Ananya Acharya
Anchal Khandelwal
Anirudh Tagat

August, 2023

FINANCIAL LITERACY AND INCLUSION IN INDIA: EVIDENCE FROM DISTRICT-LEVEL DATA AFTER DEMONETIZATION

monk prayogshala®

DEPARTMENT OF ECONOMICS

Financial literacy and inclusion in India: Evidence from district-level data after demonetization

Anchal Khandelwal

Department of Economics, Monk Prayogshala, Mumbai, India

Ananya Acharya

Department of Economics, Monk Prayogshala, Mumbai, India

Anirudh Tagat

Department of Economics, Monk Prayogshala, Mumbai, India
School of Mathematics, Monash University, Melbourne, Australia

Address correspondence to Anirudh Tagat at at@monkprayogshala.in

Financial literacy and inclusion in India: Evidence from district-level data after demonetization

Abstract

This paper examines the links between financial literacy and financial inclusion in India between 2015 and 2018 using aggregated district-level data from 157 districts. We explore heterogeneities by gender using data from districts where there are a large number of female-majority households. We find a strong and positive association between financial literacy and inclusion, and a small positive impact of the demonetization policy experiment on inclusion. The subgroup analyses by gender suggest that these results are indeed driven by the districts in which there are more female-majority households. Limitations of the current work and implications for policy are discussed.

Financial literacy and inclusion in India: Evidence from district-level data after demonetization

1. Introduction

Financial inclusion programs and interventions have gained popularity in the last decade as a tool for poverty alleviation and empowerment of the marginalized (e.g., women, historically marginalized caste groups). The Indian government has, since 2014, steadily rolled out various policies to increase access to formal financial services, especially to the rural population. For example, launched in 2014, the Pradhan Mantri Jan Dhan Yojana (PMJDY) has facilitated the opening of more than 300 million bank accounts in rural areas alone (Government of India, 2022). There have also been policies aimed at increasing the coverage of the formal financial system and widening the tax base (e.g., the withdrawal of high-value banknotes in 2016, also known as demonetization, or and the introduction of the Goods and Services Tax, or GST in 2017). However, there are still gaps in financial literacy, particularly among women, resulting in a lack of active use of bank accounts or other financial instruments, such as digital payments (Fonseca *et al.*, 2012; OECD, 2013; Arora, 2016; Baluja, 2016; Klapper *et al.*, 2016). As Figure 1 shows, there is a strong persistence of the gender gap in account ownership that has persisted, especially in developing countries. As has been highlighted elsewhere, financial literacy (especially among women) is critical to bridging this gender gap (Singh, 2018).
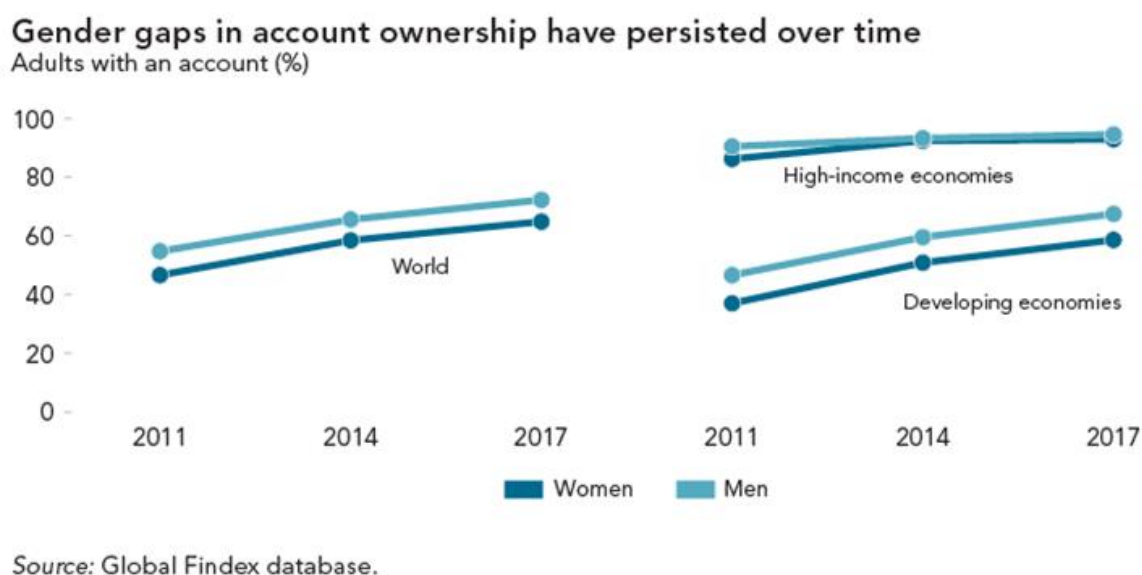
Gender gaps in account ownership have persisted over time
Adults with an account (%)

Source: Global Findex database.

Figure 1: Gender gaps in account ownership (Global Findex, 2021)

This paper aims to empirically investigate the relationship between financial literacy (FL) and financial inclusion (FI) in the Indian context, and examine whether this relationship is heterogeneous by gender. We define FL as one's ability to utilize their knowledge of financial resources and use them to their fullest potential. Typically, FL is measured using respondents' ability to count and undertake basic arithmetic calculations, knowledge about financial concepts, and attitudes towards formal financial services, and is rated along a spectrum. FL determines financial decision-making, especially related to savings and financial transactions (Alsemgeest, 2015).

While there are many working definitions of FI, in this paper, we define it as ownership of a bank account.[1] An individual is considered to be financially included if they own a bank account in their own name. According to a World Bank Report, only 50% of adults worldwide hold an account in a

---

[1] Other definitions used in the literature also consider individuals to be financial included if their borrowings take place from a formal financial institution, how they manage risks, and their accessibility to financial institutions and products. We do not explicitly consider these additional definitions in this paper.

formal financial institution (Demirguc-Kunt, Klapper, and Singer, 2013). Typically, access to financial institutions primarily explain FI, proxied by distance to the nearest banks and/or the density of financial institutions (Ghosh, 2020).[2] These are primarily supply-side factors, though there are some studies in the Indian context that also discuss demand-side issues. For example, Kumar et al. (2018) establish that education, employment status, income and gender norms are associated with financial inclusion more strongly than its supply counterparts. They also find that income and employment status have a stronger association with a household's financial inclusion in urban areas. In rural sectors, female led houses and socially deprived classes are less likely to use formal financial services than male and upper caste households.

Women on average tend to display lower levels of financial literacy than men (Ghosh and Vinod, 2017). Women, in particular, especially those in developing economies, are also much less likely to use formal financial services and institutions (Demirguc-Kunt and Klapper, 2012). Lack of economic and physical mobility, regressive patriarchal norms, and unawareness could be attributed to this (Dildar, 2015; Zaccaria and Guiso, 2020; Rink, Walle and Klasen, 2021). Awareness and literacy could play a significant role in financial decision-making (Alsemgeest, 2015), which in turn could be associated with gender norms skewed against women. There also exists a clear link between financial status and the well-being of a household; low financial status correlates with poorer physical, mental, and emotional health outcomes for all household members and lower educational attainment of children (Kaiser and Menkhoff, 2017; Kaiser *et al.*, 2022).

---

[2] There could also be supply side factors that explain low levels of financial inclusion in India, including poor bank density, lack of suitable products meeting the needs of the poor, complex processes, and language barriers (e.g., Beck, Demirguc-Kunt and Levine, 2005).

This suggests that gender plays an important role in the relationship between FL and FI, and that recent policies in India that aim to enhance access to financial markets may not have fully taken this into account during design and implementation. Ideally, detailed panel data on household and individual financial behaviour from rural India would be useful to test this claim. In the absence of such data, aggregating to subnational units (e.g., states) may be useful in terms of overcoming issues of endogeneity and causality while still being able to address the research gap (e.g., Singh et al., 2021). To the best of our knowledge, this is the first empirical investigation into panel data at the district-level to study linkages between financial literacy and financial inclusion in India. This is among the first to look at relatively recent data and study financial inclusion following the demonetization policy event as well as the implementation of the Goods and Services Tax (GST).

The remainder of the paper is organized as follows. Section 2 contains a brief review of the literature on FI and FL from a gendered lens. Section 3 contains a description of the data used. Section 4 provides an overview of the empirical framework. Section 5 provides key results of the association between financial literacy and financial inclusion over time. Section 6 concludes and provides implications for financial inclusion policy in India.

2. Literature

There has been substantial work in India that uses survey data to link FI and FL in a range of contexts. Günther & Ghosh (2018) use the same data set as this study, i.e., Financial Inclusion Insights Survey, but the second wave, based on the year 2014, to quantify the financial literacy of Indian states. Their score finds that female respondents of their study displayed 5.6% lower financial literacy than their male counterparts, and this holds true across variables for different inclusion variables. Lusardi & Mitchell (2008) also find that women's lower financial literacy further serves as an impediment in

their loan market transactions, indicating that there may be downstream impacts of FL on broader definitions of FI.

It is well-established that women, at least in the Indian context, display lower levels of financial literacy than men (Gunther & Ghosh 2018). Not just this, but they also have lower confidence in their financial literacy and skills (Heinberg *et al.*, 2014). While women are already at a disadvantage, lower levels of financial literacy further perpetuate the difference between men and women in access and use. For starters, lower levels of financial literacy can hinder women's economic participation, demand for financial goods, and have an implicit adverse effect on their children. From a macroeconomic perspective, households that accumulate formal financial experience generate greater demand for financial products, and pressure for market transparency, competitiveness, and efficiency; on the other hand, increased wealth accumulation and increases in private savings contribute to economic stability (Heinberg *et al.*, 2014).

Financial market reforms and policies could also affect both FL and FI. For instance, the demonetization policy event in November 2016 (where two high-value banknotes were withdrawn from circulation, followed by a remonetization with a higher-value banknote) obliquely aimed at FI via a reduction in black money (i.e., more flows into the formal financial system) and an increase in digital payments (i.e., more bank-linked transactions for payments), among others. However, its impact on increasing financial inclusion appeared temporary, as the core barriers to access to financial resources continue to persist well after demonetization, and that any increase in bank accounts did not have implications for the economy-at-large (Singh and Ghosh, 2021).

Finally, there is evidence that financial deepening and widening, defined as the increase in the number of financial services, products, institutions, and simultaneous increase in access to the same is associated with economic growth (De Gregorio and Guidotti, 1995). Thus, financial inclusion is considered a prerequisite for empowerment, employment, economic growth, poverty reduction, and social cohesion (Mahendra Dev, 2006).

3. Data

We use district-aggregated data from four waves of the Financial Inclusion Insights (FII) survey conducted by InterMedia global and funded by the Bill and Melinda Gates Foundation.[3] Each wave of the 'tracker' survey is conducted annually starting September or October, and data is available for 2013 to 2018 (five waves). However, data from the first and second wave (2013 and 2014) does not provide extensive details on financial literacy, which is a focal independent variable in our paper. Notably, the households surveyed across multiple waves are not the same, precluding the formation of a panel dataset. However, there are 157 common sample districts across waves, which can be used to form a panel as we do in this study. Apart from Jammu & Kashmir, Sikkim, Andaman and Nicobar Islands, and the Lakshadweep Islands, data on all states and union territories are available. Since the southern state of Telangana was formed in 2014, data for this state is included within Andhra Pradesh. More details on the sampling strategy and the sample size for each round can be found in Gunther and Ghosh (2018).

There are minor variations in the questionnaire and data collected across survey waves in the FII datasets. Thus, we harmonized the survey data at the household level and aggregated variables to

---

[3] For more details of the dataset, we refer the reader to various papers that have used the India subset of the FII survey data (Günther and Ghosh, 2018; Churchill and Marisetty, 2020).

the district-level to form a four-year panel (2015-2018) that includes the period during which policy reforms such as demonetization was implemented.

To compute a measure of financial literacy, we use a simple total of correct answers to questions from the 'financial literacy' section of the survey. The financial literacy score we use is constrained by questions that are available across waves: we, therefore, focus on constructing the score from responses to survey questions on basic arithmetic (counting, addition, subtraction, multiplication, division, and percentage calculations). This is perhaps motivated by the idea that to be able to save, borrow, and invest efficiently, one needs to be able to undertake basic mathematical operations accurately. Furthermore, knowledge about simple and compound interest is also measured in these questions. An additional question in risk diversification is included, and an understanding of inflation and its effects on the purchasing power of one's income/money is also included in this measure. The difference between the average financial literacy score (6.41) and that of women (6.25) at the district level is marginal (0.15), suggesting that women's financial literacy is not significantly lower than the male sample. The variable definitions are provided in the appendix in Table A.1.

Table 1: Summary Statistics

	Mean	SD	Min	Max
Households financially included	0.709	0.146	0.137	0.986
Financial literacy score	3.305	0.678	0.820	5.267
Average distance to bank (kms.)	2.840	0.689	1.059	5.562
Average distance to ATM (kms.)	2.900	0.766	1.043	6
Average time to bank (mins.)	9.730	13.87	1.065	64.80
Average time to ATM (mins.)	9.260	13.79	1.053	128
Average distance to nearest financial institution (kms.)	2.847	0.649	1.114	5.532
Average time to nearest financial institution (mins.)	9.705	13.72	1.149	61.74
Average HH asset ownership (number)	3.944	1.530	0.604	7.971
Average number of females in HH	1.546	0.613	0.955	3.097
Proportion married	0.538	0.328	0	1
Average age	37.84	2.816	29.56	48.82
Average mobile phone ownership [a]	0.345	0.165	0.0261	0.920
Average education level	4.263	0.921	1.914	7.556

Proportion employed in agriculture	0.300	0.205	0	0.986
Proportion receiving remittances	0.272	0.275	0	1
Proportion receiving welfare benefits	0.153	0.172	0	0.889
Proportion self-employed	0.0526	0.0702	0	0.543
Proportion employed in private sector work	0.0846	0.0894	0	0.914
Proportion employed in public sector work	0.0256	0.0494	0	0.436
Average HH wealth	2.882	0.657	1.538	7.609
Proportion of Hindu households [b]	0.851	0.172	0	1
Proportion of Muslim households [b]	0.111	0.148	0	1
Proportion of rural poor [c]	0.455	0.292	0	1
Observations		600		

Note: [a] data is only available for 2015 and 2016; [b] data is not available for 2015; [c] data is only available for 2017. Data from FII Surveys 2014-2018.

Table 1 contains the summary statistics for all waves at the district-level. Figure 2 contains box plots that show district-wise variations in the financial literacy scores and financial inclusion over time. On average, the financial literacy score is 3.3 across districts and years and households in sample districts reside about 2.8kms away from the nearest financial institution where they can access funds (e.g., a bank or an ATM). Households own about 4 consumer durables as assets and have a little more than one woman residing in the household. Individuals in our sample are slightly older than 37 years on average, and about 34.5% reported mobile phone ownership over four years. A majority of the sample is engaged in agricultural work (30%), and a large fraction rely on remittances as well (27%). Nearly 85% of our sample identifies as Hindu. Figure 2 shows the changes in financial literacy and financial inclusion by wave of the FII data.
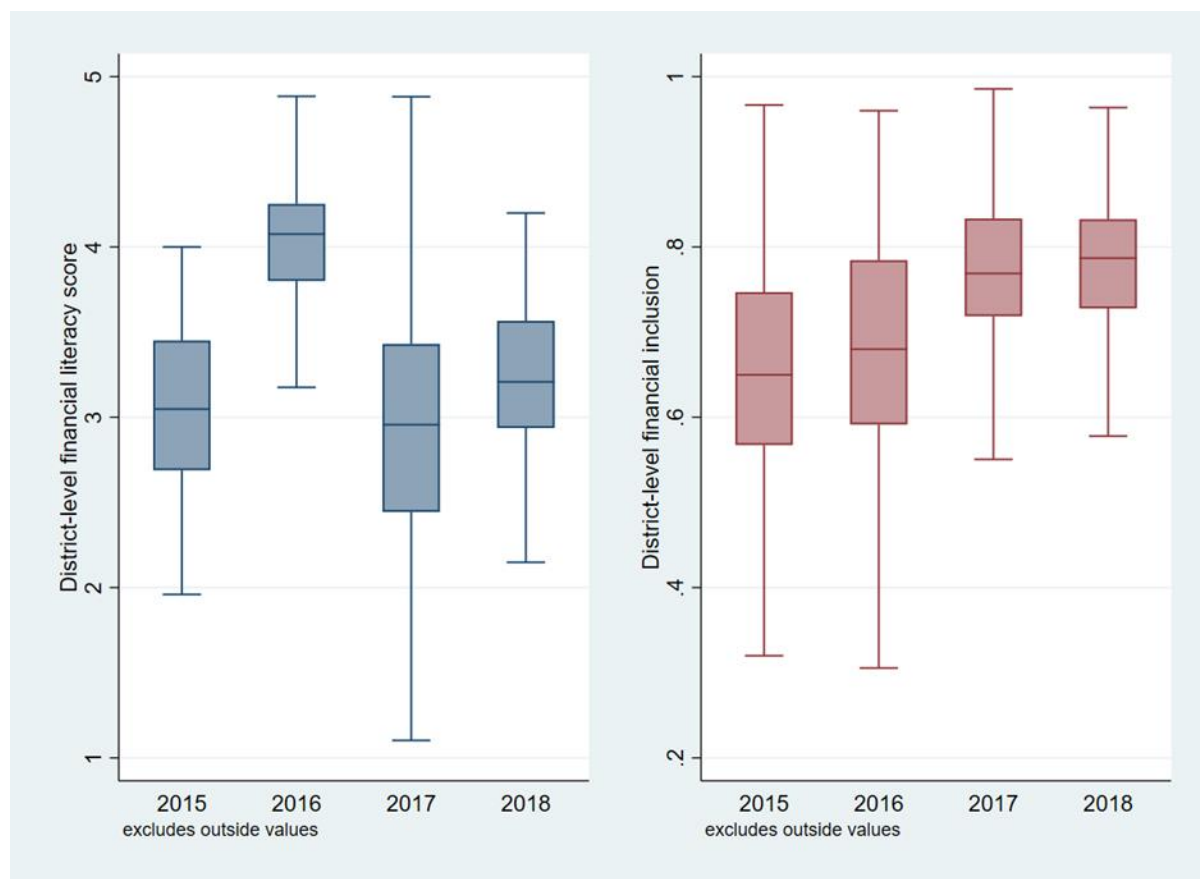
Figure 2: Box plot of financial literacy and inclusion by FII year

4. Empirical Framework

We develop and test a regression specification in line with (Gunther and Ghosh, 2018) to understand the relationship between FI (our dependent variable) and FL score (our focal independent variable), access to financial institutions (measured by time taken to nearest bank), average wealth, age, average proportion married, females in the household, average education level, proportion employed in agriculture, self-employed, a dummy variable for demonetisation. The model is as presented in equation (1):

$$FI_{dt} = \alpha + \beta_1 FL_{dt} + \beta_2 Dist_{dt} + \beta_3 X_{dt} + \beta_4 Demonetization_{dt} + \eta_{dt} \tag{1}$$

Where,

FI_{dt} is the average proportion of households owning bank accounts in district d at time t; FL_{dt} is the a

teller machine (ATM), transformed using a natural logarithm; X_{dt} is a vector of household and individu

economic determinants of financial inclusion and savings in India (Rampal and Biswas, 2022) Finally, L

is a dummy variable that takes a value of 0 prior to 2016 and 1 after. To specifically explore the role

of female financial literacy, we conduct a heterogeneity analysis separately for district-years in which

a majority of members in the average household were female, and compare it to those in which a

majority were males.

Equation (1) is run using a panel fixed-effects regression, with fixed effects for time and district, to

control for unobservables that may differ across districts or over time that are not being captured in

the model. Specifically, we use the -reghdfe- command (Correia, 2019) in Stata 17 with clustered

standard errors at the district level.

It is important to emphasize here that we are unable to ascertain causality or attribute changes in

financial inclusion that are explained solely by financial literacy. There could be various other factors

that could shift financial inclusion levels at the district level. For example, the rollout of the PMJDY

coincides with the data collected in this period, but we do not have data *prior* to the implementation

of PMJDY and thus cannot examine its impact using our data. Furthermore, we also test for the

robustness

5. Results

The results of the main specification are displayed in Table 2. Notably, the average financial literacy

scores are positively associated with financial inclusion at the district level, with a unit increase in

financial literacy scores being associated with a 2.8 percentage point increase in financial inclusion at the district level. We note that the average female in household, average proportion employed in agriculture are all positively and statistically significantly associated with financial inclusion at the district level. Interestingly, the dummy variable for post-demonetization returned a positive coefficient, suggesting that in the years following demonetization (2017 in the case of our sample), there was a 6.8 percentage point increase in financial inclusion.

Table 2: Regression results of financial literacy on financial inclusion

	Full Sample	Districts with less than average females in HH	Districts with greater than average females in HH
	Financial inclusion		
Financial literacy score	0.0284***	0.0200	0.0366***
	(0.00941)	(0.0142)	(0.0102)
Time to financial institution	-0.0102	-0.0125	-0.00101
	(0.0120)	(0.0248)	(0.0280)
Average wealth	-0.0159	-0.0437**	0.0224
	(0.0121)	(0.0195)	(0.0290)
Average age	0.000154	-0.000719	0.00168
	(0.00288)	(0.00466)	(0.00381)
Average proportion married	-0.0350	-0.0557	0.0121
	(0.0412)	(0.0634)	(0.101)
Average females in HH	0.0553**	-	-
	(0.0273)		
Average education level	0.0180	0.00321	0.0149
	(0.0151)	(0.0199)	(0.0195)
Average proportion employed in agriculture	0.0974**	-0.00757	0.114**
	(0.0381)	(0.0647)	(0.0492)
Average proportion self-employed	-0.0402	-0.220	-0.0851
	(0.0891)	(0.181)	(0.135)
Dummy for demonetization	0.0678*	0.0318	-
	(0.0369)	(0.0453)	-
Constant	0.465***	0.798***	0.444**
	(0.132)	(0.225)	(0.218)

Observations	590	321	238
R-squared	0.487	0.638	0.551

Note: Coefficients reported from regression of financial inclusion on financial literacy and additional variables estimated using panel fixed-effects regressions. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Our results suggest that there is a positive and statistically significant association between financial literacy and financial inclusion in India. The data also suggest that the positive association is driven by districts in which there are a greater than average proportion of women within the household. This further indicates that women's financial literacy is potentially driving the positive relationship between literacy and inclusion. This has significant implications for policy related to financial literacy and awareness. The policy context suggests that targeting females within households to raise literacy levels may be beneficial in terms of maximizing overall financial inclusion.

Another finding of importance to policy relates to the demonetization policy experiment. We find a small but statistically significant increase (6.8 percentage points) in financial inclusion in sample districts in the year following demonetization (2017). This reflects the contribution of demonetization, in the short run, to push households to own and operate bank accounts as well as transact using non-cash alternatives. There is evidence from Lahiri (2020) that demonetization was a short-run shock to the economy, and given that our data only extends to 2018, we cannot explore any longer-term impacts of the policy.

Finally, there is a positive association between districts where members of households are predominantly employed in the farm sector (agricultural work). This suggests that in such districts, potentially due to the nature of work in the farm sector (requiring access to credit for the purchase of inputs, sale of output, etc.), there is a greater level of financial inclusion. More work is needed to

specifically understand the channels through which predominantly agricultural households access to credit in the sample districts.

6. Conclusion and Implications for Policy

Our study has shown the association between financial literacy and financial inclusion at the district-level in India between 2015 and 2018. Given the strong and positive association between financial literacy and inclusion, there are clear implications for ongoing policies in this domain. Sub-group analyses revealed that this association is driven by districts where there are more women than average within the household. Thus, targeted literacy programs toward women may have substantial benefits in terms of improving reach of the formal financial system. There have been various randomized control trials (RCTs) that suggest similar findings, although literacy does not necessarily guarantee inclusion and operation of bank accounts across the board (Hastings, Madrian and Skimmyhorn, 2013; Kaiser and Menkhoff, 2017; Clark *et al.*, 2018; Dalla Pellegrina *et al.*, 2019). Thus, tailored literacy training programs may be warranted in this regard.

This study relied on district-level analysis to determine the associations between financial literacy and financial inclusion. One of the key limitations of the current study is that we are unable to account explicitly for various other time-variant and district-variant factors that could also be associated with financial inclusion, and resort to fixed effects to control for these. Furthermore, these districts are not necessarily nationally-representative in any way, thus limiting the external validity of the findings. Future work can build on this by using the unit-level data and forming a longer-term panel to study changes in the relationship between literacy and inclusion in India.

References

Alsemgeest, L. (2015). Arguments for and against financial literacy education: Where to go from here? *International Journal of Consumer Studies*, *39*(2), 155–161. https://doi.org/10.1111/ijcs.12163

Arora, A. (2016). Assessment of Financial Literacy among working Indian Women. *Business Analyst*, *36*(March), 219–237. https://www.researchgate.net/profile/Akshita-Arora-2/publication/298790053_Assessment_of_Financial_Literacy_among_working_Indian_Women/links/573acb1308ae9f741b2cba57/Assessment-of-Financial-Literacy-among-working-Indian-Women.pdf

Baluja, G. (2016). Financial Literacy Among Women in India : A Review. *Pacific Business Review International*, *9*(4), 82–88. http://www.pbr.co.in/2016/2016_month/October/11.pdf

Beck, T., Demirguc-Kunt, A., & Levine, R. (2005). SMEs, growth, and poverty: Cross-country evidence. *Journal of Economic Growth*, *10*(3), 199–229. https://doi.org/10.1007/s10887-005-3533-5

Churchill, S. A., & Marisetty, V. B. (2020). Financial inclusion and poverty: a tale of forty-five thousand households. *Applied Economics*, *52*(16), 1777–1788. https://doi.org/10.1080/00036846.2019.1678732

Dar, A. B., & Ahmed, F. (2020). Financial inclusion determinants and impediments in India: insights from the global financial inclusion index. *Journal of Financial Economic Policy*, *13*(3), 391–408. https://doi.org/10.1108/JFEP-11-2019-0227

Clark, S., Paul, M., Aryeetey, R., & Marquis, G. (2018). An assets-based approach to promoting girls' financial literacy, savings, and education. *Journal of Adolescence*, *68*(1), 94–104. https://doi.org/10.1016/j.adolescence.2018.07.010

Correia, S. (2019). *REGHDFE: Stata module to perform linear or instrumental-variable regression absorbing any number of high-dimensional fixed effects*. Statistical Software Components. https://econpapers.repec.org/software/bocbocode/S457874.htm

De Gregorio, J., & Guidotti, P. E. (1995). Financial development and economic growth. *World Development*, *23*(3), 433–448. https://doi.org/10.1016/0305-750X(94)00132-I

Demirguc-Kunt, A., & Klapper, L. (2012). Measuring Financial Inclusion The Global Findex Database. *Fresenius' Zeitschrift Für Analytische Chemie*, *230*(5), 388. https://doi.org/10.1007/BF00511170

Dildar, Y. (2015). Patriarchal Norms, Religion, and Female Labor Supply: Evidence from Turkey. *World Development*, *76*, 40–61. https://doi.org/10.1016/j.worlddev.2015.06.010

Fonseca, R., Mullen, K. J., Zamarro, G., & Zissimopoulos, J. (2012). What Explains the Gender Gap in Financial Literacy? The Role of Household Decision Making. *Journal of Consumer Affairs*, *46*(1), 90–106. https://doi.org/10.1111/j.1745-6606.2011.01221.x

Ghosh, S. (2020). Financial Inclusion in India: Does Distance Matter? *South Asia Economic Journal*, *21*(2), 216–238. https://doi.org/10.1177/1391561420961649

Ghosh, S., & Vinod, D. (2017). What Constrains Financial Inclusion for Women? Evidence from Indian Micro data. *World Development*, *92*, 60–81. https://doi.org/10.1016/j.worlddev.2016.11.011

Günther, M. K., & Ghosh, S. (2018). Deciphering financial literacy in India: Evidence from states. *Economic and Political Weekly*, *53*(13), 153–164.

Government of India. (2022). *Pradhan Mantri Jan Dhan Yojana – Progress Report*. https://pmjdy.gov.in/account

Hastings, J. S., Madrian, B. C., & Skimmyhorn, W. L. (2013). Financial Literacy, Financial Education, and Economic Outcomes. *Annual Review of Economics*, *5*(1), 347–373. https://doi.org/10.1146/annurev-economics-082312-125807

Heinberg, A., Hung, A., Kapteyn, A., Lusardi, A., Samek, A. S., & Yoong, J. (2014). Five steps to planning success: experimental evidence from US households. *Oxford Review of Economic Policy*, *30*(4), 697–724. https://doi.org/10.1093/oxrep/gru036

Kaiser, T., Lusardi, A., Menkhoff, L., & Urban, C. (2022). Financial education affects financial knowledge and downstream behaviors. *Journal of Financial Economics*, *145*(2), 255–272. https://doi.org/10.1016/j.jfineco.2021.09.022

Kaiser, T., & Menkhoff, L. (2017). Does financial education impact financial literacy and financial behavior, and if so, when? *World Bank Economic Review*, *31*(3), 611–630. https://doi.org/10.1093/wber/lhx018

Klapper, L., Lusardi, A., van Oudheusden, P., Hess, J., & Ansar, S. (2016). *Financial Literacy Around the World: Insights from the Standard and Poor's Rating Services Global Financial Literacy Survey*. https://media.hotnews.ro/media_server1/document-2015-11-19-20605811-0-finlit-paper-16-f2-singles.pdf

Kumar, A., Pal, R., & Pal, R. (2019). Usage of formal financial services in India: Demand barriers or supply constraints? *Economic Modelling*, *80*, 244–259. https://doi.org/10.1016/j.econmod.2018.11.010

Lahiri, A. (2020). The Great Indian Demonetization. *Journal of Economic Perspectives*, *34*(1), 55–74. https://doi.org/10.1257/jep.34.1.55

Lusardi, A., & Mitchell, O. S. (2008). Planning and Financial Literacy: How Do Women Fare? *American Economic Review*, *98*(2), 413–417. https://doi.org/10.1257/aer.98.2.413

Mahendra Dev, S. (2006). Financial Inclusion: Issues and Challenges. *Economic and Political Weekly*, *41*(41), 4310–4313. https://www.jstor.org/stable/4418799

Rampal, P., & Biswas, S. (2022). Socioeconomic Determinants of Household Investment Portfolio in India. *Journal of Emerging Market Finance*, *21*(3), 265–290. https://doi.org/10.1177/09726527221082067

Rink, U., Walle, Y. M., & Klasen, S. (2021). The financial literacy gender gap and the role of culture. *The Quarterly Review of Economics and Finance*, *80*, 117–134. https://doi.org/10.1016/j.qref.2021.02.006

Singh, C. (2018). India Since Demonetisation. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3151238

Singh, V. K., & Ghosh, S. (2021). Financial inclusion and economic growth in India amid demonetization: A case study based on panel cointegration and causality. *Economic Analysis and Policy*, *71*, 674–693. https://doi.org/10.1016/j.eap.2021.07.005

Singh, B. P., Kumari, A., Sharma, T., & Malhotra, A. (2021). Financial inclusion, Pradhan Mantri Jan Dhan Yojna Scheme and economic growth: Evidence from Indian States. *Economic Notes*, *50*(3). https://doi.org/10.1111/ecno.12186

Zaccaria, L., & Guiso, L. (2020). From Patriarchy to Partnership: Gender Equality and Household Finance. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3652376

Table A.1: Variable Definitions

VARIABLES	Definition
Households financially included	Collated from a binary variable that takes a value of 1 if *any* member of the household has a bank account, and zero otherwise. Averaged to the district level.
Financial literacy score	Collated from common questions across FII waves. Each have only one correct answer, and the number of correct answers were summated for each individual and then averaged at the district level. The questions are:

1. "Imagine you have 100 Rupees. Somebody gave you 20 Rupees. How much total money will you have?
2. Imagine you have 100 Rupees and you have to divide it among 5 people. How much money will each person receive if you divide it equally?
3. Imagine you have 100 Rupees in your savings account. Your account is earning 2% interest every year. How much money will you have on your account in 5 years if you do not withdraw anything during that period?
4. Suppose over the next 10 years the prices of the things you buy double. If your income also doubles, will you be able to buy less than you can buy today, the same as you can buy today, or more than you can buy today?
5. Suppose you need to borrow 100 Rupees. Which is the lower amount to pay back: 105 Rupees or 100 Rupees plus 3 percent?
6. Suppose you put money in the bank for two

	years and the bank agrees to add 15 percent per year to your account. Will the bank add more money to your account the second year than it did the first year, or will it add the same amount of money both years?
Average distance to bank (kms.)	Measured using distance to closest bank per household (kms.) and averaged to district level
Average distance to ATM (kms.)	Measured using distance to closest ATMs per household (kms.) and averaged to district level
Average time to bank (mins.)	Measured using time to closest bank per household (mins.) and averaged to district level
Average time to ATM (mins.)	Measured using time to closest ATMs per household (mins.) and averaged to district level
Average distance to nearest financial institution (kms.)	Measured using distance to closest financial institution (other than bank) per household (kms.) and averaged to district level
Average time to nearest financial institution (mins.)	Measured using time to closest financial institution (other than bank) per household (mins) and averaged to district level
Average HH asset ownership (number)	Number of consumer durables and assets owned from refrigerator, stove/gas burner, pressure cooker/pressure pan, television, electric fan, almirah/dressing table, motor vehicle.
Average number of females in HH	Number of females counted per household and averaged at district level.
Proportion married	A dummy variable was created, taking a value of 1 if the individual within the household was married and zero otherwise, and then averaged to the district level.
Average age	District-level average age in years
Average mobile phone ownership [a]	Proportion of individuals who reported owning a feature or smartphone, averaged at district-level.
Average education level	Average education level coded as below: 1=Illiterate – no formal education

Appendix for Financial Literacy and Financial Inclusion in Rural India

	2=Literate – no formal education
	3=Below primary schooling (Standard 4th)
	4=Primary schooling (Standard 5th)
	5=Middle (Standards 6-8th)
	6=Matriculation/secondary (Standard 10th)
	7=Higher secondary (Standard 12th)
	8=Non-technical diploma or certificate not equal to degree
	9=Technical diploma or certificate not equal to degree;
	10=Graduate
	11=Post graduate and above
Average HH wealth	Average at district-level computed from scale variable as follows: Please tell me which one best describes your family's financial situation? 1=We don't have enough money for food 2=We have enough money for food, but buying clothes is difficult 3=We have enough money for food and clothes, and can save a bit, but not enough to buy expensive goods such as a TV set or a refrigerator 4=We can afford to buy certain expensive goods such as a TV set or a refrigerator 5=We can afford to buy whatever we want
Proportion of rural poor [c]	Proportion of rural poor computed from FII Poverty Index, averaged to district-level.