Research Article

What Works Best for the Poor in Rural India: Poverty-lending Approach or Financial Systems Approach?

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Abstract

Financial sector development serves poor directly through poverty-lending approach or financial systems approach. Robinson (2001) questions the appropriateness of poverty-lending approach for the extremely poor and supports the financial systems approach for providing a poverty alleviation toolbox to serve the poor at various levels. The present study attempts to assess the effectiveness of the two lending approaches and comments on the appropriateness of the same for the poor and the poorest of the poor in rural India using state-wise annual data from 1999–2000 to 2011–2012. We conduct a panel data analysis for a sample of 15 major Indian states and provide an empirical evidence for the effect of various poverty alleviation tools on the poor and the poorest of the poor in rural India. The study partially supports the use of tools suggested by Robinson.

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Introduction

Financial sector development (FSD) has the potential to affect the degree to which a person can make use of the available economic opportunities. It may affect people's ability to start a business, to pay for education, to pursue economic aspirations and so on. Thus, when served the people below the poverty line, finance has the potential to bridge the gap between the rich and the poor and the degree to which that gap persists across generations. Theory suggests that on one hand, the extensive nature of FSD may result in increased availability and use of financial services by financially excluded individuals benefitting the disadvantaged and reducing the income gap between the rich and the poor (Becker & Tomes, 1979; Greenwood & Jovanovic, 1990). On the other hand, when FSD is intensive, it has its sole focus on expanding the range of financial services for the existing users which include already rich or better-off individuals or well-established firms. FSD, thus, may bridge or widen the income gap or inequality depending on its nature. Financial institutions reach out to the poor through two approaches—poverty lending approach and financial systems approach. While poverty-lending approach promotes provision of formal credit by banks for the poorest of the poor; the financial systems approach promotes provision of commercial microfinance services (savings and credit) for the economically active poor and expenditure on poverty alleviation by the government for the extremely poor or the poorest of the poor.

Advocating the use of financial systems approach, Robinson (2001) suggests that the provision of formal credit by the commercial banks (CBs) is mostly appropriate for lower-middle income households (non-poor) who typically have a relatively reliable income and better health, nutrition, housing and education standards. This suggests that credit, savings and other services by CBs are intensive in nature reaching out to those who are already better-off. Further, the commercial microcredit and microsavings is suitable mostly for the economically active poor who live close to the poverty line. This suggests that microcredit and microsavings is extensive in nature reaching out to the poor. He further questions the suitability of the commercial credit and microcredit for the extremely poor and argues in the favour of expenditure on poverty alleviation programmes that aim at human resource development (education, health and family planning) and infrastructure development (markets, industries, communications, etc.) for the betterment of the extremely poor. This not only benefits the poor at various levels in a more appropriate manner but also ensures the financial sustainability of the lending institutions.

In India, after independence, several efforts in the direction of extensive FSD were initiated to provide access to formal financial services to the rural poor. The nationalization of banks in 1969 and 1980, being the prominent ones, opened up bank branches in the far-flung rural areas. However, the desired results were never obtained (Murty, 2008) because of unmet farm credit needs (Choubey, 1983), exclusion of the 'poorest of the poor' (NABARD, 1999), reduced resource allocation to priority sector on the agricultural credit (Gundannavar, 1992), and

expansion of rural bank branches being 'quantitatively impressive but qualitatively weak' with unprofitability and excluding the poorest as the two key drawbacks (Misra, 2006). The inability of the formal financial services by CBs in reaching out to the rural poor resulted in the introduction of microcredit in India in 1991, which was another effort towards extensive FSD, targeting the rural poor. Since then, there has been tremendous growth in the microfinance sector with more than ₹488.82 billion disbursed to more than 37 million clients as of March 2015 (The Bharat Microfinance Report, 2015). However, across regions, there is lack of convincing evidence that microfinance programmes have positive impacts on its target clients (Armendariz de Aghion & Morduch, 2010; Duvendack et al., 2011). Examining the adequacy of the financial access in meeting the productive investment needs in India in the post-reform period, Bhavani and Bhanumurthy (2012) argue that there exists huge gap in access to finance for productive investments. At household level, the access to financial services is found to be very limited in villages and unequal across households. At sector level, the access to financial services is limited and the overall financial resource gap for the unorganized sector is found to be as high as 68 per cent with agriculture at 49 per cent and service sector at 41 per cent. They also conclude that risk and transaction costs acts as key barriers to access to financial services in the unorganized sector.

The objective of this paper is to analyze the effect of poverty lending approach and financial systems approach on the poor and extremely poor in rural India. The contribution of this paper is manifold. Firstly, our paper attempts to study the effect of bank credit by CBs on the poor and extremely poor in rural India and comments on the effectiveness of the poverty lending approach. Secondly, the paper attempts to analyze the effect of Robinson's poverty alleviation toolbox which includes commercial financial services (microcredit) and the poverty alleviation programmes on the poor and extremely poor in rural India under the financial systems approach. Thirdly, it provides a comparison of the effect of the two lending approaches and comments on the suitability of each in the Indian context. Fourthly, the paper, to the best of our knowledge, is the first ever study to use state-wise microcredit disbursed under the self-help group bank linkage programme (SBLP), the largest financial inclusion programme of the Government of India, to assess its impact on the poor and the poorest of the poor in rural India. Considering the possibility of an endogeneity bias, we use the generalized method of moments (GMM) estimators (Hansen, 1982) and perform a panel data analysis for a sample of 15 major Indian states[1] over the period 1999–2000 to 2011–2012[2]. The selected states together account for about 90 per cent of the total microcredit disbursed under the Self-help Group Bank Linkage Programme, about 80 per cent of the outstanding credit by scheduled CBs and more than 90 per cent of the total population of India.

The rest of this paper is organized as follows. The next section discusses the existing literature on FSD with respect to poverty. The third section presents the model specification, data and descriptive statistics. Empirical results are presented and discussed in the fourth section. The conclusion is drawn in the last section 5 with some policy implications.

Literature Review

There exists mix of evidences with respect to the reach and benefits of FSD on the poor. Well-functioning financial sector alleviates poverty directly by providing access to formal financial services to the poor who lack resources to fund themselves or collateral to obtain a bank loan because of information asymmetries (Banerjee & Newman, 1993). Financial development, on one hand, improves the access to formal finance by the poor by reducing the market failures such as information asymmetry and high fixed costs of lending to small and marginal borrowers (Jalilian & Kirkpatrick, 2005) and on the other hand, encourage them to make use of various credit and insurance services to acquire productive assets which improves their productivity and income and helps them to achieve sustainable livelihoods (Mundial, 2001). In addition to credit and insurance, savings too benefit the poor (Odhiambo, 2010). Studies that support the view that FSD reduces poverty and income inequality by allowing the poor to participate and benefit from financial activities through borrowing and investing in human and physical capital include Mookherjee and Ray (2003, 2010) and Shahbaz and Islam (2011). However, another view suspects the ability of developed financial sector to benefit the poor and argues that the rich and those with political influence largely benefit (Haber, 2005) especially at the early stages of FSD (Greenwood & Jovanovic, 1990). Poor who do not have enough collateral to offer are excluded by formal financial institutions due to adverse selection and moral hazard problems. This results in only rich getting access to formal financial services (Rajan & Zingales, 2004).

The poor people's access to formal financial services offered by banks in developing countries has been very limited forcing them to use informal sources of finance which are expensive as well as risky. Information asymmetry and high fixed costs of borrowing act as the key barriers to poor people's access to formal finance (Stiglitz, 1999). Also, financial institutions evaluate prospective clients on their entrepreneurship and lend those who have highest chances of successful repayment (Agenor, 2004) and thus primarily benefit the rich. A series of studies conducted by Allen, Qian and Qian (2005), Allen, Chakrabarti, De and Qian (2012a) and Allen et al. (2012b) document the insignificant contribution of the formal financial sector compared to the informal financial sector in the economic development of developing countries such as India, China and Kenya.

In India, in the post-nationalization era, the government adopted social banking policies which resulted in expansion of geographical and functional outreach of bank branches in rural areas (Shetty, 1997). However, it was felt that poor not only need credit but other financial products also. Hence, a heavy emphasis was on the provision of credit-plus services such as savings, insurance, payments, etc. (Ansari, 2007). Despite banks and cooperative societies having a wide network of branches, their performance in terms of reaching out to the poorest and serving their needs remain very low (Imai, Arun & Annim, 2010).

The sceptical evidence on the accessibility of formal finance by the poor resulted in the emergence of 'microfinance' in India in 1991, which is a financial

service primarily for the rural population (Pradeep & Garg, 2013; Singh, 2009), with the launch of self-help group bank linkage programme (SBLP). While some researchers argue that microfinance under SBLP has reduced poverty (Aruna & Jyothirmayi, 2011; Puhazhendhi & Satyasai, 2001); others are doubtful regarding the ability of microfinance to reduce poverty substantially and affect the poorest of the poor (Banerjee, Duflo, Glennerster & Kinnan, 2009; Tripathy & Jain, 2011). The key reason behind the marginal impact of SHG programme on poverty reduction of members in rural areas is their inability to make use of microloans for setting up new businesses (Kalpana, 2008). Other reasons include insufficient loan amount to cover the initial investment (Gadenne & Vasudevan, 2007), lack of productive investment opportunities and poor quality of human resource in terms of education, training, etc. to be used as inputs with microcredit (Fisher & Sriram, 2002). When the loan amount is insufficient and the borrowers are not able to make appropriate use of the borrowed funds, they borrow from multiple sources. This happened in Andhra Pradesh in India (2010) which resulted in the use of unethical practices by microfinance institutions to recover loans which lead to a series of suicides by the borrowers. The entrepreneurial nature of the borrower also plays an important role in realizing benefits out of access to microloans (Christen, 1997). A study conducted in Tamil Nadu in India found that only less than 2 per cent of the microenterprises that were started three years back were found operating and rest were shut down (George, 2005). The result of such failures can be dangerous in terms of incidence if irretrievable poverty in the affected regions (Davis, 2007).

Model Specification and Data Description

The Model

In order to assess the effect of the two lending approaches in India, our paper uses panel data of 15 major Indian states over the period 1999–2000 to 2011–2012. The paper uses rural poverty ratio (POV) and rural poverty gap index (GAP) as dependent variables, while the explanatory variables are financial development (FD) variables which includes microcredit intensity (MC) and bank credit (BC) and development expenditure (DEXP); and control variables are output growth (EG), inflation rate (INF), rural population share (RPOP) in the state. The econometric models considered in the paper are as follows:

Model 1:
$$DV_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 DEXP_{it} + \beta_3 EG_{it}$$
$$+ \beta_4 INF_{it} + \beta_5 RPOP_{it} + \mu_{it} \tag{1}$$
$$i = 1, 2, ..., N : t = 1, 2, .., T$$

where DV_{it} is POV_{it} and GAP_{it}.

Model 1 uses a limited dependent variable—it takes values from 0 to 1. The standard regression technique requires the dependent variable to take values from minus infinity to plus infinity. Therefore, in order to avoid the violation of this assumption, we use the logit transformation of DVs as follows:

$$y_{it} = ln(\frac{DV_{it}}{1 - DV_{it}})$$

(2)

In equation (2), when DV_{it} approaches 0, y_{it} approaches minus infinity. If DV_{it} approaches 1, y_{it} approaches plus infinity. This allows us to use standard regression technique without violation of any of its assumption in Model 2. Also, y_{it} being a monotonic increasing function of DV_{it}, the results obtained from equations (1) and (3) are comparable. Any change in y_{it} is directly linked with change in the original dependent variable DV_{it}.

Model 2:
$$ln(\frac{DV_{it}}{1 - DV_{it}}) = \beta_0 + \beta_1 FD_{it} + \beta_2 DEXP_{it} + \beta_3 EG_{it}$$

$$+ \beta_4 INF_{it} + \beta_5 RPOP_{it} + \mu_{it}$$

$$i = 1, 2, ..., N: t = 1, 2, .., T$$

(3)

We use both models (1) and (3) to estimate the effect of the poverty alleviation tools on the poor and the poorest of the poor which also helps us check the robustness of our empirical results.

While analyzing the finance-poor relationship, there is a need to investigate the endogeneity or reverse causality issue. In simple terms, it may be argued that provision of credit is driven by the level of poverty/inequality in a particular region. In order to adjust for the endogeneity problem, this paper uses generalized GMM estimators (Hansen, 1982). The instruments used are a constant term and the lagged value of each explanatory variable.

Data and Key Statistics

For dependent variables, the paper makes use of thin as well as thick round of annual sample surveys conducted by National Sample Survey Organization (NSSO). Both the rounds have certain limitations. The data for thick rounds are available only for four time periods (1999–2000, 2004–2005, 2009–2010 and 2011–2012); the results based on such small panel may not be considered as reliable and significant. For thin rounds, there are certain sampling issues at rural-state level. This questions the comparability of the results obtained from combining the thin and thick rounds. To address that, we run a separate regression model using only thin rounds to see if there are any significant differences between the results obtained from thin rounds only and a combination of both thin and thick rounds. On comparison, we do not find any significant difference in the results obtained. The signs of the coefficient remain unchanged and no significant difference is found in the coefficient value. This supports the use of combination of thin and thick round survey data.

Dependent Variables

Rural poverty headcount ratio (POV): The share of the rural population whose income or consumption is below the poverty line of the respective state.

The measure is computed using the unit-level data of National Sample Survey Organization (NSSO) survey data for the study period.

Squared poverty gap index (GAP): The measure, denoted as GAP, takes into account the inequality among the poor. It applies a higher weight on households further away from the poverty line. Squared poverty gap index is a useful measure when the interest of the researcher is not to analyse the impact on the number of poor but on those who are closest to poverty line or the poorest of the poor. The measure is computed using the unit-level data of National Sample Survey Organization (NSSO) survey data for the study period.

Explanatory Variables

Microcredit intensity (MC): In order to measure the effect of commercial microcredit on the poor and the poorest of the poor, the paper uses gross microcredit as a proportion of net state domestic product (NSDP), denoted as MC. Since microcredit is predominantly a rural phenomenon, it is expected to bridge the gap between the consumption levels of poor in rural areas. The data are taken from the annual status of microfinance in India reports published by National Bank for Agriculture and Rural Development (NABARD).

Bank credit as a proportion of NSDP (BC): The effect of another poverty alleviation tool, commercial credit, is captured by using state-wise bank credit as a proportion of NSDP, denoted as BC**.** The measure is consistent with Beck, Demirgüç-Kunt and Levine (2004) and Jeanneney and Kpodar (2011). The data are taken from Reserve Bank of India (RBI) database.

Development expenditure to NSDP (DEXP): The expenditure on poverty alleviation programmes is captured by using development expenditures by government, denoted as DEXP, which have direct as well as indirect effects on the poor and the poorest. Such spending not only increases the average income of the poor and the poorest but also improves the distribution of income and reduces poverty and inequality (Sen, 1997). Data are obtained from RBI database.

Control Variables

Per capita net state domestic product growth (EG): A large number of studies suggest that financial development indirectly reduces poverty and inequality through its positive effect on economic growth. Economic growth disproportionally benefits poor when the growth is pro-poor in nature. However, many contradictory studies suggest that growth has equal effect on poor as well as on non-poor (Dollar & Kraay, 2002) or growth increases income inequality (Jeanneney & Kpodar, 2011). Thus, in order to analyze the indirect effect of growth, we use per capita NSDP growth as another explanatory variable in our model, denoted as EG. The data are taken from RBI database.

Inflation rate (INF): Inflation acts as a regressive tax and exerts a negative effect on the poor in terms of deteriorated real incomes (Sen, 1981). We introduce growth in CPI for agricultural labourers as a measure of inflation rate (INF) from the RBI database.

Rural population share (RPOP): Size of the population in rural areas is controlled for by including the share of size of rural population in total population of the respective state, denoted by RPOP, following Nguyen, Albrecht, Vroman and Westbrook (2007). The data on state-wise population is taken from Census India reports.

Descriptive Statistics and Correlations

The summary statistics and the correlations of the variables considered in this study are presented in Tables 1 and 2. The variation across states over the study period with respect to poverty ratio and squared poverty gap index is indicated by the wide gap in their respective minimum and maximum values (Table 1). On an average, about 29 per cent of the rural population lives below the poverty line and among the poor, those closer to poverty line are better-off than the poorest. The average bank credit is more than 34 times greater than the average microcredit disbursed under SBLP. On an average, about 70 per cent of the total population of India resides in rural areas.

Table 1. Summary Statistics

Parameters	N	Minimum	Maximum	Mean	Standard Deviation
POV	165	5.09	62.3	30.12	11.211
GAP	165	0.139	0.502	0.314	0.079
MC	165	0.001	0.0638	0.0141	0.0135
BC	165	0.0958	1.9677	0.492	0.322
DEXP	165	0.043	0.209	0.991	0.0391
RPOP	165	49.6	89.54	68.72	10.59
INF	165	−6.03	19.73	5.022	5.081
EG	165	−0.0576	0.2574	0.0714	0.06

Table 2. Correlations between the Dependent and Independent Variables

	POV	GAP	MC	BC	RPOP	DEXP	EG	INF
POV	1							
GAP	0.319*	1						
MC	−0.277**	0.124*	1					
BC	−0.32**	0.231*	0.434***	1				
RPOP	0.514***	0.298*	−0.123	−0.207*	1			
DEXP	−0.236**	−0.088*	0.128	−0.144*	0.205*	1		
EG	−0.345**	−0.098	0.209*	−0.201*	−0.187*	−0.058	1	
INF	0.487***	0.565***	0.150*	0.192*	−0.122	0.083	0.216*	1

Note: *Correlation is significant at the 0.1 level (2-tailed), **Correlation is significant at the 0.05 level (2-tailed), *** Correlation is significant at the 0.01 level (2-tailed).

Table 2 suggests that both bank credit and microcredit have a significant nega-tive association with rural poverty ratio and a significant positive association with the rural poverty gap. This means that, on one hand, increased access to finance seems to be associated with reduced rural poverty while, on the other hand, it is also associated with increased poverty gap, seemingly benefitting those just below the poverty line and leaving the poorest at the greatest disadvantage. Similarly, increased development expenditure, which is a tool for the betterment of the poor-est, is associated with reduced poverty and inequality among the poor. Another interesting point to note is that economic growth too is associated with reduced rural poverty whereas its association with poverty gap is positive yet insignificant. The positive association of inflation and share of rural population can also be observed from the table.

Empirical Results and Discussion

There exists a high correlation between the two financial development variables viz. microcredit and bank credit (Table 2). Therefore, including both of them together in the same regression equation may result the model to suffer from the problems of multicollinearity giving imprecise coefficients. To avoid this prob-lem, the paper includes each financial development variable in a separate regres-sion equation. This approach enables us to obtain more precise estimates of the impact of each of the poverty alleviation tools. The paper, thus, have a total of eight regression equations. The first four equations use POV and GAP as the dependent variable and each of the two poverty alleviation tools as independents and the remaining four equations use log transformation of POV and GAP as the dependent and each of the two poverty alleviation tools as independents.

The results of the empirical investigation are shown in Tables 3 and 4 using poverty and squared poverty gap index and their logit transformation, respec-tively. The coefficient value of the estimates along with the SEs in parentheses is given in both tables. The endogeneity of the explanatory variables is checked by Durbin–Wu–Hausman test (Durbin, 1954; Hausman, 1978; Wu, 1973, 1974), the *p*-value of which is reported in both the tables. The null hypothesis for the test is that all the explanatory variables in the equation are endogenous and exogeneity of the explanatory variables being the alternative hypothesis. The *p*-values associ-ated with Durbin–Wu–Hausman test provided in both the tables suggest that the null hypothesis of endogenous explanatory variables for all the cases is not rejected and thus supports the use of GMM.

Before analyzing the effect of the two approaches on the poorest of the poor, it would be a good idea to look at the effect of the two approaches on the rural pov-erty ratio as a whole. Table 3 features the results obtained with respect to the effect of the Robinson's poverty alleviation tools on the poor in rural India. The results confirm the poverty reducing effect of commercial financial services across Indian states. Both bank credit and microcredit have a statistically significant negative coefficient (–0.157 and –0.511). Thus, an increase in the lending by banks and microfinance institutions seems to reduce the number of poor in rural India.

Table 3. Empirical Results for Poverty Ratio

	Model 1[a] (FD = MC)		Model 1[b] (FD = BC)		Model 2[c] (FD = MC)		Model 2[d] (FD = BC)	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Constant	0.331	(0.412)***	0.311	(0.519)***	0.835	(0.501)**	0.997	(0.726)**
MC	−0.157	(0.306)**			−0.254	(0.317)*		
BC			−0.511	(0.177)***			−0.672	(0.319)***
DEXP	−0.388	(0.214)**	−0.592	(0.277)***	−0.639	(0.206)***	−0.699	(0.235)***
EG	−0.433	(0.219)***	−0.541	(0.253)***	−0.525	(0.355)**	−0.801	(0.326)***
RPOP	0.269	(0.178)**	0.356	(0.216)**	−0.566	(0.234)*	−0.577	(0.311)*
INF	−0.502	(0.291)***	−0.555	(0.356)***	−0.671	(0.382)***	−0.608	(0.388)***
Durbin-Wu-Hausman test	0.040		0.044		0.008		0.023	
J-statistic	0.324		0.372		0.317		0.381	
Adjusted R-squared	0.232		0.241		0.263		0.272	
Number of observations	165		165		165		165	

Notes: Dependent variable is rural poverty ratio (POV). FD indicates financial development variables which are MC and BC. MC indicates ratio of gross microcredit to NSDP. BC indicates ratio of gross credit by commercial banks to NSDP. EG indicates per capita NSDP growth rate. RPOP indicates share of rural population in total population of a state. DEXP indicates ratio of development expenditure to NSDP. INF indicates growth rate in CPI for agricultural labourers. Numbers in parentheses represent the standard error (SE). ***, ** and * indicate statistical significance at the 1, 5 and 10 per cent levels, respectively. Durbin–Wu–Hausman statistic indicates the probability value of the test. 'J-statistic' indicates the probability value of the Hansen's J-statistic.
Instrumental variables:
[a] Instrumental variables used: Constant, $MC_{i,t-1}$, $EG_{i,t-1}$, $RPOP_{i,t-1}$, $DEXP_{i,t-1}$, $INF_{i,t-1}$.
[b] Instrumental variables used: Constant, $BC_{i,t-1}$, $EG_{i,t-1}$, $RPOP_{i,t-1}$, $DEXP_{i,t-1}$, $INF_{i,t-1}$.
[c] Instrumental variables used: Constant, $MC_{i,t-1}$, $EG_{i,t-1}$, $RPOP_{i,t-1}$, $DEXP_{i,t-1}$, $INF_{i,t-1}$.
[d] Instrumental variables used: Constant, $BCi,t-1$, $EGi,t-1$, $RPOPi,t-1$, $DEXPi,t-1$, $INFi,t-1$.

The results partially support the Robinson's proposition which suggests that only microcredit and not the bank credit is appropriate for the poor, whereas our results indicate that both forms of financial services have proved to be beneficial for the poor. Similar results are obtained for the expenditure on poverty alleviation-development expenditure (–0.388 and –0.592), though the effect is not as strong as for the bank credit. While Robinson remains silent over the suitability of expenditure on poverty alleviation programmes for the poor or those living closer to the poverty line, our results suggest that development expenditure do benefit the poor. Our results are consistent with Fan, Hazell and Thorat (2000) who use state-level data for the period 1970 to 1993 and estimate the direct and indirect effects of government expenditure on rural poverty and productivity growth in India applying the simultaneous equations model. They find a significant positive effect of government spending on productivity enhancing investments, rural infrastructure and rural development programmes targeting the rural poor on rural poverty. The 'trickle down' effect of government spending is greater on the poor resulting from an increase in the average consumption expenditure and an improvement in the distribution of income (Sen, 1997). Even the growth process across states seem to be pro-poor which is confirmed by the statistically signifi-cant and negative coefficient of per capita NSDP growth (–0.433 and –0.541 for poverty ratio; –0.525 and –0.801 for its log transformation). This suggests that the benefits of economic growth in terms of increased employment and investment opportunities, reduced wage differentials have accrued to the rural sector. Our results are in line with Bhanumurthy and Mitra (2004) who observe the signifi-cance of growth effect in reducing poverty in most of their sample states from 1982 to 1993 and from 1993 to 1999. The positive significant coefficient of rural population share suggests that an increase in the share of rural population aggra-vates the number of rural poor in a state. Inflation too, with its significant positive coefficient, seems to have a detrimental effect on poor in rural areas.

The results showing the effect of the poverty-lending approach and financial systems approach are given in Table 4. We use rural poverty gap as our dependent variable which measures income inequality among the poor. Any increase in GAP indicates that the better-off poor or those close to the poverty line are benefitting more than those at the bottom and vice versa. The expansion of bank credit and micro credit increases the income inequality among the poor. This means that bank credit and microcredit benefits people living closer to poverty line more than it does to those living at the bottom. Our results support Robinson's proposition that poverty-lending approach is not beneficial for the poorest. Moreover, the same result support the Robinson's view that under financial systems approach, economically active poor or those close to the poverty line benefit from micro-credit. A comparison between the two financial services suggests that bank credit (0.544 and 0.221) hits the poorest harder than the micro credit does (0.223 and 0.092). Another poverty alleviation tool under the financial systems approach, the development expenditure incurred by the states, has a significant positive effect on income inequality among the poor (–0.141, –0.172, –0.088 and –0.097) increasing the income of the poorest by a greater proportion. Again the Robinson proposition turns out to be true that expenditure on poverty alleviation programmes is

Table 4. Empirical Result for Poverty Gap

	Model 1[a] (FD = MC)		Model 1[b] (FD = BC)		Model 2[c] (FD = MC)		Model 2[d] (FD = BC)	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Constant	0.307	(0.497)***	0.473	(0.602)***	0.538	(0.432)**	0.697	(0.321)**
MC	0.223	(0.553)**			0.092	(0.369)**		
BC			0.544	(0.801)***			0.221	(0.977)***
DEXP	−0.141	(0.288)*	−0.172	(0.371)*	−0.088	(0.264)*	−0.097	(0.419)*
EG	−0.095	(0.302)	−0.152	(0.408)	−0.022	(0.517)	−0.096	(0.567)
RPOP	0.117	(0.233)**	0.218	(0.201)**	0.115	(0.587)*	0.206	(0.571)**
INF	0.516	(0.381)***	0.444	(0.325)***	0.357	(0.305)***	0.322	(0.408)***
Durbin–Wu–Hausman test	0.014		0.020		0.010		0.012	
J statistic	0.197		0.222		0.214		0.245	
Adjusted R-squared	0.191		0.209		0.232		0.260	
Number of observations	165		165		165		165	

Notes: Dependent variable is rural poverty gap index (GAP). FD indicates financial development variables which are MC and BC. MC indicates ratio of gross microcredit to NSDP. BC indicates ratio of gross credit by commercial banks to NSDP. EG indicates per capita NSDP growth rate. RPOP indicates share of rural population in total population of a state. DEXP indicates ratio of development expenditure to NSDP. INF indicates growth rate in CPI for agricultural labourers. Numbers in parentheses represent the standard error (SE). ***, **, and *Statistical significance at the 1, 5 and 10 per cent levels, respectively. Durbin–Wu–Hausman statistic indicates the probability value of the test. 'J-statistic' indicates the probability value of the Hansen's J-statistic.

Instrumental variables:

[a]Instrumental variables used: Constant, MC$_{i,t-1}$, EG$_{i,t-1}$, RPOP$_{i,t-1}$, DEXP$_{i,t-1}$, INF$_{i,t-1}$.
[b]Instrumental variables used: Constant, BC$_{i,t-1}$, EG$_{i,t-1}$, RPOP$_{i,t-1}$, DEXP$_{i,t-1}$, INF$_{i,t-1}$.
[c]Instrumental variables used: Constant, MC$_{i,t-1}$, EG$_{i,t-1}$, RPOP$_{i,t-1}$, DEXP$_{i,t-1}$, INF$_{i,t-1}$.
[d]Instrumental variables used: Constant, BC$_{i,t-1}$, EG$_{i,t-1}$, RPOP$_{i,t-1}$, DEXP$_{i,t-1}$, INF$_{i,t-1}$.

appropriate for the poorest. Thus, the results support the Robinson proposition that financial systems approach is beneficial for the poorest and not the poverty-lending approach. The evidence with respect to the positive effect of economic growth on the poorest seems to be weak (as indicated by an insignificant coefficient of economic growth). The results support the findings of a recent work by Tiwari, Shahbaz and Islam (2013) who conclude that economic growth widen the rural–urban income inequality in the long run in India. Increasing rural population share in total population continues to deteriorate the income distribution among the poor and widens the gap. Also, the poorest seem to be the hardest hit victim of the rising prices as indicated by the significant and positive coefficient of the inflation variable.

Conclusion and Policy Implications

The existing research with respect to expansion of financial services for the poor discuss two main approaches: the poverty-lending approach which advocates institutional credit for the poorest of the poor; and the financial systems approach, which advocates microfinance (credit and savings) for the economically active poor and poverty alleviation expenditure for the poorest of the poor which aims at creating jobs and reducing poverty for the poorest of the poor. Robinson argues in favour of financial systems approach and provides a poverty alleviation toolbox to benefit the economically active poor and the poorest of the poor. This paper attempts to analyze the effect of the poverty alleviation toolbox suggested by Robinson and provides a comparison of the two approaches of lending to the poor.

Our results, by and large, support the Robinsons proposition that financial systems approach is beneficial for the poor and the poorest of the poor and not the poverty lending approach. The results suggest that, in rural areas, commercial financial services, viz. commercial credit and microcredit, as well as development expenditure benefit the poor in rural India. Another poverty alleviation tool, development expenditure is found to be beneficial for the poor as well as for the poorest of the poor. Thus, Robinson's poverty alleviation toolbox from target client perspective turns out, by and large, to be correct in Indian context.

The results also suggest that the beneficial effect of commercial financial services on poverty reduction seems to be dampened by their negative effect on the income of the poorest of the poor in rural areas. This suggests that only those living close to the poverty line get benefitted from the commercial financial services. Our results with respect to the effect of poverty alleviation tools on the poorest of the poor are in line with those of other studies with different samples and methodology (Beck, Demirgüç-Kunt & Levine, 2007; Jalilian & Kirkpatrick, 2005; Jeanneney & Kpodar, 2011). The results also suggest that government spending on developmental programmes benefits the poor as well as the poorest of the poor in rural areas in terms of increased income. Increasing the government spending, thus, should be kept on top priority. Such spending not only provides more and more employment opportunities but also give the greatest growth in agriculture productivity. The policy package to be designed by the government needs to take

into account that mere increasing the availability of credit for the core poor does not necessarily mean that the borrowed funds would be put into best use. Further financial development with a focus on rural areas and within that a targeted approach for the poorest will become an important policy priority for India.

Acknowledgements

Notes

1. The states are Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odhisa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.
2. The study considers the period starting 1999–2000 because the state-wise data on microcredit from NABARD reports is available 1999–2000 onwards.

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