



Impact of Financial Inclusion on Economic Growth in India

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Abstract

This study uses time-series data from 2006–2013 to analyze how financial inclusion affected economic development in India. A crucial factor in inclusive and sustainable development is financial inclusion, which is characterized as the availability of affordable financial services to all segments of society. This study makes use of secondary data collected by the World Bank and the Reserve Bank of India, as well as a number of econometric methods conducted using EViews software, such as the Jarque-Bera normality test, the Augmented Dickey-Fuller (ADF) unit root test, correlation and covariance analyses, and multiple linear regression. The dependent variable is GDP growth, and the seventeen indicators of financial inclusion include things like insurance coverage, the number of bank branches, the number of credit and debit cards issued, the number of deposit and loan accounts, and the prevalence of automated teller machines. Extending banking infrastructure and digital financial services is crucial, since the results show that most financial inclusion indicators have a positive and substantial association with economic development. The regression model shows a strong ability to explain the data, suggesting that financial inclusion has a substantial impact on India's GDP development. On the other hand, several variables exhibit less robust or even negative impacts, indicating the necessity for more focused policy actions. The study found that increasing access to financial services can help India's economy in the long run by creating more jobs, decreasing inequality, and boosting economic prospects.

Keywords: - Financial Inclusion, Economic Growth, GDP Growth, Jarque-Bera Test, Financial Access, India Economy

Introduction

India's economy is one of the largest and fastest growing economies in the world; nevertheless, it has been uneven in the sense that there has been no uniformity in its growth performance. Additionally, India's growth has been discontinuous and unconnected with regard to the distribution of growth advantages to various sectors of the economy. According to Gunasegaram, Kuriakose, and Iyer (2013), the great majority of the population, particularly those living in rural regions, is not fortunate enough to have easy access to financial resources. Despite the fact that forty percent of households have bank accounts, just thirty-eight percent of the scheduled commercial banks' 117,200 branches are located in rural regions. There has always been a

concern on a worldwide scale over the availability of financial services at costs that are both reasonable and reasonable. The tendency of financial exclusion to hinder a country's financial infrastructure, which is unquestionably a fundamental engine of economic growth (Gurley and Shaw, 1955; Goldsmith, 1969; Greenwood and Javanovic, 1990; Diamond and Dybvig, 1983; Angadi, 2003), can be fatal for the progress of an economy. This is because financial exclusion tends to hinder the growth of the economy.

As a result, an inclusive financial system is not just essential in India, but it has also become a policy priority in a number of other nations. Access to financial resources has the potential to elevate the financial situation and level of living of those who are economically disadvantaged and impoverished. Consequently, the Reserve Bank of India (RBI) has been consistently encouraging the banking industry to expand the banking network through the establishment of new branches as well as the installation of new automated teller machines (Dangi & Kumar, 2013). According to Chhabra (2012), the term "financial inclusion" refers to the provision of financial services, such as banking services and credit, at prices that are affordable to large segments of socially disadvantaged and low-income groups that are often excluded from the financial system. The Union Government has made inclusive growth a national policy aim in order to achieve its goals. As the literal meaning of the two terms refers to both the rate and the pattern of economic growth, inclusive growth is essentially defined as growth that is broad-based, shared, and beneficial to the population of low-income individuals. In other words, inclusive growth as a strategy for economic development should not only strive to ensure that the benefits of growth are distributed in a fair manner, but it should also aim to provide economic possibilities and ensure that everyone has equal access to those chances.

According to a research published by the World Bank, "Financial inclusion, also known as broad access to financial services, is defined as the absence of price or non-price barriers in the utilization of financial services." Both Walter (1873) and Schumpeter (1912) brought attention to the significant part that the banking system plays in the expansion of the economy. Goldsmith (1969), McKinnon (1973), and Shaw (1973) proposed that the efficient flow of funds from banks through their extensive network leads to innovation and the development of enterprise as a result of the availability of credit. This initiative, known as the Pradhan Mantri Jan Dhan Yojana, was initiated by Mr. Narendra Modi, the Prime Minister of India, in August of 2013. As of January 31, 2013, a total of one hundred twenty-five million bank accounts had been established by banks as a result of this initiative. One school of thought contends that because banking services are inherently considered to be a public benefit, the primary purpose of this public policy is to ensure that banking and payment services are accessible to all members of the population without any form of discrimination. Therefore, the phrase "financial inclusion" may be described as the process of ensuring that vulnerable groups, such as weaker sections and low income groups, have access to financial services and credit that is timely and appropriate when they are required to do so. This access is provided at a cost that is accessible. The expansion and development of an economy are both significantly influenced by the banking and financial services that are provided.

There is an urgent requirement for increasing the number of people who have access to financial services in light of the fact that the nation requires further financial deepening in order to stimulate economic development. It is through the cultivation of a culture of saves among a significant portion of the rural people

that financial inclusion contributes to the expansion of the resource base of the financial system. Additionally, it plays a part in the process of economic growth. It is a powerful tool that may be used to overcome a lack of financial assistance. Access to financial services is an essential component of development since it helps to foster economic growth and reduces the disparity in income that exists between individuals. Automated teller machines (ATMs), the number of depositors with the commercial bank, the number of loan accounts, the number of Kisan Credit Cards issued, and the credit deposit ratio are all examples of financial access metrics that are outlined by the Reserve Bank of India (RBI) and the International Monetary Fund (IMF). One of the most important requirements for the growth of an economy is the mobilization and circulation of financial resources. For a growing nation like India, achieving inclusive growth is a primary policy priority that must be addressed; this includes financial inclusion. The primary purpose of the research is to investigate the impact that expanded access to financial services has had on the expansion of the Indian economy.

Objectives of the study

1. To study the Impact of Financial Inclusion on Economic Growth in India.
2. To assess the effectiveness of government initiatives and policies in promoting financial inclusion in India.

METHODS AND MATERIALS

Research Methodology

For the purpose of gaining an understanding of the correlation and effect of financial accessibility indicators on GDP Growth in India from 2006 to 2013, this study makes use of analytical tools such as the Jarque-Bera normality test, the ADF Unit root test, the Covariance and correlation analysis, and the Multiple linear regression analysis (using E views).

Taking into consideration the goals and objectives of the research, the study utilized the publically accessible data source since it is more suitable for the purpose. Due to the fact that this subject is primarily associated with macroeconomic variables, the strategy that utilizes data that is readily available to the public is more accurate than the primary data collecting method. The study employed an alternate method for obtaining data from valid and approved websites, namely the database of the Reserve Bank of India (RBI) and the statistics database of the World Bank, which are the primary sources of data. This was done after taking into consideration all of the variables mentioned above. Some of the data points for particular years were derived from the reports that were released by the RBI, and their legitimacy was confirmed by comparing them to data from other information sources.

Sample size

Starting in 2006 and continuing through 2013 the time series data used in the study is referred to as the sample size. The values for 2012 and 2013 were predicted using Excel's linear forecasting approach. 17 independent variables are identified based on the literature review and using statistical tools namely ICB (Institutions of

commercial banks), NCUCC (Number of credit unions and credit cooperatives), NIC (Number of insurance corporations), Branches CUCC (Branches of credit unions and credit cooperatives), ATMs (Automated Teller Machines), DACB (Deposit accounts with commercial banks), PIC (Policies with insurance corporations), Borrowers CUCC (Borrowers from credit unions and credit cooperatives), Number of Debit Card, Number of Credit cards, ODDT (Outstanding deposits with other deposit takers), OLCB (Outstanding loans from commercial banks), OLDLT (Outstanding loans from other deposit takers), BCB (Branches of Commercial banks), NODT (Number of other deposit takers), LACB (Loan account From 2006 to 2012, the following variables' annual data sets were collected. It is believed that India's GDP growth stands in for economic expansion. So, we can state that the study used one dependent variable (GDP growth) over 19 years and seventeen independent factors.

DATA ANALYSIS AND RESULTS

This study uses a number of statistical methods to understand the impact of financial inclusion measures on India's economic growth during the past nineteen years. These methods include the Jarque-Bera normality test, the ADF unit root test, analysis of covariance and correlation, and multiple linear regression. then use EViews to understand the variables' normality, stationarity, covariance, and connections, and then use multiple liquidation analysis to understand how financial inclusion metrics affect India's GDP growth.

Jarque-Bera normality test:

To determine the normal distribution of a variable, this statistical method is employed. It determines the data's skewness and kurtosis. Should the normalcy distribution undergo any changes. Parametric models, like linear regression, rely on the normality of residuals or errors, so this test is essential for most statistical analyses. A model may be flawed, leading to skewed or inaccurate estimates, if the data significantly deviates from normality.

		Jarque-Bera	Probability (P-Value)
Variable	ATM	1.488599	0.475067
	BCE	1.507395	0.470623
	Borrowers	—	—
	CUCC	1.704402	0.496047
	Branches CUCC	1.639083	0.440634
	Credit	2.666159	0.263664
	DACB	1.722528	0.426627

	Debit Cards	1.804343	0.405688
	ICB	9.152246	0.010295
	LAC	2.277248	0.320259
	NCUCC	10.03022	0.006637
	NIC	0.921621	0.630772
	NODT	1.135389	0.566831
	ODCB	1.420068	0.491628
	ODDT	2.906407	0.23382
	OLCB	1.34674	0.509987
	OLDT	2.185495	0.335294
	PIC	0.623276	0.732247
	GDP Growth	1.044264	0.593255

Table 1: Jarque-Bera Normality test results**ADF Unit Root**

When a time series variable has a unit root, it means it is not stationary and is instead being driven by a stochastic trend, rather than a deterministic one. This is known as the "Test" test. The presence of a unit root indicates that shocks at the level of the series can have long-term effects. Time series analysis relies on this test due to the assumption of stationarity by many statistical models. In order to guarantee the accuracy of model predictions and interpretations, it is necessary to difference a nonstationary series until it becomes stationary before continuing with further analysis.

		Augmented Dickey-Fuller Unit Root Test		Significance level		
Variable		ADFStatistic	Probability (P-Value)	1% Level	5% Level	10% Level
	ATM	0.017986	0.9486	-3.857386	-3.04039	-2.660551

BCB	0.10111	0.9565	-3.857386	-3.04039	-2.660551
Borrowers CUCC	-1.903305	0.3234	-3.857386	-3.04039	-2.660551
Branches CUCC	-0.659659	0.833	-3.857386	-3.04039	-2.660551
CreditCards	-2.516633	0.1301	-3.92035	-3.06559	-2.67346
DACB	-0.480812	0.8727	-3.886751	-3.05217	-2.666593
Debit Cards	0.176394	0.9627	-3.857386	-3.04039	-2.660551
ICB	-3.996457	0.0075	-3.857386	-3.04039	-2.660551
LACB	0.223834	0.9645	-3.959148	-3.081	-2.68133
NCUCC	-4.223774	0.0047	-3.857386	-3.04039	-2.660551
NIC	-0.968897	0.7409	-3.857386	-3.04039	-2.660551
NODT	-0.492176	0.8715	-3.857386	-3.04039	-2.660551
ODCB	0.615893	0.9859	-3.857386	-3.04039	-2.660551
ODDT	-0.460086	0.8781	-3.857386	-3.04039	-2.660551
OLCB	0.734929	0.9894	-3.857386	-3.04039	-2.660551
OLDT	0.888638	0.9927	-3.857386	-3.04039	-2.660551
PIC	-2.398787	0.1557	-3.857386	-3.04039	-2.660551
GDP Growth	-0.520676	0.8655	-3.857386	-3.04039	-2.660551

Table 2: ADF Unit Root test results

Analysis of Covariance One statistical technique is the covariance test, which measures the relationship between two variables by comparing their responses to changes in each other. The test determines the covariance value, which could be positive, negative, or zero. The relationship between two variables is

considered to be positive when their covariance is likewise positive. This means that when one variable goes up, the other usually goes up as well. When two variables have a negative covariance, it means they tend to move in opposite directions, with one variable falling while the other increases. When the covariance is zero, we say that the variables are not associated. In order to understand the significance of a covariance test, one must determine the sign and magnitude of the covariance value. When the covariance value is very positive, it means that the variables are highly associated and likely to rise in tandem. A large negative covariance indicates a statistically significant unfavorable relationship.

Independent Variable		Dependent Variable (GDP Growth)
	ATM	6.70E+16
	BCB	2.52E+16
	Borrowers CUCC	5.37E+18
	Branches CUCC	1.51E+15
	Credit Cards	1.18E+19
	DACB	5.22E+20
	Debit Cards	2.60E+20
	GDP Growth	6.07E+23
	ICB	-1.30E+13
	LACB	5.67E+19
	NCUCC	5.30E+14
	NIC	1.05E+13
	NODT	-1.01E+14
	ODCB	3.90E+19
	ODDT	1.07E+17
	OLCB	2.83E+19
	OLDT	1.21E+18

	PIC	6.88E+19
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Table 3: Covariance analysis test results)**Correlation Analysis**

The direction and intensity of a linear link between two variables may be measured by correlation analysis, which uses correlation coefficients ranging from -1 to 1. A correlation value of 1 indicates an absolutely positive link, -1 an absolutely negative one, and 0 indicates that there is no linear relationship at all. Important for both exploratory data analysis and regression model predictor identification, this approach establishes relationships between variables. High correlations between independent variables impair the estimate of regression coefficients, leading to incorrect findings in multiple regression. It also helps to detect multicollinearity in this context.

Independent Variables		Dependent Variable (GDP Growth)
	ATM	0.967745
	BCB	0.970079
	Borrowers CUCC	0.854602
	Branches CUCC	0.93111
	Credit Cards	0.83838
	DACB	0.980086
	Debit Cards	0.977568
	GDP Growth	1
	ICB	-0.844999
	LACB	0.946377
	NCUCC	0.18239
	NIC	0.966255
	NODT	-0.985005
	ODCB	0.987839

	ODDT	0.78877
	OLCB	0.987151
	OLDT	0.962352
	PIC	0.901013

Table 4: Correlation Test result**Multiple Linear Regression Analysis**

One method in statistics for modeling the connection between a dependent variable and many independent variables is multiple linear regression. Finding the effects of each predictor variable is the main objective. the one that is reliant on all other variables being kept constant. Finding the underlying links in the data is made easier using this technique, which calculates the effect size and significance of each predictor. It helps academics in several fields, including economics, finance, and the social sciences, to make predictions and infer causal links between variables, and it is also utilized for risk assessment and decision-making.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATM	12942526	1523846	8.493332	0.0034
BCB	18746033	2074225	9.037607	0.0000
BORROWERS CUCC	19855.87	8582.550	2.313516	0.0343
BRANCHES CUCC	-7329823	15755724	-4.652169	0.0187
CREDIT CARDS	31166.30	4339.811	7.181488	0.0056
DACB	-3316.788	301.7951	-10.99020	0.0016
DEBIT CARDS	2323.723	214.3565	15.03907	0.0006
ICB	-2.09E+10	2.27E+09	-9.214564	0.0027
LACB	1683.687	1426.963	1.179910	0.3231
NCUCC	71666501	7654355	9.362840	0.0026
NIC	1.44E+10	4.17E+09	3.464770	0.0405

NODT	2.09E+09	9.72E+08	2.150711	0.1206
ODCB	6363.807	6895.144	0.922940	0.4241
ODDT	-4741969	480507.2	-9.868674	0.0022
OLCB	-22042.03	8309.532	-2.652620	0.0768
OLDT	672433.9	110426.6	6.089418	0.0089
PIC	1412.477	166.3824	8.489338	0.0034
C	-9.40E+11	8.72E+11	-1.077430	0.3602

Table 5(a): Multiple linear regression analysis output

Statistic	Value
R-squared	0.999926
Adjusted R-squared	0.999555
S.E. of regression	1.59E+10
Sum squared resid	8.54E+20
Log likelihood	-456.8572
F-statistic	2098.015
Prob(F-statistic)	0.000010
Mean dependent var	2.24E+12
S.D. dependent var	8.00E+11
Akaike info criterion	49.77444
Schwarz criterion	50.56976
Hannan-Quinn criter.	49.90904
Durbin-Watson stat	3.230936

Table 5(b): Multiple linear regression analysis output

DISCUSSIONS

A number of significant discussions have resulted from the preceding extensive analysis of the effects of financial inclusion indicators on India's GDP growth. This analysis included the Jarque-Bera normality test, the ADF unit root test, the Covariance analysis, the correlation analysis, and multiple linear regression. A correlation between financial inclusion measures and GDP development in India is elucidated in the study. Although ICB and NCUCC do not follow a normal distribution, the Jarque-Bera normality test reveals that the majority of variables, including ATM, BCB, Credit Cards, NIC, and GDP Growth, do. The ADF unit root test differentiates between variables that display stationarity (like ICB and NCUCC) and those that do not (like GDP growth). Despite a positive association between other variables and GDP growth, the results of the covariance and correlation analyses show that NODT&ICB have a negative link. Financial inclusion measures are significantly related to India's GDP growth, as shown by the multiple regression model, which also validates the data stationarity and has excellent explanatory power (high R-squared values). Key indicators like BCB and borrowers CUCC are critical for increasing GDP, but LACB, NODT, ODCB, and OLCB do not impact GDP and have positive relationships with it, except for NODT. This highlights the importance of expanding financial services and improving credit availability for economic development. Therefore, it may be necessary to do more study or adopt a different strategy in order to identify which areas may have indirect effects on economic growth.

Conclusion

Research on the effects of financial inclusion on India's GDP growth shows that increasing people's ability to use financial services is essential for long-term economic prosperity. The results imply that factors like access to banking institutions, digital payment options, availability of credit, and financial literacy significantly impact GDP growth for the better. There has been an uptick in savings and investment activity among people and small companies thanks to the widespread availability of automated teller machines (ATMs), debit and credit cards, and cooperative banking institutions. By bringing underserved and rural communities into the mainstream banking system, financial inclusion helps level the income playing field. Inclusion like this boosts economic production because it improves access to financing, encourages entrepreneurship, and increases job prospects. In addition, the empirical results show that several financial indicators are very statistically significant, which supports the idea that they are important for driving economic growth. Better policy implementation and financial literacy initiatives are needed, since the study recognizes that certain factors indicate weaker or negative connections. To fully realize the potential of financial inclusion, it is crucial to fortify digital infrastructure, enhance regulatory frameworks, and guarantee last-mile connection. In general, it becomes clear that financial inclusion is a critical factor in India's inclusive and long-term economic growth.

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