The Effect of National Radio on Financial Behavior

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***Abstract*— This paper examines the effects of increasing national coverage of All India Radio on financial inclusion during the early 2000s. Specifically, the dependent variable is bank account ownership and the explanatory variable of interest is subdistrict-level radio coverage. India's linguistic diversity means that radio coverage captures the proportion of the population that can effectively listen to accessible radio broadcasts. I include the standard controls of literacy, wealth, access to banking, and other demographic variables. The relationship between radio coverage and bank account ownership is regressed using a subdistrict-level fixed-effects model in order to counteract various endogeneity concerns. Changes in radio coverage are statistically and economically significant, and demonstrate modest changes in financial inclusion in response. Results vary between rural and urban regions, with rural regions experiencing greater effects from radio coverage than urban regions. Several robustness checks confirm the results provided. Policy implications are two-fold: increasing radio coverage in terms of language and geography across India and increasing access to radio broadcasts are expected to increase financial inclusion.**

I. Introduction

This paper examines the effects of radio coverage on financial inclusion. Specifically, it explores the link between All India Radio's broadcast coverage across India and Indian bank account ownership using data from the two census years of 2001 and 2011.

In this analysis, I examine how changes in radio coverage of All India Radio (AIR), or Akashvani, affect subdistrict-level financial inclusion. I construct various measures of radio coverage in order to generate composite measures of listenership that form the core independent variables. As controls, I include principal determinants of financial inclusion relevant at the subdistrict (tehsil) level, such as literacy, access to banks, wealth, and a number of demographic variables. I estimate this relationship using subdistrict fixed-effects and by clustering standard errors over subdistricts. The data for these variables is obtained from All India Radio, Prasar Bharati, and the 2001 and 2011 Censuses of India.

Financial inclusion, defined as the availability of and unencumbered access to financial services, is generally thought to have significant beneficial long-term impacts on poverty (Beck, Demirguc-Kunt, and Martinez Peria, 2007; Beck, Demirguc-Kunt, and Levine, 2007; Clarke, Xu, and Zou, 2006; Galor and Zeira, 1993; Honohan, 2004; Jeanneney and Kpodar, 2011). Financial inclusion, and particularly access to banking, is regarded as a major potential social safety net for much of the world's poor. Owning a bank account, generally a transaction account, promotes financial planning and other aspects of financial safety, but also promotes the use of other financial services, such as credit and insurance (Carbó et al., 2005; Leyshon and Thrift, 1995; Mohan, 2006, Rangarajan Committee, 2008).

In the Indian context, the concept of financial inclusion gained prominence with the Reserve Bank of India's 2005 Annual Policy Statement by then-governor Dr. Venugopal Reddy (Reddy, 2006). Following that, the Rangarajan Committee in 2008 placed much greater emphasis on the importance and need for financial inclusion, calling it "both a crucial link and a substantial first step towards achieving inclusive growth" (Rangarajan Committee, 2008). Both of these represent government-directed efforts at not only popularizing and promulgating the concept, but at promoting an academic interest in it as well. However, it should be understood that India's policy of providing accessible banking throughout the country stretches much further back, most notably with the Regional Rural Bank program. The program was well-regarded for greatly expanding rural banking, and has been shown to have had noticeable effects on rural poverty reduction in India (Burgess and Pande, 2005).

All India Radio (AIR), also known as Akashvani, is India's national public radio broadcaster. AIR began in 1936 in Kolkata, and, as of 2011, reached over 98% of India's population. Despite this, from 2001 to 2011, AIR added 34 new stations across the country, an expansion of about 17%. A number of these new stations also increased the languages they broadcast in, seeking to engage more with underserved and historically overlooked communities. AIR operates under a three-tier system — national, state, and local — in which stations broadcast programming and news bulletins from each of the three tiers. The national tier broadcasts in Hindi and English, the state tiers broadcast in official state languages, and the local tiers broadcast in locally prominent languages. The national and state tiers broadcast both news bulletins and other programming in all of their respective languages, whereas the local tier is given autonomy in deciding the extent to which its languages are to be used. Thus, of the local tier languages, some may be used for news bulletins and programming, whereas some may only be used for specific programming.

All India Radio broadcasts a variety of programs, from entertainment to education to programs specifically for a target audience, such as farmers, women, and youth. Many of these programs include financial education, financial advice,

or other pieces of financial information. Particularly, there are a variety of business or financial programs covering an array of financial education topics. Additionally, there are programs for farmers focusing on interest rates, insurance policies, and loans, and programs for women focusing on financial independence, among many more. All in all, a multitude of groups are informed on a variety of financial topics, most of which are centered around the opening and use of a bank account.

My core results show that there are indeed tangible effects to increasing AIR coverage in India. The findings show that, as a whole, India experiences a significant rise in bank account ownership from increases in radio coverage, implying that AIR-based financial education is successful at changing the financial behavior of many of its listeners. Observing the rural-urban divide, rural regions experience a high rate of financial participation as compared with urban regions. This suggests that, despite equivalent increases in coverage in urban regions, there are urban-specific factors that prevent financial education from translating to financial inclusion. Generally, urban residents are noted to be more multilingual than rural residents. Thus, an increase in coverage in their native language may be less effective than it would be for rural residents, for whom increases in language coverage are much more critical. Further, urban residents are more exposed to banks and to banking than rural residents are, for whom such radio broadcasts can be highly informative. Additionally, the results for both rural and urban regions show that bank account ownership is only increasing in radio coverage if there is sufficient radio ownership in the given subdistrict. Otherwise, broadcasts do not seem to reach the intended audience.

My results present clear policy implications for AIR and Prasar Bharati, its parent organization. Primarily, expanding AIR coverage across India, geographically and linguistically, has much potential to further government initiatives for financial inclusion. Considering AIR's present geographical reach, increases in coverage are more likely to come in the form of expanding the number of languages broadcast at a station. Thus, with increased language diversity across AIR stations, there can be increased information dissemination and penetration to many presently unreached populations. In addition to this, however, AIR must ensure high enough rates of radio access, through radio sets, for the increases in broadcast coverage to be effective.

The paper is organized as follows. Section II provides a review of the literature regarding banking and broadcasting in India. Section III describes the data and variables. Section IV presents the results from the main regressions. Section V examines several robustness checks of the core results. Section VI presents the conclusions.

II. Literature Review

Financial inclusion has been a major development goal for both developed and developing nations since the early 2000s, at the national and sub-national level. Additionally, it has been a major focus for several multinational organizations. The general meaning of financial inclusion is the availability and access of financial services to all individuals in the economy. Often, this occurs through the expansion of bank branches and the development of more coherent policies aimed at the disenfranchised and disadvantaged (Carbó et al., 2005; Clarke, Xu, and Zou, 2006; Conroy, 2005; Beck, Demirguc-Kunt, and Levine, 2007; Honohan, 2004; Leyshon and Thrift, 1995; Mohan, 2006; Rangarajan Committee, 2008). Financial inclusion generally begins with access to banking services, with access to credit considered an important secondary step. This paper will focus on the first of these, on the effect of financial education on banking, although it is well documented that the first generally leads to the second (Allen et al., 2012; Bhandari, 2009; Sarap, 1990).

It is well-documented in the development literature that access to and ownership of a bank account enables households to engage in significant levels of consumption smoothing over time; this has also been suggested to reduce the incidence of child-labor among these households (Becker, 1975; Blundell et al., 2017; Mincer, 1974). The literature also links banking to savings mobilization and access to credit. These are associated with greater capital accumulation, longer-term investment decisions, and significant poverty reduction (Burgess and Pande, 2005). Further, a number of papers demonstrate that poverty and inequality are negatively associated with access to formal financial services (Clarke, Xu, and Zou, 2006; Beck, Demirguc-Kunt, and Martinez Peria, 2007; Honohan, 2004; Galor and Zeira, 1993; Jeanneney and Kpodar, 2011). Moreover, much of the literature notes that greater access to financial services has significant positive externalities, improving a variety of measures of economic efficiency, equity, financial development, and economic growth (Abu-Bader and Abu-Qarn, 2008; Bittencourt, 2012; Conroy, 2005; Pal, 2011; Yang and Yi, 2008).

Financial literacy is generally regarded as a critical stepping-stone towards financial inclusion, as it educates individuals on the range of financial products they may obtain. However, several studies demonstrate that India, like much of the world, has very low levels of financial literacy across all population groups (Agarwal et al., 2015; Bönte and Filipiak, 2012; Huston, 2010). There are several studies conducted in India and similar developing nations that demonstrate the effect of financial literacy on financial behavior. The majority of such papers show limited effects of financial literacy programs on those already financially literate, but that there are modest inclusion improvements on the financially illiterate (Atkinson and Messy, 2011; Cole et al., 2009; Miller et al., 2009). Additionally, these results depend on the population to whom financial education is provided, with different groups responding differently due to any number of population-specific factors (Arora, 2016; Dixit and Ghosh, 2013; Gaurav and Singh, 2012; Nedungadi et al., 2018).

Regarding the link between radio and the dissemination of financial information, very little research has been conducted,

TABLE I: Method 1 and Method 2 for Representing Language Coverage *(LCV)*

Method	Value Assigned		
Language Coverage	no coverage	non-news coverage	news coverage
Method 1 (LCV1)	0		1
Method 2 (LCV2)	0	1	

particularly in India. One of the most prominent studies, however, documents that regular radio and television use has meaningful impacts on the awareness and understanding of various financial instruments, though it does not show an increase in investment in these instruments (Bönte and Filipiak, 2012). Additionally, numerous papers demonstrate the usefulness of radio for information dissemination in India and similar developing nations in the fields of health and technology (Sharma and Choudhary, 2007; Annamalai, 2001; Kakade, 2013; Nazam, 2000; Opara, 2008; Tamuli, 1999).

Radio-based financial education is ubiquitous in India, yet there is a dearth of research examining this medium of education and its effects on financial inclusion. This paper seeks to address this gap in the literature by presenting an analysis on All India Radio, arguably India's most well-known and most listened-to radio service, and whether AIR has been successful in improving India's levels of financial inclusion.

III. Data and Methods

Using All India Radio and Prasar Bharati, I compile an original panel of station-level data on subdistricts covered and broadcasting languages, primarily for the purpose of constructing the main variable of interest, *Effective Reach*. India is a notably diverse nation linguistically. A region's official languages, Hindi, and the state language(s) may not be well-understood by the many segments of the population. This can significantly lessen the effect of radio broadcasts intended to educate the public. Thus, it is possible that significant portions of certain subdistricts might be unable to speak any of the languages broadcast in their region. In light of these circumstances, I construct a variable, *Effective Reach* (ER), that seeks to capture the population for whom the available AIR broadcasts are understandable, the effective population reached. Essentially, I intend to summarize how well a subdistrict is "matched" by the broadcasts it receives; subdistricts with a high linguistic match will return a high value for ER, and subdistricts that receive broadcasts that do not match their linguistic demography will return a low value for ER. It is constructed as follows:

$$ER_i = \sum_l MT_{il} * \max_s(LCV_{ils}) \tag{1}$$

where MT is *Mother Tongue* (over population) and LCV is language coverage for subdistrict i, language l, and AIR station s.

Specifically, MT_{il} is the proportion of individuals in subdistrict i for whom language l is the mother tongue. *Mother Tongue* is used in the absence of a variable recording speakers by language at the subdistrict level. The primary assumption mitigating concerns of measurement error is that listeners will prefer their first language, and would thus choose to listen primarily, or only, to radio broadcasts in that language. LCV_{ils} records the coverage by station s of language l in subdistrict i. Language coverage attempts to assign a value to the broadcasting languages at a station. Unfortunately, a nontrivial number of stations provide only very limited information about their broadcasts, and thus I have elected to use a station's news-bulletin in generating these values. I classify languages based on whether they are used to relay news-bulletins, whether they are used for strictly non-news broadcasting, or whether they are not present at the station.

I devise two methods of interpreting the language coverage classification by generating two separate dummy variables, presented in Table I. Under the first, referred to as *method 1*, I construct $LCV1$, a dummy variable defined as 1 if, in subdistrict i, station s uses language l for news-bulletin broadcasting. The assumption underpinning the use of *method 1* is that, for listeners of a specific language, coverage below news-level coverage is insufficient for influencing financial behavior. The alternative method to this is referred to as *method 2*. Under this method, I construct $LCV2$, a dummy variable defined as 1 if, in subdistrict i, station s uses language l for any amount of broadcasting. The assumption underpinning the use of *method 2* is that any coverage is sufficient for influencing financial behavior. Thus, I generate two alternative measures of *Effective Reach*: $ER1$ and $ER2$.

The remainder of the data is obtained directly from the Census of India, years 2001 and 2011. Earlier censuses contain were not used because they did not record household banking data. From the data, I am able to make use of three different sets of observations. The first set includes data on whole subdistricts (10,873 observations), henceforth referred to as *total*. The second set includes data on the rural portions of subdistricts (10,785 observations, as not all subdistricts have rural parts), henceforth referred to as *rural*. The third set includes data on the urban portions of subdistricts (5,551 observations, as many subdistricts do not have urban parts), henceforth referred to as *urban*. Summary statistics can be found in Appendix A, Tables 1 and 2.

The dependent variable in my analysis is *Bank Account Ownership* (BO), which represents the proportion of households in a subdistrict that are in possession of a bank account. This records households in possession of one account as equivalent to households where multiple adults possess their own, independent accounts. In order to capture the proportion of the population that has access to radio broadcasts, I construct both *Radio Ownership* (RO) and *Car Ownership* (CO). *Radio Ownership* is defined as the proportion of households in a subdistrict that are in possession of a radio set or a transistor radio. Additionally, as cars and other auto-

mobiles are generally outfitted with a radio console, I include *Car Ownership*, defined as the proportion of households in a subdistrict that are in possession of a car, van, or jeep.

Effective Reach captures the maximum potential reach that AIR broadcasts can have in a subdistrict. However, low rates of radio access would render *Effective Reach* values particularly meaningless. As such, in order to capture effective listenership, I make use of two interaction terms: $RO\text{x}ER$ and $CO\text{x}ER$. $RO\text{x}ER$ captures the radio set/transistor radio-based effective listenership, where $CO\text{x}ER$ captures the automobile-based effective listenership. In addition to these variables, I include a number of control variables that are determinants of financial inclusion seen as standard in the literature, namely wealth, literacy, access to financial institutions, and country-specific demographic variables (Bhattacharyay, 2016; Khanh, et al., 2019; Kumar, 2013; Sahoo et al., 2017; Singh et al., 2017).

Following the work of Filmer and Pritchett (2001), McKenzie (2005), Vyas and Kumaranayake (2006), and several others, I construct an asset-based wealth index by means of principal component analysis. The majority of such indices are constructed for the purpose of scoring and ranking households by wealth; however, in my analysis, I turn from scoring households to scoring subdistricts. The Census of India provides an abundance of household and housing data, and I am able to collect 81 assets for 2001 and 119 assets for 2011. This data is provided, in line with the other variables, as the proportion of households in a subdistrict that have or have access to a given characteristic/asset. Essentially, this asset index scores a subdistrict's wealth in accordance with the wealth of the households comprising that subdistrict.

Concerns over the inclusion of irrelevant assets or characteristics in the index are generally unfounded. Included variables fall under one of the following categories, each of which is an indicator of household wealth: housing condition, house-ownership status, housing materials, number of rooms, household member characteristics, water and water access, electricity and fuel, latrine and bathing room facilities, kitchen facilities, and assets.

From this, the final variable, *Wealth Index* is constructed by weighting each of the included variables for each subdistrict, resulting in a singular, summarized value that indicates the subdistrict's wealth relative to the other subdistricts in the country. As is usual in the literature, I standardize (mean-center and divide by the standard deviation) this measure by population set (*total/rural/urban*) and by year in order to facilitate interpretation of its estimated coefficients (Filmer and Pritchett, 2001; McKenzie, 2005; Vyas and Kumaranayake, 2016).

Literacy, among a variety of education variables, is generally strongly associated with financial participation in the literature. As such, I include *Literacy Rate*, which measures the proportion of the population that is literate by subdistrict. Access to financial institutions and banking facilities is another important determinant of financial inclusion. The Census of India provides information on the number of banks per capita present within a subdistrict. From this, I generate two variables: $sdBI$ and dBI. $sdBI$ is the number of banks in the given subdistrict. However, individuals living in a subdistrict are not confined to banking solely within their subdistrict. In order to account for this, I construct dBI, the number of banks in a given district per capita (of the district). Together, these two variables seek to capture banking access.

Finally, I include a number of demographic variables to account for demographic-specific barriers or advantages to financial inclusion. The Census of India provides the gender ratio as well as the proportion of religious minorities (Muslim, Christian, Sikh, Buddhist, Jain, Other) per subdistrict, and thus I include each of these in my analysis.

Additionally, in order to correct for subdistrict-specific endogenous characteristics that cannot be accounted for – cultural or social drivers, or that lack sufficient data – spending on financial infrastructure, education, or radio, I implement subdistrict fixed-effects. Further, I cluster on subdistricts in order to produce cluster-robust standard errors. Using these variables, I estimate the following two empirical models that differ only in their use of $ER1$ or $ER2$:

$$\begin{aligned} BO_{it} =& \alpha + \beta_1 RO_{it} + \beta_2 CO_{it} + \beta_3 ER1_{it} \\ &+ \beta_4 RO_{it} * ER1_{it} + \beta_5 CO_{it} * ER1_{it} + \beta_6 Lit_{it} \\ &+ \beta_7 sdBI_{it} + \beta_8 dBI_{it} + \beta_9 WI_{it} + \boldsymbol{Z} * \boldsymbol{\gamma} \\ &+ \theta_t + \phi_i + \epsilon_{it};\ t = 0, 1;\ i = 0, ..., N \end{aligned} \tag{2}$$

$$\begin{aligned} BO_{it} =& \alpha + \beta_1 RO_{it} + \beta_2 CO_{it} + \beta_3 ER2_{it} \\ &+ \beta_4 RO_{it} * ER2_{it} + \beta_5 CO_{it} * ER2_{it} + \beta_6 Lit_{it} \\ &+ \beta_7 sdBI_{it} + \beta_8 dBI_{it} + \beta_9 WI_{it} + \boldsymbol{Z} * \boldsymbol{\gamma} \\ &+ \theta_t + \phi_i + \epsilon_{it};\ t = 0, 1; i = 0, ..., N \end{aligned} \tag{3}$$

for subdistrict i and time period t. The term $\boldsymbol{Z}$ is a vector of control variables, $\boldsymbol{\gamma}$ is the vector of their coefficients, θ_t is the set of time fixed-effects, and ϕ_i is the subdistrict-specific fixed-effects term. A description of all variables can be found in Table IV.

IV. Results

Table V presents estimates of the model as specified above, where the first three columns are estimates of equation (2) and the second three columns are estimates of equation (3).

A. Effective Reach

The variable of interest, Effective Reach, is interpreted through an examination of the marginal effects. From here one, when I refer to *estimates*, I will be referring to estimates of marginal effects.

$$\frac{\partial BO}{\partial ER} = \beta_3 + \beta_4 * RO_{it} + \beta_5 * CO_{it} \tag{4}$$

Estimates of *Effective Reach* vary depending on the population set used. Estimates are increasing in *Radio Ownership* and *Car Ownership* under *total* and *rural*; however, interestingly, estimates are decreasing in either *Radio Ownership*,

Car Ownership, or both, under *urban*. increasing in *Car Ownership* about two (*method 1*) to three (*method 2*) times the rate of increases in *Radio Ownership*. This suggests that radio access by means of *Car Ownership* has a noticeably larger impact on *Bank Account Ownership* than does radio access by means of *Radio Ownership*. This is discussed further under *Car Ownership*. Despite being increasing in these two variables, the majority of subdistricts do not actually experience increases in *Bank Account Ownership* from increases in *Effective Reach*. Rather, only 25.44% (*method 1*) to 46.18% (*method 2*) of subdistricts have *Radio* and *Car Ownership* levels sufficient for increases in *Effective Reach* to translate to increases in *Bank Account Ownership*. Further, the average marginal effect (of the positive values) presents only modest values, 0.037 (*method 1*) or 0.043 (*method 2*). This implies that a 1% increase in in *Effective Reach*, essentially a a 1% increase in the broadcasting-linguistic match, leads to a 0.037%-0.043% increase in *Bank Account Ownership*. Put in other terms, in a subdistrict of population 10,000, radio service for 100 more people results in 3-4 additional individuals obtaining a bank account. Moreover, some subdistricts experience rather high marginal effects; the top 1.83% (*method 1*) and 4.04% (*method 2*) of subdistricts experience marginal effects of 0.1 or higher, or a 0.1% increase in *Banking* from a 1% increase in *Effective Reach*.

Using *rural* population, we obtain rather similar results. Again, only 25.03% (*method 1*) to 49.32% (*method 2*) of subdistricts have *Radio* and *Car Ownership* levels sufficient for increases in *Effective Reach* to have positive effects on *Bank Account Ownership*. And, the average marginal effect (of positive values) is slightly lower, at 0.032 (*method 1*) or 0.037 (*method 2*), implying that a 1% increase in *Effective Reach* leads to a 0.032%-0.037% increase in *Bank Account Ownership*. Despite this, the top 1.01% (*method 1*) and the top 2.56% (*method 2*) of subdistricts experience marginal effects of 0.1 or higher, or a 0.1% increase in *Banking* from a 1% increase in *Effective Reach*. Essentially, estimates using both *total* and *rural* populations suggest that high levels of *Radio* and/or *Car Ownership* are required for increases in *Effective Reach* to have economically significant effects on financial participation.

Under *urban* populations, estimates using $ER1$ are quite different from estimates using $ER2$. *Method 1* estimates of $ER1$, $RO \times ER1$, and $CO \times ER2$ are statistically insignificant, as are the resultant marginal effects, implying negligible effects from changes in $ER1$. Examining estimates using *method 2*, 48.00% of subdistricts have *Radio* and *Car Ownership* levels sufficient for $ER2$ to have positive effects on *Bank Account Ownership*. Additionally, the average marginal effect (of positive values) is much lower, at 0.021, implying that a 1% increase in $ER2$ leads to a 0.021% increase in *Bank Account Ownership*. Changes in All India Radio urban coverage have much smaller effects than changes in rural coverage.

B. Radio Ownership

Interpretation of the estimates of *Radio Ownership* also requires an examination of the marginal effects.

$$\frac{\partial BO}{\partial RO} = \beta_1 + \beta_4 * ER_{it} \tag{5}$$

Estimates of *Radio Ownership*, using *total* populations, is increasing in *Effective Reach*. Marginal effects at the mean ($ER1 = 0.515$, $ER2 = 0.572$) are negative at -0.0144 (*method 1*) and -0.0264 (*method 2*). However, at *ER1*=0.568 and $ER2 = 0.673$, the marginal effects of *Radio Ownership* become positive. Accordingly, we see that only 53.32% (*method 1*) to 50.89% (*method 2*) of subdistricts have *Effective Reach* at sufficiently high levels for increases in *Radio Ownership* to result in positive changes in *Bank Account Ownership*. Similarly, using *rural* populations, we see that estimates of *Radio Ownership* are increasing in *Effective Reach*. Marginal effects at the mean ($ER1 = 0.527$, $ER2 = 0.588$) are negative at -0.0279 (*method 1*) and -0.0417 (*method 2*). And, in line with the *total* results, we see that only 52.11% (*method 1*) to 48.05% (*method 2*) of subdistricts have *Effective Reach* at sufficiently high levels for increases in *Radio Ownership* to result in positive changes in *Bank Account Ownership*. However, under *urban* populations, estimates of *Radio Ownership* are decreasing in *Effective Reach*, but are positive across all values of ER. Marginal effects at the mean are much higher as well, at 0.1233 (*method 1*) and 0.1308 (*method 2*), implying that a 1% increase in *Radio Ownership* translates to a 0.1233% or 0.1308% increase in *Bank Account Ownership*.

C. Car Ownership

Interpretation of the estimates of *Car Ownership* also requires an examination of the marginal effects.

$$\frac{\partial BO}{\partial CO} = \beta_2 + \beta_5 * ER_{it} \tag{6}$$

Estimates of *Car Ownership* using *total* populations, are increasing in *Effective Reach*. Marginal effects at the mean ($ER1 = 0.515$, $ER2 = 0.572$) are positive at 0.1886 (*method 1*) and 0.1944 (*method 2*), implying 0.1886% and 0.1994% changes in *Bank Account Ownership* from percent unit changes in *Car Ownership*. The majority of subdistricts see positive marginal effects of *Car Ownership*: 67.51% (*method 1*) and 71.45% (*method 2*) of subdistricts. Estimates using *rural* populations present more positive effects from increases in *Car Ownership*. Marginal effects at the mean ($ER1 = 0.527$, $ER2 = 0.588$) are slightly lower, however, at 0.1496 (*method 1*) and 0.1911 (*method 2*). But notably, 100% of subdistricts under *method 1* specifications have positive marginal effects of *Car Ownership*, whereas 78.60% of subdistricts under *method 2* specifications have positive marginal effects. Finally, estimates using *urban* populations are similar to *rural* estimates. Marginal effects at the mean ($ER1 = 0.515$, $ER2 = 0.552$) are positive, at 0.1823 (*method 1*) and 0.1317 (*method 2*), and again, 100% of subdistricts (*method 1*) and 75.58% of subdistricts (*method 2*)

have positive marginal effects of *Car Ownership*. However, it should be noted that, for *urban* populations under *method 2* specifications, the marginal effects are decreasing in *Effective Reach*.

A point of concern with the above estimates is that *Car Ownership* appears to be proxying wealth, producing a potential upward bias in the estimates. As such, I provide a robustness test without *Car Ownership* in Section V to demonstrate that this behavior is inconsequential.

D. Literacy Rate

The coefficients on *Literacy Rate* are economically and statistically significant for *total* and *rural* populations. We see rather high levels of impact from increasing the *Literacy Rate*, with a 1% increase resulting in a 0.202% to a 0.251% increase in *Bank Account Ownership*, consistent with the literature (Khanh, et al., 2019; Kumar, 2013; Sahoo et al., 2017; Singh et al., 2017) about the impact of education on financial inclusion. However, what is unusual is the estimates for *urban* populations. These coefficients are not statistically significant and are only weakly economically significant. Further, the coefficients are negative, implying decreases to *Bank Account Ownership* from increases in the *Literacy Rate*. These findings agree with some of the literature about India's urban poor, which note that literacy or education are often insufficient to overcome barriers to financial inclusion (Chakrabarti and Sanyal, 2016; Rajeev and Vani, 2017).

E. Wealth Index

The coefficients on the *Wealth Index* are economically and statistically significant for all population sets. Estimates using *total* populations are of a moderate level, at around 0.09. Estimates using *rural* populations are slightly lower, at around 0.064, and estimates using *urban* populations are about 55% higher than *rural* estimates, at around 0.1. The *Wealth Index* has been standardized (mean-centered and divided by the standard deviation). Thus, the above estimates can be interpreted as: a 1 standard deviation increase in wealth corresponds to a 9% (*total*), 6.4% (*rural*), or 10% (*urban*) increase in *Bank Account Ownership*. These coefficients are generally consistent with the literature (Bhattacharyay, 2016; Khanh, et al., 2019; Kumar, 2013; Sahoo et al., 2017; Singh et al., 2017) about the impact of wealth on financial inclusion, and suggest wealth is more significant a factor in urban regions than in rural regions.

F. Banking Institutions

Interpretation of the estimates of Banking Institutions does not immediately suggest marginal effect analysis. However, by construction of dBI, we have:

$$dBI_i = \frac{\sum_i^d (Banks_i)}{\sum_i^d (Population_i)}$$
$$\text{and } sdBI_i = \frac{Banks_i}{Population_i}$$

Thus, we have

$$dBI_i = \frac{Banks_1 + Banks_2 + ... + Banks_d}{\sum_i^d (Population_i)}$$

$$dBI_i = \frac{Banks_i}{\sum_i^d (Population_i)} + \frac{Banks_1 + ... + Banks_{i-1}}{\sum_i^d (Population_i)} + \frac{Banks_{i+1} + ... + Banks_d}{\sum_i^d (Population_i)}$$

$$dBI_i = \frac{sdBI_i * Population_i}{\sum_i^d (Population_i)} + \frac{Banks_1 + ... + Banks_{i-1}}{\sum_i^d (Population_i)} + \frac{Banks_{i+1} + ... + Banks_d}{\sum_i^d (Population_i)}$$

and, therefore, from equations (2) and (3)

$$\frac{\partial BO_i}{\partial sdBI_i} = \beta_7 + \beta_8 * \frac{Population_i}{\sum_i^d (Population_i)}$$

Thus, we see that the marginal effects of *Banking Institutions*, as specified in these models, are dependent on relative size of the subdistrict's population to its district's population. For *total* populations, it appears that the vast majority of subdistricts experience increases to *Bank Account Ownership* from increases in the number of banks present; 100% of subdistricts under *method 1* have positive marginal effects, and, under *method 2*, subdistricts whose populations are greater than 0.021% of their district's population have positive marginal effects. This amounts to 99.32% of subdistricts. Interestingly, however, the estimates presented using *rural* and *urban* populations are strikingly contrary to the *total* population estimates. Marginal effects for *rural* and *urban* population sets are decreasing in relative population size, and the marginal effects become negative after surpassing rather low thresholds: from 0.339% to 0.527% of their district's population. As such, the vast majority of subdistricts, under *rural* and *urban*, experience negative marginal effects of *Banking Institutions* on *Bank Account Ownership*.

V. Robustness

In this section, I examine the robustness of the core estimates. Primary concerns regarding the estimates of equations (2) and (3) include potential endogeneity or feedback from certain regressors and the arbitrariness of controls included. I present estimates of alternate models in order to argue that the problems associated with these issues are not important.

The assumption that household wealth strongly influences a household's financial participation status is common in the literature (Khanh, et al., 2019; Kumar, 2013; Sahoo et al., 2017; Singh et al., 2017). However, it is highly plausible to consider that financial inclusion may have positive impacts on long-term household wealth. Thus, to maintain the

consistency of the estimates presented earlier, wealth levels must be strictly exogenous from levels of financial inclusion, as would be expected from a lagged effect. In Table VI, I present estimates of equations (2) and (3) omitting the wealth index. The core estimates of ER, RO, and their interactions are largely similar to those from Table V, whereas estimates of CO and $CO \times ER$ are somewhat lower and have less statistical significance.

As mentioned in the discussion of the estimates for *Car Ownership*, the estimates suggest that *Car Ownership* could be serving as a proxy for wealth in the regression. Owning a car is not ubiquitous in India, with data from 2011 showing that only 2.8% of households owned a car (with bicycle and motorcycle ownership much higher). Thus, higher rates of *Car Ownership* may be producing higher estimates not because car-based radio access is more effective at conveying financial information, but because the estimates appear to be proxying the subdistrict's wealth. As such, in Table VII, I present estimates of equations (2) and (3) omitting Car Ownership and its interaction term $CO \times ER$. The core estimates of ER, RO, and their interactions are broadly similar to those from Table V, clearly demonstrating their robustness.

Another assumption found frequently in the literature is that (Bhattacharyay, 2016; Khanh, et al., 2019; Sahoo et al., 2017; Singh et al., 2017) access to banking is a determinant of financial inclusion. However, it is not implausible to consider that higher levels of financial inclusion could act as a determinant of banking access. As noted above, to maintain the consistency of the previously presented estimates, access to banking must be strictly exogenous from levels of financial inclusion. In Table VIII, I present estimates of equations (2) and (3) omitting both banking variables, $sdBI$ and dBI. Here I note that the core estimates of *ER*, RO, CO, and their interactions are largely similar to those from Table V.

A final concern is related to the demographic variables included. The choice of variables included may be seen as arbitrary, and other variables which were not available in the data may seem more relevant. In Table IX, I present estimates of equations (2) and (3) omitting the demographic variables. I observe that the core estimates of ER, RO, CO, and their interactions are largely similar to those from Table V.

VI. Conclusion

The results reflect the different characteristics of rural and urban regions. From 2001 to 2011, there was a marked rise in bank account ownership throughout India. However, these increases were not homogeneous; the average bankedness in rural regions rose 23.93 percentage points to 52.26%, whereas for urban regions it rose by only 16.54 percentage points to 62.74%. At mean values of *Radio Ownership* and *Car Ownership*, we see that subdistricts experience only weak gains, and even losses, from increases in *Effective Reach*. However, at high levels of *RO* and *CO*, *Effective Reach* has a much stronger effect on *Bank Account Ownership*.

Comparing rural and urban regions, increases in *Effective Reach* (increases in the broadcasting-linguistic match) have stronger impacts in rural India at all levels of *RO* and *CO* as compared with urban India. There are several potential explanatory circumstances affecting this. Primarily, urban regions in India are widely recorded to have higher rates of multilingualism, which is not captured by *Mother Tongue*. This reduces the impact of increasing AIR language coverage in these urban regions, as higher percentages of urban linguistic minorities will already be in AIR's reach as compared with rural regions. Additionally, urban residents are much more exposed to banks and to banking than rural residents are. Thus, radio broadcasts discussing financial information can potentially be much less informational for urban residents than for rural residents. These two factors work to reduce the effect of increasing AIR language coverage for urban populations.

Additionally, observing increases in *Radio Ownership* strongly supports the above conclusion, particularly in rural regions. Rural regions experience minimal gains, and even losses, from increases in *Radio Ownership* if accompanied by low levels of ER. However, at high levels of *Effective Reach*, increases in *Radio Ownership* have a much stronger impact on *Bank Account Ownership*. *Radio Ownership* in urban regions, as well as *Car Ownership* in all regions, suggest that increases therein result in increases in *Bank Account Ownership*, irrespective of the level of *Effective Reach*.

Overall, the results presented above show that there are economically significant benefits to be had from increases in effective listenership, as represented by the two interaction terms $RO \times ER$ and $CO \times ER$. As noted when discussing the variables, effective listenership comprises languages spoken/used and access to radio broadcasts. Thus, increases in effective listenership require increases in both components. Subdistricts that experience both see the highest benefits to financial inclusion. These findings suggest that the government impetus for AIR expansion (station expansion, coverage expansion, or language expansion) must be accompanied by high levels of radio access, be it through radio sets or through radio-fitted vehicles, in order to be effective in increasing financial education.

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VIII. Appendix A: Additional Tables

TABLE II: Summary Statistics for 2001

Total	*N*	Mean	Standard Deviation	Min	Max
Bank Account Ownership (BO)	5451	0.302	0.147	0	0.887
Radio Ownership (RO)	5451	0.296	0.133	0.009	0.858
Car Ownership (CO)	5451	0.014	0.017	0	0.267
Literacy Rate (Lit)	5451	0.502	0.132	0.078	0.868
Banks per Subdistrict ($sdBI$)	5451	0.020	0.042	0	1.767
Wealth Index (WI)	5451	0	1	-1.743	4.402
Population	5451	180299.9	213203	275	4220048
Rural	*N*	Mean	Standard Deviation	Min	Max
Bank Account Ownership (BO)	5412	0.283	0.144	0	0.935
Radio Ownership (RO)	5412	0.286	0.131	0.009	0.816
Car Ownership (CO)	5412	0.011	0.015	0	0.559
Literacy Rate (Lit)	5412	0.483	0.127	0.078	0.880
Banks per Subdistrict ($sdBI$)	5412	0.093	2.907	0	209.844
Wealth Index (WI)	5412	0	1	-1.896	6.778
Population	5412	137193.4	120599.5	131	1084151
Urban	*N*	Mean	Standard Deviation	Min	Max
Bank Account Ownership (BO)	2544	0.462	0.161	0.014	0.994
Radio Ownership (RO)	2544	0.397	0.132	0.103	0.940
Car Ownership (CO)	2544	0.036	0.033	0	0.741
Literacy Rate (Lit)	2544	0.659	0.093	0.272	0.908
Banks per Subdistrict ($sdBI$)	2544	0.231	0.449	0	16.229
Wealth Index (WI)	2544	0	1	-3.395	3.179
Population	2544	93547.76	217863.4	482	4215497

TABLE III: Summary Statistics for 2011

Total	*N*	Mean	Standard Deviation	Min	Max
Bank Account Ownership (BO)	5422	0.537	0.178	0	1
Radio Ownership (RO)	5422	0.163	0.108	0	0.839
Car Ownership (CO)	5422	0.028	0.036	0	0.374
Literacy Rate (Lit)	5422	0.689	0.115	0.148	0.985
Banks per Subdistrict ($sdBI$)	5422	0.034	0.112	0	4.887
Wealth Index (WI)	5422	0	1	-2.290	3.702
Population	5422	205612.1	262482.4	189	5585528
Rural	*N*	Mean	Standard Deviation	Min	Max
Bank Account Ownership (BO)	5373	0.523	0.184	0	1
Radio Ownership (RO)	5373	0.159	0.107	0	0.839
Car Ownership (CO)	5373	0.022	0.026	0	0.447
Literacy Rate (Lit)	5373	0.670	0.113	0.148	1
Banks per Subdistrict ($sdBI$)	5373	0.182	3.968	0	272.727
Wealth Index (WI)	5373	0	1	-2.146	5.956
Population	5373	148672.2	134813.7	11	1463875
Urban	*N*	Mean	Standard Deviation	Min	Max
Bank Account Ownership (BO)	3007	0.627	0.139	0.109	0.995
Radio Ownership (RO)	3007	0.181	0.113	0.015	0.889
Car Ownership (CO)	3007	0.060	0.052	0	0.470
Literacy Rate (Lit)	3007	0.807	0.091	0	0.986
Banks per Subdistrict ($sdBI$)	3007	0.288	0.537	0	17.359
Wealth Index (WI)	3007	0 8	1	-3.145	3.315
Population	3007	104009.5	267283.5	612	5585528

TABLE IV: Definitions of variables and sources of data

Variable	Description	Sources
Bank Account Ownership (BO)	The proportion of households owning a bank account in the population.	Census of India
Effective Reach (ER)	Measures the proportion of the population that can understand (by language) the AIR broadcasts received in the subdistrict.	Census of India, All India Radio
Radio Ownership (RO)	The proportion of households owning a radio or transmitter in the population.	Census of India
Car Ownership (RO)	The proportion of households owning a car, van, or jeep in the population.	Census of India
Literacy Rate (Lit)	The proportion of literate individuals in the population.	Census of India
Banking Institutions ($sdBI$)	The number of banking institutions per subdistrict population.	Census of India
Banking Institutions (dBI)	The total number of banking institutions in the district containing the given subdistrict, per the district's population.	Census of India
Wealth Index (CI)	An asset-based index that proxies consumption, standardized (mean-centered and divided by the standard deviation).	Census of India
Female (F)	The proportion of females in the population.	Census of India
Muslim (Mus)	The proportion of Muslims in the population.	Census of India
Christian (Chr)	The proportion of Christians in the population.	Census of India
Sikh (Sikh)	The proportion of Sikhs in the population.	Census of India
Buddhist (Bud)	The proportion of Buddhists in the population.	Census of India
Jain (Jain)	The proportion of Jains in the population.	Census of India
Other Religion (Oth)	The proportion of adherents of other religions in the population.	Census of India

TABLE V: Core estimates of the effects of various regressors on *Bank Account Ownership* using Method 1 and Method 2 specifications.

	Method 1			*Method 2*		
	(1) *Total*	(2) *Rural*	(3) *Urban*	(4) *Total*	(5) *Rural*	(6) *Urban*
Radio Ownership (RO)	-0.158***	-0.179***	0.160***	-0.173***	-0.201***	0.228***
	(0.0291)	(0.0299)	(0.0357)	(0.0319)	(0.033)	(0.0344)
Car Ownership (CO)	-0.101	0.14	0.00268	-0.261	-0.0331	0.371*
	(0.133)	(0.15)	(0.246)	(0.157)	(0.178)	(0.189)
Effective Reach 1 ($ER1$)	-0.0998***	-0.0862***	0.000923			
	(0.0161)	(0.0165)	(0.0277)			
RO x $ER1$	0.278***	0.286***	-0.0718			
	(0.0336)	(0.0341)	(0.0463)			
CO x $ER1$	0.562**	0.0179	0.349			
	(0.195)	(0.207)	(0.317)			
Effective Reach 2 ($ER2$)				-0.0701***	-0.0600**	0.0637*
				(0.0192)	(0.0189)	(0.0257)
RO x $ER2$				0.257***	0.270***	-0.177***
				(0.0375)	(0.038)	(0.044)
CO x $ER2$				0.797***	0.381	-0.434
				(0.229)	(0.245)	(0.291)
Literacy Rate (Lit)	0.231***	0.202***	-0.0581	0.251***	0.223***	-0.0553
	(0.0463)	(0.0456)	(0.0343)	(0.0462)	(0.0452)	(0.0348)
Banks per Subdist. ($sdBI$)	0.00185	0.000748	0.00483	-0.000071	-0.000172	0.00472
	(0.00853)	(0.00221)	(0.00279)	(0.00849)	(0.00229)	(0.00288)
Banks per District (dBI)	0.353	-0.142	-1.386***	0.335	-0.105	-1.391***
	(0.797)	(0.127)	(0.377)	(0.818)	(0.135)	(0.367)
Wealth Index (WI)	0.0896***	0.0644***	0.106***	0.0914***	0.0647***	0.107***
	(0.00657)	(0.0061)	(0.00744)	(0.00656)	(0.00605)	(0.00737)
θ	0.188***	0.196***	0.196***	0.182***	0.190***	0.197***
	(0.01)	(0.00986)	(0.00703)	(0.00998)	(0.00975)	(0.00737)
Female (F)	-0.655*	-0.685*	-0.165	-0.700**	-0.761**	-0.1
	(0.269)	(0.292)	(0.28)	(0.268)	(0.287)	(0.289)
Muslim (Mus)	-0.144	0.0271	-0.240**	-0.13	0.0329	-0.241**
	(0.0969)	(0.0557)	(0.0907)	(0.0995)	(0.0561)	(0.0887)
Christian (Chr)	0.277**	0.131	-0.141	0.258*	0.144	-0.202
	(0.104)	(0.0763)	(0.126)	(0.101)	(0.075)	(0.119)
Sikh ($Sikh$)	0.0156	-0.131	0.198	0.0487	-0.0697	0.157
	(0.301)	(0.315)	(0.261)	(0.302)	(0.317)	(0.236)
Buddhist (Bud)	-0.199	-0.292	-0.0444	-0.159	-0.252	-0.0856
	(0.206)	(0.168)	(0.191)	(0.193)	(0.156)	(0.181)
Jain ($Jain$)	-10.14***	-12.52***	-0.522	-10.87***	-13.33***	-0.488
	(1.749)	(2.312)	(0.37)	(1.78)	(2.352)	(0.377)
Other Religion (Oth)	0.270***	0.182**	-0.00137	0.263***	0.184**	0.00622
	(0.0648)	(0.064)	(0.206)	(0.061)	(0.06)	(0.196)
Constant	0.574***	0.576***	0.576***	0.577***	0.594***	0.510***
	(0.137)	(0.148)	(0.14)	(0.138)	(0.146)	(0.144)
N	10873	10785	5551	10873	10785	5551
R^2	0.795	0.776	0.787	0.793	0.774	0.788
Adj. R^2	0.794	0.776	0.786	0.793	0.774	0.787

Standard errors in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE VI: Estimates without the Wealth Index (WI)

	Method 1			*Method 2*		
	(1) *Total*	(2) *Rural*	(3) *Urban*	(4) *Total*	(5) *Rural*	(6) *Urban*
Radio Ownership (RO)	-0.121***	-0.166***	0.207***	-0.122***	-0.177***	0.269***
	(0.0304)	(0.0306)	(0.0339)	(0.0331)	(0.0332)	(0.0314)
Car Ownership (CO)	0.188	0.404**	0.0262	0.155	0.416*	0.358*
	(0.153)	(0.153)	(0.227)	(0.189)	(0.182)	(0.151)
Effective Reach 1 ($ER1$)	-0.0881***	-0.0828***	-0.00108			
	(0.0174)	(0.0171)	(0.0284)			
RO x $ER1$	0.250***	0.274***	-0.0773			
	(0.035)	(0.0352)	(0.0457)			
CO x $ER1$	0.287	0.035	0.413			
	(0.221)	(0.216)	(0.302)			
Effective Reach 2 ($ER2$)				-0.0625**	-0.0609**	0.0462
				(0.0204)	(0.0196)	(0.0257)
RO x $ER2$				0.209***	0.242***	-0.168***
				(0.039)	(0.0387)	(0.0421)
CO x $ER2$				0.356	0.0815	-0.327
				(0.269)	(0.252)	(0.259)
Literacy Rate (Lit)	0.246***	0.284***	0.0963*	0.267***	0.302***	0.0957*
	(0.0473)	(0.0446)	(0.0488)	(0.0473)	(0.0444)	(0.0478)
Banks per Subdist. ($sdBI$)	-0.0077	-0.000539	0.00758*	-0.00939	-0.000759	0.00750*
	(0.0094)	(0.00229)	(0.00296)	(0.00933)	(0.0023)	(0.00296)
Banks per District (dBI)	2.129**	-0.0797	-1.223**	2.181**	-0.0661	-1.238**
	(0.724)	(0.243)	(0.421)	(0.744)	(0.251)	(0.415)
θ	0.188***	0.180***	0.193***	0.182***	0.174***	0.196***
	(0.0103)	(0.00978)	(0.00943)	(0.0103)	(0.00971)	(0.00952)
Female (F)	-0.764**	-0.593**	-0.0695	-0.801**	-0.627**	-0.0249
	(0.293)	(0.227)	(0.0574)	(0.293)	(0.229)	(0.0616)
Muslim (Mus)	-0.244*	0.0382	-0.349***	-0.240*	0.0431	-0.352***
	(0.1)	(0.0669)	(0.0737)	(0.102)	(0.068)	(0.0723)
Christian (Chr)	0.112	0.0189	-0.247	0.116	0.0356	-0.307*
	(0.115)	(0.0772)	(0.137)	(0.112)	(0.076)	(0.131)
Sikh ($Sikh$)	0.419	-0.0133	0.233	0.47	0.0211	0.191
	(0.331)	(0.312)	(0.344)	(0.333)	(0.314)	(0.317)
Buddhist (Bud)	-0.153	-0.274	-0.225	-0.111	-0.231	-0.267
	(0.192)	(0.153)	(0.189)	(0.18)	(0.144)	(0.188)
Jain ($Jain$)	-6.707***	-10.09***	0.283	-7.455***	-10.96***	0.348
	(1.661)	(2.212)	(0.451)	(1.681)	(2.248)	(0.465)
Other Religion (Oth)	0.244***	0.177*	-0.0726	0.242***	0.178**	-0.0636
	(0.067)	(0.0693)	(0.176)	(0.0651)	(0.0662)	(0.168)
Constant	0.611***	0.486***	0.420***	0.610***	0.487***	0.374***
	(0.15)	(0.115)	(0.0446)	(0.151)	(0.117)	(0.0425)
N	10873	10785	5551	10873	10785	5551
R^2	0.785	0.769	0.754	0.784	0.767	0.754
Adj. R^2	0.785	0.769	0.753	0.783	0.767	0.753

Standard errors in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE VII: Estimates without Car Ownership (CO)

	Method 1			*Method 2*		
	(1) *Total*	(2) *Rural*	(3) *Urban*	(4) *Total*	(5) *Rural*	(6) *Urban*
Radio Ownership (RO)	-0.149***	-0.186***	0.171***	-0.157***	-0.201***	0.194***
	(0.0259)	(0.0279)	(0.0244)	(0.028)	(0.0308)	(0.0265)
Effective Reach 1 ($ER1$)	-0.0821***	-0.0868***	0.0255			
	-0.0139	-0.0146	-0.0134			
RO x $ER1$	0.247***	0.290***	-0.101***			
	-0.0281	-0.0301	-0.0278			
Effective Reach 2 ($ER2$)				-0.0442**	-0.0493**	0.0306
				(0.0167)	(0.017)	(0.016)
RO x $ER2$				0.213***	0.256***	-0.129***
				(0.0316)	(0.0344)	(0.0304)
Literacy Rate (Lit)	0.226***	0.203***	-0.0647	0.244***	0.223***	-0.0634
	(0.0464)	(0.0456)	(0.0355)	(0.0461)	(0.0452)	(0.035)
Banks per Subdist. (BI_{sd})	0.00637	0.00088	0.00477	0.00471	0.000693	0.00472
	(0.00895)	(0.00228)	(0.00278)	(0.00886)	(0.00224)	(0.00284)
Banks per District (BI_d)	0.372	-0.143	-1.379***	0.404	-0.136	-1.366***
	(0.809)	(0.128)	(0.378)	(0.828)	(0.133)	(0.374)
Wealth Index (WI)	0.0895***	0.0660***	0.107***	0.0903***	0.0660***	0.107***
	(0.00654)	(0.00597)	(0.00745)	(0.00653)	(0.0059)	(0.00745)
θ	0.190***	0.197***	0.200***	0.184***	0.191***	0.201***
	(0.01)	(0.00984)	(0.00719)	(0.00996)	(0.00974)	(0.00716)
Female (F)	-0.589*	-0.654*	-0.106	-0.629*	-0.711*	-0.0665
	(0.264)	(0.291)	(0.281)	(0.263)	(0.287)	(0.288)
Muslim (Mus)	-0.144	0.0283	-0.251**	-0.136	0.0355	-0.252**
	(0.0965)	(0.0557)	(0.0949)	(0.0992)	(0.0564)	(0.0949)
Christian (Chr)	0.263**	0.141	-0.152	0.284**	0.159*	-0.155
	(0.1)	(0.0743)	(0.12)	(0.0992)	(0.0742)	(0.121)
Sikh ($Sikh$)	-0.218	-0.193	0.151	-0.191	-0.179	0.149
	(0.261)	(0.311)	(0.231)	(0.262)	(0.31)	(0.23)
Buddhist (Bud)	-0.198	-0.303	-0.0421	-0.16	-0.259	-0.0367
	(0.204)	(0.166)	(0.186)	(0.192)	(0.155)	(0.186)
Jain ($Jain$)	-10.17***	-12.48***	-0.507	-10.99***	-13.38***	-0.469
	(1.743)	(2.314)	(0.371)	(1.776)	(2.354)	(0.374)
Other Religion (Oth)	0.266***	0.181**	-0.011	0.266***	0.182**	-0.00358
	(0.0641)	(0.0646)	(0.205)	(0.0615)	(0.0607)	(0.202)
Constant	0.543***	0.564***	0.550***	0.539***	0.569***	0.525***
	(0.135)	(0.147)	(0.141)	(0.135)	(0.146)	(0.144)
N	10873	10785	5551	10873	10785	5551
R^2	0.794	0.776	0.786	0.792	0.774	0.786
Adj. R^2	0.794	0.775	0.785	0.792	0.773	0.786

Standard errors in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE VIII: Estimates without Banking Institution variables ($sdBI$ & dBI)

	Method 1			*Method 2*		
	(1) *Total*	(2) *Rural*	(3) *Urban*	(4) *Total*	(5) *Rural*	(6) *Urban*
Radio Ownership (RO)	-0.158***	-0.180***	0.164***	-0.173***	-0.200***	0.233***
	(0.029)	(0.0297)	(0.0357)	(0.0318)	(0.0328)	(0.035)
Car Ownership (CO)	-0.105	0.132	-0.00412	-0.267	-0.0279	0.359
	(0.133)	(0.147)	(0.24)	(0.157)	(0.175)	(0.187)
Effective Reach 1 ($ER1$)	-0.0998***	-0.0868***	0.00325			
	(0.0161)	(0.0165)	(0.0273)			
RO x $ER1$	0.279***	0.287***	-0.0762			
	(0.0337)	(0.0337)	(0.0458)			
CO x $ER1$	0.568**	0.0368	0.353			
	(0.195)	(0.203)	(0.31)			
Effective Reach 2 ($ER2$)				-0.0703***	-0.0598**	0.0649*
				(0.0191)	(0.0189)	(0.0256)
RO x $ER2$				0.258***	0.269***	-0.181***
				(0.0375)	(0.0377)	(0.044)
CO x $ER2$				0.804***	0.369	-0.419
				(0.229)	(0.239)	(0.288)
Literacy Rate (Lit)	0.229***	0.204***	-0.0499	0.249***	0.226***	-0.047
	(0.0459)	(0.0453)	(0.0351)	(0.0458)	(0.0449)	(0.0354)
Wealth Index (WI)	0.0902***	0.0644***	0.106***	0.0920***	0.0647***	0.107***
	(0.00651)	(0.00606)	(0.00743)	(0.00651)	(0.00603)	(0.00736)
θ	0.189***	0.196***	0.194***	0.183***	0.190***	0.196***
	(0.00993)	(0.00979)	(0.00709)	(0.00988)	(0.00968)	(0.0074)
Female (F)	-0.657*	-0.653*	-0.0265	-0.701**	-0.728**	0.0396
	(0.269)	(0.284)	(0.31)	(0.268)	(0.279)	(0.317)
Muslim (Mus)	-0.111	0.0246	-0.238**	-0.0985	0.0311	-0.239**
	(0.106)	(0.0548)	(0.0905)	(0.108)	(0.0555)	(0.0884)
Christian (Chr)	0.280**	0.13	-0.137	0.261**	0.144	-0.197
	(0.104)	(0.0762)	(0.125)	(0.1)	(0.0749)	(0.119)
Sikh ($Sikh$)	0.0128	-0.134	0.236	0.0457	-0.0647	0.196
	(0.302)	(0.319)	(0.273)	(0.303)	(0.317)	(0.248)
Buddhist (Bud)	-0.196	-0.296	0.0406	-0.156	-0.255	0.00025
	(0.205)	(0.167)	(0.232)	(0.192)	(0.156)	(0.219)
Jain ($Jain$)	-10.17***	-12.51***	-0.513	-10.90***	-13.35***	-0.478
	(1.745)	(2.303)	(0.359)	(1.777)	(2.351)	(0.367)
Other Religion (Oth)	0.271***	0.182**	0.0197	0.264***	0.183**	0.0282
	(0.0647)	(0.064)	(0.204)	(0.0609)	(0.0601)	(0.194)
Constant	0.572***	0.560***	0.497**	0.576***	0.577***	0.430**
	(0.137)	(0.143)	(0.156)	(0.138)	(0.142)	(0.159)
N	10873	10785	5551	10873	10785	5551
R^2	0.795	0.776	0.785	0.793	0.774	0.785
Adj. R^2	0.794	0.776	0.784	0.793	0.774	0.785

Standard errors in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE IX: Estimates without Demographic Variables

	Method 1			*Method 2*		
	(1) *Total*	(2) *Rural*	(3) *Urban*	(4) *Total*	(5) *Rural*	(6) *Urban*
Radio Ownership (RO)	-0.169***	-0.194***	0.166***	-0.187***	-0.214***	0.236***
	(0.0302)	(0.0312)	(0.0363)	(0.0322)	(0.0341)	(0.0353)
Car Ownership (CO)	-0.106	0.119	0.00797	-0.332*	-0.0743	0.381*
	(0.128)	(0.15)	(0.246)	(0.152)	(0.185)	(0.192)
Effective Reach 1 ($ER1$)	-0.100***	-0.0902***	0.00341			
	(0.0159)	(0.0163)	(0.0277)			
RO x $ER1$	0.298***	0.301***	-0.0742			
	(0.0343)	(0.0353)	(0.0465)			
CO x $ER1$	0.504**	-0.00246	0.357			
	(0.188)	(0.209)	(0.313)			
Effective Reach 2 ($ER2$)				-0.0742***	-0.0662***	0.0688**
				(0.0189)	(0.0192)	(0.026)
RO x $ER2$				0.275***	0.280***	-0.182***
				(0.0382)	(0.0398)	(0.0437)
CO x $ER2$				0.860***	0.403	-0.435
				(0.225)	(0.256)	(0.284)
Literacy Rate (Lit)	0.226***	0.206***	-0.0396	0.250***	0.232***	-0.0392
	(0.0445)	(0.0444)	(0.0379)	(0.0439)	(0.0437)	(0.0378)
Banks per Subdistrict ($sdBI$)	0.000898	0.000197	0.00459	-0.0016	-0.000889	0.00462
	(0.00834)	(0.00219)	(0.00308)	(0.00828)	(0.00223)	(0.00319)
Banks per District (dBI)	-0.0943	-0.0322	-1.273***	-0.0535	0.0238	-1.289***
	(0.696)	(0.129)	(0.296)	(0.722)	(0.139)	(0.298)
Wealth Index (WI)	0.0813***	0.0596***	0.111***	0.0833***	0.0592***	0.112***
	(0.00597)	(0.00587)	(0.00716)	(0.006)	(0.00585)	(0.00709)
θ	0.191***	0.197***	0.191***	0.184***	0.190***	0.193***
	(0.00976)	(0.00967)	(0.00754)	(0.0096)	(0.00951)	(0.0078)
Constant	0.243***	0.241***	0.433***	0.226***	0.223***	0.395***
	(0.0226)	(0.0221)	(0.0329)	(0.023)	(0.0228)	(0.0324)
N	10873	10785	5551	10873	10785	5551
R^2	0.791	0.772	0.783	0.789	0.769	0.784
Adj. R^2	0.79	0.772	0.782	0.789	0.769	0.783

Standard errors in parentheses: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$