

Accounting for Empowerment?

Examining Women’s Financial Inclusion in India

Online Appendix

Tarana Chauhan

November 8, 2025

1 Financial inclusion in India

1.1 Bank branch and credit penetration

From 1969 until the early 1990s, several commercial banks were brought under the ownership and management of the government ([Government of India, 1970](#)). This increased the bank branch density significantly ([International Monetary Fund, 1973](#)). Between 1977 and 1990, a licensing policy by Reserve Bank of India (RBI) mandated that for every new branch opened in a location with existing bank infrastructure, four branches had to be opened in underserved areas (see [Burgess and Pande \(2005\)](#) for a description). The two policies increased the uptake of bank credit by rural households, and rural branch expansion corresponded with a decline in poverty ([Burgess and Pande, 2005](#)).

In the 1980s and early 1990s, policies aimed at increasing lending to priority sectors such as agriculture and socio-economically disadvantaged groups were introduced. The initiative by the National Bank for Agriculture and Rural Development (NABARD) to connect self-help groups (SHGs) with banks helped economically marginalized groups, especially women, access financial services¹. These groups were initially identified through poverty estimates and later through community mapping processes². These savings groups increased women’s control over savings and income, and participation in borrowing decisions ([Raghunathan et al., 2023](#); [Kumar et al., 2021](#)). They enabled peer groups that positively impacted women’s self-esteem and personal agency ([Basargekar,](#)

¹This was implemented through the National Rural Livelihoods Project (NRLP) and corresponding state-specific Rural Livelihoods Mission.

²See RBI Master Circular RBI/2016-17/9: <https://www.rbi.org.in/commonperson/English/Scripts/Notification.aspx?Id=1757>

2009; Kato and Kratze, 2013; Morgan and Coombes, 2013), and reduced experience of intimate partner violence (Goetz and Gupta, 1996; Rahman, 1999; Ahmed, 2005). However, the impact of SHGs varied in different parts of the country and some regions experienced higher non-performing assets (Sinha and Navin, 2021).

1.2 Early efforts to expand account ownership

Against this background, RBI announced the “no-frills account” policy in 2005, advising banks to offer accounts with low or no minimum balance requirements³. Banks were advised to offer these accounts and extend financial services in remote areas with the help of Business Correspondents (BCs)⁴. BCs particularly helped customers open accounts, make irregular and small transactions, process loans, and facilitate small deposits, remittances, insurance and pension products. In an attempt to scale up, BCs were expanded from non-profit organizations to include individuals⁵. They were allowed to conduct business for more than one bank and their operational area increased from 15 to 30 kms⁶. Despite these modifications, banking through BCs was unprofitable due to low volume of transactions (Uzma and Pratihari, 2019; Enclude and Grameen Foundation, 2013; Kolloju, 2014). Only 37% of all bank branches were located in rural areas, and 34% of the villages had access to banking services through BCs (Enclude and Grameen Foundation, 2013). The implementation suffered from technological issues, concerns about legal risks, and low financial literacy among clients (Khan, 2012; Enclude and Grameen Foundation, 2013). Only 58.7% of households reported having access to banking services⁷ in the 2011 Population Census.

The no-frills account was subsequently restructured into the Basic Savings Deposit Account, offering digital services like ATMs and electronic payments⁸. This scheme led to an increase of 100 million accounts between 2011-13 as opposed to the 6 million through the introduction of BCs in 2007 (Helix Institute of Digital Finance (2015) cited in Uzma and Pratihari (2019)). Despite this, account ownership and access to bank infrastructure remained low.

³See RBI Master Circular RBI/2005-06/204

⁴Full notification given in Circular RBI/2005-06/288

⁵Retired employees from banks, post office, government, teaching and other agents who worked with the government such as owners of fair price shops, insurance/ saving schemes agents.

⁶See RBI/2011-12/100

⁷These include services from brick and mortar bank, Business Correspondent and microfinance institution.

⁸See RBI notification RBI/2012-13/169

1.3 Additional features of Pradhan Mantri Jan Dhan Yojana (PMJDY)

Anyone who opened the account in the first five months of the policy was eligible for life insurance as long as they were an income earning member of the household and between ages 18 and 59. Consistent with the policy, this covered only first time account holders with a debit card issued with the PMJDY account. Only one person in the household was eligible for this life insurance. There was no premium required under this policy. This INR 30,000 insurance coverage was available until financial year 2020. Over 125 million accounts were opened and over 110 million debit cards issued in the first five months of the policy. This provides a broad estimate of the people eligible for this insurance.

The policy also aimed to improve financial literacy, particularly in rural areas through Financial Literacy Centers set up by lead banks of districts or Centers of Financial Literacy that were set up at the block level by NGOs and sponsor banks. The literacy camps organized by these centers were free of charge. The RBI provides a list of these centers⁹. However, without information on when each center was opened and timing of the camps organized, it is difficult to estimate changes in financial literacy in the first year of PMJDY.

1.4 Reasons for not owning a bank account

The Financial Inclusion Insights and World Bank Findex are nationally representative surveys. Figures 1 and 2 report reasons for adults (ages 18 and above) not having a bank account. The most important reasons are not having sufficient money to store in an account, costs of owning a bank account (transactions and distance), and lack of documents required to open one.

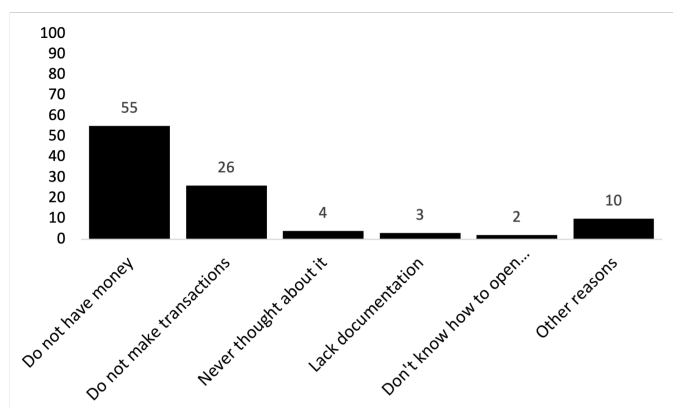


Figure 1: Financial Inclusion Insights, October 2013–January 2014

⁹Link: https://www.rbi.org.in/FinancialEducation/FLCs_CFLs_Details.aspx

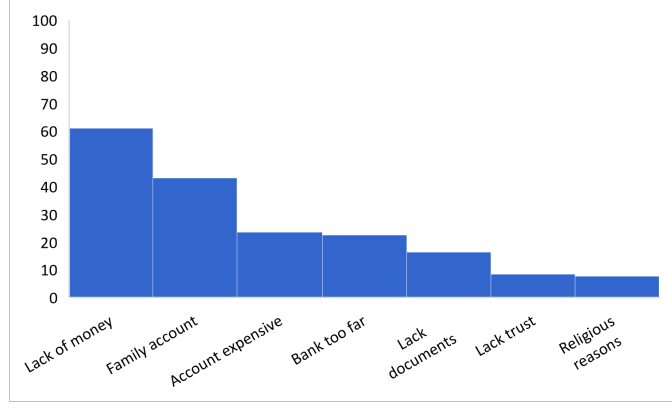


Figure 2: Global Findex 2011

1.5 Advancements in digital finance

This paper does not investigate the interaction of account ownership with digital infrastructure and financial products due to limited use of ATMs and mobile banking in 2014-15. Figure 3 shows that the annual transaction values through ATMs and mobile banking were a fraction (25% and 1%, respectively) of the value of total bank deposits in 2014. The low use of ATMs was explained by the limited machines in rural areas and significant transaction costs: only four free withdrawals were allowed per month. This paper does not capture the effects of the spike in mobile and internet banking transactions and short-term decline in ATM withdrawals (Figure 4) as a result of a monetary policy implemented in November 2016. This policy increased deposits in bank accounts, reduced cash supply and boosted e-wallet transactions ([Chodorow-Reich et al., 2020](#)). The analysis is restricted until 2016, determined by the timing of the post-policy survey data capturing women’s decision making, where less than 0.007% of the survey observations were collected in November and December.

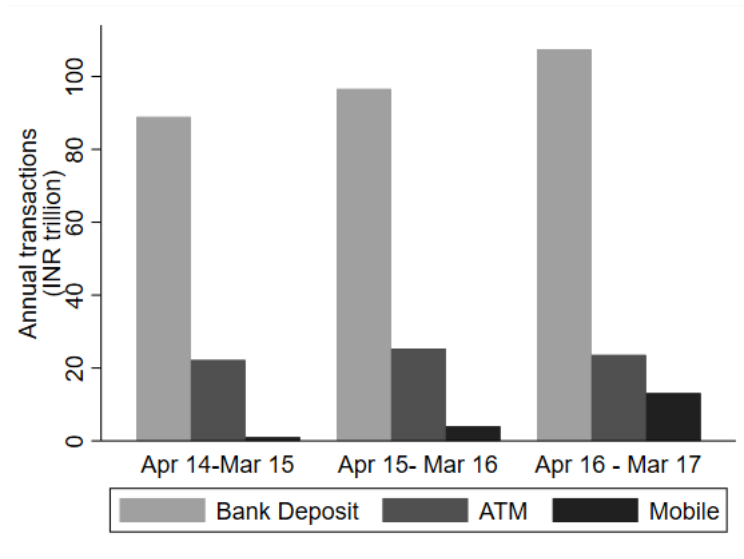


Figure 3: Annual volume of deposits versus digital transactions (2014-17)

Notes: Annual volume of deposits versus mobile and ATM transactions shows that a small fraction of the money held in savings accounts was transacted digitally between 2014 and 2017. The volume (in INR Trillion) is given in nominal terms. Source: Reserve Bank of India. Author's calculations.

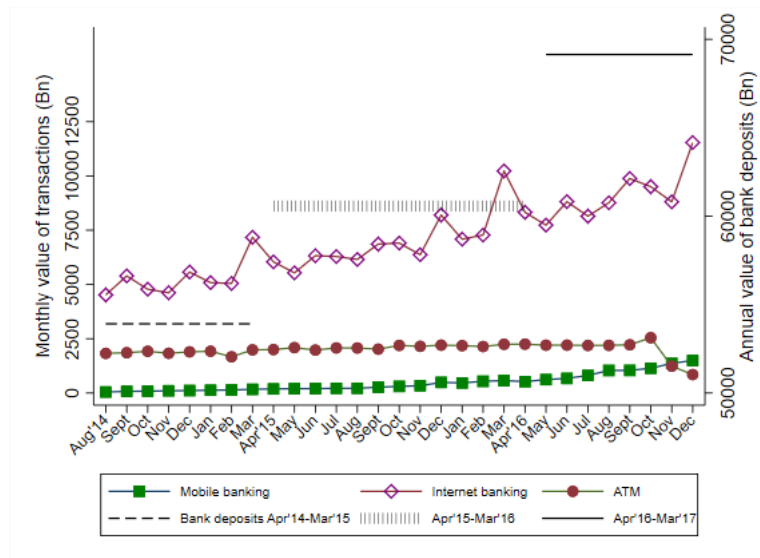


Figure 4: Monthly value of digital transactions in India (2014-16)

Notes: This figure shows the monthly volume of digital transactions (in INR Billion) in nominal terms by individuals using mobile phones, internet and ATMs. The horizontal lines in black (dash and solid) are the size of total bank deposits during that year. The figure identifies the effect of a nationwide change in monetary policy implemented in November 2016 (outside the analysis period). Source: Reserve Bank of India. Author's calculations.

2 Additional Figures

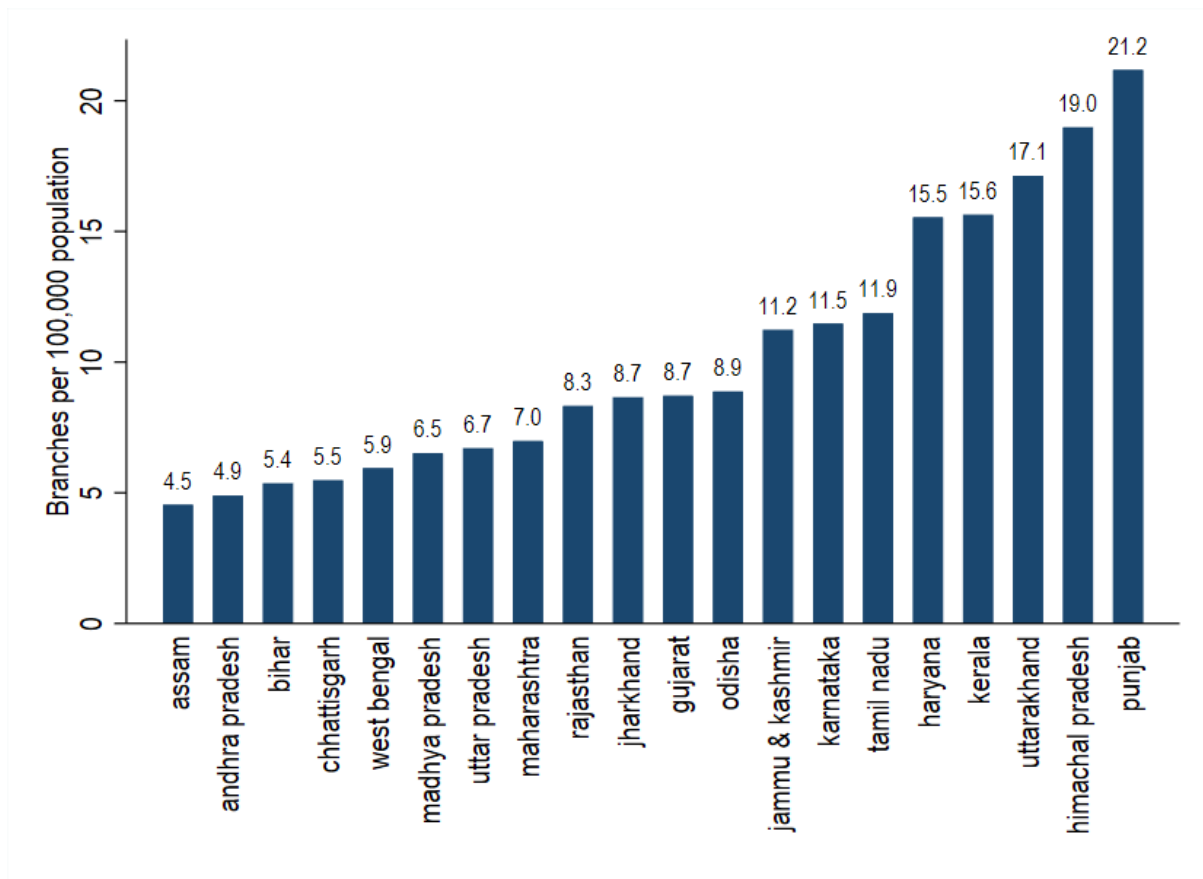


Figure 5: State-wise median bank branch density in 2014

Data sources: Basic Statistical Returns, Reserve Bank of India. Author's calculations.

3 Additional Tables

Table 1: Monthly differences in consumption allocations between treated and comparison groups

	Women's consumption (1)	Cooking & sanitation (2)	Time saving (3)	Men's consumption (4)	Education (5)
Jan 2014	19.435*** [3.755]	-14.835** [5.789]	0.140 [0.182]	7.361*** [2.702]	7.497*** [1.791]
Feb 2014	9.771*** [3.694]	-12.670** [5.750]	0.800*** [0.192]	9.370*** [2.687]	6.526*** [1.770]
Mar 2014	1.019 [3.646]	-9.849* [5.852]	0.980*** [0.183]	11.403*** [2.792]	6.200*** [1.795]
Apr 2014	10.823*** [3.454]	-11.632** [5.846]	-0.034 [0.201]	13.615*** [2.786]	-2.656 [1.777]
May 2014	2.428 [3.463]	-15.042*** [5.089]	0.437*** [0.162]	11.926*** [2.498]	-3.731** [1.732]
Jun 2014	-4.847 [3.408]	2.774 [4.401]	0.366** [0.148]	10.830*** [2.171]	3.886** [1.716]
Jul 2014	-5.032 [3.070]	0.155 [3.282]	-0.039 [0.154]	7.076*** [1.493]	6.405*** [1.614]
Sep 2014	-3.900 [3.246]	-3.614 [3.209]	-0.602*** [0.149]	0.830 [1.278]	-3.947*** [1.256]
Oct 2014	20.420*** [3.395]	-3.802 [3.869]	-0.294** [0.141]	4.350** [1.699]	-2.248* [1.293]
Nov 2014	2.387 [3.384]	-19.660*** [4.870]	-0.493*** [0.162]	3.142 [2.172]	-4.456*** [1.440]
Dec 2014	-9.083*** [3.234]	-31.692*** [5.288]	-0.161 [0.152]	1.847 [2.502]	-5.893*** [1.583]
Jan 2015	-3.062 [3.404]	-27.736*** [5.435]	-0.535*** [0.164]	1.278 [2.505]	-4.038** [1.626]
Feb 2015	-12.758*** [3.236]	-32.596*** [5.493]	-0.314** [0.156]	3.265 [2.655]	-6.805*** [1.621]
Mar 2015	-6.672* [3.530]	-36.311*** [5.708]	-0.689*** [0.164]	7.774*** [2.750]	-11.547*** [1.751]
Apr 2015	-16.412*** [3.438]	-31.730*** [5.763]	-0.443*** [0.154]	11.220*** [2.793]	-14.482*** [1.766]
May 2015	-5.886* [3.364]	-27.962*** [5.921]	-0.510*** [0.176]	10.712*** [2.926]	-15.412*** [1.726]
Jun 2015	-9.180*** [3.529]	-21.362*** [6.186]	-0.747*** [0.184]	8.962*** [2.946]	-7.500*** [1.864]
Jul 2015	-0.590 [3.698]	-7.924 [6.394]	-0.983*** [0.190]	13.235*** [3.046]	-6.103*** [1.971]
Aug 2015	-10.126*** [3.803]	2.772 [6.460]	-0.692*** [0.198]	11.141*** [3.080]	-8.989*** [1.953]
Observations	256535	256535	256535	256535	256535

Notes: Expenditure categories listed as column titles. Standard errors are reported in brackets and clustered at household level. * p< 0.1, ** p< .05, *** p< .01

Table 2: Differences in bank infrastructure and expansion of account ownership between High and Low Impact districts

	(1) Branch density	(2) Account density	(3) Percent difference in accounts since 2014
High impact \times 2006			-4.906** [1.797]
High impact \times 2007	-0.000*** [0.000]	-0.014** [0.007]	-4.230** [1.747]
High impact \times 2008	-0.000*** [0.000]	-0.038*** [0.011]	-4.426** [1.930]
High impact \times 2009	-0.000*** [0.000]	-0.058*** [0.013]	-4.103* [2.011]
High impact \times 2010	-0.000*** [0.000]	-0.078*** [0.018]	-3.683* [2.077]
High impact \times 2011	-0.000*** [0.000]	-0.087*** [0.020]	-1.991 [2.087]
High impact \times 2012	-0.000*** [0.000]	-0.116*** [0.022]	-1.226 [2.118]
High impact \times 2013	-0.000*** [0.000]	-0.174*** [0.031]	-4.624 [2.782]
High impact \times 2014	-0.000*** [0.000]	-0.183*** [0.034]	
High impact \times 2015	-0.000*** [0.000]	-0.219*** [0.039]	2.998** [1.407]
High impact \times 2016	-0.000*** [0.000]	-0.248*** [0.044]	7.035** [2.552]
High impact \times 2017	-0.000*** [0.000]	-0.270*** [0.050]	9.293** [3.559]
Observations	3936	3936	3156
R^2	0.940	0.946	0.921
Adjusted R^2	0.934	0.940	0.892

Notes: The table reports year-by-year differences in bank branch and account variables between High and Low Impact districts. High impact includes districts at state median bank branch density and below. Low impact includes the districts above state median. The dependent variables are listed as column titles. The density variables in columns 1 and 2 are estimated as bank branches or bank accounts per 100,000 population. The estimation includes district fixed effects and controls selected by post double (LASSO) selection method (Belloni et al., 2013). Standard errors are reported in brackets and clustered at district level. * $p < 0.1$, ** $p < .05$, *** $p < .01$

Table 3: DiD: Effect of account expansion policy on account ownership in survey data

	Proportion of households banked		Proportion of women banked	
	(1)	(2)	(3)	(4)
High impact \times Post	-0.004 [0.020]	-0.004 [0.020]	0.030* [0.018]	0.030* [0.018]
Observations	307812	307812	307812	307812
R^2	0.798	0.798	0.828	0.828
Comparison group mean	.91	.91	.12	.12
State FE	Yes	Yes	Yes	Yes
Bank Infrastructure	No	Yes	No	Yes

Notes: This table reports differences in proportion of banked households (columns 1-2) and women (columns 3-4) in the sample between High and Low Impact districts before and after policy implementation. High impact includes districts with bank branch density equal to the state median or less. Low impact includes the districts with branch density greater than state median. Bank branch density is calculated per 100,000 population. Post is a binary variable that assigns 1 to observations from household survey after policy implementation (DHS 2015-16) and 0 to observations from survey before policy implementation (IHDS 2012). Districts are defined by 2001 Population Census Boundary. The sample includes districts where the account expansion policy (PMJDY) was implemented from August 2014 to August 2015. Decision making variables are extracted from nationally representative household surveys (IHDS, DHS), bank infrastructure is estimated using data from RBI and Population Census and information on crime is extracted from NCRB's dataset on Violence Against Women. Districts not surveyed in both IHDS and DHS are excluded from analysis. All specifications include district fixed effects. Columns 2 and 4 also control for changes in bank branch density between 2014-16. Standard errors are clustered by district and reported in brackets. * $p < 0.1$, ** $p < .05$, *** $p < .01$

References

- Ahmed, S.M., 2005. Intimate Partner Violence against Women: Experiences from a Woman-focused Development Programme in Matlab, Bangladesh. *Journal of Health, Population and Nutrition* 23, 95–101. URL: <https://www.jstor.org/stable/23499189>.
- Basargekar, P., 2009. Microcredit and a macro leap: An impact analysis of Annapurna Mahila Mandal (AMM), an urban microfinance institution in India. *IUP Journal of Financial Economics* 7, 105–120. URL: <https://ideas.repec.org/a/icf/icfjfe/v07y2009i3&4p105-120.html>.
- Belloni, A., Chernozhukov, V., Hansen, C., 2013. Inference on Treatment Effects after Selection among High-Dimensional Controls. *The Review of Economic Studies* 81, 608–650. doi:<https://doi.org/10.1093/restud/rdt044>.
- Burgess, R., Pande, R., 2005. Do Rural Banks Matter? Evidence from the Indian Social Banking Experiment. *American Economic Review* 95, 780–795. doi:[10.1257/0002828054201242](https://doi.org/10.1257/0002828054201242).
- Chodorow-Reich, G., Gopinath, G., Mishra, P., Narayanan, A., 2020. Cash and the Economy: Evidence from India’s Demonetization. *The Quarterly Journal of Economics* 135, 57–103. doi:<https://doi.org/10.1093/qje/qjz027>.
- Enclude, Grameen Foundation, 2013. Discussion Papers On India’s Business Correspondent Model. Technical Report. Grameen Foundation USA. URL: <https://grameenfoundation.org/documents/xf7gj15rzxa1q5mk24ku.pdf>.
- Goetz, A.M., Gupta, R.S., 1996. Who takes the credit? Gender, power, and control over loan use in rural credit programs in Bangladesh. *World Development* 24, 45–63. doi:[https://doi.org/10.1016/0305-750X\(95\)00124-U](https://doi.org/10.1016/0305-750X(95)00124-U).
- Government of India, 1970. Nationalised Banks (Management and Miscellaneous Provisions) Scheme 1970. Technical Report. Gazette of India Pt. II, Section 3(ii). URL: https://upload.indiacode.nic.in/showfile?actid=AC_CEN_2_11_00023_197005_1517807321575&type=notification&filename=nationalisedbank_1.pdf.
- International Monetary Fund, 1973. Nationalization of Banks in India. *Finance & Development* 10, 32–37. doi:[10.5089/9781616353117.022.A008](https://doi.org/10.5089/9781616353117.022.A008).
- Kato, M.P., Kratze, J., 2013. Empowering Women through Microfinance: Evidence from Tanzania. *ACRN Journal of Entrepreneurship Perspectives* 2, 31–59. URL: <http://www.acrn.eu/resources/Journals/201302c.pdf>.

- Khan, H.R., 2012. Financial inclusion in Indian economy, in: Issues and challenges in financial inclusion – policies, partnerships, processes & products, pp. 1–13. URL: <https://www.bis.org/review/r120802f.pdf>.
- Kolloju, N., 2014. Business Correspondent Model vis-à-vis Financial Inclusion in India: New practice of Banking to the Poor. International Journal of Scientific and Research Publications 4. URL: https://www.findevgateway.org/sites/default/files/publications/files/business_correspondent_model_vis-a-vis_financial_inclusion_in_india_new_practice_of_banking_to_the_poor.pdf.
- Kumar, N., Raghunathan, K., Arrieta, A., Jilani, A., Pandey, S., 2021. The power of the collective empowers women: Evidence from self-help groups in India. World Development 146, 105579. doi:<https://doi.org/10.1016/j.worlddev.2021.105579>.
- Morgan, M., Coombes, L., 2013. Empowerment and Advocacy for Domestic Violence Victims. Social and Personality Psychology Compass 7, 526–536. doi:<https://doi.org/10.1111/spc3.12049>.
- Raghunathan, K., Kumar, N., Gupta, S., Thai, G., Scott, S., Choudhury, A., Khetan, M., Menon, P., Quisumbing, A., 2023. Scale and Sustainability: The Impact of a Women’s Self-Help Group Program on Household Economic Well-Being in India. The Journal of Development Studies 59, 490–515. doi:[10.1080/00220388.2022.2154151](https://doi.org/10.1080/00220388.2022.2154151).
- Rahman, A., 1999. Micro-credit initiatives for equitable and sustainable development: Who pays? World Development 27, 67–82. doi:[https://doi.org/10.1016/S0305-750X\(98\)00105-3](https://doi.org/10.1016/S0305-750X(98)00105-3).
- Sinha, P., Navin, N., 2021. Performance of Self-help Groups in India. Economic & Political Weekly 5. URL: <https://www.epw.in/journal/2021/5/special-articles/performance-self-help-groups-india.html>.
- Uzma, S.H., Pratihari, S.K., 2019. Financial Modelling for Business Sustainability: A Study of Business Correspondent Model of Financial Inclusion in India. Vikalpa 44, 211–231. doi:[10.1177/0256090919898909](https://doi.org/10.1177/0256090919898909).