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Monetary Policy Shocks and Macroeconomic Variables: Evidence from India

Sewak Pradhan*
G Raghavender Raju**

Abstract

Monetary policy has become an important part of any economic policy functioning in different countries of the world. Price stability has become the main objective of monetary policy keeping in mind economic growth. Since the deregulation of interest rate in 1994-1997, monetary transmission mechanism (the process of fulfilling the objectives of monetary policy) in India has under gone certain change. The globalisation of economy created more complexities in conduct of monetary policy with exposure to exogenous factors like oil price shock and federal fund rate. The Reserve Bank of India also made several changes in the base rate system in order to improve monetary transmission mechanism. A structural vector autoregressive model has been proposed and monthly data has been incorporated after post-liberalisation period April 1996 - March 2017. Contractionary monetary policy has had adverse impact on output growth for a long run and increases the price level for short term in contrast to its decline and rises the issue of 'price puzzle'. The depreciation of exchange rate also encourages exporters to increase industrial production in turn raises the average price level due to increase in import cost. Exogenous factors like oil price shocks have negative impact on domestic output growth and raise inflation for long time horizon. This also propels to decrease stock prices marginally and also in turn effect exchange rate adversely. Increase in the US federal fund rate have detrimental effect on output growth for a year and has an immediate sharp impact on call money rate. Transmission from policy repo rate to marginal cost of lending rate (MCLR) has been found more than the transmission to Base rate system. Private sector banks respond faster contrary to the magnitude of Public sector banks.

Keywords: Econometric Modelling, Macroeconomic Variables, Monetary Policy, SVAR

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* Research Assistant at the Department of Economics, Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam Campus, Prasanthi Nilayam and can be reached at PradhanSevak18@gmail.com

** Director of Prasanthi Nilayam Campus and Heading the Department of Economics, Sri Sathya Sai Institute of Higher Learning, Prasanthi Nilayam Campus, Prasanthi Nilayam and can be reached at graghavenderraju@sssihl.edu.in

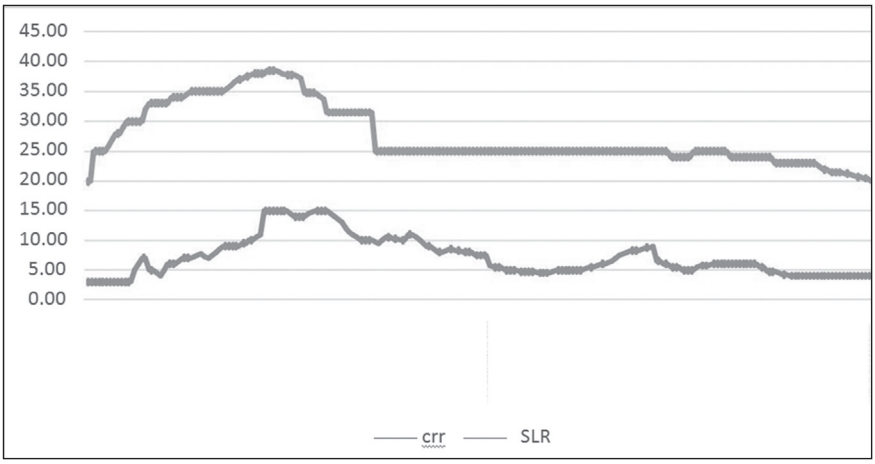
Introduction

The conduct of any policy is influenced by the spirit of time, as reflected in the intellectual climate and socio-political and economic milieu. Monetary policy is no exception to this propensity. Monetary policy, the macroeconomics policy, refers to the policy of the central bank with regard to the use of monetary instruments that involves control of money supply and interest rate. The main objective of the monetary policy is the price stability keeping in mind the objectives of growth.

Monetary policy affects the real economic activity by affecting real output and inflation. The effectiveness of the monetary policy to real output and inflation have been explained through various channels. These include interest or money channel, credit channel, exchange rate channel, asset price channel and inflationary expectation channel. These are the different channels through which output and inflation are affected by a change in monetary instruments. So the process of transmitting monetary decisions (change in short term nominal money stock or interest rate) to real macroeconomic variable through different channels is known as monetary transmission mechanism. Economist still prefer the term 'black box' to describe the transmission mechanism as the conduct of monetary policy in examining a particular channel is not desirable as all the channels operate simultaneously.

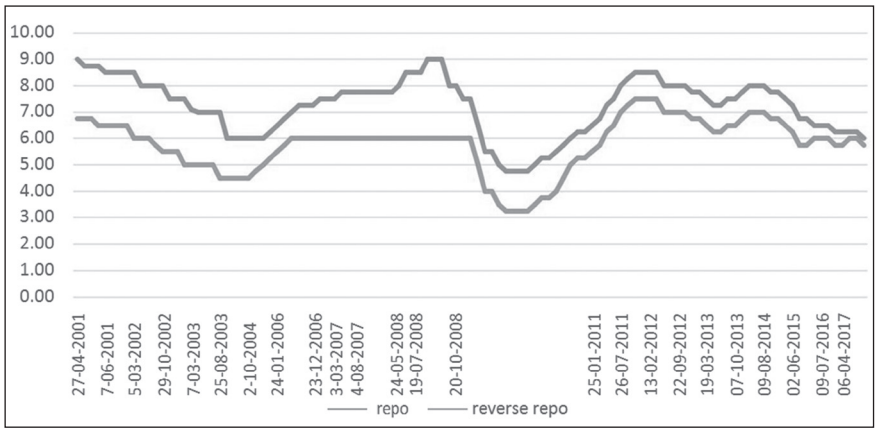
Prior to post reform period, the working of monetary policy was more like Quasi-fiscal responsibility. Government extensively used this policy in order to expand credit not keeping price stability in mind. There were no such rules of constraint discretion of monetary policy. Only rule based monetary policy and discretionary base monetary policy had emerged at that time. Government assumed the exogenous factors like natural calamities, war, and oil price shock as the main cause of the inflation and thus considered the output expansion due to expansion of credit creation as anti-inflationary in nature. Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR) were the main direct instruments used to conduct monetary policy. CRR is a certain fraction of bank deposits which banks are required to keep with RBI in the form of reserve balances. Change in CRR directly affects the availability to lend by banks. It is evident from the graph below that before balance of payment crisis, CRR was one of the main instrument. It had gradually increased from 1970's and reached peak to 15% in 1990. SLR is defined as the ratio of the liquid assets to time and demand liabilities held in the form of cash, gold, or as unencumbered "approved" securities. SLR being the most significant indirect monetary

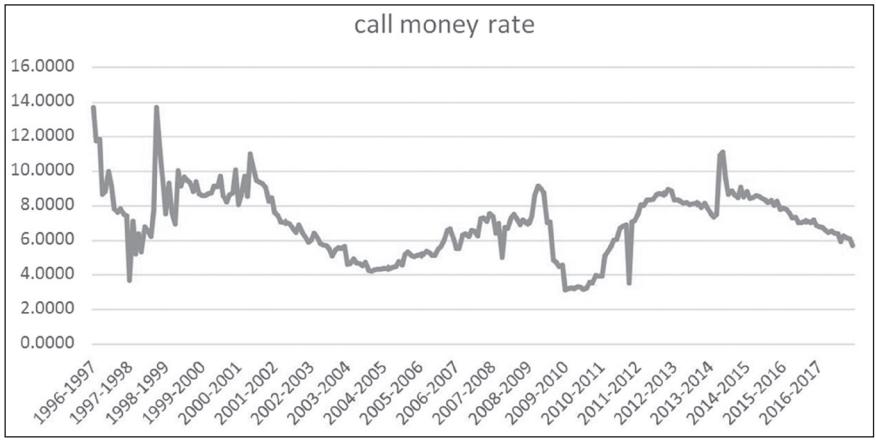
instrument touched nearly to 40% in second half of 1980's and first half of 1990's. This is shown in the following graph below.



Monetary planning was constrained by regulated regime consisting of priority sector lending, administered interest rate, bank refinance at concessional rate so that they can lend at cheap rate to primary sectors. This led more stress in financing the deficit (also called *defacto* credit targeting) and there was intense debate to the background of the conduct of monetary operation. C Rangarajan, the former governor of RBI points out the weakness of the conduct of monetary policy which is as follows: 1) RBI deciding all interest rate, i.e. monopoly of RBI deciding interest rates, 2) Credit Authorisation Scheme, 3) Importance to Primary sectors, 4) After Nationalisation of Commercial Banks, 85% of total bank asset under Public Sector. In 1982, the recommendations of Chakravarty Committee totally shifted the conduct of monetary policy following price stability in particular and economic growth in general.

The Balance of Payment crisis of 1990's gave the golden opportunities to restructure the traditional reforms of an Indian economy. Interest rate were deregulated and left to market forces to determine. Banks free to determine the domestic and PLR. There was a shift from direct instrument to indirect instrument of monetary policy which has enabled the working of interest rate channel of monetary transmission mechanism where greater role was assigned to policy rate and bank rate and later to repo rate. CRR and SLR were reduced to 4% and 25% respectively. Full-fledged LAF was introduced in 5 June 2000 in order to maintain short term liquidity in financial market. Weighted call money rate was recognised as the operating target in May 2011 which continued to move in line with reverse repo and marginal standing facility.





The effectiveness of any policy is judged by its impact on the short run or long run. Therefore, there has been heated debate between policy makers and academicians in the effective conduct of monetary policy in short run and long run. The objectives of the conduct of monetary policy has undergone certain change. Price stability has been the primary objectives of monetary policy. In context of an open economy framework, the central bank also maintains stable exchange rate. In such scenario the working of the monetary policy has been very challenging and this led again to rethink the transmission procedure of monetary policy.

Objectives of the Study

- To analyse the India's monetary policy during post-reform period.
- Comparing the transmission between Marginal cost of lending rate (MCLR) and base rate system through a change in policy rate.
- To find the effectiveness of monetary policy to real economic activity in context of exogenous shocks.

Review of Literature

There are several of empirical studies done in cross country role and emerging economies and the conduct of monetary policy widely differs from country to country. For US economy, Bernanke and Blinder (1988) examined the federal fund rate as the best indicator for the conduct of monetary policy. Fund rate sensitively records shocks to the supply of the bank reserves and through the change in the funds rate, the working mechanism of monetary policy is through the bank loans and bank deposits. On the contrary, credit channel is ineffective in monetary transmission (Romer and Romer (1990)). Using SVAR model, Bernanke and Blinder (1992) empirically found out that the mechanism of monetary policy is entirely through the conventional money demand mechanism. They observed positive innovation in funds rate reduce the volume of deposits by the depository institutions. This observation was in consonance with the theory that as loans are quasi-contractual commitments whose stock is different to change quickly; banks therefore react to reduced deposits in the short run by selling of securities. On the contrary, Morris and Sellon (1995) in US found that by selling securities and issuing managed liabilities, banks have been able to offset a decline in core deposits to maintain their business lending. In the period of monetary tightening, bank reduce loan supply or ration credit. However, bank loans reduction due to monetary tightening does not completely ruled out. This is because some firms depend only on the bank credit as the only source of getting credit. Using integrated VAR system in analysing the response of macroeconomic variables to monetary policy shock, Cassola and Morana (2004) examining from impulse response function found that monetary shock has a positive effect on real stock prices. Using VAR model, Smets and Wouters (1999) examined the exchange rate channel of Germany. He observed that a monetary tightening leads to prolonged real appreciation of the exchange rate because of more capital inflow due to high interest rate. This strength the price stability in an economy from the import side because of cheap imported goods. It also has net export through the relative price effect. On the contrary, Nagayasu (2007) found that exchange rate channel is not functioning sufficiently to affect output. In contrast, he found monetary policy does not affect exchange rate at all.

In Indian context, Roy, Joshi and Sagar in 1998 found that in the post reform period, interest rates were significant in operating targets of monetary policy. While Mohan (2006) also found monetary policy impact of interest rate and exchange rate channel on output and prices. By establishing the analytical underpinnings for the monetary policy framework, Michael Debabrata Patra and Muneesh Kapur (2010) found aggregate demand response to interest rate was significant with a lag of at least three quarters and the administrate interest rate can be important variable to impact

monetary policy up to two years. They also found that the working of the exchange rate channel maintained inflation low in developing countries and thus inferred the credibility to the monetary authority. The significance of exchange rate channel was also found by Roy, Joshi and Sagar in 1998. Aleem (2010) also observed the presence of exchange rate channel and asset price channel in India by using the benchmark model. He observed the unanticipated increase in the overnight call money rate affects the real effective exchange rate and shows a short lived reaction to a positive overnight call money rate shock. Using SVAR model for the monthly data, Paramanik and Kamaiah (2014) found that the tightening of monetary policy led to rise in inflation supporting the 'price puzzle' and hampered investment leading to fall in the industrial output growth. They also found the adverse effect of oil prices to output and stock prices was detrimental and in turn effect exchange rate and thus fuels domestic inflation. Hike in federal rate had considerable effect on output growth. The significance of the exchange rate channel in monetary transmission process was also observed by Bhattacharya (2011) using VAR model. The same findings have been observed in Goyal (2008) paper also. Using SVAR and flip-flop analysis found that monetary policy during 2000-2008, William A. Barnett, Soumya Suvra Bhadury, Taniya Ghosh (2015) was able to explain the most of the exchange rate fluctuation, followed by inflation that monetary policy rate does not explain. This shows that inflation stability is central bank's main focus. The similar findings are observed by Prachi Mishra and Peter Montiel (2012) in examining the effectiveness of monetary policy in low developing countries. They suggested the importance of exchange rate channel in the monetary authority reaction functions and also tells that in the context of open economy, interaction between monetary and exchange rate cannot be ignore. Developed countries have strong monetary transmission mechanism then developing countries and the consistency of transmission is lost in low income countries.

Data and Methodology

For the sample period of 1996 to 2017 financial year, this study analyse the effectiveness of monetary policy via policy rate to real macroeconomic variables like output and inflation. In order to compare the transmission between base rate and MCLR, the sample period chosen for the base rate system ranges from July 2010 to April 2016 and for MCLR ranges from April 2016 to February 2018. Monthly data is incorporated for both analyses. The variables chosen in the study is in consonance with theoretical background of monetary transmission mechanism which consists of weighted call money rate, WPI, IIP, nominal exchange rate, stock prices, federal fund rate and oil price. SVAR model is proposed for

the analysis of monetary policy shocks and macroeconomic variables and bivariate linear regression model is used for analysing the transmission from policy rate to base rate and to MCLR system.

Empirical Findings and Analysis

Monetary policy affects the real sectors at least in the short-run, and transmitted to the real sector through different mechanism. The mechanism differs from country to country depending upon their legal and financial structure. With the globalisation of economy, the conduct of monetary policy is constrained by the policies regulated in the developed economy. Independence or the autonomy of the monetary authority is actually lost with more integration to the rest of the world. Therefore, considering the exogenous factors that actually influence monetary authority to take decision regarding the changes in monetary policy has become very crucial to consider in monetary transmission mechanism. This view gives the transmission mechanism of monetary policy with context to oil price shock and shock in federal fund rate.

In developing countries like India, the conduct of monetary policy is successful only when the policy decision is transmitted to lending rates of different banks. The primary assumption taken for the pass through credit channel from monetary authority decision on policy rate to consumer's reaction is the strong bank balance sheet. This assumption gives the working of the transmission from policy rate to banks' lending rates. In case of India, the successful conduct of the pace and strength of monetary policy is actually depending upon the banks reaction of the change in lending rates to policy rate. Banks adjust their deposit rate and lending rate in consonance to policy rate and thus meet adequately the demand for credit. This will enable us to understand the concept of monetary transmission more deeply where transmission from policy rate to lending rate is crucial.

Since the deregulation of interest rate in early 1990's, the Reserve Bank refined the process of setting lending rates by banks in attempts to improve the pace and extent of monetary policy pass through to banks deposit rate and lending rates. The transition of base rate that every banks need to consider has developed over the years. The transition of the base rate is from prime lending rate (PLR) system (1994) to the benchmark prime lending rate (BPLR) system (2003), the base rate system (2010) to the present marginal cost of funds based lending rate (MCLR) system (2016). This has enable the transparency provided to borrowers and flexibility to banks in setting lending's rates. My empirical analysis rests upon comparing Base rate and present Marginal cost of lending rate (MCLR) due to change in the policy rate.

The empirical analysis of the Base rate and MCLR with respect to policy rate Repo rate are given below in equation.

Base Rate = 0.014 + 0.04 Repo Rate

MCLR = -0.07 + 0.155 Repo Rate

The above equation clearly shows the weak transmission mechanism in India. Relatively, the transmission mechanism from policy rate to MCLR is only 15% with the lag of eight months and that of Base rate is very negligible to .4% with the lag of only one month. This clearly shows the timely effectiveness of monetary policy to Base rate than MCLR but the adequate transmission is more in MCLR.

The transmission from policy rate to base rate and MCLR includes all banks. Empirically analysing the transmission to Base rate and MCLR of different banking sector like public and private sector gives a clear picture of the ineffectiveness of policy rate. The transmission mechanism to base rate and MCLR in disaggregate level is given in equation below.

Base Rate (Public Sector) = 0.02 + 0.047 Repo Rate

Base Rate (Private Sector) = 1.04 + 0.004 Repo Rate

MCLR (Public Sector) = 0.04 + 0.216 Repo Rate

MCLR (Private Sector) = 0.005 + 0.15 Repo Rate

In disaggregate level also, transmission from policy rate to base rate is relatively weak than transmission to MCLR. Transmission to Public sector bank is more effective than Private sector bank with respect to both base rate and MCLR. In case of Base rate of Public sector bank, it hardly takes a month to complete the transmission whereas in case of MCLR Public sector bank, it takes the lag of seven months to complete the policy rate transmission. For Base rate of Private sector bank, it takes almost two quarters and takes one month for MCLR transmission.

The reason behind such transmission to base rate is that most of the banks follow internal benchmark rate which is linked to lending rate. Internal benchmark rate actually links to cost of funds of banks. Calculation of the cost of funds varies with banks. Each banks follows different ways to calculate cost of funds. Some follows marginal cost, the other follow average cost and blended cost. Banks often adjust spreads over benchmark rate and this spread varies from banks to banks. This slows the speed and strength of transmission mechanism.

On the other hand, MCLR follows marginal cost in calculating cost of funds which is very sensitive to policy rate and thus made mandatory to all banks to follow. The other difference between base rate and marginal cost of lending rate is the tenor premium. In base rate system banks lend loans charging single interest rate for all the borrowers irrespective of different period. But in MCLR, different interest rate is charged by creditors to different periods of maturity.

SVAR Model: Interaction between Monetary Policy and Macroeconomic Variables

Seven variables are taken into consideration for analysing monetary policy using SVAR model and the variables are in order of vector Xt:

Xt = (Ot Ft St Pt Yt It Et)'

Here Ot is Global Brent Crude Oil Price. Ft is the effective federal fund rate proxy for the international financial condition. St is the closing price of the stock index. Pt is the WPI and Yt is the domestic output (IIP) is used as proxy. Finally, It and Et symbolises the domestic interest rate for which weighted call money rate is taken as a proxy and Nominal Exchange Rate respectively.

Since it is a monthly data, all variables except interest rate are deseasonalised. The growth rate of the variables except interest rate is taken and it is taken as the difference of the value of particular month of particular year minus the same particular month of the previous year. For the stationary test, the domestic interest rate and oil price are at levels and all the remaining five variables are in the first difference at five per cent level of significance which is shown in the following table.

Table-1: Stationarity Test

Variables	Dickey Fuller Test Static	Inference
Call Money Rate	-6.12	I(O)
Federal Fund Rate	-6.91	I(1)
WPI Inflation	-5.92	I(1)
Oil Price	-4.38	I(O)
IIP	-5.98	I(1)
Stock Price	-8.38	I(1)
Exchange rate	-8.86	I(1)

The SVAR structure of monetary transmission in India as follows:

$$B_o * X_t = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ c21 & 1 & 0 & 0 & 0 & 0 & 0 \\ c31 & c32 & 1 & 0 & 0 & 0 & 0 \\ c41 & 0 & 0 & 1 & 0 & c42 & 0 \\ c51 & 0 & 0 & 0 & 1 & c52 & c53 \\ 0 & c62 & 0 & c64 & 0 & 1 & 0 \\ c71 & c72 & c73 & c74 & 0 & c75 & 1 \end{bmatrix} * \begin{bmatrix} oil\ price \\ fed \\ stock \\ wpi \\ iip \\ interest\ rate \\ exchange\ rate \end{bmatrix}$$

The value one is given in the above matrix known as diagonal matrix because it simply represents the same variables is causing itself. The given model is over identified. To have exact identification, number of restrictions required in matrix is 21. Here, in our case, we have eight more restrictions

than 21 restrictions. It can be seen from the first equation of the model that oil price is the most exogenous variables as it is independent from all the variables present in the model. In the second equation, federal fund rate dependents on oil price to maintain stable interest rate with respect to importing inflation. The third equation shows that oil price and federal fund rate has adverse impact to stock price because increase in oil price increases transportation and production cost reduces the corporate earnings of an individual or a firm. Increase in federal fund rate may encourages foreign investors to invest in their domestic country resulting in capital outflows and bringing down the stock prices.

Fourth equation tells the monetary policy tightening when there is high importing inflation due to increase in global crude oil price. Investment is one of the key component of output growth and depends upon the cost of borrowings which directly depends on the rate of interest. Producers are often encouraged to produce more output when the domestic currency depreciates and earns huge profit margin.

All of these are included in fifth equation. Sixth equation highlights the importance of the monetary policy of the developed countries reminding the primary objective of price stability. Here, domestic interest rate is positively related to federal fund rate and inflation. Lastly, exchange rate is dependent on oil price, federal fund rate, stock price and domestic interest rate. The later relation shows the parity condition of International Fisher effect.

Table-2: Estimates of Coefficients of SVAR Model

Equation	Coefficient	Estimate
Federal funds rate	C21	0.050
Stock price growth	C31	2.421
	C32	1.825
Inflation (WPI GROWTH)	C41	0.061
	C42	0.671
IIP GROWTH	C51	-0.169
	C52	-1.942
	C53	0.132
Call money rate	C62	0.428
	C64	0.156
Exchange rate depreciation	C71	-0.412
	C72	-0.723
	C73	2.095
	C74	0.572
	C75	-0.13

Notes: Bold coefficients are statistically significant at the 5 per cent level of significance.

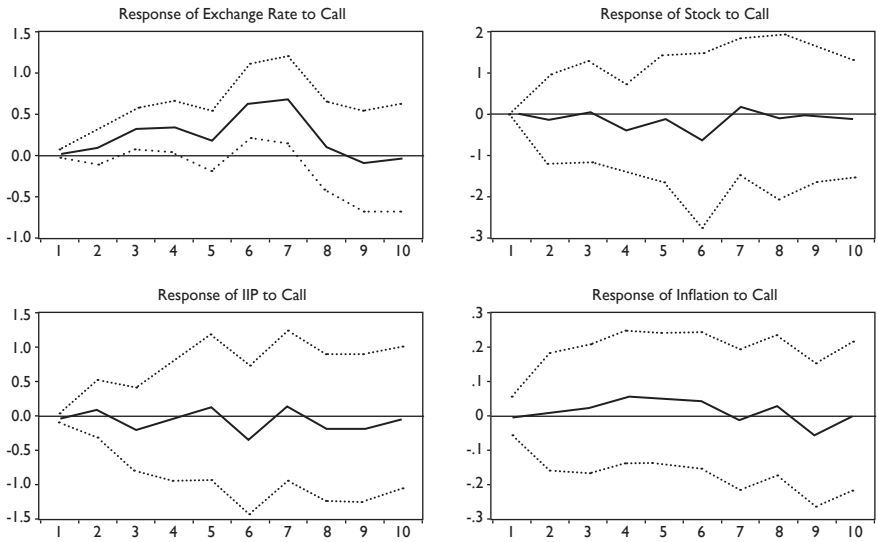
Table-2 presents the estimates of the impact of a policy rate change or money supply shocks on domestic variables in an open economy. The above table concludes that with one-unit increase in oil price will increase federal fund rate by 0.050 units. Since US is relatively net importer of oil, an increase in the oil price brings importing inflation in the economy and in order to contain it, federal governor hikes the interest rate. Similarly, oil being the inevitable component of domestic demand, a unit increase in the oil price will increase inflation by 0.061 units. In order to curtail down the inflationary pressure in a domestic economy, the monetary authority increase the policy rate by 0.671 units which is self-explanatory phenomenon.

Increase in oil price causes -0.169 decreases in IIP growth and depletes foreign reserves and therefore decreases the investment in business hampering economy output. One of the crucial factor for the increase in the production of the domestic economy is the depreciation of domestic rupee against dollar. Depreciation of domestic currency often encourages the producer to produce more goods. This is because producer find more profitable in exporting the domestic good instead of selling in domestic country. Therefore, one-unit increase in nominal exchange rate will increase IIP growth by 0.132 units.

Inflation and output growth goes hand to hand and neither of the one are inevitable. A one-unit increase in domestic inflation increase 0.156-unit in the interest rate increasing the cost of borrowing and thus discourages investment dragging the pace of economic growth. This also enables us to understand the commitment of the monetary authority to keep the promising objectives of price stability in mind.

Inflation being one of the good macro economy indicator, pinpoints the stability of domestic economy to the rest of the world. The investors from the overseas countries may not gain expected profit or may be in loss because of rising inflation in an economy. Therefore, a unit increase in the domestic inflation will depreciates domestic currency by 0.572 units. This is in consonance with purchasing power parity condition. But when the domestic interest rate is high, foreign investors are often encouraged to invest in domestic economy in order to gain high returns and thus appreciates domestic currency. A unit increase in the domestic interest rate appreciates domestic currency by -0.13 units. This also follows in consonance with the international fisher parity condition. The main understanding of the above findings is that monetary authority decision in changing interest rate are not only to maintain stable price but it also silently maintains the stability of the exchange rate in flexible regime to ensure stable importing inflation from net imports in a developing economy like India.

Figure-1: Response to Call Money Rate

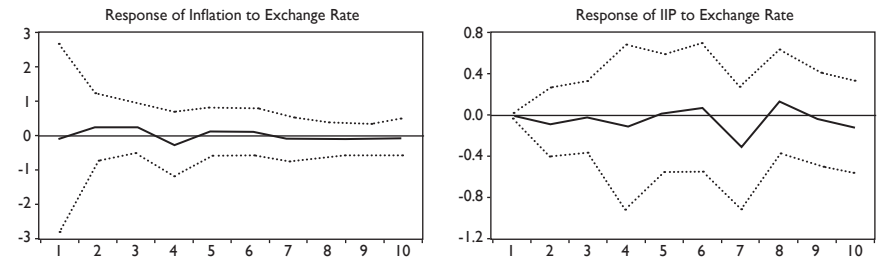


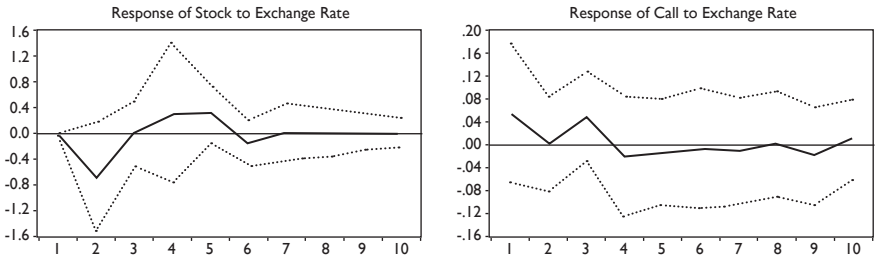
Impulse Response Analysis of Call Money Rate Shock

The impact of a contractionary monetary policy to domestic variables is clearly observed in the above given Figure-1. The contractionary monetary policy effects adversely to industrial output. The industrial output falls for several quarters and start improving from the third quarters onwards. This is with the intuition of ISLM framework, where hike in the interest rate increases the cost of borrowing which adversely affects investment and dampens the economic growth. Increase in the interest rate increases inflation for few quarters raising the issue of "*price puzzle*" observed in Indian context and then decreases.

This is because of the expectations of increase in price level. Exchange rate appreciation is observed in response to interest rate shock which follows from economic theory. Tightening of interest rate decreases money supply in an economy and thus impacts stock price negatively because of low demand of equity in the market.

Figure-2: Response to Exchange Rate



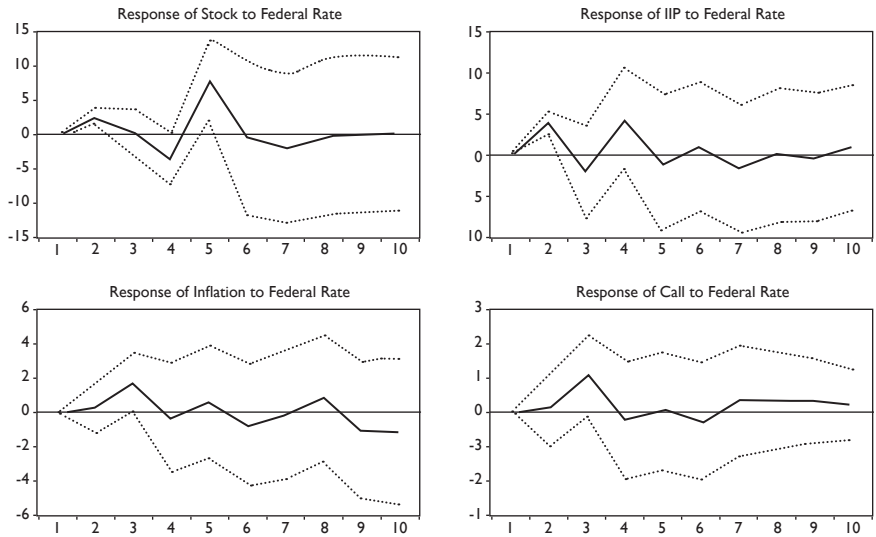


Impulse Response Analysis of Exchange Rate Shock

Figure-2 shows the increase in the exchange rate (depreciation) decreases output growth for first two quarters and then starts increasing from third quarters onwards as exporters finds the relative price decreasing and with depreciation of domestic currency, they expect more profit margin. Exchange rate depreciation also indicates high import cost and hence high inflation in domestic economy.

In order to contain inflation in an economy, monetary authority hikes interest rate in an economy. Stock price falls sharply in first quarter in response to exchange rate shock and start improving tending to equilibrium line. The behaviour of stock prices not always follows economic logic since investors in this type of market behaves irrationally.

Figure-3: Response of Variable to Federal Rate Shock

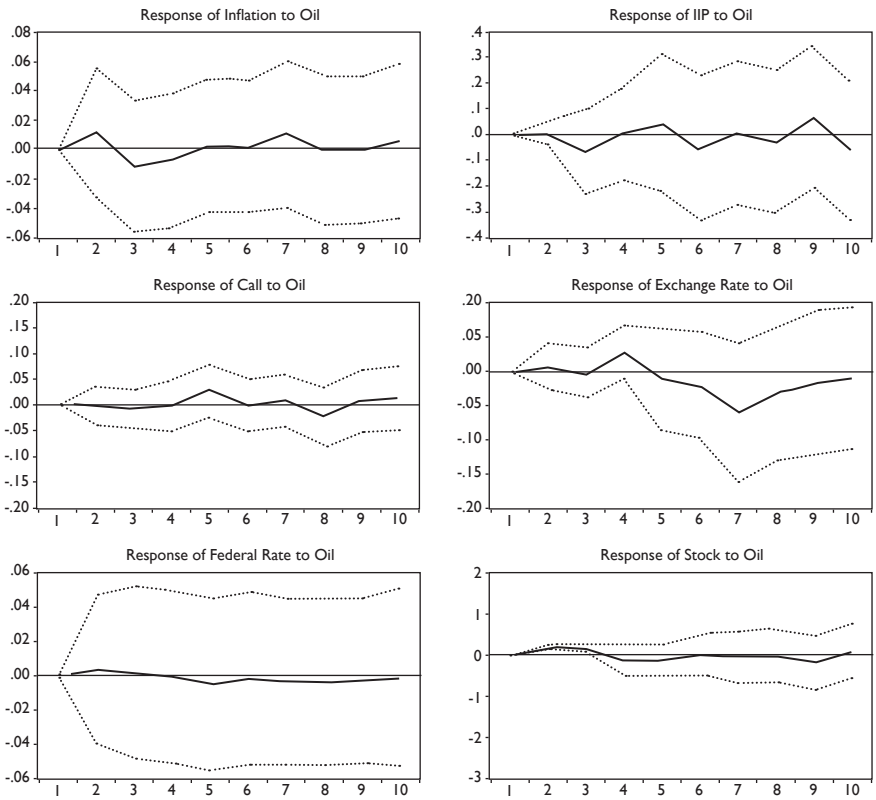


Impulse Response Analysis of Federal Fund Rate Shock

From the given impulses of US federal fund rate shock in the above Figure-3. Industrial output growth initially responses positively and declines from six months onwards. This is due to the low investment in economy as foreign investors take their share of capital and invest in home market with expectation of high returns.

It has also been found that increases in federal rate also effects call money rate positively for the first three months, this finding gives the empirical support to the international fisher's parity condition. There is a increase in the demand for US dollar in the foreign exchange market due to increase in US federal funds rate resulting in decreasing the value of domestic currency. There is a sudden fall in stock prices due to panic selling by foreign investors as a result of the increasing in the federal rate.

Figure-4: Response of Variable to Oil Price Shock



Impulse Response Analysis of Oil Price Shock

Figure-4 gives the response of all other variables to oil price shock. The above figure concludes that the response of output growth has adverse effect to oil price shock for a long time period. Oil price shock also has positive impact on federal funds rate. In order to bring inflation down, the US Federal Reserve rises interest rate for few months. Oil prices have a negative impact on stock returns as well. An increase in oil prices diminishes foreign reserves and squeezes corporate profits available for investment, which leads to a decrease in stock returns. Increase in the oil price also effect domestic inflation as well. India being the net importer of oil rises cost push inflation and thus increases transportation cost ultimately increasing price level in an economy.

Increase in the oil price depreciates exchange rate for the first few quarters and tends to appreciate. However, after third quarters, it starts to depreciate for the long time horizon. Oil price indirectly affects domestic interest rate and response positively after few months and tends to the equilibrium line.

Conclusions

Monetary policy affects real economic activity at least in the short term and medium term. The conduct of monetary policy has changed considerably during post liberalisation period of 1990's in the context of oil price shock and federal fund rate. This paper examines the effect of contractionary monetary policy in macroeconomic variables like output, inflation, stock prices etc. Increase in the domestic interest rate affects output growth adversely and attracts foreign investment which in turn increases the value of domestic currency. The same policy fuels the price level in an economy contrary to its decline rising the issue of 'price puzzle'. Depreciation of exchange rate encourage export competitiveness and side by side fuels high import cost. Oil price has adverse impact on domestic inflation and output which drags down the corporate earnings declining stock price. Federal Reserve also hikes federal fund rate for few months to contain inflation in an economy. Federal fund rate and Call money rate goes in same line for few months maintaining parity hypothesis. The transmission from policy rate to marginal cost of lending rate is better than to base rate. This is due to the freedom given by RBI to each bank to choose internal benchmark rate system where calculating cost of funds varies widely across banks. Policy rate transmission to Public sector banks are higher in magnitude than private sector banks contrary to its speed because of high spreads over internal benchmark rate of different private sector banks. On the other hand, though public sector banks have common spread over the benchmark rate, because of its weak balance sheet and high NPAs, the speed of transmission is weak.

References

Aleem, A. (2010). Transmission mechanism of monetary policy in India. *Journal of Asian Economics*, *21*(2), 186-197.

Bernanke, B. S., & Blinder, A. S. (1992). The federal funds rate and the channels of monetary transmission. *The American Economic Review*, 901-921.

Bernanke, B. S., & Gertler, M. (1995). Inside the black box: the credit channel of monetary policy transmission. *Journal of Economic perspectives*, *9*(4), 27-48.

Bhattacharya, R., Patnaik, I., & Shah, A. (2011). Monetary policy transmission in an emerging market setting.

Das, M. S. (2015). *Monetary Policy in India: Transmission To Bank Interest Rates* (No. 15-129). International Monetary Fund.

Disyatat, P., & Vongsinsirikul, P. (2003). Monetary policy and the transmission mechanism in Thailand. *Journal of Asian Economics*, *14*(3), 389-418.

Dua, P., & Raje, N. (2014). Determinants of yields on government securities in India. *Margin: The Journal of Applied Economic Research*, *8*(4), 375-400.

Khundrakpam, J. K., & Jain, R. (2012). Monetary policy transmission in India: A peep inside the black box. analysis in India. *Margin: The Journal of Applied Economic Research*, *8*(4), 401-429.

Mishra, P., & Montiel, P. (2013). How effective is monetary transmission in low-income countries? A survey of the empirical evidence. *Economic Systems*, *37*(2), 187-216.

Mishra, P., Montiel, P., Pedroni, P., & Spilimbergo, A. (2014). Monetary policy and bank lending rates in low-income countries: Heterogeneous panel estimates. *Journal of Development Economics*, *111*, 117-131.

Mishra, P., Montiel, P., & Sengupta, R. (2016). Monetary Transmission In Developing Countries: Evidence from India. In *Monetary Policy in India* (pp. 59-110). Springer, New Delhi.

Mohanty, M. S., & Turner, P. (2008). Monetary Policy Transmission in Emerging Market Economies: What Is New?. *BIS papers*, *35*, 1-59.

Mohanty, D. (2012, May). Evidence of interest rate channel of monetary policy transmission in India. In *Second International Research Conference at the Reserve Bank of India, February* (pp. 1-2).

Pandit, B. L., Mittal, A., Roy, M., & Ghosh, S. (2006). Transmission of monetary policy and the bank lending channel: analysis and evidence for India. *Development Research Group Study*, *25*.

Pandit, B. L., & Vashisht, P. (2011). Monetary policy and credit demand in India and some EMEs. *Indian Council for Research on International Economic Relations, Working Paper*, *256*.

Paramanik, R. N., & Kamaiah, B. (2014). A structural vector autoregression model for monetary policy. Margin: The Journal of Applied Economic Research, volume 8, issue 4, 2014.

Samantaraya, A., & Kamaiah, B. (2011). An empirical analysis of monetary transmission in India in the post-reform period: Relevance of the banking channel. *IUP Journal of Applied Economics*, *10*(4), 5.

Sims, C. A. (1992). Interpreting the macroeconomic time series facts: The effects of monetary policy. *European economic review*, *36*(5), 975-1000.

Singh, K., & Kalirajan, K. (2007). Monetary transmission in post-reform India: an evaluation. *Journal of the Asia Pacific Economy*, *12*(2), 158-187.

Virmani, V. (2004). Examination of the credit channel of monetary transmission in India: results from response of commercial bank balance sheet to a monetary policy stock.

Walia, S. V., & Raju, G. R. (2014). Monetary Policy Transmission in India: A Post-Reform Analysis. *IUP Journal of Applied Economics*, *13*(2), 7.

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Financial Literacy and Stock Market Participation in India: An Overview

Renuka S*
K V Raju**

Abstract

There exists strong empirical evidence for the positive influence of financial literacy on stock market participation. In this paper we draw data from secondary sources to provide an overview of financial literacy in India and its association with awareness, holding and operation of stock market products. Financial literacy in India is very low and shows considerable variations across zones. West zone has more financial literates compared to other zones. Financial asset holding of households is skewed towards traditional avenues like bank deposits, provident and pension funds and insurance. Investment and of mutual funds occupies only a nominal share of gross financial asset as per cent of India's GDP. Awareness about stock market instruments is low among Indian households which is reflected in the low holding and operation of such instruments. There has been a shift in awareness from direct to indirect instruments of stock market participation during the survey periods. Stock market participation of Indian households is mostly indirect, that is, through mutual fund investment. An improvement in financial literacy is accompanied by improvement in the awareness of bonds and mutual funds. This evidences the importance of financial literacy on the awareness of stock market instruments. The study finds that financial literacy in India is low and holding and operating stock market instruments is negligible.

Keywords: Awareness, Financial Literacy, Household Finance, Stock Market Participation, Stockholding Puzzle

* Research scholar in the Department of Economics, Sacred Heart College, Thevara, Kerala and can be reached at: sreerenuka94@gmail.com

** Research guide in the Department of Economics, Sacred Heart College, Thevara, Kerala and can be reached at: kvraju@shcollege.ac.in

Introduction

Researches establish positive influence of financial literacy on financial decision-making and economic outcomes such as savings, investment, credit, stock market participation, retirement planning (Lusardi & Mitchell, 2014; Lusardi & Mitchell 2008). Financial literacy has been used to analyze the stock holding puzzle in the literature. A highly financial literate individual is highly likely to participate in stock market than a low financial literate individual (Van Rooij et al, 2007; Arts, 2018). Empirical studies show that basic and advanced financial literacy increases both direct and indirect stock holding, the effect more pronounced for advanced financial literacy. In India, financial literacy, financial education, investment awareness and risk tolerance exert significant influence on stock market participation (Mishra, 2018). Financial knowledge affects intention to invest and less financial literates are less likely to hold stocks (Sivaramakrishan et al, 2017). Although numerous literature exists, studies on financial literacy and stock market participation in Indian contexts needs further exploration. Thus, we attempt to contribute to existing literature by drawing evidence from national surveys to gain a comprehensive understanding of financial literacy and stock market participation in India.

The paper is organized as follows: the following section reviews prominent works on the topic and lays down the context of the study. Section three states the objectives of the study and section four describes the data source and methodology. Section five assesses household financial investment in India. Section six examines financial literacy. Section seven examines awareness and stock market participation. Section eight summarizes and concludes the study.

Review of Literature

Financial literacy influences both assets and liabilities of households and lack of financial literacy leads to financial mistakes and sub-optimal decisions (Bajo et al, 2015). Low financial literacy is related to poor retirement planning, costly credit behaviour, and non-participation in stock market (Lusardi, 2008). Financial knowledge is associated with financial behaviour like cash and credit management, savings and investment (Hilgert & Hogarth, 2003).

Literature shows that financial literacy has been extensively used to address the stockholding puzzle or stock market participation puzzle. For instance, Van Rooij et al (2007) found that a highly financial literate individual is more likely to hold stocks and the effect is profound when it comes to advanced financial literacy index. According to Al Tamimi and Kalli (2009) financial literacy of UAE investors is lower than the expected level and it has a significant negative influence on investment decision

except accounting information category. Financial illiteracy lowers the prospect of stock market participation among the US households (Yoong, 2011). Financial literacy overconfidence positively affects stock market participation and is akin to the effect of high objective and subjective financial literacy (Xia et al, 2014). Kadoya et al (2017) confirmed the positive effect of financial literacy on stock market participation in Japan.

Cross-country studies also examine the effect of financial literacy on stock holding. Arts (2018) confirms the positive effect of financial literacy on stock market participation in Europe using SHARE data. Thomas & Spataro (2018) found that financial literacy is positively associated with stock market participation in European countries using SHARE data. The importance of financial literacy increases in countries where social connectedness is weak.

There are few studies on financial literacy and stock market participation in the Indian context. A study on salaried class in Himachal Pradesh found financial literacy to affect financial product awareness as high financial literates showed better awareness of investment products with an exemption of post office savings. High financial literates showed greater preference for capital market investment than low financial literates who mostly preferred bank and post office savings (Bhushan, 2014). A positive correlation exists between financial literacy of urban retail consumers and their intention to invest. While basic financial literacy did not necessarily help to increase equity holding, advanced financial literacy did help (Sivaramakrishnan et al 2017). Awareness of individual investors in Punjab varied across stock market products. Investors were highly aware of common stocks and least aware of bonds, derivatives, debentures etc. Financial literacy, judged in terms of knowledge of stock market traits, differed across various traits (Arora & Marwaha, 2013). There exists a significant positive effect of financial literacy and investment awareness, among other factors, on stock market participation of households in India (Mishra, 2018). However, Gangwar and Singh (2018) found no positive relationship between financial literacy and investments in fixed income securities, mutual funds or stocks.

Given the few researches in Indian contexts, there is a need to further examine the problem, from a national perspective[1]. Hence, this paper attempts to present an overview of financial literacy and stock market participation in India.

Objectives of the Study

- To assess portfolio choice of households with special reference to financial assets.

1 Mishra (2018) used a nation-wide sample in the study.

- To examine financial literacy in India at the national and zonal level.
- To understand the awareness and stock market participation of households.

Data and Methodology

To obtain a comprehensive understanding, we draw data from secondary sources such as the final reports of National Financial Literacy and Inclusion Survey (NCFE-NFLIS) published in 2013 and 2019. The National Centre for Financial Education (NCFE) conducted the National Financial Literacy and Inclusion Survey (NFLIS) in 2013-14 and 2018-19 covering a pan India representative sample of over 75,000. The NCFE-NFLIS 2013 report and NCFE-NFLIS 2019 report offer data on socio-demographics, components, measurement, and score of financial literacy and financial inclusion at the national and zonal levels. We also draw insights from OECD/INFE international surveys, Indian Household Finance, 2017, RBI Bulletin, Economic Survey of Government of India and other published sources to obtain a macro-economic perspective of the problem under consideration. This study is a descriptive study which relies on secondary data collected from the afore mentioned sources.

Household Financial Investment

Gross domestic savings of household sector as per cent of Gross Domestic Product (GDP) is the largest, while that of public sector is the lowest. (Table-1). Contrary to household and public sector, gross domestic savings of private sector as a per cent of GDP showed an increasing trend from 9.5 per cent in 2011-12 to 11.9 per cent in 2015-16. Afterwards it declined except for 0.1 per cent point increase in 2017-18.

Table-1: Gross Domestic Savings as per cent of GDP at Current Market Prices (2011-12 series)

Year	Household Sector	Private Corporate Sector	Public Sector
2011-12	23.6	9.5	1.5
2012-13	22.5	10.0	1.4
2013-14	20.3	10.7	1.0
2014-15	19.6	11.7	1.0
2015-16	18.0	11.9	1.2
2016-17	18.1	11.5	1.7
2017-18	19.2	11.6	1.7
2018-19	18.2	10.4	1.5

Source: "Economic Survey 2020-21 Statistical Appendix", 2021, Government of India.

As household sector contributes significantly to the Gross domestic savings, we shall examine the gross financial assets of household sector. Household portfolio around the world is characterized by "stock holding

puzzle" i.e., despite the possibility of earning high returns from holding stocks, majority of the households generally do not hold or holds very little stocks in their portfolio (Haliassos, 2002). In other words, there is considerable non-participation in stock market observed among the households across the world.

Table-2: Annual Gross Financial Assets of Household as per cent of GDP

Financial assets	2017-18	2018-19	2019-20
Total deposits	2.9	4.0	3.6
Life insurance funds	2	1.9	1.7
Provident and Pension Funds (incl. PPF)	2.2	2.1	2.2
Currency	2.8	1.5	1.4
Investments of which	1.1	0.4	0.4
i. Mutual fund	0.8	0.3	0.2
Small savings (exl.PPF)	0.9	1.1	1.3
Gross Financial Assets	12	11.1	10.6

Source: Data from "Quarterly Estimate of Households' Financial Assets and Liabilities", June 10, 2020, RBI Bulletin.

Table-2 shows the gross financial assets of households account for 11 per cent of GDP in 2019-20. Gross financial assets as per cent of GDP shows a declining trend between 2017-18 and 2019-20. Besides, households are inclined to traditional low/medium risk investment avenues like deposits, provident and pension funds (including PPF), insurance and small savings. Investments and of which mutual funds form a negligible share of gross financial assets of the households comprising 0.4 per cent and 0.2 per cent respectively in 2019-20.

Financial market participation of households in India is far below the developed countries. Households in India holds a vast portion of assets in the form of physical assets. Financial assets constitutes a very low percentage of household assets (Indian Household Finance, 2017). In the given context, let us examine the financial inclusion of the households with respect to banking and non-banking products.

Table-3: Financial Inclusion Score (in per cent)

Financial products	NFLIS 2013	NFLIS 2019	Per cent point Change*
Saving related banking products	72	87	15
Non-banking products and services	11	16	5

Source: Data compiled from "Financial Literacy and Inclusion in India – Final Report- India", 2013, NISM, Maharashtra, India and "Financial Literacy and Inclusion in India – Final Report on the Survey Results", 2019, NCFE, Maharashtra, India.

*Authors calculation

Saving related banking products include saving bank account or no frill account either with commercial or cooperative bank or recurring

or fixed deposits. Non-banking products and services include savings related products such as PPF, Post Office Savings Scheme, and NSC/KVP, insurance products, capital market products, pension related products and commodity future products (Financial Literacy and Inclusion in India-Final Report, 2013).

Following three conclusions can be drawn from the financial inclusion score in Table-3. Firstly, financial inclusion score improved for both categories i.e. banking and non-banking financial products and services. Secondly, savings related financial products witnessed three times per cent point increase than non-banking products and services. Thirdly, financial inclusion in non-banking products and services is quite low.

Hence, we may conclude that Indian households are characterized by low levels of investments in financial assets, indifference to stock market participation, and lack of financial inclusion in non-banking products. This prompts us to further examine the role of awareness or knowledge on stock market participation.

Financial Literacy

According to OECD/INFE "financial literacy is a combination of awareness, knowledge, skill, attitude, and behaviour necessary to make sound financial decisions and ultimately achieve financial well-being" (Atkinson and Messy, 2012, P.14). Financial literacy is low across the globe. Nations irrespective of financial market development and economic growth suffer from low levels of financial literacy (Lusardi & Mitchell, 2008). Disaggregated findings of national as well as cross-country studies indicate that financial literacy levels differed across socio-economic and demographic characteristics i.e. women, the young and the elderly, less-educated, unemployed, residents in rural areas, specific ethnic and minority communities etc. are vulnerable to financial illiteracy (Lusardi, 2008; Lusardi & Mitchell 2011; Atkinson & Messy 2012; Bajo et al, 2015; Gangwar & Singh, 2018). According to OECD/INFE (2020) report the average financial literacy of adult population is 60 per cent (Table-4).

Table-4: Financial Literacy Score and Per Cent from International Surveys

Year	Survey	Overall Financial Literacy Score	Per cent
2012	Measuring Financial Literacy: Results of the OECD/ International Network on Financial Education (INFE) Pilot Survey	13.7/22	62
2015	Financial Literacy Around the World: Insights from the Standard & Poors' Rating Services Global Financial Literacy Survey	-	33

Year	Survey	Overall Financial Literacy Score	Per cent
2016	OECD/INFE International Survey on Adult Financial Literacy Competencies	13.2/21	63
2017	G20/OECD INFE Report on Adult Financial Literacy in G20 countries	12.7/21	60
2020	OECD/INFE 2020 International Survey on Adult Financial Literacy	12.7/21	60

Source: Overall financial literacy scores compiled from respective survey reports

According to the G20/OECD INFE Report (2017) India scored 11.9 out of 21, that is, 57 per cent of adult population are financial literate. Financial literacy score of India is less than the G20 average. Gunther and Ghosh (2018) estimated the average financial literacy score adult population in India to be 6.8 out of 15, and financial literacy varied across the states. The per cent of financial literacy population of half of the states (11 out of 22) in the study fell below national average. This is indicative of the low financial literacy levels in the country.

Table-5: Zone-Wise Distribution of Per Cent of Respondents Who Passed the Minimum Threshold Financial Literacy Score

Zone	NFLIS 2013	NFLIS 2019	Per cent point Change*
West	27	37	10
North east	15	33	18
North	21	32	11
South	25	30	5
Central	14	21	7
East	15	20	5

Source: From "National Strategy for Financial Education 2020-25", 2020, RBI

*Authors computation.

As per the National Financial Literacy and Inclusion Survey (NFLIS) financial literacy in India was 27 per cent in 2019, and 20 per cent in 2013. In other words almost three-fourth of the population in India are financial illiterate. Although financial literacy rate continues to be low, there is visible improvement at the national and zonal level. Financial literacy of two zones viz., Central (21 per cent) and East (20 per cent) were below the national average in 2019 compared to three zones i.e. Central (14 per cent), East (15 per cent), and North- East (15 per cent) in 2013. While the East zone (20 per cent) scored the lowest financial literacy in 2019, Central zone (14 per cent) scored the lowest in 2013.

North-East shows the highest per cent point increase in financial literacy and West zone has the highest per cent financial literates compared to

other zones. It is worth mentioning here that west zone has also the highest percent investors (51.2 per cent) in the country (SEBI Investor Survey, 2015).

Awareness and Stock Market Participation

From the preceding sections it is evident that financial literacy in India is very low and stock market investment forms only a nominal share of household finance. Empirical studies examine stock market participation in two ways viz., direct and indirect. Direct stock market participation refers to share or stock holding by an individual investor, whereas indirect participation is through mutual fund investment. It is also known that household finance is characterized by stockholding puzzle. Initially, fixed entry costs was the stated reason for stockholding puzzle, but awareness of financial assets also began to be considered as a barrier along with information costs (Guiso & Jappelli, 2004). Non-participation in stock market is the result of little or lack of knowledge or awareness of stocks, stock market, and asset pricing (Van Rooij et al, 2011). Table-6 examines awareness, holding and operating of capital market instruments like shares, bonds/debentures, and mutual fund.

Table-6: Awareness, Holding and Operating Capital Market Products (All India per cent)

Products	NFLIS 2013			NFLIS 2019		
	Awareness	Holding	Operating	Awareness	Holding	Operating
Shares/stocks	33	3	2	21	3	3
Mutual Fund	21	2	1	32	6	4
Bond/debenture	17	1	1	18	3	2

Source: Data compiled from "Financial Literacy and Inclusion in India- Final Report- India", 2013, NISM, Maharashtra, India and "Financial Literacy and Inclusion in India- Final Report on the Survey Results", 2019, NCFE, Maharashtra, India.

Awareness of capital market instruments is very low among Indian population. In 2013, awareness was highest for shares or stocks (33 per cent), followed by mutual fund (21 per cent), and bonds or debentures (17 per cent). Holding and operation of capital market instruments is negligible. Nonetheless, holding securities corresponds to awareness as relative holding percentages of shares or stocks (3 per cent) is more, followed by mutual fund (2 per cent), and bonds or debentures (1 per cent).

In 2019, awareness was highest for mutual fund (32 per cent), followed by shares or stocks (21 per cent), and bonds or debentures (18 per cent). The shift in awareness from direct to indirect stock holding in 2019 is reflected in the holding and operation as well. Although there has been a marginal increase in holding (except shares or stocks), and operation, participation remains very low. Nevertheless, the holding and operation

of mutual fund shows a three-fold jump in 2019. Hence, we may conclude that low levels of stock market participation (holding and operating) is resultant of low financial literacy in India.

The non-participation or exclusion from capital market is due to voluntary and involuntary reasons. Discretion and religious reasons are the voluntary factors, whereas involuntary factors include inadequate earnings, knowledge, complicated and difficult procedure, and fear of losing money among others (Financial Literacy and Inclusion in India- Final Report, 2013). 56 per cent and 33 per cent are respectively excluded from capital market because of lack of earnings and lack of knowledge about stock market (Financial Literacy and Inclusion in India- Final Report on the Survey Results, 2019).

Further, empirical studies in the Indian context have examined the relationship between financial literacy and awareness of various investment products (Arora & Marwaha, 2013; Bhushan 2014). It is usually seen that an individual with high financial literacy has better awareness and understanding of financial products and services. Studies have also considered lack of awareness as a major deterrent to stock market participation (e.g. Guiso & Jappelli, 2004). Thus, it becomes necessary to examine the relationship between financial literacy and awareness of capital market products in India. Table-7 examines the zone-wise relationship between financial literacy and awareness of stock market investment products like mutual funds, bonds and debentures.

Table-7: Financial Literacy and Awareness of Capital Market Products (in per cent)

Zone	Financial Literacy		Shares / Stocks		Bonds / Debentures		Mutual Fund	
	2013	2019	2013	2019	2013	2019	2013	2019
West	27	37	49	46	24	43	30	60
North	21	32	39	18	21	14	24	29
South	25	30	29	14	16	13	21	30
Central	14	21	28	18	13	17	18	27
East	15	20	25	15	11	12	16	23
All India	20	27	33	21	17	18	21	32

Source: Data compiled from "Financial Literacy and Inclusion in India – Final Report- India", 2013, NISM, Maharashtra, India and "Financial Literacy and Inclusion in India- Final Report on the Survey Results", 2019, NCFE, Maharashtra, India.

Note: Bonds/Debentures 2019 represents data on bonds.

Financial literacy improved at the zonal and national level, but still remains very low. Change in awareness across capital market products decreases for shares/stocks, increases for mutual fund, and slightly increases for bond/debentures. Financial literacy and awareness is relatively highest in West zone in both the years. East zone and Central zone has the lowest

financial literacy, below the national average. Corresponding awareness of mutual funds is also the lowest in 2013. Awareness of shares or stocks and bonds or debentures in 3 out of 5 zones was below the national average. Capital market product awareness was found to be very low among East, Central, and South zones.

In 2019, financial literacy and mutual fund awareness decreases as we move down the zones. Awareness of bonds/debentures follows a similar trend with financial literacy except at central zone. The relationship between financial literacy and awareness of shares/stocks is inconsistent as we move down the zones.

We may conclude that the relation between financial literacy and awareness of capital market products varies across the zones. However, the point of change in the awareness of bonds / debentures and mutual fund has increased, so does financial literacy. Along with the results of existing empirical work, this prompt us to conclude that awareness plays an important role in investment decisions like stock market participation.

Summary and Conclusion

Financial education has attained lot of importance across the globe. Governments have adopted various policy measures and initiatives to promote financial literacy and education. For instance, the Reserve Bank of India (RBI) and other financial sector regulators established the National Centre for Financial Education (NCFE) and recently the RBI has put forth the "National Strategy for Financial Education 2020-25" which laid down the strategic objectives to promote financial literacy, encourage saving behavior and financial market participation among others. Financial knowledge, skills, and access to financial products and institutions together lead to financial capability (Jonhson & Sherraden, 2007).

A major outcome of financial literacy is stock market participation. Empirical studies including existing works in India substantiate the positive influence of financial literacy on stock market participation. This paper tries to address three objectives: what is the financial literacy level in India and how is it related to awareness? Does financial investment indicates a stockholding puzzle? What can you infer from awareness and stock market participation?

Financial literacy in India is very low. A vast majority of individuals surveyed fail to pass the minimum threshold score of financial literacy. There is considerable variation in financial literacy across zones. West zone has more financial literacy than other zones. Besides, west zone accounts for the highest number of investors in India which persuade us to hypothesize a positive influence of financial literacy on stock market participation. It is also seen that financial literacy is related to awareness.

It is seen that financial investment of household is skewed to traditional low or medium risk avenues. Investments and of which mutual funds have a nominal share in the gross domestic savings as per cent of GDP. It is noteworthy that stock market participation in India is indirect i.e. through mutual fund investment which is validated by its awareness levels. There is a shift in awareness from direct to indirect stock market investment between the survey period.

One of the major limitation of the study is statistical significance of the relationship between financial literacy and stock market participation is not examined due to the absence of adequate dataset. An in-depth analysis of financial literacy and stockholding in the West zone which has largest presence of investors and relatively high financial literacy offers scope for further study. Surge in the retail investor participation in equity market in India during COVID times[2] will be an interesting area for future research.

References

Al-Tamimi, H.A.H., & Kalli, A.A.B. (2009). Financial Literacy and Investment Decisions of UAE Investors. *The Journal of Risk Finance*, *10*(5), 500-516.

Atkinson, A.,& F. Messy. (2012). *Measuring Financial Literacy: Results of the OECD/ International Network on Financial Education (INFE) Pilot Study.*(OECD Working Papers on Finance, Insurance and Private Pensions No. 15). Paris: OECD.

Arora, S., & Marwaha, K. (2013). Financial literacy level and awareness regarding stock market: An empirical study of individual stock investors of Punjab. *Management and Labour Studies*, *38*(3), 241-253.

Arts, L. (2018). Financial Literacy and Stock Market Participation: Moderating Effect of Country-specific Connectedness. Retrieved from http://www.diva-portal.org/smash/get/diva2:1193563/FULLTEXT01.pdf

Bajo, E., Barbi, M., & Sandri, S. (2015). Financial Literacy, Households' Investment Behaviour, and Risk Propensity. *Journal of Financial Management Markets and Intuitions*, 3(1), 157-174.

Bhushan, P. (2014). Relationship between Financial Literacy and Investment Behaviour of Salaried Individuals. *Journal of Business Management and Social Sciences Research, 3*(5), 82-87.

Gangwar, R., & Singh, R. (2018). Analyzing Factors Affecting Financial Literacy and its Impact on Investment Behavior among Adults in India. Retrieved fromhttp://hdl.handle.net/10419/183168.

Government of India (2021). *Economic Survey 2020-21 Statistical Appendix*. Retrieved from https://www.indiabudget.gov.in/economicsurvey/doc/Statistical-Appendix-in-English.pdf.

2 See http://www.ficci.in/ficci-in-news-page.asp?nid=24164

Guiso, L., & Jappelli, T. (2004). *Awareness and Stock Market Participation*. (CSEF Working Paper No. 110). Italy: Centre for Studies in Economics and Finance.

Gunther, M. K., & Ghosh, S. (2018). Deciphering Financial Literacy in India. *Economic and Political Weekly*, 53(13), 153-164.

Haliassos, M. (2002). *Stockholding: Recent Lessons from Theory and Computations.*(University of Cyprus Working Papers in Economics No. 0206). Nicosia: University of Cyprus Department of Economics.

Hilgert, M. A.,& Hogarth, J. M. (2003). Household Financial Management: The Connection between Knowledge and Behavior. *Federal Reserve Bulletin*, *89*, 309-322.

Household Finance Committee (2017). *Indian Household Finance*. Retrieved from https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/HFCRA28D0415E2144A009112DD314ECF5C07.PDF

Johnson, E., & Sherraden, M. S. (2007). From Financial Literacy to Financial Capability among Youth. *The Journal of Sociology and Welfare*, *34*(3), 119-145.

Klapper, L., Lusardi, A., & Van Oudheusden, P. (2015). *Financial Literacy Around the World: Insights from the Standard and Poor's Ratings Services Global Financial Literacy Survey*. Retrieved fromhttps://gflec.org/initiatives/sp-global-finlit-survey/

Kadoya, Y., Khan, M., & Rabbani, N. (2017). Does Financial Literacy Affect Stock Market Participation? *SSRN Electronic Journal*.http://dx.doi.org/10.2139/ssrn.3056562.

Lusardi, A. (2008). *Financial Literacy: An Essential Tool for Informed Consumer Choice*. (NBER Working Paper No. 14084). Cambridge: National Bureau of Economic Research.

Lusardi, A.,& Mitchell, O.S. (2011). *Financial Literacy Around the World: An Overview*.(NBER Working Paper No. 17107). Cambridge: National Bureau of Economic Research.

Lusardi, A.,& Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature*, *52*(1), 5-44.

Mishra, R. (2018). Financial Literacy, Risk Tolerance and Stock Market Participation. *Asian Economic and Financial Review*, *8*(12), 1457-1471.

National Institute of Securities Market. (2013). *Financial Literacy and Inclusion in India - Final Report*. Maharashtra: National Centre for Financial Education.

National Centre for Financial Education. (2019). *Financial Literacy and Inclusion in India - Final Report*. Maharashtra: National Centre for Financial Education.

Organization for Economic Co-operation and Development. (2016). *OECD/INFE International Survey of Adult Financial Literacy Competencies*. Paris: OECD.

Organization for Economic Co-operation and Development. (2017). *G20/OECD INFE Report on Adult Financial Literacy in G20 Countries.* Paris: OECD.

Organization for Economic Co-operation and Development. (2020). *OECD/INFE 2020 International Survey of Adult Financial Literacy.* Paris: OECD.

Reserve Bank of India. (2020). *Quarterly Estimates of Households' Financial Assets and Liabilities*. RBI Bulletin. Retrieved from https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=49931

Reserve Bank of India. (2020). *National Strategy for Financial Education 2020-25.* Retrieved from https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/NSFE202020251BD2A32E39F74D328239740D4C93980D.PDF

Retail investors flocking to stock market amid Covid 19 crisis: SEBI chief. (2020, July 22). FICCI. Retrieved March 27, 2021, from http://www.ficci.in/ficci-in-news-page.asp?nid=24164

Securities and Exchange Board of India. (2015). *SEBI Investor Survey2015*. Mumbai: Securities and Exchange Board of India.

Sivaramakrishnan, S., Srivastava, M., & Rastogi, A. (2017). Attitudinal Factors, Financial Literacy, and Stock Market Participation. *International Journal of Bank Marketing*, 35(1), 818-841.

Thomas, A., & Spataro, L. (2018). Financial Literacy, Human capital and Stock Market Participation in Europe. *Journal of Family and Economic Issues*, *39*, 532-550.

Van Rooij, M., Lusardi, A., & Alessie, R. (2007). *Financial Literacy and Stock Market Participation.* (NBER Working Paper No. 13565). Cambridge: National Bureau of Economic Research.

Xia, T., Wang, Z.,& Li, K. (2014). Financial Literacy Overconfidence and Stock Market Participation. *Social Indicators Research, 119*, 1233-1245.

Yoong, J. (2010). *Financial Illiteracy and Stock Market Participation: Evidence from the RAND American Life Panel*. Wharton Pension Research Council Working Papers No. WP2010-29. Pennsylvania: Wharton Pension Research Council University of Pennsylvania

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The Linkage Among Foreign Direct Investment Inflows, Export and Economic Growth in India: An Autoregressive Distributed Lag Bound Testing Model

Ganapati Mendali*

Abstract

In recent years, inflows of foreign direct investment (FDI) and exports are responsible for the economic growth of many emerging market economies. An enormous theoretical literature is available that explores the interrelationship among these variables. However, in the particular circumstances, a research gap still exists in the empirical narrative. The present study examines the interrelationship among these variables in short and long run in India from 2001Q1 to 2018Q1. Utilizing the Autoregressive Distributed Lag (ARDL) model established by Pesaran et al.(2001), the study discovered a positive and significant short-run connection involving FDI and economic growth. It also reveals that these variables have a long-term affiliation. However, the coefficient of FDI inflows and exports is insignificant. As a result, FDI should be prioritised because India has a competitive advantage in export-led growth strategies, export-aligned industrial and agricultural sectors. The Government's objective should be to promote FDI with an export-boosting atmosphere through strong spillovers to stimulate the economic growth.

Keywords: ARDL, Economic Growth, Exports, FDI, India

Introduction

The FDI inflows and exports are very vital factors for the growth of many emerging market economies in recent times. Globalization has considerably improved the inflow of FDI to India. Especially, during the phase of deglobalization, there is a huge inflow of FDI to India, which is because of improved macroeconomic conditions,

* Lecturer in Economics, Anchalik Kishan College, Bheden, Dist - Bargarh, Odisha and can be reached at ganapatimendali@gmail.com

the reforms initiated by the Government such as expanding the free trade zones and a conducive business environment prevailing in the country. There is a surge in the ranking of India's position in ease of doing business in the recent time which is decisive to attract foreign investors.

The interrelationship among FDI, exports, and economic growth has a broad theoretical literature. With regard to empirical literature, however, there exists a research void.

Literature Review

Kentor (1998) found that fringe nations with generally high reliance on foreign capital showcase more slow economic growth than those less needy fringe nations. Borensztein et al. (1998) examined the impact of FDI by taking data on FDI flows to 69 developing countries (from industrial nations) over the last two decades. It utilized a cross country regression structure. The investigation found that FDI is a massive vehicle for the trading of advancement, which contributes commonly to growth as compared to domestic investment. In any case, FDI adds to economic growth just after an adequate receptive capacity of trendsetting innovations is accessible in the host country. Sarkar (2007) inspected the connection among development and FDI (with respect to gross capital formation) from 1981 to 2002 (panel data) and from 1970 to 2002 (time-series data) of 51 Least developed countries (LDCs). It is observed that there is a rising connection between development and FDI just for only 11 moderately wealthy and open-economy nations. The time-series examination revealed important affirmative connections between FDI and development just for three nations having a place with this cluster and some different nations. It was shown that, regardless of the level of income, openness, and FDI-reliance, long-term positive relationship does not exist between the two. By means of the ARDL model, Belloumi (2014) explored the association among FDI, trade openness and economic growth in Tunisia from 1970 to 2008. It showed that these variables have a causal relationship. As there is an advancement of trade liberalisation and economic growth, Tunisia is attracting more FDI. It revealed that in the short run, there does not exist any significant Granger causality from FDI to economic growth and vice-versa and from trade to economic growth and the other way round. Mahmoodi and Mahmoodi (2016) investigated the underlying connection among FDI, exports and economic growth of eight European and eight Asian developing nations from 1992 to 2013 and 1986 to 2013 respectively. A panel vector error correction model (VECM) was used to examine variables such as GDP, FDI, and exports. In the short term, there is a bidirectional causality between GDP and FDI, as well as a unidirectional causality from GDP

and FDI to exports are found for Europe's developing nations. Together, European and Asian developing countries have a a long-run causality from exports and FDI to economic growth and from economic growth and exports to FDI. Iamsiraroj (2016) contemplated the association between income per capita growth and FDI inflows of 124 nations by utilizing a simultaneous system of equations model and the information is taken from 1971 to 2010. It found that the general impacts of FDI are decidedly connected with growth and the other way around. The other key determinants of FDI i.e., labor force, economic freedom, and trade openness likewise invigorate income growth altogether. Ahmad et al. (2018) explored the underlying ties amongst economic growth, exports, and FDI of ASEAN-5 countries by using co-integration and causality tests from 1981 to 2013. A bi-directional causal link between economic growth and FDI is found in the long-run. However, in the short run, a unidirectional causal association from FDI to exports is found. It also established that the hypotheses of export-led growth and FDI-led growth remain stable in short as well as long run. From 1980 to 2016, Sultanuzzaman et al. (2018) investigated the short and long-term relationship between exports, FDI inflows, and economic growth in Sri Lanka. Using the ARDL process, it revealed that, both in the short and long term, there is a positive and important relationship between FDI inflows and economic growth. However, economic growth and exports have a long-term negative and significant relationship.

Some of the past studies regarding India are presented here.

Srinivasan (1998) found that infrastructure sector of India is ineffective to increase any affirmative spillovers from FDI. Sharma (2000) established that there is an insignificant positive impact of FDI on export supply. Aggarwal (2002) inspected the association between exports and FDI by utilizing Tobit model from 1996 to 2000 and found that liberalisation has upgraded the role of exports of foreign associates. Utilizing the quarterly data from 1990-91 to 2003-04, Prusty (2006) discovered that FDI inflows influence India's export supply hugely in the short and long run. Likewise, Banga (2006) established that FDI had a considerable impact on the importance of exports from non-traditional segments. Backward and horizontal spillovers from the existence of multinational enterprises on the productivity of exports of domestic firms were investigated by Joseph and Reddy (2009). They found no evidence to support analogous overflows. Dash and Sharma (2011) investigated India's economic growth, FDI, and trade using Toda and Yamamoto's (1995) Ganger non-causality assessment from 1991q3 to 2006q3. It was revealed that FDI and economic growth have a bidirectional association, while exports and FDI have a one-way connection. The examination of causality between imports and FDI, in contrast, suggests that the variables are linked in a two-way feedback circle.

Data as Well as Methodology

The study utilizes quarterly data from 2001Q1 to 2018Q1. The variables used in this examination are aggregate real exports (expo), foreign direct investment (FDI), and domestic income (IIP). Real exports are the volume of exports during time *t*. It is determined as the total exports value expressed in US Dollar deflated by the unit value of exports, which is taken as an alternative for price indices of exports. The index of industrial production (IIP) is utilized like an intermediary measure for Gross Domestic Product (GDP). While the IIP is a restrictive measure of domestic income, as it reflects only of the manufacturing sector, still it captures the movement in GDP (McKenzie & Brooks, 1997). FDI inflow is calculated as net inflows of foreign direct investment. The data are collected from the IFS report 2018, published by the International Monetary Fund (IMF).

ARDL Bounds Testing Approach

Pesaran and Shin (1999) built up the ARDL model, which was afterward modified by Pesaran et al. (2001). This method compares the standard type of cointegration techniques to an Unrestricted Error Correction Model (UECM) with different preferences.

The boundary test does not have to interfere with any of the critical factors that must be applied in order 1. It is used where the primary regressors are merely I(0), absolutely I(1), or jointly integrated. Consequently, it avoids the pre-testing vulnerability problem that arises from ordering variables into either I(0) or I (1). Second, although conventional cointegration techniques, for instance those developed by Engle and Granger (1987), Johansen (1988), and Johansen and Juselius (1990) suffer from small sample bias, the bounds test could be used for small sample sizes.

The methodology depends on F-Statistics or the Wald test. It examines the importance of skewed degrees of pertinent variables in a conditional UECM. Derivations are employed by constructing two sets of asymptotic significant values based on additional premise so as to I (1) is entirely devoid of the need to consider the regressor's basic array of integration.

Reflect on the ensuing VAR model of order ρ

$$\gamma (K) = (z_t - \theta - \beta t) = \upsilon_t \qquad ...(1)$$

Where $t = 1, 2, 3$

K is the lag operator

θ and β are unidentified vector of intercepts and trend co-efficient correspondingly.

υ is N(0, τ) amid the variance matrix τ, a positive definite.

Concerning the decision out of the chance of recurrent and explosive roots, known definite suppositions as given in Pesaran, et al. (2001), the subsequent error correction outline of equation (1) can be determined in this manner:

$$\Delta Z_t = \beta_0 + \beta_1 t + \Pi Z_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Z_{t-i} + \omega_t \quad ...(2)$$

where $t = 1,2,3..$

$\Delta = 1 - K$ is the difference operator

β_0 and β_1 are unidentified vectors of intercept and trend coefficients correspondingly

ω_t is a error term, which is distributed normally

The matrices for the long-run multiplier and the short-run response are shown by π, Γ_i i=1..... ρ-1 respectively.

Dividing Z_t as

$$Z_t = (y_t, x_t^{'})' \quad ...(3)$$

The conditional modelling of the scalar variable y_t given the k-vector x_t and distinctive and precedent values of Z_t are according to Pesaran et al. (2001). By means of progressively proper apportioning of ω_t and the long-run multiplier matrix π inhibited with Z_t. The conditional ECM of (3) can be composed as similar partitioning of β_0, β_1, and Γ_i together with several recognizing postulations as follows:

$$\Delta y_t = \alpha_0 + \alpha_1 t + \Pi_1 y_{t-1} + \Pi_2 x_{t-1} + \sum_{i=1}^{p-1} \xi_i^{'} \Delta Z_{t-i} + \theta' \Delta x_t + \varepsilon_t \quad ...(4)$$

Equation (4) frames the reason for the estimation of the ARDL model.

Two steps should be taken when performing the boundary test. The presence of co-integration among variables is analyzed in underlying phase. When the co-integration is verified in the subsequent step, ARDL model is used to evaluate the short as well as long-run coefficients.

The accompanying empirical model for the investigation is as follows:

$$lniip_t = \beta_0 + \beta_1 lnexpo_t + \beta_2 lnfdi_t + u_t \quad ...(5)$$

where

expo is real exports,

iip is the measure of economic growth,

fdi indicates foreign direct investment,

β_1 and β_2 are parameters.

u_t denotes the error term,

t indicates the time span.

The natural logarithm of every variable is taken as it holds the elasticities of the variables by their related coefficients. In this investigation, the reduced form is used which is reliable with literature.

The increase in exports are projected to contribute to an increase in IIP and hence to economic growth. So, the accepted sign of β_1 is positive ($\beta_1 > 0$). Moreover, the increase in FDI is expected to increase economic growth of a nation. So, positive is the predicted sign of β_2 ($\beta_2 > 0$).

The equation (5) could be communicated by ARDL-UECM model used here is as per the following:

$$\Delta lniip_t = \beta_0 + \sum \Delta lnexpo_{t-1} + \sum \Delta lnfdi_{t-1} + \beta_1 \, lnexpo_{t-i} + \beta_2 \, lnfdi_{t-i} + \omega_t \quad ...(6)$$

Where,

t is the time dimensions

Δ stands for the first difference operator

β_0 indicates the intercept

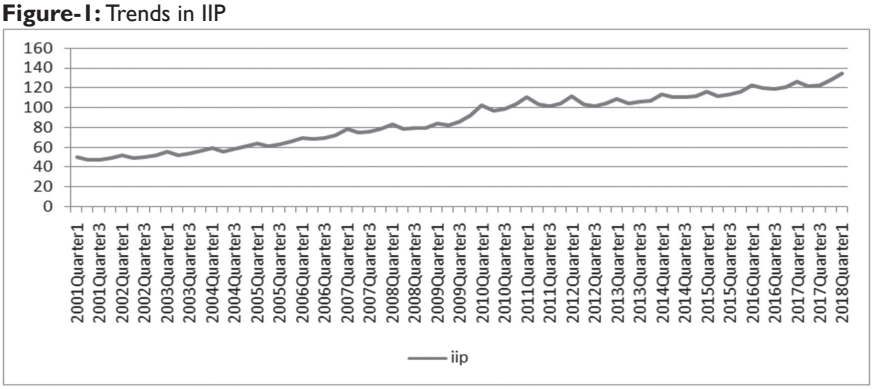
ω_t is the white noise error term.

Empirical Findings

Trend in the Prime Variables

Figure-1 presents the conduct of IIP. It demonstrated a consistent growth during the study period.

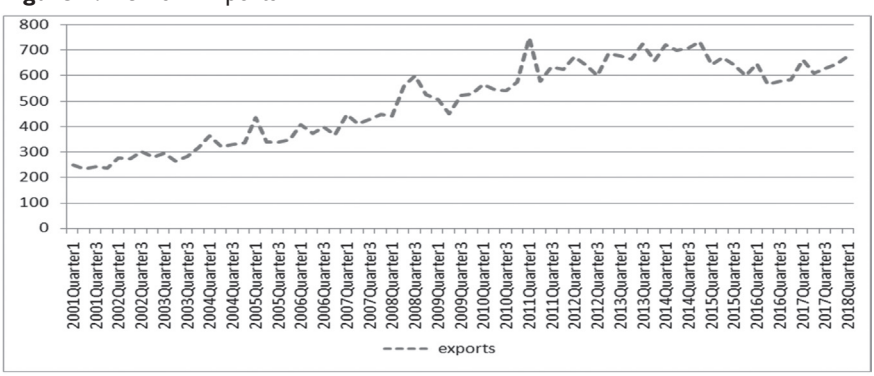
Figure-1: Trends in IIP



Source: Author's calculation from International Financial Statistics, IFS CD-ROM 2018, IMF

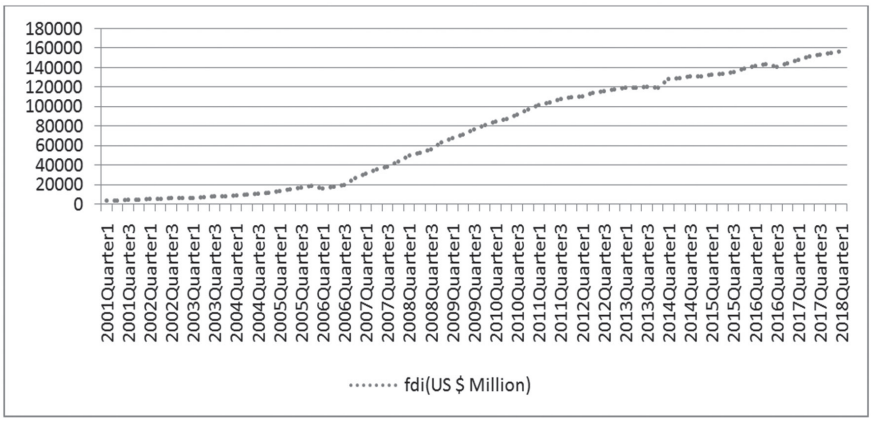
Figure-2 presents the pattern of exports. In short period, fluctuations are found in the case of exports.

Figure-2: Trends in Exports



Source: Author's calculation from International Financial Statistics, IFS CD-ROM 2018, IMF

Figure-3: Trends in FDI



Source: Author's calculation from International Financial Statistics, IFS CD-ROM 2018, IMF

It is observed from Figure-3 that FDI was steady from 2001Q1 to 2006Q1 and rises thereafter.

Unit Root Test

The unit root test aids in determining the order of integration. Furthermore, it is a precondition for the occurrence of co-integration relations. The Augmented Dickey-Fuller (ADF) test is employed for all variables to validate the unit root and to set up the order of integration. The outcome of the unit root test is given in Table-1.

Table-1: ADF Test

Variable	I(0) Level (Constant with trend)	I(1) First Difference (Constant without trend)
IIP	-1.23	-5.17*
Expo	-0.83	- 3.62*
FDI	-0.65	- 7.32*

Source: Author's calculation from International Financial Statistics, IFS CD-ROM 2018, IMF

Note: The Akaike information criterion (AIC) is used to establish the duration of the lag,

maxlag=10

*Significant at 5 % level.

From Table-1, it can be shown that variables such as IIP, expo, and FDI are stationary at the first difference. As a result, the ARDL model could be employed.

Bounds F-test for Cointegration

The outcome of ARDL Bounds F-test for Cointegration derived from equation (6) is given in Table-2. For the provisional ARDL-UECM, the lag period selected was depended on the AIC.

Table-2: Results of Bounds Test

Computed F-statistics
7.99

Source: Author's calculation from International Financial Statistics, IFS CD-ROM 2018, IMF

Notes: The Bounds critical values are 3.79-4.85 (lower bound-upper bound) at 5 percent significance level which is acquired from Pesaran, et al. (2001), pg no. 300, Table: CI (iii) Case III: Unrestricted intercept and no trend (k = 2).

The Bounds test results showed that 7.99 is the calculated F-statistics, which at the five percent significance stage is above the upper bound estimate of 4.85. Therefore, the null hypothesis which states that there is no co-integration, could be ruled out. And the alternative hypothesis of a co-integrating relationship is considered. This means that the variables studied have a stable long-run co-integration relationship.

Long-run Estimates of ADRL Process

A cointegration relationship exists between these variables, and equation (6) was tested for long-run coefficients. Based on the AIC, the ARDL model chosen is a model of (2, 3, 0). The results are listed in Table-3.

Table-3: Long-run Calculated Coefficients Using the ARDL (2, 3, 0) Method

Variable	Coefficient	Prob. Value
Exports	-0.48	0.53
FDI	0.26	0.08
Constant	4.80	0.16

Source: Author's calculation from International Financial Statistics, IFS CD-ROM 2018, IMF

Notes: * indicates significance at five percent level. AIC defines the optimal lag length

The findings show that the export coefficient is -0.48 and the corresponding probability value is 0.53, i.e. the five percent level is insignificant. It claims that exports do not lead to economic growth in the long run. Since the coefficient value of 0.26 is insignificant, FDI has no effect on long-term economic growth.

Diagnostic and Stability of the ARDL Process

In order to test if any serial correlation exists, the Breusch-Godfrey Serial Correlation LM test is used. Table-4 contains this information. Since the Chi-Square probability is 33 percent, there does not exist any serial correlation.

Table-4: Serial Correlation LM Test

F-statistic	0.98	Prob. F(2,56)	0.38
Obs*R-squared	2.22	Prob. Chi-Square(2)	0.33

Source: Author's calculation from International Financial Statistics, IFS CD-ROM 2018, IMF

The Breusch-Pagan-Godfrey test is often applied to check for heteroskedasticity. Table-5 summarises the results.

Table-5: Heteroskedasticity Test

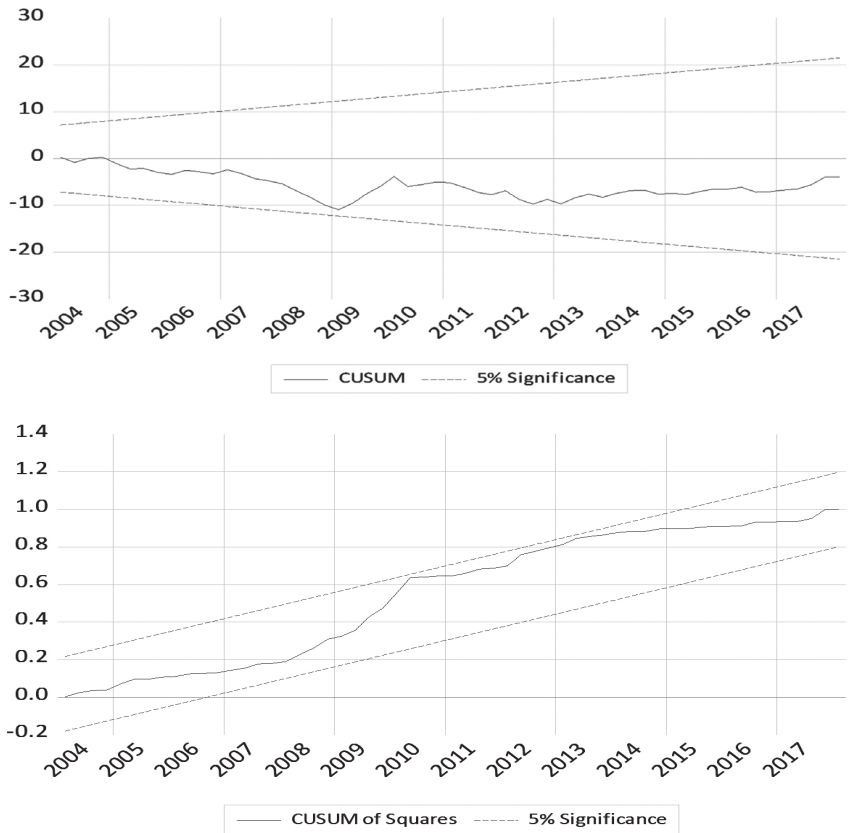
F-statistic	0.74	Prob. F(7, 58)	0.64
Observed R-squared	5.40	Prob. Chi-Square(7)	0.61

Source: Author's calculation from International Financial Statistics, IFS CD-ROM 2018, IMF

Here, the Prob. Chi-Square (7) value is 61 percent. Thus, we acknowledge the null hypothesis that the model is homoskedastic. It is desirable.

The model's stability is evaluated by using the CUSUM plots (See Figure-4). The CUSUM test (Brown, Durbin, and Evans, 1975) is defined on the cumulative sum of the recursive residuals. During study period the export demand function is stable, as the cumulative sum does not lie between two critical lines outside the field. All the assessed coefficients are put inside the bands (at the five percent level of significance), hence all coefficients estimated in the export demand function are supposed to be stable. However, CUSUM of squares reveals that the coefficients unstable as they are not staying inside the band (See Figure-4).

Figure-4: CUSUM and CUSUM of SQUARES Tests



Source: Author's calculation from International Financial Statistics, IFS CD-ROM 2018, IMF

There is a long-run association among the variables. Therefore, the short-term relationship among them could be analyzed. This is introduced beneath:

Short-run Dynamics of ADRL Process

Table-6 shows the consequences of dynamic coefficients of short-run which are linked to long-run relationships derived from equation (6). The AIC determines the best possible lag period for chosen error correction illustration of the ARDL (2, 3, 0) model.

Table-6: Error Correction Illustration for the Choosen ARDL (2, 3, 0) Model

Variable	Co-efficient	Probability
c	0.18	0.00
iip(-1)	-0.03	0.11
Exports(-1)	-0.02	0.38
FDI	0.01	0.02
d(iip(-1))	0.53	0.00
d(exports)	-0.01	0.93
d(exports(-1))	-0.02	0.32
d(exports(-2))	-0.06	0.00
CointEq(-1)	-0.03	0.00

Source: Author's calculation from International Financial Statistics, IFS CD-ROM 2018, IMF

The calculated error correction coefficient is negative and significant at the zero percent mark, which implies the short-run adjustment method is very mild. More importantly, it shows that three percent of the IIP imbalance from preceding cycle shock would congregate to the long-run equilibrium in the present period. Although exports have not had a noteworthy impact on economic growth in the short term, FDI had a considerable impact. However, the lagged value of exports of two is significant.

Concluding Remarks

Using the ARDL bound test method for long-run relationships, the study offers an accurate overview of the effect of FDI inflows and exports on economic growth in India. The findings reveal that there is no significant long-term association among these variables. Inflows of FDI have a short-run effect on economic growth, but not on exports. FDI inflows are an imperative source of economic growth and a main generator of GDP growth. India's emphasis on FDI has a competitive advantage for the economy's export-led growth strategies, export-oriented industrial, and agricultural segments. The Government's objective should be to encourage FDIs on an export-friendly basis through stronger spillovers to accelerate the growth of the Indian economy.

References

Aggarwal, A. (2002). Liberalisation, multinational enterprises and export performance: evidence from Indian manufacturing. *The Journal of Development Studies,* 38(3), 119-137.

Ahmad, F., Muhammad Umar Draz & Su-Chang Yang. (2018). Causality nexus of exports, FDI and economic growth of the asean 5 economies: Evidence from panel data analysis. *The Journal of International Trade & Economic Development*, 27(6), 685-700.

Banga, R. (2006). The export-diversifying impact of Japanese and US foreign direct investments in the Indian manufacturing sector. *Journal of International Business Studies,* 37(4), 558-568.

Belloumi, M. (2014). The relationship between trade, FDI and economic growth in Tunisia: An application of the autoregressive distributed lag model. *Economic Systems,* 38 (2), 269-287.

Borensztein E., De Gregorio J., & Lee J-W. (1998). How does foreign direct investment affect economic growth? *Journal of International Economics,* 45(1), 115-135.

Brown, R. L., Durbin, J., & Evans, J. M. (1975). Techniques for testing the constancy of regression relationships over time. *Journal of the Royal Statistical Society*, series B (37), 149-163.

Dash, R. K. & Sharma C. (2011). FDI, trade, and growth dynamics: new evidence from the post-reform India. *The International Trade Journal*, 25(2), 233-266.

Engle, R.F. & Granger, C.W.J. (1987). Co-Integration and error-correction: Representation, estimation and testing. *Econometrica*, 55(2), 1251-1276.

Iamsiraroj, S. (2016). The foreign direct investment-economic growth nexus. *International Review of Economics and Finance*, 42 (C), 116-133.

Johansen, S. (1988). Statistical analysis of cointegrating vectors. *Journal of Economic Dynamics and Control*, 12(2-3), 231-254.

Johansen, S. & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration - with applications to the demand for money. *Oxford Bulletin of Economics and Statistics,* 52 (2), 169-210.

Joseph, T.J. & Reddy, N. (2009). FDI spillovers and export performance of Indian manufacturing firms after liberalisation. *Economic and Political Weekly*, 44 (52), 97-105.

Kentor, J. (1998). The long-term effects of foreign investment dependence on economic growth, 1940-1990. *American Journal of Sociology*, 103(4), 1024-1046.

Mahmoodi, M. & Mahmoodi, E. (2016). Foreign direct investment, exports and economic growth: evidence from two panels of developing countries. *Economic Research - Ekonomska Istraživanja*, 29(1), 938-949.

McKenzie, M. & Brooks, R.D. (1997). The impact of exchange rate volatility on German-US trade flows. *Journal of International Financial Markets, Institutions & Money*, 7(1), 73-87.

Pesaran, M. H. & Shin, Y. (1999). An autoregressive distributed lag modelling approach to cointegration analysis. In S. Strom (Eds.), *Econometrics and economic theory in the 20th century: The ragnar frisch centennial symposium* (pp.371-413). Cambridge University Press.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289-326.

Prusty, S. (2006). An analysis of foreign direct investment and export growth in India. *International Journal of Applied Business and Economic Research*, 4(1), 9-21.

Sarkar, P. (2007). Does foreign direct investment promote growth? panel data and time series evidence from less developed countries, 1970-2002, MPRA paper no. 5176. Retrieved from http://mpra.ub.uni-muenchen.de/5176/.

Sharma, K. (2000). Export growth in India - has FDI played a role? Discussion Paper No.816, Economic Growth Center, Yale University. Retrieved from http://www.econ.yale.edu/growth_pdf/cdp816.pdf

Srinivasan, T.N. (1998). India's export performance: a comparative analysis. In I.J. Ahluwalia & I.M.D. Little (Eds.), *India's economic reforms and development: Essays for Manmohan Singh* (pp.197-228). Oxford University Press.

Sultanuzzaman, Md R, Hongzhong, F., Mahamud, A., Banban, Wang & Uddin Sarker Md S. (2018). The role of FDI inflows and export on economic growth in Sri Lanka: An ARDL approach. Cogent *Economics & Finance* 6(1). doi.org/10.1080/23322039.2018.1518116

Toda H. Y. & Yamamoto T. (1995). Statistical inference in vector autoregressions with possibly integrated processes. *Journal of Econometrics*, 66 (1-2), 225-250.

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Influence of Data Localisation on E-Commerce in India: An Exploratory Study

Suman Kalyan Chaudhury*
Anupam Panigrahi**

Abstract

Greater adoption of digital content has brought a see through change in the idea of data generation and its storage. UNCTAD's 'Digital Economy Report 2019' reveals that e-commerce in India has generated a total business of 28 lakh crore rupees in 2017. This volume took India to ninth-highest e-commerce sales globally, and included selling of goods and services through online, room-sharing platforms and companies providing platform for various transactions such as ride-hailing apps, and thus, contributing 15% to India's GDP. The only way for developing countries to own and control data generated in their territories is by restricting the cross-border flows of important personal and community data. RBI has made data localisation compulsory for payment systems, disallowing sharing of the data with a third-party. This research paper is an attempt to find out the possible outcomes of data localisation, and to test the extent to which it will have a greater influence on the E-commerce business. The researcher has used ANOVA method to test the hypotheses of this study, since the study seeks to explore significant difference between the means of two groups of data. The first group comprises of user's data, viz: education level, urgency level, and geographical location; while the other group of data comprises of the extent to which disclosure of the users' personal data is made. It is inferred from the study that the localisation of data storing will, no doubt, increase the cost of operation for the multinational players, will however, not have significant impact on the E-commerce business of these companies.

Keywords: Data Localisation, Developing Country, E-Commerce, Local Population, Multinational Companies

* Faculty Member in the rank of Reader in the P.G. Department of Business Administration, Berhampur University and can be reached at sumankalyan72@gmail.com

** Running his own business namely Anupam Panigrahi Trading Academy, Bhubaneswar and can be reached at panigrahianupam@rediffmail.com

Introduction

Data localisation, which entails companies to keep the stockpile of their data in servers that are locally available and not in another country or jurisdiction if they collected from individuals live in those countries. The UNCTAD's 'Digital Economy Report 2019' reveals "The only way for developing countries to exercise effective economic "ownership" of and control over the data generated in their territories may be to restrict cross-border flows of important personal and community data". Till now the multinational companies have managed to collect user's data and store them in foreign servers, exposing the local population to live under the concern of personal data theft. When Indian customers swipe their Visa card or use Amazon services, it is not surprising that the customer's financial and personal information is taken, processed and stored on servers located outside of Indian territory. Well, most of the data is partially or completely stored outside India. Further, it's shocking to note that the Indian government and Indian regulators too have limited access to this data. Therefore, the RBI intends to change its data location rules. Earlier, in October 2018, businesses around the world jumped to follow the RBI deadline to locate all sensitive information related to users from India, wherein it emphasized use of various digital payment services by connecting to servers within the Indian territory.

Therefore, Data localization is the method of storing sensitive personal data on any device that is physically present inside any country's borders. So far, most of this information has been stored in the cloud drives outside India. The RBI order followed the data protection bill proposed by Srikrishna Committee in July / August 2018. One of the recommendations made by this committee on data localization has changed the dynamics of data storing in that.. 'the government of India should have free access to the data of Indian citizens to determine the citizen policy (via Big Data Analysis and artificial intelligence)'. Thus, it is the duty of the data storing companies engaged in locating data, to store the personal information of their citizens on a device that physically exists within the boundaries of the particular country where the data was created.

Past experiences have pointed out the free flow of digital data, particularly that which may affect government activities or operations in a region, is limited. The need to locate data can be seen for a variety of reasons, such as: mandates for national law which specifically require that the data must be physically stored on a server in the country, or comply with data protection regulations. This is particularly true in inter-regional transfers, where storing data in one country seems to be an efficient and preferred solution, or in cases where companies that are clients of data storage technology and public data solutions and strategies favor storage data in the country.

Theoretical Overview

The localisation of storing data orders that companies collecting important customer information should be stored and processed within the borders of their country. The RBI has issued a notice stating that payment information collected by payment providers should be stored in India only, setting an October 15 deadline for compliance. This includes card payment services not only by Visa and MasterCard but also by companies like Paytm, WhatsApp and Google that offer electronic or other payment services. Many companies have always followed the rules and have not specified any penalty or penalty for RBI delays. Why is it important? The key purpose of data localization is to defend the personal and essential financial information of citizens of India and residents of the country from foreign observation and to allow local government authorities and domestic regulators to obtain data when needed. This aspect became important after the spread of the lynching in the States associated with the WhatsApp rumours. Social media giant Cambridge Analytica allegedly shared data sharing from Facebook users, which would have influenced the results of the vote, alleging that the government had created a global glut of data localization. Data localization essentially requires installation of better IT infrastructure and robust security procedures for safeguarding the business data. Numerous efforts to promote and promote border security, and therefore encourage the localization of data. While some come with arguments in favour of the localization of data, some believe that misleading policies that are meant for data localization can have grave undesirable consequences for native citizens and for the Indian economy. The second argument is that data localization is necessary for national security. Local data recording helps law enforcement agencies identify the crime or use the information necessary to collect evidence. Where data is not localised, the agencies need to rely on mutual legal assistance treaties (MLATs) to obtain access must delay investigations. Global data on the coast can create national jobs and efficiency in data storage and analysis, as reported by the Sri Krishna Committee. On the contrary, however, maintaining multiple local data centers can be a significant investment in infrastructure and high costs for global companies, which is why they seem to take up arms length distance from these rules.

Since we all rely on global service providers with more and more information on a voluntary and voluntary basis, we may prefer to take even more responsibility from these companies regarding the end use of this information. Although data localization does not fully prevent episodes such as Facebook-Cambridge Analytica, it can at least ensure that national law enforcement responds more effectively to our complaints. The bottom line is that the spread of data localization in the predominantly billion-

strong consumer market of India has stronger negotiating strengths than most of the other countries. Some favour data localization due to fear of losing personal data in the hands of hackers who in most of the cases attack foreign data storage solutions. Some objection to data localization is because it is seen as an obstacle to the flexibility of the Internet.

Literature Review

Local storage and data processing requirements are commonly referred to as "data localization" or "data residency" requirements. Data localization can be broadly defined as "any legal limit to global data" and can be interpreted locally. These principles can take many forms. These may include local data copying, local content production requirements or a specific requirement to impose conditions for the transmission of boundary data, which acts as a location order. The principles of ensuring national data control are called "data nationalism". "Data exceptionalism" is an ideology that maintains that data is regional and therefore incompatible with existing notions of regional jurisdiction. However, there are many researchers who oppose "data exceptionalism" and have argued that data jurisdiction can be influenced by the authority of the data field. The claim of territoriality is the cornerstone of any argument justifying the location of the data.

"Data nationalism" is a framing device, which refers to the widespread trend of countries claiming national priority (related to law enforcement, privacy, security, etc.) in the 'Global Internet. "Data protectionism" is an expression of data nationalism which may indicate a ban on transferring data across borders as part of economic policy. Requiring local data storage can be part of this national program. "Data sovereignty" is an included term – a guarantee to ensure that national laws apply to data even when it is originally located outside the borders of a country. Other researchers have an alternative understanding of data sovereignty, which necessarily places data in national regions. Another term widely used in India and other countries to justify data localization is "data colonialism". Broadly speaking, the 'Data colonialism' is understood by data-driven capitalism of modern Western digital businesses with an understanding of data-centered income incentives and behavioural changes that are compatible with past colonial hunting practices.

Basu, et. al. (2019) consider that the way in which local games of chance are applied that determines how these data fit into nationalist tools. The goal is to have "data sovereignty" without implying more "protectionism" so that India can uphold its laws without having to enter into diplomatic or legal agreements with foreign stakeholders in the wrong place. The digital population is increasing in ASEAN countries. In 2016, the number

of internet users worldwide was 1.3 billion; most of them in Southeast Asia alone, which has more than 3 million digital population. Besides, in Southeast Asia, there are almost 306 million active social media users, and this number continues to increase. Data localization can include a broad citation of the ramification of life, business activities and government functions of a large digital population. Typically, two locks are involved. The first regional approach to controlling ASEAN members over data transfer, individually or collectively, has a direct effect on the full realization of the possibilities envisaged by the AEC 2025 Action Plan. In addition, their regulatory approach can be involved in the formation of the international arena. Many ASEAN members have evolved considerably in recent mega-territories, in particular the TPP and the RCEP. Presumably, given the strong power of these common markets, these initiatives have spread to other forums and could serve as a model for digital business administration. In ASEAN and beyond, the development of new laws or policies will be dynamic; generally, it is the strengthening of processes that must be taken into account.

The first attempt to control data flows took place in the 1970s. The national effort gained momentum after the hanging of Edward Snowden, which sparked a heated debate over intelligence and the number of alarms necessary to protect privacy and information. Governments around the world have been called upon to take action to restore confidence in the online environment. Rightly or wrongly, one way to do this is to prevent data from "travelling to incredible regions or infrastructure of countries". Today, more than a dozen governments from developed and developing countries, including some ASEAN members, are considering or implementing relevant policies. These steps can be classified into three types individually in terms of objectives, scope and application, described below. Camp governments are taking a strict approach to retain data on facilities physically located within geographic boundaries. Given the RCEP and its implications for ASEAN members, China's actions are particularly intriguing. Long before the cyber-security law was passed, China has addressed several laws for relatively important issues across the border - for example, national privacy laws, which generally do not exclude China. The data is deemed to include but is limited to "State Secret" and among other things, a more fully involved framework for data transfer is found in Article 37 of the Cyber-security Law, which requires "personal information" by "critical information infrastructure operators" and others important data collected or produced in mainland China within the country's borders (CII operators). The former says that, all kinds of information is recorded electronically or by other means and taken in isolation or with other information, which is not sufficient to identify the identity of the

natural person. In accordance with the draft "Regulation on the protection of protecting the security of critical information infrastructures", public communication and information services, public finances, public service, energy, water resources, transport, electronic communications and all other activities must be used. Worse still, there is no exemption from obtaining data from foreign and foreign companies on this national local storage mandate.

Research Gap

In this paper the researcher has tried to find out the impact of government's active participation on framing the law for localizing the data storage on E-Commerce business in India. Yet, no research or less research has been conducted to find out the influence of data localisation on E-Commerce. This study reveals gap between various emotional and financial encounters the Indian consumers and businesses come across on the wake of data localisation. As on date in India no research has been carried out to study how the users' Education level restricts the end users to stay away from disclosing their personal data to the online retailers. From the literature the researcher failed to find the end users' intention to disclose their personal data based on their urgency level for consumption of any particular item. The researcher also failed to find linkage of end users' geographical location and its intention to disclose their personal information to the online retailers. Thorough study of previous researches carried out by the preceding authors failed to highlight the differentiation between two groups of data, where one group comprised of users' Education level, Urgency level, and Geographical location, while the other group dealt with disclosure of the users' personal data. In this study, the researcher has sought after the following objectives:

- To study how the users' education level significantly differs the end users in disclosing their personal data.
- To investigate how the users' urgency level for consumption significantly differs the end users in disclosing their personal data.
- To examine how the users' geographical location significantly differs the end users in disclosing their personal data.

Hypotheses of the Study

In order to achieve the objectives of this present study, the following hypotheses are stated as:

- H1: The users' education level does not significantly differ the end-users in disclosing their personal data.
- H2: The users' urgency level for consumption does not significantly differ in disclosing their personal data.

- H3: The users' geographical location does not significantly differ in disclosing their personal data.

Research Methodology

In this research the attempt has been made to test the influence of data localisation on the consumers and the individuals involved in online business. In this research five assumptions were taken and the three close ended questions were asked to the participants grouped under two broad heads one is the consumers and the second is the online business owners. Towards ensuring that the consent to provide personal data more informed and meaningful, the Justice B.N. Srikrishna committee pointed out the revised notice and choice framework need to be modified and designed to make data storing corporations to communicate the terms of consent to data principals in a clear form with utilitarian defined obligations. The committee was not clear about the standard of clarity that might be required in communicating consent. They are of opinion that the EU mandates that the consent must be freely given, specific, informed and unambiguous for processing of personal data. Since consent is prominently considered method of data collection, for validity of consent; the committee recommended the collection of data must be based on the following five principles i.e. 1) free, 2) informed, 3) clear, 4) specific and 5) capable of being withdrawn.

Since this research is relatively new for mass research, the researcher unable to find adequate secondary data. Taking this into consideration the present study used only primary data to test the research hypotheses. The study has used stratified sampling for adequate representation of both male and female respondents and the convenient sampling as the study has no previous information about the respondents. Thus, the study uses the combination of stratified and convenient sampling for the collection of data that is to be used in the research. The study collected data from four categories of people firstly the technical expert working in IT companies, secondly middle level managers working in the MNCs and those who use data for making strategies, Thirdly researchers and management faculty members teaching IT and Marketing, and finally law enforcement officers like police and lawyers. Since the population was not definite the researcher has followed the method prescribed by Cochran, W. G. (1963), based on which 430 questionnaires were distributed among respondents. Finally, the researcher found 342 responses worthy for considering in this research. The study has used the google forms for collection of data, sent questionnaires to the respondents in their E-mail with a request letter for providing honest and accurate data. Since the sample collection lacks human interaction there is higher chance of personal bias while filling up the form. It was

observed that the forms those were received from all across the country and none of the place managed to hold more than 15% weightage in the whole data. Therefore, geographical distribution was not considered in this research.

Findings and Discussion

To test the above mentioned three Hypotheses ANOVA test was utilised and the results are as follows:

Null Hypothesis-1: The users' education level does not significantly differ the end-users in disclosing their personal data.

Validity of Consent	Education level					Total
	Under Metric	Intermediate	Graduate	Postgraduate	Professional	
Free	4	13	16	13	8	54
Informed	9	11	17	22	10	69
Clear	8	11	19	20	18	76
Specific	4	16	26	22	19	87
Capable of Being Withdrawn	5	9	11	14	17	56
Total	30	60	89	91	72	342

SUMMARY

Groups	Count	Sum	Average	Variance
Under Metric	5	30	6	5.5
Intermediate	5	60	12	7
Graduate	5	89	17.8	29.7
Postgraduate	5	91	18.2	19.2
Professional	5	72	14.4	25.3

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	498.64	4	124.66	7.189158	0.00093	2.866081
Within Groups	346.8	20	17.34			

From the above ANOVA table, it was evident that the F value is more than the F critical value i.e., 7.189>2.866 and the corresponding p-value is less than 0.01. Hence as per the result, the null hypothesis will be rejected. In other words the users' education level significantly differ the end-users in disclosing their personal data.

Null Hypothesis-2: The users' urgency level for consumption does not significantly differs in disclosing their personal data.

Validity of Consent	Urgency Level				Total
	Highly Urgent	Urgent	Indifferent	Not Urgent	
Free	9	13	18	14	54
Informed	14	17	17	24	72
Clear	16	21	21	21	79
Specific	8	26	27	27	88
Capable of Being Withdrawn	11	12	11	15	49
Total	58	89	94	101	342

SUMMARY

Groups	Count	Sum	Average	Variance
Highly urgent	5	58	11.6	11.3
Urgent	5	89	17.8	33.7
Indifferent	5	94	18.8	34.2
not urgent	5	101	20.2	31.7

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	216.2	3	72.06667	2.599339	0.08813	3.238872
Within Groups	443.6	16	27.725			
Total	659.8	19				

From the above ANOVA table, it was evident that the F value is less than the F critical value i.e., 2.599 < 3.239 and the p-value i.e., 0.088 > 0.05. Hence the Null Hypothesis will be accepted, i.e., the statement "The users' urgency level for consumption does not significantly differ in disclosing their personal data" has been accepted. In other words the users' urgency level for consumption significantly differs in disclosing their personal data.

Null Hypothesis-3: The users' geographical location does not significantly differ in disclosing their personal data.

Validity of Consent	Urgency Level			Total
	Urban	Semi-Urban	Rural	
Free	28	22	29	79
Informed	24	27	19	70
Clear	22	23	21	66
Specific	17	21	33	71
Capable of Being Withdrawn	21	17	18	56
Total	112	110	120	342

SUMMARY

Groups	*Count*	*Sum*	*Average*	*Variance*
Urban	5	112	22.4	16.3
Semi-urban	5	110	22	13
Rural	5	120	24	44

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	11.2	2	5.6	0.229195	0.798575	3.885294
Within Groups	293.2	12	24.43333			
Total	304.4	14				

From the above ANOVA table, it was evident that the F value is less than the F critical value i.e. 0.229 < 3.886 with a p-value greater than 0.05. Hence, the null hypothesis will be accepted which states that the users' geographical location does not significantly differ in disclosing their personal data. Hence to reject the alternate hypothesis i.e., The users' geographical location significantly differentiates in disclosing their personal data.

Result

Sl. No.	Hypothesis	Test Statistics	Finding	Result
1	The users' education level does not significantly differ the end-users in disclosing their personal data.	ANOVA	7.189>2.866	Rejected
2	The users' urgency level for consumption does not significantly differ in disclosing their personal data.	ANOVA	2.599<3.239	Accepted
3	The users' geographical location does not significantly differ in disclosing their personal data.	ANOVA	0.229<3.886	Accepted

Theoretical Implications

The negative after effect of data theft is still not publicly available in large quantity it is the researchers and the academicians who need to continuously work on finding out the effect of data localisation on different stakeholders.

Managerial Implications

Since the government of India has given more stress on digitalisation of business and governance there is a greater chance for data migration i.e. the personal information of citizens is revealed to an outsiders who live away from India. This brings in breach of privacy. If this information will be localised the operation cost for the data storing companies will increase and it directly or indirectly will put pressure on the costing of the products. The decision of RBI for data localisation of financial information of Indians will definitely curb the international hacking problems.

Conclusion

The results show that the impact of data localisation still not felt by both the consumers and the people involved in online business. Since there is a strong security concern from various agencies, the government has taken its first step to localise the data and has asked the companies involved in data gathering to store these data in the servers located in India. Again since this is the new topic and emerging area it was observed that the respondents were not aware of these cases, because of which there were to be elaborated before asking them the questions about their idea of disclosure of their personal information and the importance of the cautious approach in revealing their personal and financial information.

References

Adam Moore, (2007). Toward Informational Privacy Rights, 44 *San Diego Law Review*at. 812.

Allan Gotlieb et al., (1974). The Transborder Transfer of Information by Communications and Computer Systems: Issues and Approached to Guiding Principles, 68 Am. J. Int'l L. 227, 246.

Anita L. Allen, (2003). Why privacy isn't everything: feminist reflections on personal accountability, 115-16.

Anupam Chander, Uyên P. Lê, (2015). Data Nationalism, 64 Emory L.J. 677, http://law.emory.edu/elj/content/volume-64/issue-3/articles/data-nationalism.html;

B. W. Schermer et al. (2012). Technology Law, The crisis of consent: how stronger legal protection may lead to weaker consent in data protection, 273.

Basu, A. et al.(2019). The Localisation Gambit, Unpacking Policy Measures for Sovereign Control of Data in India, The Centre for Internet and Society, India. Retrieved from https://cis-india.org/internet-governance/resources/the-localisation-gambit.pdf

Castro, D. (2013). The False Promise of Data Nationalism, December 2013, http://www2.itif.org/2013-false-promise-data-nationalism.

Chelliah, C. (n.d.) With Data Sovereignty, Location Isn't Everything. https://www.oracle.com/uk/cloud/paas/features/data-sovereignty.

Christopher Kuner (2013). Transborder Data Flows and Data Protection Law, 26-7. 10.1093/acprof:oso/9780199674619.001.0001.

Cochran, W. G. (1963). Sampling Techniques (2nd Ed.), New York: John Wiley and Sons, Inc.

Couldry, Nick & Mejias, Ulises (2019). Data colonialism: rethinking big data's relation to the contemporary subject. *Television and New Media*.20(4), 336-349.

Ferracane, M.F. & Marel, E. (2018). The Cost of Data Protectionism, October 2018. http://ecipe.org/blog/the-cost-of-data-protectionism.

Florian Schaub et al. (2015). A design space for effective Privacy Notices (Symposium on usable privacy and security, 2015) at p. 2; LF Cranor, Necessary but not sufficient: Standardized mechanisms for privacy notice and choice.

Graham Greenleaf & Scott Livingston,(2017). China's New Cyber Security Law – Also a Data Privacy Law?, 144 Privacy Laws & Bus. Int'l Rep., 1-7.

https://meity.gov.in/writereaddata/files/Data_Protection_Committee_Report.pdf.

https://uknowledge.uky.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1593&context=law_facpub.

John Kleinig (2009). The Nature of Consent in The Ethics of Consent-Theory and Practice (Alan Wertheimer and Franklin Miller (eds.), Oxford University Press, 2009, 4.

Jonah Force Hill(2014). The Growth of Data Localization Post-Snowden: Analysis and Recommendations for U.S. Policymakers and Industry Leaders, *Lawfare Research* Paper Series 3 (2014), https://lawfare.s3-us-west-2.amazonaws.com/staging/Lawfare-ResearchPaper-Series-12(3).

Joshua Meltzer, (2013).'The Internet, Cross-Border Data Flows and International Trade' [2013] Issues in Technology Innovation.https://www.brookings.edu/wp-content/uploads/2016/06/internet-dataandtrade-meltzer.pdf.

Justice B.N. Srikrishna Committee report (2018). A Free and Fair Digital Economy, Protecting Privacy, Empowering Indians. Committee of Experts under the Chairmanship of Justice B.N. Srikrishna.

Kuner, C. (2015). Data Nationalism And Its Discontents. *Emory Law Journal*, 2089-2098. https://brusselsprivacyhub.eu/onewebmedia/kuner,

Labour, J (2018). Data sovereignty: What you need to know and why you should care. https://cira.ca/blog/state-internet/data-sovereignty-what-you-need-know-and-why-you-should-care.

Reidenberg et al. (2015). Privacy Harms and the effectiveness of the Notice and Choice Framework. *Journal of Law and Policy for the Information Society*, 11(2), 485-524.

Ryan M. Calo (2012). Against Notice Skepticism in Privacy (and Elsewhere). *Notre Dame Law Review*, 87(3), 1049.

Sanjay Kishan Kaul, J., in Puttaswamy, (2017). referring to the Second Circuit's decision in Haelan Laboratories v. Topps Chewing Gum. 202 F.2d 866 (2d Cir. 1953).

Scott Shane (2013). Ex-Contractor Is Charged in Leaks on N.S.A. Surveillance, N.Y. Times, June 21. www.nytimes.com/2013/06/22/us/snowden-espionage-act.html?mcubz=1.

Shin-Yi Peng& Han-Wei Liu, (2017). The Legality of Data Residency Requirements: How Can the Trans-Pacific Partnership Help?. *J. World Trade*, 51, 183, 190.

Simon Kemp (2017). The Full Guide to Southeast Asia's Digital Landscape, *Techin Asia*, Feb. 8. www.techinasia.com/talk/full-guide-southeast-asia-digital-landscape-2017

Woods, Andrew Keane (2016). Against Data Exceptionalism (March 8). *Stanford Law Review,* 68, 729. https://ssrn.com/abstract=2745038.

Zachary D. (2016). Clopton, Territoriality, Technology, and National Security. *U. CHI.L.REV*, 45, 83.

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Impact of MGNREGA on Employment Generation in Haryana

Mukesh Chahal*
Pardeep Kumar**

Abstract

Mahatma Gandhi National Rural Employment Guarantee scheme is as a flagship program by the Government of India started on February 2, 2006. As per the Scheme, each rural household gets 100 days of guaranteed employment (unskilled works) every year. Although the major objective of this scheme is to provide livelihood security for rural households, it also facilitates the creation as well as maintenance of rural infrastructure and employment generation. The present paper is an attempt to overview the impact of MGNREGA on employment generation in rural Haryana. It also examined the financial progress of MGNREGA and employment generated by this scheme. The study revealed that MGNREGA plays a significant role in employment generation in rural Haryana. To perform the objective of the paper secondary data has been used. The finding of the study reveals that MANREGA plays an important role in employment generation in rural Haryana. It not only provides security for food but also supports rural development.

Keywords: Employment Generation, MGNREGA, Rural Economy

Introduction

With two-third population of the country is living in rural areas; development initiatives in the rural sectors have immense importance for India. The main source of employment, as well as livelihood within this rural population is agriculture. Frequent climatic changes have affected agrarian life badly and with no other means of income; they keep falling deep into the pit of poverty. Substantially, in rural India, poverty and unemployment are prolonging and it is also having a negative impact on overall development.

* Research Scholar, Department of Economics, Niilm University Kaithal, Haryana and can be reached at mukesheconomics@gmail.com

** Dean & Prof. of Economics, Niilm University Kaithal, Haryana and can be reached at drpardeepkumar27@gmail.com

Taking this major problem into account, the Government of India launched its flagship scheme Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) through the Mahatma Gandhi National Rural Employment Guarantee Act in 2005. MGNREGA scheme provides a unique rights-based guarantee of employment for people living in rural areas. The Act mandates the provision of at least 100 days of guaranteed wage employment in a financial year, within 5 km of an applicant's residence, to every rural household whose adult member's unpaid assistant to do unskilled manual work. As employment under MGNREGA is legally conditioned, a minimum wage is to be paid for the labor work and if the government fails to provide employment over a period of 15 days, it has to provide unemployment allowances to those people. The short-term objective of MGNREGS is to provide employment opportunities to unskilled labor. The long-term objectives include livelihood security and transformation of rural economy through productive assets creation. It also aims to empower women through providing work in the vicinity and reducing migration.

Review of Literature

Sadashivam (2011) mentioned some key challenges in MGNREGA, since workers are likely to prepare employment guarantee scheme work with higher wages to local farm work at low wages. The operational guidelines of MGNREGA detail a household as a nuclear family and there is still a lot of confusion about the definition. When the program involves hard physical labor, old people and some people who are physically challenged may also not be in a position to as much hard manual labor. For improving the efficiency and transparency of operational processes of MGNREGA in real many parts of the country do not have the minimum facilities like electricity broadband internet and computer and software are of the old version and not updated timely.

Prasad (2012) has studied the performance of MGNREGS serves as safety armor for the unemployed during famine and drought. It enables the workers with satisfactory purchasing power to at least support their basic needs and stopped migration to the cities. It is also involving them in other nonagricultural work and will also improve the rural infrastructure. It will ultimately lead to sustainable development.

Sunil and Anupriya (2015) concluded that the increase in income was not satisfactory even it somehow increases the standard of living of the respondents and very few percentages of households did utilize 100 days of wage employment. The scheme is not fully and uniformly implemented in all the surveyed villages and it was successfully implemented in some villages. The assets created under the scheme were not proved for immense use and in some villages the scheme has increased irrigation facilities. They further concluded that the impact of the scheme on the economy was not equal.

Objectives of the Study

- To examine the importance of MGNREGA for the generation of employment in Rural Haryana.
- To examine the financial progress in MGNREGA in rural Haryana.

Research Methodology

Methodology plays a main role in the research process. It not only helps the researcher to formulate the research question but also plays an important role in the research process. It also guides him to answer the questions related to a research problem. Following are the details of broad areas of research methodology. Research methodology as far as the approach to research in the present study is concerned, secondary data have been collected from different articles, research papers, reports, journals, newspapers, and websites. The present study is based on secondary data, wherein secondary data comprises the information from 2016-17 to 2020-21.

Results, Analysis and Discussion

State Profile of Haryana

The state of Haryana is a landlocked state situated in the northern part of India and came into existence on 1st November 1966. The total geographical area of the state is 44,212 km^2, which is 1.4 % of the geographical area of the country. Haryana is located between the Shivalik hills on the northeast and the Thar Desert on the southwest. Haryana is bound by Uttar Pradesh in the east, Punjab in the west, Himachal Pradesh in the north, and Rajasthan in the south. It has Union territory, Chandigarh as its capital. On the basis of state per capita income Haryana is one of the wealthiest states of India.

MGNREGS in Haryana

In Haryana also, MGNREGS was launched in three phases. On 2nd February 2006, the scheme was launched in two districts viz. Mahendergarh and Sirsa. It was extended to two more districts, Ambala and Mewat, on 1st April 2007. The scheme has been covering all the districts under the scheme with effect from 1st April 2008.

Table-1: Current Status of MGNREGA in Haryana State

Total No. of Job Card issued [In Lakhs]	11.56
Total No. of Workers [In Lakhs]	20.33
Total No. of Active Job Cards [In Lakhs]	5.44
Total No. of Active Workers [In Lakhs]	7.97
(i) SC worker % against active Workers	45.61
(ii) ST worker % against active Workers	0

Source: www.nrega.nic.in

Table-2: Trends and Progress of Employment Generation In Haryana

Year	Person Days Generated so far (in lakhs)	SCs Person Days % as of Total Person Days	ST Person Days % as of Total Person Days	Women Person Days out of Total (%)
2016-17	84.92	50.01	0.01	45.62
2017-18	97	47.66	0.01	48.64
2018-19	77.9	45.58	0.01	50.05
2019-20	91.19	42.14	0.02	50.09
2020-21	180	36.21	0.00	48.8

Source: www.nrega.nic.in

MGNREGA and employment generation in Rural Haryana: Table-2 shows that the progress of employment generation in rural Haryana. Person employment generated days during the year 2016-17 was 84.92 lakhs and it increased to 180 lakh person-days in 2020-21. Above 48 percent of the beneficiaries of the scheme are women. From the overall data, we can observe that rural women have started more participating in MGNREGA. The percentage of employment provided to women is increasing in starting four years and has been shown in the Figure-2.

Figure-1: Employment Generation

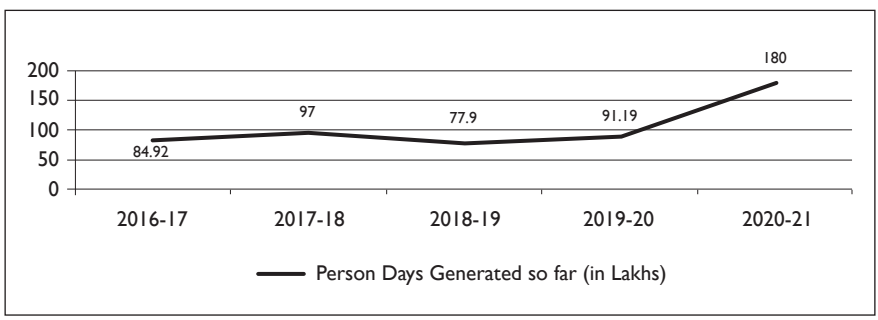
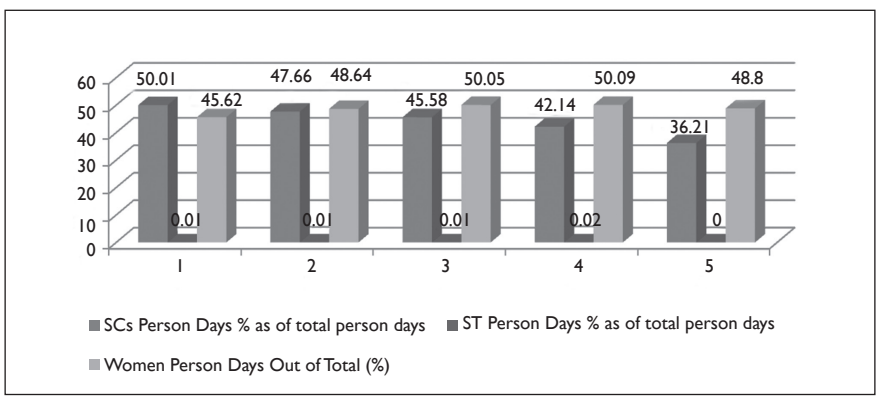


Figure-2: Percentage of Number of Person Days by Category Wise in Haryana



Source: Based on Table-2

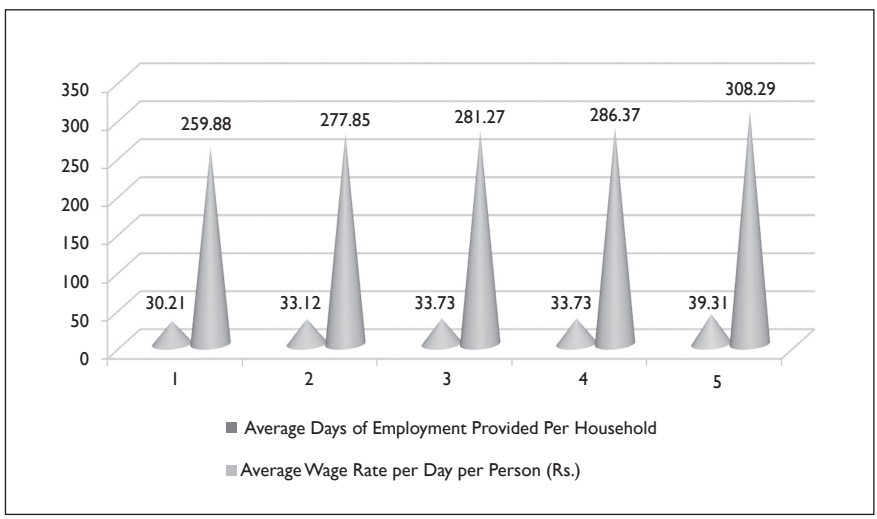
Table-3: Average Days Employment Provided and Average Wage Rate in Haryana

Year	Average Days of Employment Provided Per Household	Average Wage Rate Per Day Per Person(Rs.)
2016-17	30.21	259.88
2017-18	33.12	277.85
2018-19	33.73	281.27
2019-20	33.73	286.37
2020-21	39.31	308.29

Source: www.nrega.nic.in

Interpretation: The above table shows that if we compare the Average days of employment provided per household it increased to 30.21 days during 2016-17 and to 39.31 days during the 2020-21 financial year. In case of Average wage rate per day per person indicate an increasing trend during each financial year. In 2016-17 it increased to Rs.259.88 and in 2020-21 it increased to Rs.308.29.

Figure-3: Avg. Days of Employment & Avg. Wage Rate in Haryana (Financial year wise)



Source: Based on Table-3

Financial Progress: Fund Availability and Expenditure on MGNREGA

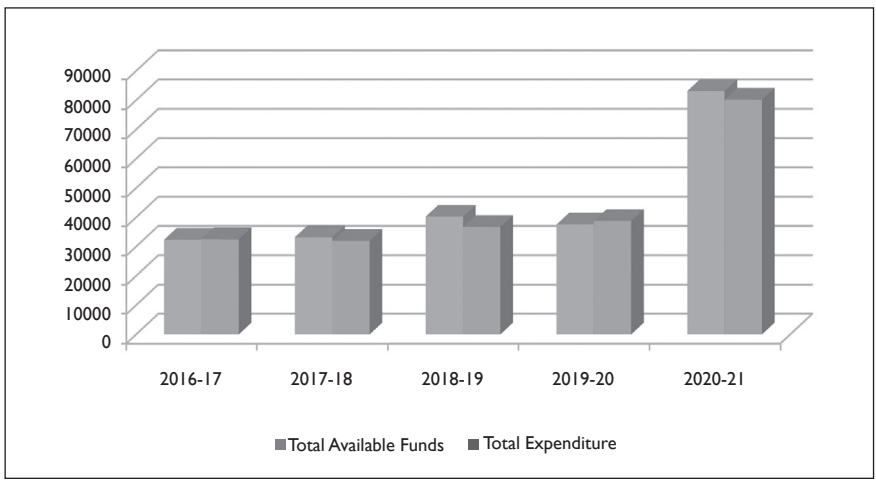
Central and state governments both were releasing sufficient funds for proper implementation of this scheme, as it is clear from Table-4 that available funds in the financial year 2019-20 and 2020-21 were 37582.34 lakh rupees and 83154.97 lakh rupees whereas the expenditure incurred during those years was 38795.81 lakh rupees and 80262.25 lakh rupees. Table analysis the financial progress through the total expenditure.

Table-4: Total Funds and Total Expenditure under MGNREGA in Haryana State (in Lakhs)

Financial Year	Total Available Funds	Total Expenditure
2016-17	32391.57	32542.83
2017-18	33245.24	31976.24
2018-19	40281.99	36788.40
2019-20	37582.34	38795.81
2020-21	83154.97	80262.25

Source: www.nrega.nic.in

Figure-4: Total Funds and Total Expenditure Under MGNREGA in Haryana State (in Lakhs)



Source: Based on Table-4

Distribution of Expenditure under MNREGA in Haryana State

Expenditure on wages, expenditure on material and skilled wages, and total admin expenditure funds has been calculated and given in Table-5.

Table-5: Distribution of Expenditure under MNREGA in Haryana State

Year	Total Expenditure	Expenditure on Wages (Rs. in Lakhs.)	Material and Skilled Wages (Rs.in Lakhs)	Total Admin Expenditure
2016-17	32542	23087	8543	912
2017-18	31976	24868	5962	1145
2018-19	36788	22464	13045	1278
2019-20	38795	26593	11044	1159
2020-21	80262	54907	24029	1325

Source: www.nrega.nic.in

Interpretation: The above table shows that expenditure on Wages was 23087 lakh rupees during 2016-17 while 54907 lakh rupees in 2020-21. Maximum expenditure on wages was in 2020-21, i.e., 54907 lakh rupees. Table-5 shows that expenditure on materials and skilled wages was minimum during 2017-18, i.e., 5962 lakh rupees, while maximum expenditure on material and skilled wages was in 2020-21, i.e., 24029 lakh rupees.

Conclusion

MGNREGA is one of the rural development programs implemented in India that gained wide acceptance. The important objective of all development plans in India has been to increase the labor force along with providing employment to the unemployed. The future challenge is not only to generate more employment but also to increase the average productivity in all jobs. It was assumed that growth would automatically solve the problem of unemployment. However, past experience indicates that a high rate of growth is a necessary, but not a satisfactory condition to solve the problem of unemployment. One of the biggest challenges that India is facing in the post-reform era is of generating enough employment to keep pace with the increases in labor forces.

Since independence MGNREGA is the major rural employment generation scheme in India. This scheme not only secures 100 days job but also provides minimum earnings for every adult of every household at a similar time. It satisfies some other aspects of environmental protection, social protection, and rural infrastructure development, promotes women empowerment gender equality, asset creation, and improvement of the migration problem. Accordingly, MANREGA is acting as an important tool not only for employment creation. Apart from it providing equal participation opportunities to rural poor females promotes gender equality in the workplace. MGNREGA not only decreased unemployment but also develops rural development.

References

Sundaram (2008). Employment, Wages, and Poverty in the Non-Agricultural Sector: All –India, 2000-05. *Economic Political Weekly*, 43, 14-27.

Roy, D.S., & Samanta, D. (2009). Good Governance and Employment Generation through NREGA: A Case Study of Gram Panchayat in West Bengal. Presented in Conference on `Infrastructure, Finance, and Governance: Push for Growth`, New Delhi, India.

Jha, R., Bhattacharyya S., Guiha R. & Shenkar S. (2009). *Journal of Asian Economics*, 456-464.

Jahan, R. (2010). Dynamics of Implementation of 100 Days Employment Generation Program: A Study of Mouchak and Holdia Union Parishads. Master in Public Policy and Governance Program Dept. of General and Counting Education North University, Bangladesh.

Kumar, B., & Rengasamy, K. (2012). Participation of Rural Workers in the Mahatma Gandhi National Rural Employment Guarantee Act in India. *International Multidisciplinary Research Journal,* 89-90.

Prasad, K. (2012). Performance of Mahatma Gandhi National Rural Employment Guarantee Act MGNREGA: An Overview. *International Journal of Management & Business Studies*, 2 (4), 99-103.

Kareemulla, K., Ramasundaram, P., Shalander., & Rao C.A. (2013). Impact of National Rural Employment Guarantee Scheme in India on Rural Poverty and Food Security. *Current Agriculture Research Journal*, 1, 13-28.

Navtej, S. (2018). Effect of MGNREGA on Employment Opportunities in Rural India. *Demography India*, 155-162.

Mishra, A. (2018). MGNREGA and Employment Generation in India. *International Journal of Research in Social Sciences*, 8 (9), 146-154.

www.wikipedia.org

www.nrega.nic.in

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Financial Inclusion through PMJDY and Economic Growth Linkage: Evidence from All Districts of Odisha

Debananda Behera*

Abstract

The objective of the present work is to look into extent of financial inclusion in Odisha before implementation of PMJDY and after implementation and to access the impact of financial inclusion dimension on economic growth in Odisha. To access extent of financial inclusion, Financial inclusion Index is constructed in all districts of Odisha and to ascertain impact of financial inclusion dimension on economic growth correlation and regression are adapted. The study finds that after implementation of PMJDY financial inclusion index is improved in all districts of Odisha. Banking availability and Banking usage have positive correlation and significant impact on economic growth. There is a positive correlation between banking penetration with economic growth in Odisha. Thus, financial inclusion is main driver of economic growth.

Keywords: Economic Growth, Financial Inclusion, PMJDY

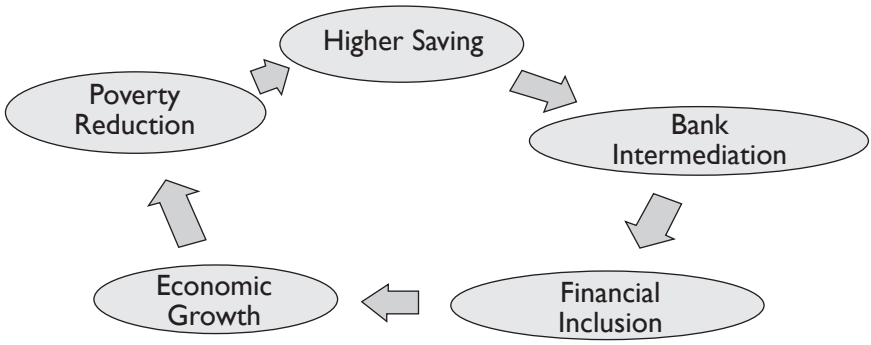
Introduction

Financial Inclusion is a panacea in a underdeveloped financial sector and in a weak public financial participation. It emerged that the development of financial sector to world-class level with more globalized manner, financial inclusion is defined as a continuous process which includes unequal sections of people under a common roof of financial system i.e., people in less income brackets, the poor and the unbanked sections including migrants and makes them with the basic financial services with accessibility, affordability and usability (Sethi D. & Acharya D, 2019). Firstly, Financial exclusion is like a black spot in the sky of economic

* Ph.D. research scholar in Department of Analytical and Applied Economics, Utkal University, Vanivihar, Bhubaneswar, Odisha and can be reached at:debanandabehera13@gmail.com

development with poor supply of financial infrastructure (Gurley and Shaw, 1955). Secondly, it is found out that financial inclusion enhances economic growth by mitigating gap of inequality, solving unemployment problem and eradicating poverty. Financial inclusion refers to a process which provides financial services at a reasonable cost (Claessens 2006, p. 210), which ensures the accessibility, banking penetration and usage of formal financial system (Sarma 2008, p. 3) to people in different socio-economic statuses by providing new innovative approaches. Financial inclusion includes financial education, financial awareness which help individual to access appropriate financial service. According to the Committee on Financial Inclusion i.e., Rangarajan Committee, 2006 about 51.4% of farmer households are financially excluded from both formal and informal sources in India, and about 73% of the farmer households do not access formal sources of credit. Financial development is not simply a fruit of economic growth; it is also the healthy seed to grow economic growth.

In theoretical background, there are three different notions which explain direction of relationship and causality between economic growth and financial inclusivity. Firstly, some economists state that financial inclusivity is required for faster economic growth; which is demonstrated as "supply leading" notion by Schumpeter (1911) and Patrick (1966). Secondly, another group of economists advocates that real economic growth leads to financial development and this view is referred as "demand-following" given by Robinson (1952). Thirdly, it is found out that there is a existence of bidirectional causality between these two variables (Demetriades and Hussein, 1996; Greenwood and Smith, 1997). Financial inclusion plays a vital role to mobilize saving through financial intermediation by which financial sector is a major part of economic development. Financial sector is the managing channel of excessive liquidity by which inflationary pressure is controlled. Smarter allocation of financial resources and efficient use financial product enhance strong entrepreneurship activities and origin new start-ups to obtain more economic growth. Inclusivity in financial sector contributes to decline financial information asymmetry, reduction in transaction costs which accelerate economic growth and development. Direct benefit transfer can be made easy by which policy will be reached at grassroot level. Like vicious cycle of poverty which enforces poor nation to be more poor and rich country to more rich, financial inclusion also signifies linkages between saving generation to economic growth. A country with higher saving leads to more economic growth and poor saving leads to less growth.



Theoretical Framework on the Financial Inclusion – Economic Growth Linkage

Financial inclusion, with accessibility, affordability and usability of formal financial services such as deposit, credit, insurance with securing saving opportunities, has been explained as an engine and driver of economic growth. (Claessens, 2006; Claessens and Perotti, 2007). The economic growth and economic development are interlinked to each other. There is positive correlation between financial development and human development index which is used as a proxy to economic development of India (Deepak and Prakash, 2014). Financial development enforces trade openness which enforces economic growth. So, it is found that the market based and bank-based indicators like call money, CPI and trade as percentage of GDP have a positive role on economic growth in India (Sehrawat and Giri, 2014). Financial sector reform has a positive impact on reduction of rural poverty by which economy attains inclusive growth (Swamy, 2009). Real bank credit has a positive impact on real per capita GDP growth. It is also found that foreign banks assets and other interest-bearing liabilities have positive correlation with economic growth (Hatekar and Singh, 2014). One literature found a strong positive role of financial development on economic growth by using instrumental variable techniques. Under 2SLS regression, the coefficient of credit to NSDP is 0.144 which shows for every 1% rise in bank credit as a proportion of NSDP, the growth rate of NSDP the state is increased by 14.4 basis points per year in India from 1981 to 2011 (Tiwary and Thampy, 2015).

Financial inclusion depends not only on supply side factor but also on demand side factor. Gender equality, Higher income, education level, and occupational structure influence frequency of usage in banking services, ease of accessing banking products easily. Accessibility of banking services has a great association with and use of banking services as main determinant of financial inclusion (Nandru et.al. 2015). In rural area role of SHG and MFI evoke financial inclusion. The supply side issues like

infrastructure and technological problems, unfavorable attitude towards rural credit and man power shortages are the main factor for financial inclusion. On the demand side, inadequate awareness, low financial literacy, vulnerability of small and marginal farmers, low skill and poor market condition are main ingredients. It is found that financial exclusion in terms of accessibility of credit from formal institution is higher for small and marginal farmers (Dev, 2006). As per the performance of commercial banks with respect to financial inclusion vis-à-vis economic efficiency during the post-reform period in India the private banks both domestic and foreign are better placed compared to their public counter parts. In terms of profitability performance Foreign Bank ranked first and Private Bank second, Nationalized Bank remains the least performing bank in terms of profitability in all the years of analysis. In performance in financial inclusion operation, the Nationalized Bank and State Bank Association are far outpaced as compared to Private Bank and Foreign Bank (Nair, 2015)

Some Past Studies on Extent of Financial Inclusion

The index of financial inclusion is constructed by taking the three basic dimensions of an inclusive financial system: banking penetration (BP), availability of the banking services (BS) and usage of the banking system (BU) (Sharma, 2008). It is found that a group of 55 countries for which a 3-dimentional financial inclusion index has been estimated by selecting data in 3-dimentions of financial inclusion internationally. Spain has the highest index value followed by Australia, Belgium, Denmark, Switzerland and Malta with IFI values of 0.5 or more. Other countries like, France Greece, Italy, Malaysia, London from the group of medium financial index value countries with value between .3 and 0.5. All other countries except above countries have low IFI values. Comparing the computed financial index for 1991 and 2001, it is stated that the levels of FI in India have declined from the year 1991 to 2001. However, in all over India and in each of its states, the levels of FI have raised during 2001-2007 (Satya, R. and Rupayan Pal, 2010). In 2008 the Index of Financial Inclusion of India is 0.194 which means it is below 0.3 and hence India has a low financial inclusion. Degree of penetration, availability and usages were 0.185, 0.096 and 0.186 respectively (Bihari, 2011). In 2009, the highest value of IFI is determined in case of Maharashtra followed by Karnataka. West Bengal and Gujarat are sequenced 11th and 12th rank respectively in index of financial inclusion. About 77.5 per cent households are endowed with adequate banking facilities in the locality and 90 per cent households communicate their bank accounts by personal visits but only 5.9 percent households use the ATM cards (Chattopadhyay, 2011). The III (Insurance Inclusion Index) trend shows that Goa ranks with the highest III of 0.99,

followed by Maharashtra, Tamil Nadu, Haryana and Karnataka with 0.62, 0.53, 0.51 and 0.46, respectively. The III of Manipur is '0', since five of six variables are nil (Kumar and Alamelu, 2011). In Odisha, young people within age group of 30 to 40 have the highest usability and accessibility to bank accounts. The data shows that the persons having income of 1000 to 2000 rupees per month do not have any usability and accessibility to bank accounts. But individuals having income level of greater than 4000 per month indicate the highest use and access to bank account. There is a positive relation between education level and access to bank account. Illiterate person in Odisha have more credit availability from non-institutional sources (Patnaik, 2015).

For achieving long term sustainability of economic growth, it is important to bring all the sections of people together. So inclusive financing has a major role in economic growth. But the extent of financial inclusion is not so much supportive to economic growth due to the lack of banking services. India is an agricultural economy with the issue that the major source of credit being informal. So, by enhancing inclusive financing the inequality problem can be sorted out and poverty can be reduced. The incentives from RBI, NABARD and NGOs to build the pillars of financial inclusion are welcome.

Model Specification and Methodology

The approach for constructing the index is similar to the method used by UNDP for computation of some well-known development indexes, such as HDI, HPI, GDI, so on. The status of financial inclusion of different districts of Odisha will be measured by using Index of financial inclusion (IFI). IFI is computed by first calculating a dimension of financial inclusion. The dimension of index for the i_{th}dimension, d_i is computed by the equation (I).

$$d_i = \frac{A_i - m_i}{M_i - m_i} \quad \text{...(I)}$$

Where

A_i= Actual value of dimension i.

m_i = Minimum value of dimension i.

M_i= Maximum value of dimension i.

Equation (I) ensures that $0 \leq d_i \leq 1$. Higher the value of d_i, higher will be the state achievement in dimension i. If n dimensions of financial inclusion are considered, then, a state i will be represented by a point D_i= (d_1,d_2, d_3….d_n) on the n-dimensional Cartesian space. The n-dimensional space, the point O = (0, 0, 0 ….0) represents the lowest achievement while the point I = (1, 1, 1 …1) represent the highest achievement. Then it measured by the normalised inverse Euclidian

distance of the point D_i from the ideal point I= (1, 1, 1…1). The exact equation becomes:

$$IFI_i = 1 - \frac{\sqrt{(1-d_1)^2+(1-d_2)^2+(1-d_3)^2}}{\sqrt{3}} \quad \text{...(II)}$$

In equation (II) the numerator of the second component is the Euclidian distance D_i from ideal point i, normalising it by $\sqrt{n}$ and subtracting 1 gives the inverse normalised distance. The normalisation is done in order to make the value lie between 0 and 1 and the inverse distance is considered so that higher value corresponds to higher financial inclusion.

Financial Inclusion Index is constructed by taking 3 basic dimensions of an inclusive financial system; i.e., banking penetration (BP), availability of the banking service (BS) and usage of the banking system (BS) (Sharma, 2008; Kumar and Alamelu, 2011; Chattopadhyay, 2011).

The main reasons for selecting these dimensions of data availability are:

Dimension 1 (Banking penetration): Banking penetration is taking into huge number of bank deposit and credit accounts per 1000 population as an indicator of this dimension. This uses both deposit account and credit account as the indicator of banking penetration. Thus, if every person in an economy has a bank account, then the value of this measure would be 1 and if every person having not bank account, then the value of this measure 0.

Dimension 2 (Availability of banking services): It can be indicated by the number of bank branches per 1000 population.

Dimension 3 (Usage): We consider the two basic services of the banking system- credit and deposit amount as proportion of the Gross District Domestic Product (GDDP) at constant price at factor cost has been used to measure this dimension.

Thus, considering the above three dimensions - banking penetration availability and usage, we can represent a district i by a point (p_i, a_i, u_i) in the three-dimensional Cartesian space, such that $0 \leq p_i, a_i, u_i \leq 1$. in the three-dimensional Cartesian space. The point indicates (0, 0, and 0) represent lowest position and the point (1, 1, and 1) represents the highest position. The IFI for a district i is measured by the normalized inverse Euclidean distance of the point (p_i, a_i, u_i) from the ideal point (1,1,1).

$$IFI_{i=}1 - \frac{\sqrt{(1-p_i)^2+(1-a_i)^2+(1-u_i)^2}}{\sqrt{3}} \quad \text{...(III)}$$

To give a meaningful understanding of Financial Inclusion Index (FII) of different districts of Odisha, categorization is shown in following table.

Categorization of Index of Financial Inclusion (IFI)

IFI	CATEGORY
0.5-1.00	High Financial Inclusion/ High achiever
0.3-0.5	Medium Financial Inclusion/Average achiever
0.00-0.3	Low Financial Inclusion/worst performer

For analyzing linkage between economic growth and financial inclusion in Odisha the study is adopted a multiple regression model

$Y=f(x)$……. (1)

$Yi = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \varepsilon$……. (2)

Where Y= Economic growth variable (per capita GSDP at constant price).

X= Independent variable (Financial inclusion) whereby as measured by the various indicators of financial inclusion is measures of penetration, availability and usage

X1= Number of bank accounts (per 1000 people),

X2= Number of bank branches (per 1000 people),

X3= Amount of bank credit and deposit as a percentage of state GSDP

$\beta0$= Constant term

$\beta(\beta1, \beta2, \beta3)$= Gradient/Slope of the regression measuring the amount of the change in Y associated with a unit change in X

ε= Error term

The hypotheses are:

H0_1: there is no impact of banking penetration on economic growth;

H1_1: banking penetration affects economic growth;

H0_2: The banking availability does not affect economic growth;

H1_2: Banking availability affects economic growth;

H0_3: Banking Usage does not affect economic growth;

H1_3: Banking usage affects economic growth.

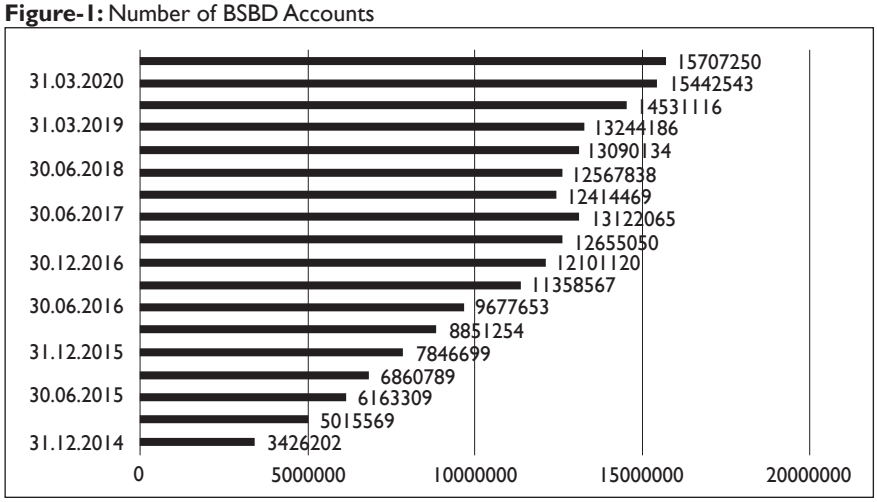
Result and Discussion

In this section we will look into dimensions of financial inclusion, extent of financial inclusion index of 30 districts of Odisha and also focus on financial inclusion and economic growth linkage in Odisha. Basically, in construction of Financial Inclusion Index three dimensions are emphasized i.e. Banking penetration, Availability of banking services and Usage. Odisha is a rural state. About 83.31 percent of total population in Odisha are in rural area. So, more bank branches are increased to provide financial inclusivity. There is a steep increase from 2014 to 2015 due to announcement of PMJDY which needs more branches to provide financial inclusivity.

Banking Penetration

In Banking penetration, there is a steep increase in number of BSBD account from 2014 to 2017 in Odisha. PMJDY was introduced in 2014 in order to increase bank account for inclusion of unbanked people. So, zero bank account are created for financial inclusivity for financial excluded people to provide financial services. In banking penetration PMJDY has greater impact in creation of BSBD account in Odisha.

Figure-1: Number of BSBD Accounts

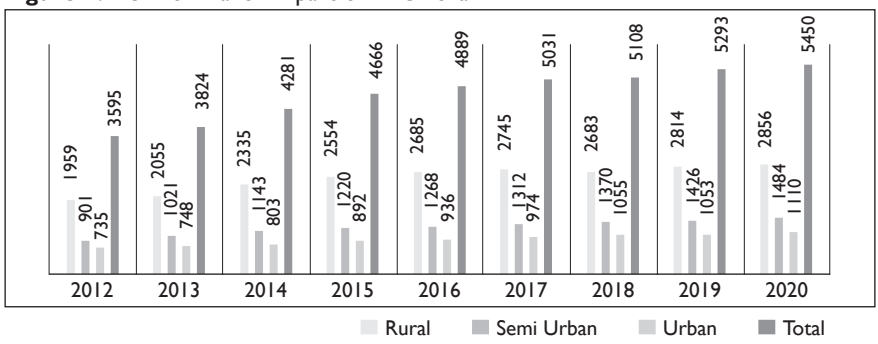


Source: SLBC data of Odisha

Availability of Banking Services

Availability of banking institutions and financial services explains health of good financial system. Rural-urban disparity in availability of financial inclusion violates moto of financial includability and makes hindrance in inclusive growth.

Figure-2: Trend of Branch Expansion in Odisha



Source: SLBC data of Odisha

In rural-urban composition, Odisha is moreover a state having more rural population concentration. So, more bank branches should be generated for the smooth functioning and enforcing financial activities. If rural bank branches per 1 lakh people and urban bank branches per 1 lakh people are compared, urban availability of bank branches is near double of rural availability of branches per 1 lakh population.

Table-1: Rural-Urban Composition of Availability of Bank Branch

Year	Total Rural Bank Branch	Rural Bank per 1 lakh Rural People	Total Urban Bank Branch	Urban Bank per 1 lakh Urban People
2012	1959	5.604	735	10.505
2013	2055	5.879	748	10.691
2014	2335	6.680	803	11.477
2015	2554	7.307	892	12.749
2016	2685	7.682	936	13.378
2017	2745	7.853	974	13.921
2018	2683	7.676	1055	15.079
2019	2814	8.051	1053	15.051
2020	2856	8.171	1110	15.865

Source: Author's own calculation

In area wise comparison, public sector bank per 1000 square kilometer is increasing steadily. But private sector bank per 1000 square kilometer is growing sharply. In 2012, about 13 public sector banks are available in 1000 square kilometer, which is increased to 19 public sector banks. In case of private sector banks only one bank branch is available per 1000 square kilometer, which is increased to 6 in 2020. In 2012, 23 total banks branches are available but it is increased to 35 bank branches in 2020. RRBs per 1000 square kilometer is consistent 5 to 6 branches from 2012 to 2020. Likely cooperative bank branches are also constant in 2 per 1000 square kilometer from 2012 to 2020.

Banking Usability: Banking usability dimension is measured by amount of deposit and credit as percent of Gross State Domestic Product (GSDP). In Odisha more than 100 percent of GSDP is utilized in amount of deposit and credit, which explains good useability dimension. But the gap between deposit and credit as percent of GSDP is widening which means gap between saving and investment is increasing. Saving is leakage to income but investment is an injection.

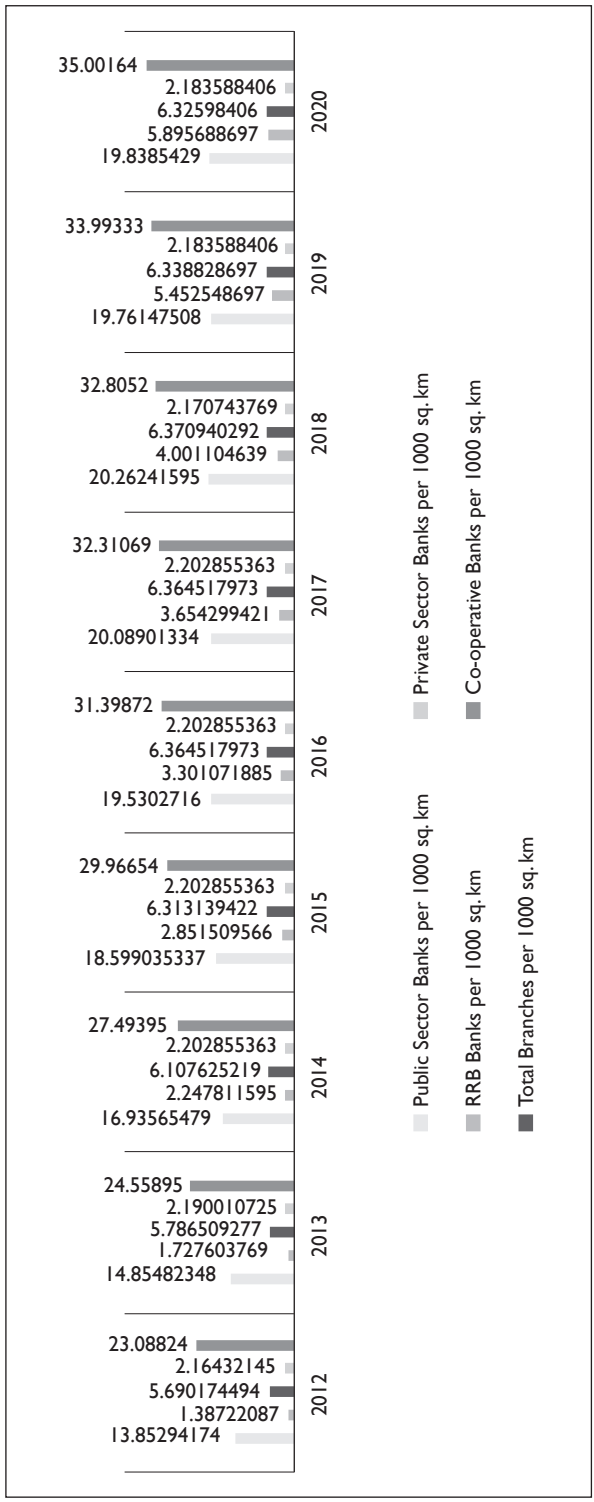
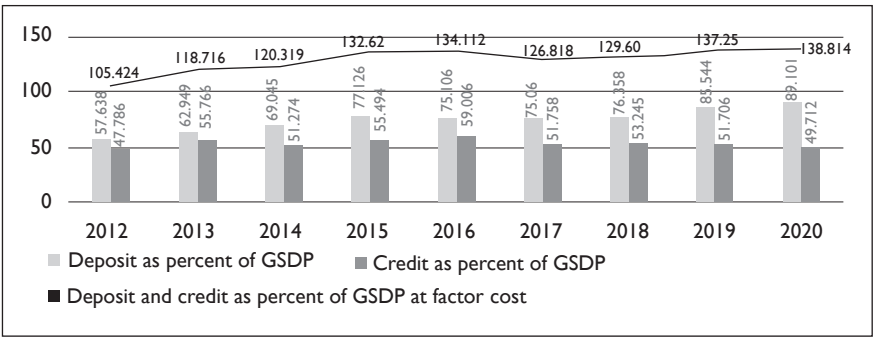


Figure-3: Availability of Financial Services in Odisha

Source: Author's own calculation

Figure-4: Usability Dimension of Odisha



Source: Author's own calculation

Dimensions of Financial Inclusion Index

In banking penetration dimension of Odisha in 2013-14 to 2018-19, all districts are improved in terms of dimension ratio except two districts like Bolangir and Malkanagiri. As PMJDY was introduced in 2014, so in terms of banking penetration it is improved in all districts in 2018-19. In banking availability all districts are improved in terms of dimension ratio in 2018-19 in comparison to 2013-14 except districts like Balasore, Bolangir and Malakanagiri. Likely in banking usability dimension, all districts are improved in terms of dimension ratio except Baragarh and Boudh.

Table-2: Financial Inclusion Dimensions in Districts of Odisha

District	Banking Penetration in 2013-14	Rank	Banking Penetration in 2018-19	Rank	Banking Availability in 2013-14	Rank	Banking Availability in 2018-19	Rank	Banking Usage in 2013-14	Rank	Banking Usage in 2018-19	Rank
Angul	0.236	9	0.533	13	0.355	9	0.385	7	0.044	24	0.091	24
Balasore	0.369	2	0.460	17	0.358	8	0.272	20	0.129	4	0.295	4
Baragarh	0.068	25	0.586	10	0.117	28	0.281	18	0.091	14	0.070	28
Bhadrak	0.280	4	0.489	14	0.188	25	0.250	24	0.128	5	0.158	11
Bolangir	1	1	0.718	4	1	1	0.247	25	0.065	19	0.685	2
Boudh	0	30	1	1	0	30	0.305	16	0.017	29	0	30
Cuttack	0.221	11	0.387	25	0.390	4	0.462	4	0.207	3	0.233	5
Deogarh	0.230	10	0.678	6	0.372	6	0.401	6	0.067	18	0.114	20
Dhenkanal	0.282	3	0.662	7	0.257	17	0.310	14	0.126	8	0.159	10
Gajapati	0.118	22	0.367	26	0.267	16	0.290	17	0.060	21	0.116	19
Ganjam	0.141	18	0.336	28	0.285	13	0.342	11	0.120	9	0.165	8
Jagatsinghpur	0.262	6	0.450	19	0.365	7	0.428	5	0.127	7	0.145	14
Jajpur	0.244	8	0.433	21	0.247	18	0.310	15	0.082	15	0.162	9
Jharsuguda	0.179	15	0.592	8	0.377	5	0.509	3	0.042	27	0.211	6
Kalahandi	0.028	29	0.406	24	0.191	24	0.221	28	0.044	23	0.089	27
Kandhamal	0.072	24	0.435	20	0.228	20	0.252	23	0	30	0.056	29

District	Banking Penetration in 2013-14	Rank	Banking Penetration in 2018-19	Rank	Banking Availability in 2013-14	Rank	Banking Availability in 2018-19	Rank	Banking Usage in 2013-14	Rank	Banking Usage in 2018-19	Rank
Kendrapara	0.192	13	0.431	22	0.201	23	0.234	26	0.106	11	0.155	12
Keonjhar	0.141	17	0.336	27	0.280	15	0.323	13	0.074	16	0.121	18
Khurda	0.276	5	0.587	9	0.778	2	1	1	1	1	1	1
Koraput	0.111	23	0.460	18	0.170	26	0.227	27	0.057	22	0.096	22
Malkangiri	0.065	26	0	30	0.138	27	0	30	0.043	26	0.090	25
Mayurbhanj	0.127	20	0.770	2	0.243	19	0.278	19	0.092	13	0.133	17
Nabarangpur	0.052	27	0.473	15	0.071	29	0.06	29	0.094	12	0.153	13
Nayagarh	0.245	7	0.47	16	0.291	12	0.365	9	0.040	28	0.09	26
Nuapada	0.190	14	0.726	3	0.207	22	0.253	22	0.044	25	0.096	23
Puri	0.214	12	0.571	11	0.299	10	0.364	10	0.127	6	0.198	7
Rayagada	0.031	28	0.282	29	0.212	21	0.260	21	0.063	20	0.100	21
Sambalpur	0.165	16	0.555	12	0.399	3	0.548	2	0.453	2	0.460	3
Sonepur	0.132	19	0.689	5	0.285	14	0.334	12	0.068	17	0.138	16
Sundargarh	0.127	21	0.408	23	0.293	11	0.365	8	0.110	10	0.141	15

Source: Own calculation of author

Financial Inclusion Index of Odisha

In Financial Inclusion Index of 2013-14, 27 districts except Bolangir, Khurdha and Sambalpur have low financial inclusion which are within range of 0 to 0.3. Only Sambalpur has medium financial inclusion and district like Bolangir and Khurdha have high financial inclusion. But in 2018-19, 16 districts like Baragarh, Bhadrak, Boudh, Gajapati, Ganjam, Jajpur, Kalahandi, Kandhamal, Kendrapada, Keonjhar, Koraput, Malakanagiri, Nabarangapur, Nayagarh, Rayagada and Sundargarh have low financial inclusion index. In medium range of financial inclusion index, 11 districts like Anugul, Balasore, Cuttack. Deogarh, Dhenkanal, Jagatsingpur, Jharsuguda, Mayurbhanj, Nuapada, Puri and Sonepur are included. Likely in high financial inclusion range, three districts are included such as Bolangir, Khudha and Sambalpur.

Table-3: Financial Inclusion Index of All Districts in Odisha

District	FII in 2013-14	Rank	FII in 2018-19	Rank
Angul	0.201	10	0.31	13
Balasore	0.277	4	0.33	11
Baragarh	0.092	26	0.281	20
Bhadrak	0.196	11	0.285	19
Bolangir	0.460	2	0.502	3
Boudh	0.005	30	0.297	15

District	FII in 2013-14	Rank	FII in 2018-19	Rank
Cuttack	0.268	5	0.354	7
Deogarh	0.213	8	0.355	6
Dhenkanal	0.219	7	0.343	9
Gajapati	0.144	21	0.25	24
Ganjam	0.179	15	0.276	21
Jagatsinghpur	0.245	6	0.327	12
Jajpur	0.187	13	0.293	17
Jharsuguda	0.188	12	0.414	4
Kalahandi	0.085	27	0.228	27
Kandhamal	0.095	25	0.232	26
Kendrapara	0.165	17	0.264	22
Keonjhar	0.161	18	0.253	23
Khurda	0.563	1	0.761	1
Koraput	0.111	23	0.246	25
Malkangiri	0.081	28	0.029	30
Mayurbhanj	0.152	20	0.335	10
Nabarangpur	0.072	29	0.201	29
Nayagarh	0.185	14	0.29	18
Nuapada	0.144	22	0.304	14
Puri	0.210	9	0.359	5
Rayagada	0.099	24	0.21	28
Sambalpur	0.327	3	0.519	2
Sonepur	0.157	19	0.346	8
Sundargarh	0.172	16	0.295	16

Source: Author's own calculation

Dimension of Financial Inclusion and Economic Growth: Some Linkages

Dimensions of financial inclusion index have correlation with economic growth. Per capita GDDP is used as proxy to measure economic growth at district level. In both 2013-14 and 2018-19 all variables such as per capita GDDP, number of BSBD account per 1000 population, number branch per 1000 population and amount of deposit and credit as proportion of GDDP are positively correlated to each other. So, it is concluded that each dimension such as banking penetration, banking availability and banking usage have positive correlation with per capita GDDP in district level.

Regression analysis is a statistical tool for determining the relationships between independent and dependent variables. In that paper our research objective is to determine the relationship between dimensions of financial inclusion index and economic growth; thus, regression analysis is one of the best statistical tool to analyze this relationship.

Table-4: Correlation between Dimensions of FII and Economic Growth

2018-19					2013-14				
Variable	**Per Capita GDDP**	**Number of BSBD Account Per 1000 Population**	**Number Branch Per 1000 Population**	**Amount of Deposit and Credit as Proportion of GDDP**	**Variable**	**Per Capita GDDP**	**Number of BSBD Account Per 1000 Population**	**Number Branch Per 1000 Population**	**Amount of Deposit and Credit as Proportion of GDDP**
per capita GDDP	1				per capita GDDP	1			
number of BSBD account per 1000 population	0.283196	1			number of BSBD account per 1000 population	0.668841	1		
number branch per 1000 population	0.445818	0.273413	1		number branch per 1000 population	0.752493	0.823868	1	
amount of deposit and credit as proportion of GDDP	0.07304	0.138721	0.672018	1	amount of deposit and credit as proportion of GDDP	0.10155	0.113042	0.505966	1

Source: Author's own calculation

Table-5: Model Summary – Dependent Variable: Per Capita Gross District Domestic Product

2018-19

Constant	Number of BSBD Accounts per 1000 Population	Number Branches per 1000 Population	Amount of Deposit and Credit as Proportion of GDDP	R^2
-0.12113	0.00091	9.918118	-0.34975	0.470
(0.689395)	(0.348795)	(0.00021) *	(0.001883) *	
2013-14				
0.00869129	-0.00122	4.61865	-0.0547	0.692
(0.856939)	(0.189147)	(0.000111) *	(0.003882) *	

N.B.-(*)-significant at 5% level of significance

Source: Author's own calculation

In 2013-14 the goodness of fit in the regression model is 0.692 which means 69.2 percent of dependent variable (per capita Gross District domestic product) is explained by independent variables such as, number of BSBD account per 1000 population, number of branches per 1000 population and amount of deposit and credit as proportion of GDDP. Likely goodness of fit in regression model of 2018-19 stands at 0.470. To test the significance of the coefficients t-test is estimated on the null hypothesis that the coefficient/parameter is 0. Since this is a 2 tailed test, each p value to the predetermined value of alpha which was 0.05(5%) is to be compared. Coefficients having p value less than alpha are usually significant.

In banking penetration dimension null hypothesis is accepted which means there is no impact of banking penetration on economic growth in Odisha. But in banking availability dimension, null hypothesis is rejected and alternative hypothesis is accepted which means banking availability has impact on economic growth or banking availability affects economic growth of the state. Likely in banking usability dimension null hypothesis is rejected and alternative hypothesis is accepted which means banking usability has impact on economic growth or banking usability affects economic growth of the state.

So, it is found out that in penetration dimension, the variable i.e., number of BSBD account per 1000 people is not significant to determine per capita GDDP at factor cost at constant price (2004-05) in the state. But in banking availability dimension, the variable i.e., number branch per 1000 population is significant to determine per capita GDDP at factor cost at constant price. Likely in banking usage dimension, the variable i.e., amounts of deposit and credit as proportion of GDDP is significant to determine per capita GDDP at factor cost at constant price.

Conclusion and Policy Suggestions

The main objective of PMJDY is to increase deposit of financially excluded people by opening zero balance account. There is significant increase of bank accounts from 2013 to 2017 due to the immediate impact of PMJDY. In banking penetration dimension all districts except Bolangir and Malakanagiri are improved in 2018-19 in comparison to 2013-14. So, Banking institutions are to be more alert in these districts to achieve more banking penetration. In terms of banking penetration, number of BSBD account has positive correlation with economic growth of districts but there is no significant impact of banking penetration on economic growth.

In case of banking availability, rural availability of banking branches is almost half of urban availability per 1000 population. In that dimension all districts except Balasore, Bolangir and Malakanagiri are improved in 2018-19 in comparison to 2013-14. So Financial authority and Government should take an effective step to expand branch expansion for which banking services will be easily available to all. As the financial institutions are the intermediary between saving and investment, so banking institution have greater role in economic growth. There is a positive relationship between availability of banking branches per 100 people to per capita GDDP of districts and also there is a significant impact of banking branch availability on economic growth.

In case usability dimension, the increasing gap between deposit as proportion of GSDP and credit amount as a proportion of GSDP widens the gap between saving and investment. In that dimension all districts except Baragarh and Boudha are improved in 2018-19 in comparison to 2013-14. So, in this districts Financial institution should increase their credit deposit ratio (amount of credit financed by bank out of its total deposit). There is a positive relation between per capita GDDP and amount of credit and deposit as proportion of GDDP and also banking usability has significant impact on economic growth.

References

Babajide, A. A., Adegboye, F. B., & Omankhanlen, A. E. (2015). Financial inclusion and economic growth in Nigeria. *International Journal of Economics and Financial Issues*, *5*(3), 629-637.

Bihari, S. C. (2011). Growth through financial inclusion in India. *Journal of International Business Ethics*, *4*(1).

Chakma, J. B. (2014). Financial inclusion in India: A brief focus on Northeast India. *International Journal of Application or Innovation in Engineering & Management*, *3*(11), 224-9.

Charkravarty, S. R., & Pal, R. (2010). Measuring financial inclusion: an axiomatic approach. *IGIDR, WP*.

Chattopadhyay, S. K. (2011). Financial inclusion in India: A case-study of West Bengal.

Claessens, S. (2006). Access to financial services: A review of the issues and public policy objectives. *The World Bank Research Observer*, *21*(2), 207-240.

Dangi, N., & Kumar, P. (2013). Current situation of financial inclusion in India and its future visions. *International Journal of Management and social sciences research*, *2*(8), 155-166.

Dev, S. M. (2006). Financial inclusion: Issues and challenges. *Economic and political weekly*, 4310-4313.

Manjunath, D., & Ramaprasada Rao, C. (2015). The Extent of Financial Exclusion and Financial Inclusion Initiatives in India. *Gundupagi Manjunath & Ramaprasada Rao," The Extent of Financial Exclusion and Financial Inclusion Initiatives in India", Adarsh Business Review*, *2*(1).

Gurley, J. G., & Shaw, E. S. (1955). Financial aspects of economic development. *The American Economic Review*, *45*(4), 515-538.

Hatekar, N., & Singh, S. (2014). Financial Structure and Economic Development: A Case of Indian Economy. *Indian Economic Review*, 205-226.

Kainth, G. S. (2013). Developing an index of financial inclusion. *Anvesha*, *6*(2), 1.

Kumar, N. (2012). An Empirical Analysis of Financial Inclusion Across Population Groups in India. *IUP Journal of Bank Management*, *11*(1).

Deepak, K. V., & Prakash, R. P. (2014). A Conceptual Study On The Role of Financial Inclusion on Economic & Social Development Of India. *International Journal of Management Research and Reviews*, *4*(12), 1151.

Nair, M. S. (2015). Financial Inclusion vis-à-vis Economic Efficiency: The Case of Commercial Banks in India. *Productivity*, *55*(4).

Nandru, P., Anand, B., & Rentala, S. (2015). Financial inclusion in Pondicherry region: evidence from accessibility and usage of banking services. *TSM Business Review*, *3*(2), 1.

Patnaik, B. C. M., Satpathy, I., Litt, D., & Supkar, A. C. (2015). Pradhan Mantri Jan Dhan Yojna (PMJDY) – A new direction for mainstreaming the financially excluded. *International Journal of Management*, *6*(2), 31-42.

Sahu, K. K. (2013). Commercial banks, financial inclusion and economic growth in India. *International Journal of Business and Management Invention*, *2*(5), 1-6.

Sankaramuthukumar, S., & Alamelu, K. (2011). Insurance Inclusion Index: A State-Wise Analysis in India. *IUP Journal of Risk & Insurance*, *8*(2), 18.

Sarma, M. (2008). *Index of financial inclusion* (No. 215). Working paper.

Sarma, M. (2012). Index of Financial Inclusion – A measure of financial sector inclusiveness. *Centre for International Trade and Development, School of International Studies Working Paper Jawaharlal Nehru University. Delhi, India*.

Sehrawat, M., & Giri, A. K. (2015). Financial development and economic growth: empirical evidence from India. *Studies in Economics and Finance*.

Sethi, D., & Acharya, D. (2018). Financial inclusion and economic growth linkage: Some cross country evidence. *Journal of Financial Economic Policy*.

Singh, B. (2011). The microfinance promise in financial inclusion: evidence from Pacific region.

Swamy, V. (2012). Bank-based financial intermediation for financial inclusion and inclusive growth. *Available at SSRN 2126834*.

Thangasamy, E. (2014). Financial inclusion in North-East India: An analytical study. *International Journal of Commerce, Business and Management*, *3*(1), 180-8.

Tiwary, M. K., & Thampy, A. (2015). Financial development and economic growth: Evidence from States in India. *Journal of Finance, Accounting and Management*, *6*(1), 41.

Wang'oo, E. W. (2013). *The relationship between financial inclusion and economic development in Kenya* (Doctoral dissertation, University of Nairobi).

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