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FINANCIAL INCLUSION LINKS TO ENERGY POVERTY IN INDIA

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ABSTRACT

In India, despite numerous measures adopted by RBI to ensure adequate supply of financial services in rural areas, their penetration and usage is considerably low due to low per capita income and poor financial literacy. On the other hand, electrification significantly affects household income, literacy rate, and school enrollment ratio. The paper establishes a relationship between energy poverty and financial inclusion using cross-section data on Indian states for financial inclusion index, and electrification rate. Results suggest that, at policy level, an integration of financial inclusion initiatives with elimination of energy poverty brings synergic outcomes.

***JEL classification**:* G21; O18; Q42; Q48; R51

KEYWORDS: *Financial inclusion; literacy; Energy poverty; Electrification,*

1. INTRODUCTION

Ever since the idea of financial inclusion came into existence, it has come a long way from mere access to banking facilities to access to a wide range of financial services which includes banking, insurance, credit and equity products at an affordable cost by all classes of the society with particular emphasis on low income households (Planning Commission, 2009). Though the definition of financial inclusion has witnessed a great deal of improvement over the years, the access to and usage of same by poor sections of the society has not grown at a pace it should have. Whenever the measurement of the degree of financial inclusion is considered, two categories of indicators are taken into account. The supply side indicators measure the access to financial services such as Commercial bank branches/ATMs per 1,000 km^2 or per 100000 adults while the ones at demand side measure their usage such as Deposit/ loan accounts with commercial banks per 1,000 adults. Based on these indicators, countries or central banks report the progress made over a period of time in terms of being more or less inclusive compared to the past years. The access to financial services is provided by banks by opening up branches and ATMs in rural and urban areas of the country. Whereas the usage of services by people depends not only on its availability but also on other important factors such as income, financial literacy, proximity of the services available and other socio-economic factors.

As far as the income and financial literacy as a determinant of usage of financial services is concerned, the access to modern energy such as electricity as a source of lighting in a region significantly and positively affects the income and literacy level of households. Thus an indirect link is likely to exist between energy poverty and low levels of financial inclusion in any region. This paper attempts to study the association between availability and usage of financial services among Indian states and establishes a link between energy poverty and usage of financial services across states in India. Based on the results obtained, an integration of welfare schemes to alleviate energy poverty and improve financial inclusion is proposed.

2.RESEARCH OBJECTIVES

The paper attempts to accomplish the following research objectives:

- To analyse the impact of availability of financial services on its usage across Indian states
- To analyse the impact of availability of modern energy services such as electricity on the level of financial inclusion across Indian states

3.LITERATURE REVIEW

3.1Determinants of Financial Inclusion:-

Whether urban or rural area, people demand and make use of financial services only when they are able to save a part of their incomes. Most of the people in rural areas work in unorganized sector or agriculture and do not have a regular source of income and thus they never feel a need for a bank account. Because of low income or poverty coupled with high consumption levels in rural areas, people are unable to save and thus they never demand financial services. As per NCAER-CMCR survey – NISCHIE 2004-05, only 7.5 percent of the total funds borrowed through informal sources are put into productive or income-generating purposes in rural areas. Rest all is spent on meeting some financial, medical and other emergencies. In the absence of any collateral or poor repayment capacity due to low income or unproductive use of borrowed funds, they cannot obtain loans from formal financial institutions.

A report by Asian Development Bank (ADB) expresses its doubt over the preparedness of Asia's rural financial markets for the 21st century (Meyer & Nagarajan, 2000). It also says that most of the individuals excluded by formal financial markets are low-income and rural individuals. A policy research working paper by World Bank suggests that worldwide, 65 percent of non-account holders cited lack of enough money as the most important reason for not having a formal account (Demirgüç-Kunt & Klapper, 2012). Another study conducted to explore the association between financial inclusion and economic development using data on 15 Indian states concludes that per capita net state domestic product (PCNSDP) is a significant determinant of financial inclusion (Singh & Kodan, 2011). Another study concludes that states with better banking outreach have higher per capita NSDP (Ghosh, 2012). A study conducted to identify the determinants of usage of financial products and services reports income stability and availability of electricity as two of the key determinants (Amankwah et al., 2012).

Thus, household income seems to be a key determinant of the demand for financial services. Unless people earn enough to save, they can never make use of financial services offered. In this direction, micro-financing and self-help groups seems to be a promising move where a group of people channelize small amount of savings and access formal financial services to engage themselves into some productive activities. This puts them into employment and generates income for the group as a whole.

3.2 Electrification, Household Income, and Literacy

There has been a clear consensus among development specialists for a relationship between access to energy and poverty. Energy is considered as an important issue in order to alleviate poverty from the developing countries (DFID, 2002; Sachs, 2005). That is why access to modern energy, in particular to electricity, has been one of the priority themes of the World Bank and other development organizations. The literature supporting the link between access to modern energy and welfare is well documented. Electrification in rural areas stimulates growth through welfare benefits such as improvement in quality of life of the people (ADB, 2010; Munasinghe, 2009). Also across nations, a large chunk of energy-deprived households is located in rural areas (World Bank, 2008). Hosier (2004) provides an econometric evidence for a positive relationship between consumption of energy and household income. Use of electricity in evening time not only enhances the productivity of households but it also contributes to the educational achievements of children (Roddis, 2000). This has a positive effect on future income too and thus has a long term impact on poverty.

Worldwide, poor people spend a greater proportion of their income as energy expenditures than do the rich ones. Such percentage ranges from 5 to 20 percent of household income or expenditure (Barnes et al., 2003), the reason being costlier nature of such traditional sources of energy. A World Bank policy research paper, using rich household survey data in India, estimates the benefits of rural electrification. The results suggest that rural electrification reduces the household time allocated

to fuel wood collection and helps them allocate more time to studying by children. It also increases the supply of labor by households and helps in reduction of rural poverty by increasing their per capita income (Khandker et al., 2012). Lack of energy also limits the income-generating opportunities for women who are involved in self-employed economic activities (Reddy and Nathan, 2012). Low electrification rate also adversely impacts household savings and income through channels such as high fertility rates for women, low wages, low schooling rate resulting in poor female labor force participation (Version 6.2, Heston et al. 2006)

4.DATA AND METHODOLOGY

Based on the availability of data on selected variables, 23 Indian states have been selected for testing the hypothesis developed in the previous part of the paper. The data used for analysis belongs to the year 2009-10 since financial inclusion index covering all the three dimensions for Indian states is available for that year only. The variables used for the analysis are as follows:

- Financial Inclusion Index- Availability (Chattopadhyay, 2011)
- Financial Inclusion Index- Penetration (Chattopadhyay, 2011)
- Financial Inclusion Index- Usage (Chattopadhyay, 2011)
- Rural/Urban/Total Electrification Rate; Ministry of Power, Govt. of India

Pearson Correlation Test is used to analyze the linear association between:

- Availability Index and Penetration Index
- Availability Index and Usage Index
- Electrification Rate and Financial Inclusion Index

Following regression equation is being considered in order to assess the impact of electrification on financial inclusion:

$$FII = a_0 + a_1*ELECT + u_t$$

$$FII\_USG = b_0 + b_1*ELECT + u_t$$

where FII = financial inclusion index, FII_USG = financial inclusion index- usage dimension, and ELECT = electrification rate.

5.RESULTS

The penetration of banking services in terms of opening a bank account depends on availability of banks in a particular region. Initiatives taken by RBI such as opening of branches in unbanked rural centres, relaxed 'Know Your Customer' requirements, basic banking 'no-frills account', etc have resulted in more than 40 percent of the population across the country having a bank account. Thus opening up bank branches is significantly correlated with its penetration in terms of opening a bank account (Table 1). Further, the usage of banking services in terms of transacting through bank accounts on regular basis has been abysmally low and is not strongly determined by its availability as indicated by a statistically insignificant and low value of correlation coefficient between availability and usage of banking services across states (Table 1). The major barriers to usage include lack of regular income, poverty, illiteracy and other socio-economic factors.

Electrification positively affects the penetration and usage of financial services through increase in household income and literacy as well as increase in savings due to reduced energy expenditure. The correlation coefficient between electrification and penetration as well as usage of financial services is reasonably high and statistically significant (Table 2).

Electrification positively affects the progress in financial inclusion with greater usage of formal financial services. Such effect is stronger in case of urban electrification compared to rural electrification (Table 3). A one percentage increase in electrification in urban areas results in an increase in usage of financial services by about 6 basis points whereas such an increase is about 2 basis points in case of rural electrification. Coefficients in both the cases are statistically significant at 5 percent level. Similarly, the effect of electrification on the overall financial inclusion is positive and significant at 5 percent level.

6.CONCLUSION

Electricity being the key basic infrastructure in rural areas, its usage raises household income and literacy rate and eventually results in better usage of financial services, if available. Thus, per capita income and literacy are the channels through which electrification promotes financial inclusion in a

region. Another indirect channel is increased household savings through which households are able to make use of banking services. Considering the results obtained, there is a need for an integration of the welfare programmes launched by government for eliminating energy poverty and improving financial inclusion in India. Recently, many private microfinance organisations worldwide have developed successful models to ensure provision of energy services and access and usage of financial services by the households. Credit is being provided by such organizations to rural un-electrified households to purchase solar power equipments which enables them to engage into some productive/ income generating activities. The loan amount is repaid out of the increased income of the households.Households also get to open a bank account and transact through it at regular intervals for making payments, paying back instalments, etc. Such initiatives not only raise the penetration of formal financial services, but also improve their usage.

In India, the SHG-Bank Linkage Programme (SBLP) by National Bank for Agriculture and Rural Development (NABARD) needs to adopt similar kind of a model where the un-electrified households may be linked up with SBLP to ensure provision of electricity along with access to formal financial services. Secondly, there is a need for government authorities to avail banking services, even in the far-flung electrified areas of the country so that the household savings may be properly channelized. In such areas, lack of access to banking services prevents households to sustain the benefits received through electrification.

ANNEXURE – A

Table 1: Correlation Between Availability, Penetration, and Usage of Banking Services

	Penetration	Usage
Availability	0.738**	0.330

***Correlation is significant at the 0.01 level (2-tailed)*

Table 2: Correlation Between Electrification Rate and Availability, Penetration, and Usage of Banking Services

	Electrification
Penetration	0.544**
Usage	0.400***

***Correlation is significant at the 0.01 level (2-tailed)*

**** Correlation is significant at the 0.1 level (2-tailed).*

Table 3: Regression Output

$FII = a_0 + a_1*ELECT + u_t$					
Dependent Variable	Independent Var.	R-square	F-Sig	B-Coeff	B-Signi
IFI	Rural Electrification	0.143	0.042	0.018	0.042
	Urban Electrification	0.135	0.047	0.056	0.047
	Total Electrification	0.131	0.05	0.019	0.05
$FII\_USG = b_0 + b_1*ELECT + u_t$					
Usage	Rural Electrification	0.192	0.024	0.018	0.024
	Urban Electrification	0.179	0.028	0.057	0.028
	Total Electrification	0.172	0.031	0.02	0.031

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