Financial Inclusion drive in India: Productivity Analysis

Dr. Rajni Chugh[1], Neetu[2]

Abstract— **Financial Inclusion is one of the important policy initiatives towards the upliftment of lower income group people and relieving them from the clutches of informal sources of financing. Despite the fact that Financial Inclusion is widely renowned, there still lacks a comprehensive determinant that can be used to indicate the extent of Financial Inclusion. However, several indicators have been used to indicate the extent of Financial Inclusion in India. In accordance with that the paper focuses on measuring the productivity of Financial Inclusion drive in different states of India for the period of 2005 to 2013. The study utilizes Malmquist Index for estimating the year wise as well as state wise productivity of Financial Inclusion drive for the selected span of time. The results reveal that although there has been improvement, significant progress has not been observed 8.9 percent growth has been estimated for India during the span of eight years (2005-13).**

Index Terms— Financial Inclusion, Malmquist Index, Productivity

I. INTRODUCTION

Financial Inclusion is defined as the proportion of individuals and firms that use financial services and become a subject of considerable interest among policy makers, researchers and other stakeholders (GFDR, 2014). The Reserve Bank of India (RBI) has been pursuing its goal of financial inclusion since the 1950s with the building of rural cooperative structures, the popularization of social banking, the spread of self-help groups (SHGs) in the 1970s, and the rapid expansion of bank branch networks in the most recent decades. While these measures have helped in building a strong banking network across the country, studies show that 40% of the country's population still does not have any access to formal means of credit (Basu and Srivastava, 2005). To tackle the issue of financial exclusion in India, the RBI fore fronted a financial inclusion campaign. Beginning with the launch of no-frills bank accounts in 2005, it also introduced easier Know Your Customer (KYC) norms and

simplified the process of opening bank branches in unbanked and under-banked districts and areas (Subbarao, 2009). The heightened interest reflects a better understanding of the importance of Financial Inclusion for economic and social development as it specifies that access to financial services has a critical role in reducing poverty, boosting shared propensity and supporting inclusive and sustainable development. The interest also derives from a growing recognition of the large gaps in Financial Inclusion. But boosting Financial Inclusion is not inconsequential. Creating new bank accounts does not always translate into regular use. The Committee (Mor Committee) on Comprehensive Financial Services for Small Business and Low Income Households submitted its report in 2014. The report observed

60 per cent of the rural and urban population did not have a functional bank account. Moreover, things can go badly, especially if credit starts growing rapidly. The promotion of credit without sufficient regard for financial stability is likely to result in a crisis. Therefore, concerted efforts are needed to ensure the achievement of several key goals such as universal access to a bank account; a ubiquitous payments infrastructure; and a base level suitable access to all the other financial products such as deposits, credit, investment and insurance within a relatively short period of time.

II. LITERATURE REVIEW

N.Sundaram and M.Sriram (2008) studied empirically the determinants of Financial Inclusion in rural regions of Vellore district of Tamil Nadu. The author studied the reasons for not having bank accounts. Analytical research design has been used and primary data has been collected from 20 village blocks. The study, with the help of percentage analysis and Index of Financial Inclusion (framed on the basis of a multidimensional model developed by Sarma (2012)) found that Financial Inclusion was at a mid range (0.55) for the selected area, which needs progression and major reasons for lack of financial access were low income, illiteracy and unemployment.

Sunil Kumar and Rachita Gulati (2008) studied (with the help of DEA) the technical efficiency, pure technical efficiency and scale efficiency of 27 public sector banks by using non-parametric methodology. For the analysis, the input variables include physical capital, labor and loanable funds; the output variables include net interest income and non interest income. The empirical analysis revealed that the level of technical efficiency for public sector banks stood at 88.5 percent, implying thereby that the inputs could be reduced by 11.5 percent without sacrificing output if all banks were efficient as seven benchmark banks identified by DEA. Moreover, the results of multiple regression analysis have shown that the exposure of the banks to off balance sheet activities has a strong and positive impact on the overall technical efficiency of banks.

Nitin Kumar (2011) studied the inclusion intensity and inclusion growth across the states of India by using DEA. The author studied the performance of postal network in India as a medium of financial intermediary in general and operation of basic savings specifically. The results of empirical analysis showed that although there has been continuous rise in both population and number of postal saving accounts still there was no significant improvement in the postal network as reflected by accounts per capita and savings per capita over

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the study period i.e. from 1990 to 2008, across 18 major states of India.

Cristian Biener and Martin Eling (2011) measured the performance of micro insurance progress using DEA and derived implications for viable provision of micro insurance products. The sample selected for the study included 20 micro insurance programs for the period 2004-08 for Africa, Asia and Latin America. In the study, the performance of micro insurance programs has been evaluated with the help of DEA. Malmquist Index of TFP has also been calculated i.e. the change of distances of micro insurers to the efficient frontier between two periods by using the proxy; inputs include labor, business services, debt capital and equity capital. However, for specifying the outputs, value added approach has been used. Accordingly, benefits, investments and social output measure have been taken as output variables. The empirical findings revealed that there were significant potential for improvement in many of the programs and illustrated the diversity of micro insurance programs in terms of performance which emphasized the relevance of benchmarking in identifying best practices. However, TFP has shown an overall positive development of productivity for the sample period with a high degree of improvement in technology used.

III. OBJECTIVES

To study the state wise productivity of Financial Inclusion drive of different states of India

To study year wise productivity of Financial Inclusion drive for different states of India for the span of 2005 to 2013

IV. RESEARCH METHODOLOGY

The study measures the growth of Financial Inclusion between the periods of time (2005-13). In order to accurately estimate the changes in productivity/ growth of Financial Inclusion during the time period, the Malmquist Index (Henceforth MI) is used (Mohan, T.T.Ram and Ray, Subhash C., 2004; Mukesh Kumar, Vincent Charles, 2012). The Index was first suggested by malmquist (1953) as a quantity index to be used in analyzing consumption of inputs. Fare et al., (1992) constructed an MPI directly from input and output data using DEA by combining their ideas on measurement of productivity from caves et al., The DEA based malmquist index has proven to be the most appropriate tool to use for measuring productivity change in various states (Chen 2011). As far is this study is concerned, the growth of Financial Inclusion on the basis of demographic and macroeconomic factor based on time series, can be measured by MI as improved efficiency is related to increased growth/ performance. Thus MI is expressed by the two adjacent DEA efficiency measures. In this study's setting, the growth of FI from one time period to other has been estimated. For instance, the MI between time periods t and t+1 were measured as:

$$M^i_t = \frac{e^i_{t,t+1}}{e^i_{t+1}}$$

From the above equation $e^i_{t,t}$ and $e^i_{t,t+1}$ denote the input

technical efficiency scores for state I that relates observations in periods t and t+1 respectively. The growth change between time periods t and t+1 were measured by M^i_t. As $e^i_{t,t}$ and $e^i_{t,t+1}$ are efficiency scores which usually lies between zero and unity. Subsequently, these may induce three possibilities as regards Financial Inclusion growth which van be expressed as follows (Fare et al. 1992)

M^i_t < 1 indicates decline in Financial Inclusion growth

M^i_t = 1 implies no change in growth from time t to t+1

M^i_t > 1 indicates an increase in Financial Inclusion growth

Similarly, MI based on period t+1 can be expressed as

$$M^i_{t+1} = \frac{e^i_{t+1,t+1}}{e^i_{t+1,t}}$$

The productivity/ growth measure can be decomposed into two indices which capture technical efficiency change (TEC[i]) between time period t and t+1, and the technological (Frontier) change (FS[i]) (Fare et al.). This can be defined as:

$$M^i_t = \frac{e^i_{t+1,t+1}}{e^i_{t+1,t}} \left[\frac{e^i_{t,t+1}}{e^i_{t+1,t+1}} \frac{e^i_{t,t}}{e^i_{t+1,t}} \right]^{1/2} = Tec^i + FS^i$$

The efficiency change component (TEC[i]) is an index of relative technical efficiency change between periods for state i. It shows how much closer or farther away a state gets to the frontier made up of best practice of other states. For this component to be greater than, equal to or less than unity, it depends upon whether Financial Inclusion is growing, stagnant or not progressing. On the other hand, the technical change component (FS[i]) shows the relative distance between the frontiers. In other words, this component measures the frontier shifts between two periods and indicates whether the best practice relative to which the evaluated state i is compared to, is improving, stagnant or not showing any progress. In sum, as regards this study, the efficiencies and change in growth of Financial Inclusion in Indian states was calculated by DEA frontier.

V. ANALYSIS AND INTERPRETATION

Table 1: Year wise Productivity of Financial Inclusion drive

Year	TEC	FS	Productivity
2005-06	0.871	1.053	0.917
2006-07	1.342	0.789	1.059
2007-08	1.026	1.091	1.119
2008-09	1.063	1.085	1.153
2009-10	0.887	1.341	1.190
2010-11	1.155	0.922	1.064
2011-12	0.995	1.15	1.145
2012-13	1.053	1.031	1.085
Mean	1.04	1.047	1.089

Source: Study results obtained using Malmquist Index for the study period, 2005-13

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Table 1 shows the interpretation of the indexes of MI, TEC and FS. According to the analysis, the value of inclusion growth greater than unity implies that Financial Inclusion in the time period t+1 was greater relative to that of the previous year (period t). The results in table 1 revealed that there has been inclusion growth in the states of India during the years of study period. The average inclusion growth for all the states was estimated at 1.089 (8.9 percent). According to MI only three states were there that have not shown growth in Financial Inclusion during the study period while all other states have shown the index value greater than unity (MI > 1) implying thereby that Financial Inclusion has grown between the periods of study (2005-13).

When measuring the growth changes between two periods (table 1) almost same tendencies with regard to Financial Inclusion have been noticed. When results were evaluated for the periods 2007-08, 2008-09, 2009-10 and 2011-12, remarkable growth with regards to financial inclusion have been observed at 11 percent, 15 percent, 19 percent and 14 percent respectively. Although, in 2005-06 there has been evidence of decline in Financial Inclusion as the observed value was less than unity (0.917<1), thus showing no progression in Financial Inclusion during the initial phase of Financial Inclusion drive. To be precise, it has been observed that year 2009-10 has shown highest Financial Inclusion growth of 19 percent than rest of the years. However, in totality, there has been observed progression in Financial Inclusion during all the years of study period except 2005-06.

Table 2: State wise Productivity of Financial Inclusion drive

State	Tec	FS	Productivity
Gujarat	0.975	0.831	0.810
Punjab	1	0.816	0.816
Tamil Nadu	1	0.843	0.843
Goa	1	1.039	1.039
Kerala	0.993	1.062	1.054
Delhi	1	1.063	1.063
Chandigarh	1.007	1.062	1.070
Pondicherry	1.039	1.033	1.073
Himachal Pradesh	1.103	1.069	1.083
Haryana	1.03	1.054	1.086
ALL INDIA	1.04	1.047	1.089
Jammu & Kashmir	1.04	1.058	1.100
Uttar Pradesh	1	1.104	1.104
Rajasthan	0.997	1.109	1.106
West Bengal	1.001	1.107	1.109
Karnataka	1.012	1.101	1.115
Andhra Pradesh	1.007	1.11	1.118
Meghalaya	1.050	1.066	1.119
Jharkhand	1.026	1.091	1.119
Maharashtra	1.014	1.107	1.123
Assam	1.025	1.097	1.125
Madhya Pradesh	1.017	1.109	1.127
Tripura	1.075	1.066	1.146
Chhattisgarh	1.070	1.076	1.151
Nagaland	1.081	1.065	1.151
Arunachal Pradesh	1.095	1.055	1.155
Orissa	1.052	1.102	1.160
Bihar	1.037	1.121	1.163
Manipur	1.093	1.065	1.164
Sikkim	1.115	1.048	1.169
Mizoram	1.124	1.056	1.187
Andaman & Nicobar Islands	1.301	0.963	1.252

Source: Study results obtained using Malmquist Index for the study period, 2005-13

Considering the individual states, the results of the analysis (table 2) shows the MI value less than unity for states; Punjab (0.816), Gujarat (0.810) and Tamil Nadu (0.843), implying thereby that these states have not shown any progress with regards to Financial Inclusion from 2005 to 2013. However, states like Goa, Kerala, Delhi, Chandigarh, Pondicherry, Himachal Pradesh and Haryana have shown positive but less than all India average Inclusion growth (Table 2). Whilst, 21 states out of the total have shown higher Financial Inclusion growth when compared with all India average inclusion growth of 1.089.

VI. CONCLUSION

In totality, it could be concluded that Financial Inclusion has penetrated in the economy of India to a large extent in terms of depth as well as breadth. The study found that the proliferation of new bank accounts and other financial services served to a great extent in increasing the Financial Inclusion in India. However, in case of Haryana district, this Financial Inclusion drive has performed below the all India average and was not proved to be much fruitful in bringing large number of people into the ambit of formal finance. Moreover the inclusion intensity of Haryana was found to be slightly greater than all India average inclusion intensity (0.588> 0.585), along with the low level of productivity of Financial Inclusion drive (1.086< 1.089).

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