

FINANCIAL INCLUSION AND ECONOMIC GROWTH IN INDIA: AN EMPIRICAL ANALYSIS OF FEEDBACK MECHANISM

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ABSTRACT

Sustainable and Inclusive growth involves participation of all sections of society. Financial Inclusion is a major step towards achieving inclusive growth and sustainable development. The objective of the study is to analyze the extent of financial inclusion in various regions and compare the region wise financial inclusion score of India. It will also compare the decadal changes in the structure of Institutional and Non-Institutional Rural credit in India. The study was conducted through collection of secondary data from Crisil Inclusix reports and PMJDY (Pradhan Mantri Jan Dhan Yojana) reports and RBI (Reserve Bank of India) official website. Empirical analysis has been undertaken using panel data econometrics. Descriptive analysis suggests that South region leads in financial inclusix score whereas North-east states are on the lowest scale. Panel data analysis tests supply-leading and demand-following hypothesis. The study accepts both the hypothesis in case of India. However, evidences of demand-following hypothesis are stronger than the supply-leading hypothesis. Finally, the study suggests that Government of India and Government of each state should make efforts to reach all the rural sections of India and increase financial literacy among the rural people of India.

Keywords: Financial inclusion, Economic Growth, Panel Data

JEL Classification: G20, G28, O17

1. INTRODUCTION

Access to financial services (Financial Inclusion) to all sections of society is considered vital for sustainable development and inclusive growth. However in India the access to Financial Inclusion presents a picture which says that despite several efforts made by RBI and Government to promote financial inclusion, still a large population of India is unbanked. An inclusive finance must include all sections of society, especially the weaker one in the financial services. The uniqueness of having a bank account is that it not only provides basic banking facility but also

encourages saving habits among people which will further boost investment which in turn generates employment and work for the development of economy. Financial inclusion may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost. These include other pecuniary services such as pension, insurance and equity products. According to the committee on financial inclusion (2006) it refers to “The process of ensuring access to appropriate financial services needed by vulnerable groups such as weaker sections and low income groups at an affordable cost in a fair and transparent manner by mainstream institutional players.”

There are multiple benefits of financial inclusion such as it provides potential for increasing banking business by bringing more and more customers to bank; it boosts the growth of banking business; it encourages saving habits among people; it boosts investment which in turn leads to growth of the economy; it aims at achieving equitable distribution of income thereby reducing income saving gap; and this helps in eradication of poverty by giving bank loans and sustainable livelihood of the weaker section of the society.

India compared to the developed world has less coverage of financial services, for this banks were urged to review their existing practices and modify them to achieve the objective of financial inclusion, as a result Khan Committee recommendation were incorporated into the midterm review of policy of 2006. In India financial inclusion first featured in 2005 in Y.V Reddy’s annual policy statement. Second time financial inclusion featured in 2005 when K.C Chakraborty, the Chairman of Indian bank declared Mangalam, Puducherry first village in India to achieve 100 percent financial inclusion. In 2006, RBI permitted commercial banks to make use of NGOs, SHGs, and micro-finance institutions as intermediaries for providing basic banking services to people. The Reserve Bank of India vision 2020 aims at opening 600 million new customers’ accounts and service them through the channels of IT.

Rest of this paper is organized as follows. Section 2 discusses Regional Pattern of Financial Inclusion. Section 3 presents review of selected literature. Data and Methodology for analysis is discussed in section 4. Section 5 discusses empirical results. Concluding remarks are summarized in Section 6.

2. REGIONAL PATTERN OF FINANCIAL INCLUSION

This section is broadly based on CRISIL Inclusix reports. First time, an attempt has made by CRISIL to capture financial inclusion at state level. CRISIL Inclusix is India’s first financial inclusion index which was formed in 2013 to provide information and insights beyond banking in India. It takes into account not just Branch penetration (BP) but also credit penetration (CP),

deposit penetration (DP) and insurance penetration (IP). Insurance penetration has been included first time in 2016. Prior to 2016, only three dimensions of financial inclusion are taken into account. Coming to insurance the total number of life cover policies has increased in India which shows big opportunity for financial inclusion. It is an index that takes into account various forms of basic financial services into a single metric. It measures financial inclusion against the ideal level for BP, CP, DP, and IP on a scale of 0 to 100, where 100 is the maximum score showing full financial inclusion. CRISIL Inclusix also measures the extent of financial inclusion and interpreted as given in table-1:

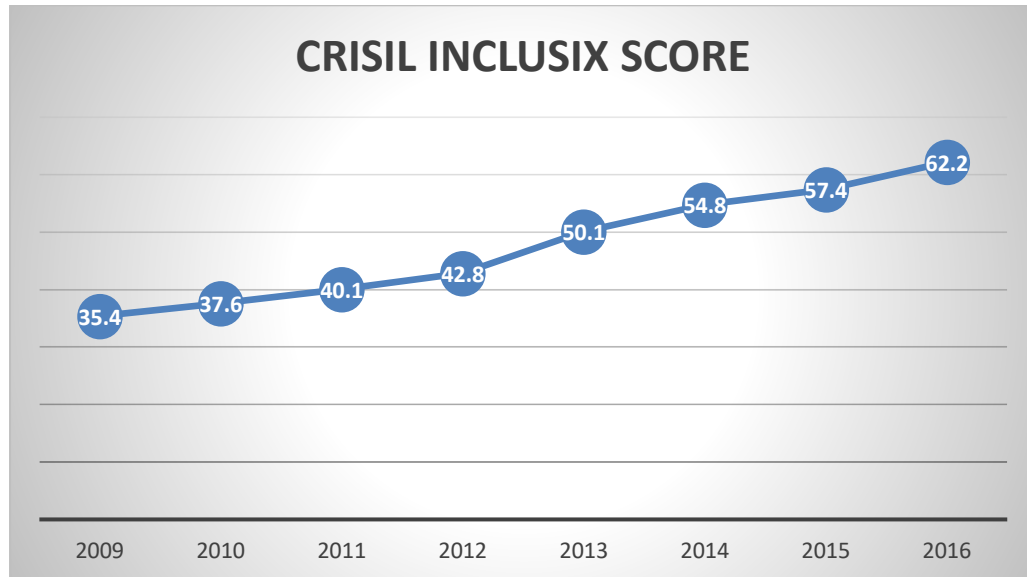
Table 1: LEVEL OF FINANCIAL INCLUSION

CRISIL INCLUSIX SCORE	LEVEL OF FINANCIAL INCLUSION
>65	High financial inclusion
Between 50.1-65	Above average
Between 35-50	Below average
<35	Low financial inclusion

Source: CRISIL Inclusix report

Figure 1 shows the increasing trend of Inclusix score that measures the progress of financial inclusion across the country. Though the data shows increasing trend over the period of time, major increase could be seen from 2012 to 2013 and 2015 to 2016. This remarkable increase could be because of the introduction of basic savings bank deposit account which is the modified version of No frills account. The RBI has introduced No frills account in 2005 to promote financial inclusion and basic banking facilities to the poorer sections of society, then RBI asked the banks to convert the existing No frills account into BSBD account. Another possible reason could be the Swabhimaan scheme launched in 2011. PMJDY in 2015 has registered its name in Guinness world record for opening highest number of bank accounts in a week. In figure 1 micro finance institutions data is included from 2013 and insurance penetration data has been added in 2016.

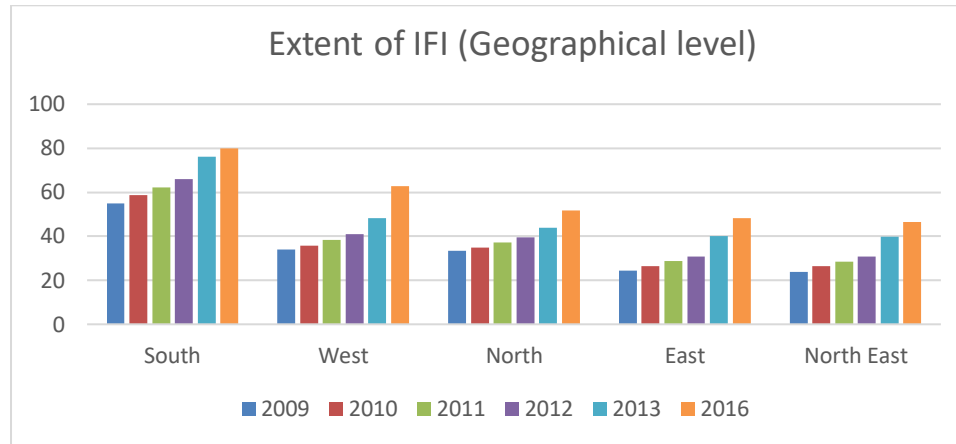
Figure 1: CRISIL Inclusix Score of India from 2009 To 2016



Source: CRISIL Inclusix reports for various years

Figure 2 shows the region wise Inclusix score of India from 2009 to 2016, where South region continues to lead with a score of 79.8 in 2016 higher than the All India score of 58.0. It not only leads over all but also leads among all the four regions of India mainly because of large amount of branch penetration, credit and deposit penetration and high level of literacy rate found in South region. Kerala, Karnataka, Telangana, Andhra Pradesh attains high level of financial inclusion, where Kerala attains the top spot with CRISIL score of 90.9. From the above figure it is seen that North East states continues to be on the lowest scale, with all 10 north eastern states except Tripura featuring in the bottom 10, reason being slow progress of banking and low level of financial outreach in North eastern states, poor Cash-Deposit ratio and lack of financial literacy and awareness among the people.

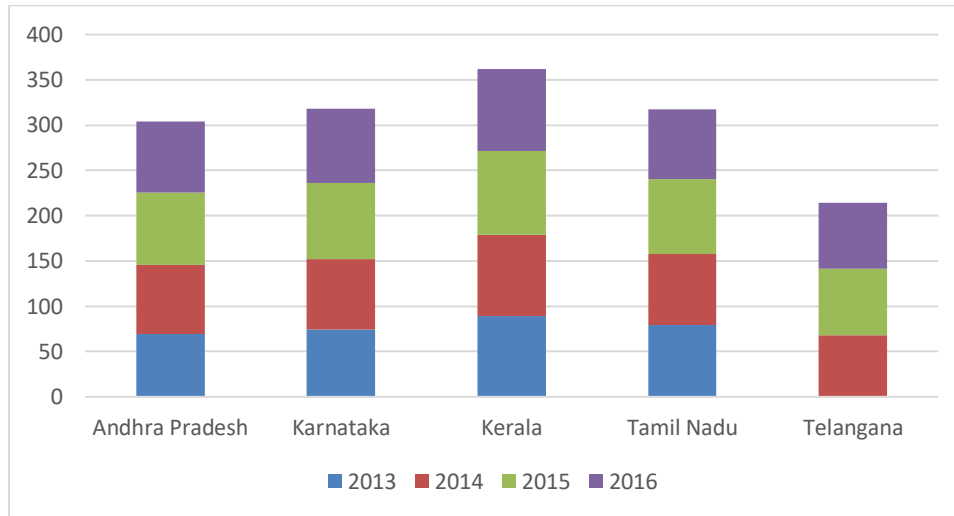
Figure 2: Regional Pattern of Financial Inclusion Score



Source: CRISIL Inclusix Report (accessed on 10 January 2019)

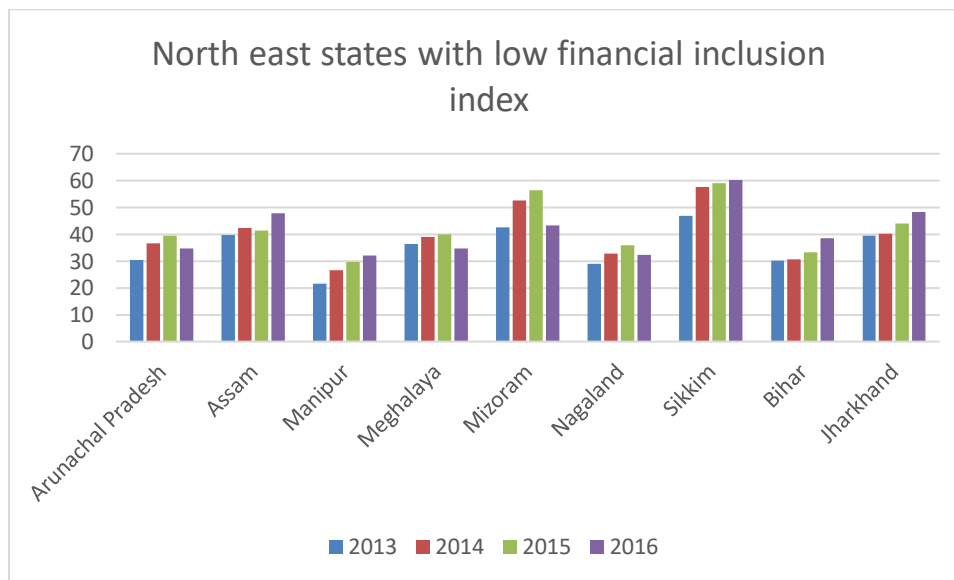
Figure 3 & 4 shows the states with highest financial inclusion in India and states with lowest financial inclusion where it is visible that south region has retained its top position in all the years. South not only tops overall, but in all four dimensions of financial inclusion, with Kerala attaining the highest score. The probable reason could be high amount of literacy rate found in Kerala and also being on the top spot in social indicators whereas North east states are on low scale in all dimensions of financial inclusion. The widest disparity in all the regions is in Credit Penetration with south being way ahead of other regions. This indicates high amount of credit culture in the south through formal institution. The East and North-East have also shown significant improvement in credit penetration score in the recent past, benefitting from Micro-finance institutions. Micro finance institutions are playing a remarkable role in Credit Penetration serving the poor and underprivileged sections of society. MFIs not only give financial help to poor but also educate them on utilizing the funds in a better way by giving them information about the structure of market.

Figure 3: State Pattern of Financial Inclusix Score



Source: CRISIL reports (accessed on 10 January 2019)

Figure 4: North East States with Low Financial Inclusix Score

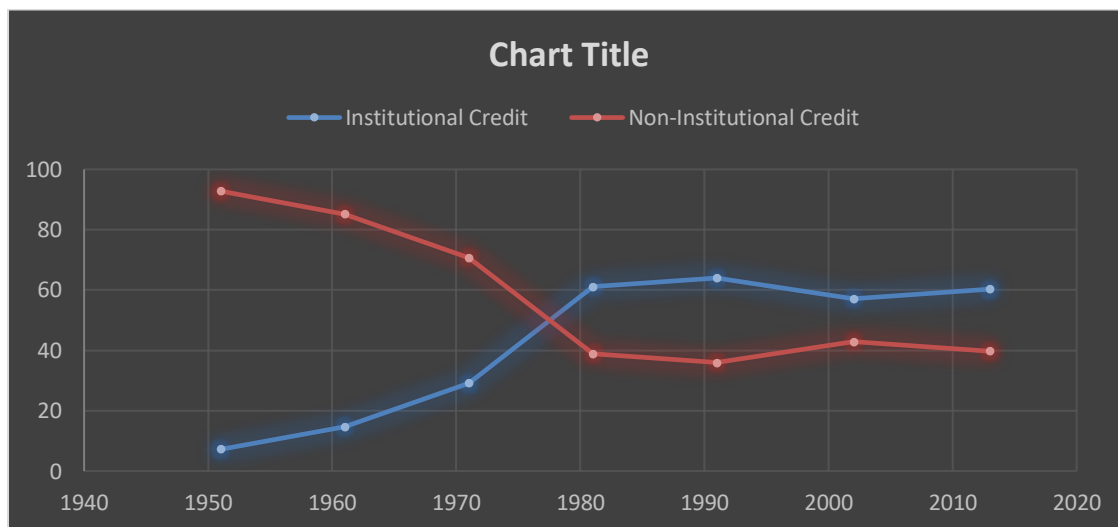


Source: CRISIL report (accessed on 10 January 2019)

Figure 5 shows massive fall in the share of non-institutional rural credit or informal sources and huge increase in institutional rural credit, due to several initiatives taken by Government and RBI to strengthen institutional or formal rural credit delivery system like Nationalization of banks, formation of Regional Rural Banks etc and Various schemes has been launched which has given

fruitful results in the area of financial Inclusion. One such scheme is PMJDY which has also made its mark under the Guinness world record under the category of opening most number of bank accounts in a week. The graph also shows fall in formal rural credit from 1990 onwards reason being the economic reforms post 1990 where market took the centre stage, growth acceleration was given the first priority and social aspect of economy took a back seat. However after 2005, Financial Inclusion was adopted as a policy and several schemes like No frills account, Swabhimaan, PMJDY were launched which further increased the flow of formal rural credit.

Fig 5: Decadal Institutional and Non-Institutional Rural Credit of India



Source: AIRCS (All India Rural Credit Survey)

Table 2 shows the number of bank accounts launched under PMJDY scheme and percentage of bank accounts with zero balance. PMJDY was launched in August 2014 and has shown huge increase in the opening of bank accounts. Also the table shows huge fall in the percentage of zero balance accounts from 68 percent in 2015 to 24 percent in 2017 showing the increase in banking habits among people, one main reason for this drastic fall could be demonetization which took place on November 2016 due to which many bank accounts were activated which enhanced the cashless transactions and shifted the economy towards digital economy. This fall in zero balance account shows the success of PMJDY scheme and also shows the increase in financial literacy among people.

Table 2: Progress of PMJDY

Year	Number of Accounts (in crores)	Zero balance accounts (in %)
2015	12.5	68
2016	22.29	25
2017	28.38	24

Source: Official website of PMJDY (accessed on 2 January 2019)

3. REVIEW OF SELECTED THEORETICAL AND EMPIRICAL LITERATURE

The theoretical and empirical studies suggest that there is a significant positive association between financial development and economic growth. The question whether financial development promote economic growth, or does economic growth propels financial development still remains unsettled. The direction of causality between financial development and economic growth is crucial because it has significantly different implications for development policy. However, this causal relationship remains unclear.

The possible directions of causality between financial development and growth are labelled by Patrick (1966) as the supply-leading and demand-following hypothesis. The supply-leading hypothesis posits a causal relationship from financial development to economic growth, which means deliberate creation of financial institutions and markets, increases the supply of financial services and thus leads to real economic growth. Numerous theoretical and empirical writings on this subject have shown that financial development is important and causes economic growth. Schumpeter (1911), Goldsmith (1969), McKinnon (1973), Diamond (1984), Boyd and Prescott (1986), King and Levine (1993a, b), Neusser and Kugler (1998), Levine, Loayza and Beck (2000) and Aghion et al. (2004) support the supply-leading phenomenon. On the other hand, the demand-following hypothesis postulates a causal relationship from economic growth to financial development. Here, an increasing demand for financial services might induce an expansion in the financial sector as the real economy grows. Gurley and Shaw (1967), Goldsmith (1969) and Jung (1986) support this hypothesis.

The Outlook Regional Economic (2015) argued that Financial Inclusion by lowering constraints to access credit generally boosted growth in African emerging and developing countries. Hariharan and Marktanner (2012) have shown that Financial Inclusion could stimulate economic growth. They also argued that Financial Inclusion could create capital because of this strong positive correlation with the total factor productivity. They concluded that Financial Inclusion could increase the savings portfolio, the efficiency of intermediation of financial sector, foster entrepreneurship and thus economic growth. Sahay et al. (2015) have used macroeconometrics

and microeconometrics methodologies to study the link between Financial Inclusion and GDP growth. The results showed that Financial Inclusion have a positive impact on GDP growth, as more inclusion and financial development increases the positive effect of inclusion on growth increases. Sharma (2016) using the Vector autoregressive (VAR) and the Granger causality, have shown that various dimensions of Financial Inclusion have positively impacted the economic growth. Author found a bi-directional causality between the geographical penetration of banking services and the economic development and a unidirectional causality between the number of deposits and the GDP.

Bagli & Dutta (2012) seeks to examine the achievement of Indian states regarding financial inclusion by using ten indicators of financial inclusion and applying Principle Component Analysis on the selected indicators. Authors also examined the correlation between Human Development and Financial inclusion of various states in India and found that southern part of India dominates by scoring highest score and north east states are on the lower platform indicating the need of mass financial literacy and awareness among people to achieve financial inclusion. Sureshet.al (2016) studied the past and present status of financial inclusion in the country and implementation and challenges of PMJDY. It is suggested that PMJDY is a big step towards achieving financial inclusion and the scheme can meet the challenges for improving overall banking structure in the economy. The study further suggested granting of full banking license to department of posts for further strengthening the JDY.

Srivastava (2016) analyzed the benefits, challenges and progress and future prospects of PMJDY using secondary sources. The study concluded that the scheme is highly beneficial to weaker sections of society and needs great management as the growth of scheme will help other developmental schemes like skill India and digital India. Godha & Nama(2017) studied the impact of PMMY on financial inclusion and its progress in the state of Rajasthan. According to the study micro-enterprises are very backward in their position and face many problems, therefore a bigger change is required in the area of microfinance by empowering MUDRA yojana which will further increase financial inclusion and make India a more sustainable developed country. Sethy (2018) studied the financial inclusion and identified the indicators required to construct Financial inclusion index. The author suggested giving equal importance to both supply side and demand side indicators of banking services for the success of financial inclusion. Shekhar (2018) examined the progress of PMJDY before and after demonetization. The author suggested proper regulation of financial inclusion in India and access of financial services to everyone for achieving high degree of financial inclusion and inclusive growth.

To the best of our knowledge, there are few or no studies examining the regional depth of financial inclusion. Further, there is no study examining supply-leading and demand-following hypothesis. The present study is an attempt to fill this gap.

4. DATA AND METHODOLOGY

The present study is based on secondary data. The data is collected from secondary sources and analyzed using various proportions, ratios, percentages and growth. For readers benefit, primarily line diagrams, map and tables have also been drawn. Distribution, percentages, growth, etc. have been used for analysis. The secondary information for the research is collected from the following sources: - Pradhan Mantri Jan Dhan Yojana (Official Website), Reserve Bank of India (Official website), National sample survey organisation, AIRCS (All India rural credit survey), and Research papers and journals. The gaps in data were filled by *moving average forecasting technique*.

To test supply-leading and demand-following hypothesis, the present study has used data for 13 Indian states for the period of 2009–2016. The data has been obtained from CRISIL website¹ and RBI website on state wise CRISIL Inclusix score and state wise per capita income at constant prices (base year: 2004-05).

Panel approach is expected to deal better with the problem of measurement bias and the issues related to limited degrees of freedom. As our data series is consist of 13 cross section units and 8 years of time dimension, it is more suitable to apply panel estimation methods. In panel framework, the bilateral relationship between CRISIL Inclusix score and per capita income may be expressed as:

$$\text{Log}(IFI_{it}) = \alpha + \beta_1 \text{Log}(PCI_{it}) + \varepsilon_{it} \quad \text{Model - 1}$$

$$\text{Log}(PCI_{it}) = \alpha + \beta_1 \text{Log}(IFI_{it}) + \varepsilon_{it} \quad \text{Model - 2}$$

Where for $i = 1, 2, \dots, N$; $t = 1, 2, \dots, T$ and ε_{it} is a disturbance term.

As theory is ambiguous about the linkages between IFI and PCI, Dumitrescu & Hurlin (2012) Granger non-causality test has been applied to infer the possible direction of relationship. Under the assumption that the Wald statistics \bar{W} are independently and identically distributed across individuals, it can be showed that the standardized statistic \bar{Z} when T & N tends to infinity (sometimes interpreted as "T should be large relative to N"), follows a standard normal distribution: Also, for a fixed T dimension with $T > 5+3K$, the approximated standardized

¹ <https://www.CRISIL.com/en/home/our-analysis/publications/CRISIL-inclusix.html>

statistic $Z\text{-tilde}$ follows a standard normal distribution. The testing procedure of the null hypothesis is finally based on $Z\text{-bar}$ and $Z\text{-tilde}$. If these are larger than the standard critical values, then one should reject H_0 and conclude that Granger causality exists. For large N and T panel datasets, $Z\text{-bar}$ can be reasonably considered. For large N but relatively small T datasets, $Z\text{-tilde}$ should be favoured. Using Monte Carlo simulations, DH have shown that the test exhibits very good finite sample properties, even with both T and N small (Lopez, 2017).

It is also important to choose appropriate panel model for estimation from a fixed effect or random effect models. A fixed effect model takes into account the state specific factors.

For selection of model, Hausman specification test has been applied. The Hausman test statistic follows Chi-square distribution with k degrees of freedom, where k is the number of slope parameters in the model. If the p-value of Chi-square statistics is more than 0.05, then we reject the null and conclude that v_i is correlated with explanatory variables and therefore the fixed effects model is the appropriate choice for panel estimations.

5. EMPIRICAL ANALYSIS

Theoretically, financial inclusion and economic growth seems to have the feedback effect” or the “bidirectional causality view”. In such scenario, an attempt has been made to examine probable pattern of causality using Dumitrescu & Hurlin (DH) (2012) Granger non-causality test. DH test results in table 3 indicate bidirectional causality view which is supportive of both supply-leading and demand-following hypothesis between financial inclusion and economic growth.

Table 3: Dumitrescu & Hurlin (2012) Granger Non-Causality Test Results

Test Statistics	H0: logpci does not Granger-cause logifi. H1: logpci does Granger-cause logifi for at least one panel var (state).	H0: logifi does not Granger-cause logpci. H1: logifi does Granger-cause logpci for at least one panel var (state).
W-bar	3.3380	2.5473
Z-bar	5.9607 (0.00)	3.9449 (0.00)
Z-bar tilde	1.2783 (0.2011)	0.6736 (0.500)

Having established the suitability of a standard panel method to estimate the model, the final step in our analysis is to select whether fixed effects model or random effects models is appropriate to

estimate from given data set. In the fixed effects model, country specific effects are assumed to be correlated with the explanatory variables, whereas the random effects model assumes that country specific effects are uncorrelated so they become part of the error term. In order to determine the validity of the fixed effect model, Hausman specification test has been applied to validate our selection of the model. Results in table 4 reveal that null hypothesis has been rejected in case model-1, implying that the fixed effects model is preferred over the random effects model while reverse is true in case of model-2.

Table 4: Hausman Specification

Model 1: Dependent Variable-IFI		
Null Hypothesis	$\text{Chi}^2(1) = (b-B)'[(V_b-V_B)^{-1}](b-B)$	Prob.
Ho: difference in coefficients not systematic	11.05	0.0009
Model 2: Dependent Variable-PCI		
Null Hypothesis	$\text{Chi}^2(1) = (b-B)'[(V_b-V_B)^{-1}](b-B)$	Prob.
Ho: difference in coefficients not systematic	0.36	0.55

Contemporaneous causality has been examined using panel data regression. Table 5 presents both fixed effect and random effect results. However, random effect model is valid on the basis of Hausmen specification test in case of model-1; Results of Model-1 indicate that increase in per capita income exerts a positive effect upon financial inclusion. Results indicate that 1% increase in PCI increases IFI by 1.12%. This validates demand-following hypothesis between financial inclusion and economic growth.

Table 5: Panel Regression Results: Dependent Variable-IFI

Independent Variable	Fixed Effect	Random Effect
Log(PCI)	1.22 (13.19)	1.12 (12.81)
Constant	-3.98 (-9.39)	-3.51 (-8.74)
R-sq: within	0.6589	0.65
R-sq: between	0.41	0.41
R-sq: overall	0.43	0.43
N	104	104

F-Statistics	173.88	164
Prob > F	0.000	0.000

Table 6 presents both fixed effect and random effect results. However, fixed effect model is valid on the basis of Hausmen specification test in case of model-2, Results of Model-2 indicate that increase in financial inclusion exerts a positive effect upon per capita income. Results indicate that 1% increase in IFI increases PCI by 0.53%. This validates supply-leading hypothesis between financial inclusion and economic growth.

Table 6: Panel Regression Results: Dependent Variable-PCI

Independent Variable	Fixed Effect	Random Effect
Log(IFI)	0.53 (13.19)	0.54 (13.51)
Constant	3.70 (56)	3.70 (46)
R-sq: within	0.65	0.65
R-sq: between	0.41	0.41
R-sq: overall	0.43	0.43
N	104	104
F-Statistics	173.88	182
Prob > F	0.000	0.000

Finally, the present study validates feedback hypothesis between financial inclusion and economic growth. The study reveals that the economic growth trickle down via demand-following hypothesis. This effect is relatively stronger than the supply leading hypothesis.

6. CONCLUDING REMARKS

The study concludes that banking habits among the people has increased a lot, with the highest financial inclusion in the southern part of India. South continues to lead in financial inclusion index from 2009 to 2016; however with the incorporation of insurance penetration other regions have also closed the gap with south. South also lead in deposit penetration whereas other regions have also shown significant improvement because of large number of deposit accounts opened under PMJDY. Widest regional disparity is visible in credit penetration with south being way

ahead of other regions. This indicates the prevalence of credit culture in south through formal institutional channels.

The study also concludes the changes in the institutional and non-institutional rural credit of India. The study reveal that institutional credit has been continuously increasing and non-institutional credit has been decreasing over a period of time. The study shows that improvement in inclusix score could be much faster if focus is made on enhancing branch and credit penetration in all the regions and not particularly in South. Credit and Branch penetration is currently highly focused in the south and large cities, and needs to be expanded to other regions.

Finally, the study validates feedback hypothesis between financial inclusion and economic growth, implying supply-leading and demand-following hypothesis may be reinforcing in case of India. The study reveals that the economic growth trickle down via demand-following hypothesis and this effect is relatively stronger than the supply leading hypothesis.

Finally, the study recommends that Government of India and Government of each state should make efforts to reach all the rural sections of India and increase financial literacy among the rural people of India.

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