

Overall, our results suggest that the supply of formal financial services is not a strong predictor of demand for these services and that there are other factors influencing demand for formal finance. While determinants of access to and usage of formal financial services are outside the scope of this study, recent research points us towards what these factors might be. Kamath et al., (2010) find a weak relationship between the levels of access to institutional finance (a proxy for supply of formal financial services) and the fraction of households that have outstanding debt (a proxy for demand for formal financial services). They find factors such as occupation, landholding, and other socio-economic factors to correlate strongly with the demand for formal financial services. Kumar et al., (2018) find that *“while availability of banking services has a significant positive effect on usage of formal financial services, its contribution in inducing households to use formal financial services is as small as 15% compared to the contribution of household factors (85%), such as education, income, employment status, gender and social norms”*.

Our findings suggest a further nuanced policy strategy to increasing financial inclusion in India. Financial inclusion can benefit by varying interventions by states, depending on the gaps across regions and products, rather than implement the same strategy for all states, as also noted by Kamath et al. (2010).

5. Conclusion

The motivation for this paper emerged from the need to arrive at a realistic measure of financial inclusion by capturing its multi-dimensionality. We go beyond the mainstream approach of measuring financial inclusion through bank account ownership and instead examine the levels of access to and usage of a suite of products, namely, bank accounts, saving and investment products, life and health insurance, provident fund and formal credit to arrive at a comprehensive measurement of financial inclusion that incorporates a range of products needed to meet the financial requirements of a household.

Given the multi-dimensionality of financial inclusion and the variation in these dimensions across regions and over time, we use an index-based approach to measure the levels of financial inclusion in rural and urban India. We use data from a nationally representative household survey; wherein households report details about their access to and use of a range of financial products and services. Given the nature of this dataset, our index, which we call the Composite- Financial Inclusion Index (FII), is therefore a demand-based index. We argue that this approach is methodologically stronger compared to a bank-based index that measures financial inclusion solely on bank account ownership. We also argue for the superiority of this method over a supply-based measurement of financial inclusion, which can result in an overestimation of the levels of financial inclusion owing to factors such as multiple accounts (bank or other financial products) held by the same individuals and inactive use of these accounts. While a supply-based measurement can be useful to assess the performance or progress of a financial system, a demand-based measurement is more appropriate when measuring the outreach and inclusivity of financial products and services.

We find that the bank-based index tends to overestimate levels of financial inclusion and presents an incomplete picture of financial inclusion, without incorporating access to and usage of a range of financial products. At an all-India level, financial inclusion in terms of access, usage and the overall FII scores, is higher for urban regions compared to rural regions. There are also considerable differences in the access and usage scores within and across states. A state-wise comparison of scores and rankings based on high and low performing states for rural and urban geographies, separately, shows disparities, indicating that levels of financial inclusion are not evenly spread across regions of states and require targeted efforts in increasing financial inclusion in under-served geographies. Comparing these rankings with the supply-side rankings shows a further mismatch, suggesting that increased supply of financial services is not a strong predictor of demand for formal finance.

Finally, in terms of percentage contribution of various dimensions to the overall FII score both in urban and rural India, bank account ownership stands out as an important variable. Products that contribute the least to the overall FII score are risky assets (such as mutual funds, Demat and listed shares), health insurance and provident fund, suggesting the need for targeted efforts to increase the demand for and take-up of these products.

Despite the granularity of the data used for this analysis, there are some caveats of our measurement that are worth highlighting. Firstly, data on the frequency of bank

account usage as well as usage of other products is not available. Secondly, while access is measured through ownership of various products and services as well as outstanding savings and investments across products, mere owning an account is a necessary but not a sufficient condition for ‘meaningful’ access. A household could own a bank account, yet may choose not to use it, due to various barriers to banking (Mowl and Boudot, 2014). Therefore, ownership of financial products could be an underestimate or overestimate of meaningful access.

Similarly, a household may not have an outstanding debt with a formal financial institution and yet could access formal credit if needed. Therefore, outstanding debt could be an underestimate of meaningful access to formal credit. These limitations are worth noting as they provide insights into how financial inclusion measurement could be further strengthened by collecting data that measures financial inclusion more accurately.

To the best of our knowledge, our study is the first attempt to measure financial inclusion in India using a comprehensive demand-side index, thereby incorporating the multi-dimensionality of financial inclusion. We believe that our measurement is conceptually sounder compared to previous attempts in this topic, that either use a supply-based measurement or use a narrow definition of financial inclusion, when conducting a demand-based assessment. Our intention is for these results and the said approach of measuring financial inclusion to be used by policymakers in order to identify gaps in inclusive finance across products and regions.

6. References

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Appendix- List of Tables

TABLE 1: Bank-Based versus Composite Financial Inclusion Index- Urban and Rural

State	Bank FII-	Bank FII-	Composite FII-	Composite FII-
	Urban	Rural	Urban	Rural
Andhra Pradesh	0.80	0.69	0.68	0.68
Assam	0.58	0.70	0.75	0.65
Bihar	0.72	0.75	0.64	0.68
Chhattisgarh	0.79	0.71	0.71	0.65
Delhi	0.62	0.74	0.71	0.66
Goa	0.71	NA	0.71	0.71
Gujarat	0.79	0.77	0.66	0.63
Haryana	0.60	0.81	0.69	0.73
Himachal Pradesh	0.71	0.93	0.71	0.72
Jammu & Kashmir	0.71	0.71	0.71	0.71
Jharkhand	0.80	0.76	0.64	0.69
Karnataka	0.75	0.78	0.67	0.67
Kerala	0.80	0.70	0.69	0.67
Madhya Pradesh	0.68	0.68	0.64	0.66
Maharashtra	0.78	0.83	0.66	0.57
Odisha	0.72	0.65	0.70	0.70
Punjab	0.74	0.60	0.74	0.67
Rajasthan	0.82	0.68	0.71	0.71
Tamil Nadu	0.80	0.87	0.68	0.67
Telangana	0.75	0.63	0.71	0.64
Tripura	0.71	0.80	0.71	0.70
Uttar Pradesh	0.89	0.78	0.59	0.61
Uttarakhand	0.63	0.72	0.68	0.71
West Bengal	0.74	0.68	0.70	0.67
All India	0.81	0.84	0.61	0.55

TABLE 2: Access and Usage Score- Urban and Rural

States	Access-Urban	Usage-Urban	Access-Rural	Usage-Rural
Andhra Pradesh	0.65	0.72	0.69	0.66
Assam*	0.74	0.78	0.66	0.64
Bihar	0.63	0.64	0.69	0.68
Chhattisgarh	0.69	0.73	0.60	0.74
Delhi	0.71	0.70	0.69	0.61
Goa	0.71	0.71	0.71	0.71
Gujarat	0.65	0.66	0.63	0.63
Haryana	0.64	0.75	0.76	0.70
Himachal Pradesh	0.71	0.71	0.73	0.71
Jammu & Kashmir	0.71	0.71	0.71	0.71
Jharkhand	0.65	0.62	0.69	0.70
Karnataka	0.69	0.65	0.69	0.65
Kerala	0.73	0.63	0.68	0.65
Madhya Pradesh	0.62	0.67	0.67	0.65
Maharashtra	0.66	0.66	0.58	0.57
Odisha	0.69	0.71	0.68	0.73
Punjab	0.74	0.75	0.65	0.68
Rajasthan	0.73	0.67	0.71	0.71
Tamil Nadu	0.69	0.68	0.71	0.63
Telangana	0.73	0.68	0.60	0.71
Tripura	0.71	0.71	0.71	0.67
Uttar Pradesh	0.62	0.55	0.64	0.58
Uttarakhand	0.68	0.69	0.72	0.68
West Bengal	0.70	0.70	0.68	0.67
All India	0.63	0.59	0.58	0.51

TABLE 3: Comparison of State-Ranking by Demand and Supply-side Index

States	Rank-FII Rural	Rank-FII Urban	Rank-CRISIL Inclusiv
Haryana	1	14	11
Himachal Pradesh	2	7	8
Rajasthan	3	5	17
Jammu & Kashmir	4	7	21
Goa	4	7	2
Uttarakhand	6	15	10
Odisha	7	12	13
Tripura	8	7	12
Jharkhand	9	23	19
Bihar	10	22	24
Andhra Pradesh	11	16	5
West Bengal	12	11	16
Tamil Nadu	13	17	6
Karnataka	14	18	4
Kerala	15	13	1
Punjab	16	2	9
Madhya Pradesh	17	21	18
Delhi	18	4	3
Assam	19	1	20
Chhattisgarh	20	6	22
Telangana	21	3	7
Gujarat	22	20	15
Uttar Pradesh	23	24	23
Maharashtra	24	19	14

Rank correlation coefficient between rural and urban FII- rank= 0.152
Rank correlation coefficient between FII-rural and CRISIL rank=0.131
Rank correlation coefficient between FII-urban and CRISIL rank=0.236

TABLE 4: Percentage Contribution of Dimension- Urban

State	Bank a/c access	Health insurance access	Life insurance access	Provident fund access	Risk-free asset access	Risky asset access	Formal borrowing access	Risk-free asset usage	Risky asset usage	Life insurance usage	Provident fund usage	Formal borrowing usage
Andhra Pradesh	10%	7%	8%	8%	7%	7%	8%	8%	9%	8%	9%	10%
Assam	6%	9%	8%	9%	8%	NA	8%	9%	NA	9%	8%	9%
Bihar	9%	8%	8%	7%	8%	9%	9%	8%	9%	8%	8%	9%
Chhattisgarh	9%	7%	9%	8%	7%	8%	8%	9%	8%	9%	7%	9%
Delhi	7%	9%	8%	8%	7%	10%	9%	8%	10%	8%	7%	8%
Goa	8%	8%	8%	8%	8%	NA	8%	8%	8%	8%	8%	8%
Gujarat	10%	9%	9%	8%	7%	8%	6%	8%	8%	10%	9%	7%
Haryana	7%	8%	9%	8%	7%	9%	7%	10%	10%	10%	9%	7%
Himachal Pradesh	8%	NA	8%	8%	8%	NA	8%	NA	NA	8%	8%	8%
Jammu & Kashmir	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Jharkhand	10%	9%	8%	8%	8%	8%	8%	8%	8%	8%	9%	8%
Karnataka	9%	9%	10%	10%	9%	6%	7%	8%	7%	8%	10%	7%
Kerala	10%	10%	8%	10%	10%	7%	8%	8%	7%	7%	8%	7%
Madhya Pradesh	9%	8%	8%	7%	8%	8%	8%	10%	8%	10%	8%	9%
Maharashtra	10%	8%	7%	7%	9%	7%	9%	9%	9%	8%	7%	9%
Odisha	9%	8%	9%	8%	9%	8%	8%	9%	8%	9%	7%	9%
Punjab	8%	9%	9%	8%	9%	8%	7%	9%	9%	9%	8%	7%
Rajasthan	10%	9%	9%	9%	9%	6%	8%	8%	7%	8%	10%	7%
Tamil Nadu	10%	7%	10%	7%	10%	7%	8%	10%	7%	9%	7%	8%
Telangana	9%	9%	9%	8%	8%	8%	9%	9%	8%	8%	7%	8%
Tripura	8%	8%	8%	8%	8%	NA	8%	8%	NA	8%	8%	8%
Uttar Pradesh	12%	6%	10%	9%	10%	8%	6%	7%	6%	9%	9%	7%
Uttarakhand	8%	7%	10%	7%	8%	9%	9%	8%	10%	9%	8%	8%
West Bengal	9%	9%	9%	8%	8%	8%	8%	8%	8%	9%	9%	8%
All India-Urban	11%	7%	10%	8%	11%	6%	8%	8%	5%	10%	8%	8%

TABLE 5: Percentage Contribution of Dimension- Rural

State	Bank a/c access	Health insurance access	Life insurance access	Provident fund access	Risk free asset access	Risky asset access	Formal borrowing access	Risk free asset usage	Risky asset usage	Life insurance usage	Provident fund usage	Formal borrowing usage
Andhra Pradesh	8%	8%	8%	8%	9%	9%	9%	7%	9%	6%	8%	10%
Assam	9%	7%	10%	6%	10%	NA	10%	10%	NA	8%	6%	8%
Bihar	9%	9%	9%	9%	8%	8%	6%	7%	7%	9%	9%	9%
Chhattisgarh	9%	9%	10%	9%	8%	0%	9%	9%	NA	9%	10%	9%
Delhi	9%	8%	8%	9%	9%	8%	9%	7%	7%	9%	9%	7%
Goa	NA	NA	8%	8%	8%	NA	8%	NA	NA	8%	8%	8%
Gujarat	10%	7%	8%	8%	8%	9%	8%	7%	10%	9%	8%	7%
Haryana	9%	9%	9%	9%	9%	8%	7%	8%	8%	8%	9%	7%
Himachal Pradesh	11%	6%	10%	7%	11%	NA	6%	8%	7%	9%	8%	9%
Jammu & Kashmir	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Jharkhand	9%	9%	9%	7%	9%	7%	7%	10%	8%	8%	7%	9%
Karnataka	10%	8%	9%	7%	9%	8%	9%	8%	9%	8%	7%	9%
Kerala	9%	8%	8%	8%	8%	9%	10%	8%	NA	8%	8%	9%
Madhya Pradesh	9%	7%	8%	7%	9%	10%	8%	8%	8%	8%	8%	9%
Maharashtra	12%	6%	8%	7%	10%	7%	8%	8%	9%	9%	6%	9%
Meghalaya	9%	8%	7%	9%	10%	NA	8%	8%	NA	7%	9%	9%
Odisha	8%	8%	9%	10%	7%	7%	8%	10%	8%	10%	7%	8%
Puducherry	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Punjab	8%	7%	8%	9%	9%	8%	9%	9%	7%	8%	9%	9%
Rajasthan	8%	8%	7%	8%	8%	9%	9%	9%	8%	9%	9%	7%
Sikkim	7%	9%	8%	9%	8%	NA	8%	8%	NA	8%	9%	7%
Tamil Nadu	11%	7%	9%	8%	10%	9%	7%	10%	8%	8%	7%	6%
Telangana	8%	10%	10%	9%	8%	0%	9%	11%	NA	10%	9%	8%
Tripura	10%	8%	9%	7%	8%	NA	10%	8%	NA	8%	8%	NA
Uttar Pradesh	11%	7%	9%	10%	9%	8%	8%	6%	10%	7%	9%	8%
Uttarakhand	9%	8%	9%	8%	10%	8%	6%	8%	NA	9%	8%	7%
West Bengal	8%	10%	8%	8%	7%	9%	8%	8%	8%	7%	8%	9%
All India- Rural	13%	8%	11%	7%	10%	5%	8%	8%	6%	9%	7%	8%