson County, K	-0.2	181	221	90	84	117	26.1%	5.2%	KY
Orlando	-0.2	40	150	116	110	57	22.4%	10.3%	FL
Roanoke	-0.2	204	171	168	104	193	24.2%	0.0%	VA
Santa Maria	-0.2	12	5	19	202	171	5.9%	15.5%	CA
Savannah	-0.2	93	101	138	145	162	26.8%	6.3%	GA
Athens	-0.3	71	53	135	219	205	14.1%	7.0%	GA
Bloomington	-0.3	119	243	71	249	149	21.6%	1.4%	IL
Dover	-0.3	173	21	210	116	123	15.3%	16.8%	DE
Fayetteville	-0.3	84	106	162	12	3	35.8%	14.0%	NC
Hagerstown	-0.3	189	64	214	6	154	35.5%	10.5%	MD
Huntsville	-0.3	141	87	99	26	190	17.2%	11.4%	AL
Racine	-0.3	139	185	206	215	156	11.9%	7.1%	WI
Springfield	-0.3	185	224	105	191	136	13.3%	4.9%	MO
Utica	-0.3	197	143	209	40	142	32.6%	12.2%	NY
Davenport	-0.4	203	172	75	56	73	16.9%	11.7%	IA
Dayton	-0.4	190	211	109	53	128	25.4%	8.7%	OH
Fort Wayne	-0.4	166	199	145	160	79	9.4%	7.2%	IN
Fresno	-0.4	16	7	174	61	210	23.9%	15.5%	CA
Greenville	-0.4	143	176	194	108	204	23.4%	4.7%	SC
Oshkosh	-0.4	206	249	53	245	163	0.0%	0.0%	WI
Port St. Lucie	-0.4	103	60	239	97	166	28.2%	13.0%	FL
Toledo	-0.4	182	214	98	44	46	20.2%	9.5%	OH
Winston	-0.4	161	128	181	115	187	24.2%	7.3%	NC
Asheville	-0.5	202	203	171	213	169	8.1%	2.1%	NC
Fayetteville	-0.5	122	173	115	152	72	24.7%	4.0%	AR
Gulfport	-0.5	171	90	203	33	201	33.0%	9.6%	MS
Johnstown	-0.5	250	205	241	246	146	11.2%	0.0%	PA
Lancaster	-0.5	154	174	152	130	182	20.9%	7.5%	PA
Cincinnati, OH	-0.6	187	222	49	86	130	20.3%	9.3%	OH
Rockford	-0.6	126	156	160	70	157	22.0%	9.0%	IL
Scranton	-0.6	188	196	204	90	186	38.3%	2.0%	PA
Syracuse	-0.6	159	204	120	78	132	26.4%	7.4%	NY
Erie	-0.7	142	194	183	236	203	12.1%	0.0%	PA
Gainesville	-0.7	83	129	133	77	144	9.1%	17.4%	FL
Knoxville	-0.7	216	201	161	100	221	12.2%	3.0%	TN
Niles	-0.7	224	247	151	243	176	6.2%	0.0%	MI
Tulsa	-0.7	145	100	87	57	180	21.4%	11.0%	OK
Charleston	-0.8	137	71	86	139	99	14.0%	8.5%	SC
Killeen	-0.8	64	44	125	193	173	6.2%	17.5%	TX
Nashville	-0.8	99	158	36	99	81	18.5%	9.4%	TN
Evansville, IN	-0.9	234	193	141	47	175	24.3%	4.9%	IN
Modesto	-0.9	19	34	164	45	208	14.1%	11.8%	CA
Ocala	-0.9	239	93	251	52	4	5.2%	15.0%	FL
Amarillo	-1.0	52	76	70	5	23	41.0%	22.4%	TX
Charleston	-1.0	249	202	76	50	183	27.2%	7.3%	WV
Jacksonville	-1.0	70	131	140	27	159	28.5%	4.1%	NC
Las Cruces	-1.2	26	17	176	168	222	4.9%	17.6%	NM
Monroe	-1.2	247	231	230	165	139	34.8%	0.0%	MI
Montgomery	-1.2	176	111	147	42	189	30.1%	5.6%	AL
Visalia	-1.2	10	69	220	208	240	35.1%	4.4%	CA
Anniston	-1.3	225	163	248	79	91	35.1%	0.0%	AL
Chattanooga, TN	-1.3	212	125	137	15	207	15.3%	10.8%	TN
Huntington	-1.3	246	195	205	114	179	19.8%	10.9%	WV
Little Rock	-1.3	178	110	62	69	199	24.4%	10.4%	AR
Michigan City	-1.3	208	242	227	204	165	17.8%	2.6%	IN
Yakima	-1.3	23	46	212	22	223	24.0%	9.0%	WA
Columbia	-1.4	169	162	104	20	181	27.1%	12.9%	SC
New Orleans	-1.4	112	58	51	167	178	16.0%	13.3%	LA
Topeka	-1.4	164	212	156	49	177	26.4%	6.8%	KS
Baton Rouge	-1.5	201	84	50	64	111	19.9%	19.1%	LA
Florence	-1.5	211	180	247	11	219	29.9%	3.5%	AL
Greensboro	-1.5	104	192	110	203	200	11.9%	7.6%	NC
Lafayette	-1.5	195	80	102	101	194	24.5%	15.9%	LA
Lynchburg	-1.5	210	137	169	135	216	18.8%	10.0%	VA
Midland	-1.5	59	184	1	229	184	19.2%	9.2%	TX
Saginaw	-1.5	240	244	182	118	218	20.7%	4.1%	MI
Salinas	-1.5	3	47	143	82	211	27.5%	3.8%	CA
Birmingham	-1.6	222	161	132	96	220	24.2%	5.7%	AL
Lake Charles	-1.6	215	89	60	9	112	30.6%	17.5%	LA

Table 32 (continues from previous page)

Financial Inclusion Metropolitan Index (FIMI) Alternative Ranking*

	FI Index	Demographic Rank	Supply-Side Rank	Macro Rank	Demand-Side Rank	Tech Rank	Underbanked	Unbanked	State
Lakeland	-1.6	75	157	246	201	209	18.5%	3.1%	FL
Victoria	-1.6	114	132	82	148	232	28.3%	2.2%	TX
Canton	-1.7	233	207	189	24	147	26.2%	8.9%	OH
Springfield	-1.7	227	246	179	247	185	21.0%	0.0%	OH
Bakersfield	-1.8	13	1	188	28	234	20.9%	20.9%	CA
El Centro	-1.8	1	73	139	175	235	30.6%	0.0%	CA
Kankakee	-1.8	133	63	192	25	167	25.8%	16.4%	IL
Lawton	-1.8	81	109	190	23	224	28.9%	4.1%	OK
Spartanburg	-1.9	155	167	196	39	231	32.8%	7.4%	SC
Jackson	-2.1	236	230	167	217	196	13.6%	6.9%	MI
Kingsport	-2.1	251	208	235	14	225	19.1%	6.4%	TN
Flint	-2.2	232	210	222	37	195	3.6%	6.9%	MI
Hickory	-2.3	217	175	243	120	233	25.3%	6.8%	NC
Joplin	-2.3	165	248	173	58	202	31.7%	14.6%	MO
El Paso	-2.4	11	186	163	18	226	38.7%	7.6%	TX
Tuscaloosa	-2.5	184	78	146	34	236	27.3%	9.5%	AL
Valdosta	-2.5	125	119	200	235	213	7.9%	10.3%	GA
Vineland	-2.5	66	108	236	1	197	42.3%	28.9%	NJ
Waco	-2.5	51	121	119	4	214	33.2%	22.3%	TX
Youngstown	-2.5	245	191	226	226	228	12.5%	8.5%	OH
Augusta	-2.6	207	19	216	3	212	32.1%	25.4%	GA
Corpus Christi	-2.7	62	75	59	59	192	49.8%	16.4%	TX
Beaumont	-2.8	146	66	93	41	229	26.7%	15.2%	TX
Fort Smith, AR	-2.8	192	154	197	109	248	25.8%	8.6%	AR
Mobile	-2.8	180	103	198	63	239	27.2%	13.4%	AL
Panama City	-2.8	191	144	231	32	230	6.1%	17.7%	FL
South Bend	-2.8	168	92	130	127	198	18.3%	25.9%	IN
Columbus, GA	-2.9	129	136	193	35	217	34.4%	3.6%	GA
Decatur	-2.9	231	67	221	16	241	21.7%	16.4%	AL
Decatur	-3.0	235	251	121	198	188	11.3%	10.3%	IL
Jackson	-3.0	213	113	124	66	215	28.5%	14.3%	MS
Shreveport	-3.0	198	114	107	107	243	31.0%	13.7%	LA
Laredo	-3.1	8	43	219	89	246	24.6%	5.3%	TX
Longview	-3.1	138	59	64	10	238	34.8%	16.1%	TX
Macon	-3.3	162	55	191	13	237	31.2%	22.9%	GA
Memphis, TN	-3.3	131	116	81	51	227	24.2%	20.1%	TN
Merced	-3.4	6	14	234	8	244	30.7%	26.0%	CA
Muskegon	-3.5	241	220	229	218	206	16.6%	7.9%	MI
Brownsville	-3.6	9	99	245	180	250	10.6%	10.1%	TX
Madera	-3.6	15	9	185	173	247	7.5%	33.8%	CA
Monroe	-3.6	229	81	225	94	249	28.4%	9.5%	LA
McAllen	-4.1	5	11	218	121	245	22.2%	35.7%	TX
Farmington	-5.0	108	38	165	2	251	51.0%	23.2%	NM
Albany	-5.1	156	91	242	21	242	25.2%	22.0%	GA

Note: Alternative specification using explanatory factors that significantly impacts being unbanked. FIMI Index Scores Are Based on Normalized Values
Source: BBVA Research, FHWA IPUMS, SNL, B.E.A. & Census

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