

Economic Growth, Income Inequality, and Poverty Reduction in People's Republic of China

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The paper proposes a poverty reduction index demonstrating that the selection of growth policies should be to maximize the sum of income and inequality effects. The empirical results indicate that economic growth in the People's Republic of China (PRC) between 1985 and 2001 was effective in reducing poverty but rising inequality reduced the effectiveness of poverty reduction. The empirical results also indicate that initial level of inequality is important in determining growth policies for a country whose regions are in different development stages. A development stage with low initial inequality will achieve greater poverty reduction from growth, whereas a development stage with high initial inequality will require a deeper poverty focus. In the current stage of economic development in the PRC, economic growth is still effective in reducing poverty. Infrastructure projects that support economic growth will still lead to poverty reduction, even if the nonpoor might get more direct benefits from these projects. Well-designed infrastructure projects with a poverty focus will be more effective in poverty reduction.

I. INTRODUCTION

The People's Republic of China (PRC) was one of the world's most egalitarian societies in the 1970s. However, in the 1990s, the PRC became one of the more unequal countries in the Asian and Pacific region and among developing countries in general (Riskin 2001). This retreat from equality has been unusually rapid. The Gini coefficient was 0.29 in 1981 but increased to 0.39 in 1995 (World Bank 1997). The Gini coefficient of inequality in household income rose by 1.0 percentage point per year between 1988 and 1995 (Knight and Song 2001). The process was encouraged by the PRC government's policy of "letting some people get rich first" since the introduction of reforms and opening in 1978.¹ At

¹The "letting some people get rich first" policy was promoted by the PRC government to stimulate economic incentives and activities during the early stage of economic reforms and opening in 1978. It was a major policy initiative that started the impressive economic growth and the rapid retreat from equality in the PRC.

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the same time, the PRC's poverty reduction efforts have been a great success. The poor in rural areas were reduced from 250 million in 1978 to about 26.4 million in 2001, and the rural poverty incidence rate decreased to 3.3 percent,² mainly supported by rapid economic growth. The average annual rate of growth of gross domestic product (GDP) was 9.8 percent during the 1980s, 9.7 percent during the 1990s, and 9.5 percent in 1979 and 2001. Per capita GDP increased almost six times between 1978 and 2001.³

Economic growth explains much of the PRC's record of success in poverty reduction since 1978. Both over time and across regions/provinces, the growth in per capita GDP has been closely associated with the pace of poverty reduction. Available evidence confirms that the growth effect on poverty in the PRC has been substantially influenced by the regional and sectoral composition of that growth. The slower than national average growth in the poor western regions explains the increasing regional concentration of poverty. In addition, uneven growth in agriculture, the main source of income for the rural poor, has contributed to differences in the rate of poverty reduction between rural and urban areas. Poverty reduction has been slower where agricultural growth has lagged, and faster where agricultural growth has more or less kept pace with the growth in other sectors. Further, uneven infrastructure development has contributed to both the increased regional concentration of poverty and rural poverty.

The reliance of rapid economic growth on infrastructure investment is evidenced by the close relationship between the growth of fixed investment for infrastructure development and GDP growth. Particularly since 1997, economic growth in the PRC has been supported by a series of fiscal stimulus measures focusing on infrastructure investment.⁴ The government's strategy of infrastructure development is a main factor for sustaining the 7 to 8 percent GDP growth in the short to medium term. The traditional view of infrastructure investment rests on the assumption that its relationship with the poor, if any, is indirect via growth in the economy. For a road or power project, the nonpoor will receive more direct project benefits, as they usually consume proportionally more of the project outputs. There is clear evidence that infrastructure investment supported economic growth in the PRC. But did it lead to poverty reduction?

The PRC's experience seems to indicate that an effective way to reduce poverty is to increase the average income that could lower the absolute number of

²The current official rural poverty line is Yuan 625. Using a poverty line of \$1 a day applying purchasing power parity (PPP) or caloric methodologies, the poverty population will be about 90 million or 11 percent of the rural population (Wu 2003).

³The low population growth also contributed to the rapid growth in per capita income. The annual population growth rate was only 1.24 percent during the period.

⁴Government has committed itself to supporting the economy through funds raised via bond issuance. For example, the fixed asset investment for infrastructure development grew by 15.1 percent in 1999.

poor people. A recent World Bank study by Dollar and Kraay (2001) states that the income of the poor rises one for one with overall economic growth. This implies proportional benefits of growth for the poor and for the nonpoor. It also implies that growth, regardless of its nature, is good for the poor. However, many economists believe that world poverty has remained at a higher level largely due to worsening income inequality (Ahluwalia 1974), although there is no conclusive evidence to suggest that inequality has actually worsened significantly over time in a large number of developing countries (Fields 1988).

If poverty is defined in terms of capabilities (Sen 1981 and 1984), reducing poverty may imply, for example, an improvement in nutritional and health status and educational attainment. A rise in the overall income level may not guarantee a reduction in malnutrition, illiteracy, and disease. Even if we define poverty in a narrow sense,⁵ growth will not always lead to poverty reduction. Economic growth could be achieved by adopting different policy measures and every set of growth policies will have a varying impact on inequality. The effectiveness of growth in reducing poverty, therefore, will be affected by how income is distributed.

In this study, we focus on poverty analysis using the narrow definition, i.e., degree of poverty depends on two basic factors: average income and inequality. A positive growth with no change in inequality will certainly reduce poverty. If the rise in average income is accompanied by distributional changes in favor of the poor, poverty will be reduced to a greater extent. On the other hand, if growth is accompanied by worsening income inequality, poverty may not decline, or in extreme cases, may in fact rise. Therefore, to assess if growth leads to poverty reduction and to understand the extent how growth reduces poverty, this paper utilizes the methodology of decomposition of poverty impact into two components: change in average income and change in inequality.⁶

Because (i) poverty in the PRC is largely a rural phenomenon,⁷ and (ii) urban income is distorted and seriously underestimated (Shi 2001), this paper focuses on rural poverty. Two main questions the paper tries to analyze are: (i) how the rise in average income and the change in inequality affected poverty reduction, and (ii) if inequality increased during the study period, did it lower the effectiveness of growth in reducing poverty.

⁵Poverty in a narrow definition refers to the poor who earn income less than or equal to a certain benchmark income level (the poverty line).

⁶Ravallion and Huppi (1991) have attempted to measure separately the impact of changes in mean income and income inequality on poverty by a regression model explaining poverty in terms of mean income and Gini index. First, this procedure is not very accurate and second, it requires an enormous amount of data. The methodology developed in this paper provides an alternative way of separating the effects on poverty of mean income growth and changes in inequality.

⁷There is growing concern on rising urban poverty due to state-owned enterprise reforms that lead to urban unemployment. However, urban poverty is not considered an important issue under the current official poverty line.

Section II discusses in detail the methodology of decomposition of growth effect and proposes a poverty reduction index. In Section III, the paper applies the methodology to survey and other official data to analyze rural poverty reduction in the PRC from 1985 to 2001. Section IV analyzes what policies led to the kind of growth process that had a diminishing marginal effectiveness on poverty reduction. Section V concludes.

II. MODEL

A poverty measure using the narrow definition of poverty can be expressed in terms of the level of income relative to a fixed benchmark poverty line z , and the income distribution. The poverty level at time t , can be written as:

$$P_t = P(z_t, \mu_t, L_t)$$

Keeping the poverty line z fixed over time, we can rewrite the equation as:

$$P_t = P(\mu_t, L_t) \quad (1)$$

The total change in poverty is the difference between the poverty levels observed in the two time periods, say $t=0$, and $t=1$.

$$P_1 - P_0 = P(\mu_1, L_1) - P(\mu_0, L_0) \quad (2)$$

Therefore, the total change in poverty is due to a change in mean income (μ) and/or a change in inequality, represented by a change in the Lorenz curve (L). To determine how much of the total change in poverty is brought about by each type of change, we need to calculate some “intermediate or hypothetical” levels of poverty:

$$P_{10} = P(\mu_1, L_0) \text{ and } P_{01} = P(\mu_0, L_1)$$

These are referred to as hypothetical poverty levels because these poverty levels are not observed historically. They indicate what would have been the poverty level (P_{10}) if the mean income had changed from μ_0 to μ_1 without any change in inequality, and what would have been the poverty level (P_{01}) if the Lorenz curve had been changed from L_0 to L_1 without any change in the mean income. Using these intermediate poverty levels, the total change in poverty can be decomposed in several ways. Kakwani and Subbarao (1990) carried out the decomposition in the following way:

$$P_1 - P_0 = (P_{10} - P_0) + (P_1 - P_{10}) \quad (3)$$

Jain and Tendulkar (1992) proposed an alternative way:

$$P_1 - P_0 = (P_1 - P_{01}) + (P_{01} - P_0) \quad (4)$$

The first term on the right hand side of Equations (3) and (4) presents the growth component, which gives the growth impact on poverty from changes in mean income. The growth component in Equation (3) is measured by holding inequality fixed at time $t = 0$, while in Equation (4) growth is measured by holding inequality fixed at time $t = 1$. Similarly, the second term in Equations (3) and (4) is the inequality component, which gives the poverty impact due to change in inequality, holding mean income fixed at time $t = 1$ in Equation (3) and time $t = 0$ in Equation (4). The growth and inequality components measured in Equation (3) differ from that measured in Equation (4). Since there is no theoretical basis to prefer the base year to the final year as the benchmark, we have no reason to prefer the decomposition in Equation (3) to that in Equation (4) or vice versa.

However, the above approach was criticized on the grounds that the decomposition is not path-independent. The reduction in poverty due to a change in the mean income (inequality) depends on whether the inequality (mean income) is held fixed at time $t = 0$ or $t = 1$. To make each component path-independent, Jain and Tendulkar suggest that the decomposition should be:

$$P_1 - P_0 = (P_{10} - P_0) + (P_{01} - P_0) + R \quad (5)$$

where R is the residual, which is the difference between the growth (inequality) components evaluated at the final and initial inequality (mean income level). In this case, each parameter is changed holding the other parameter fixed at time $t=0$, yielding the sequence in which the changes are calculated irrelevant. However, this path independence property is obtained at a cost. The decomposition in Equation (5) is partial in the sense that the two components do not add to the total change and the equation contains a residual. Intuitively, if the total change in poverty can be expressed fully by the change in income level and inequality, there is no reason why the decomposition should have any residual. The decomposition in Equation (3) and Equation (4) are full but not path-independent, whereas in Equation (5) it is path-independent but has a residual. In this study, we use a simple way to address the problem. From Equations (3) and (4), the total change in poverty can be rewritten as:

$$P_1 - P_0 = [(P_{10} - P_0) + (P_1 - P_{01})]/2 + [(P_1 - P_{10}) + (P_{01} - P_0)]/2 \quad (6)$$

Using the decomposition, we take the average of the two components; one presents the growth effect on poverty due to a change in the mean income keeping inequality fixed at time $t = 0$ and the second gives the growth effect on poverty

keeping inequality fixed at time $t = 1$. We apply the same method for averaging the two inequality components; one gives the growth effect on poverty due to a change in inequality keeping mean income fixed at time $t = 0$ and the other gives the growth effect on poverty keeping mean income fixed at time $t = 1$. The advantage of this method is that the decomposition becomes not only free of the sequence in which the different components are calculated but it also becomes complete. There is no residual or unexplained part of the total change.

Equation (6) analyzes how the gains from growth are distributed across households, in particular, if an economic growth benefits the poor, and if so, to what extent. The first term in the right hand side, which captures income effect keeping inequality constant, is the income component; the second term is the inequality component. Let $\Delta P = P_1 - P_0$, $\Delta G = [(P_{10} - P_0) + (P_1 - P_{01})]/2$, and $\Delta I = [(P_1 - P_{10}) + (P_{01} - P_0)]/2$, we have:

$$\Delta P = \Delta G + \Delta I \quad (7)$$

We can calculate the inequality component by fixing the mean income to a poverty line. One should note that it is possible that while the distributional changes are “pro-poor”, there is no absolute gain to the poor, and “pro-rich” distributional shifts may have come with large absolute gains to the poor (Ravallion and Chen 2001). It is common to compare mean incomes across the distribution ranked by mean income. This is referred to as “Pen’s parade” (Pen 1971). To assess if a growth is poverty-reducing, a natural step from Pen’s parade is to calculate the growth rate of the poorest quintile in terms of mean income.⁸ Considering that there is a positive growth rate g_{01} percent between periods 0 and 1, poverty elasticity can be defined as:

$$\eta = \Delta P / g_{01} \quad (8)$$

Poverty elasticity (η) is the proportional change in poverty from a positive growth rate of 1 percent. We define $\eta_G = \Delta G / g_{01}$ and $\eta_I = \Delta I / g_{01}$ and rewrite Equation (8) as:

$$\eta = \eta_G + \eta_I \quad (9)$$

Equation (9) shows that the change in poverty caused by a 1 percent growth is the sum of η_G and η_I , where η_G is the income effect and η_I is the inequality effect. η_G is always negative, indicating that growth will reduce poverty when inequality does not change. η_I can be either negative, zero, or positive. If η_I is

⁸Dollar and Kraay (2001) tested whether aggregate growth is “good for the poor” by calculating the growth rate of the mean income of the poorest quintile.

negative, growth has led to a change in income distribution in favor of the poor and therefore is strictly pro-poor. If η_I is zero, growth has not led to a change in inequality making everyone better off and reducing poverty. When η_I is positive, the change in inequality is in favor of the rich and has a negative impact on poverty reduction. We now define a poverty reduction index:

$$\Phi = \eta / \eta_G = (\eta_G + \eta_I) / \eta_G = 1 + \eta_I / \eta_G \quad (10)$$

Φ will be greater than 1 if $\eta_I < 0$, meaning, growth leads to higher income and a better income distribution, and is strictly pro-poor. If $\eta_I = 0$ and $\Phi = 1$, growth leads to higher income for all while keeping inequality constant. If $0 < \Phi < 1$, it requires $|\eta_G| > |\eta_I|$ and implies that even if $\eta_I > 0$, poverty generally declines due to growth. If $\eta_I > 0$, $|\eta_G| < |\eta_I|$, and $\Phi < 0$, growth hurts the poor and increases poverty.

III. EMPIRICAL ANALYSIS

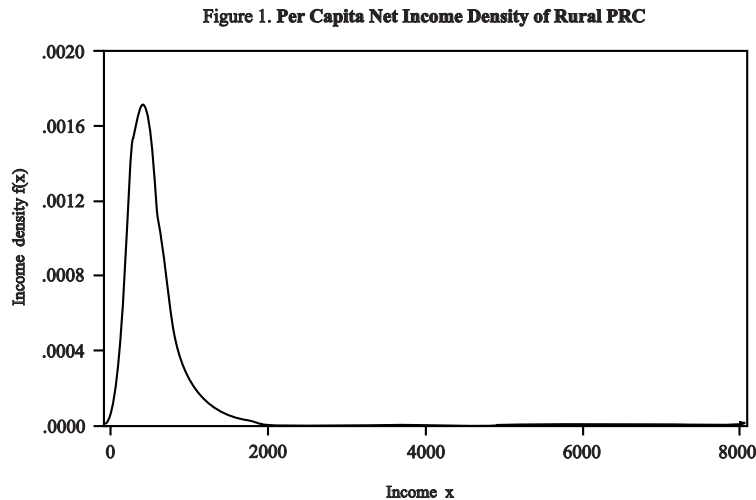
The methodology developed in the foregoing section is applied to assess the impact of economic growth in the PRC on poverty using survey data for the period 1990 to 2001. For convenience of ranking effectiveness of poverty reduction, we propose a set of value judgments for the poverty reduction index (Φ). If

- (i) $\Phi < 0$, growth is antipoor
- (ii) $\Phi = 0$, growth is neutral in poverty reduction
- (iii) $0 < \Phi < 0.5$, growth is weak in poverty reduction
- (iv) $0.5 < \Phi \leq 1.0$, growth is effective in poverty reduction
- (v) $\Phi > 1.0$, growth is effective in poverty reduction and is pro-poor

The poverty reduction index is the sum of income effect and inequality effect in a given time period. When $\Phi = 0$, economic growth does not lead to poverty reduction, or the growth effect on poverty reduction is offset by a negative inequality effect. When $0 < \Phi < 1$, though the economic growth is accompanied by worsened inequality, the income effect dominates and the growth is poverty reducing. We consider that when $0.5 < \Phi < 1.0$, growth is effective in poverty reduction, as it indicates that substantial poverty reduction happens due to either high growth effect or low inequality effect. When $\Phi = 1.0$, growth is effective in poverty reduction and does not worsen income distribution. When $\Phi > 1.0$, growth is effective in poverty reduction and is pro-poor, as growth enables the poor to benefit proportionally more than the nonpoor (Pernia 2003). The poverty reduction index could be easily computed and the data requirements for computing Φ are not demanding.

The study used a poverty line of Yuan 1,000 in 2001 constant price for rural households.⁹ The data used in this study are obtained from: (i) 1985 Rural Household Survey, (ii) *Rural Statistical Yearbook* (various issues), (iii) *Statistical Yearbooks of China* (various issues), (iv) *Rural Yearbooks* (various issues), and (v) data provided by the China National Statistical Bureau. Rural consumer price index, per capita net income, and other important socioeconomic indices of rural households are also used in calculating the proportion of per capita net income of rural households and cumulative income distribution.

We assume that income distribution is lognormal based on the following considerations: (i) the hypothesis of income following lognormal distribution is a common procedure in economics (Dollar and Kraay 2001); and (ii) the empirical density curve of income of rural households, which is plotted by the 1985 rural household survey data, is indeed lognormal (Figure 1).



⁹If the \$1 per day “international” poverty line is used, the rural poverty line is estimated to be Yuan 960. The Yuan 1,000 poverty line for rural areas used in this paper follows the design of the survey data.

The second issue, consequently, is how to estimate log income mean (μ) and standard deviation (σ). Using the average of per capita net income and log-normal density relationship, we have:

$$\mu + \frac{1}{2}\sigma^2 = \ln a \quad (11)$$

We consider cumulative income proportion as cumulative distribution function (CDF) of lognormal. Using lognormal density for given probability function (P), we have

$$P = \frac{1}{\sigma\sqrt{2\pi}} \int_0^x \frac{1}{t} e^{-\frac{(\ln(t)-\mu)^2}{2\sigma^2}} dt \quad (12)$$

Combining Equations (11) and (12), we can resolve μ and σ series for a given CDF and P .¹⁰ The income series was adjusted at 2001 constant price. The Foster-Greer-Thorbecke poverty measures (FGT) (Foster et al. 1984) distinguish among the poor according to how far away from the poverty line their income falls and can, therefore, be considered as measures of depth of poverty. In this study, we use FGT for which $\alpha \leq 2$ in a continuous form of FGT poverty measures is given by:

$$\pi_\alpha = \int_0^z \left(\frac{z-y}{z} \right)^\alpha f(y) dy \quad (13)$$

Table 1 presents the estimates of poverty measures and Gini coefficients in the PRC for 1985, 1990, 1995, and 2001. The poverty incidence ratio has declined substantially, from 57.85 percent in 1985 to 15.44 percent in 2001. The impressed poverty reduction is also evidenced by the measurements of the income gap ratio, the poverty gap, and FGT. The income gap ratio decreased from 0.34 to 0.26, poverty gap ratio from 19.00 in 1985 to 3.43 in 2001, and FGT index from 8.37 in 1985 to 1.03 in 2001. However, the Gini coefficient, which reflects the degree of inequality, increased from 0.23 in 1985 to 0.35 in 2001.¹¹ The increased inequality during this period is confirmed by the Lorenz curves in Figure 2.

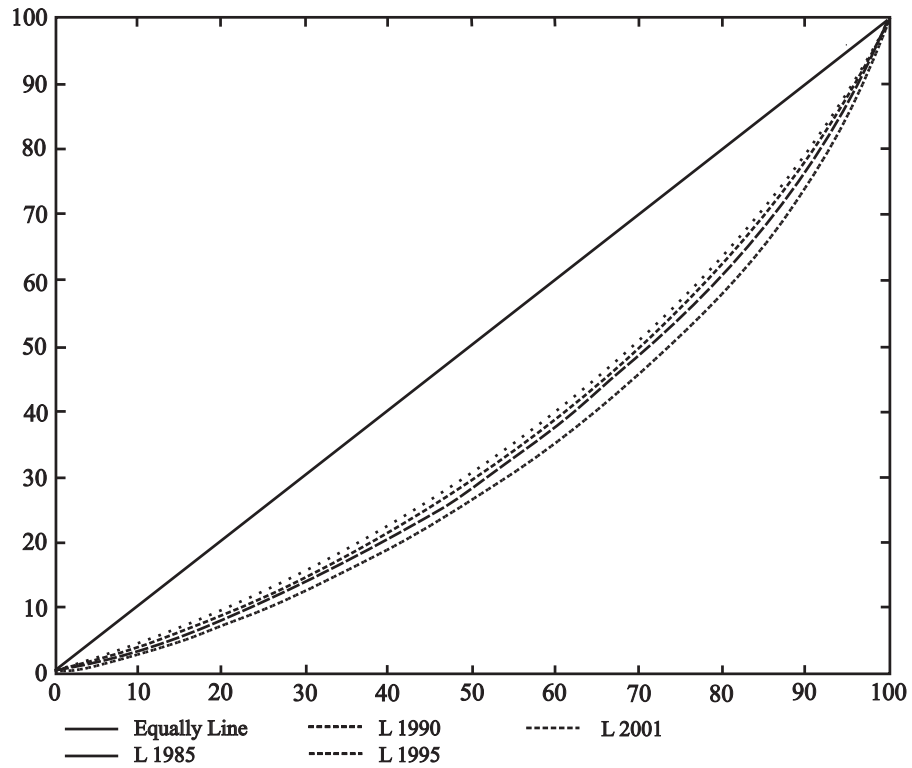
¹⁰For a given year, μ and σ used to simulate Yuan 1,000 per capita income series are their means (for 2000, μ is 7.62, σ is 0.62). The simulation income series was adjusted by rural consumer price index.

¹¹This is consistent with 1.0 percent per year increase in Gini coefficient of inequality estimated by Knight and Song (2001).

Table 1. Poverty Measures and Gini Coefficients

	Unit	1985	1990	1995	2001
Poverty Incidence (headcount, H)	percent	57.85	40.08	25.48	15.44
Income Gap ratio I	percent	0.34	0.29	0.27	0.26
Poverty Gap (PG=H*I)	percent	19.00	11.76	6.89	3.43
FGT	percent	8.37	4.75	2.56	1.03
Gini Coefficient		0.23	0.29	0.33	0.35

Figure 2. Lorenz Curves for Rural PRC in 1985, 1990, 1995, and 2001



Decomposing the poverty reduction index into the income and inequality components, the Lorenz function parameters a , b , and c were estimated by regressing $[1-L(p)]L(p)$ on (p^2-L) , $(p-1)L$ and $(p-L)$.¹² The regression results were used to recalculate poverty measures, which are consistent with the corresponding values presented in Table 1. The rule used in determining regression sample ranges is to minimize poverty measurement errors. Based on this, other parameters were also estimated. For the different combinations of mean income and Lorenz curve, various hypothetical poverty levels were calculated, indicating what would have been the poverty level (P_{10}) if mean income had changed from μ_0 to μ_1 without change in inequality, and what would have been the poverty level (P_{01}) if the Lorenz curve had changed from L_1 to L_2 without change in mean income. Equation (6) is used to calculate poverty decomposition presented in Table 2.

Table 2. Poverty Impact Decomposition for Rural PRC

Periods	Total Change in Poverty (percent)	Growth Component (percent)	Inequality Component (percent)	Ratio of Inequality Component to Growth Component
Headcount Ratio (H)				
1985-1990	-17.77	-18.88	1.12	-0.06
1990-1995	-14.61	-16.62	2.01	-0.12
1995-2001	-10.04	-13.81	3.77	-0.27
1985-2001	-42.41	-47.79	5.38	-0.11
Poverty Gap (PG)				
1985-1990	-7.25	-8.18	0.93	-0.11
1990-1995	-4.86	-6.21	1.34	-0.22
1995-2001	-3.47	-4.83	1.36	-0.28
1985-2001	-15.58	-19.12	3.54	-0.19
Foster-Greer-Thorbecke Class (FGT)				
1985-1990	-3.62	-4.26	0.64	-0.15
1990-1995	-2.19	-2.99	0.80	-0.27
1995-2001	-1.53	-2.13	0.60	-0.28
1985-2001	-7.34	-9.56	2.22	-0.23

¹²If we have observations for the entire population, poverty and inequality measures could be computed directly. In practice, however, only a certain number of survey data points are available. It is necessary to specify a functional form for the Lorenz curve and use econometric methods to estimate the parameters underlying the functional form. There are many possible specifications of the Lorenz curve in literature. In this study, we use the general quadratic model: $ax^2 + bxy + dy^2 + cx + ey + f = 0$

The empirical study yields several important results. First, poverty impact decomposition using different poverty measures in Table 2 have consistent results, indicating that, between 1985 and 2001, growth had led to significant poverty reduction but worsening inequality had a negative impact on poverty reduction. The poverty headcount is estimated to decline by 42.41 percent between 1985 and 2001, with 17.77 percent between 1985 and 1990, 14.61 percent between 1990 and 1995, and 10.04 percent between 1995 and 2001. Second, the impact of growth on poverty reduction has declined over time. The impact of growth on poverty reduction in 1985 and 1990 was more effective than that in other periods. The negative impact on poverty reduction from inequality has increased over time. The increase was usually rapid in a period of 15 years. Using the headcount ratio, the inequality component made growth only 6 percent less effective in poverty reduction in 1985 (11 percent by PG, and 15 percent by FGT). This increased to about 27 percent in 2001 and should serve as a warning to policymakers.

Table 3. Poverty Reduction Index

Year	Poverty Elasticity	Explained by Growth	Explained by Inequality	Poverty Reduction Index
Headcount (H)				
1985-1990	-0.64	-0.68	0.04	0.94
1990-1995	-0.47	-0.54	0.06	0.88
1995-2001	-0.27	-0.37	0.10	0.73
1985-2001	-0.33	-0.37	0.04	0.89
Poverty Gap (PG)				
1985-1990	-0.26	-0.30	0.03	0.89
1990-1995	-0.16	-0.20	0.04	0.78
1995-2001	-0.09	-0.13	0.04	0.72
1985-2001	-0.12	-0.15	0.03	0.81
Foster-Greer-Thorbecke Class (FGT)				
1985-1990	-0.13	-0.15	0.02	0.85
1990-1995	-0.07	-0.10	0.03	0.73
1995-2001	-0.04	-0.06	0.02	0.72
1985-2001	-0.06	-0.07	0.02	0.77

Applying the poverty reduction index, we can provide in Table 3 an assessment of the effect of growth on poverty reduction in the PRC between 1985 and 2001. Among the three poverty measurements, poverty elasticity is highest using the headcount measure. After decomposition, the resultant poverty reduction indexes are consistent using all three poverty measurements. On average, growth in the PRC was effective in reducing poverty ($\Phi > 0.77$) between 1985 and 2001 even with rapidly worsening inequality. Growth was very effective in poverty reduction between 1985 and 1990 with $\Phi > 0.85$. But the effectiveness of growth on

reducing poverty has been diminishing as the inequality effect increases over time. This is indicated by the poverty reduction index of about 0.73 between 1995 and 2001.

The effectiveness of growth in poverty reduction depends on the initial level of inequality in different time intervals. Between 1985 and 1990, growth was very effective in poverty reduction with effectiveness (Φ) as high as 0.94 using the poverty headcount, due to the low initial inequality in 1985 (Gini coefficient of 0.23). But from 1995 to 2001, effectiveness has declined substantially to 0.73 using the poverty headcount, due to the higher initial inequality (Gini coefficient of 0.33 in 1995).

IV. INCREASING INCOME INEQUALITY IN ECONOMIC REFORMS AND TRANSITION

This section focuses on the factors that have led to the kind of growth process with diminishing marginal effectiveness on poverty reduction during the economic transition in the PRC. Prior to the 1978 economic reforms, the PRC was an egalitarian society, save for its rural-urban gap. There were many factors contributing to the high degree of equality in the PRC. First, the institutional arrangement of a socialist system is characterized by public ownership of the means of production. Especially from 1949 to 1956, with the gradual enforcement of public ownership, the people did not have property income except some interest earnings from a small amount of savings. Second, the policymakers believed that social equality is an important objective of socialism. The policy of emphasizing capital accumulation was adopted and wages were kept low and largely equal across sectors. Third, the egalitarian ideology of “worry about inequality but not scarcity” long existed in the PRC’s traditional culture that emphasized equality over efficiency. The Gini coefficients of income distribution before the reforms were lower than that of most other countries. The Gini coefficient on average was below 0.20, while in the rural areas it was estimated at about 0.21.¹³

A. Important Features of Inequality in Economic Transition

The increase in inequality in the PRC was faster than originally anticipated at the outset of the reform. Table 4 presents official rural Gini coefficients from 1978 to 2000. Income inequality in rural areas increased substantially during the period. The rural Gini coefficient rose from 0.21 in 1978 to 0.35 in 2000. Table 4 also indicates that the income gap between urban and rural residents narrowed in the early 1980s and then widened again beginning in the mid-1980s. This is be-

¹³The urban Gini coefficients in many developing countries were between 0.37 and 0.43 and the rural Gini coefficients between 0.34 and 0.40.

cause the 1978 economic reforms started in rural areas and benefited the rural population more in this period. Rural per capita income as a percentage of urban real per capita income increased to 54 percent in 1985, but by 2000, it had returned to the pre-reform level of 35 percent. In addition, regional disparities have been also increased since the reforms.

Table 4. **Gini Coefficients in the Rural Areas and Rural and Urban Income Per Capita**

Year	Rural Gini Coefficients	Rural Per Capita Income as Percentage of Urban Per Capita Income
1978	0.21	38.9
1980	0.24	40.1
1985	0.23	53.8
1990	0.31	45.4
1995	0.34	36.8
2000	0.35	35.9

Source: China National Statistical Bureau.

One interesting feature of the PRC's rural poverty is that individual and family characteristics appear to be less important than in other developing countries in explaining poverty. There are several reasons for this phenomenon. First, within villages, the egalitarian access to economic assets that began in the 1950s and continued through the period of collective production in the early 1980s limited the asset-based income inequality. In particular, land-use rights (not ownership) are equally distributed, and there are few, if any, landless farmers. This contrasts sharply with other developing countries such as India where a large percentage of the rural poor are landless labors. Moreover, access to social services such as education and medical care in the PRC tends to be village-, not family-, specific. Second, because of the compulsory system of primary and secondary education, most children receive basic education and become literate. Third, continued state control of some major agricultural inputs, such as fertilizer, and some major outputs, reduce opportunities in these markets. Finally, in many areas, collectives directly control or strongly influence the access to many forms of nonagricultural employment in an attempt to spread jobs among local families.

An important aspect of inequality in the PRC is the larger regional inequality between rich and poor provinces. In general, poverty is concentrated in mountainous areas, primarily in several ranges and high plateaus that define the western boundary of traditional Han agricultural areas, and in the Northern PRC plain. More than 60 percent of the rural poor live in the border provinces such as Gansu, Guizhou, Guangxi, Inner Mongolia, Ningxia, Qinghai, Sichuan, Xinjiang, and Yunan. Despite the low population density in these areas, poverty incidence was much higher than the national average. For example, 23 percent of the rural

population in Gansu and 27 percent in Xinjiang lived below the poverty line in 1996. Another pocket of poverty is the Northern PRC Plain, where the poor account for 22 percent of the national total. This area includes Hebei, Henan, Shanxi, and Shannxi, where natural resources, particularly poor soil and scarce water, are the major reasons for high concentration of the rural poor.

The PRC rural-to-urban income ratio in 2000 was only 35.9 percent, lower than 38.9 percent at the beginning of the economic reforms of 1978. If subsidies and other implicit incomes for the urban residents were included, the PRC could have the largest income gap between the rural and urban sector in the world (Li Shi 2001). As in most of the developing countries, the rural-urban income gap was caused by a dual economic structure: the coexistence of a modern industrial sector (urban) and a traditional agricultural sector (rural). Unlike other developing countries, however, there have been specific features for the rural-urban gap in the PRC. Historically, low purchasing prices for agricultural products that were used to accumulate funds for industrialization, and strict control over urban resident household registration that prevented the migration of rural populations into the urban areas were the specific policies responsible for the large rural-urban gap. The economic reforms that led to the PRC's impressive economic growth did not address the rural-urban gap.

B. Factors Affecting Inequality and Poverty Reduction

Many economists have tried to explain increasing inequality as a natural result of the early stages of economic development, as hypothesized in Kuznets's inverted U-shaped time path of distribution (Kuznets 1955). In general, the PRC's experience indicates that growth supported by different reform agendas led to very different results in inequality. The PRC's economic reforms started in rural areas. Table 4 showed that the rapid development of agricultural production from 1978 to 1984 actually narrowed the income gap between the rural and urban areas as the rural-urban income ratio increased from 38.9 to 53.8 percent, but had a small impact on rural inequality, as the rural Gini coefficient increased from 0.21 in 1978 to 0.23 in 1985. The growth in agriculture during this period was largely due to the freedom and incentives in agricultural production provided by rural institutional reforms and increases in agricultural prices.

The subsequent economic reforms focused on industrial development, which led to rapid economic growth and increasing inequality. By 2000, the rural Gini coefficient increased to 0.35 and the rural-urban income ratio decreased to 35.9 percent. All these happened in a relatively short period of 15 years. What are the main factors that contributed to the rapid deterioration of income inequality in the PRC? We focus on the main factors affecting income distribution in the areas of (i) economic reform and institutional changes, and (ii) economic policies. In Table 5, some main factors are identified and their impacts (positive or negative) are

assessed. As these factors could be interrelated, it is difficult to quantify their impacts.

Table 5. **Main Effects of Economic Growth, Reform, and Policy on Income Inequality**

	Rural Inequality	Urban and Rural Inequality
Economic Reforms/Institutional Changes		
Price reform in favor of rural areas	–	–
Household responsibility system in rural areas	+	–
Internal flow of rural labor	+	–
Other reforms supporting agricultural development	–	–
Allowing private sector development	+	+
State-owned enterprise reforms		+
Rent-seeking activities and corruption	+	+
Policy Choices		
Low purchasing price for agricultural products	+	+
Net taxation of the rural sector	+	+
Rural taxes and fees	+	+
Subsidies to urban residents		+

Note: “+” represents the increase of inequality; “–” represents the decrease of inequality. Some effects on inequality are difficult to assess and have been left empty.

1. Economic Reforms and Institutional Changes

The key to the PRC’s high and sustained growth has been the economic reforms that preserve political stability, which have provided a business environment encouraging domestic and foreign direct investment. However, to ensure political stability, the PRC adopted a gradual approach to economic reforms, which led to the coexistence of two economic systems (planned system and market system), and a dual price system (planned prices and market prices). The PRC’s economic reform started in 1978 was the starting point of the growth process. The initial reforms focused on the rural sector. In particular, reforms on agricultural prices and the household contract responsibility system were implemented in the rural areas, which were widely beneficial to rural households and decreased the inequality between the rural and urban areas. However, income inequality in the rural areas also increased as incentives and efficiency improvements brought about by the reforms helped some hardworking, more market-oriented farmers become “rich” first. Allowing internal flow (rural to urban) of rural labor played an important role in reducing the rural-urban and regional inequalities, but increased rural inequality as migrant laborers usually earned higher income than farmers.

Since the mid-1980s, reform of state-owned enterprises (SOEs) and private sector development have so far had the largest impact on income inequality in the PRC, including rural, rural-urban, and regional inequalities. The SOE reform and

restructuring were the main causes of urban unemployment. In rural areas, allowing and encouraging nonagricultural, private sector development (nonfarm opportunities and incomes) was the main cause of rural inequality. The reforms and institutional changes in the PRC also provided opportunities for rent-seeking activities and corruption. Not much research has been done on the distribution of rents. However, it is universally acknowledged that rent-seeking activities and corruption lead to income inequality. In particular, rent-seeking activities and corruption have led to the loss of state assets. This also contributes to increasing inequality.

2. Policy Choices

In addition to economic reforms and institutional changes, certain economic policy choices also affected the effectiveness of poverty reduction. In the initial stage of the economic reforms and transition, the policy of encouraging people to get rich "first" was intended to overcome the egalitarianism of the socialist system and promote efficiency with stronger incentives to facilitate economic growth. However, this policy unavoidably promoted income inequality. Traditional low purchasing prices for agricultural products, the high tax burdens on farmers, and the high subsidies and benefits for urban residents have not been effectively addressed in the economic transition and contributed to increasing inequality. Rural inequality and rural-urban inequality increased substantially from the mid-1980s to the mid-1990s (Table 4).

Taxes and subsidies are the two important tools in redistributing income and decreasing inequality. A fundamental prerequisite of an effective tax policy is that income needs to be transparent. However, personal income in the PRC has not been transparent and often underestimated, particularly for the higher income groups. In the urban areas, although a progressive income tax was adopted, higher subsidies were also provided to the higher income groups. The net impact of progressive taxation has been marginalized, particularly in rural areas where the poor and the rich pay almost the same amount of taxes and fees. The government's policy of net taxation for the rural sector and net subsidies for the urban sector further worsened the increasing rural-urban inequality resulting from unequal economic growth. The relatively high tax burden in rural areas has slowed down poverty reduction despite rapid economic growth.

The gradual approach to economic reforms that is required to preserve political stability has led to certain policy choices in several areas important for reducing inequality. A social security policy could help reduce inequality and poverty caused by unemployment, sickness, and old age. However, there has been slow progress in establishing an effective social security system since the reforms. A labor mobility policy can improve labor mobility and provide a precondition for greater equality, namely, more opportunities for individuals, especially rural indi-

viduals, to gain higher incomes. The policy of allowing rural labor to work in the urban areas still has many restrictions that limit the benefits to rural labors. An education policy is very important to increase investment in human capital, especially in basic education. Investment in rural education is still lacking, particularly in the backward, remote areas, which limits opportunities for higher income.

C. Looking Forward

The PRC's experience indicates that the high economic growth rates and the larger income pie brought about by growth have been the main factors for successful poverty reduction in the country. Sustained economic growth will continue to reduce poverty in the PRC. However, the rapid deterioration of inequality has reduced the effectiveness of poverty reduction. In the PRC's situation, poverty is largely a rural phenomenon and agricultural development is the key to addressing rural inequality, the urban-rural income gap, and interregional inequality. Strategically, agricultural development is important not only for safeguarding the food supply and social stability, but also for narrowing income differentials.

Increasing wage, income, and wealth differentials to a certain extent is part of the growth process. Market-determined wage differentials create incentives for increasing efficiency, and such incentives are of great significance to the success of the economic reform. Increasing inequality cannot be used as an excuse to refute the direction of economic reforms in the PRC. Nor can it become an excuse to slow the reform process, for this would increase the costs of the reform and could even turn the temporary costs of transition to permanent ones. One could argue that increasing inequality is one of the unavoidable costs of economic growth and transition. However, economic growth with a greater focus on addressing inequality could increase the effectiveness of poverty reduction. It is still too early to conclude if the PRC follows the inverted U-shaped time path of distribution. However, it is not too early to pay closer attention to increasing inequality.

V. CONCLUSION

The decomposition of growth effect is an important analytical tool in identifying the impact of growth and inequality on poverty reduction. The proposed poverty reduction index provides a practical way of measuring the degree of "poverty reduction" resulting from economic growth. The poverty reduction index implies that the selection of growth policies must be hinged on maximizing the sum of income and inequality effects and that economic growth could lead to poverty reduction, even with worsened inequality. This offers a choice of growth policies for different development stages and different regions, with more focus on growth in one development stage/region and inequality in the other.

The empirical results indicate that economic growth in the PRC between 1985 and 2001 was effective in poverty reduction but rising inequality in this period limited the potential benefit to the poor and reduced the effectiveness of growth on poverty reduction, particularly in the latter part of the 1990s. There has been a persistent decline in the effectiveness of poverty reduction and this should serve as a warning to policymakers. The PRC's poverty reduction experience since 1978 tells very much the same story. In a low-inequality economy, "letting some people get rich first" is necessary to provide incentives and stimulate growth, and effective poverty reduction could be achieved by maximizing economic growth, even if inequality worsens in the growth process.

The empirical results also indicate that the initial level of inequality is important in determining growth policies for a country in different development stages. A development stage with low initial inequality will manifest greater poverty reduction from economic growth, whereas a development stage with high initial inequality will require a deeper poverty focus to achieve greater poverty reduction from growth. It will be interesting to compare across regions with different inequality levels in the PRC to further assess this conclusion.

In the current stage of economic development in the PRC, economic growth is still effective in reducing poverty. However, economic policies that promote efficient agricultural growth and target regions with high concentrations of poor such as the infrastructure investment program in the western regions will be more effective in poverty reduction. At the project level, infrastructure projects that support economic growth will still lead to poverty reduction, even if the nonpoor might get more direct benefits from these projects. However, well-designed infrastructure projects with a greater poverty focus will be more effective in poverty reduction.

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