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ADB Institute Discussion Paper No. 4

**Poverty Targeting in the People's Republic of China**

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## Abbreviations

|        |   |   |
|--------|---|---|
| ADB    | - | Asian Development Bank  |
| Ausaid | - | Australia Agency for International Development                        |
| ABC    | - | Agricultural Bank of China  |
| CPI    | - | Consumer Price Index  |
| DFID   | - | Department for International Development of Britain                   |
| FAO    | - | Food and Agriculture Organization                                     |
| FFW    | - | Food for Work   |
| GDP    | - | Gross Domestic Products   |
| IFAD   | - | International Fund for Agricultural Development                       |
| LGPR   | - | The Leading Group for Poverty Reduction                               |
| JICA   | - | Japan International Cooperation Agency                                |
| MDG    | - | Millennium Development Goal   |
| MOA    | - | Ministry of Agriculture   |
| MOE    | - | Ministry of Education   |
| MOH    | - | Ministry of Health  |
| MCA    | - | Ministry of Civil Affairs   |
| NBS    | - | National Bureau of Statistics, formerly SSB – State Statistics Bureau |
| NPDC   | - | National Planning and Development Commission                          |
| OLGPR  | - | Office of the Leading Group for Poverty Reduction                     |
| SOE    | - | State Owned Enterprises   |
| TCG    | - | Targeting Count Gap   |
| TCE    | - | Targeting Count Error   |
| TIG    | - | Targeting Income Gap  |
| TIE    | - | Targeting Income Error  |
| TRE    | - | Targeting Rank Error  |
| TVE    | - | Township and Village Enterprises                                      |
| UNICEF | - | United Nations Children’s Fund  |
| UNDP   | - | United Nations Development Program                                    |
| WHO    | - | World Health Organization   |
| WPI    | - | Weighted Poverty Index  |

## **Poverty Targeting in the People's Republic of China**

The People's Republic of China (henceforth PRC) has achieved remarkable progress in rural poverty reduction since the beginning of the reform in later 1970s. Measured by the official poverty line, rural poor population was reduced from 250 million in 1978 to 80 million in 1993 and further to 28 million in 2002, or from 31 percent of the rural population to 3 percent. Two forces have made such progress possible: a) fast general economic growth and b) targeted poverty reduction programs. On the other hand, urban poverty has become a problem only since middle 1990s when the reform of the state owned enterprises (SOEs) was on high agenda of the central government and more and more SOE employees were laid off. Chinese government adopt a complete different approach in addressing urban unemployment and poverty. This paper summarizes targeting measures used in anti-poverty programs in PRC with the focus on rural poverty and the effectiveness of various poverty interventions.

### **1. Recent trends in poverty in PRC**

#### **1.1 Rural poverty**

Though there are disagreements on the magnitude of the absolute poor in rural PRC or even on the trends of poverty changes at different time period, everyone does agree that PRC's rural poor population has been reduced substantially with the fast growth of the economy and household income in the past twenty years.

##### Official poverty estimates

PRC's estimate of its rural poor population is based on the poverty line defined by the National Bureau of Statistics (NBS). "Rural poverty" is defined by NBS as "difficulty in material well-being so great that a person or a family cannot reach the socially acceptable minimum standard of living." Therefore, a fundamental principle in defining the poverty line is "the minimum expense required to meet people's basic living needs for necessary goods and services under the specific conditions of time, place and social development" (Tang, 1994). The NBS divides basic personal consumption expenditures into two categories, the food consumption expenditures and non-food consumption (clothing, housing, communications, fuel, health and medical care, education, entertainment, etc.) expenditures. Food consumption to meet minimum calorie requirements is the most important factor for setting the poverty line. To determine the poverty line, one must first select the minimum caloric intake based on nutritionists' recommendations; second, define a proper food consumption bundle and set the quantity of various foods to be consumed; third, calculate the minimum food consumption expenditure based on the prices of different foods and the amounts consumed; and last, determine the Engel coefficient (food consumption as a proportion of total consumption by the poor), which can be used to

calculate the non-food consumption expenditures and the poverty line.

Based on the recommendations of the China Nutrition Association, the NBS adopted a daily intake of 2,400 calories per person as the minimum nutritional standard (Wang, Xia, & Liu, 1996). The following principles are applied in defining the food bundle that meets this nutritional standard. First, all the food in the bundle should be necessities, excluding all harmful and extravagant consumption (cigarettes, alcoholic beverages, sweets, etc.). Second, the food bundle should reflect the real consumption pattern in rural areas. The NBS reckoned the farmers' real consumption ratio of grain, vegetable, fruit, meat, poultry, aquatic products, milk, edible oils, sugar, salt, etc. by using the 1984 sample survey statistics on rural households. Table 1 shows the food bundle and the corresponding caloric intake adopted by the NBS. The prices adopted by the NBS in calculating food consumption expenditures are the package (weighted) average prices of the various foods. The Engel coefficient of 60% is used in computing the non-food consumption expenditure before 1998. The reason for using this coefficient is that the Engel coefficient of 60% is usually employed internationally as the criterion for defining absolute poverty, and furthermore, the cost of food constituted about 60% of the average total living expenses of Chinese farmers in 1984, which is regarded as the year when Chinese farmers as a whole had basically emerged from absolute poverty (Tang, 1994).

Based on the above approaches, the NBS first of all calculated the 1984 poverty line in PRC's rural areas; the figure was 200 yuan per person per year.

Table 1 Food Consumption Bundle Adopted by the NBS

| Consumption Item | Unit Calories (Cal./Kg) | Amount Consumed (kg) | Caloric Intake (Cal./day) | Proportion of Total Calories |
|------------------|-------------------------|----------------------|---------------------------|------------------------------|
| Grain            | 3150                    | 220.00               | 2115.6                    | 88                           |
| Vegetable oil    | 8990                    | 2.45                 | 60.34                     | 2.5                          |
| Vegetables       | 204                     | 100.00               | 56                        | 2.3                          |
| Pork             | 3950                    | 8.70                 | 94                        | 4                            |
| Eggs             | 1635                    | 1.30                 | 5.8                       | 0.2                          |
| Animal oil       | 8960                    | 1.36                 | 33.4                      |                              |
| Mutton and beef  | 1746                    | 0.54                 | 2.6                       |                              |
| Milk             | 1522                    | 0.75                 | 3.13                      |                              |
| Poultry          | 1845                    | 0.74                 | 3.74                      | 2.6*                         |
| Fish, shrimp     | 1091                    | 0.96                 | 2.87                      |                              |
| Sugar            | 3970                    | 1.00                 | 10.9                      |                              |
| Fruit            | 604                     | 3.00                 | 4.96                      |                              |

\* The combined proportion of animal oil, beef and mutton, milk, poultry, fish and shrimp, sugar and fruit.

Over the years, the NBS has rectified the poverty line established for 1984 in keeping mainly with the changes in the rural retail price index and later with rural consumption price index. Since 1990, the statistical pricing of the farmers' self-consumed agricultural and sideline products has been changed from the state-planned purchase prices to the compound average of contract purchase prices (the weighted average of the state-planned purchase prices and the above-quota purchase prices in contract purchases). Also from 1990 onwards, the poverty line has been adjusted accordingly. Table 2 shows the poverty line in different years as determined by the NBS.

The NBS conducted a new set of poverty line calculations in 1999 using the 1998 national rural sample data (NBS, 2000). A standard food bundle of 27 items in 15 categories was established from the mean consumption pattern of households with income per capita less than 800 yuan, adjusted to meet a minimum caloric standard of 2100 kcals. The income necessary to purchase the standard bundle, or food poverty line, was 527 yuan. The non-food expenditure share was calculated using a regression method proposed by Ravallion.<sup>1</sup> Required non-food expenditures were estimated to be 108 yuan, leading to a poverty line of 635 yuan. However, the non-food expenditure share of 17 percent is substantially lower than the 40 percent share assumed in earlier calculations.

Table 2 Per Capita Income and Poverty Line of PRC's Rural Residents

| Year | Average Annual Net Income Per Capita (yuan) | Poverty Line (yuan)     | Poverty Line / Net Income (%) |
|------|---|-------------------------|-------------------------------|
| 1978 | 134   | 100                     | 74.6                          |
| 1984 | 355   | 200                     | 56.3                          |
| 1985 | 398   | 206                     | 51.8                          |
| 1986 | 424   | 213                     | 50.0                          |
| 1987 | 463   | 227                     | 49.0                          |
| 1988 | 545   | 236                     | 43.3                          |
| 1989 | 602   | 259                     | 43.0                          |
| 1990 | 686 (630 <sup>*</sup> )                     | 300 (269 <sup>*</sup> ) | 43.7 (42.7)                   |
| 1991 | 709   | 304                     | 42.9                          |
| 1992 | 784   | 320                     | 40.8                          |
| 1993 | 922   |                         |                               |
| 1994 | 1221  | 440                     | 36.0                          |
| 1995 | 1578  | 530                     | 34.2                          |
| 1996 | 1926  | 580                     | 30.1                          |
| 1997 | 2090  | 630                     | 30.1                          |

<sup>1</sup> Ravallion and Bidani (1994) describes a method of non-food expenditures based on a regression of food share on a constant and the log of (expenditures/food poverty line). It is straightforward to calculate the food share for households whose food expenditures exactly equal the food poverty line (upper line) or whose total expenditures equal the food poverty line (lower line).

|      |      |     |      |
|------|------|-----|------|
| 1998 | 2165 | 635 | 29.3 |
| 1999 | 2210 | 625 | 28.3 |
| 2000 | 2253 | 625 | 27.7 |
| 2001 | 2366 | 635 | 26.8 |
| 2002 | 2476 | 627 | 25.3 |

\*In 1990, the NBS changed the pricing of the rural households' self-consumed products from the state-planned purchase prices to compound average prices, as a result of which the figure for the farmers' per capita net income increased. The data in brackets are the per capita net income and poverty line before the adjustment.

Source: Tang Ping, "A Preliminary Study of the Poverty Standard and Poverty Conditions in China's Rural Areas," China's Rural Economy, Issue 8, 1994; and other materials provided by the NBS.

After setting the poverty line in different years, the NBS, using the household survey system it set up in one third of PRC's counties in the early 1980s and the income data from more than 60,000 sample rural households, worked out the proportion of the rural households and population whose per capita net income level is below the poverty line, and then reckoned the total poverty-stricken population in the country according to this percentage. Table 3 provides the NBS estimates of the poverty-stricken population in PRC's rural areas. According to these figures, the poverty-stricken population in PRC's rural areas has decreased dramatically over the past 20 years. The absolute poor population decreased from 250 million in 1978 to 28 million in 2002, and the poverty-stricken population as a proportion of the total rural population decreased from 31% to 3%.

**Table 3 PRC's official rural poverty headcounts (1978-2002)**

| Year | Rural Population (million persons) | Poor Population (million persons) | Percentage of Poor |
|------|------------------------------------|-----------------------------------|--------------------|
| 1978 | 803                                | 250                               | 30.7               |
| 1984 | 843                                | 128                               | 15.1               |
| 1985 | 844                                | 125                               | 14.8               |
| 1986 | 850                                | 131                               | 15.5               |
| 1987 | 857                                | 122                               | 14.3               |
| 1988 | 867                                | 96                                | 11.1               |
| 1989 | 878                                | 106                               | 12.1               |
| 1990 | 896                                | 85                                | 9.5                |
| 1991 | 905                                | 94                                | 10.4               |
| 1992 | 912                                | 80                                | 8.8                |

|      |     |    |     |
|------|-----|----|-----|
| 1993 | 913 | 75 | 8.2 |
| 1994 | 915 | 70 | 7.6 |
| 1995 | 917 | 65 | 7.1 |
| 1996 | 919 | 58 | 6.3 |
| 1997 | 915 | 49 | 5.4 |
| 1998 | 920 | 42 | 4.6 |
| 1999 | 922 | 34 | 3.7 |
| 2000 | 928 | 32 | 3.4 |
| 2001 | 934 | 29 | 3.1 |
| 2002 | 935 | 28 | 3.0 |

Source: NBS (2000, 2001, 2002, 2003).

### Potential bias of the official estimates

Criticism on PRC's official poverty estimates focus on the methodology used by the NBS to calculate the official poverty line (Park and Wang, 2001). The calculation may be subject to a number of different sources of potential bias, i.e. a) An unrealistic food bundle was adopted, in which consumption items viewed to be non-necessities were excluded e.g., alcohol, candy. As a result, grain accounted for 88 percent of expenditures even though grain comprises only 70 percent of actual food expenditures for poor households. Over-weighting of grain in the standard bundle leads to under-pricing of calories since grain is a relatively cheap source of calories. This puts downward bias on the poverty line and leads to an underestimation of poverty. b) Planned prices rather than market prices were used to value own-produced consumption goods before 1990. c) Decreasing share of non-food expenditure in the composition of poverty line also exaggerate the magnitude of poverty reduction in recent years<sup>2</sup>. d) The implicit inflation rates evident in the official poverty lines appear much lower than the rural consumer price index. Khan and Riskin (2001) point out that even the rural CPI is likely to underestimate the growth in living costs of the poor, because their budget shares for food are higher and food-prices have grown relatively faster than other prices.<sup>3</sup> In the initial years, the official poverty lines are consistent with the rural retail price index, and in the final several years, they are consistent with the rural consumer price index. However, in the intervening years, there are large discrepancies. Most notably, the poverty line increases only modestly during the high inflation years of 1988 and 1989, and there is a sharp increase in the poverty line 1997 that is far in excess of inflation. This helps explain why official statistics show a steady reduction in poverty in the late 1980s while other estimates show little change. If the 1985 line is inflated by the rural CPI,

<sup>2</sup> Non-food expenditure share of 40 percent used prior to 1998 dropped sharply to a 17 percent in 1998 due to the change from a fixed share to regression estimation. Data made available to the author by the NBS show that in 1999, the non-food expenditure shares of the poor, defined as those with incomes below 850 yuan per capita, in Guizhou, Gansu, and Henan were 27, 33, and 49 percent.

<sup>3</sup> Chen and Ravallion (1996) calculate CPI's for the poor that grow significantly faster than the overall CPI in two of four provinces. Khan and Riskin (2000) find that the CPI for the poor is four percent higher than the overall CPI for the period 1988 to 1995.



the 2000 poverty line reaches 721 compared to the official line of 625. This suggests that poverty reductions over time may be greatly exaggerated. e) Like poverty lines in many countries, the NBS's national poverty lines does not allow for regional price differences in calculating required food expenditures.<sup>4</sup> Food prices vary greatly among different provinces due to transport costs, imperfect market integration, and other factors. Chen and Ravallion (1996) estimate that the cost of purchasing the NBS food bundle was 23 percent higher in Guangdong than in Guangxi in the late 1980s. For example, in 1992 and 1995, the NBS of Jiangxi Province calculated provincial poverty lines of 400 and 750 yuan using local prices and the national food bundle, compared to national poverty lines of 320 and 540 yuan. Failure to account for regional price differences in PRC exaggerates the concentration of poverty in poor regions. f) Some have criticized the NBS sample for under-representing households in remote areas, illiterate households, and minorities, which would lead to an underestimation of the poor population. Choosing such households can be more costly to administer, as they require greater time to reach and supervise. g) Expenditures are considered to be a better measure of both current and long-term welfare. Because individuals prefer to smooth consumption over time, expenditures tend to vary less from year to year than incomes. However, despite the availability of expenditure data, PRC has always calculated poverty rates using income data. This can lead to two types of bias. First, incomes exhibit greater dispersion than expenditures because they are more likely to be influenced by transitory factors. This increases the poverty count. Second, and more importantly, average incomes are 10 to 20 percent higher than average expenditures, so that using income data results in lower poverty rates. The poverty headcounts of the World Bank (2001) are about ten percent higher using expenditure data rather than income data (Table 4).

#### Alternative Estimates of Rural Poverty

Because of these different sources of bias of the official poverty estimates, it is necessary to look at other estimates using different methods and data sources. Alternative estimates of rural poverty presented in Table 4 offer a wide range of point estimates in the same year and different trends in poverty reduction during different sub-periods. Considering all of the possible sources of bias, a majority of factors, and those with the largest likely influence, lead to an underestimation of the extent of rural poverty and an over-estimation of poverty reductions over time. Improper inflation adjustments lead to a poverty line in 2000 that is 13 percent below what it should be. Use of income rather than expenditure data exaggerates average welfare by 10-20 percent. The food poverty line is overly austere before 1998 because of a standard food bundle that is not consistent with actual consumption patterns, and the non-food expenditure share is unrealistically conservative since 1998, both leading to downward bias in the poverty line. NBS sampling may exclude some of the poor. The only factors leading to upward bias in the poverty count are a high caloric standard (2400 kcals), the failure of the NBS survey to accurately record specific

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<sup>4</sup> Nor do they allow for regional variations in the food bundle itself.

types of income, and a high prevalence of transitory poverty which may reduce our concerns about chronic suffering.

The recent World Bank poverty report (2001) uses a dollar-per-day poverty line, which leads to much higher poverty headcounts than the official statistics. The dollar-per-day standard was established to facilitate inter-country comparisons, but is not based on nutritional standards, consumption patterns, or social norms specific to PRC. Thus, if the dollar-per-day line in fact more accurately reflects rural poverty in PRC today, it is likely due to problems in the methodology used to calculate official statistics rather than any inherent preference for an international standard. The Khan and Riskin range of estimates exemplifies how sensitive the poverty count can be to assumptions about the poverty line.

Because of the arbitrariness of choosing any one poverty line, many feel it is more important to examine trends in poverty over time. All estimates agree that there was a spectacular reduction in poverty in the early 1980s. All estimates other than the official poverty count show little or no progress in poverty reduction in the late 1980s. Reductions in the official count are almost certainly due to insufficient inflation of the poverty line in 1988 and 1989. In the early 1990s, Khan (1996) and the World Bank (2001) show little change until after 1993. The official poverty count falls steadily throughout the 1990s. These differences are not due to differences in inflators or income definition, so must reflect different trends in different parts of the income distribution. Khan and Riskin (2001) and Riskin and Li (2001) emphasize the small magnitude of poverty reduction from 1988 to 1995. Riskin and Li (2001) report that using NBS's own income definition and poverty line, they estimate a poverty headcount of 9.4, much higher than the official 7.1. Although the mean incomes are the same in their 19-province sample and the NBS's national sample, the only plausible explanation is differences in the distribution of incomes, which should be testable even using grouped data.<sup>5</sup> Khan and Riskin (2001) attribute their surprising result to their refined income measures. However, if rental income from owner-occupied housing is rapidly increasing as a share of total income, including this part of income without adjusting the non-food expenditure shares in the two survey years may bias the change in poverty downward. In any case, what is striking is the rapid fall in poverty in the mid-1990s reported by World Bank (2001). Using the income data, the Bank estimates that the poverty headcount fell from 27.1 to 10.8 in five years, a reduction as impressive as that of the early 1980s. At least for the period after 1995, this is not contradicted by alternative estimates, and deserves further confirmation.

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<sup>5</sup> Riskin and Li (2001) oddly use a national poverty line while deflating incomes by provincial price indices, which will produce unpredictable bias in the change of the poverty headcount.

Table 4 Rural Poverty Estimates

| Source                 | Sample data  | Survey     | 1978 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|------------------------|--|------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| PRC Official           | National (income groups and household income) <sup>a</sup> | NBS        | 30.7 | 15.1 | 14.8 | 15.5 | 14.3 | 11.1 | 12.1 | 9.5  | 10.4 | 8.8  | 8.2  | 7.6  | 7.1  | 6.3  | 5.4  | 4.6  | 3.7  | 3.4  | 3.1  | 3.0  |
| The World Bank (1992)  | National (income groups)                                   | NBS        | 33.0 | 11.0 | 11.9 | 11.9 | 11.1 | 10.4 | 12.3 | 11.5 |      |      |      |      |      |      |      |      |      |      |      |      |
| The World Bank (2001)  | National (income groups)                                   | NBS        |      |      |      |      |      |      |      | 29.1 | 28.2 | 27.7 | 27.1 | 24.0 | 20.3 | 14.0 | 12.7 | 10.8 | 10.5 | 12.0 | 10.6 | 9.4  |
| The World Bank (2001)  | National (expenditure groups) <sup>b</sup>                 | NBS        |      |      |      |      | 35.4 |      |      | 40.0 | 38.0 | 37.7 | 37.9 | 32.3 | 28.8 | 22.6 | 22.7 | 22.8 | 23.5 | 21.0 | 19.5 | 17.2 |
| Khan (1996)            | National (income groups)                                   | NBS        |      |      | 14.0 |      |      | 16.1 |      | 13.9 |      | 13.6 | 14.1 | 13.6 |      |      |      |      |      |      |      |      |
| Khan and Riskin (2001) | 19 provinces (household income)                            | Own survey |      |      |      |      |      | 32.7 |      |      |      |      |      |      | 28.6 |      |      |      |      |      |      |      |
| Riskin and Li (2001)   | 19 provinces (household income)                            | Own survey |      |      |      |      |      | 12.7 |      |      |      |      |      |      | 12.4 |      |      |      |      |      |      |      |
| Xian (2001)            | National   | NBS        |      |      | 12.6 |      |      | 15.3 | 20.5 | 17.7 |      | 12.1 |      | 9.1  | 8.0  |      |      |      |      |      |      |      |
| Jalan and Ravallion    | 5 provinces (household                                     | NBS        |      |      | 28.4 | 27.5 | 23.0 | 22.8 | 25.3 | 28.3 |      |      |      |      |      |      |      |      |      |      |      |      |



Nutritional Outcomes Measures and other indicators

The poverty headcount is conceptually a nutrition-based standard of welfare, since the poverty line is constructed to reflect the income necessary to purchase a food bundle that provides a minimum acceptable number of calories per day. One way to validate official poverty statistics is to look directly at nutritional outcomes in the population. Park and Wang (2001) summarized available evidence on caloric intake and stunting in children:

Zhu (2001) analyzes 1995 rural household data from 19 provinces and finds that 17 percent of the rural population had caloric intake below 2100 kcals and 28 percent had caloric intake below 2400 kcals, the caloric standard used in constructing the official poverty line. She also finds that the prevalence of inadequate calorie consumption is only weakly correlated with income, casting doubt on exclusive use of income as a poverty indicator. Using aggregate production, trade, stock, and demographic data, and a minimum energy requirement of 1920 kcals, the FAO estimated that the share of PRC’s population with insufficient calorie intake fell from 30 percent in 1979-1981 to 17 percent in 1990-1992 to 11 percent in 1996-1998.

A common indicator of long-term nutrition is the prevalence of stunting in children. A national survey by WHO/UNICEF in 1992 found a stunting rate in children of 31.4 percent (FAO, 2000). A series of national surveys conducted by the Ministry of Health found stunting rates of 41.4 percent in 1990, 39.1 percent in 1995, and 22.6 percent in 1997.<sup>6</sup> In officially designated poor counties, the stunting rate is much higher. The 1995 MOH survey found a stunting rate of 43 percent in poor counties and the China Rural Poverty Survey directed by the author found a stunting rate of 46.1 percent among children in 6 poor counties. These stunting rates compare with the following estimates in different parts of the developing world in 1995: 36 percent in all developing countries, 36.5 percent in Africa, 38.8 percent in Asia, and 12.6 percent in Latin America (ACC/SCN, 2000). These statistics suggest high rates of undernutrition in rural PRC. They also suggest little progress in poverty reduction in the early 1990s but substantial progress beginning in the mid-1990s. This pattern is consistent with the poverty headcount estimates.

Health indicators published by the Ministry of Health show steady progress in the quality of life PRC had made in the 1990s. Infant mortality rate dropped from 58 per 1000 live births in 1991 to 37 in 2000 in rural areas, and from 17 to 12 in urban areas. Under 5-year mortality rate reduced from 71 to 46 in rural areas and 21 to 14 in urban areas in the same time period. Maternal mortality rate decreased from 100 per 10,000 live births to 70 in rural areas and 46 to 29 in urban areas. Interestingly, the trends of these three indicators suggest remarkable progress in early 1990s but little progress in late 1990s, contradicting with the nutritional findings above.

**Table 5 Recent Trend in Health Indicators**

| Infant Mortality |       | Under 5-Year Mortality |       | Maternal Mortality |       |
|------------------|-------|------------------------|-------|--------------------|-------|
| Rural            | Urban | Rural                  | Urban | Rural              | Urban |

<sup>6</sup> Personal communication with China Center of Preventative Medicine, Ministry of Health.

|      |    |    |    |    |     |    |
|------|----|----|----|----|-----|----|
| 1991 | 58 | 17 | 71 | 21 | 100 | 46 |
| 1992 | 53 | 18 | 66 | 21 | 98  | 43 |
| 1993 | 50 | 16 | 61 | 18 | 85  | 39 |
| 1994 | 46 | 16 | 57 | 18 | 78  | 44 |
| 1995 | 42 | 14 | 51 | 16 | 76  | 39 |
| 1997 | 38 | 13 | 49 | 16 | 80  | 38 |
| 1998 | 38 | 14 | 48 | 16 | 74  | 29 |
| 1999 | 38 | 12 | 48 | 14 | 80  | 26 |
| 2000 | 37 | 12 | 46 | 14 | 70  | 29 |

Note: Infant mortality and under 5 year of age mortality rates are per 1000 of live births. Maternal mortality rate is per 10,000 of live births.

Source: China Health Statistical Digest, 2001

### Chronic and transitory poverty

PRC's official poverty estimates are based on one year of data, Thus on distinguishing has been made between chronic and transitory poverty. Using panel data for households in four provinces from 1985-1990, Jalan and Ravallion (1998a) find that the share of the poor who are not chronically poor vary from 30 to 46 percent. McCulloch and Calandrino (2001) find that in 1991 and 1995, 57 and 46 percent of the poor in Sichuan were experiencing transitory poverty. Using the data from China Rural poverty Survey in six poor counties for year 1997 and 2000, Wang and Li (2003) find that 31 percent of the poor are transitory. It is worth bearing in mind that much of measured transient poverty could be the result of measurement error. Nonetheless, whether or not that be the case, if one's goal is to measure chronic poverty, annual poverty headcounts are likely to overstate the extent of such poverty.

### Regional disparity in rural poverty

PRC is a large country with wide range of differences in term of resource endorsement, climate, population, and economic and social development. Rural poverty is to a large extent a regional phenomenon. Extensive research has shown that PRC's poverty-stricken population is mainly concentrated in the southwestern, northwestern and central mountainous areas. The problem of poverty is especially remarkable in the areas inhabited by minority nationalities.

Based on the official poverty line and different income data in different provinces collected from the household survey, the NBS estimated the poor population in each provinces and autonomous regions. I then calculated the provincial incidence of poverty and the proportion of the provincial poverty-stricken population in the national total for 1985, 1993 and 2001 (Table 6). These three years represent the establishment of PRC's rural poverty reduction programs, the launch of "the Eight-Seven Poverty reduction Plan" and the formulation of the new poverty reduction policy for next ten years respectively. In 1985, the incidence of poverty averaged 14.81% on the national level, and the provinces and autonomous regions having a

poverty incidence higher than 14.81% were Henan, Shaanxi, Ningxia, Gansu, Guangxi, Sichuan, Guizhou and Yunnan, four located in the Southwest, three in the Northwest and one in the central. The provinces and regions whose poverty-stricken populations each accounted for more than 5% of the national total were Henan, Shaanxi, Gansu, Guangxi, Sichuan, Guizhou and Yunnan. In 1993, when PRC began to carry out its “Eight-Seven Poverty Alleviation Plan,” the total poverty stricken population was 80 million and the national incidence of poverty was 8.83%, and the provinces or regions having a poverty incidence higher than the national average were Hebei, Henan, Shanxi, Inner Mongolia, Shaanxi, Ningxia, Gansu, Qinghai, Xinjiang, Sichuan, Guizhou and Yunnan, seven in the Northwest, three in the Southwest and two in the central. The provinces or regions whose poverty-stricken population accounted for more than 5% of the national total were Hebei, Henan, Shandong, Shaanxi, Gansu, Anhui, Sichuan, Guizhou and Yunnan. In 2001, the national incidence of rural poverty were 3.2%, and the provinces or regions having a poverty incidence above the national average were Liaoning, Heilongjiang, Inner Mongolia, Shanxi, Shaanxi, Gansu, Qinghai, Xinjiang, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan and Tibet. Poverty incidence in all provinces and autonomous regions in the Northwest and Southwest were higher than the national average, indicating that poverty was further concentrated in remote western regions. The provinces or regions whose poverty-stricken population accounted for more than 5% of the national total in 2001 were Henan, Inner Mongolia, Shanxi, Shaanxi, Gansu, Sichuan, Guizhou and Yunnan.

Based on the data from these three years, we can roughly conclude that the provinces or autonomous regions suffering from comparatively serious poverty are Henan, Inner Mongolia, Shanxi, Shaanxi, Gansu, Ningxia, Qinghai, Xinjiang, Guangxi, Sichuan, Guizhou and Yunnan while the provinces or regions having a comparatively large poverty-stricken population are mainly Henan, Shaanxi, Gansu, Guangxi, Sichuan, Guizhou and Yunnan. All are in the western region except Henan.

Table 6 Poverty incidence by province (1985, 1993 and 2001)

| Province            | Poverty incidence |       |       | Percent of national poor population |       |       |
|---------------------|-------------------|-------|-------|-------------------------------------|-------|-------|
|                     | 1985              | 1993  | 2001  | 1985                                | 1993  | 2001  |
| <i>North</i>        |                   |       |       |                                     |       |       |
| Beijing             | 0.0               | 0.55  | 0.53  | 0                                   | 0.03  | 0.06  |
| Tianjin             | 0.0               | 0.14  | 0.52  | 0                                   | 0.01  | 0.07  |
| Hebei               | 4.90              | 13.76 | 1.81  | 1.88                                | 9.07  | 3.33  |
| Henan               | 24.90             | 12.59 | 2.10  | 13.68                               | 11.92 | 5.64  |
| Shandong            | 2.30              | 5.83  | 0.70  | 1.24                                | 5.18  | 1.56  |
| <i>Northeast</i>    |                   |       |       |                                     |       |       |
| Liaoning            | 6.50              | 3.85  | 3.22  | 1.14                                | 1.07  | 2.55  |
| Jilin               | 0.0               | 6.23  | 3.08  | na                                  | 1.13  | 1.51  |
| Heilongjiang        | 14.10             | 5.22  | 4.55  | 2.08                                | 1.20  | 2.92  |
| <i>Northwest</i>    |                   |       |       |                                     |       |       |
| Inner               |                   |       |       |                                     |       |       |
| Mongolia            | 10.60             | 10.75 | 13.30 | 1.17                                | 1.90  | 6.28  |
| Shanxi              | 4.10              | 11.87 | 6.62  | 0.69                                | 3.31  | 5.25  |
| Shaanxi             | 41.60             | 19.19 | 7.78  | 8.33                                | 6.50  | 7.36  |
| Ningxia             | 53.00             | 29.53 | 13.60 | 1.34                                | 1.31  | 1.80  |
| Gansu               | 43.90             | 26.15 | 9.60  | 6.03                                | 6.20  | 6.64  |
| Qinghai             | 5.00              | 16.79 | 16.90 | 0.11                                | 0.66  | 1.95  |
| Xinjiang            | 0.90              | 14.10 | 6.50  | 0.05                                | 1.48  | 2.02  |
| <i>Yangze River</i> |                   |       |       |                                     |       |       |
| Shanghai            | 0.0               | 0.15  | 0.0   | 0                                   | 0.01  | 0.00  |
| Jiangsu             | 0.0               | 2.42  | 0.20  | na                                  | 1.61  | 0.36  |
| Zhejiang            | 4.50              | 3.53  | 0.18  | 1.22                                | 1.57  | 0.23  |
| Anhui               | 5.10              | 8.55  | 1.79  | 1.83                                | 5.19  | 3.13  |
| Jiangxi             | 12.10             | 3.24  | 2.76  | 2.72                                | 1.27  | 3.02  |
| Hubei               | 3.70              | 6.16  | 1.82  | 1.16                                | 3.12  | 2.44  |
| Hunan               | 12.60             | 3.14  | 2.09  | 4.92                                | 2.06  | 3.86  |
| <i>South</i>        |                   |       |       |                                     |       |       |
| Fujian              | 6.30              | 1.14  | 0.24  | 1.16                                | 0.37  | 0.22  |
| Guangdong           | 0.0               | 0.50  | 0.06  | Na                                  | 0.34  | 0.14  |
| Hainan              | Na                | 4.67  | 1.72  | Na                                  | 0.27  | 0.30  |
| <i>Southwest</i>    |                   |       |       |                                     |       |       |
| Guangxi             | 22.20             | 7.82  | 3.35  | 6.08                                | 3.72  | 4.62  |
| Chongqing           | Na                | Na    | 3.99  | Na                                  | Na    | 3.33  |
| Sichuan             | 35.10             | 10.12 | 3.31  | 24.98                               | 11.77 | 7.83  |
| Guizhou             | 36.80             | 21.85 | 10.40 | 7.72                                | 7.90  | 11.12 |
| Yunnan              | 41.30             | 23.77 | 7.89  | 9.90                                | 9.71  | 9.34  |
| Tibet               | Na                | 5.98  | 15.20 | Na                                  | 0.15  | 1.13  |



|                         |              |             |             |            |            |            |
|-------------------------|--------------|-------------|-------------|------------|------------|------------|
| <b>National average</b> | <b>14.81</b> | <b>8.83</b> | <b>3.20</b> | <b>100</b> | <b>100</b> | <b>100</b> |
|-------------------------|--------------|-------------|-------------|------------|------------|------------|

### *Vulnerability of the poor and its main causes*

Since PRC's rural poor population are mainly concentrated in remote mountainous areas with fragile ecological system, harsh climate and under-development of infrastructure and social services, the poor are vulnerable to a member of internal and external shocks. High percentage of transitory poverty indicate that households around the poverty line frequently get into and escape from poverty due to changes within and outside their family. Poor households in poor areas commonly suffer from: (1) damage to the natural environment, water losses and soil erosion; (2) per capita deficiency in and poor quality of agricultural resources (infertile land and shortage of per capita arable land in southwestern rocky mountain areas and karst areas, grave shortage of water resources in northwestern regions); (3) deficiencies in such infrastructure as roads and water conservancy facilities; (4) the lack of such basic social services as education and health and medical care, which exerts an adverse influence on the ability of the local poor to cope with their situation; (5) poor agricultural productivity and underdevelopment of markets and non-agricultural industries, all caused by the above-mentioned factors.

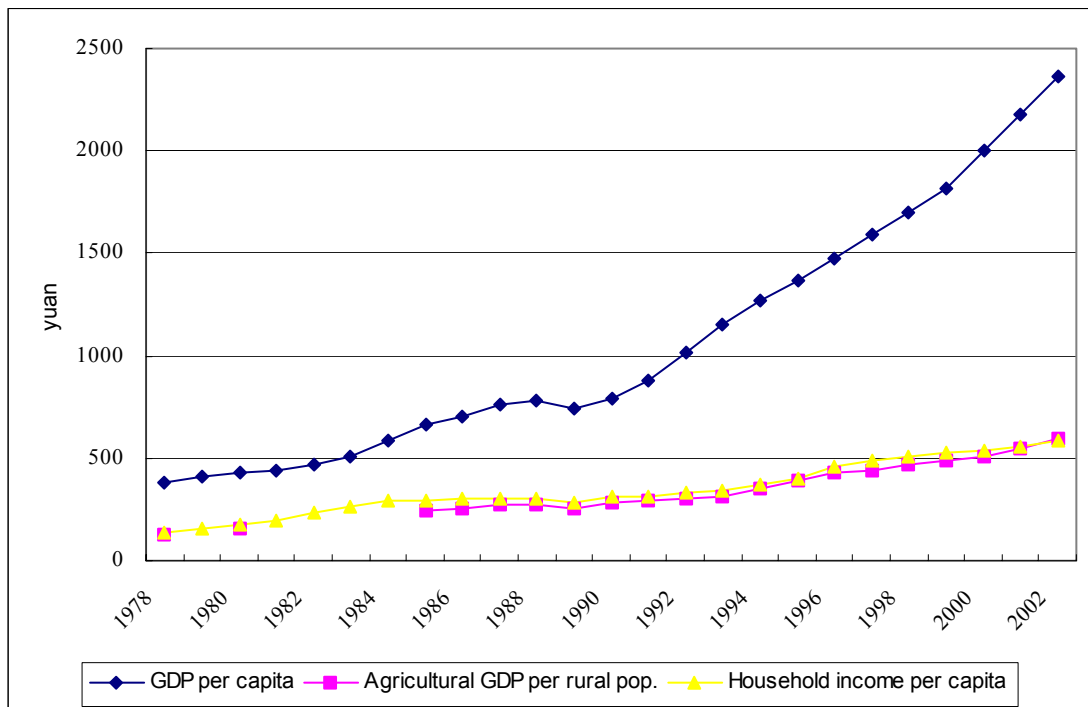
Recent research has shown that there are notable differences between impoverished families and non-impoverished families in terms of demographic characteristics, resources, assets and ability: ① The low-income rural household has a relatively large family size, but with relatively fewer labors, due to a youthful demographic structure; ② basic indicators reflecting labor quality and ability (e.g., the adults' average educational level, the householder's educational level, the family members' non-agricultural job experience and the proportion of the households whose members have a special skill) is in direct ratio to the per capita income level, and thus there is a large difference in operation and management capacity between the low-income households and the high-income households; ③ from the perspective of owned land resources, the total cultivated area and per capita cultivated area of the low-income households are larger than those of the high-income households. On the other hand, the more other kinds of land (woodland, orchard, fish pond, etc.) a household has, the higher its income; ④ household family assets are in direct ratio to the per capita income level. Econometric analysis has also shown that a rural household's per capita net income mainly depends on family size (negative influence), labor, the householder's educational level, its members' non-agricultural job experience, the quality of the cultivated land and the amount of productive assets (Li and Wang, 1999, Wang and Li, 2003).

## Reasons for rural poverty reduction

PRC's success in rural poverty reduction has gained worldwide reorganization and greatly helped the whole international community achieve its MDG to halving the total poor population by 2015. The achievement of rural poverty reduction has been brought about by both fast economic growth and targeted poverty investments.

Economic and income growth: Overall economic growth explains much of PRC's record of success in poverty reduction since 1978. PRC's rapidest economic growth began in 1978 when rural economic reform began. GDP per capita increased from 379 yuan in 1978 to 2359 yuan<sup>7</sup> in 2002 at constant price, with an annual increase rate of 8.7%. Though not as fast as the secondary and tertiary sectors, agricultural production also increase considerably in the past two decades. GDP from agricultural sector per rural population reached 594 yuan in 2002, which was 4.6 times as high as in 1978, increasing at an annual rate of 6.6%. In addition to agriculture, the rapid development of township and village enterprises (TVE) in rural areas in 1980s and early 1990s and the increasing labor migration from rural to urban areas in recent years has also contributed greatly to the income growth of the rural residents. Household net income per capita increased from 134 in 1978 to 586 in 2002 at constant prices, increasing 6.3% annually (Figure 1).

Figure 1 GDP and rural household income growth (1978-2002)



<sup>7</sup> 1 US dollar equals to 8.26 RMB yuan.

Simple comparison between the rates of economic growth, especially agricultural growth, and poverty reduction has shown the same downward and upward movements over the years. In their joint report on China Overcoming Rural Poverty, the Leading Group for Poverty Reduction, UNDP and the World Bank also revealed that both over time and across provinces, growth in per capita GDP had been closely associated with the pace of poverty reduction in 1990s and that the impact of aggregate growth on poverty has been substantially influenced by the regional and sectoral composition of that growth (World Bank, 2001).

Targeted poverty reduction programs: In 1986, Chinese government put forward a major rural poverty reduction initiative with the objectives of further stimulating the economic development in poor areas and lift the remaining poor in rural areas out of poverty. This initiative was reinforced in 1994 when the Eight-Seven Poverty Reduction Plan was launched<sup>8</sup>. More than 212 billion yuan have been invested in poverty reduction programs by the central government alone since 1986. All those investments together with other measures have helped the income growth and infrastructure improvements in term of road, drinking water and irrigation facilities, and school and health facilities (will be discussed in more detail below).

## **1.2 Urban poverty**

Urban poverty was not an issue for the Chinese government till middle 1990, because urban residents were covered by a wide range of welfare programs from the government or state owned enterprises. Thus, the Chinese government has treated poverty exclusively as a rural problem. To date the government has released no official poverty lines or poverty counts for urban populations. State guarantees of jobs, pensions, housing, and health care for all urban workers under socialism, along with a strict residence permit system, created a large urban-rural income gap that has not been reversed by market reforms. Early estimates of urban poverty by the World Bank (1992) found insignificant poverty incidence through 1990. However, since the mid-1990s, restructuring of state-owned enterprises and substantial layoffs of workers has created significant dislocation for many workers. Growing urban poverty thus has become a very real prospect that will demand monitoring and policy response from government. Using grouped income data, Khan (1996) estimates that the urban poverty headcount fell from 20 percent in 1981 to 13 percent in 1985 to only five percent in 1991. Khan and Riskin (2001) estimate an urban poverty rate of 6.8 percent in 1988 and 8.0 percent in 1995. Using urban household survey data collected by NBS and one dollar one day poverty line, the World Bank estimated that urban poverty headcount rate for all estimated years in 1990s were equal to or below

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<sup>8</sup> The 8-7 poverty reduction plan was launched by the central government with the objective of bring the remaining 80 million absolute poor in the rural areas out of poverty within 7 years (from 1994 to 2000).

1% either measured with income data or consumption data (table 7). Compared with rural poverty incidence which is over 10% for all years, urban poverty is much a less problem in PRC. However, Khan and Riskin (2001) argue that the World Bank's urban poverty line is too small a percentage (23 percent) of average income to be realistic. One point worth making is that many of the potential biases in constructing rural poverty lines and poverty counts also characterize urban poverty statistics. Valuation of non-wage benefits in measuring income is a particularly difficult challenge.

**Table 7 Recent Trends in urban Poverty**

| <i>Poverty headcount rate at \$1/day income</i>      | 1990 | 1992 | 1996 | 1998 | 1999 | 2000 |
|--|------|------|------|------|------|------|
| National   | 23.1 | 21.6 | 10.6 | 7.9  | 7.8  | 8.8  |
| Rural  | 31.0 | 30.0 | 14.9 | 11.4 | 11.2 | 13.7 |
| Urban  | 0.9  | 0.0  | 0.2  | 0.0  | 0.25 | 0.3  |
| <i>Poverty headcount rate at \$1/day consumption</i> |      |      |      |      |      |      |
| National   | 32.9 | 30.2 | 17.4 | 17.8 | 17.8 | 16.1 |
| Rural  | 44.4 | 41.4 | 24.8 | 26.2 | 27.0 | 25.0 |
| Urban  | 1.0  | 0.8  | 0.4  | 1.0  | 0.5  | 0.5  |

Source: World Bank estimates based on official household survey data available only until 2000 (World Bank, 2003).

## **2.Targeting measures used in anti-poverty programs in PRC**

PRC has different poverty reduction programs for its rural and urban residents. Rural poverty reduction focus on the development of the poor regions and the poor itself, while urban poverty reduction concentrate on the provision of minimum living standard and basic social services.

### **2.1 PRC's rural poverty reduction strategy and targeting mechanism**

#### **2.1.1 Regional poverty targeting**

The most salient characteristic of PRC's poverty reduction program is its regional targeting; i.e., all the poverty reduction funds from the government are targeted at defined regions and not directly at poor populations. Counties remained the basic units for state poverty reduction investments till 2001; the central government first designates poor counties according to certain standards<sup>9</sup> and then invests all the

<sup>9</sup> Income standards for poor county designation are different from official poverty lines, which are mainly used to calculate poor population and not available till 1993.

anti-poverty resources in these poor counties through different government departments and state-owned banks. Four organizations including the Office of the Leading Group for Poverty Reduction (OLGPR), the Agricultural Bank of China (ABC), the National Planning and Development Commission (NPDC), and the Ministry of Finance (MOF) are intensively involved in the delivering and management of government poverty reduction funds. Each organization uses its own administrative system to channel poverty alleviation funds from the central government to the provincial government and then to the county government. Rules and criteria adopted by these organizations for funds distribution and project selection are the bases for targeting accuracy.

### **Designation of Poor Counties**

Since almost all of poverty reduction funds have to go to the nationally designed poor county before they can be used for anti-poverty projects or by the poor households, the process and accuracy of poor county designation will first of all affect the targeting and the effectiveness of all poverty reduction funds.

PRC's poor county designation began in 1986 when the newly established Leading Group for Poverty Reduction (LGPR) under the State Council designated 258 poor counties in 17 provinces and autonomous regions. The basic criterion for being selected as a national poor county is that the average net income per capita of all rural residents within the county should be less than 150 yuan. However, different treatments for different counties are applied in the selection of poor counties. Revolutionary bases where Communist Party and its army were active in the revolutionary era before 1949, minority counties and pastoral areas received preferential treatment, whose per capita net income level can be as high as 300 yuan in order to be designated. Among 258 poor counties, only 83 where the per capita net income of farmer households was below 150 yuan, 82 between 150 and 200 yuan and 93 between 200 and 300 yuan. The fact that per capita incomes in only a third of the counties were under the LGPR's income line of 150 yuan showed that the selection of poor counties was highly political. In 1987, 13 counties in old revolutionary areas and two other counties were listed as national poor counties. In 1988, 27 pastoral and semi-pastoral counties were designated as such. Counting the poor counties in the "three Xi" prefectures that had been given state financial aid since the early 1980s, namely, Dingxi and Hexi Prefectures in Gansu Province and Xihaigu Prefecture in Ningxia Autonomous Region, the number of state-designated poor counties totaled 328 in 1988. Shaanxi, Gansu, Yunnan, Guangxi and Sichuan had the greatest number of poor counties, while Gansu, Ningxia, Shaanxi, Qinghai and Guangxi had the highest proportion of their counties designated as poor (Table 8).

Table 8 National and provincial poor counties, 1988

| Province | National poor counties | Provincial poor counties |
|----------|------------------------|--------------------------|
|----------|------------------------|--------------------------|

|                     | Number     | Percent of provincial rural pop | Number     | Percent of provincial rural pop |
|---------------------|------------|---------------------------------|------------|---------------------------------|
| <i>North</i>        |            |                                 |            |                                 |
| Hebei               | 14         | 9.4                             | 35         | 21.5                            |
| Henan               | 15         | 11.7                            | 9          | 7.8                             |
| Shandong            | 9          | 9.9                             | 5          | 4.4                             |
| <i>Northeast</i>    |            |                                 |            |                                 |
| Liaoning            | 3          | 6.9                             | 8          | 13.4                            |
| Jilin               |            |                                 | 11         | 15.2                            |
| Heilongjiang        |            |                                 | 6          | 9.0                             |
| <i>Northwest</i>    |            |                                 |            |                                 |
| Inner Mongolia      | 16         | 23.9                            | 24         | 34.8                            |
| Shanxi              | 14         | 13.8                            | 21         | 11.6                            |
| Shaanxi             | 34         | 27.4                            | 12         | 13.9                            |
| Ningxia             | 8          | 53.5                            |            |                                 |
| Gansu               | 31         | 47.5                            | 12         | 16                              |
| Qinghai             | 10         | 36.3                            | 10         | 48.7                            |
| Xinjiang            | 17         | 20.1                            | 13         | 26.3                            |
| <i>Yangze River</i> |            |                                 |            |                                 |
| Zhejiang            | 3          | 2.3                             |            |                                 |
| Anhui               | 9          | 14.8                            | 8          | 11.2                            |
| Jiangxi             | 17         | 23.4                            | 39         | 44.6                            |
| Hubei               | 13         | 15.1                            | 24         | 20.6                            |
| Hunan               | 8          | 5.4                             | 20         | 17.7                            |
| <i>South</i>        |            |                                 |            |                                 |
| Fujian              | 14         | 19.1                            | 2          | 1.1                             |
| Guangdong           | 4          | 4.5                             | 27         | 20.6                            |
| <i>Southwest</i>    |            |                                 |            |                                 |
| Guangxi             | 23         | 18                              | 25         | 19.5                            |
| Sichuan             | 21         | 12.3                            | 30         | 18                              |
| Guizhou             | 19         | 29.6                            | 12         | 12.5                            |
| Yunnan              | 26         | 20.5                            | 15         | 11.9                            |
| Tibet               |            |                                 |            |                                 |
| <b>Total</b>        | <b>328</b> | <b>12.6</b>                     | <b>370</b> | <b>13.9</b>                     |

Note: calculated from data in office of the Leading Group for Economic Development in Poor Areas, *Outlines of Economic Development in China's Poor Areas*, (Beijing: Agricultural Press), 1989; and Statistics Bureau, *China Rural Economics Statistics by County, 1980-1987*, (Beijing: Statistical Press), 1989.

The central government also demanded that all provinces and autonomous regions designate their own poor counties and that these counties be supported with provincial funds. By 1988, 370 counties had been designated as provincial poor counties.

In 1989, Hainan was made a separate province from Guangdong and three counties in Hainan Province were added to the list of national poor counties. Subsequently, there were no major changes in the list of poor counties until 1993.

In 1993 the Chinese government formulated the “Eight-Seven Poverty Reduction Plan” to show its determination to eliminate absolute poverty by the end of the century. Considering the changes that had taken place since the designation of poor counties in 1986, adjustments in the list of state-designated poor counties were obviously necessary. Despite the decrease in the poor rural population from 125 million in 1985 to 80 million in 1993, the number of state-designated poor counties increased from 331 to 592 after the readjustment (Tables 9). The LGPR defined a per capita net income of less than 300 yuan in 1990 for farmer households as the standard for selecting new poor counties; and only 326 counties conformed to this standard. As poor counties enjoyed various allowances and preferential access to resources, the dropping counties from the new list naturally met with strong opposition. As a result, few were removed from the list while many new ones were added.

Table 9 National poor counties, 1993 and 2001

| Province         | National poor counties 1993 |                            |                                 |                          | National poor counties 2001 |                            |                                 |                          |
|------------------|-----------------------------|----------------------------|---------------------------------|--------------------------|-----------------------------|----------------------------|---------------------------------|--------------------------|
|                  | Number                      | Rural pop in poor counties | Percent of provincial rural pop | Percent of poor counties | Number                      | Rural pop in poor counties | Percent of provincial rural pop | Percent of poor counties |
| <i>North</i>     |                             |                            |                                 |                          |                             |                            |                                 |                          |
| Hebei            | 39                          | 16.6                       | 31.23                           | 8.33                     | 39                          | 11.55                      | 21.45                           | 5.83                     |
| Henan            | 28                          | 16.8                       | 21.96                           | 8.42                     | 31                          | 20.93                      | 26.61                           | 10.56                    |
| Shandong         | 10                          | 6.8                        | 9.42                            | 3.39                     |                             |                            |                                 |                          |
| <i>Northeast</i> |                             |                            |                                 |                          |                             |                            |                                 |                          |
| Liaoning         | 9                           | 3.5                        | 15.41                           | 1.73                     |                             |                            |                                 |                          |
| Jilin            | 5                           | 0.9                        | 5.84                            | 0.43                     | 8                           | 1.09                       | 7.61                            | 0.55                     |
| Heilongjiang     | 11                          | 2.2                        | 12.14                           | 1.13                     | 14                          | 2.67                       | 14.22                           | 1.35                     |
| <i>Northwest</i> |                             |                            |                                 |                          |                             |                            |                                 |                          |
| Inner Mongolia   | 31                          | 6.8                        | 47.86                           | 3.43                     | 31                          | 6.04                       | 43.99                           | 3.05                     |
| Shanxi           | 35                          | 5.9                        | 26.15                           | 2.96                     | 35                          | 5.38                       | 23.15                           | 2.71                     |
| Shaanxi          | 50                          | 12                         | 43.77                           | 6                        | 50                          | 11.80                      | 42.59                           | 5.96                     |
| Ningxia          | 8                           | 2                          | 55.81                           | 1                        | 8                           | 2.17                       | 54.59                           | 1.09                     |
| Gansu            | 41                          | 11.9                       | 62.1                            | 5.96                     | 43                          | 13.14                      | 64.43                           | 6.63                     |

|                     |     |       |       |      |     |        |       |       |
|---------------------|-----|-------|-------|------|-----|--------|-------|-------|
| Qinghai             | 14  | 1.4   | 43.49 | 0.69 | 15  | 2.03   | 59.79 | 1.02  |
| Xinjiang            | 25  | 3     | 35.75 | 1.52 | 27  | 4.10   | 43.99 | 2.07  |
| <i>Yangze River</i> |     |       |       |      |     |        |       |       |
| Zhejiang            | 3   | 0.8   | 2.29  | 0.41 |     |        |       |       |
| Anhui               | 17  | 15.6  | 31.83 | 7.82 | 19  | 16.44  | 32.19 | 8.29  |
| Jiangxi             | 18  | 7.9   | 25.1  | 3.98 | 21  | 9.10   | 28.37 | 4.59  |
| Hubei               | 25  | 11.5  | 28.25 | 5.78 | 25  | 11.00  | 27.92 | 5.55  |
| Hunan               | 10  | 6.1   | 11.53 | 3.07 | 20  | 9.67   | 17.86 | 4.88  |
| <i>South</i>        |     |       |       |      |     |        |       |       |
| Fujian              | 8   | 2.1   | 8     | 1.04 |     |        |       |       |
| Guangdong           | 3   | 0.8   | 1.44  | 0.4  |     |        |       |       |
| Hainan              | 5   | 0.6   | 13.78 | 0.32 | 5   | 0.58   | 11.49 | 0.29  |
| <i>Southwest</i>    |     |       |       |      |     |        |       |       |
| Guangxi             | 28  | 7.7   | 20.02 | 3.85 | 28  | 8.21   | 20.35 | 4.14  |
| Sichuan             | 43  | 19.3  | 20.58 | 9.69 | 36  | 13.06  | 18.86 | 6.59  |
| Chongqing           |     |       |       |      | 14  | 9.60   | 39.35 | 4.84  |
| Guizhou             | 48  | 16.8  | 57.48 | 8.42 | 50  | 19.12  | 60.49 | 9.65  |
| Yunnan              | 73  | 20.1  | 61.05 | 10.1 | 73  | 20.54  | 59.30 | 10.36 |
| Tibet               | 5   | 0.2   | 10.58 | 0.1  |     |        |       |       |
| Total               | 592 | 199.2 | 23.49 | 100  | 592 | 198.22 | 30.53 | 100   |

Note: 1. Calculated from China Rural Economics Statistics by County, 1993 (Beijing: Statistical Press), 1994; Rural Statistics Yearbook of China, 1994; China Rural Economics Statistics by County, 2002; Rural Statistics Yearbook of China, 2002.

The revision of the list of poor counties in 1993 must be considered a step forward, since it was made on the basis of the poverty line recommended by the NBS, with the result that many previously neglected poor counties were added. In some poor provinces and autonomous regions, previously province-designated poor counties were changed into state-designated ones, and no additional provincial poor counties were selected. The readjustment rendered the greatest benefit to Yunnan, Guizhou, Hebei provinces and the Inner Mongolian Autonomous Region. The proportion of their total rural population living in poor counties in the last three provinces rose by 20%, and in Yunnan by 40%. Coastal provinces as Fujian, Guangdong, Shandong and Zhejiang sustained losses in the readjustment. The proportion of poor county rural population in Fujian, for example, was reduced by 11%.

After Chinese government announced that PRC has basically solved the food and closing problem of the rural absolute poor in early 2001 when the "Eight-Seven Poverty Reduction Plan" was completed, PRC's rural poverty reduction entered into a new stage. To reflect the changes of poverty situation in different regions and focus on poverty problem in inland provinces and autonomous regions, the LGPR readjusted



the poor county once again in 2001<sup>10</sup>. The total number of national poor counties is still kept at 592, while the distribution of the poor counties further shifted to the central and western provinces. All the poor counties in coastal region designated in 1993 were eliminated from the new poor county name list (Table 9). The provincial governments in the coastal regions are assumed to take full responsibility for poverty reduction within their jurisdiction.

### **Designation of poor villages**

With the decrease of the rural poor population, county was no longer the appropriate targeting unit. Chinese government issued a new Poverty Reduction Compendium for the next 10 years in 2001, in which village targeting was proposed though key poverty reduction counties were still designated and the counties would still exercise overall administration of poverty reduction funds. With the financial and technical helps from ADB and UNDP, OLGPR developed appropriate methodologies and indicators for identifying the poor villages and households. It is required that most poverty reduction funds must go to the poor villages. Non-poor villages in key poverty reduction counties are no longer eligible for poverty investments, while poor villages in non-key poverty reduction counties are qualified for poverty investments. County government took the responsibility to identify the poor villages within the quota set by the provincial government.

### Indicators for village ranking

OLGPR proposed a weighted poverty index (WPI) developed by ADB for villages ranking. The index was generated from the score of eight indicators, namely: livelihood poverty indicators (grain production/person/year, cash income/person/year, and % of bad quality houses); infrastructure poverty indicators (% of households having difficulty of access to potable water, % of natural villages with access to reliable electricity supply, % of natural villages with an all-weather road access to county town); human resource poverty indicator (% of women with long-term health problem, % of eligible children not attending school). Except for the first two indicators that are continuous, the rest are proportions and relatively easy to collect. For cross-village comparison, it is better to have the same indicators for all the villages. In practice, OLGPR allowed the local governments to change some of the indicators according to the local situation. This decision has made the identification process more flexible, but at the same time made it more difficult to compare poverty between counties and provinces.

For comparability, the weights assigned to the indicators should remain constant across townships, counties and provinces. In practice, however, the weights were actually assigned by a group of villagers including the poor and women in a few sample villages in each county by using participatory approaches, which means

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<sup>10</sup> LGPR renamed these poor counties as key poverty reduction counties.

different villages in different counties will have different weights for the same indicators. The advantage of having different weights in different counties is that farmers in different communities may have different perception about poverty and its causes and this can be reflected in the weights they assign to each indicator. The disadvantage of having villagers setting the weights for each indicator is that its quite subjective and sensitive to the local conditions, e.g. farmer in a village without access to road may give the highest weight to road accessibility while farmer in another village without electricity may give the highest weight to electricity accessibility.

#### Data collection for the selected indicators

The recommended method for data collection is group discussion held in each village. The concrete steps are: a) organizing a discussion meeting in each village; b) explaining the indicators to all the participants to ensure that they have the same perception about the indicators; c) dividing the participants into several small groups and each group fill out the figures for each indicator; d) writing out the figures filled by each small group and initiating discussions about the figures among all the participants to reach an agreement on each indicator. When there was no reliable records or survey for most of the indicators at the village level, participatory approach was the most suitable way to collect information. The only problem was that the quality of the data collected largely depends on the knowledge and skills of the organizers.

#### Poor village identification

Since WPI calculated from the above procedure was only valid for village ranking within the county, county governments (mainly OLGPR at the county level) were assigned responsibility for poor village identification. Working teams were organized to help villages select indicators and collect relevant data. County OLGPR then calculated WPI and identified poor villages by ranking them all; the higher the index, the poorer the village. It was required that the name list of all the identified poor villages be publicized within the county for monitoring purpose. The most appealing about this index is its simplicity. However, effective implementation of the whole process is not an easy task for the county governments and needs lots of expertise in the area of participatory methodologies.

County OLGPR suggested a name list of poor villages to the provincial OLGPR and the later adjusted the number of poor villages in each county according to total number of poor villages the provincial government could support within the planned time period. A total of 146 thousand poor villages were identified by the end of 2001 through participatory approaches.

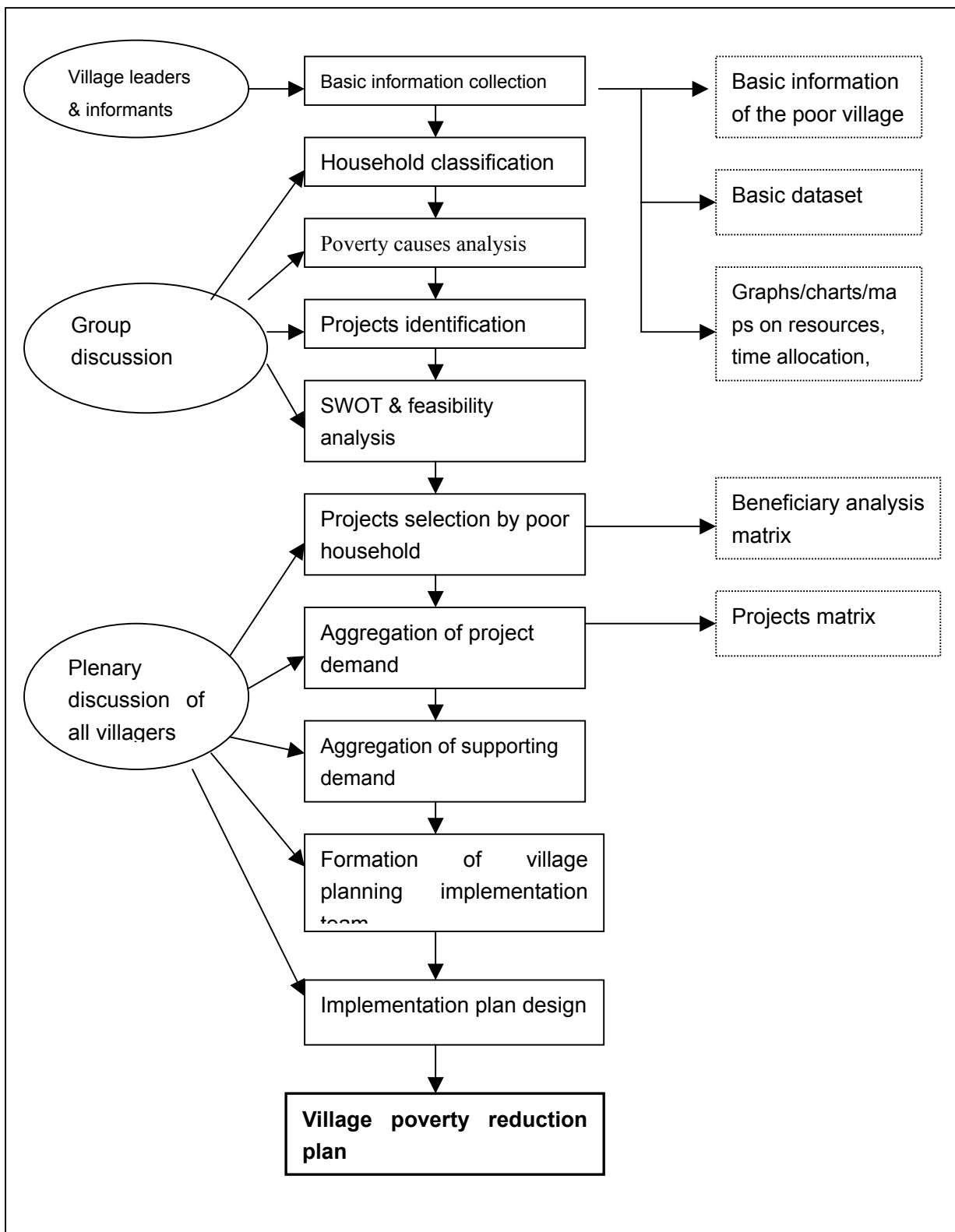
#### Poor household identification

Though income poverty lines (625 and 820 yuan) are set for poor household identification in PRC. It is recommended that participatory approach be used to identify poor households in each village because household income data is not available at this level. Six steps were proposed to be taken to distinguish the poor from the non-poor. a) printing out a name list of all the households in the village; b) organizing group discussing of villager representatives; c) classifying four household groups, namely households on relief, extremely poor households, poor households and better-off households; d) identify the basic characteristics of each group; e) designating each household into one of the four groups by voting; and f) estimating an income level for each group and all the households in the groups with income below the official poverty line can be designated as poor households.

#### Village/community development planning

To implement poverty reduction programs at the village level, village development plan made through active participation of all the households in the targeted villages accompanied the poor village identification process, and would serve as the bases for projects identification, investments and monitoring. The whole process of village planning is summarized in chart 1.

Chart 1 Village planning process



## 2.1.2 Targeting measures at the project level

Whence the poor counties are designated and poverty reduction funds delivered to these counties through different channels, the county governments and the ABC county branches play key roles in project selection and poor community and household targeting. Different types of poverty funds are managed by different organizations with different regulation and roles on fund purposes, project and beneficiary selections.

### Subsidized loan program

The main objective of the subsidized loan program was to provide credit support for the production activities of poor areas and the poor population so as to boost economic development and improve the income and living standards of the poor. The bulk of subsidized loans are provided to households or enterprises in poor counties at a subsidized annual interest rate of 2.88%<sup>11</sup>.

Subsidized loans were managed mainly by LGPR county offices and the ABC county Bank. By regulation, the choice of projects and households to be supported was left mainly to the care of LGPR county offices; and questions of issue and recovery to the care of the ABC county branches. With the commercialization of the state-owned banking system in recent years, ABC is getting more independence in deciding the use of subsidized loans.

When the subsidized loan program was begun in 1986, the government believed that a key constraint facing poor farmers in generating income was the lack of available capital and an inability to gain access to the formal credit system. The government also felt it was important to provide technical assistance and other services. With this premise, priority in the first phase of lending was given to distributing subsidized loans directly to poor households selected by poverty officials to develop cropping, animal husbandry, and agricultural processing. An official survey at the end of 1987 showed that in the first year of the program, 92 % of subsidized loans were distributed directly or indirectly to farm households, rather than to county, township, or village enterprises.

This pattern of loan distribution ended by 1989 when the Leading Group opted to encourage the development of economic entities (*jingji shiti*) for assisting the poor. These economic entities were enterprises engaged in some kind of productive or service activity that helped poor households to escape poverty. The new policy stipulated that at least half of the employees of the economic entities had to be from poor households in order to qualify for subsidized loans. This change in lending priorities was based on the view that most poor households could not make good use of subsidized loans on their own because they lacked the necessary technical and

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<sup>11</sup> Beginning in 2002, the interest rate was adjusted to 3%.

management ability and could not achieve economies of scale in operation. In contrast, economic entities such as collectively managed orchards or companies selling agricultural or sideline products were managed by professional personnel who could coordinate activities on a larger scale. An important goal of the reform was to improve the productivity of loans and achieve higher repayment rates. Evidence from some poor counties and provinces revealed that since 1989, over 70 percent of subsidized loans had been distributed to economic entities.

The main problem with lending to economic entities was that the connection to poor households was much less direct, which compromised the original targeting goals of the program. Many of the loans were given to township and village enterprises (TVEs) or county-owned enterprises, increasing the revenue base for local governments but not greatly benefiting poor households. What was more serious was that most of the industrial projects built with subsidized loans failed in the end due to technical, management and market limitations; hence, there was no conspicuous improvement in the repayment rate of the loans. At the national work conference on poverty in September 1996, the government decided to return the focus of lending to providing direct loans to poor households for cropping and animal production.

To better serve the poor households, microcredit schemes were introduced in 1997 as an important measure to improve the targeting accuracy as well as loan recovery. By the end of 2001, the amount of microcredit issued by ABC through the use of subsidized loans totaled 3.8 billion yuan, covering 2.3 million poor households and 10.6 million poor population (Cao, 2003).

Due to the restrictions imposed by macrofinancial policies, all microcredit projects confronted a difficult problem of sustainable development. The main aim of local governments in using the subsidized loans to make microcredit available was to use microcredit techniques to reach households (not necessarily the poorest farmer households) and increase repayment rates. Compared with the previous subsidized loans, the government microcredit program was a big step forward in terms of getting credit funds to households and raising the repayment rate. But the greatest defect of the government program was that the government neglected the development of the microcredit mechanism and the building of institutional capacity; most of the working personnel were ad hoc administrators brought together mainly to serve a temporary task. The key issue of how to provide effective long-term financial services for the poor through microcredit was not given any consideration in the government microcredit projects.

### **Food/cash for work program**

The main aim of food/cash for work was to make use of the surplus labor resources in poor areas to build such infrastructure as roads, water conservancy and drinking

water facilities and farmland, at the same time providing poor farmers with job opportunities and income sources, thus raising their short-term income level and long-term development capacity.

From the very beginning, the food/cash for work scheme had been a multi-annual one organized and implemented by the NPDC system. A special feature of the scheme's management was the payment of project costs in kind. The basic management mode was that the planning committee distributed coupons to be exchanged for grain, cloth and daily necessities directly, to the relevant project implementation institutions (such as the traffic bureau, the water conservancy bureau, etc.) and got those institutions to make the exchange. Materials were to be allocated by state-run commercial departments (such as the grain bureau, the commercial bureau, etc.) and in some cases food coupons could be exchanged for cash through the bank.

In the initial period of the scheme, poor areas were required to secure state-allocated materials from coastal and other developed areas and then distributed them to the project implementation units, which in turn would sell the materials in local markets or hand them over directly to the farmers. As it cost a good deal to transport materials from coastal to poor areas, in the 1990s such materials began to be sold in their places of origin and the cash thus obtained was remitted to the poor areas, where the planning committee office in charge would distribute it among project implementation units. Beginning in 1997, all the funds used for FFW came from the government budget rather than from selling grain or industrial consumption goods.

Policy dictated that the resources provided by the central government for the food/cash for work scheme were to be augmented by the provincial, prefectural and county governments. But in reality, due to the strain in local financial resources, the matching funds from local governments were very limited, or even non-existent. Funds for food/cash for work were mainly used to pay for supplies and labor for infrastructure projects in poor areas.

Since FFW funds are mainly used for infrastructure construction, poor households can only benefit from the improvement of production and living conditions and wages earned from participating in the project construction. The selection of the project sites and whether wages are paid are determinants of short-term and long-term impacts on poverty reduction.

The project selection procedures depend on the scales and nature of the projects. Large-scale projects such as roads connecting counties and townships are usually applied and implemented by specialized county government bureaus, e.g. the traffic bureau, while small scale community based projects are usually applied and implemented by the village committees and the township governments. The specialized construction teams are hired for the construction work of large-scale project and wages or lump sum construction fee are paid to workers or construction

teams. As for community based small-scale projects, village committees and township governments usually mobilize compulsory labors to carry out the construction; wages may or may not be paid for these labors depending on the budget of the projects.

### **Budgetary development fund**

The low level of economic development in PRC's poor areas made it impossible for most poor counties to be self-sufficient financially, as their expenditures far exceeded revenues; and such counties were absolutely unable to make any investments. It was precisely the purpose of the budgetary development funds to support productive construction projects and investments by means of special funds. The fund can be used to support promising industries using appropriate technology, support infrastructure construction and agricultural structural adjustment, and develop external agriculture and green industry. A small portion of the fund has also been used in the area of primary education and basic health care, e.g. school and clinic construction.

All budgetary development funds came from the Ministry of Finance and mainly managed by the fiscal system. It is also required that local governments (province, prefecture and county) provide matching funds, though these matching funds have rarely in their place. The project identification and implementation are much the same as FFW except that budgetary development fund can also be used in the area of social and human development such as education, health care and training, and the project scales are usually smaller. Wages are usually not paid for project participants except that some projects need skilled workers or specialized construction teams.

### **Compulsory education project**

Beginning in 1996, Chinese government set up a separate fund for the implementation of compulsory education project with the objective to improve the basic schooling conditions in the poor counties. The Ministry of Education (MOE) is in charge of the project fund and the county education bureaus are responsible for the implementation of the project.

The focus of the project is on the construction of new primary and secondary schools, enlarging and repairing old schools, purchasing desks, chairs, book and equipments, and training teachers and principals. It is also required that local governments in poor counties should merge small schools and provide boarding facilities for students in order to improve the education quality and reduce cost. In the first five-year project period, no subsidies were given to school students. The second phase (2001-2005) project began in 2001, covering 522 poor counties with the emphasis on mountainous, pastoral, border and minority areas (especially minority areas where the total population is under 100 thousand). Subsidies for poor students were added as a components of the project, which accounted for 10% of the total budget. The



subsidies from the central government were mainly used to cover the textbook cost. It is also required that local governments provide the same amount of subsidies for tuition exemption and boarding fee deduction. Beside the subsidies, 60% of the fund should be used for school construction, 10% for IT equipments (computer, satellite receiver, SVCD, video recorder and TV) for long distance education, 10% for desks, chairs, book and other equipments, 10% for school teacher and principal training.

## 2.2 Urban poverty reduction strategy and targeting

In PRC, the task of urban poverty reduction is assigned to municipal and township governments. The central government provides subsidies for the local governments to establish a minimum living standard system.

Criteria for selecting urban residents who are eligible for receiving subsidies and the amount of subsidies are determined by municipal and township governments. No poverty line based on income or consumption has been developed in any city. Instead, a set of mixed indicators including employment status, housing, illness, disability, etc. is usually used to identify the subsidy recipients. The amount of subsidy received by each recipient is different according to his/her income and living conditions. Unlike rural poverty reduction, the Ministry of Civil Affairs (MCA) is the only government organization that is assigned responsibility for the administration of urban minimum living standard system. MCA city and county bureaus are the implementation units of such a system, who rely on urban residents committee at the community level to provide necessary information to accurately identify the beneficiaries.

By the end of September 2003, 21.8 million urban residents in 8.9 million households are eligible for receiving subsidies and a monthly subsidy of 56 yuan is distributed to each recipient on average. However, the minimum living standard and average subsidies provided are quite different between cities and provinces, usually determined in line with their financial ability and the coverage of the program (Table 10).

Table 10 Minimum living standard program in PRC (2003)

| Province/city    | Recipients<br>(1,000) | No. of<br>households | Monthly subsidy |
|------------------|-----------------------|----------------------|-----------------|
| <b>Total</b>     | <b>21,800</b>         | <b>8,950</b>         | <b>56</b>       |
| <b>North</b>     |                       |                      |                 |
| Beijing          | 155                   | 69                   | 230             |
| Tianjing         | 249                   | 103                  | 71              |
| Hebei            | 745                   | 299                  | 38              |
| Henan            | 1,241                 | 534                  | 44              |
| Shandong         | 740                   | 272                  | 51              |
| <b>Northeast</b> |                       |                      |                 |

|                      |       |     |     |
|----------------------|-------|-----|-----|
| Liaoning             | 1,531 | 573 | 59  |
| Jilin                | 1,467 | 578 | 53  |
| Heilongjiang         | 1570  | 619 | 46  |
| <b>Northwest</b>     |       |     |     |
| Inner Mongolia       | 701   | 291 | 45  |
| Shanxi               | 752   | 327 | 45  |
| Shaanxi              | 784   | 271 | 63  |
| Ningxia              | 152   | 57  | 73  |
| Gansu                | 568   | 232 | 48  |
| Qinghai              | 194   | 75  | 70  |
| Xinjiang             | 795   | 315 | 60  |
| <b>Yangtze River</b> |       |     |     |
| Shanghai             | 447   | 206 | 139 |
| Zhejiang             | 76    | 39  | 117 |
| Jiangsu              | 324   | 135 | 81  |
| Anhui                | 1,048 | 429 | 47  |
| Jiangxi              | 1,013 | 383 | 56  |
| Hubei                | 1,615 | 644 | 50  |
| Hunan                | 1,441 | 600 | 42  |
| <b>South</b>         |       |     |     |
| Fujian               | 191   | 76  | 54  |
| Guangdong            | 345   | 126 | 74  |
| Hainan               | 84    | 35  | 49  |
| <b>Southwest</b>     |       |     |     |
| Guangxi              | 516   | 213 | 46  |
| Sichuan              | 1,394 | 647 | 51  |
| Chongqing            | 704   | 343 | 74  |
| Guizhou              | 412   | 180 | 51  |
| Yunnan               | 622   | 317 | 60  |
| Tibet                | 38    | 12  | 70  |

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Source: MCA (2003).

### 3. Assessment of the impact of targeting measures

PRC adopted a multi-level targeting mechanism, in which regional poverty targeting plays a fundamental role in the allocation of poverty reduction funds. In this section, I first examine the effectiveness of the regional poverty targeting through the analysis of the accuracy of poor county designation and the equity of poverty fund distribution, and then discuss the impact of targeting measures at project level.

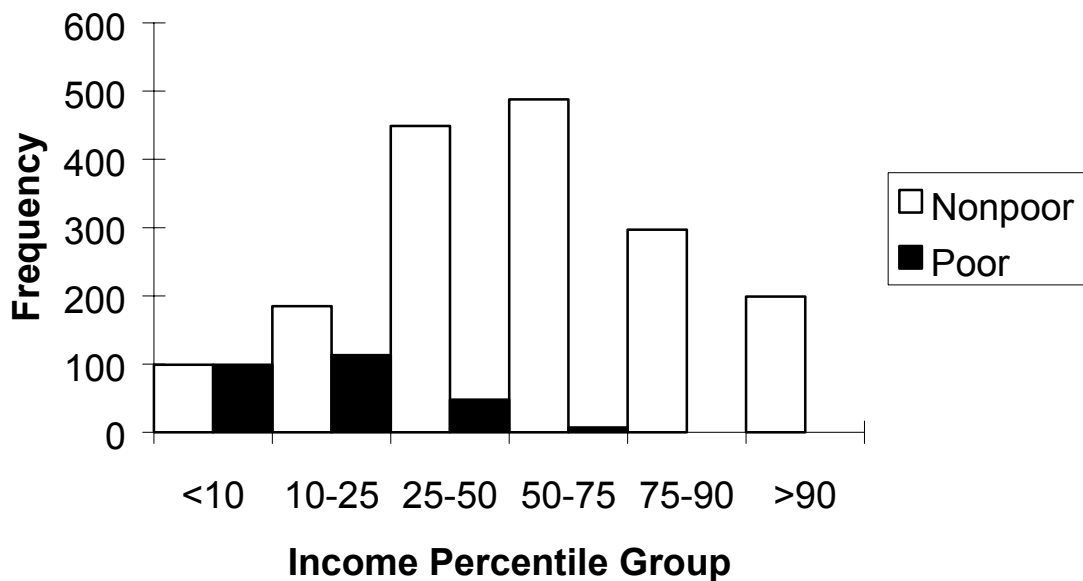
### 3.1 Accuracy of the Poor County Designation

#### 3.1.1 Targeting Gaps

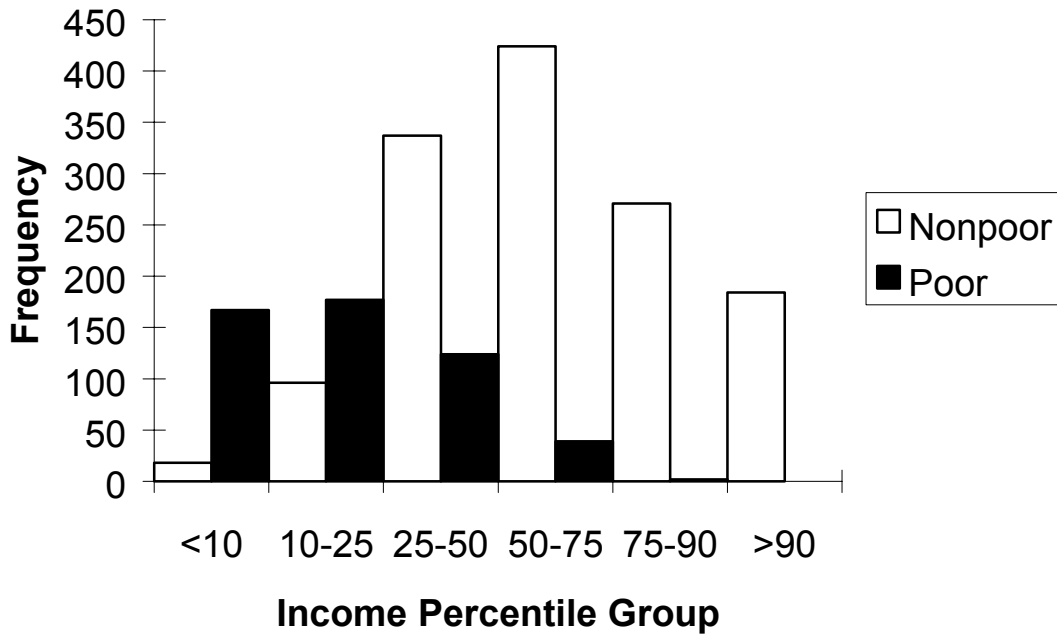
Initial evidence on targeting can be found in the frequency distributions of poor and nonpoor counties across income levels. In 1986, only half of the counties in the lowest income decile were designated as poor, even though there were even more counties designated as poor in the next income group (Figure 2). In 1993, many fewer counties in the lowest income groups were being excluded--better coverage, but there were many more counties designated as poor in the middle-income groups--greater leakage (Figure 2).

**Figure 2**  
**County Income Per Capita Distribution in Poor and Nonpoor Counties, 1986 and 1993**

1986



1993



To evaluate overall targeting effectiveness, Park, Wang and Wu (2002) defined new measures, which were referred to as *targeting gaps* and *targeting errors*. *Targeting gaps* describe mistargeting in the full sample with respect to a reference poverty line, while *targeting error* describes mistargeting given a set number of targeted beneficiaries. Similar to poverty measures, gaps and errors can be aggregated using different weights.

Two types of targeting gaps were calculated: the *targeting count gap* ( $TCG_t$ ) and the *targeting income gap* ( $TIG_t$ ). The targeting count gap is defined as

$$TCG_t = \frac{1}{N} \sum_{i=1}^N \{I_{it1}(P_{it} = 0, Y_{it} < Z_t) + I_{it2}(P_{it} = 1, Y_{it} > Z_t)\}.$$

Here,  $N$  is the total sample of counties, indexed by  $i$ .  $I_{it1}$  is an indicator variable for type I error (or incompleteness) that equals one if a county is not designated as poor ( $P_{it}=0$ ) but its income per capita ( $Y_{it}$ ) is below the poverty line ( $Z_t$ ).  $I_{it2}$  is an indicator variable for type II error (or leakage) that equals one if a county is designated as poor ( $NP_{it}=1$ ) but its income per capita is above the poverty line.  $TCG_t$  can be interpreted as the percentage of counties that are mistargeted, and is easily disaggregated into type I and type II error.

The targeting income gap is defined as

$$TIG_t = \frac{1}{N} \sum_{i=1}^N \{ (Z_t - Y_{it}) I_{it1} + (Y_{it} - Z_t) I_{it2} \}.$$

Where the indicator variables are as defined above. It is similar to the TCG except that mistargeting is weighted by the magnitude of mistargeting, measured as the difference between income and the poverty line. The TCG and TIG are analogous to the widely used poverty headcount and poverty gap measures, but are two-sided rather than one-sided.<sup>12</sup>

Yearly TCG and TIG measures for PRC's poor county designation are presented in Tables 11 and 12. Both measures are sensitive to the chosen poverty line; as the line is increased type I error increases and type II error decreases. The authors calculated the TCG and TIG for each year from 1986-1995 for two different lines--the official poverty line and a relative poverty line equal to 60 percent of mean income per capita.<sup>13</sup>

The results show that targeting effectiveness has deteriorated steadily over time, that incompleteness has fallen while leakage has increased, and that using the official poverty line, targeting gaps jumped noticeably after the new poor county designations in 1993. As seen in Table 11, the percentage of counties that were mis-targeted increased from 14 to 22 percent using the official poverty line and from 15 to 19 percent using the relative poverty line. While failure to designate a poor county as poor was nearly twice as likely as designating a nonpoor county as poor in 1986 (using either the official or relative poverty lines), by 1995 the opposite was true using the relative line and virtually all mis-targeting was due to leakage using the official line. Considering that about one fifth of counties are mis-targeted, the TIG of 77 yuan in 1995 for the official line implies that the average magnitude of mis-targeting in mis-targeted counties is about 385 yuan, or nearly two thirds of the poverty line<sup>14</sup>. Only part of the targeting gaps can be explained by preferential treatment towards minority and revolutionary base counties. In 1986, 25 percent of leakage (type II error) in the TCG (using the official poverty line) was due to minority counties and 35 percent to revolutionary base counties. By 1995, the comparable figures were 35 and 19 percent.

**Table 11**  
**Targeting Count Gap, 1986 to 1995**

|      | Official Poverty Line |         |       | Relative Poverty Line<br>(60 Percent of Ave. Income Per Capita) |        |         |       |
|------|-----------------------|---------|-------|---|--------|---------|-------|
|      | Type I                | Type II | Total | Line  | Type I | Type II | Total |
| 1986 | 0.094                 | 0.050   | 0.144 | 598   | 0.099  | 0.050   | 0.149 |

<sup>12</sup> It is straightforward to weight type 1 and type 2 errors differently. Just as for poverty measures, one can also give greater weight to larger targeting income gaps by using higher order weighting terms (Foster, Greer, and Thorbecke, 1984).

<sup>13</sup> There is no obvious reason for choosing the official poverty line since the goal of the program is to target individuals below the poverty line rather than counties with average incomes below the line.

<sup>14</sup> Since the targeting income gap for all counties is 77 yuan and all the income gaps are from one fifth of the mistargeted counties, the average magnitude of mistargeting in mistargeted counties is 385yuan.

|      |       |       |       |     |       |       |       |
|------|-------|-------|-------|-----|-------|-------|-------|
| 1987 | 0.082 | 0.065 | 0.146 | 611 | 0.097 | 0.061 | 0.158 |
| 1988 | 0.044 | 0.101 | 0.144 | 586 | 0.086 | 0.073 | 0.159 |
| 1989 | 0.056 | 0.096 | 0.152 | 538 | 0.096 | 0.079 | 0.175 |
| 1990 | 0.078 | 0.093 | 0.171 | 570 | 0.093 | 0.085 | 0.178 |
| 1991 | 0.058 | 0.101 | 0.158 | 590 | 0.093 | 0.084 | 0.177 |
| 1992 | 0.038 | 0.107 | 0.145 | 628 | 0.087 | 0.083 | 0.171 |
| 1993 |       |       |       | 655 | 0.028 | 0.150 | 0.178 |
| 1994 | 0.005 | 0.232 | 0.237 | 703 | 0.047 | 0.137 | 0.185 |
| 1995 | 0.004 | 0.218 | 0.222 | 793 | 0.065 | 0.120 | 0.185 |

Note: Calculations based on sample of 1837 counties with complete data for all years.

One problem with the targeting gap measures is that they are sensitive to the number of poor counties designated. If the number of designations is less than the number of truly poor counties, type I error is unavoidable, and if designations exceed the number of poor counties, type II error is unavoidable, even when targeting is perfect in that designations go to the poorest counties. Another way to assess targeting, then, is to compare outcomes with the perfect targeting case given the number of poor county designations. The authors defined *targeting count error* (TCE) as the percentage of designations not given to counties that would be targeted under this definition of perfect targeting, or

$$TCE_t = \frac{1}{D} \sum_{i=1}^N I_{it} (Y_{it} < Z_t^*, P_{it} = 0)$$

Here,  $Z_t^*$  is the income level of the marginal, or threshold, county when targeting is perfect given the number of available designations (D). Similar to targeting gaps, the indicator functions can be weighted by income differences with counties that were mistakenly targeted to calculate *targeting income error* (TIE<sub>t</sub>) or by rank differences to calculate *targeting rank error* (TRE<sub>t</sub>).<sup>15</sup> These statistics (and formal definitions) are reported in Table 13, and show that by any measure, targeting error was substantial in the original designations (in fact, a majority of designations were mistargeted), increased steadily over time, fell dramatically after new designations in 1993 to levels even below that of the original designations, and then began increasing once again. Thus, the 1993 designations reduced targeting error, but through a strategy of expanded coverage beneficial to counties above the absolute or relative poverty thresholds.

<sup>15</sup> Targeting income error formula is the same as for targeting income gap except the poverty line Z is the income of the threshold county and the summation is divided by D instead of N. Targeting rank error replaces income difference with income rank difference.

**Table 12**  
**Targeting Income Gap, 1986 to 1995**

|      | Official Poverty Line |         |       | Relative Poverty Line<br>(60 Percent of Ave. Income Per Capita) |        |         |       |
|------|-----------------------|---------|-------|---|--------|---------|-------|
|      | Type I                | Type II | Total | Line  | Type I | Type II | Total |
| 1986 | 9.6                   | 6.2     | 15.8  | 598   | 11.6   | 6.1     | 17.7  |
| 1987 | 8.2                   | 9.1     | 17.3  | 611   | 11.1   | 7.5     | 18.6  |
| 1988 | 3.3                   | 16.4    | 19.7  | 586   | 8.5    | 9.6     | 18.1  |
| 1989 | 4.3                   | 17.3    | 21.7  | 538   | 9.6    | 11.1    | 20.7  |
| 1990 | 6.5                   | 16.2    | 22.7  | 570   | 9.7    | 13.0    | 22.7  |
| 1991 | 4.5                   | 21.9    | 26.5  | 590   | 9.9    | 15.9    | 25.8  |
| 1992 | 2.9                   | 29.9    | 32.9  | 628   | 9.7    | 19.1    | 28.8  |
| 1993 |                       |         |       | 655   | 1.9    | 26.0    | 27.8  |
| 1994 | 0.3                   | 65.8    | 66.1  | 703   | 4.6    | 29.6    | 34.2  |
| 1995 | 0.2                   | 76.4    | 76.5  | 793   | 7.8    | 31.2    | 39.0  |

Note: Calculations based on sample of 1837 counties with complete data for all years.

**Table 13**  
**National Targeting Error, 1986-1995**

|      | Targeting<br>Count Error | Targeting Rank<br>Error | Targeting<br>Income Error |
|------|--------------------------|-------------------------|---------------------------|
| 1986 | 0.524                    | 363                     | 242                       |
| 1987 | 0.504                    | 381                     | 265                       |
| 1988 | 0.574                    | 447                     | 264                       |
| 1989 | 0.625                    | 532                     | 302                       |
| 1990 | 0.649                    | 564                     | 332                       |
| 1991 | 0.629                    | 621                     | 378                       |
| 1992 | 0.618                    | 682                     | 422                       |
| 1993 | 0.280                    | 260                     | 153                       |
| 1994 | 0.319                    | 313                     | 212                       |
| 1995 | 0.334                    | 323                     | 267                       |

Note: Calculations based on sample of 1837 counties with complete data for all years.

Even if poor county designation was perfect, there would still be mistargeting due to:

*The non-poor in poor counties*

To the extent that poverty programs are targeted at poor counties, there is a danger of leakage to the nonpoor who live in designated poor counties. Total rural population in 592 counties is around 200 million, while poor population is only 28 million estimated

by the official poverty line or less than 100 million measured by \$1 dollar/day standard. Even if all of PRC's poor were resident in poor counties, the majority of households in poor counties would still not be poor.

#### *The Poor in Non-Poor Counties*

Data from the NBS indicate that, of the 80 million rural poor in 1992, only 23 million lived in non-poor counties, accounting for 29%. However, proportion is increasing. Estimate from the same source suggest that the poor living in non-poor counties account for 38% of total poor population in 2001. Rural household data provide evidence that a much larger percentage of the poor live in non-poor counties. A study indicated that about half of the poor in four southern provinces do not live in poor counties (Ravallion and Jalan, 1999).

### **3.1.2. Empirical Analysis of the Determinants of Poor County Designation**

As we have known from the discussion of the poor county selection process above, status as a minority or revolutionary base county will have a significant effect on poor county designation. In 1990, 637 counties in PRC were minority counties (33 percent) and 195 were revolutionary base areas (10 percent). 20 percent of minority counties and 44 percent of revolutionary base counties were designated as poor in 1986, accounting for 38 and 30 percent of all poor counties. In 1993, the number of minority counties designated as poor more than doubled (to 46 percent of all minority counties) but the number of revolutionary base counties increased only slightly (to 48 percent). As a share of all poor counties, however, the number of minority and revolutionary base counties fell to 30 and 16 percent in 1993 because the total number of poor counties increased by so much.

Using county-level economic data from the Ministry of Agriculture, which were the basis of poor county designations in 1986,<sup>16</sup> Park, Wang and Wu (2002) studied the determination of poor county status by estimating probit functions for poor county designations in 1986 and 1993. The results shed light on the first two targeting criticisms only. Explanatory variables include log of income per capita, log of grain production per capita, and industrial share of total income in the year preceding the designations, status as a minority county or revolutionary base county, and provincial dummy variables. All explanatory variables have estimated coefficients that are statistically significant. The fitted probabilities correctly predict the status of 92 percent of county designations in 1986 and 88 percent in 1993.

The marginal effects on the probability of poor county designation at the sample means for poor counties are presented in Table 14. In 1986, a 1 percent increase in income per capita reduces the probability of being designated a poor county by 1.3

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<sup>16</sup> The MOA data is known to show more poverty in PRC's southwest and less in the northwest in comparison to the SSB data (World Bank, 1992). Both SSB and MOA data are available for poor counties in 1994 and 1995. The two series have a rank correlation of 0.89 and 0.92 in the two years.



percent, a 1 percent increase in grain output per capita decreases the probability by 0.2 percent, and an increase in the industrial share of income of 1 percent reduces the probability by 0.7 percent. Designations are less responsive to per capita income and grain production in 1993 (1.1 and 0.1 percent) and slightly more responsive to industrial share of income (0.8 percent). Being a minority or revolutionary base county increases the probability of designation by 15 and 45 percent in 1986, and 17 and 18 percent in 1993. Overall, the responsiveness of poor county designation to both economic and political variables decreases in 1993, mainly because the larger number of designations reduced the sensitivity of designations at poor county means. A comparison of elasticities evaluated at full sample means finds greater responsiveness in the latter period.

**Table 14**  
**Marginal Effects on Probability of Poor County Designation**  
**(From Probits Evaluated at Poor County Means)**

|                                    | 1986               | 1993               |
|------------------------------------|--------------------|--------------------|
| Log(income per capita) (t-1)       | -1.31<br>(0.0749)  | -1.13<br>(0.0526)  |
| Log(grain output per capita) (t-1) | -0.216<br>(0.0509) | -0.124<br>(0.0270) |
| Industrial share of income (t-1)   | -0.705<br>(0.308)  | -0.769<br>(0.135)  |
| Minority                           | 0.146<br>(0.0633)  | 0.166<br>(0.0377)  |
| Revolutionary base                 | 0.441<br>(0.0411)  | 0.180<br>(0.0255)  |
| Provincial dummies:                |                    |                    |
| <b>North</b>                       |                    |                    |
| Henan                              | -0.240             | -0.138             |
| Shandong                           | 0.392              | -0.111             |
| <b>Northeast</b>                   |                    |                    |
| Liaoning                           | 0.175              | 0.0882             |
| Jilin                              |                    | 0.0309             |
| Heilongjiang                       |                    | 0.0381             |
| <b>Northwest</b>                   |                    |                    |
| Inner Mongolia                     | -0.136             | 0.0140             |
| Shanxi                             | 0.282              | -0.00751           |
| Shaanxi                            | 0.126              | 0.00762            |
| Ningxia                            |                    | -0.369             |
| Gansu                              | -0.302             | 0.00431            |
| Qinghai                            | 0.343              | -0.297             |
| Xinjiang                           | 0.363              | -0.0626            |
| <b>Yangtze River</b>               |                    |                    |

|                  |         |          |
|------------------|---------|----------|
| Zhejiang         | 0.0834  | -0.194   |
| Anhui            | 0.244   | -0.212   |
| Jiangxi          | -0.0426 | -0.0474  |
| Hubei            | 0.347   | 0.0533   |
| Hunan            | -0.182  | -0.391   |
| <b>South</b>     |         |          |
| Fujian           | 0.443   | 0.0613   |
| Guangdong        | 0.143   | -0.00769 |
| <b>Southwest</b> |         |          |
| Guangxi          | 0.0600  | -0.129   |
| Sichuan          | -0.231  | -0.46    |
| Guizhou          | -0.219  | -0.341   |
| Yunnan           | -0.119  | -0.320   |

Notes: Sample sizes are 1908 and 1953 and pseudo R-squared is 0.49 and 0.54. Marginals for minority and revolutionary base status as well as provincial effects are effect of change from 0 to 1. Provincial effects are with respect to Hebei. Marginal effects evaluated at full sample means in 1986 and 1993 are the following: income  $-0.129$  and  $-0.704$ , grain  $-0.0212$  and  $-0.0773$ , industrial share  $-0.0689$  and  $-0.481$ , minority  $0.181$  and  $0.130$ , and revolutionary base  $0.143$  and  $0.216$  (all statistically significant at the 1 percent level).

Many provincial dummies have large and significant coefficients, suggesting that there was considerable discrimination against specific provinces. In the 1986 designations, poor provinces in Sichuan, Guizhou, Yunnan (southwest), Henan, Hunan (central), and Inner Mongolia, Gansu (northwest) were at a severe disadvantage, while a county was much more likely to be designated as poor if it were in the wealthier provinces of Fujian, Shandong, Hubei, or Xinjiang. The starkest contrast is between Gansu and Fujian: a county in Gansu was 70 percent less likely to be designated as poor than a county in Fujian. In 1993, despite a large number of newly designated counties in relatively disadvantaged provinces such as Yunnan and Guizhou, southwest provinces remained at a distinct disadvantage, along with Qinghai and Ningxia in the northwest and Anhui and Hunan in central PRC.<sup>17</sup> Many favored provinces in 1986 no longer appeared favored in 1993.

The Chinese experience confirms the view that regional targeting may be a rather “blunt instrument” for reaching the poor (Ravallion and Lipton, 1995). Even when funds are perfectly targeted at the poorest regions, there is considerable leakage to the nonpoor in poor regions and lack of coverage of poor in nonpoor regions. In PRC, political factors have strongly influenced poverty targeting from the outset.

<sup>17</sup> Part of the measured bias against southwest provinces may be due to biases in the MOA versus SSB data. However, interviewed officials in Beijing confirmed that the number of poor counties in the poorest provinces was limited to preserve balance among provinces.

Entrenchment of political interests to maintain poor county status has made adjustments difficult, leading to a tendency to expand coverage and increase leakage. Combined with the finding by Ravallion (1993) that Indonesia's pattern of regional disbursements is poorly targeted, the evidence presented here suggests that political constraints are likely to undermine regionally targeted programs when the level of targeting is at the county level or higher.

### **3.2 Equity of Poverty Fund distribution**

After poor county designation, poverty funds from different sources are delivered to those designated poor county through various channels following different regulations. The central government usually allocate the majority of poverty funds to the provincial government, and the latter then allocate the funds both from the central government and from its own budget as matching funds to the county government. Criteria adopted by the provincial government in deciding the amount allocated to each poor county varies considerably between provinces. In this section, I will discuss the determinants of poverty fund allocation among poor counties after a brief description of the main fund sources.

#### **3.2.1 Sources of poverty reduction funds**

The OLGPR categorizes three kinds of funds as rural poverty reduction funds in PRC, i.e. subsidized loan, fund for food/cash for work and budgetary fund. Total amount spent by the central government every year since 1986 is presented in table 15. Total nominal poverty funds increase steadily over the past 17 years, from RMB 4.2 billion yuan to RMB 29.1 billion yuan, or increasing at an annual rate of 12.9%. But the funds increase much more slowly in real terms, only from RMB 4.2 billion to RMB11.4 billion yuan, or increasing at an annual rate of 6.4%. Because of high inflation in late 1980s and early 1990s, fund amount in real terms stagnated till 1996. Only after 1996, had poverty reduction funds increased dramatically. Among the three funds, subsidized loan accounts for 59% of the total, FFW fund takes the second position with a share of 24% and the budgetary fund only account for 17%. Compared with the central government budget and GDP, poverty investments' shares are 5% and 0.2% respectively over 1986 and 2002 period. The shares of government budget are relatively higher in early and late 1990s and the shares of GDP are highest in middle 1980s<sup>18</sup>.

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<sup>18</sup> It is worth noting that the government only provides interest subsidies for subsidized loans and the capital money are from the state owned financial institutions. However, the losses from subsidized loan program are most likely to be taken by the government.

Table 15 Poverty reduction funds from the central government

(100 million)

| Year         | Subsidized loan |                            | Food/cash for work |                            | Budgetary funds |                            | Subtotal      |                            | Share of gov't of budget GDP |            |
|--------------|-----------------|----------------------------|--------------------|----------------------------|-----------------|----------------------------|---------------|----------------------------|------------------------------|------------|
|              | Nominal         | Real (1986 constant price) | Nominal            | Real (1986 constant price) | Nominal         | Real (1986 constant price) | Nominal       | Real (1986 constant price) | %                            | %          |
| 1986         | 23.0            | 23.0                       | 9.0                | 9.0                        | 10.0            | 10.0                       | 42.0          | 42.0                       | 5.0                          | 0.4        |
| 1987         | 23.0            | 21.4                       | 9.0                | 8.4                        | 10.0            | 9.3                        | 42.0          | 39.1                       | 5.0                          | 0.4        |
| 1988         | 29.0            | 22.8                       | 0.0                | 0.0                        | 10.0            | 7.9                        | 39.0          | 30.7                       | 4.6                          | 0.3        |
| 1989         | 30.0            | 20.0                       | 1.0                | 0.7                        | 10.0            | 6.7                        | 41.0          | 27.4                       | 4.6                          | 0.2        |
| 1990         | 30.0            | 19.6                       | 6.0                | 3.9                        | 10.0            | 6.5                        | 46.0          | 30.1                       | 4.6                          | 0.2        |
| 1991         | 35.0            | 22.2                       | 18.0               | 11.4                       | 10.0            | 6.4                        | 63.0          | 40.0                       | 5.8                          | 0.3        |
| 1992         | 41.0            | 24.7                       | 16.0               | 9.6                        | 10.0            | 6.0                        | 67.0          | 40.4                       | 5.7                          | 0.3        |
| 1993         | 35.0            | 18.6                       | 30.0               | 16.0                       | 11.0            | 5.9                        | 76.0          | 40.5                       | 5.8                          | 0.2        |
| 1994         | 45.0            | 19.7                       | 40.0               | 17.5                       | 12.0            | 5.3                        | 97.0          | 42.5                       | 5.5                          | 0.2        |
| 1995         | 45.0            | 17.2                       | 40.0               | 15.3                       | 13.0            | 5.0                        | 98.0          | 37.4                       | 4.9                          | 0.2        |
| 1996         | 55.0            | 19.8                       | 40.0               | 14.4                       | 13.0            | 4.7                        | 108.0         | 38.8                       | 5.0                          | 0.2        |
| 1997         | 85.0            | 30.3                       | 40.0               | 14.3                       | 28.0            | 10.0                       | 153.0         | 54.6                       | 6.0                          | 0.2        |
| 1998         | 100.0           | 36.6                       | 50.0               | 18.3                       | 33.0            | 12.1                       | 183.0         | 67.0                       | 5.9                          | 0.2        |
| 1999         | 150.0           | 56.6                       | 50.0               | 18.9                       | 43.0            | 16.2                       | 243.0         | 91.7                       | 5.9                          | 0.3        |
| 2000         | 150.0           | 57.5                       | 50.0               | 19.2                       | 48.0            | 18.4                       | 248.0         | 95.0                       | 4.5                          | 0.3        |
| 2001         | 185.0           | 71.5                       | 60.0               | 23.2                       | 40.0            | 15.4                       | 285.0         | 110.1                      | 4.9                          | 0.3        |
| 2002         | 185.0           | 72.4                       | 66.0               | 25.8                       | 40.0            | 15.7                       | 291.0         | 113.9                      | 4.3                          | 0.3        |
| <b>Total</b> | <b>1246.0</b>   | <b>554.0</b>               | <b>525.0</b>       | <b>225.8</b>               | <b>351.0</b>    | <b>161.3</b>               | <b>2122.0</b> | <b>941.1</b>               | <b>5.1</b>                   | <b>0.2</b> |

Source: poverty funds data is from OLGPR, GDP and government budget data is from the China Statistical Yearbook, various years.

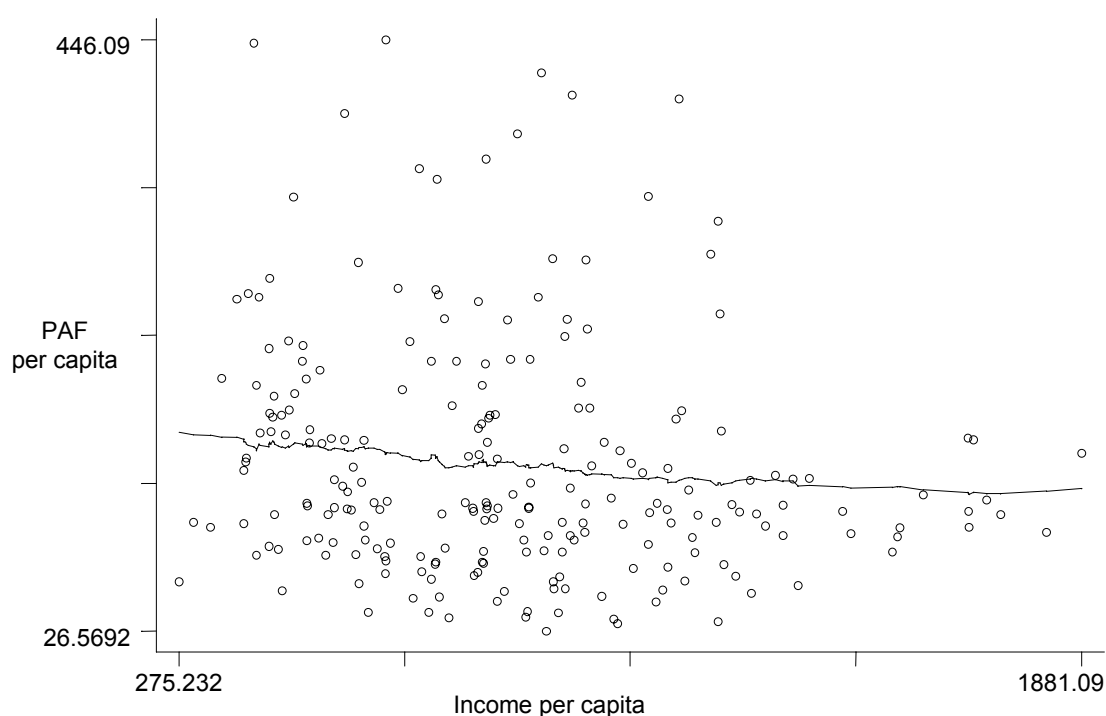
In addition to these three funds, several other sources are also important for poor counties in PRC. The fund for Compulsory Education Project in Western Regions from the central government totaled RMB 8.9 billion yuan. A recent study reveals that poverty investments from local governments and government departments equal one fourth of the investments from the central government (Li Zhou, 2001). International organizations such as the World Bank, UNDP, IFAD and bilateral development agencies such as Ausaid, JICA, DFID also have different kinds of poverty reduction projects in PRC for years<sup>19</sup>.

<sup>19</sup> The World Bank implemented three large poverty reduction projects in the Southwest, Qingba Mountainous Areas and Western PRC with a total input of \$568 million US dollars.

### 3.2.2 Distribution of poverty funds among poor counties

From a simple plot of average funding levels for the three programs during 1994-96 against income per capita, it is obvious that there is not a strong relationship between funding levels and income per capita (Figure 2).<sup>20</sup> The nonparametric estimate reveals a weak inverse relationship.

**Figure 2 Poverty Alleviation Funds (PAF) Per Capita and Income Per Capita, County Means, 1994-1996**



Using the NBS county level data collected from the Rural Poverty Monitoring Survey and OLS regression model, I test the extent to which county funding amounts from different sources for the period 1998-2001 can be explained by county characteristics for the sample of poor counties where data exists<sup>21</sup>. Provincial dummies are included in all regressions. Regression results are presented in table 16.

**Table 16 Determinants of poverty reduction fund allocation (1998-2001)**

| Independent variables | Total PA investment | Central gov. investment | Other investment | Subsidized Loan | Budgetary Fund | Food For Work |
|-----------------------|---------------------|-------------------------|------------------|-----------------|----------------|---------------|
| Poverty               | 0.76***             | 0.85***                 | -0.16            | 0.46***         | 0.18***        | 0.21***       |

<sup>20</sup> We have added average outstanding loans directly to the average funding for FFW and development capital. This gives disproportionate weight to the subsidized loan component of poverty funds, and also may introduce a bias towards progressivity if lower incomes correlate with lower repayment and thus higher outstanding loans.

<sup>21</sup> Among 592 poor counties, 532 counties have complete data for all four years.

|                    |                      |                      |                     |                      |                      |                      |
|--------------------|----------------------|----------------------|---------------------|----------------------|----------------------|----------------------|
| incidence          | (3.57)               | (5.34)               | (-0.41)             | (4.01)               | (4.17)               | (3.67)               |
| Rural pop          | -2.44***<br>(-18.29) | -1.89***<br>(-18.84) | -0.74***<br>(-3.03) | -1.06***<br>(-14.63) | -0.30***<br>(-11.24) | -0.52***<br>(-14.56) |
| Revolutionary base | -25.83***<br>(-3.02) | -26.07***<br>(-4.05) | -5.70<br>(-0.37)    | -15.85***<br>(-3.40) | -2.55<br>(-1.48)     | -7.68***<br>(-3.32)  |
| Minority           | 13.65*<br>(1.84)     | 9.75*<br>(1.74)      | 13.33<br>(0.98)     | 10.06**<br>(2.48)    | 0.85<br>(0.57)       | -1.16<br>(-0.57)     |
| Border             | 66.96***<br>(6.24)   | 45.27***<br>(5.61)   | -16.68<br>(-0.85)   | 16.87***<br>(2.89)   | 13.21***<br>(6.11)   | 15.19***<br>(5.23)   |
| Highland           | 0.11<br>(0.01)       | 2.67<br>(0.38)       | -4.81<br>(-0.28)    | 1.44<br>(0.28)       | 0.58<br>(0.31)       | 0.65<br>(0.25)       |
| Mountainous area   | 6.64<br>(0.76)       | 9.66<br>(1.47)       | 4.46<br>(0.28)      | 2.51<br>(0.53)       | 2.55<br>(1.45)       | 4.60*<br>(1.95)      |
| year               | 3.18<br>(1.57)       | 7.82***<br>(5.12)    | -7.47**<br>(-2.01)  | 3.79***<br>(3.42)    | 3.03***<br>(7.40)    | 1.00*<br>(1.83)      |
| Shanxi             | -27.53**<br>(-2.09)  | -20.42**<br>(-2.05)  | -6.50<br>(-0.27)    | -28.93***<br>(-4.01) | 2.99<br>(1.12)       | 5.53<br>(1.54)       |
| Inner Mongolia     | -6.53<br>(-0.43)     | -12.01<br>(-1.04)    | -5.35<br>(-0.19)    | -24.95***<br>(-2.99) | 4.38<br>(1.42)       | 8.56**<br>(2.07)     |
| Liaoning           | -56.69***<br>(-2.86) | -54.87***<br>(-3.66) | -13.07<br>(-0.36)   | -41.95***<br>(-3.86) | -6.22<br>(-1.55)     | -6.70<br>(-1.24)     |
| Jilin              | 49.52*<br>(1.96)     | 79.27***<br>(4.15)   | 26.73<br>(0.58)     | 44.00***<br>(3.18)   | 4.82<br>(0.94)       | 30.45***<br>(4.43)   |
| Heilongjiang       | 103.35***<br>(5.56)  | 70.60***<br>(5.06)   | 54.32<br>(1.60)     | 14.92<br>(1.48)      | 17.58***<br>(4.70)   | 38.10***<br>(7.59)   |
| Anhui              | 143.74***<br>(7.29)  | 115.36***<br>(7.76)  | 37.44<br>(1.04)     | 59.85***<br>(5.56)   | 17.98***<br>(4.52)   | 37.54***<br>(7.03)   |
| Fujian             | 5.49<br>(0.26)       | -39.03**<br>(-2.41)  | 67.17*<br>(1.71)    | -31.91***<br>(-2.72) | -7.50*<br>(-1.73)    | 0.38<br>(0.07)       |
| Jiangxi            | 37.09**<br>(2.18)    | 37.36***<br>(2.90)   | 2.38<br>(0.08)      | 15.17<br>(1.63)      | 2.88<br>(0.84)       | 19.31***<br>(4.17)   |
| Shandong           | -10.45<br>(-0.53)    | -2.81<br>(-0.19)     | 0.10<br>(0.00)      | -4.12<br>(-0.39)     | 0.37<br>(0.10)       | 0.93<br>(0.18)       |
| Henan              | 53.63***<br>(3.93)   | 52.53***<br>(5.10)   | 12.99<br>(0.52)     | 27.08***<br>(3.63)   | 9.43***<br>(3.41)    | 16.02***<br>(4.32)   |
| Hubei              | 34.42**<br>(2.15)    | 34.28***<br>(2.84)   | -6.27<br>(-0.21)    | 20.51**<br>(2.34)    | 3.34<br>(1.03)       | 10.43**<br>(2.40)    |
| Hunan              | 122.77***<br>(5.39)  | 90.44***<br>(5.26)   | 19.59<br>(0.47)     | 53.72***<br>(4.32)   | 14.51***<br>(3.15)   | 22.21***<br>(3.60)   |
| Guangxi            | 14.43<br>(0.97)      | 33.75***<br>(3.00)   | -22.45<br>(-0.82)   | 18.29**<br>(2.24)    | 5.52*<br>(1.83)      | 9.94**<br>(2.46)     |
| Hainan             | -27.86<br>(-1.10)    | 54.38***<br>(2.85)   | -35.73<br>(-0.77)   | -1.71<br>(-0.12)     | 10.26**<br>(2.01)    | 45.83***<br>(6.67)   |

|                         |                      |                       |                   |                      |                    |                     |
|-------------------------|----------------------|-----------------------|-------------------|----------------------|--------------------|---------------------|
| Chongqing               | 65.01***<br>(3.29)   | 56.85***<br>(3.82)    | -3.13<br>(-0.09)  | 24.58**<br>(2.28)    | 12.24***<br>(3.07) | 20.04***<br>(3.74)  |
| Sichuan                 | 163.53***<br>(9.85)  | 152.04***<br>(12.27)  | -15.40<br>(-0.51) | 91.14***<br>(10.16)  | 21.49***<br>(6.47) | 39.41***<br>(8.85)  |
| Guizhou                 | 3.35<br>(0.25)       | 8.34<br>(0.83)        | -15.79<br>(-0.65) | 8.10<br>(1.11)       | -0.40<br>(-0.15)   | 0.65<br>(0.18)      |
| Yunnan                  | -11.93<br>(-0.98)    | -22.04 **<br>(-2.40)  | 38.48*<br>(1.72)  | -9.06<br>(-1.36)     | -5.77**<br>(-2.34) | -7.21**<br>(-2.18)  |
| Shaanxi                 | 3.64<br>(0.29)       | 9.12<br>(0.96)        | -4.69<br>(-0.20)  | 11.70*<br>(1.69)     | -0.79<br>(-0.31)   | -1.78<br>(-0.52)    |
| Gansu                   | 7.39<br>(0.59)       | 20.18 **<br>(2.15)    | -10.29<br>(-0.45) | 1.06<br>(0.16)       | 16.40***<br>(6.53) | 2.72<br>(0.81)      |
| Qinghai                 | 211.25***<br>(12.09) | 215.78 ***<br>(16.34) | 6.26<br>(0.20)    | 162.21***<br>(16.96) | 7.71**<br>(2.18)   | 45.86***<br>(9.66)  |
| Ningxi                  | 117.41***<br>(5.41)  | 99.54***<br>(6.07)    | 25.53<br>(0.64)   | 44.82***<br>(3.77)   | 36.12***<br>(8.22) | 18.60***<br>(3.15)  |
| Xinjiang                | 25.151<br>(1.55)     | 79.18 ***<br>(6.45)   | 3.22<br>(0.11)    | 8.46<br>(0.95)       | 23.15***<br>(7.04) | 47.58***<br>(10.79) |
| No. of obs.             | 2121                 | 2128                  | 2128              | 2128                 | 2128               | 2128                |
| Adjusted R <sup>2</sup> | 0.38                 | 0.47                  | 0.01              | 0.38                 | 0.29               | 0.37                |

\*\*\*significant at 0.01 level,

\*\*significant at 0.05 level,

\*significant at 0.1 level.

The estimation results suggest that, except investment from other sources, fund allocations are significantly and positively related to the level of poverty incidence. One percent point increase in poverty incidence will increase the total poverty investment per capita by RMB 0.76 yuan, or total investment, subsidized loan, budgetary fund and FFW fund from the central government by 0.85, 0.46, 0.18, 0.21 yuan respectively. Total rural population has significantly negative impact on the allocation of all poverty funds, indicating large counties are at a disadvantage. Although revolutionary base counties are favored in poor county designation, they are discriminated against in fund allocation, as revolutionary base counties receive 26 yuan per capita less than non-revolutionary counties. Minority counties are still at a advantage, receiving 14 yuan per capita more than non-minority counties. Inland border counties are also favored in poverty fund allocation. Compared with counties with plain geography, funds allocated to counties in highland and mountainous areas are not significantly different.

Many provincial dummies have large and significant coefficients, indicating some provinces are at an advantage while others are discriminated against. Compared with Hebei province, Shanxi, Inner Mongolia, Liaoning, Fujian and Yunnan are at a disadvantage, while Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, Hunan, Guangxi, Hainan, Chongqing, Sichuan, Gansu, Qinghai, Ningxia and Xingjiang are all

in favor of, e.g. Qinghai receive 211 yuan per capita more from the central government even after controlling for poverty incidence, population size and minority status.

### **3.3 Effectiveness of community and household targeting**

Due to data availability, few empirical works have been done on the effectiveness of poverty targeting at the community and household levels. I mainly resort to our field interviews with local officials, households and other anecdotal evidence for the discussion of targeting effectiveness at the project level.

#### **3.3.1 Subsidized loan**

PRC's subsidized loan scheme was widely criticized for failing to target the poor effectively. To a large extent, the problem was due to the political and economic environment in which Chinese local government institutions operate.

One broad source of targeting problems stems from the dual goals of the program—to reach the poor and to promote economic development. Serving two masters can lead to conflicts. First, to provide incentives for effective loan use and repayment, local poverty officials often use past performance as a criterion competing with poverty status in awarding new loans to lower levels. Second, many local officials believe that the poor are incapable of managing projects successfully and prefer to promote economic development by lending to enterprises, economic entities and large farmers.

Even more important sources of poor targeting arise because of factors motivating local officials. There are three local players with a stake in the use of subsidized loans: the local OLGPR, the local government, and the Agricultural Bank. Local poverty officials may compromise targeting objectives to meet the dual goals of the program. Local government officials also are concerned with generating revenues and furthering overall economic development, not just in poor areas and poor households, which may lead them to support diversion of funds to enterprises or investment in more promising regions. This is especially true given the acute fiscal woes of local governments in poor areas. Agricultural Bank officials are interested in profit and so care about loan repayment above all else. As the transaction cost of small loans to poor households was relatively high and loan use was difficult to supervise, neither the Agricultural Bank nor the Agricultural Development Bank<sup>22</sup> was willing to grant loans to poor farmers in the absence of stringent supervising mechanisms. Because they disburse the funds, they can veto projects proposed by the local Poverty Alleviation Office if they feel the likelihood of repayment is low. This has led to

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<sup>22</sup> Agricultural Development Bank was set up in 1994 to manage policy loans for agricultural sector, and took change of subsidized loan for 4 year. Beginning in 1998, the management of subsidized loan was assigned back to ABC.



numerous conflicts between bank officials and poverty officials. Even when loans are approved, Agricultural Bank officials have an incentive to shorten the period of the loan (so that funds can be relented quickly at higher rates), delay loan disbursement, or divert loans outright. Finally, rent-seeking and corruption sometimes led to diversion of the inexpensive subsidized loans to influential and ready-to-bribe non-poor groups. The record of subsidized credit programs in other countries also shows that in one way or another, influential interests rather than the poor often end up benefiting most from subsidized loans. There is much evidence attesting to the widespread leakage of subsidized loans.

The diversion of subsidized loan to non-poverty reduction activities has become more serious in recent years with the commercialization of ABC and the shutdown of most ABC township branches. A recent survey by the MOF found that the majority of subsidized loans are made to large scale enterprises and for infrastructure construction such as highway. In 2002, of 750 million yuan subsidized loans made in Jiangxi province, only 150 million were households (not necessarily the poor households) loans. Pingjiang county in Hunan province and Suichuan and Le An county in Jiangxi province have not made any loans to poor households in recent years (Wen, 2003).

Even when loans are lent directly to households in poor villages, in many cases they are not given to the poorest households. Evidence from a nationwide survey of villages conducted in 1996 provides some evidence on the targeting effectiveness of subsidized loans within villages. Of the 184 villages in 6 provinces that were surveyed, 32 had received poverty loans a total of 58 times in the past. Of these 58 times, data on the average wealth of households exist in 33 cases. Village leaders were asked whether most loans went to better-off farmers, average farmers, or poorer farmers. 57.5 percent of the time the loans went mostly to farmers of average wealth while 42.5 percent of the time they went to farmers of below average wealth. In no cases did village leaders report that the loans went mainly to better-off farmers. Also, the relative frequency of giving loans to average rather than poor farmers appears to have increased in the 1990s. Loans received before 1990 went to poor households 45 percent of the time. Loans received in 1990 and after went to such households only 36 percent of the time (Rozelle et al, 1999).

### **3.3.2 Food for work**

One reason FFW programs have been praised and targeted for expansion is that because the funds bypass local budget bureaus, to date relatively few funds have been diverted for other uses, which has become common for many earmarked budgetary items, especially in poor counties (Park et al., 1996). There is concern that expanding the scope of FFW will make it more difficult to monitor and increase the incentives for local governments to think of ways to divert the funds to other uses, decreasing the programs effectiveness. Another disadvantage of creating too many channels for funding local agencies is that it hurts the transparency of the fiscal

system, and effectively reduces the planning authority and capacity of local units.

Another targeting issue related to fund diversion is the possibility that local governments are substituting FFW projects for other funds that would have gone toward infrastructure construction. In other words, is it the case that FFW funds merely displace other funds and so do not greatly increase the amount of infrastructure constructed? There is little evidence to quantify the extent of such crowding out, but given the acute fiscal pressures hitting poor areas, some crowding out is likely.

A number of targeting issues also surround the actual FFW projects. These include the location of the projects, whether laborers are paid, and who participates in the construction work. Because FFW projects are investment projects, as with subsidized loans, local leaders inevitably balance the economic return of projects with the effect of projects on helping the poor. The return to building a road to a very remote village, for example, will be extremely low given the sparse populations served and the high cost of constructing roads in mountainous terrain.

Provincial poverty officials reported that in addition to poverty status, other criteria used in allocating FFW funds included the quality of project design, the ability of local leaders, and past performance. In some provinces, such as Henan, before 1994 some projects were awarded to nonpoor counties (though often with poor townships), but since then all funds have been allocated to national or provincial poor counties. Some county officials, however report that amounts awarded to different counties depend more on project feasibility and quality than on poverty status. This is likely to be even more true within counties. Zhu and Jiang (1995) report that villages that have greater population, favorable environmental conditions, more surplus labor, and which are more remotely located are more likely to be involved in projects.

One important issue in assessing the poverty alleviation role of FFW projects is the cost borne by local residents in the form of uncompensated labor effort. Because funds are limited, in many areas FFW funds are used to pay for material supplies while labor is supplied through *yiwugong* (essentially a labor tax). In some areas with FFW projects, the amount of *yiwugong* may surpass regulated limits (usually a maximum of 30 labor days per year). Even when workers are paid, the amount is often lower than the going wage. These costs to the poor in the form of foregone leisure or other income-earning activities must be weighed in assessing how well the programs are targeted and how much they benefit the poor. It is entirely possible that the labor tax associated with FFW projects taxes the poor more, since they are more likely to have surplus labor that can be tapped for construction work.

Zhu and Jiang (1995) report that 40 percent of households in their sample (in Sichuan, Ningxia, and Shandong) worked without receiving any pay. Older, male laborers with less land and more education are more likely to participate in projects. They also found that for most laborers (78 percent), time spent working on FFW projects did not detract of income-earning activities but rather decreased leisure consumption only.

In other countries, especially India, public employment schemes offer work to anyone willing to work at the stated wage, which is purposely set fairly low. In this

way, self-targeting is achieved because only the poor are willing to work at such a low wage. Voluntary participation also ensures that participants are better off from participating in the project, independent of the benefits from infrastructure construction. In PRC, however, because labor participation often is not voluntary and frequently uncompensated, participation is often a tax which must be weighed *against* the benefits from infrastructure. Were PRC to attempt to more fully incorporate self-targeting and voluntary participation into the design of its FFW program, the amount of infrastructure constructed would likely be reduced, but targeting might be improved.

### **3.3.3 Budgetary development fund**

Of the three main poverty programs, least is known about the distribution and use of budgetary development funds because of the classified nature of budgetary data in PRC. Still, a number of targeting concerns warrant mention. First, because the development fund program began before the designation of poor counties in 1986, many of these funds were and continue to be given to counties not officially designated as poor, which may increase coverage but also increase leakage. Second, just as for Food-for-Work funds, it is likely that poor counties will substitute development funds for other budgetary resources that would have been allocated for similar purposes, reducing the impact of such funds on realized investment. Assuming perfect fungibility, development funds at worst act as a pure budget subsidy, so should help local governments in poor counties meet their own fiscal agendas, even if these lack the development focus that central leaders would prefer. However, if these transfers also affect the subsistence transfers negotiated between levels of government, the crowding out problem could be much more severe. In poor areas where budgetary crises have forced governments to delay or suspend wage and other payments to cadres, there also is the danger that funds will be diverted to non-productive use altogether. Regulations stipulating that development funds be used to benefit poor households by developing projects probably prevent full crowding out as described above. However, local governments have a much stronger influence on the use of these fund than subsidized loans or Food-for-Work funds, so the danger of biases toward revenue-producing enterprise investments is greater, even though the success rate of such projects and their benefits to the poor are much less. Another concern is that when development fund is used in the areas of education for the construction of schools, it is usually required that villages to collect supplementary fees from the households to finance the financial gaps. This will have negative impact on poverty reduction in the short term.

## **4. Assessment of overall effectiveness of poverty targeting programs**

To date, there is limited evidence on the overall effectiveness of PRC's poverty investments. The main challenge of the assessment is to isolate the effect of poverty programs, since progress or lack of progress in reducing the poor may reflect factors other than poverty investments, especially those that affect the pace of overall economic development. Some have argued, for instance, that poor areas stood to gain more from market and commercialization reforms since the planning system forced them into production patterns that went against their comparative advantage to a greater extent than in richer areas (Lardy, 1983). There is some evidence that income growth in poor counties was greater than nonpoor counties in some regions (Park et al., 1996; Tong et al., 1995). At the same time, most studies of income distribution across all of PRC find rising inequality among rural areas, suggesting that the poor are falling further behind the rich.

Jalan and Ravallion (1998b) assess whether being located in an officially designated poor county affects growth in household expenditures, controlling for geographic externalities and other community variables that are likely to determine income growth. Utilizing NBS panel data (1985 to 1990) on households in four southwest provinces (Guizhou, Yunnan, Guangxi, and Guangdong), they find that living in a national poor county increases consumption by 1.1 percent per year, though this gain is offset by growing divergence in consumption due to other reasons. The rate of return on poverty investments is estimated to be 12 percent<sup>23</sup>. The authors themselves point out that this estimation may overestimate the program's effect since some public expenditures on the programs may not be included, funds may be used for consumption rather than investment purposes, and community variables may omit factors that give poor counties advantages in achieving income growth.

Growth regressions examining the impact of the use of poverty investments on different sectors in poor area economies, agriculture, rural industry, and state-owned enterprise, make up the core of the analysis in Rozelle et al, 1998. The study utilizes a data set to examine the sources, uses and effectiveness of targeted poverty investments in 43 poor program counties of Shaanxi Province during the years 1986-91. The authors adopt three separate sectoral growth models in which the rates of growth in output value per capita in year  $t$  is a linear function of the current-year poverty investments, poverty investments lagged one year, government expenditures per capita (for controlling for other investments), rural income per capita (for controlling for private investments since income per capita is a proxy of private wealth), human capital represented by the share of the labor force that had graduated from middle school in 1985, the beginning of the period under consideration, lagged output value (for controlling for the initial size of the sectors), and county and time-related

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<sup>23</sup> The authors also have estimated an econometric model of consumption growth at the farm-household level allowing for individual effects with nonstationary impacts using the same data set. After controlling for (observed and unobserved) household heterogeneity, they find that living in an area with poor natural conditions reduces consumption growth, namely, poor areas tend to grow slower because of geographic externalities. Without allowing for the geographic externalities, the estimated rate of return from poverty programs is zero.

fixed effects (county and time dummy variables), as well as population density as a proxy for relative abundance of labor, which may reflect the allocation of labor across sectors. In the agricultural growth equation, they also include as a regressor changes in the availability of agricultural land, while in the growth equation of state-owned industry, they include fixed investments in the assets in both current and lagged-year form as regressors because such information is available in this sector. The estimation results reveal that for the sample of nationally and provincially poor area program counties, targeted investment funds allocated directly to households for agricultural activities are found to have a significant and positive effect on growth. In contrast, investments in township and village enterprises or county state-owned enterprises do not have a discernible effect on growth. In an even more disaggregated part of the study, investments in agricultural infrastructure (such as, terracing or soil leveling and improvements) do not positively affect growth rates in agricultural output by themselves. These results suggest that the poverty investments targeted directly at households have a positive growth affect. However, this study suffers from several limitations, First, it is based on data from only one province. Similar work using data from other provinces is necessary to have confidence that the results for Shaanxi can be generalized to other parts of PRC. Second, another important source of poverty investments, namely, the Food-for-Work funds are excluded from the estimation, which is most likely to affect the estimation of the impact of infrastructure investments since the majority of FFW funds go to infrastructure construction. Finally, investments lagged one year may not be able to capture the long-term impact of certain poverty investment such as infrastructure.

Zhang, Huang and Rozelle (2002) analyze the impact of participation in the national and provincial poverty programs on income growth in Sichuan Province. They classify all counties in Sichuan into program poor counties, non-program poor counties and non-poor counties. Using gross income per capita, designated or program counties started lower in 1985 and ended higher than non-program counties. Growth of real gross per capita income in program counties was positive and exceeded the very small rise for non-program poor counties. Increase in gross income per capita of poor program counties, however, did not keep up with increases in the non-poor counties. Although less evident, the poor program counties also outperformed non-program poor counties in terms of net income per capita. To examine the statistical significance of the differences in the growth rates among sub-groupings of counties, they regress the log of gross and net per capita income on a series of year and group dummy variables. The results show that growth rates of poor program counties were statistically indistinguishable from non-poor counties and non-program poor counties had significantly slower growth. They also use a single regression model to identify determinants of growth and examine the impact of PRC's poverty programs using six years data from 1990 to 1996 for 177 Sichuan counties. The growth of income is regressed on sets of independent variables representing resource endowments and the economic structure of the county, investment (by type) made through the fiscal system (which includes some but not all of poor area investments), and program

participation<sup>24</sup>. They find investments in agriculture, health and education, and electrification positively affect growth, though the effect on growth of some investments (e.g. those in “other ” infrastructure projects) is not readily apparent. Another finding of interest from the growth regression is that the poverty program does positively increase growth, or more accurately, keep growth rates of poor program counties from falling as much as the growth rates of poor, non-designated counties. After accounting for endowments, structure, and beginning level of income, poor program counties grow slower than non-poor counties (by 2.95 percent per year less). However, this slower growth rate was still faster than non-program poor counties, which experienced growth rates 4.56 percent slower than those of non-poor counties. They authors attribute the higher growth rates in program poor counties to either more effective use of poverty investments that go through the fiscal system, or to FFW or other poor areas programs that are not included in the fiscal investments. Considering that less than 20 percent of the total government poverty investments go through the fiscal system, the latter explanation is more likely to be true. There are several important differences between this study and Rozelle et al (1998) study. First, this study uses data from all counties in Sichuan while the other study only works with designated poor (program) counties, which enables this study to have the non-designated poor counties as a good comparison group. Second, investment data of this study are fiscal investments, excluding subsidized loans and FFW funds, while the other study includes subsidized loan and budgetary development funds (part of fiscal investments) in the regression. Incomplete coverage of poverty investments is a common limitation of both studies. Finally, this study uses expenditure data on health and education and finds a strong effect on income growth. However, it is hard to believe that expenditure on health and education (the majority of the expenditure goes to primary education) can generate big impacts on growth in such a short time period as that being studied.

Fan et al. (2002) develop a simultaneous equations model to estimate the various effects of government expenditure on production, inequality, and poverty through different channels. They conclude that poverty investments (measured as poverty loans) matter somewhat for growth and poverty alleviation, but not nearly as much as investments in other sectors of the economy. The study, using provincial data for the past 26 years between 1970 and 1995, shows that government spending on production-enhancing investments, such as agricultural R&D, irrigation, rural education and infrastructure (including roads, electricity, and communication) have all contributed not only to agricultural production growth. Moreover, these investments, which all have a public-goods aspect, also have a large and significant effect on the reduction in rural poverty and inequality. One of the most striking results is that large parts of the poverty and inequality-reducing effect are realized through improved access to rural non-farm employment. Government anti-poverty loans specifically

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<sup>24</sup> In their year-to-year growth equation, endowment and structure variables are also in year-to-year form. Right hand side investment and endowment variables are lagged one period to help avoid endogeneity problems.

targeted for poverty alleviation have the smallest impact on poverty reduction of any of the investment programs. This study has both strength and weakness in terms of assessing the impacts of poverty investments. The strength lies in its adoption of simultaneous equations model and the use of a panel data set lasting for 25 years. This is also the only study that uses provincial poverty incidence to estimate the impacts of public expenditures on poverty. The weakness of this study is also obvious. First, only subsidized loans are taken into consideration in the estimation and the other half of poverty investments in infrastructure, health and education, training, etc. are excluded. Second, even poverty loans do not enter into the simultaneous 'production equations' and therefore do not generate feedbacks in the way that infrastructure and other non-poverty investments do, most likely to generate biased estimation on the impacts of poverty investments. Finally, there are so many equations in the simultaneous system with a lot of strong assumptions that do not readily hold, which is also likely to lead to biased estimation.

Using MOA county level data for all counties where data exist, Park, Wang and Wu (2002) estimated the impact of poverty reduction policy on average income growth in the poor counties. The growth in county  $i$ 's rural income per capita ( $Y$ ) from period  $t-\tau$  to time  $t$  is modeled as a function of the county's status as a designated poor county made at the beginning of the period ( $P_{it-\tau}$ ), initial income per capita ( $Y_{it-\tau}$ ), other initial characteristics ( $X_{it-\tau}$ ), county time-invariant characteristics ( $\gamma_i$ ), and prefectural time-varying factors ( $\lambda_{pt}$ ). The specification implicitly assumes that poor county designation is not endogenous to time-varying unobservables that differ within prefectures and are not correlated with initial characteristics. In the main specification, the sole  $X$  variable is grain production per capita, a commonly used poverty indicator in PRC. The error term consists of other time-varying unobservables and measurement error that are assumed to be uncorrelated with the regressors. A panel is constructed from data for each county for four time periods: 1981-85, 1985-89, 1989-1992, and 1992-95. The first period predates the poverty program, the first poor county designations occurred during the second and third periods, and new designations were made during the fourth period. Information on growth rates before the poverty program began makes it possible to identify the effects of poor county status while also controlling, through county fixed effects, for unobservables that have persistent effects on growth. This also eliminates potential bias from the endogeneity of poor county designation to county unobservables that are time-invariant<sup>25</sup>.

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<sup>25</sup> The main equation is

$$\log Y_{it} - \log Y_{it-\tau} = \beta_{1d} P_{it} + \beta_2 \log Y_{it-\tau} + \beta_3 \log X_{it-\tau} + \gamma_i + \sum_p \lambda_{pt} + e_{it} .$$

fixed effects, first we rewrite the last equation as follows:

$$y_{it} = \beta_{1d} P_{it} + (1 + \beta_2) y_{it-\tau} + \beta_3 x_{it-\tau} + \gamma_i + \sum_p \lambda_{pt} + e_{it} ,$$

where small  $y$  and  $x$  denote logs, and the “~” superscript denotes differences from regional means, where regions can be defined as prefectures or provinces. We allow for the effect of the poverty program to be different for the period of original designations (1985-1992), captured by  $\beta_{11}$ , and the period of new designations (1992-95), captured by  $\beta_{12}$ . Imposing these restrictions, controlling for region-time effects, and implementing

The authors estimate the three equations simultaneously using an iterative feasible 3SLS procedure, imposing appropriate cross-equation restrictions and using different instruments for the three equations. The instruments are lagged variables for income, grain production, and poverty status, and vary by equation because they are plausibly exogenous only when predetermined. Thus, the instruments for equation one are values in period 0, for equation two values in periods 0 and 1, and for equation three values for periods 0, 1, and 2. The estimation result shows that household net income per capita increases 2.2% and 0.9% faster in poor counties than in non-poor counties during the periods of 1986-1992 and 1992-1995. Without fixed effects, the effect of the poverty program is negative in both periods, although not statistically significant in the second period. One explanation for the different results is that counties with unobservables deleterious to growth are more likely to be designated as poor<sup>26</sup>. Alternatively, the program's impact could be exaggerated in the differenced regressions if changes over time are benefiting poor counties, such as if poverty designations are going to counties with improved political connections which also facilitate growth, or if there is reporting bias associated with being a poor county. The effects are larger than those found by Jalan and Ravallion (1998b) for the period of 1985-1990 in four southwest provinces (discussed above).

Based on our measurement of program impact on rural income growth, it is possible to estimate the rate of return on poverty investments. In real terms, poverty spending during 1985-92 fell and then recovered to about its initial level, averaging 9.5 billion yuan per year (in 1995 yuan), equivalent to 89 yuan per person or 14 percent of rural income. Based on the 2.28 percent impact on incomes, the poverty program on average increased rural income by 13.8 yuan per person per year. This suggests a rate of return of 15.5 percent, somewhat higher than the 12 percent estimated by Ravallion and Jalan (1998). For the 1992-95 period, the rate of return is still 11.6 percent despite increased spending and smaller program effects, because the approximate doubling of the program's coverage reduced spending per capita to 55 yuan. Our estimates of program impact are open to different interpretations. Critics will argue that performance was much worse than we describe, because we do not account for all expenditures—we exclude administrative costs of the programs, matching or supplementary funds provided by local governments, relent poverty loans, international donor funds, and funds from a vast array of government and private

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county fixed effects by taking first differences yields a system of 3 equations:

$$\tilde{y}_{i2} - \tilde{y}_{i1} = \beta_{11}\tilde{P}_{i2} + (1 + \beta_2)(\tilde{y}_{i1} - \tilde{y}_{i0}) + \beta_3(\tilde{x}_{i1} - \tilde{x}_{i0}) + (e_{i2} - e_{i1})$$

$$\tilde{y}_{i3} - \tilde{y}_{i2} = (1 + \beta_2)(\tilde{y}_{i2} - \tilde{y}_{i1}) + \beta_3(\tilde{x}_{i2} - \tilde{x}_{i1}) + (e_{i3} - e_{i2})$$

$\tilde{y}_{i4} - \tilde{y}_{i3} = \beta_{12}\tilde{P}_{i4} - \beta_{11}\tilde{P}_{i3} + (1 + \beta_2)(\tilde{y}_{i3} - \tilde{y}_{i2}) + \beta_3(\tilde{x}_{i3} - \tilde{x}_{i2}) + (e_{i4} - e_{i3})$ . Here we replace  $t$  with explicit time subscripts (0=1981, 1=1985, 2=1989, 3=1992, 4=1995). The coefficients on the poverty status variables should be interpreted as the effect of the poverty program on counties in the same prefecture in the same period with the same starting income and grain production levels and controlling for time-invariant unobservables.

<sup>26</sup> Ravallion and Jalan (1998b) also find that without accounting for the geographic externality, the programs' impacts are zero.



initiatives. Some argue that the total of such spending is greater than official poverty alleviation funds (Xie, 1994). Thus, our estimates of positive impact on incomes could be overstating the rate of return on poverty investments by more than 100 percent. Second, indirect evidence of low repayment rates on subsidized loans and suspected substitution effects make the relatively high rate of return surprising. Third, it is possible that some funds are being diverted to direct consumption which is showing up as income, leading us to overstate investment returns. Fourth, differenced regressions remain subject to bias from time-varying unobservables that disproportionately benefit poor counties within the same prefecture. Finally, our results provide no evidence on the distribution of benefits within counties, so high impacts do not necessarily benefit the poor within poor counties. Other factors, however, may bias our estimates downward. First, if targeted programs also benefit poor counties not designated as poor, then leakage may dilute the measured impact on targeted counties even though the absolute effects are large. This is also true if provincial governments substitute budgetary allocations away from counties supported by national poverty alleviation funds, or initiate programs targeted at poor counties not designated as poor. Also, if consumed funds are being consumed directly and not being reported as income, benefits may be greater than suggested by the impact on income. We have empirical evidence that designated poor counties have fewer budgetary funds than non-designated counties *ceteris paribus*, pointing to slight selection or substitution effects that should lead to downward bias in program impacts. Poorer relative performance in 1992-95 is consistent with our knowledge of aspects of program implementation. The pattern of spending on subsidized loans shifted away from agriculture (households) toward industry (firms and intermediary organizations), despite the greater return to the former (Rozelle et al., 1998). The budgetary crisis in poor counties became acute beginning in the early 1990s and worsened over time (Park et al., 1996). On the other hand, benefits of Food-for-Work infrastructure (a program without significant funding until the early 1990s) may take more time to be realized, so that the lack of program impact for the most recent period may be premature.

Unfortunately, data do not permit the authors to separately estimate the extent to which specific programs affect income growth. We have data on county fund allocations only for the years 1994-96, and given the shortness of the panel, it is impossible to properly control for unobserved heterogeneity and time-varying factors. Despite these reservations, we estimate a model of third-period growth as a function of average funding levels during 1994-96, including provincial dummies and initial period economic variables, as well as minority and revolutionary base status. We find no significant effect of poverty alleviation funds, except for a slight negative effect for subsidized loans.

Evidence from the above studies suggest that poverty programs in PRC have positive impact on household income growth and poverty reduction in poor areas, or more accurately, have kept poor regions from falling further behind, but the impacts from

other investments seem even bigger. The efficiency of poverty investment is decreasing with the decrease of the rural poor population and increase of poverty funds, possibly because of the worsening targeting problems and irrational use of some poverty funds, e.g. subsidized loans are used inefficiently in rural enterprises in poor counties. Investments in agriculture, education and health seem more promising than investments in industry in poor areas. Due to the lack of reliable poverty data at disaggregated (county) levels, none of the above studies has managed to disaggregate gains to poor and non-poor from poverty programs, and this requires future research.

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