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Tackling poverty and inequality among farm households in Bihar: implications for achieving sustainable development goals (SDGs)

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Abstract One of the main goals of SDGs is to remove of the poverty in its all forms and from everywhere. The present study examines the factors that are responsible for rural poverty; the relationship between poverty and inequality; and between poverty and debt-to-assets ratio among farm households in Bihar, one of the economically most backward states in India. We use primary data on consumption, income, and assets for the agricultural year 2010–11. The logit model has been applied to empirically identify the factors responsible for poverty. The study finds a strong positive, correlation between poverty and debt-to-assets ratio, but not between inequality and poverty or any impact of inequality on poverty. The results indicate that poverty is more prevalent among the households having little access to land, livestock and other productive assets, low level of education, larger family size, and higher dependency ratio.

Keywords SDGs, Poverty, Inequality, Farmers, Agriculture, Rural, Logit

JEL classification Q10, Q12, I32, D63

1 Introduction

Eliminating poverty in its all forms and from everywhere by 2030 is the main agenda outlined in the Sustainable Development Goals (SDGs) by the UNDP. While the number of people living in extreme poverty has dropped; millions of people are still struggling for the most basic human needs. India's recent rapid economic growth has been accompanied by growing inequalities (Sen & Himanshu 2004a; Chaudhari & Ravallion 2006; Vakulabharanam & Motiram 2012; Thorat & Dubey 2012) and the benefits of this growth for the poor are vigorously debated. Although, the incidence of poverty has been decreasing continuously, but the debate over the inclusiveness of growth has merit. The scenario of poverty is not same for all the states of India and it is a very serious problem in states like Odisha, Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh and Uttar Pradesh. Bihar is known in India as well as worldwide for its extreme poverty and malnutrition (World Bank 2005). About one-third of state's population is poor, and ranks as the second poorest state in India. In the recent decades, the state has witnessed impressive economic growth (Mukherji & Mukherji 2012; Saxena 2011; Singh & Stern 2013), but it has not helped much change the status of state in terms of poverty as well as per capita income.

There is a huge literature on inequality and poverty in India (EPWRF 1993; Datt 1999; Drèze 2000; Deaton & Drèze 2002; Datt & Ravallion 2002; Sen & Himanshu 2004a,b; Himanshu 2007; Bhattacharya & Sakthivel 2004; Kurian 2000). Most of these studies are based on large-scale consumer surveys conducted by the National Sample Survey Office (NSSO) of the Government of India. These provide estimates of poverty for rural and urban areas and by income groups. There are only a few studies that have estimated poverty and inequality among different categories of farm households (Janaiah et al. 2000; Kumari & Singh 2009; Singh et al. 2011; Singh et al. 2013; Thakur et al. 2000; Kumari 2014; Roy 2013; Pandey 2016). In this paper,

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using the household-level data we estimate incidence of poverty among farm households and its correlates. Rest of the present paper is organized as follows. Section 2 discusses data, sampling techniques, and methodology. Section 3 presents results. Final section presents concluding remarks.

2 Data and methods

2.1 Data and sampling technique

The data used in this paper were collected through a year-long survey of farm households in four districts of Bihar during 2011–12. The study used a stratified random sampling procedure. Bihar has four agroclimatic zone viz., North-west Alluvial Plains, South Bihar Alluvial Plains, and Eastern and Western Sub-zone. Keeping in view the differences in agroclimatic conditions, one district from each zone was randomly selected. The selected districts are: Sheohar from North-west alluvial, Purnia from South Bihar alluvial, Lakhisarai from Eastern and Bhojpur from Western zones. At the next stage, all blocks in the selected districts were selected, and one village from each block was randomly selected. From each selected village, 5% of the farm households were selected randomly from each farm size category. Thus, the total sample consists of four districts, 40 blocks, 40 villages, and 528 farm households. Of all the sample households, 78 were landless, 257 belonged to marginal (up to 2.49 acres), 119 to small (2.50–4.99 acre), 52 to medium (5–9.99 acre), and 22 to large farm (more than 10 acres) categories.

The details on cropping pattern, yield, income and other relevant variables were collected from the selected households through a field survey.

2.2 Analytical procedure

According to the Tendulkar Committee, the poverty line for rural Bihar in 2009–10 was Rs 655.60 per capita per month or Rs 7867.20 per annum. We adopt this poverty line to identify the poor and deflate it by the general consumer price index for agricultural labourers (CPI-AL) to bring it at 2010-11 prices. Accordingly, the cut-off is Rs 8,370.70 per capita per annum.

2.3 Measures of poverty

Head count ratio: Head count ratio (HCR) is the most commonly used measure of a poverty; it simply measures the proportion of poor people of the total population living below the poverty line. The head count ratio is expressed as:

$$HCR = \frac{P}{N}$$

Where, P is the number of poor and N is the total number of population (or sample).

Poverty gap index: HCR does not indicate the depth of poverty; hence it does not change if people below the poverty line become poorer. Also, it violates the transfer axiom of poverty. Thus, the use of HCR as a measure of poverty systemically biases policies in favour of individuals who are very close to the poverty line—these people offer the biggest bang for the buck, because they are most easily taken above the poverty line (Zheng 1997).

The poverty gap index (PGI) measures the depth of poverty; it shows the mean distance of the income or consumption expenditure of the entire poor population from the poverty line. PGI also measures the cost of eliminating poverty (relative to the poverty line), because it shows how much money would have to be transferred to the poor to bring their income or consumption expenditure up to the poverty line.

The poverty gap index may be written as:

$$P_g = \frac{1}{N}\sum_{i=1}^{N}\frac{Gi}{y}$$

Where, we define the poverty gap index (G_i) as the poverty line (y) less actual consumption expenditure by the poor individuals. The gap is considered to be zero for everyone else.

Severity of poverty: It shows change in severity of poverty. It captures income/consumption distribution among poor households. It is the mean square of the proportion of the PGI from the poverty line and, thus, puts more weight on poorer persons.

$$P_s = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{Gi}{y}\right)\wedge 2$$

Further, we use estimate logit regression to analyze the impact of factors on the chances that a household will be poor. For this purpose, a dummy variable that takes the value of 1 and 0, respectively for the poor and non-poor households has been constructed.

Let, Y_{ij} be the outcome of an individual in the j^{th} category resulting from X_i set of independent factors; then, in its simplest form the regression model is:

$Y_{ij} = \beta_{1Xi} + U_i$

Where, $Y_{ij} = 1$ for i^{th} individual falling in the j^{th} category, 0 otherwise

Suppose, there can be *m* outcomes of an event with associated probabilities P_1, P_2,.....P_m; then the likelihood function of the multinomial logit model can be written as:

$$L = \prod[(P_{i1})^{y_{i1}} (P_{i2})^{y_{i2}} \ldots\ldots\ldots\ldots (P_{im})^{y_{im}}]$$

$$P_{ij} = prob[Y_i = j] = [\frac{\exp^{x^1\beta}}{1 + \sum_{1}^{m-1} \exp^{x^1\beta}}]$$

$$P_{im} = prob[Y_i = m] = [\frac{1}{1 + \sum_{1}^{m-1} \exp^{x^1\beta}}]$$

Where, $\sum_{1}^{m} Y_{ij} = 1$

The model, being non-linear, can be estimated by the maximum likelihood method. However, it is cumbersome to interpret the estimated coefficients of the logit model. There are two consequences of this specification. For example, in case of two outcomes, the odds of any outcomes, say poor (1) and non-poor (2) is given by prob(poor)/[prob (non-poor)]=P_{i1}/P_{i2}= exp $[(x_{i1}-x_{i2})\ \beta]$. Therefore, the estimated coefficients (βs) are interpreted as the log odds ratio of probability of occurrence of an alternative to the base category.. Another point is that, like in other qualitative response models, the usual R^2 is very low. So, the accuracy of goodness of fit of the model is judged by the probability of correct classification calculated by comparing the predicted probability and observed response frequencies of alternatives and by 2-log-likelihood statistics that follows a chi-square (χ^2) distribution. McFadden (1973) suggested a measure, which is like R^2, called Pseudo R2, derived from the log-likelihood ratio test to compare the accuracy of such models (Madala 1983).

3 Results and discussion

3.1 Descriptive statistics

The descriptive statistics help us to understand better 'who the poor are and what the characteristics'. Table 1 presents information on social and economic characteristics. On an average, the poor households have bigger household size and live in villages far away from the town. Their heads are also older but they receive more remittances compared to the non-poor households. However, the level of education of the household-heads, total number of living rooms, total income, owned land, outstanding debt, irrigated land, value of total output of crops per acre and all productive assets have higher values for the non-poor households. It is important to note that we consider averages, and the averages may hide large variations; for example, the heads of some poor households may be highly educated, while the heads of some non-poor farming households may be uneducated.

3.2 Poverty estimates

The analysis of primary data shows 36% of the farm households as poor (table 2). This figure is almost identical to the official estimate of 33.7% in 2011–12 (GoI 2014). The incidence of poverty varies from 81% among the landless to 8% among the medium farm households. The landless and majority of the marginal households who are nearly to landless suffer multiple deprivations and fall prey to chronic poverty. However, among the large farm households there is hardly any household below the poverty line. The headcount measure of poverty is insensitive to the distribution of income among the poor and cannot measure changes in the intensity and severity of poverty (Sen 1976). The PGI and the squared PGI are used to capture these dimensions.

The poverty gap for different farm classes is found maximum for marginal farmers, followed by landless, small and medium farmers. The depth of the poverty varies from 74.40% for marginal farm households to 1.20% for medium farm households. However, it is 23% for landless households and very less (2.40%) for small farm households. Table 2 indicates that poverty is most severe for landless households, followed by marginal, small, and medium size farmers. It shows the inverse relationship between severity of

Table 1. Descriptive statistics of households

S.N	Variable	Non-poor households				Poor households			
		Mean	SD	Min.	Max.	Mean	Std. Dev.	Min.	Max.
1.	Age of the household-head (in year)	56.12	11.99	25	88	57.24	11.65	30	80
2.	Household size (nos.)	7.07	3.08	1	19	8.83	2.94	2	21
3.	Education of household head (year of schooling)	6.42	5.03	0	17	3.13	4.13	0	15
4.	Female head of household (% of total households)	7.85	–	–	–	9.79	–	–	–
5.	Total no. of living rooms	3.72	1.92	1	12	2.72	1.16	1	7
6.	Total income (Rs.)	73220	63307	9900	420500	44150	40283	5300	158900
7.	Remittances (Rs.)	3620.18	9131.87	0	60000	4293.19	7911.88	0	36000
8.	Total debt outstanding (Rs.)	12543	21962	0	180000	12241	28127	0	350000
9.	Land owned (in acre)	4.23	4.86	0	50	1.54	1.59	0	9
10.	Irrigated land (in acre)	4.25	3.64	0	30	2.89	2.37	0	25
11.	Gross value of crops/per acre (in Rs.)	29244	9810	5833	75000	29114	12888	6000	105000
12.	Tractor (nos.)	0.06	0.24	0	1	0.02	0.14	0	1
13.	Pump set (nos.)	0.53	0.50	0	1	0.29	0.46	0	1
14.	No. of milch animals	1.38	1.11	0	9	0.95	0.80	0	4
15.	Distance from nearest town (in km)	12.21	5.88	2	32	14.20	7.60	2	32
16	Electricity availability (yes/no)	0.50	0.50	0	1	0.37	0.48	0	1

Source: Author's estimates

Table 2. Poverty among different farm classes

Farm size category	Poverty depth	Severity	HCR
Landless	22.80	10.70	80.77
Marginal	74.40	2.30	39.69
Small	2.40	0. 26	18.49
Medium	1.20	0. 12	7.69
Large	0	0	0
All	76.00	2.30	36.17

Source: Author's estimates

poverty and land holding size. This is mainly due to uneconomic size of landholdings, low level of household income and higher indebtedness. On the other hand, its lowest incidence among large households is because of the larger landholdings and greater access to other income generating assets.

The analysis clearly indicates size of land as one of the key factors that directly or indirectly influence poverty status especially when the poor households do not have access to employment opportunities elsewhere. Higher depth of poverty among marginal farmers than among the landless is because the landless households lease-in land either on cash or crop sharing. Further, most of the landless belong to the scheduled caste and schedule tribes, considered to be at the lowest rung of social hierarchy in India; and they do not hesitate engaging themselves in any kind of employment, while the upper caste households mostly depend on the agriculture even if they own tiny pieces of land.

3.3 Poverty, inequality and debt-assets-ratio

The linkage between poverty and assets is indirect, and mainly through credit and education (Kubo 2009). If a person is born poor, he has limited access to education and health care; hence limited access to a remunerative jobs or credit facilities. He is trapped in a poverty and has little chances of acquiring assets (Hirashima 2009). Table 3 presents debt-to-assets ratio for different farm size classes.

Overall, the debt-to-assets ratio is 9.71. Large farmers had an outstanding debt of Rs 17,954.55, which is one-and-a-half times more than for landless households (Rs.

Table 3. Indebtedness and debt-to-assets ratio

Farm size category	Average value of assets (Rs/household)	Average outstanding debt (Rs/household)	Debt- assets ratio
Landless	52097	11115	21.34
Marginal	92191	9766	10.59
Small	161314	17285	10.72
Medium	213682	1 4153	6.62
Large	440147	17954	4.08
All	128081	12433	9.71

Source: Author's estimates

11,115.38), but their debt-to-assets ratio is low (4.08). The assessment of debt-to-assets ratio differs from the purpose of indebtedness, but it shows the capability of raising funds, be it for productive investment or consumption expenditure. It is clear from tables 2 and 3 that there is a positive relationship between the debt-to-assets ratio and poverty among farm households.

Hirashima (2009) hypothesizes that asset ownership, and not income or consumption levels, makes social distinctions explicit. Keeping this hypothesis in view, we explore the relationship between poverty and the debt-to-assets ratio among farmers and find the correlation positive and high—poverty tends to increase as the debt-to-assets ratio increases. Further, the analysis shows the relationship between the debt-to-assets ratio and poverty across farm classes. The correlation coefficient is 0.96, and statistically significant at 5% level.

Table 4 shows distribution of household income, consumption expenditure, and assets. Bottom 10% farm households share only 2.15% of the total income, and that top 10% about 32%. The distribution of assets is also similar. The bottom 10% farm households share 2.42% of the total assets, while the top 10% around 34%. The distribution of consumption expenditure is, however, different; the bottom 10% of the households account for 4.2% of the total consumption while the top 10% of households account for around 23%. This indicates very high inequality in distribution of income, assets and consumption expenditure. The estimated Gini coefficients are: 0.41 for income, 0.27 for consumption, and 0.38 for assets.

Table 4. Distribution of income, consumption expenditure and assets among farmers

Cumulative percentage of households	Cumulative percentage of Income	Cumulative percentage of Consumption	Cumulative percentage of Assets
10	2.15	4.2	2.42
20	5.59	9.79	6.16
30	9.99	16.2	11.02
40	15.38	23.17	16.76
50	21.89	31.17	23.6
60	29.77	40.1	31.83
70	39.75	50.23	41.93
80	52.22	62.07	54.28
90	68.04	76.76	70.01
100	100	100	100
Gini Coefficient	0.41	0.27	0.38

Source: Author's estimates

The correlation between poverty and inequality is estimated 0.027, which is very weak and not statistically significant. In other words, inequality does not affect poverty. The reduction in poverty needs not reduce inequality, and a reduction in inequality needs not reduce poverty. Inequality may be high due to a shift in the distribution of income from wages to profits and fall in the rate of labour absorption (Jha 2000).

3.4 Determinants of poverty

In this section, we identify the factors associated with poverty. The explanatory variables included in the model are selected based on the literature review, and availability of the data.

Results of the logit regression are given in table 5. The coefficient of household size is a positive and its

Table 5. Results of the logit model

S. No.		Coefficient	Standard Error
(A) Demographic factors			
1.	Age of household head (in years)	.0382	.9884
2.	Household size (nos)	.8977***	.2286
3.	Household size square	-.0328**	.0118
6.	Female headed households (dummy, =1 if female headed household, 0 otherwise)	.9406**	.4802
(B) Human resources			
7.	Education of head (in years)	-.0632**	.3113
8.	Dependency ratio (in no.)	.0207**	.0086
9.	Subsidiary occupation (dummy, =1 if income earning other than agriculture, 0 otherwise)	.1749	.4632
(C) Economic variables			
10.	Land own (in acre)	-.7753***	.1267
11.	Tractor (dummy, =1 if own tractor, 0 otherwise)	1.1163	1.0480
12.	Pump set (dummy, =1 if own pump-set, 0 otherwise)	-.7195**	.3546
13.	Milch animals (no.)	-.5155**	.1719
14.	Land leased-in (dummy, =1 if leased in on crop sharing basis, 0 otherwise)	.2425*	.1137
(E)	Development variable		
15.	Land productivity (in Rs./acre)	-6.34e	.0000
(F)	Infrastructure facilities		
16.	Pucca road connectivity (yes=1, no=0)	.7986*	.3185
17.	Electricity facility (yes=1, no=0)	.1589	.3112
18.	Distance from nearest town (in km)	-.0146	.0238
(G)	Risk and uncertainty variables		
19.	Flood (dummy, =1 if flood occurred in village, 0 otherwise)	2.8177***	.4733
20.	Drought (dummy, =1 if drought appeared, 0 otherwise)	-.6757	.4715
(H)	Locational dummy		
21.	Sheohar district (dummy, =1 for Sheohar, 0 otherwise)	-1.6401**	.4984
22.	Lakhisarai district (dummy, =1 for Lakhisarai, 0 otherwise)	-1.9711**	.4085
23.	Bhojpur district (dummy, =1 for Bhojpur, 0 otherwise)	-2.9672**	.4143
Constant			
Diagnostic tests			
Log-likelihood		-183.502	
LR Chi-square		(25) 300.92	
Pseudo R^2		0.45	
No. of Observations		528	

Source: Same as Table 1. *, ** & *** indicate that the values are significant at 10, 5 and 1% level of significance respectively.

squared term is negative and both are statistically significant. This indicate a non-linear inverted-U relationship between household size and probability of being into poverty. This relationship is quite in line with our expectation. The coefficient on female-headed households and the *Muslim* community is statistically significant and positive, indicating that these groups are more prone to poverty. This may be due to greater illiteracy, lower per capita income, or larger family size among the *Muslim* households. The coefficients on the household-head's education is negative and statistically significant, indicating a critical link between human capital formation and poverty. The coefficient on farm size too is negative, as expected bringing the critical role of farm size in reducing poverty. The coefficient on dependency burden is positive and statistically significant, indicating that the probability of being poor increases with increase in the proportion of dependents in the family.

Coefficients of pump-set and milch animals are also negative and statistically significant, that suggest that farmers' ownership of such productive assets enhances farm incomes and reduces poverty. As expected, crop-sharing lease arrangements are positively and significantly related with poverty. This is because the farmers who have leased-in land on crop-sharing pay more rent as compared to those who rented on fixed cash. The coefficient of land productivity, however, is insignificant.

The coefficient of *pucca* road connectivity is positive and statistically significant. This is contrary to our expectations. But, it may happen if the road conditions are very poor. Other infrastructure variables i.e., electrification and distance from the nearest town turn out insignificant. Floods and droughts are common in Bihar. The coefficient on flood is positive and statistically significant, suggesting that floods push households into poverty. However, the coefficient of drought is statistically insignificant and negative, probably because their adverse effects are largely offset through irrigation.

4 Conclusions

This paper has analyzed linkages among poverty-debt-assets ratio, and inequality among farm households in Bihar. About 36% of the farm households are poor. Incidence of poverty is as high as 81% among the landless farm households. The debt-to-assets ratio has a strong positive correlation with poverty, and significantly affects it, but no such a correlation is found between inequality and poverty. The major factors responsible of farmers' poverty are poor human capital, larger family size, higher dependency ratio and climatic risks, especially floods.

References

Bhattacharya, B. B., & Sakthivel, S. (2004). Regional growth and disparity in India – comparison of pre and post-reform decades. Economic and Political Weekly, 29 (10), 1071–77.

Chaudhuri, S., & Ravallion, M. (2006). Partially awakened giants: uneven growth in China and India. Policy Research Working Paper, The World Bank.

Datt, G. (1999). Has poverty declined since economic reforms? statistical data analysis. Economic and Political Weekly, 34(50), 3516–3518.

Datt, G., & Ravallion, M. (2002). Is India's economic growth leaving the poor behind? Mimeo, World Bank, Washington, DC.

Deaton, A., & Drèze, J. (2002). Poverty and inequality in India: a re-examination. Economic and Political Weekly. 37(36), 3729–3748

Drèze, J. (2000). Poverty: beyond headcount ratios. The Hindu, September 9.

EPW Research Foundation (1993). Poverty levels in India: norms, estimates and trends. Economic and Political Weekly, August 21. 1748-68

GOI, (2014). Planning commission of India. available at http://planningcommission.nic.in/reports/genrep/pov_rep0707.pdf

Hirashima, S. (2009). Growth-poverty linkage and income-asset relation in regional disparity: evidence from Pakistan and India. Pakistan Development Review, 48 (4), 357–386

Himanshu. (2007). Recent trends in poverty and inequality: some preliminary results. Economic and Political Weekly, *42*(6), 497–508.

Jha, R. (2000). Reducing poverty and inequality in India: has liberalization helped? Available: https://crawford.anu.edu.au/acde/publications/publish/papers/wp2002/wp-econ-2002–04.pdf

Janaiah, A., Manik, L. B., & Agarwal, A. G. (2000). Poverty and income distribution in rain-fed and irrigated ecosystem: village studied in Chhattisgarh. Economic and Political Weekly, 35(10), 4664–69.

Kubo, K. (2009). Poverty and asset distribution inequality in rural India. In S. Hirashima, and Hisaya Oda (eds.) Approach towards inclusive growth: India's challenges. *Tokyo:* Institute of Developing Economies. 23–47

Kumari, V., & Singh, R.K.P. (2009). Fragile human capital causes poverty in north Bihar: empirical evidences. Agricultural Economics Research Review, 2(1), 99–108.

Kumari, R. (2014). Levels of living, poverty and inequality in Bihar: a district-wise analysis. Journal of Social and Economic Development, 16(2), 1–18

Kurian, N J. (2000). Widening regional disparity in India. Economic and Political Weekly, 35(7), 538–50.

McFadden, D. (1973). Conditional logit analysis of qualitative choice behavior. In Frontiers in Econometrics (Edited by P. Zarembka), 105-42. Academic Press, New York.

Madala, G.S. (1983). Limited dependent and qualitative variables in econometrics. Cambridge University Press, New York.

Mukherji, A., & Mukherji, A. (2012). Bihar: what went wrong? and what changed? (No. 12/ 107). New Delhi: National Institute of Public Finance and Policy

Pandey, G. (2016). Level of income, expenditure behaviour and poverty among farming community in rural Bihar. Indian Journal of Economics and Development, 12(2), 283-292.

Roy, I. (2013). Contesting consensus disputing inequality: agonistic subjectivities in rural Bihar, South Asia Multidisciplinary Academic Journal *[Online]. Available at https://samaj.revues.org/3569*

Sen, A., & Himanshu. (2004). Poverty and inequality in India-1. Economic and Political Weekly, 39 (38), 4247–4263.

Sen, A., & Himanshu. (2004). Poverty and inequality in India: II: widening disparities during the 1990s. Economic and Political Weekly, *39*(39), 4361–4375.

Sen, A. (1976). Poverty: an ordinal approach to measurement. Econometrica, 46: 437-446.

Singh, K M., Meena, M. S., Singh, R. K. P., & Kumar, A. (2011). Dimensions of poverty in Bihar. Paper presented in 7th Asian Society of Agricultural Economists (ASAE) Conference in Hanoi, Vietnam. 13-15 October 2011 Available at: http://dx.doi.org/10.2139/ssrn.2017506

Singh, R.K.P., Singh, K.M., Kumar, A., Meena, M.S., Jha, A.K. & Kumar, A., (2013). Dimensions of rural poverty in Bihar: A Village Level Study.

Singh, N. K., & Stern, N. (Eds.) (2013). The new Bihar. New Delhi: HarperCollins

Saxena, N. C. (2011). Challenges before a resurgent Bihar: livelihood options and development possibilities. Journal of Social and Economic Studies, 21(2), 161–190.

Thakur, J., Bose, M. L, Hussain, M., & Janaiah, A. (2000). Rural income distribution and poverty in Bihar: insights from village studies. Economic and Political Weekly, 35(10), 4657–4663

Thorat, S., & Dubey. A. (2012). Has growth been socially inclusive during 1993– 94–2009–10. Economic and Political Weekly, 47(10), 43–53.

Zheng, B. (1997). Aggregate poverty measures. Journal of Economic Surveys, 11, 123–62.

Vakulabharanam, V; & Motiram. S. (2012). Understanding poverty and inequality in urban India since reforms: bringing quantitative and qualitative approaches together. Economic and Political Weekly, 47(47& 48), 44–52.

World Bank (2005). Bihar towards a development strategy, *A World Bank Report*. Available at http://siteresources.worldbank.org/INTINDIA/Resources/Bihar_report_final_June2005.pdf