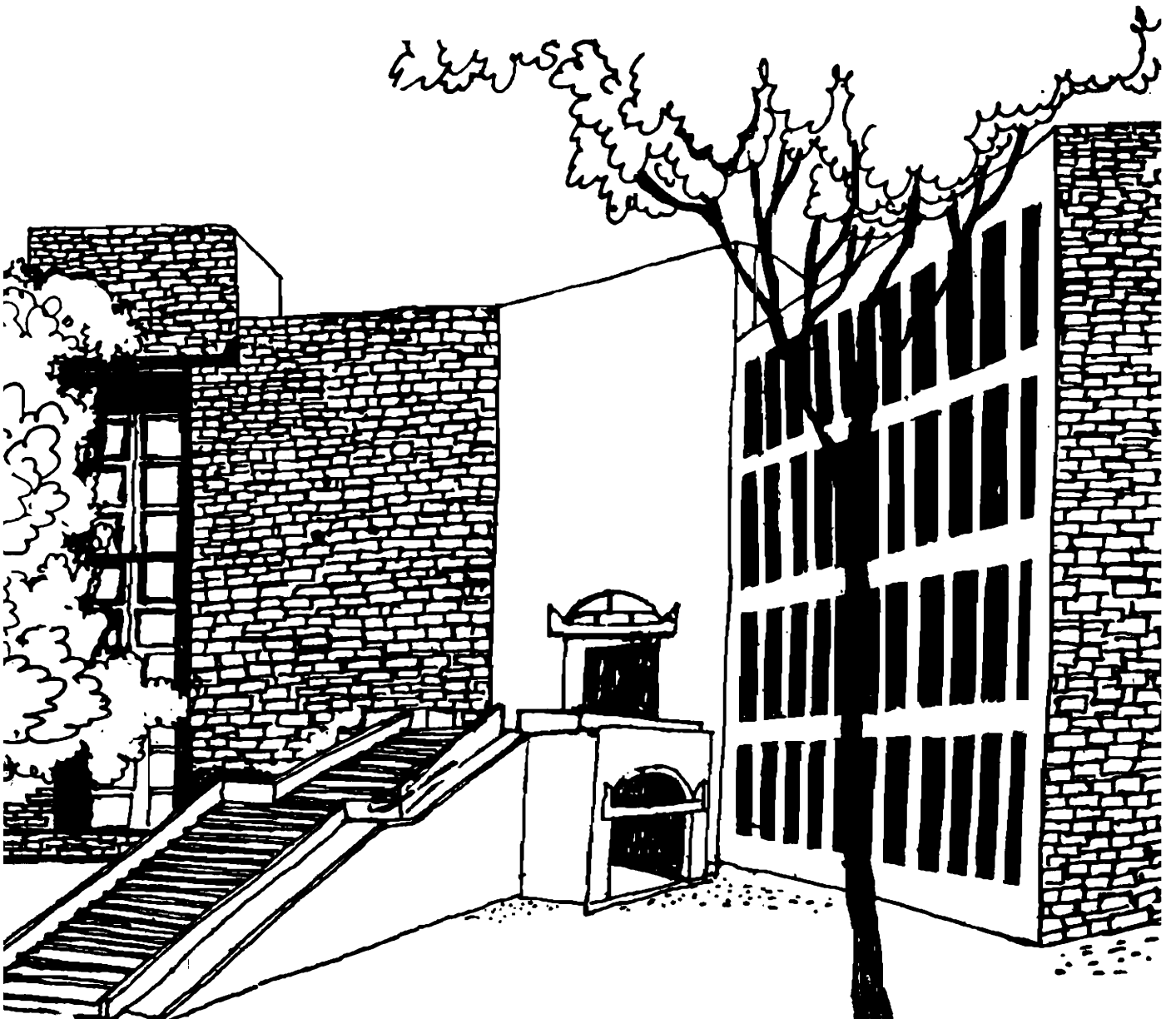





# Working Paper



# Policy Strategy and Instruments for Alleviating Rural Poverty

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# Policy Strategy and Instruments for Alleviating Rural Poverty

*Bhupat M. Desai\**      *N.V. Namboodiri\**

## Introduction

Ever since the macro reforms have been introduced the concern for (rural) poverty alleviation has acquired a "centre-stage" attraction. But same cannot be said about the concern for agricultural growth. This is evident from both the policy pronouncements and more recent literature on poverty.

Official pronouncements include target-group specific and social sector related government expenditure for poverty alleviation programs and neglect of this expenditure for agricultural growth together with an ad-hoc policy approach to farm input subsidies and interest rates for rural credit in addition to misdirected policy of relying on relative farm prices as an engine of this growth (see, for example, Singh 1995, Ahluwalia 1996, and their critic by Desai 1997a and b, and Desai and Namboodiri 1997a). And the recent literature emphasizes overt rationale for the role of state for social sectors like education and health, and for redistributive measures such as land reforms, and poverty programs like IRDP, JRY etc. (see, for example, Sunderam et al 1993, Tendulkar et al 1995, Ravallion et al 1995, and Sen 1996). This is disconcerting as agricultural growth and poverty alleviation are compatible objectives as is eminently shown by Dandekar and Rath 1971, Narain 1986, Dantwala 1986, Mellor and Desai 1986, Ahluwalia 1986, Rao 1994 and 1997, and Ninan 1994).

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Perhaps the reason for such an imbalanced approach to policy and research is that not all types of poverty alleviation may be compatible with (agricultural) growth (see, for example, Bardhan 1986). It is, therefore, useful to distinguish absolute poverty from the relative poverty. While former is the per cent of people living below poverty line corresponding to some minimum calory intake, the latter is the extent of inequality in the distribution of income and wealth. It is this inequality which increases initially in the process of growth. But over time it reduces (Kuznets 1957). The initial increase in inequality justifies economic programmes for poverty alleviation though they need to be sectorally better integrated (Hirway 1997).

That alleviating absolute poverty and agricultural growth are complementary is self-explanatory. It is thus appropriate to "prioritize" achieving such poverty alleviation especially when it is increasingly clear that unless the cake is large enough poverty cannot be removed. This is even justified when (financial) resources for development are limited. Equally clearly it is now recognized that technical change in agriculture is the only sustainable strategy for its growth (see, for example, Rao 1997, Desai 1997c, and Desai and Namboodiri 1997b and 1997c).

Considering the above as a context this paper analyses determinants of alleviating absolute rural poverty with a view to identify a strategy and policy priorities to achieve it. Section II lays down a framework, while Section III analyses the empirical results at an all-India level based on required data for 1961-62 to 1990-91 and 1961-62 to 1993-94 for which they are available. And Section IV sums up the paper. Before these are discussed it should be noted that

- (a) absolute poverty as well as agricultural growth have worsened after the reforms got initiated in mid-1991 (see **Figure 1** and Desai 1997a),

- (b) this poverty had an increasing time trend until mid 1960s but thereafter it had a declining time trend (see **Figure 1**), and
- (c) inequality in distribution of consumption expenditure and land ownership has also declined, albeit marginally (see, for example, Dev *et al* 1991, Ninan 1994, Thorat 1997, and Sharma 1997).

### **Analytical Framework, Methodology and Data Base**

Past literature on determinants of absolute rural poverty (i.e. Head Count Ratio-HCR) suggests that it is influenced by multiple factors. These could be categorized as non-price and price factors. Former includes current (PCAVA) as well as lagged real agricultural value added (i.e. ag.NDP) per capita of rural population, current real non-agricultural value added (Non-ag.NDP) per capita of total population (PCNAVA), technical change in agriculture (ITFP), government programs for poverty alleviation (GEPP), and land reforms as proxied by Gini ratio of distribution of owned (ONLE) and operational (OPLE) land.<sup>1</sup> Inflation (I) and prices paid relative to prices received (RP) are the price factors. Thus, the multivariate model that may explain behaviour of absolute rural poverty is

$$HCR_t = f(PCAVA_t, PCAVA_{t-1}, PCNAVA_t, ITFP_t, GEPP_t, ONLE_t, OPLE_t, I_t, RP_t)$$

Each of these determinants is discussed to identify how it influences absolute rural poverty (HCR) and what is the nature of its relationship with HCR i.e. positive or negative, a priori.

#### **Per Capita Real Agricultural NDP (PCAVA<sub>t</sub>)**

That agricultural growth and absolute rural poverty are compatible is well acclaimed for a country where the fortunes of poor are intimately linked to

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<sup>1</sup> Education and health related variables are not considered due to non-availability of satisfactory data.

agricultural performance. This occurs through changes in the levels of their income as well as in the prices.  $PCAVA_t$  in real terms captures this and when it increases absolute rural poverty would decline i.e. its impact on HCR being inverse ( $<0$ ). Such a specification also indirectly captures the impact of population pressure which may aggravate this poverty.

### **Lagged Per Capita Real Agricultural NDP ( $PCAVA_{t-1}$ )**

The impact of agricultural performance on absolute poverty arises not only from its current ramifications but also through its subsequent dent.  $PCAVA_{t-1}$  is approximated to capture this. Sustained good agricultural performance is expected to reduce HCR (i.e.  $<0$ ) just as poor such performance of agriculture would aggravate this poverty (i.e.  $<0$ ).

### **Per Capita Real Non-agricultural NDP ( $PCNAVA_t$ )**

Absolute rural poverty is also influenced by the performance of the non-agricultural sector. This occurs through various mechanisms such as (off-farm rural) employment multipliers and agricultural production linkages arising from increase in the economic activities in the non-agricultural sector. The more favourable these are the higher the per capita real non-agricultural value added and hence lower is the absolute rural poverty (i.e.  $<0$ ). But the development strategy for the non-agricultural sector that is capital-intensive and characterized by weak demand linkages with agriculture would accentuate this poverty (i.e.  $>0$ ).

### **Technical Change in Agriculture (ITFP)**

Agricultural growth that largely results from technical change benefits the poor in more ways than one. These are: one, it increases agricultural production at reduced unit-costs in real terms and thereby lowers the prices for agricultural commodities which benefit the poor most (for some evidence on this for wheat, rice,

maize and foodgrains see, for example, Kahlon and Tyagi 1983, Sidhu and Byerlee 1992, Kumar and Mruthyunjaya 1992, Rao 1994, Kumar and Rosegrant 1994, Singh, Pal and Morris 1995, and Acharya 1997). Two, technical change that is land and labour augmenting as is the case with Green Revolution encourages growth in farm employment opportunities with consequent increase in purchasing power of those employed. Three, scale-neutral and divisible new technologies of the Green Revolution type also benefit the smaller farmers who are an important constituent of those in absolute poverty. And four, technical change in agriculture makes net addition to the sector's income that gets spent on goods and services that are labour-intensive with consequent higher employment linkage. All these suggest that absolute rural poverty is expected to be inversely (i.e.  $<0$ ) related to technical change in agriculture. This change is measured by Tornquist-Theil index of total factor productivity (TTFP) in agriculture and allied sectors of dairy, animal husbandry and fisheries.<sup>2</sup> Data for this index are drawn from Desai 1994 and Desai and Namboodiri 1997c.

### **Real Government Expenditure on Poverty Programs (GEPP)**

India has a long history of government programs for poverty alleviation. They are special area programs, target-group specific programs like IRDP/SFDA, TRYSEM etc., national rural employment programs like JRY, and food subsidy. Government spending on these programs in real terms encourages both self-employment and wage-paid employment and income generating opportunities in addition to making available food at subsidized prices under PDS. Thus, a priori, absolute rural poverty (HCR) and this spending are inversely associated (i.e.  $<0$ ). In other words, as GEPP increases rural poverty ratio diminishes.

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<sup>2</sup> For details on methodology of constructing this index see Desai 1994.

### **Gini Ratio of Distribution of Own Land (ONLE)**

The inverse relationship between absolute poverty and farm size is quite common in developing countries (for some evidence on India see, for example, Dev et al 1991). This may be because larger farmers have higher income and lower family size with consequent higher income per capita. It may also be because larger farms generate more employment opportunities for hired labour and thereby purchasing power of the poor may increase. Both these suggest that as inequality in the distribution of owned land increases the absolute rural poverty would decline (i.e.  $<0$ ). But larger farmers may have lower land and total factor productivity suggesting thereby that this inequality has positive association with rural poverty ratio resulting from weak employment and income multipliers that are stated earlier (i.e.  $>0$ ). Furthermore, larger farmers may adopt labour-substituting new technologies in order to overcome diseconomies in managing larger labour force. Under such scenario absolute rural poverty may increase due to reduction in employment opportunities for the poor. Thus, a priori, influence of ONLE could be  $> = <0$ . Data on Gini ratio of land ownership distribution for 1961-62, 1971-72, 1982, and 1992 are obtained from Thorat 1997 and Sharma 1997 and for the intervening years they are interpolated since it being a structural variable.

### **Gini Ratio of Distribution of Operational Land (OPLE)**

Even this inequality is expected to be positively or negatively associated with the absolute rural poverty (i.e.  $> = <0$ ) for the reasons discussed earlier. This inequality is considered to capture the impact of tenancy since the data on extent of tenant cultivated land are unsatisfactory on account of widespread prevalence of oral and concealed tenancy. Data for this inequality are also drawn from Thorat 1997 and Sharma 1997.



### **Inflation ( $I_t$ )**

That inflation would hurt the poor is obvious for it reduces the purchasing power which is already meagre. In other words, HCR and inflation are directly related to each other (i.e.  $>0$ ). Inflation is measured as per cent of change in the index of consumer general prices for agricultural labourers.

### **Relative Prices ( $RP_t$ )**

Prices paid ( $P^P$ ) by the poor relative to prices received ( $P^R$ ) by them would increase the absolute rural poverty when this ratio increases (i.e.  $>0$ ). In other words, when this relative prices decline the rural poverty ratio would also decline (i.e.  $>0$ ). Such a phenomenon is associated with the new economic environment through two routes. One of these is that the reduction in protection to trade and industry would lower the prices paid ( $P^P$ ) and hence the relative prices (i.e.  $RP_t$ ) would decline. And the other is that when price support for agriculture ( $P^R$ ) is increased the relative prices would also decline. But if the increase in support prices ( $P^R$ ) more than offsets the decline in prices paid ( $P^P$ ), then the relative prices would increase and hence the absolute poverty would also increase. This is because increased support prices means increased prices paid by the poor who consumes agricultural commodities supported through such price policy.

Measuring relative prices requires data on goods and services (including labour) purchased and sold by the poor. Since such data are not available it is approximated by the index of consumer general price for agricultural labourers as prices paid ( $P^P$ ) and the deflator of agricultural NDP as prices received ( $P^R$ ).

**Table 1** provides mean and standard deviation of Head Count Ratio (HCR) and its nine determinants for 1961-62 to 1990-91 as well as up to 1993-94 to capture the years of macro reforms.

The above discussed multi-variate model explaining behaviour of absolute rural poverty is estimated by Ordinary Least Squares method using double log form of function except for measuring inflation ( $I_t$ ). **Table 2** reports the estimated model.

### **Analysis of Results**

Three main features of the results are discussed. These are their statistical properties, signs of the estimated coefficients, and relative importance of various factors explaining the change in ratio of rural poverty. Study of this importance is crucial for it would enable prioritizing various determinants and thereby facilitate identifying policies that would be more conducive to alleviating this poverty.

As much as 89 per cent of the variation in poverty ratio (HCR) is explained by the model that covers 1961-62 to 1990-91 period. Inclusion of the three years of macro reforms (i.e. up to 1993-94) reduces this to 87 per cent. Durbin-Watson statistic is not all that satisfactory. But as many as seven/six out of nine determinants of absolute rural poverty have statistically significant 't' ratios.

Only two/three variables have a sign that is contrary to a priori expectation. This is so for the per capita real non-agricultural NDP ( $PCNAVA_t$ ) and relative prices ( $RP_t$ ) for both the periods and for inflation ( $I_t$ ) for the latter period covering macro reform years. But the coefficients for the two price variables are statistically non-significant.

The positive association of per capita real non-agricultural NDP ( $PCNAVA_t$ ) with the poverty ratio (HCR) could be because the strategy of developing non-agricultural sector has weak links with agriculture. Such links arise from non-

agricultural sector that is characterized by capital-intensive techniques, production of consumer durables, and (financial) services such as those that suit urban areas. Such features neither absorb larger labour nor do they provide much demand pull growth for agriculture where most rural poor live. That India's industrialization strategy is characterized by "Machines First" rather than "Textiles First" approach is well documented with its low employment-led economic growth (see, for example, Oza 1997).<sup>3</sup> Thus, unless the development strategy shifts from capital and skill/service-intensive to labour, (agricultural) raw materials, and semi-skill/service-intensive in both manufacturing and tertiary sectors rural poor cannot be much pulled out of (absolute) poverty. Nor would it enable even rapid (agriculture-led) economic growth.

Between the two land distribution variables the one for land ownership (ONLE) shows that as this inequality increases rural poverty ratio would decline. This may be because larger farmers have much more labour-augmenting agriculture together with larger income multipliers that benefit the rural poor. Indeed, these impacts seem to have more than offset any negative impacts that the unequal land ownership may have on poverty ratio. But the same cannot be said about the relation between poverty ratio (HCR) and inequality in distribution of operational land (OPLE) which is positive. In other words, larger tenant unlike owner farmers do not

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<sup>3</sup> "Textiles First" approach gives highest priority to industries which produce (a) non-durable consumer goods like textiles, sugar, edible oil, tea, coffee, grains, dairy products, cigarette, footwear, paper, pharmaceuticals, etc., (b) intermediate goods like chemicals, dyes etc., (c) light engineering products like pumps, sewing machines, bicycles etc., and (d) simple equipments and machinery like looms, lathes, boilers, etc. required in consumer good industries. "Machines First" approach envisages highest priority to industries which produce (a) heavy capital goods, (b) basic inputs like steel, coal, cement etc., (c) transport equipment, and (d) infrastructural inputs like electricity, water supply, roads, railways, telecommunication etc. (Oza 1997). What may be required is relatively higher priority for "Textiles First" approach and some of the industries that produce infrastructural inputs compared to other capital goods industries. All these industries and trade related to them need to be the "central focus" in the policy for government expenditure and credit from the financial institutions.

provide labour-augmenting agriculture. Nor do they encourage income multipliers that benefit the rural poor. This is perhaps because tenancy is prohibited in many states, besides its reforms are neither formulated properly nor are they enforced effectively (see, for example, Datta et al 1997). Such uncertain and inappropriate land lease environment creates distortions that are injurious to poverty alleviation process.

The relative importance of various determinants is shown in cols.4 and 7 in **Table 2**. These are obtained by the standardized regression coefficients ignoring signs. Such coefficients are given by  $\hat{\beta}_i \times (\text{standard deviation of explanatory variable } X_i \div \text{standard deviation of dependent variable } Y)$ . They are utilized because of differences in the measurement of different factors (Snedecor et al 1967). Following findings and their implications are discussed.

*One*, between the price and non-price factors the former are least important in alleviating rural poverty ratio. This suggests that price reforms that seem to be kingpin of new economic policy have very limited role in inducing the process of removing this poverty. This is so even for inflation ( $I_t$ ) perhaps because change in general consumer prices is “relatively” more a structural rather than a monetary phenomenon. Alleviating such inflation requires accelerating supply of consumer non-durables including agricultural commodities through judicious public/government expenditure on R&D, and infrastructure in addition to interest rates and fiscal incentives for private investment that encourage “Textiles First” approach to industrialization in which agriculture receives a place of prime.

*Two*, technical change in agriculture is second/most important determinant of absolute rural poverty. This highly significant finding suggests that past policies which have facilitated this change must be accorded the highest priority. They

largely include government expenditure on agricultural research, education and extension in addition to farm input industries such as for seeds, irrigation water, electricity, fertilizers etc., farm input subsidies, and more conducive interest rates on rural credit. Any rationalization of these subsidies must be through appropriate input pricing rather than cuts in government "current" expenditures like those on maintenance of canal/surface irrigation and power projects or on state seeds farms and corporations. But government approach to this suffers from some conceptual inconsistency in classifying subsidies for merit and non-merit goods. One such example is that flood control, drainage and soil and water conservation are considered merit goods but irrigation and flood control is not. Similarly, agricultural research and education is defined as merit good but agricultural extension is not (GOI 1997). What is therefore required is to consider irrigation and flood control as well as agricultural extension as merit goods whose benefits to the society are larger than to the farmers. Subsidies for such goods have a basic economic rationale. Moreover, farm input subsidies may be rationalized keeping in view that their existing level is way below 10 per cent of agricultural production that is permitted under GATT.

*Three*, between the two land reforms of land ceiling and redistribution, and tenancy, it is the latter which must be prioritized even though the former has a higher relative ranking. This is because it unlike land redistribution has a positive association with absolute rural poverty i.e. it increases this poverty, while the latter reduces it. Thus, selective legitimization of tenancy that is egalitarian would be more healthy to remove the earlier discussed deficiencies of the lease market for reversing its ill-effects on this poverty (for similar conclusion based on the impact on productivity see Datta et al 1997, and Desai and Namboodiri 1997c). As regards land ceiling and redistribution what is required is not the liberal ceiling but implementing existing policies more vigorously. This is suggested because it would

protect threshold for smaller farmers' viability, besides easing their poverty. Another related land reform could be consolidation of fragmented holdings which will make effective farm size larger.

*Four*, next in importance is government expenditure on poverty programs. For the period that includes three years of macro reforms its relative importance even receded. These findings together with the preceding discussion suggests that for reducing poverty ratio technology-led agricultural growth is far more important than these programs.

And *last*, among the three per capita real value added it is this for agriculture rather than non-agricultural sector that is more important. This is because non-agricultural value added per capita has adverse impact on poverty ratio as was explained earlier. Thus, sustained growth in agriculture is very critical than a sporadic growth. This need has become more pronounced after the reforms emerged as can be seen from **Table 2**. And it suggests that non-(product) price policies that encourage technology-led agricultural growth should also be sustained and nurtured to reduce poverty ratio.

### Summing-up

This paper departs from the present policy emphasis for and more recent literature on poverty alleviation in advocating six major conclusions. These are:

*One*, contrary to the view that non-agricultural growth would provide off-farm employment opportunities to the rural poor we think that the strategy underlying such growth at an all-India level being capital-intensive with limited demand pull growth these opportunities do not bear fruits for the rural poor. What is, therefore, required

is to shift industrialization strategy from “Machines First” to “Textiles First” which has high and dispersed employment and income multipliers and linkages.

*Two*, what follows from the above suggestion is that agricultural growth should receive higher priority than is accorded now. And since such a growth has no trade-off with poverty ratio it would alleviate this poverty more rapidly.

*Three*, the strategy for technology-led agricultural growth is even more potent than either poverty alleviation programs or land redistribution measures in alleviating absolute rural poverty. This follows from the finding that total factor productivity in agriculture is relatively more important than these other policies and programs in reducing this poverty. Rapid and broad-based technical change would therefore require higher priority for government expenditure on agricultural R&D, extension, irrigation and watersheds, electricity, seeds, rural roads etc. It would also require encouraging private investments in seeds, fertilizers, pesticides, farm implements and machinery through more conducive interest rates on (rural) credit and fiscal and other incentives for industries making these inputs.

*Four*, between the poverty programs and land reforms latter may be prioritized more. But between egalitarian tenancy reforms and land ownership distribution the former may be more emphasized as inequality in land ownership unlike in operational land seems to generate processes that alleviate rural poverty ratio. Simultaneously, land consolidation programs also need to be urgently undertaken to make effective farm size larger.

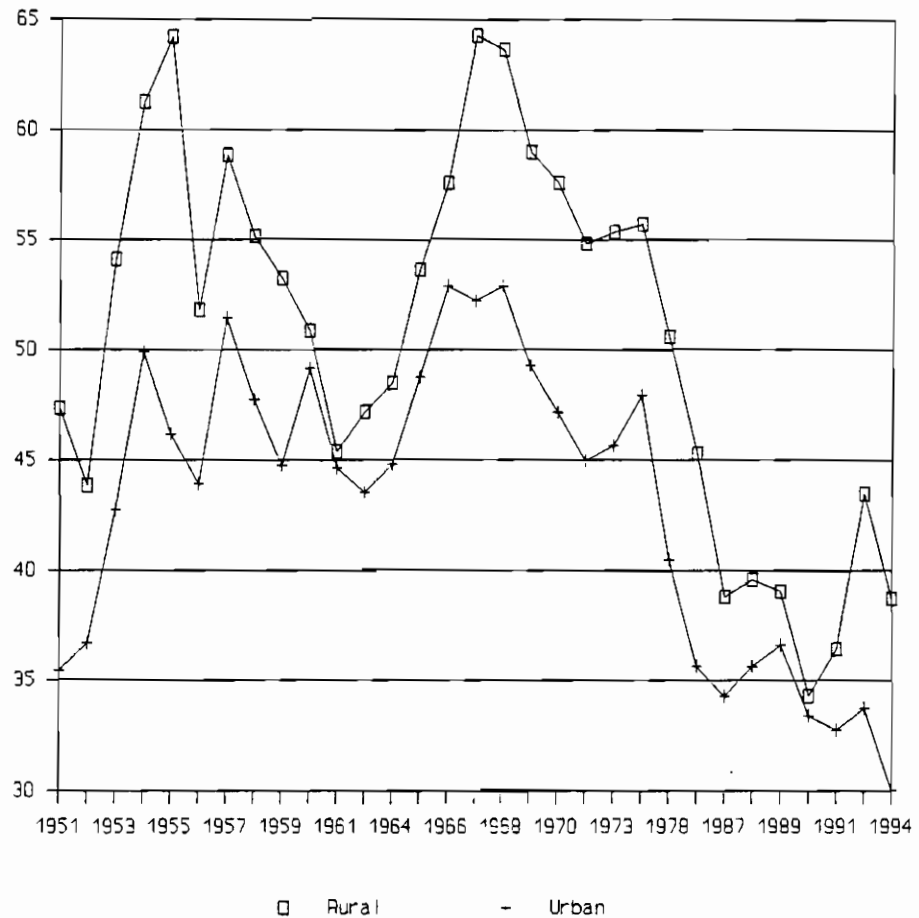
*Five*, economic programmes for poverty alleviation may be prioritized next. These programs also need to have better sectoral integration such as for agriculture, dairying, fisheries etc. with an emphasis on technical change as these have a lion’s share in rural work-force.

And *six*, price reforms through macro stabilization measures, and through reducing protection to trade and industry have the least impact on alleviating absolute rural poverty. This may be because (a) inflation is more of a structural

rather than monetary phenomenon, and (b) industries and business that are protected produce products that are perhaps remotely connected to poor's consumption pattern.



**Figure 1: Percentage of Head Count Ratio (i.e. absolute poverty) in Rural and Urban India during 1951 to 1994**



**Source:** "Economic Reforms, Employment and Poverty," Abhijit Sen, Economic and Political Weekly, Special No., September 1996. Headcount ratio estimate for some of the years in 1970s and 1980s is not available but it is interpolated as it had a relatively more clear uni-directional trend.

<b>Table 1 : Mean and Standard Deviation (S.D.) of Head Count Ratio and its Determinants for Rural India: 1961-62 to 1990-91 and 1961-62 to 1993-94</b>				
Variables	1961-62 to 1990-91		1961-62 to 1993-94	
	Mean	S.D.	Mean	S.D.
1. Head Count Ratio (%) in 1973-74 prices (HCR)	49.29	7.51	48.44	7.70
2. Per Capita Non-agril. NDP in 1973-74 prices (PCNAVA:Rs)	643.85	146.81	674.43	170.15
3. Per Capita Agril. NDP in 1973-74 prices (PCAVA:Rs)	568.47	41.59	576.07	46.69
4. Tornquist-Theil Index of Total Factor Prody in Agri.(ITFP)	108.45	15.53	109.99	15.57
5. Govt. Exp. on Poverty Programs in 1973-74 prices (GEPP: Rs.Mn.)	4533.00	4618.5	5389.20	5188.70
6. Gini Ratio of Owned Land Dist'n (ONLE)	0.709	0.003	0.710	0.003
7. Gini Ratio of Operational Land Dist'n (OPLE)	0.712	0.011	0.711	0.012
8. Inflation i.e. % Change in Index of Consumer General Prices for Agri. Labourers (I)	7.40	9.13	6.88	8.86
9. Prices Paid relative to Prices Received i.e. Index of Consumer General Price relative to Agri.NDP Deflator (RP)	1.01	0.08	0.99	0.09
* Poverty programs considered are IRDP, JRY, Special Programs and Food Subsidy				

**Table 2 : Estimated Models of Determinants of Absolute Poverty (i.e. HCR)<sup>[1]</sup> in Rural India: 1961-62 to 1990-91 and 1961-62 to 1993-94**

Variables	1961-62 to 1990-91			1961-62 to 1993-1994		
	Coeffts.	't' Values	Rank <sup>[2]</sup>	Coeffts.	't' Values	Rank <sup>[2]</sup>
1. PCAVA <sub>t</sub>	- 0.301	-1.278****	7	-0.410	-1.642***	6
2. PCAVA <sub>t-1</sub>	- 0.503	-2.551*	6	-0.692	-3.106*	4
3. PCNAVA <sub>t</sub>	0.093	1.790**	5	0.086	1.586***	3
4. ITFP <sub>t</sub>	- 0.666	-2.370**	2	-0.656	-2.201**	1
5. GEPP <sub>t</sub>	- 0.040	-2.069**	4	-0.023	-1.188****	5
6. ONLE <sub>t</sub>	-28.397	-2.900*	1	-15.298	-1.608***	2
7. OPLE <sub>t</sub>	4.544	1.761**	3	0.577	0.249	7
8. I <sub>t</sub>	0.0007	0.542	9	-0.160	-0.114	8
9. RP <sub>t</sub> <sup>[3]</sup>	- 0.116	-0.480	8	-0.022	-0.086	9
10. Constant	3.729	1.075	---	8.501	2.562	---
11. R bar Square	0.889			0.871		
12. 'F' Value	26.88*			24.92*		
13. D-W	1.04			1.10		

[1] All the variables except inflation (I<sub>t</sub>) are in natural logarithms. It is in linear form as it was negative in some of the years.

[2] Based on standardized regression coefficients which are given by coefficients x (s.d. of X<sub>i</sub> ÷ s.d. of Y) (ignoring signs) where s.d. is standard deviation, X<sub>i</sub> is i<sup>th</sup> explanatory variable and Y is dependent variable.

[3] RP is Index of Consumer General Price for Agricultural Labourers relative to Ag.NDP deflator.

\* Significant at 1%    \*\* Significant at 5%    \*\*\* Significant at 10%    \*\*\*\* Significant at 15%

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