The Poverty Challenge for China in the New Millennium

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Abstract

We present estimates for different indicators of rural poverty in the 1990-2002 period under different assumptions about the appropriate income level for the poverty line. We found:

- a recent rise in the cases of extreme poverty. The proportion of rural residents with daily income below 50 cents has risen from 1.8 percent in 1996 to 2.9 percent in 2002.
- there has been stagnation of income for most of the poor. The proportion of rural residents with daily income below US$1 has stayed around 11 percent in the 1998-2002 period.
- the average income of China's rural poor is likely to have fallen over the 1998-2002 period. The fall appeared earliest in those with daily income below $0.50, the average shortfall from the poverty line of this poorest group had fallen pretty steadily from 25 percent in 1991 to 66 percent in 2002.
- the squared poverty gap measure of poverty shows that the distribution of income for folks below the poverty line has become more unequal since 1996. When we examine the change in the composition of the 11 percent that was below the $1 poverty line in 1999 and 2002, the "50 cent to $1 range" contains 9.4 percent of rural residents in 1999, and 8.1 percent in 2002. Greater inequality has come along with the increase in extreme poverty.

One major reason for the flagging dynamism in the rural economy is that, after almost a quarter of a century, China has largely exhausted the easy economic gains from the catching-up mechanism. The mere restoration of previous high growth rates is unlikely to be accompanied by the same fast rates of poverty reduction of the past because a much larger proportion of today's rural poor lives in more geographically isolated places, works on land whose soil is much poorer in nutrients and which receives lower rainfall, and has received less years of education. We propose a package of anti-poverty programs that strengthen the three mechanisms of income convergence, provide infrastructure, focus on rural poverty, and mobilise the universities for growth.

It is important that human capital formation be given higher priority than physical capital formation. The fact is that, once a market economy is in place, technological advancement is the fundamental engine of sustainable development, and education lies at the heart of the ability to acquire and innovate new technologies. The ultimate prize of development efforts is the successful incubation of four or five centers of endogenous growth in the now backward provinces. Failing that, the next objective is to create sufficient local scientific capacity to hasten the diffusion of new technologies from the coastal provinces and foreign countries to the poor provinces. Even in the worst case scenario, in which neither technological innovation centers nor technological diffusion centers could be successfully established in the poor provinces, good education and good health would enable individuals who migrate to the coastal provinces to get higher-paying jobs and contribute to the technological progress there. Compared to physical capital formation, human capital formation has a much lower wastage rate because humans can move and bridges and tunnels cannot.

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Section 1: China's Progress toward the Achievement of the Millennium Development Goals

China's high rate of economic growth in the last two decades has quadrupled its volume of output and lowered the incident of poverty significantly. Table 1 shows that the popular impression that China's welfare has improved impressively in the era of market-oriented reform is borne out by its notable progress toward most of the targets of the Millennium Development Goals (MDG) established by the United Nations. Of the 15 targets identified in Table 1[1], China has already achieved 1.5 of them, made above-average progress in 6 targets, and attained satisfactory progress in 1 target, i.e. China is on-track for 8.5 targets. China is off-track on 4 targets, and has made unknown progress on 2.5 targets.

China's greatest triumph on the MDG scoreboard is in poverty reduction. The decline in its rural poverty rate from 31.3 percent in 1990 to 10.9 percent in 2002 greatly exceeded Target 1 which only requires that the poverty rate be halved in the 1990-2015 period. However, it should be remembered that since China started from a low income base, it remains a low-income developing country with a substantial number of impoverished citizens. The number of rural residents below the poverty line of (1985 P-P-P) US$1 a day in 2002 was still 102 million, which

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[1] Table 1 discusses only 15 of the 18 MDG targets because three of them are not applicable to China, see Table 1 for what the three omitted targets are. The numbers from UNDP (2004) and ADB (2004) are in conflict in substantial disagreement for a number of cases, but, fortunately, in no cases, did the discrepancy affect our conclusion on the pace of the progress made.

Table 1
China's Progress Toward 15 of the 18 Targets
of the Millennium Development Goals (MDG)

Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day.
- *Rural population below $1 per day: 31.3% in 1990; 10.9% in 2002.*
  [progress has exceeded MDG target]

Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger.
- *Undernourished people: 16.0% in 1990; 9.0% in 2000 (ADB)*
- *Below minimum dietary energy consumption: 17% in1990; 11% in 2000 (UNDP)*
- *Underweight children (less than 15 years in age): 21% 1990; 10% in 1998 (UNDP)*
  [progress appears well on track to achieve MDG target]

Target 3: by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling.
- *Net primary enrolment ratio: 97% in 1990; 93% in 2001 (ADB)*
- *Net primary enrolment ratio: 96% in 1190; 99% in 2002 (UNDP)*
- *Gross junior secondary enrolment ratio: 67% in 1990; 90% in 2002 (UNDP)*
  [progress appears well on track to achieve MDG target]

Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and to all levels of education no later than 2015.
- *Ratio of girls to boys in primary education: 86% in 1990; 92% in 2001(ADB)*
- *Ratio of girls to boys in primary education: 86% in 1990; 90% in 2002 (UNDP)*
- *Ratio of girls to boys in secondary education: 83% in 2001 (ADB)*
  [progress appears off track to achieve MDG target]

Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate.
- *Under-5 mortality rate (per 100,000 live births): 88.9 in 1990; 39 in 2001 (ADB)*
- *Under-5 mortality rate (per 100,000 live births): 61 in 1990; 30 in 2001 (UNDP)*
- *Infant mortality rate (per 1,000 live births): 38 in 1990; 31 in 2001 (ADB)*
- *Infant mortality rate (per 1,000 live births): 50 in 1990; 30 in 2001(UNDP)*
  [progress appears well on track to achieve MDG target]

Target 6: Reduce the maternal mortality ratio by three-quarters between 1990 and 2015.
- *Maternal mortality (per 100,000 live births): 88.9 in 1990; 39 in 2001 (ADB)*
- *Maternal mortality (per 100,000 live births): 89 in 1990; 50 in 2001(UNDP)*
- *Proportion of births attended by skilled health workers in hospital births 50.6% in 1990; 89.0% in 2001 (ADB)*
- *Proportion of births attended by skilled health workers in hospital births 51% in 1990; 76% in 2001 (UNDP)*
  [progress appears well on track to achieve MDG target]

Target 7: Have halted by 2015, and begun to reverse, the spread of HIV/AIDS.
- *HIV/AIDS incidence rate (age 15-49) as of 2001 is 0.11%, around 790,000 cases (ADB)*
- *1,000 children orphaned by AIDS in 1995; 76,000 in 2001 (UNDP)*
  [progress appears off track to achieve MDG target]

Target 8: Have halted by 2015, and begun to reverse, the incidence of malaria and other major diseases.
- *Malaria (per 100,00 people): 1 in 2000 (ADB)*
- *Tuberculosis (per 100,000 people): 107 in 2001 (ADB)*
- *Smear-positive TB per 100,00 persons: 134 in 1990; 122 in 2000 (UNDP)*
  [progress on malaria is unknown, and progress on TB has achieved MDG target]

Target 9: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources.
- *Land covered by forest: 15.6% in 1990; 17.5% in 2001 (ADB)*
- *Carbon dioxide emissions (per capita): 2.1 tons in 1990; 2.3 tons in 1999 (ADB)*
  [progress appears off track to achieve MDG target]

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water.
- *Total population with clean water source: 60% in 1990; 66% in 2000 (ADB)*
- *Urban population with clean water source: 99% in 1990; 94% in 2000 (ADB)*
- *Total population with sustainable access to an improved water source: 71% in 1990; 75% in 2000 (UNDP)*
  [progress appears off track to achieve MDG target]

Target 11: Have achieved, by 2020, a significant improvement in the lives of at least 100 million slum dwellers.
- *Urban population with access to improved sanitation: 56% in 1990; 69% in 2000 (ADB)*
  [progress might be on track to achieve MDG target]

Target 12: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system.
  [progress is unknown, especially in the financial system]

Target 15: Deal comprehensively with the debt problems of developing countries through national and international measures.
- *Total debt service (as % of exports of goods and services): 10.6% in 1990; 4.2% in 2001 (ADB)*
  [progress appears well on track to achieve MDG target]

Table 1: China's Progress on MDG Goals (continued), page 3 of 3

Target 17: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries.
- *Population with sustainable access to affordable essential drugs: 80-94% in 1999.* **[progress is unknown]**

Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications.
- *Telephone mainlines and cellular subscribers (per 100 people): 0.6 in 1990; 24.8 in 2001 (ADB)*
- *Fixed lines per 100 persons: 8 in 1997; 26 in 2001 (UNDP)*
- *Mobile phones per 100 persons: 1 in 1997; 11 in 2001 (UNDP)*
- *Units of internet-ready computers: 290,000 in 1997; 16 million in 2002 (UNDP)*
- *Internet users: 620,000 in 1997; almost 46 million in 2002 (UNDP)* **[progress appears well on track to achieve MDG target]**

Targets not discussed
- Target 13: Address the special needs of the least developed countries (... enhanced program of debt relief for and cancellation of official bilateral debt ...)
- Target 14: Address the special needs of landlocked countries and small island developing states ...
- Target 16: In cooperation with developing countries. develop and implement strategies for decent and productive work for youth.

Source: Constructed from information in United Nations Development Program (UNDP, 2003), in UNDP (2004), and in Table S1 of Asian Development Bank (ADB, 2004); and from poverty indicators calculated by authors. The numbers in UNDP (2004) and ADB (2004) are in conflict in quite a number of cases, but this discrepancy luckily does not affect our conclusion on the pace of the progress made.

is more than one-third of the U.S. population – making "Impoverished China" the 10th largest country in the world.[2]

China is close to achieving Target 2, which dictates the halving of the proportion of people suffering from hunger in the same period: the proportion of people with below minimum dietary energy consumption dropped from 17 percent in 1990 to 9 percent in 2002, and the proportion of children (under 15 years of age) who are underweight dropped from 21 percent to 10 percent. Accelerated progress has also been made on Target 5 (under 5 mortality rate)[3], Target 6 (maternal mortality rate), part of Target 8 (TB rate), Target 15 (external debt management), and Target 18 (improvements in access to information and communications technologies).

There is, unfortunately, also a less-than-rosy picture of China as well. This is captured in the limited, or no progress, made in achieving the following 4 MDG targets:

- Target 4 – gender equality in lower education; the ratio of girls to boys in primary and junior secondary education is improving too slowly. The girl-boy ratio in primary education went from 86 percent in 1990 to 90 percent in 2002 (UNDP, 2004), and was 83 percent in secondary education in 2001.

- Target 7 – containment and reversal of the spread of AIDS. The rise in the incidence of AIDS seems to have accelerated rather than to have slowed. The number of children

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[2] Excluding "Non-impoverished China", only Bangladesh, Brazil, India, Indonesia, Japan, Nigeria, Pakistan, Russia, and U.S.A. have populations that exceeded 102 million in 2002.

[3] The ADB and UNDP figures on infant mortality rates are actually at odds with the data from the 1989 and 2000 Population Censuses. The two censuses show that the national infant (under one year old) mortality rate increased over the period from 22.5 to 24.7 per thousand live births. In 1989, the infant mortality rate in rural areas was 22.9 for males and 26.3 for females, compared with 14.6 and 14.4 in cities, respectively. In the 2000 Census, the infant mortality rate in cities declined substantially to 5.9 for males and 5.2 for females, and in rural areas it remained almost the same males (22.6), but rose sharply to 33.4 for females. The disturbing possibility of female infanticide comes to mind. (The cited official census data are from various volumes of *China Population Statistics Yearbook*, published by National Bureau of Statistics. Figures for urban China refer to cities only, excluding towns.)

orphaned by AIDS rose from 1,000 in 1995 to 76,000 in 2001.[4] The number of HIV

carriers is estimated to be about 1 million at present, but the World Health Organisation

(WHO) has warned that the number could climb to 10 million by 2010.[5]

- Target 9 – Initiate sustainable development and reverse the deterioration of the

  environment. Carbon dioxide emission per capita has actually gone up from 2.1 tons in

  1990 to 2.3 tons in 1999. UNDP (2004, pp. 29) has concluded that the worsening of the

  "various forms of land degradation including grassland destruction, soil erosion, and soil

  and water pollution" has heightened the threat to China's rich biodiversity.

- Target 10 – Increasing sustainable access to safe drinking water. Access to safe drinking

  water has risen only marginally from 60 percent of the population in1990 to 66 percent in

  2000[6]; and anecdotal evidence suggest that there is growing scarcity of water and

  increasing pollution of it.

The gender equality problem extends well beyond the limited progress on reaching the

narrowly-defined MDG Target 4. The broader gender issue that has received the greatest recent

media attention is that the Chinese cultural preference for boys in an administrative setting where

there are strict quotas on the number of children permitted for each family is likely to have

caused an increase in female infanticide.[7] But what is at least equally horrifying about the

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[4] UNDP (2004) page 26.
[5] "Where are the patients?" The Economist, August 21, 2004.
[6] These figures are from ADB (2004) figures. UNDP (2004) put the estimates at 71 percent in 1990 and 75 percent in 2002. In either case, the progress is unsatisfactory according to a straight line projection of the required pace required to achieve the MDG target.
[7] Because it is not possible to find reliable statistics on the actual number of female infant deaths, most scholars derive their estimates based on the increasing gender imbalance from the census. Compared with the normal gender ratio of 105-106 males per 100 females at birth, China's ratio for the nation as a whole increased from 111 in 1989 to 118 in 2000. The 2000 Census also shows that the gender ratio varied significantly across regions, ranging from 110-115 in metropolises (like Beijing, Shanghai and Tianjin) and in richer provinces (like Shandong, Liaoning and Zhejiang) to about 130 in poorer provinces (like Anhui, Hunan and Hubei). It is even more striking when one looks at the gender ratio for infant deaths.

women situation in China is the lesser-known trend of rising suicide rate among women, a manifestation that a disproportionate burden of China's growing pains is being borne by its women folks. A recent study by the United Nations Development Program (UNDP, 2004, pp. 17) reported that:

> "Recent statistics ... indicate that Chinese women now have one of the world's highest suicide rates. About 25 percent more women commit suicide in China than do men; in Western societies, by comparison, 3.6 times more men kill themselves than women ... [An] estimated 156,841 women commit suicide each year in China, constituting roughly half of all female suicides in the world. Family violence, one of the contributors to suicide, occurs in 30% of Chinese families."

The inability of the Chinese government to rapidly control the spread of SARS in early 2003 is manifestation of a grossly inadequate public health system. While it is hard to judge effectiveness, the coverage of China's healthcare system has certainly declined tremendously since the market-oriented economic reform program was started in December 1978. The decollectivization of agriculture has lowered healthcare in the rural area coverage from 90 percent to 10 percent. The reform of the state-owned enterprises (SOEs) has brought urban healthcare coverage down from 100 percent to 60 percent. A recent survey by *The Economist* ("Where are the patients?" 21 August 2004) had this to say of the present healthcare conditions:

> "When the World Heath Organisation (WHO) ranked the public-health systems of 191 countries four years ago, China was placed at 144, behind some of Africa's poorest. India, which has half China's GDP per head, came in at 112 ... A

In 2000, the numbers of infant deaths of the two genders in rich regions were fairly close (95 to 105 female deaths per 100 male deaths) but the ratio ranged from 135 to above 200 in poor regions! One could argue that these official figures might have still underestimated the reality.

government survey three years ago found that some 60% of rural residents avoid

hospitals altogether because of the expense. Diseases once declared tamed, such

as tuberculosis, measles and snail fever, have been making a comeback. And amid

the disarray of the system, a new infection, HIV, is rapidly taking hold ... The

WHO says that China is the only country in the western Pacific region which

relies on patients to finance childhood immunisations."

China's fast growth in the last two decades has done substantial damage to the

environmental. Elizabeth Economy (2004, pp. 18-19) summarized the economic toll as follows:

"China has become home to six of the ten most polluted cities in the world.[8]

Acid rain now affects about one-third of China's territory, including

approximately one-third of its farmland. More than 75 percent of the water in

rivers flowing through China's urban areas is [unsuitable for human contact[9]] …

deforestation and grassland degradation continue largely unabated[10] ... The

[annual] economic cost of environmental degradation and pollution … are the

equivalent of 8-12 percent of China's annual gross domestic product."

The uncomfortable reality for China is that unless ecological balance is restored within

the medium-term, environmental limits could choke off further economic growth. And the

uncomfortable reality for the rest of the world is that the negative consequences of large-scale

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[8] "300,000 people die prematurely from air pollution annually, which is twice the number for South Asia, which has a roughly comparable population" Economy, (2004, pp.85)

[9] Economy (2004, pp.69)

[10] " … degradation has reduced China's grassland by 30-50 percent since 1950; of the 400 million or so hectares of grassland remaining, more than 90 percent are degraded and more than 50 percent suffer moderate to severe degradation." Economy (2004, pp. 65)

environmental damage within a geographically large country are seldom confined within that country's borders. The continued march of China's desertification first brought more frequent sand storms to Beijing and then, beginning in April 2001, sent yellow dust clouds not only across the sea to Japan and Korea but also across the ocean to the United States. China's environmental management is a concern not only for China's poverty level but also for poverty levels globally.

However, as we shall see later in this paper that gender equality, environmental protection and public health are not the only serious economic issues facing China. The surprising fact is that despite the early achievement of the MDG poverty reduction target, poverty reduction is one of these other serious economic challenges facing China. As we shall document, the welfare of the poorest group in Chinese society appears to have deteriorated in the last seven years. The two aims of this paper are to present a diagnosis of China's poverty, and to outline an approach from Woo (2004) on how to ameliorate the situation.

We organize our discussion as follows: Section 2 briefly describes three new economic problems that China is facing beside gender, ecological, and public health issues. Section 3 analyses the nature of rural poverty over time, and section 4 discusses the spatial aspects nature of rural poverty. Section 5 assesses the government programs that have been implemented to fight rural poverty. Section 6 studies the new phenomenon of urban poverty, and discusses the effectiveness of current policies to alleviate urban poverty. Section 7 presents our conclusions and recommendations.

Section 2: China's New Challenges

There have been increasingly strong signals in recent years which suggest that output growth and poverty reduction in the new millennium might no longer proceed at the high rates of

the past. The first such signal is that there has been a noticeable slowdown in overall economic growth. The average annual GDP growth rate is 9.4 percent in the 1979-2003 period, but GDP growth in every year beginning in 1997 has been below 9.4 percent, see Table 2. The fact is that the length of time in which growth has been below the average growth rate of the 1979-2003 period is unprecedented suggests the troubling possibility that the post-1996 growth slowdown is not merely a transitory phenomenon. A formal statistical test of the difference in the means of the growth rates in the 1979-1996 sub-period and the 1997-2003 sub-period yields a t-statistic of 2.28 which supports the hypothesis of a downward shift in the growth regime.

The second signal that past patterns no longer hold comes from the marked rise of the urban poverty rate from less than 1 percent in 1984.[11] The National Bureau of Statistics has put the urban poverty rate at 4.1 percent in 1998, 3.1 percent in 1999, and 3.4 percent in 2000; Hussain (2001) put the 1998 rate at 4.7 percent; Li (2000) put the 1999 rate at 5.9 percent; and the Asian Development Bank (2001) found the poverty rate in 1999 to be 10.3 percent for permanent residents, and 15.2 percent for the illegal migrants.[12] There are two major reasons for the rise in urban poverty in the 1990s:

1. the acceleration of reforms in the state enterprise sector since 1995 has resulted in large job losses. For example, Table 1 shows that employment in the manufacturing sector fell from 98 million in 1996 to 83 million in 2002, a drop of 15 percent; and

2. the rate of rural-to-urban migration has picked up the 1990s.

The third disturbing signal is that the proportion of rural residents below the official poverty line of 71 cents per day (measured in 1985 PPP US$) has been stagnant at about 5.4 percent since 1997, after having declined steadily from 13.7 percent in 1990. In fact, the

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[11] This estimate is given in pp. x in World Bank (1992).
[12] The estimates of the National Bureau of Statistics, Hussain (2001), and Asian Development Bank (2001) are found in Tables 37, 38, and 41 respectively in Asian Development Bank (2004).

Table 2: Growth, Inflation and Employment Slowdown Since 1997

(The two 1992 employment growth rates are the compound growth rates for the 1978-1992 period)

| | Gross Domestic Product (GDP) | Retail Price Index (RPI) | Consumer Price Index (CPI) | Employment Level | | Growth in Employment | |
| | | | | Secondary Industry | Manufacturing Sector | Secondary Industry | Manufacturing Sector |
	(Rate of change, in percent)			*(in millions)*		*(percent per year)*	
1992	14.2	5.4	6.4	143.5	91.1	5.3	3.9
1993	13.5	13.2	14.7	149.6	93.0	4.2	2.1
1994	12.6	21.7	24.1	153.1	96.1	2.3	3.4
1995	10.5	14.8	17.1	156.5	98.0	2.2	2.0
1996	9.6	6.1	8.3	162.0	97.6	3.5	-0.4
1997	8.8	0.8	2.8	165.5	96.1	2.1	-1.5
1998	7.8	-2.6	-0.8	166.0	83.2	0.3	-13.5
1999	7.1	-3.0	-1.4	164.2	81.1	-1.1	-2.5
2000	8.0	-1.5	0.4	162.2	80.4	-1.2	-0.8
2001	7.3	-0.8	0.7	162.8	80.8	0.4	0.5
2002	8.0	-1.3	-0.8	157.8	83.1	-3.1	2.8
2003	9.1	-0.2	1.2				

Period average
1979-2003	9.38	5.31	NA
1979-1996	9.92	7.84	NA
1997-2003	8.01	-1.22	0.30

t-statistic for difference in the means of 1979-1996 and 1997-2002
| | 2.276 | 5.618 |

Memo: average of 1992-1996 period
| | *12.1* | *12.2* | *14.1* |

proportion of rural resident with daily income less than 50 cents has actually increased in the same period from 2.1 percent to 2.9 percent.

The fourth signal that China is facing a set of new challenges is that the post-1996 cessation of "trickling-down" to the lowest income group (defined as people with daily income less than 1985 $0.50) in China was accompanied by a post-1976 slowdown in rural income growth. Earlier, Table 1 had reported slower GDP growth after 1996, and, now, Table 3 shows that the first phenomenon might be entirely attributable to a drop in rural income growth. Rural income growth went down from 5.69 percent annually during 1992-96 to 3.97 percent annually during 1997-2002, while urban income growth went up from 7.29 percent to 7.80 percent in the same two periods.

These divergent trends caused the rural-urban income ratio to fall from 39.8 percent in 1996 to 32.1 percent in 2002, see Table 4. The fact however is that the rural-urban income ratio has been decreasing steadily since the mid-1980s, after the boost to agricultural productivity from the de-collectivization of rural communes had spent its force, and with the dynamism of the urban areas being reliably stoked since 1984 by the steady liberalization of international trade and investment, and ownership forms in the industrial and service sectors.

The accentuation of rural urban income disparity since mid-1980s is echoed in the rise of rural-urban consumption disparity. Table 4 reports four calculations of the rural-urban consumption ratio based on different methodologies. Unfortunately, these 4 sets of estimates overlap only over some sub-periods. The Method A ratio and the Method B ratio show downward trends (with different speeds) over the 1985-93 period that they overlap. The Method B and Method D ratios also show downward trends in their overlapping period of 1989-97. If the Method A ratio had continued along the downward trend seen in the Method B and D ratios

<u>Table 3: Average annual growth rates in per capita</u>
<u>real income of rural households and urban households</u>
(in percent)

	<u>rural</u>	<u>urban</u>
average 1979-2002	7.33	6.77
average 1979-1983	17.06	7.16
average 1984-1988	7.24	5.55
average 1989-1991	0.73	5.25
average 1992-1996	5.69	7.29
average 1997-2002	3.97	7.80

Table 4: Rural-Urban Disparity in Income and Consumption
(measured as percent of urban level)

	Per Capita Income		Rural-Urban	Proxies for Rural-Urban Consumption Ratio			
	Rural	Urban	Income Ratio	Method A	Method B	Method C	Method D
	(in yuan)						
1955				*40.4*			
1960				*31.8*			
1965				*42.2*			
1970				*43.8*			
1975				*38.3*			
1978	133.6	343.4	38.9	34.5	34.1		
1979	160.2	387.0	41.4	37.4	na		
1980	191.3	477.6	40.1	37.0	35.9		
1981	223.4	491.6	45.5	36.9	na		
1982	270.1	526.6	51.3	39.9	na		
1983	309.8	564.0	54.9	42.4	na		
1984	355.3	651.2	54.6	44.3	na		
1985	397.6	739.1	53.8	44.6	43.3		
1986	423.8	899.6	47.1	42.1	40.9		
1987	462.6	1002.2	46.2	39.3	38.3		
1988	544.9	1181.4	46.1	36.9	35.5		
1989	601.5	1373.9	43.8	36.8	35.3		44.2
1990	686.3	1510.2	45.4	35.5	33.9		na
1991	708.6	1700.6	41.7	34.0	32.3		na
1992	784.0	2026.6	38.7	32.0	30.5		na
1993	921.6	2577.4	35.8	31.2	28.2		na
1994	1221.0	3496.2	34.9		28.6		na
1995	1577.7	4283.0	36.8		29.3	29.4	na
1996	1926.1	4838.9	39.8		31.2	na	na
1997	2090.1	5160.3	40.5		31.9	na	38.6
1998	2162.0	5425.1	39.9			30.5	na
1999	2210.3	5854.0	37.8			28.4	na
2000	2253.4	6280.0	35.9				na
2001	2366.4	6859.6	34.5				32.8
2002	2475.6	7702.8	32.1				30.4

1960 is in the middle of the 3-year long Great Leap Forward in which about 30 million died from starvation
1965 is the eve of the decade-long Cultural Revolution

Income and Consumption are measured in current prices on Per Capita basis
CSY = China Statistical Yearbook, Income concepts measured in CSY 2003
Method A is based on consumption concepts measured in CSY1994, agricultural vs non-agricultural
Method B is based on consumption concepts measured in CSY1998, agricultural vs non-agricultural
Method C is based on consumption concepts measured in CSY2000, rural vs urban
Method D is based on consumption concepts measured in CSY2003, rural vs city rural

after 1993, then the Method A ratio in 2002 would have had a value quite a bit less than its 1993 value of 31.2 — which would make is the lowest rural-urban consumption ratio since data became available in 1952.[13]

The troubling suggestion from this extrapolation of the Method A ratio is that if we can assume that the close co-movements between the (Method A) consumption ratio and the income ratio over 1978-93 persisted after 1993, then the rural-urban income disparity in 2002 was the largest at least since 1952. Even more troubling is the argument by Li and Yue (2004) that the actual rural-urban income gap in 2002 was actually much larger than the gap constructed from the official data shown in Table 4:

> "In 2001, per capita income in the urban is about 3 times that of rural area. But we
> don't think this measure truly represents human well-being. Urban dwellers can
> get various subsidies, such as public health care, basic education subsidy,
> pensions, unemployment insurance, minimum living expense guarantee, whereas
> farmers can't enjoy these benefits. Once these subsidies are accounted, income
> disparity between the urban and rural area may be as large as 4, 5, or 6 times. If
> non-monetary factors are included, China's rural-urban income disparity is the
> largest in the world."

It is instructive to remember for later discussion that the rural-urban gap had narrowed dramatically from 38.9 percent in 1978 to 54.9 percent in 1983 because of the large increases in agricultural productivity generated by the de-collectivization of the agricultural communes, and the partial deregulation of agricultural markets. *This 1979-1984 experience therefore suggests that any attempt to reduce rural poverty and the rural-urban gap should have a strong policy component that boosts income in the agricultural sector.*

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[13] The lowest value of the Method A ratio before 1978 was 31.6 percent in 1959.

Clearly, the four recent developments described above – overall growth slowdown, rise in urban poverty, stagnation (or, perhaps, even worsening) of extreme rural poverty, flagging dynamism in the rural economy – are related, but there are specific factors that contributed importantly in each case. The mere restoration of previous high growth rates, for example, is unlikely to be accompanied by the same fast rates of poverty reduction of the past because a much larger proportion of today's rural poor lives in more geographically isolated places, works on land whose soil is much poorer in nutrients and which receives lower rainfall, and has received less years of education. It therefore appears that most of the remaining poor people in China are entrapped in hardcore rural poverty, and the records of today's rich countries and the rest of the developing world show that it is both extremely difficult and terribly expensive to reduce such hardcore rural poverty.

One major reason for these three unfavorable developments is that, after almost a quarter of a century, China has largely exhausted the easy economic gains from the catching-up mechanism. China is entering into the new millennium with economic problems whose solutions require a fundamental reorientation of economic development strategy, and the introduction of several new policy tools. In this paper, we will confine our discussion of the new thinking and new policies to the sphere of poverty reduction. The inescapable fact is that the trickling-down mechanism alone will not solve the problem of hardcore poverty.

Section 3: Trends in Poverty Reduction

Table 5 quantifies the extent of rural poverty according to the official poverty line. The decline in the poverty rate has been truly impressive, roughly halving itself every eight years -- 31 percent in 1978, 16 percent in 1986, 8 percent in 1994, and 3 percent in 2002. It must be

Table 5: Official Headcounts of Rural Poverty

	Official Poverty Line (yuan)	Rural Population (millions of persons)	Number of Rural Poor (millions of persons)	Rural Poverty Rate (percent)
1978	100	803	250	30.7
1984	200	843	128	15.1
1985	206	844	125	14.8
1986	213	850	131	15.5
1987	227	857	122	14.3
1988	236	867	96	11.1
1989	259	878	106	12.1
1990	300	896	85	9.5
1991	304	905	94	10.4
1992	320	912	80	8.8
1993		913	75	8.2
1994	440	915	70	7.6
1995	530	917	65	7.1
1996	580	919	58	6.3
1997	630	915	49	5.4
1998	635	920	42	4.6
1999	625	922	34	3.7
2000	625	928	32	3.4
2001	635	934	29	3.1
2002	627	935	28	3.0

Compiled from Tables 2 and 3 in Wang (2004)

pointed out, however, that the actual extent of rural poverty might be more serious than what the 3 percent poverty rate might suggest. This is because the official poverty line is substantially below the universal poverty line of $1 per day (measured in 1985 PPP US$) proposed by the World Bank. In terms of 1985 PPP US$, the official poverty line in China has been roughly between 66 cents per day and 71 cents per day.

World Bank (2001) presents estimates for different indicators of rural poverty in the 1990-1997 period under different assumptions about the appropriate income level for the poverty line. We have used the same World Bank procedures[14] to extend the three common measures of poverty – the headcount index (HCI), the poverty gap index (PGI), and the squared poverty gap index (SPGI) – to cover the 1998-2002 period. These three measures are defined as follows:

Headcount Index = [P / N]

where P = number of poor people, i.e. number of people below the poverty line

N = total population of country

Poverty Gap Index = (P / N) $\cdot$ ([L – a] / L)

where L = income (or expenditure) level of the poverty line

a = average income of the poor

Squared Poverty Gap Index = (1 / N) $\cdot$ $\sum$ {([L – a_i] / L)^2}

where a_i = income of individual i who is below the poverty line, and the

summation is over the number of poor persons (P)

Tables 6 through 9 and Figures 1-1, through 1-3 present the updated data in different ways to highlight different aspects of poverty in rural China. Table 10 translates the 1985 PPP US$ poverty lines into their Yuan equivalent at current prices. There are four noteworthy features about these three poverty indicators. First, the headcount index indicates:

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[14] The procedures are rationalised in Chen, Datt, and Ravallion (undated items a and b), and Datt (1998).

Table 6: The Headcount Measure of the Incidence of poverty in rural China, 1990-2002
* Headcount measure, number of rural poor/rural population (in percent)
* Poverty line is in 1985 PPP US$ per day

Poverty Line	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Official	**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**
Part A: Using Average Per Capita Income													
$0.50	3.78	5.00	3.83	4.58	4.50	3.63	1.82	2.11	1.87	1.68	2.79	3.05	2.87
$0.71	13.72	14.96	12.96	12.83	11.81	9.97	5.59	5.44	4.55	4.30	5.65	5.65	5.38
$0.75	15.76	17.08	15.00	14.70	13.43	11.36	6.55	6.26	5.20	4.93	6.29	6.21	5.92
$1.00	31.25	31.70	30.13	29.10	25.90	21.80	15.04	13.49	11.45	11.05	12.10	11.38	10.90
$1.25	47.74	47.49	44.56	43.81	37.46	33.13	25.36	22.59	19.96	19.29	19.77	18.38	17.60
$1.50	62.28	61.69	58.58	56.85	50.46	44.70	36.02	32.32	29.51	28.46	28.41	26.53	25.39
$1.75	73.29	72.64	69.76	67.47	62.10	55.46	46.14	41.87	39.14	37.70	37.26	35.11	33.59
$2.00	80.96	80.37	77.91	75.68	71.46	64.68	55.32	50.82	48.28	46.49	45.79	43.55	42.19
Part B: Using Average Per Capita Expenditure													
$0.50	7.22	7.78	7.21	7.79	7.46	6.24	3.43	4.14					
$0.71	20.87	20.99	20.80	20.44	18.51	15.82	10.38	10.95					
$0.75	23.53	23.04	23.47	23.01	20.73	17.74	11.97	12.47					
$1.00	42.82	40.79	40.92	40.83	34.90	31.00	24.31	24.23					
$1.25	60.57	57.95	57.92	56.69	50.51	44.92	37.32	36.78					
$1.50	73.70	71.31	71.07	69.17	64.24	57.68	49.49	48.71					
$1.75	82.28	80.38	80.02	78.26	74.58	68.09	60.11	59.26					
$2.00	87.73	86.27	85.87	84.58	80.54	75.98	68.98	68.18					
Part C: Difference between the Expenditure and Income Measures													
$0.50	3.44	2.78	3.38	3.21	2.96	2.61	1.61	2.03					
$0.71	7.15	6.03	7.84	7.61	6.70	5.85	4.79	5.51					
$0.75	7.77	5.96	8.47	8.31	7.30	6.38	5.42	6.21					
$1.00	11.57	9.09	10.79	11.73	9.00	9.20	9.27	10.74					
$1.25	12.83	10.46	13.36	12.88	13.05	11.79	11.96	14.19					

The 1990-97 figures are from World Bank (2001) Annex 1 Table 3, and the post-1997 figures are computed by the authors.

Table 7: The Poverty Gap Index Measure of the Rural Poverty in rural China,
and Income Distance of the Poor from the Poverty Income Line
* Poverty line is in 1985 PPP US$ per day
* Used Average Per Capita Income

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Part A: The Poverty Gap Index													

* The poverty gap index is the mean distance below the poverty line, expressed as a percentage
  of the poverty line. The mean is taken over the entire population, counting the non-poor as
  having zero poverty gap.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
$0.50	0.74	1.24	0.90	1.43	1.46	1.07	0.59	0.84	0.85	0.72	1.58	2.06	1.88
$0.71	2.72	3.73	3.00	3.48	3.36	2.70	1.45	1.66	1.51	1.35	2.33	2.72	2.52
$0.75	3.31	4.33	3.54	3.99	3.82	3.09	1.67	1.86	1.67	1.50	2.50	2.87	2.67
$1.00	8.31	9.22	8.27	8.43	7.74	6.15	3.90	3.81	3.27	3.07	4.13	4.31	4.07
$1.25	14.56	15.30	13.91	14.05	12.42	10.39	7.14	6.64	5.73	5.47	6.47	6.40	6.08
$1.50	21.35	21.89	20.22	20.13	17.69	15.16	11.07	10.11	8.89	8.53	9.40	9.06	8.64
$1.75	28.02	28.40	26.53	26.16	23.22	20.16	15.36	13.97	12.53	12.04	12.75	12.17	11.62
$2.00	34.19	34.44	32.47	31.86	28.69	25.16	19.79	18.02	16.43	15.80	16.35	15.57	15.39

Part B: Distance of Average Income Below the Poverty Income Line
* The distance is measured as the difference between the average income of the impoverished group and the poverty income line
  expressed as a percent of the poverty income line.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
$0.50	19.55	24.86	23.42	31.18	32.42	29.59	32.64	39.67	45.35	42.62	56.56	67.57	65.64
$0.71	19.83	24.94	23.15	27.12	28.47	27.08	25.89	30.46	33.14	31.42	41.26	48.05	46.91
$0.75	21.01	25.37	23.59	27.11	28.41	27.21	25.56	29.76	32.04	30.51	39.78	46.15	45.12
$1.00	26.60	29.09	27.45	28.96	29.90	28.19	25.90	28.27	28.57	27.77	34.12	37.84	37.29
$1.25	30.49	32.21	31.21	32.06	33.16	31.37	28.15	29.38	28.71	28.33	32.71	34.80	34.53
$1.50	34.27	35.48	34.52	35.41	35.06	33.90	30.73	31.27	30.13	29.96	33.07	34.16	34.02
$1.75	38.23	39.09	38.03	38.77	37.40	36.34	33.30	33.35	32.01	31.93	34.21	34.66	34.58
$2.00	42.22	42.85	41.68	42.09	40.15	38.90	35.78	35.46	34.04	33.99	35.70	35.75	36.47

Source: The figures in 1990 through 1997 are from World Bank (2001) Annex 1 Table 3 and authors calculate those for the rest of years.

Table 8: The Squared Poverty Gap Index as Measure of the Rural Poverty in China, 1990-2002

* The squared poverty gap index is a weighted sum of poverty gaps (as a proportion of the poverty line),
  where the weights are the proportionate poverty gaps themselves (like the Price Gap, but
  with weights given to each observation).
* Poverty line is in 1985 PPP US$ per day
* Used Average Per Capita Income

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
$0.50	0.27	0.58	0.40	0.89	0.92	0.61	0.40	0.68	0.82	0.64	1.89	3.01	2.64
$0.71	0.74	1.51	1.15	1.65	1.66	1.24	0.70	0.96	0.99	0.83	1.91	2.68	2.41
$0.75	0.96	1.75	1.35	1.85	1.84	1.39	0.78	1.03	1.05	0.89	1.96	2.69	2.42
$1.00	3.08	3.77	3.33	3.75	3.56	2.40	1.64	1.81	1.65	1.48	2.54	3.07	2.83
$1.25	6.10	6.84	6.00	6.46	5.85	4.52	3.03	3.03	2.67	2.48	3.53	3.89	3.63
$1.50	9.75	10.46	9.41	9.73	8.68	7.06	4.89	4.67	4.09	3.86	4.88	5.06	4.77
$1.75	13.74	14.38	13.14	13.31	11.82	9.88	7.11	6.63	5.85	5.57	6.52	6.54	6.19
$2.00	17.84	18.40	17.00	17.01	15.15	12.89	9.57	8.83	7.88	7.53	8.41	8.26	7.70

Source: The figures in 1990 through 1997 are from World Bank (2001) Annex 1 Table 3 and authors calculate those for the rest of years.

Table 9: Change in Poverty Indicators, 1990-2002
(in percentage points)

Poverty Line (in 1985 US$)	Change in Headcount Incidence			Change in Poverty Gap Index			Change in Squared Poverty Gap Index		
	1990-2002	1990-1996	1996-2002	1990-2002	1990-1996	1996-2002	1990-2002	1990-1996	1996-2002
$0.50	-0.91	-1.96	1.05	1.15	-0.15	1.29	2.37	0.13	2.24
$0.71	-8.34	-8.13	-0.21	-0.20	-1.27	1.08	1.66	-0.05	1.71
$0.75	-9.84	-9.21	-0.63	-0.64	-1.64	1.00	1.46	-0.18	1.65
$1.00	-20.35	-16.21	-4.14	-4.25	-4.42	0.17	-0.25	-1.44	1.19
$1.25	-30.14	-22.38	-7.76	-8.48	-7.42	-1.06	-2.47	-3.07	0.60
$1.50	-36.89	-26.26	-10.63	-12.71	-10.28	-2.43	-4.98	-4.86	-0.12
$1.75	-39.70	-27.15	-12.55	-16.40	-12.66	-3.75	-7.55	-6.63	-0.92
$2.00	-38.77	-25.64	-13.13	-18.80	-14.39	-4.41	-10.14	-8.26	-1.87

Table 10: Translation of 1985 PPP US$ Poverty Lines to Yuan in Current Prices
The consumption PPP exchange rate in 1985 is 0.76293 yuan per US$.

year	$0.50	$0.71	$0.75	$1.00	$1.25	$1.50	$1.75	$2.00
1985	139.2	199.0	208.9	278.5	348.1	417.7	487.3	556.9
1986	147.7	211.2	221.6	295.5	369.3	443.2	517.0	590.9
1987	156.9	224.3	235.3	313.8	392.2	470.7	549.1	627.5
1988	184.3	263.5	276.5	368.7	460.9	553.0	645.2	737.4
1989	219.9	314.4	329.9	439.8	549.8	659.8	769.7	879.7
1990	229.8	328.5	344.7	459.6	574.5	689.5	804.4	919.3
1991	235.1	336.1	352.7	470.2	587.8	705.3	822.9	940.4
1992	246.2	351.9	369.2	492.3	615.4	738.5	861.5	984.6
1993	279.9	400.1	419.8	559.8	699.7	839.6	979.6	1,119.5
1994	345.4	493.7	518.0	690.7	863.4	1,036.1	1,208.8	1,381.5
1995	405.8	580.1	608.7	811.6	1,014.5	1,217.4	1,420.3	1,623.2
1996	437.9	625.9	656.8	875.7	1,094.7	1,313.6	1,532.5	1,751.5
1997	448.8	641.6	673.2	897.6	1,122.0	1,346.4	1,570.8	1,795.2
1998	444.3	635.2	666.5	888.6	1,110.8	1,333.0	1,555.1	1,777.3
1999	437.7	625.6	656.5	875.3	1,094.1	1,313.0	1,531.8	1,750.6
2000	437.2	625.0	655.8	874.4	1,093.1	1,311.7	1,530.3	1,748.9
2001	440.7	630.0	661.1	881.4	1,101.8	1,322.2	1,542.5	1,762.9
2002	439.0	627.5	658.4	877.9	1,097.4	1,316.9	1,536.3	1,755.8
2003	446.0	637.5	669.0	892.0	1,114.9	1,337.9	1,560.9	1,783.9

Figure 1-1. Trend of rural poverty reduction, 1990-2002

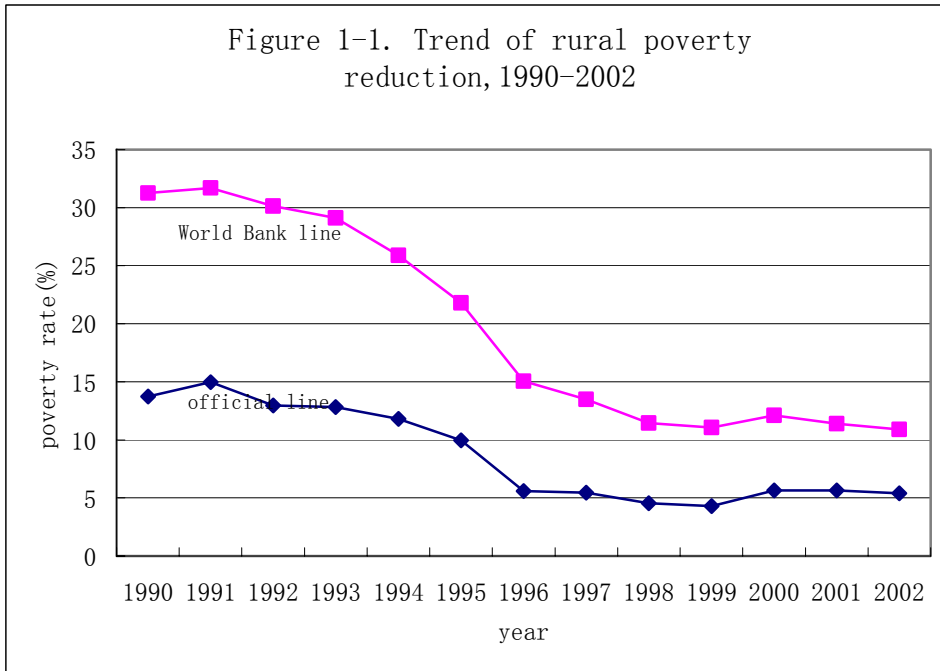

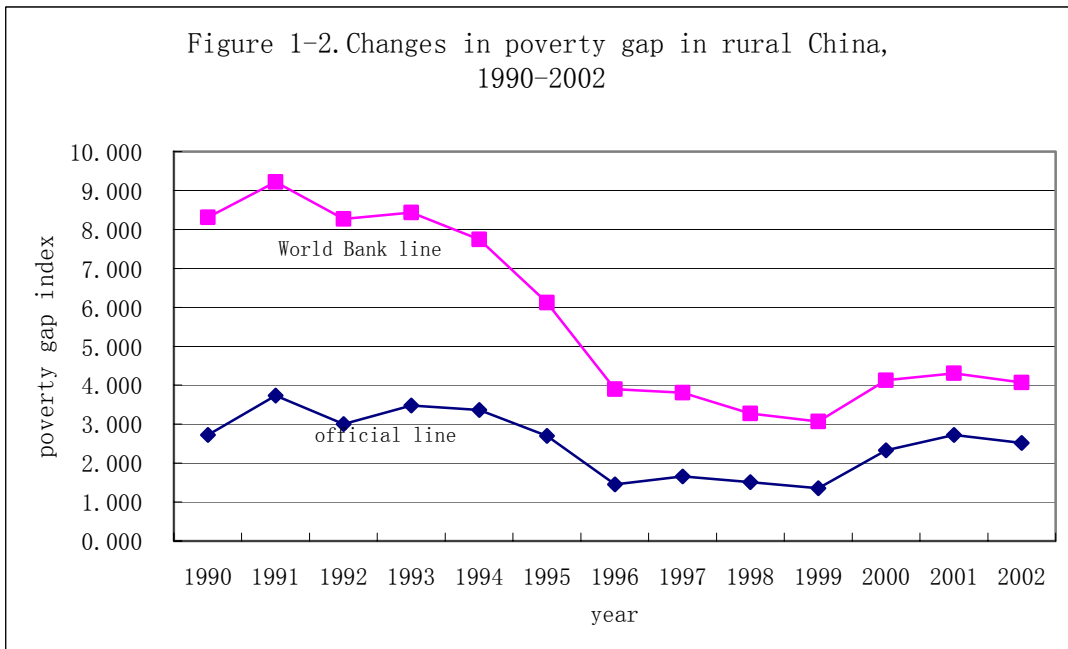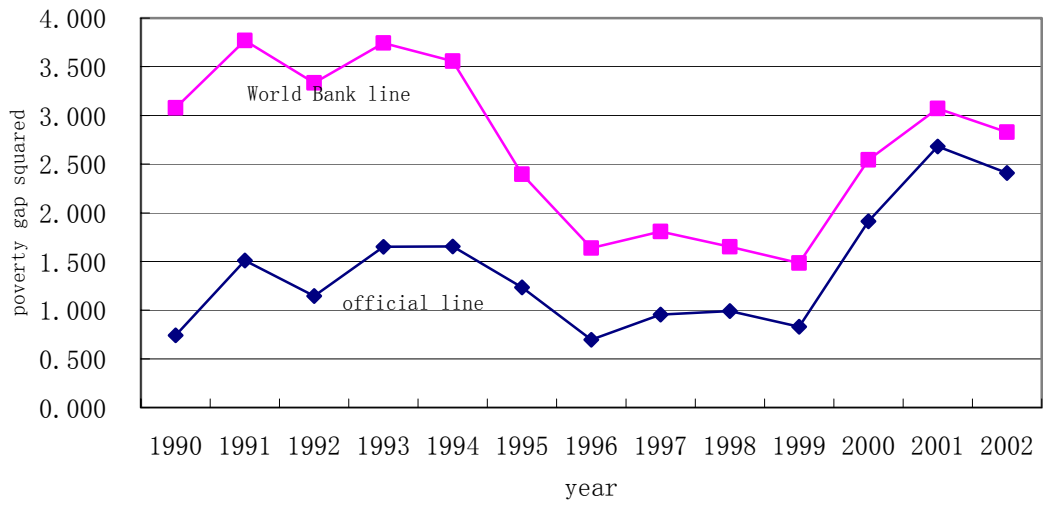Figure 1-2.Changes in poverty gap in rural China, 1990-2002

Figure 1-3. Changes in index of poverty gap squared, 1990-2002

World Bank line

official line

poverty gap squared

4.000
3.500
3.000
2.500
2.000
1.500
1.000
0.500
0.000

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002

year

1. a recent rise in the cases of extreme poverty. The proportion of rural residents with income below 50 cents has risen from 1.8 percent in 1996 to 2.9 percent in 2002, see Table 6.

2. there has been stagnation of income for most of the poor. At the international poverty line of US$1, the incidence of poverty has fluctuated around 11 percent in the 1998-2002 period with no visible downward trend.

Second, expenditure level is a better indicator of welfare than income level, and the degree of rural poverty is much higher when it is measured by expenditure rather than by income. In 1997, the expenditure-based poverty rate was twice that of the income-based poverty rate for poverty lines up to $1. At the 75-cent poverty line, the expenditure-based poverty rate was 12.5 percent and the income-based poverty rate was 6.3 percent – see Table 6. The salient points from this observation are that:

1.   the official poverty rate understates the depth of rural poverty, and

2.   this understatement of rural poverty has been reinforced by the use of a low poverty line.

Third, the average income of China's rural poor is likely to have fallen over the 1998-2002 period. Since the headcount index has been stagnant at the 71-cents, 75-cents and $1 poverty lines in 1998-2002, the rise in the poverty gap index (in Part A of Table 7) in this period means that the average income of the poor has fallen. Specifically, with L= $1, HCI at 11 percent in 1999 and 2002, and PGI at 3.07 percent and 4.07 percent respectively, this means that the average income of the poor had gone from 72 cents in 1999 to 63 cents in 2002.

If we take 1991 as the base year, Part B of Table 7 shows that:

- for L= $0.50, the average of this poorest group had fallen pretty steadily to bring the average shortfall from the poverty line from 25 percent in 1991 to 66 percent in 2002; and

- there was a precipitous drop in the average income of the poor in 2000 – a finding that should be investigated further.

Fourth, the squared poverty gap index shows that the distribution of income for folks below the poverty line has become more unequal since 1996, see Table 8. This is not surprising when we examine the change in the composition of the 11 percent that was below the $1 poverty line in 1999 and 2002. The "50 cent to $1 range" contains 9.4 percent of rural residents in 1999, and 8.1 percent in 2002. Greater inequality has come along with the increase in extreme poverty.

By construction, the squared poverty gap index (SPGI) is more sensitive than the headcount index (HCI) and the poverty gap index (PGI) to changes in the income of the folks further below the poverty line. This is why SPGI detected the growing inequality within the poor very early. For the 50-cent and 75-cent poverty lines, SPGI increased from 1990 to 1996 and continued to do so from 1996 to 2002. Both HCI and PGI, on the other hand, reported a decline in the 1990-1996 period for all values of the poverty line – see Table 9.

The SPGI does not show a rise during 1996 to 2002 only when the poverty line is raised up to $1.50 to include a considerably richer segment of the rural population. The "$1 to $1.50 range" contains 14.5 percent of the rural population, and the inclusion of this large sub-population prevents inequality from increasing, i.e. overwhelms the rising inequality trend seen in the 11 percent of the rural population contained in the "0 to $1 range".

Of course, the correctness of our four conclusions rests upon the validity of the statistical assumptions behind the World Bank's computation methodology of these poverty measures.

Section 4: The Regional Dimensions of Rural Poverty

Tables 11 through 13 show the regional characteristics of rural poverty. These tables employ a scheme of six provincial groups that is heavily influenced but not entirely determined by geographical location.[15] Factors like land area, nature of economic base, and ecology are also considered in formulating these six provincial groups. For example, despite the fact that the province-level cities of Beijing, Shanghai, and Tianjin are not physically contiguous, they form the "Metropolis" group because they are small in area, are heavily industrialized, and have insignificant rural populations. Chongqing is not included within the "Metropolis" category because it is larger than Ningxia in land area, and has a rural population more than five times than of Ningxia. Furthermore, although Tibet is located in the southwest corner, it is classified as a member of the "Northwest" group because it's dryness makes it ecologically more similar to Qinghai than to Sichuan.

To summarise, the six geographical groups are as follows:

1. *The metropolises* of Beijing, Tianjin, and Shanghai have province-level status. (Chongqing was granted province-level status in 1997, but we have included its data under Sichuan province.) These are the richest pockets of China and have had high growth in the 1990s. These cities are highly industrialized, and over 71 percent of their population lives within 100 kilometers of the coast or navigable waters. Beijing, Shanghai, and Tianjin are *the exceptionally rich (city) provinces*.

2. *The northeastern provinces* of Heilongjiang, Jilin, and Liaoning, which are collectively called Manchuria, were the industrial heartland of China in 1949 (because of the Japanese control of the economy that started in 1905). During the central planning period, their

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[15] This classification is from Démurger, Sachs, Woo, Bao, Chang, and Mellinger (2002).

Table 11: Regional Distribution of the Rural Poor

	Per Capita Net Income in 2000 (yuan)	Official Rural Poverty Rate (%)			Proportion of National Poor Population (%)		
		1985	1993	2001	1985	1993	2001
National	**2,253**	**14.8**	**8.8**	**3.2**	**100.0**	**100.0**	**100.0**
Metropolis	**4,608**	**0.0**	**0.3**	**0.4**	**0.0**	**0.1**	**0.1**
Beijing	4,605	0.0	0.6	0.5	0.0	0.0	0.1
Tianjin	3,622	0.0	0.1	0.5	0.0	0.0	0.1
Shanghai	5,596	0.0	0.2	0.0	0.0	0.0	0.0
Northeast	**2,176**	**6.9**	**5.1**	**3.6**	**3.2**	**3.4**	**7.0**
Liaoning	2,356	6.5	3.9	3.2	1.1	1.1	2.6
Jilin	2,023	0.0	6.2	3.1	Na	1.1	1.5
Heilongjiang	2,148	14.1	5.2	4.6	2.1	1.2	2.9
Coastal	**3,150**	**3.0**	**4.6**	**0.7**	**5.5**	**18.4**	**6.1**
Jiangsu	2,479	0.0	2.4	0.2	Na	1.6	0.4
Zhejiang	3,595	4.5	3.5	0.2	1.2	1.6	0.2
Hebei	4,254	4.9	13.8	1.8	1.9	9.1	3.3
Shandong	3,230	2.3	5.8	0.7	1.2	5.2	1.6
Fujian	3,654	6.3	1.1	0.2	1.2	0.4	0.2
Guangdong	2,182	0.0	0.5	0.1	Na	0.3	0.1
Hainan	2,659	Na	4.7	1.7	Na	0.3	0.3
Central	**2,071**	**10.4**	**7.6**	**2.9**	**25.0**	**26.9**	**23.3**
Henan	1,986	24.9	12.6	2.1	13.7	11.9	5.6
Shanxi	2,269	4.1	11.9	6.6	0.7	3.3	5.3
Anhui	2,197	5.1	8.6	1.8	1.8	5.2	3.1
Jiangxi	1,906	12.1	3.2	2.8	2.7	1.3	3.0
Hubei	2,135	3.7	6.2	1.8	1.2	3.1	2.4
Hunan	1,935	12.6	3.1	2.1	4.9	2.1	3.9
Southwest	**1,703**	**37.7**	**18.6**	**5.8**	**48.7**	**33.1**	**36.2**
Guangxi	1,892	22.2	7.8	3.4	6.1	3.7	4.6
Chongqing	1,904	Na	Na	4.0	Na	Na	3.3
Sichuan	1,374	35.1	10.1	3.3	25.0	11.8	7.8
Guizhou	1,479	36.8	21.9	10.4	7.7	7.9	11.1
Yunnan	1,865	41.3	23.8	7.9	9.9	9.7	9.3
Northwest	**1,582**	**25.8**	**17.5**	**11.8**	**17.0**	**18.2**	**27.2**
Shaanxi	2,038	41.6	19.2	7.8	8.3	6.5	7.4
Ningxia	1,444	53.0	29.5	13.6	1.3	1.3	1.8
Gansu	1,429	43.9	26.2	9.6	6.0	6.2	6.6
Qinghai	1,490	5.0	16.8	16.9	0.1	0.7	2.0
Xinjiang	1,724	0.9	14.1	6.5	0.1	1.5	2.0
Tibet	1,618	Na	6.0	15.2	Na	0.2	1.1
Inner Mongolia	1,331	10.6	10.8	13.3	1.2	1.9	6.3

Rearrangement and additional computations of data in Table 6 in Wang (2004)
Additional data from China Statistical Yearbook, 2001

Table 12: Education Attainment by Rural Household in 2000

| | All Sampled Households | | | | Households with per capita consumption expenditure less than 860 yuan | | |
	Illiterate or Semi -illiterate	Primary School Education	Above Primary Education		Illiterate or Semi -illiterate	Primary School Education	Above Primary Education
National	**8.1**	**32.2**	**59.7**		**13.2**	**35.6**	**51.2**
Metropolis	**2.6**	**22.1**	**75.3**		**10.0**	**32.8**	**57.3**
Beijing	1.9	11.8	86.3		11.1	13.3	75.6
Tianjin	1.8	29.7	68.5		2.1	35.0	62.9
Shanghai	4.1	24.9	71.0		16.7	50.0	33.3
Northeast	**3.1**	**29.5**	**67.4**		**3.6**	**33.9**	**62.5**
Liaoning	2.2	26.9	70.9		2.5	33.9	63.6
Jilin	4.2	31.9	63.9		5.2	35.5	59.3
Heilongjiang	2.8	29.7	67.5		3.1	32.3	64.6
Coastal	**5.5**	**30.1**	**64.4**		**8.3**	**33.6**	**58.1**
Hebei	2.7	25.0	72.3		3.3	27.9	68.8
Jiangsu	6.5	28.9	64.6		8.5	34.0	57.5
Zhejiang	6.6	37.1	56.3		6.0	36.8	57.2
Fujian	5.8	34.9	59.3		9.0	39.6	51.4
Guangdong	4.3	33.1	62.6		13.9	43.0	43.1
Hainan	7.0	26.0	67.0		10.7	23.4	65.9
Shandong	5.4	26.0	68.6		6.7	30.3	63.0
Central	**6.2**	**30.4**	**63.4**		**8.0**	**35.4**	**56.7**
Henan	6.1	23.2	70.7		7.4	25.2	67.4
Hubei	5.8	32.7	61.5		6.3	42.7	51.0
Hunan	3.4	34.0	62.6		10.1	41.6	48.3
Shanxi	3.2	25.7	71.1		4.3	30.2	65.5
Jiangxi	6.8	37.0	56.2		7.2	41.7	51.1
Anhui	11.7	30.0	58.3		12.4	30.9	56.7
Southwest	**11.8**	**41.2**	**47.0**		**16.1**	**45.7**	**38.2**
Chongqing	6.2	43.4	50.4		8.6	48.6	42.8
Sichuan	8.4	41.4	50.2		13.1	44.7	42.2
Guizhou	21.4	39.7	38.9		25.2	42.1	32.7
Yunnan	17.6	45.3	37.1		25.1	49.0	25.9
Guangxi	5.4	36.0	58.6		8.4	44.3	47.3
Northwest	**23.3**	**33.2**	**43.6**		**27.8**	**35.8**	**36.4**
Inner Mongolia	7.7	31.7	60.6		7.1	36.7	56.2
Shaanxi	9.6	27.4	63.0		11.1	29.0	59.9
Gansu	20.9	28.7	50.4		27.6	29.5	42.9
Qinghai	32.5	34.4	33.1		35.6	35.9	28.5
Ningxia	19.5	30.3	50.2		33.3	36.3	30.4
Xinjiang	9.1	46.2	44.7		10.2	54.6	35.2
Tibet	63.5	33.4	3.1		69.7	28.4	1.9

Regional figures are unweighted averages. Computed from Asian Development Bank (2004)

Table 13: Access to Infrastructure by Rural Households in 2000

	All Sampled Households			Households with per capita consumption expenditure less than 860 yuan		
	<2 km away from nearest:		Households with access to safe drink-ing water (in percent)	*<2 km away from nearest:*		Households with access to safe drink-ing water (in percent)
	primary school	medical clinic		primary school	medical clinic	
National	**86**	**65**	**65**	**87**	**57**	**58**
Metropolis	**73**	**75**	**98**	**100**	**68**	**95**
Beijing	83	71	98	100	50	93
Tianjin	97	75	97	100	85	96
Shanghai	40	78	99	--	--	--
Northeast	**89**	**70**	**83**	**86**	**63**	**86**
Liaoning	92	74	91	88	65	92
Jilin	88	68	84	86	64	89
Heilongjiang	88	67	75	83	60	76
Coast	**91**	**72**	**73**	**81**	**51**	**72**
Hebei	98	78	87	98	72	85
Jiangsu	86	78	83	86	83	83
Zhejiang	80	72	75	100	50	67
Fujian	95	76	55	50	50	53
Guangdong	92	77	72	50	0	67
Hainan	96	47	68	100	38	78
Shandong	87	76	74	83	63	68
Central	**91**	**68**	**59**	**91**	**66**	**56**
Henan	97	74	57	96	71	54
Hubei	76	57	49	91	56	45
Hunan	87	68	52	80	53	32
Shanxi	95	68	75	92	62	71
Jiangxi	96	69	54	91	70	62
Anhui	94	74	66	94	81	71
Southwest	**80**	**54**	**47**	**77**	**48**	**37**
Chongqing	73	59	42	69	48	26
Sichuan	79	62	55	78	54	45
Guizhou	75	51	30	70	46	21
Yunnan	85	44	52	83	39	44
Guangxi	86	52	55	84	55	50
Northwest	**82**	**51**	**54**	**86**	**46**	**51**
Inner Mongolia	74	39	77	89	39	86
Shaanxi	94	68	53	95	59	52
Gansu	88	59	45	84	51	38
Qinghai	78	41	53	72	38	55
Ningxia	95	70	67	100	55	53
Xinjiang	77	42	73	83	31	68
Tibet	65	40	9	77	50	5

Regional figures are unweighted averages. Computed from Asian Development Bank (2004)

early start in industrialization was consolidated, making these provinces the part of China that most resembled the Soviet Union in industrial organization and production structure. In the national ranking of GDP per capita (after omitting the three metropolises) Heilongjiang and Liaoning ranked first and second, respectively, in 1978 and ranked seventh and fifth, respectively, in 1998. Heilongjiang and Liaoning are *the traditionally rich provinces*.

3. *The coastal provinces* are Hebei, Shandong, Jiangsu, Zhejiang, Fujian, Guangdong, and Hainan (Hainan was separated from Guangdong in 1988). These seven provinces have 82 percent of their population living within 100 kilometers of the sea or navigable rivers. They have grown the fastest of these six groupings in the 1978–98 period, at an annual average of 10.7 percent. The result is that Zhejiang and Guangdong have soared to the top of the GDP per capita ranking (omitting the metropolises), from fourth and sixth, respectively, in 1978 to first and second, respectively, in 1998. Zhejiang and Guangdong are the archetype of *the nouveau riche provinces*.

4. *The central provinces*, through which the plain runs relatively unimpeded from the north of the Yellow River to the south of the Yangtze River, are Shanxi, Henan, Anhui, Hubei, Hunan, and Jiangxi. The temperature and rainfall make this region the agricultural heartland of China, which explains why its population density is almost twice that of the northeastern and southwestern regions. The two large rivers and their many tributaries endow 57 percent of the population with easy water transportation. The Yangtze Valley between Wuhan and Shanghai has the industrial potential of the Rhone Valley, possibly, multiplied several times.

5. *The northwestern provinces* of Inner Mongolia, Shaanxi, Ningxia, Gansu, Qinghai,

Xinjiang, and Tibet are truly isolated. The center of the land mass is 1,400 kilometers from the coast. This region is more arid and steeper compared to the four previous groupings, and it is marked by desert on its western and northern borders. Furthermore, 5 percent of the land has a slope of greater than 10 degrees compared to 2.5 percent of the land in the northeastern, coastal, and central provinces. The general lack of water makes agriculture in the region difficult, and only 8 percent of the land is arable, which helps explain why it had the lowest population density in China in 1998: 46 persons per km^2 versus 126 persons per km^2 in the southwestern region, which had the next-lowest population density. A large number of the region's residents are of Turkic origin and are practicing Muslims.[16] The Han people are in the minority in Xinjiang and Tibet.

6. *The southwestern provinces* of Sichuan, Yunnan, Guizhou, and Guangxi have rainfall and temperature conditions that are ideal for crop cultivation, but they suffer from being too mountainous. The average elevation is 1,428 meters, the average slope is 5.2 degrees, and 14 percent of the land has a slope of greater than 10 degrees. The proportion of arable land of 10 percent is barely above that of the arid northwestern provinces. Since they lack the mineral resources of the northwestern provinces, the southwestern provinces had the lowest GDP per capita in 1978, and have had the lowest growth rates in the period of market-oriented reform. A significant proportion of the population belongs to non-Han ethnic groups.

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[16] In the 1950s, 3.5 million of Xinjiang's population of 5 million were Muslims Uighurs, with Han Chinese accounting for less than 200,000. It is estimated that 6 million Han Chinese have settled there since then, bringing the total population to about 16 million in 1994, with 62 percent belonging to non-Han ethnic groups. Data are from "Wang Enmao, 87, Who Ruled a Rebellious Chinese Province," *New York Times*, 23 April 2001, and "Xinjiang's Minorities Feel Torn between Desire for Independence, Benefit of Economic Reform," *Asian Wall Street Journal Weekly*, 5 September 1994.

Table 11 through 13 permits two major conclusions about rural poverty. The first is that the extent and depth of rural poverty differs drastically across provinces, and that a classification of poverty by its key features fits quite well with the six provincial groups identified earlier. The highest incidence of poverty is in the Northwest (11.8 percent) and Southwest (5.8 percent). Incidence of poverty is less than 1 percent in Metropolis and Coast, 2.9 percent in Central and 3.6 percent in Northeast. The poverty in the Northwest and Southwest is so much more pervasive than in the rest of the country that these two groups of provinces contained 63 percent of the poor in 2001 even though their population share was only 29 percent.

Since the average rural income in 2000 was lowest in the Northwest and the Southwest, it means that the rural poverty there is also likely to be deeper than in the rest of the country. This greater depth of poverty in the western provinces has been true at least since 1996.[17]

The second major conclusion is that at least part of the poverty across provinces could be explained by differences in human capital formation and in access to basic infrastructure. For households with per capita consumption expenditure of less than 860 yuan in 2000, the illiteracy or semi-literacy rate was 27.8 percent in Northwest, 16.1 percent in Southwest, 10 percent in Metropolis, about 8 percent in Coast and Central, and 3.6 percent in Northeast. The proportion of poor households that went beyond primary education was about 37 percent in the Northwest and Southwest, and about 60 percent in the other four provincial groups. Human capital formation was just lower in the western provinces which reflected both as a cause and as an effect of the more pervasive and deeper poverty there – low skills led to low productivity and hence low income, while low income meant reduced ability to pay the school fees of the children.

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[17] See Annex 1, Tables 7,8,10 and 11 in World Bank (2001).

There is also regional disparity in the access that the poor have to healthcare. About 47 percent of the poor in Northwest and Southwest live less than 2 kilometers from a medical clinic compared with 51 percent in Coast and about 65 percent in Northwest, Central and Metropolis. However, distance from a medical clinic is a grossly inadequate measure of the quality of healthcare available — it is more the case of more simple medical clinics in the Northwest and Southwest and more full-service hospitals in the Metropolis and Coast. This is why in "richer area, such as around Shanghai or the coast, health indicators are as good as they are those in many western countries. In western China, they are those of a basket of a basket-case country."[18]

This disparity in healthcare across provincial groups can also be seen in the access to safe drinking water by the rural poor. 37 percent had access in Southwest, 51 percent in Northwest, 56 percent in Central 72 percent in Coast, 86 percent in Northeast, and 95 percent in Metropolis.

Substantial disparity in regional incomes is a reality in every geographically large country, and the causes of the disparity are numerous and complex. The enduring character of many cases of regional backwardness is also a reality, for example, the Appalachians in the United States, Chiapas in Mexico, and Madura in Indonesia. The persistence of regional poverty has led many prominent social scientists to see the primary causes of entrenched regional poverty to be interrelated in a self-reinforcing manner. Sociologists talk about the culture of poverty. Psychologists highlight the absence of the drive to achieve. And economists explicate the working of local dynamics that produce multiple equilibria, with the "low-income trap" being one of the stable outcomes.[19]

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[18] "Where are the patients?' *The Economist*, August 21, 2004, pp. 21.
[19] Sachs, McArthur, Schmidt-Traub, Kruk, Bahadur, Faye, and McCord (forthcoming).

Natural scientists too have their own discipline-based explanations for spatial inequality in economic development. The most well-known recent example is *Guns, Germs and Steel* by physiologist Jared Diamond (1997). One of Diamond's main arguments is that many types of innovation (especially those in agriculture and construction) are not transferable across ecological zones. Biological endowments certainly matter, presence of malaria inhibits investment just as much as excessive state regulation.

There is clearly no shortage of explanations for regional disparity and its sometimes centuries-long durability. This surfeit of views is suggestive of inadequate understanding about this phenomenon and of confusion about what to do about it. What is clear, however, is that the successful development strategies of some provinces cannot produce the same salubrious results when implemented in other provincial settings. When China opened some coastal pockets for foreign direct investment (FDI), the Special Economic Zones (SEZs) and their variations in the other parts of the coastal provinces quickly turned into magnets for FDI and created wealth on an unprecedented scale at an incredible speed. However when the interior provinces were allowed, beginning in 1999, to extend many of the SEZ-type preferential treatment of FDI, the increase in FDI inflow to the inland provinces has not been impressive. The specific lesson in this case is that the time-tested effective poverty-reduction policy package for a coastal province, and minor modifications of it, are unlikely to work for an interior province. *An effective poverty-reduction strategy has to be, in short, circumstance-specific.*

Section 5: State Programs to Reduce Rural Poverty

From 1986 to 2001, the central government provided special poverty relief funds through national organizations like the Agricultural Bank of China, Ministry of Finance and the State

Planning Commission to "national poverty counties" it identified. Every province was also required to designate "provincial poverty cities" and dispense fiscal support to them. In 1988, there were 328 national poverty counties and 370 provincial poverty counties. When the government launched a campaign in 1993 to end poverty, the number of national poverty counties was expanded to 592.[20] Because economic growth differed greatly across provinces, the government in 2001 reshuffled the geographical designation of national poverty counties while keeping the total at 592. For example, in 1993, Fujian had 8 national poverty counties, Guangdong 3, Sichuan-Chongqing 43, and Hunan10; and the respective numbers in 2001 were 0, 0, 50 and 20. The government also sought in 2001 to improve the efficacy of its anti-poverty programs by adding village targeting and reducing county targeting.

The four possible most well-know anti-poverty programs are:

1. *subsidized loan program* was started in 1986 to mobilize rural entrepreneurship and create more jobs. This program has undergone several changes in operational priorities over the years, and the most recent emphasis is the expansion of micro-credit mechanisms. There are two tradeoffs in this program: (i) lending to poor households to expand agricultural activities versus lending to rural enterprises to create jobs; and (ii) lending to the poorest households versus ensuring a high repayment rate.

2. *food/cash for work program* is a public works program to build rural infrastructure (like roads, canals, reservoirs) with the surplus agricultural labor.

3. *budgetary development fund* to raise the productive capacity of counties that are too poor to invest in key infrastructure to overcome production bottlenecks. Many education and medical projects qualify for funding from this source.

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[20] Park, Wang and Wu (2002) examined these two rounds of national poverty county designation and concluded that the designations were strongly influenced by political considerations (e.g. former revolutionary base) and were only weakly correlated with income levels.

4. *compulsory education project* was initiated in 1996 to expand the reach of primary and secondary education e.g. building schools, purchasing equipment, training teachers.

In response to the evident slow-down in rural poverty reduction since about 1998, the poverty alleviation funds provided by all the levels of governments have increased substantially. Tables14 and 15 give some information on thee type of poverty funds from 1986 to 2001, and its breakdown by different program and sector. The main obstacle to assessing the effectiveness of anti-poverty programs in China is the unavailability of proper data. Jalan and Ravallion (1998) and Park, Wang and Wu (2002) have shown that the state-designated *national poor counties*, which receive special poverty relief funds from these anti-poverty programs, have higher growth rates in per capita consumption and per capita net income compared to the than non-designated poor counties.

However, Yue, Li and Wang (2003) have argued that it remains unclear that these anti-poverty programs really help the poor, and, thereby, reduce rural poverty. Their skepticism is based on an analysis that decomposed the poverty index into chronic and transitory components at the household level, and then linked these to the many factors (e.g. amount of poverty funds received by counties where the households resided) that are believed to affect the depth and extent of poverty. Yue, Li and Wang (2003) did not uncover any evidence that the state's anti-poverty funds had attenuated poverty at the household level.

In another study, Yue and Li (2004) found that the anti-poverty funds reach their designated targets less and less as the funds go lower and lower down the administrative level. In short, the central government could distribute the anti-poverty funds according the incidence of poverty and the number of the poor in each province, but when the provinces many times do not follow the same criteria when passing these funds on to the counties. For example, in a few

Table 14. Poverty Alleviation Funds by Central Government
(Unit: million Chinese Yuan)

Year	Subsidized Loan	Development Funds	Food for Work Funds	Aggregate	Previous year =100
	(In current price)				
1986	2,900	1,000	900	4,800 -	
1987	3,000	1,000	900	4,900	102.1
1988	3,050	1,000 -		4,050	82.7
1989	3,050	1,000	100	4,150	102.5
1990	3,050	1,000	600	4,650	112
1991	3,550	1,060	1,800	6,410	137.8
1992	3,550	1,120	1,600	6,270	97.8
1993	3,550	1,180	3,000	7,730	123.3
1994	4,550	1,240	4,000	9,790	126.6
1995	4,550	1,300	4,000	9,850	100.6
1996	5,500	1,300	3,000	9,800	99.5
1997	8,450	2,815	4,000	15,265	155.8
1998	10,000	3,315	5,000	18,315	120
1999	12,532	3,640	5,424	21,597	117.9
2000	12,028	4,075	5,071	21,173	98
2001	10,586	4,416	5,062	20,063	94.8
	(In 2000 constant price)				
1986	9,017	3,109	2,798	14,924 -	
1987	8,693	2,898	2,608	14,199	95.1
1988	7,439	2,439 -		9,879	69.6
1989	6,305	2,067	207	8,578	86.8
1990	6,115	2,005	1,203	9,323	108.7
1991	6,883	2,055	3,490	12,429	133.3
1992	6,469	2,041	2,916	11,426	91.9
1993	5,640	1,875	4,766	12,282	107.5
1994	5,825	1,588	5,121	12,534	102.1
1995	4,975	1,421	4,373	10,769	85.9
1996	5,552	1,312	3,029	9,893	91.9
1997	8,298	2,764	3,928	14,991	151.5
1998	9,899	3,282	4,950	18,131	120.9
1999	12,583	3,655	5,446	21,683	119.6
2000	12,028	4,075	5,071	21,173	97.6
2001	10,512	4,385	5,026	19,923	94.1

Notes: Data in current prices come from World Bank (2001) p. 43 for years 1986
 through 1998, and from Poverty Monitoring Survey for years after 1998. Data
 in 2002 in constant prices are derived as figures in current prices divided by
 consumer price index.

Table 15. The use of poverty funds by sector, 1998-2000

Sectors	Amounts of funds (Unit:10 thousand Yuan)			Share (Unit:%)		
	1998	1999	2000	1998	1999	2000
1. Agriculture	806,196	1,037,070	984,088	42.9	46.3	45.6
Of which: Farming	378,752	497,829	471,069	20.1	22.2	21.8
Forestry	86,169	105,179	100,660	4.6	4.7	4.7
Farming of animals	264,888	330,766	293,390	14.1	14.8	13.6
Fishing	16,912	33,538	24,940	0.9	1.5	1.2
2. Manufacturing	299,768	385,606	321,517	15.9	17.2	14.9
Of which: Manufacturing of agricultural goc	92,351	141,452	118,419	4.9	6.3	5.5
3. Transportation	125,694	133,177	143,816	6.7	5.9	6.7
4.Trade, restaurants, services	20,020	26,114	27,510	1.1	1.2	1.3
5.Education and health care	76,594	75,760	76,366	4.1	3.4	3.5
6.Other	552,327	580,561	604,648	29.4	25.9	28
Of which: land improvement	204,567	223,371	199,406	10.9	10	9.2
Water conservation	97,002	93,740	111,287	5.2	4.2	5.2
Construction of roads	91,229	90,667	99,840	4.9	4.1	4.6
Technical training	15,781	18,740	24,543	0.8	0.8	1.1
Total of investment funds	1,880,599	2,238,287	2,157,945	100	100	100

Source: Poverty Monitoring Survey conducted by National Bureau of Statistics (NBS).

provinces, the funds were given to counties without taking into account the poverty measures of the counties. Inept targeting of anti-poverty funds might be an important reason why Yue and Li (2004) could not find a link between the amount of subsidized loan and the per capita income at the household level.

Findings like those of Yue, Li and Wang (2003) and Yue and Li (2004) lend support to one widely-held view in China that the existing anti-poverty programs benefited the wealthy living in the poor areas rather than the poor living in the poor areas.

Section 6: Rising Urban Poverty as a New Phenomenon

Poverty has generally been perceived as a rural phenomenon in China. Until the mid-1990s, the topic of urban poverty was scarcely mentioned in the literature. Since 1995, however, the accelerated restructuring of state-owned enterprises and collectively-owned enterprises has led to millions urban workers being laid off. Because the reform of the social security system has lagged behind the reform of the state enterprises, there has been a rapid rise in the number of poor people in urban areas in the end of 1990s.

The Asian Development Bank (2001) has estimated that the urban poverty rate was 4.7 percent in 1998. Li Shi (2002) used a household survey that covered 13 cities to compute an urban poverty rate of 5.9 percent in 1999.

The urban poverty lines used in the Asian Development Bank (2001) differ from those of the National Bureau of Statistics, which are called the *dibao* lines (low-income support lines). Table 16 documents the difference between the *dibao* lines and those suggested by the ADB. Of the 30 provincial capital cities, 23 have *dibao* lines lower than the poverty line estimated by ADB. Most cities would prefer to adopt a low poverty line because a higher line means a higher

Table 16. Dibao lines and estimated poverty lines by ADB in provincial capital cities in 2000
(unit: yuan)

city	Dibao line	ADB poverty line	city	Dibao line	ADB poverty line
Beijing	3360	3120	Zhengzhou	2028	2508
Tianjin	2892	2916	Wuhan	2340	2424
Shijiazhuang	2184	2712	Changsha	2400	2484
Taiyuan	1872	1896	Guangzhou	3600	4224
Huhot	1716	2148	Nanning	2196	2952
Shenyang	2340	2124	Haikou	2652	2496
Changchun	2028	2052	Chengdu	1872	2748
Harbin	2184	1896	Chongqing	2028	2616
Shanghai	3360	3648	Guiyang	1872	2028
Nanjing	2160	2976	Kunming	2184	3024
Hangzhou	2640	3420	Lhasa	2040	2232
Hefei	1980	2280	Xian	1872	2640
Fuzhou	2400	2160	Lanzhou	1872	1608
Nanchang	1716	1752	Xining	1860	1668
Jinan	2496	3012	Urumqi	1872	3024

Notes: The figures are calculated based on Table 8 in Urban Poverty in PRC (p67) by ADB.

proportion of people in poverty, and, hence, more state expenditure have to used on poverty reduction, a fiscal burden that provincial governments would wish to minimise.

Table 17 compares two measures of urban poverty rate in 1998 under the income standard and under the expenditure standard. Nearly 15 million of urban people are identified as the poor and the poverty rate incidence is estimated to be 4.7 percent when the income measure is applied. The headcount of the poor increases to 37 million and the poverty rate to nearly 12 percent when the consumption measure is applied instead. This is the point made earlier that the extent of poverty depends crucially on the choice of whether income or consumption is the proxy for welfare.

We will use the income measure in our exposition.

When we view urban poverty spatially, we find that it differs from rural poverty in one significant aspect. The 1998 urban poverty rate in Southeast (4.2 percent) was lower than in Northwest (6.8 percent) and Center (5.4 percent). The biggest pockets of urban poverty still remained in western China, however. The Northwest had a 8.2 percent urban poverty rate, with it being 13.5 percent in Ningxia, 11.2 percent in Shaanxi, and 11.3 percent in Tibet.

The spatial distribution of poverty reveals one common factor behind the pervasive urban poverty in Ningxia, Shannxi, Henan, Shanxi, and the three Northeastern provinces, which is that these particular provinces were allocated a large number of big industrial projects during the central planning period. The decision to locate them in these provinces was based on strategic and political considerations, and, sometimes, for bureaucratic convenience. For example, the expectation about possible conflict with the United States and its allies led to the Third Line industries being established in many interior provinces.

Table 17. Urban Poverty incidence across provinces in China, 1998

Province	Headcount of the poor ('000)		Poverty rate (%)	
	Income measure	Expenditure measure	Income measure	Expenditure measure
Urban China	*14,770*	*37,072*	*4.73*	*11.87*
Metropolis	*728*	*1,975*	*3.25*	*8.81*
Beijing	54	422	0.73	5.64
Tianjin	360	969	6.77	18.23
Shanghai	314	584	3.24	6.02
Northwest	*3,157*	*6,421*	*6.75*	*13.73*
Liaoning	1,150	2,383	6.13	12.7
Jilin	853	1,295	7.54	11.44
Heilongjiang	1,154	2,743	6.92	16.46
Coast	*2,669*	*9,441*	*2.76*	*9.76*
Hebei	651	2,010	5.20	16.04
Jiangsu	244	1,298	1.20	6.4
Zhejiang	153	463	1.62	4.89
Guangdong	154	244	0.68	1.07
Fujian	145	319	2.18	4.78
Hainan	150	418	7.94	22.09
Shandong	1,172	4,689	5.05	20.19
Center	*4,060*	*10,145*	*5.38*	*13.44*
Shanxi	596	1,637	7.17	19.69
Jiangxi	310	1,261	3.42	13.92
Anhui	348	1,060	2.89	8.8
Henan	1,410	3,088	8.39	18.38
Hubei	934	1,763	5.67	10.71
Hunan	462	1,336	3.61	10.44
Southwest	*1,702*	*3,729*	*4.16*	*9.12*
Guangxi	246	620	3.01	7.59
Chongqing	260	548	4.09	8.62
Sichuan	711	1,102	4.72	7.31
Guizhou	260	864	5.00	16.65
Yunnan	225	595	3.69	9.73
Northwest	*2,454*	*5,361*	*8.19*	*17.90*
Tibet	39	65	11.31	19.05
Shaanxi	932	1,567	11.95	20.08
Gansu	304	792	6.44	16.77
Qinghai	76	131	5.63	9.76
Ningxia	210	403	13.51	25.91
Xinjiang	383	625	6.16	10.06
Inner Mongolia	510	1,778	6.40	22.3

Source: ADB, Urban Poverty in PRC, p34 rearranged and added group numbers

When the market mechanism was increasingly used after 1998 as the resource allocation mechanism, and economic institutions were steadily transformed to be compatible with the growth of a modern market economy, most of the plan-subsidized industrial enterprises in the Northeast and the interior provinces were rendered non-viable economically even after massive layoffs and changes in ownership structure. The enterprises were in the wrong places, and, even for those correctly sited, they had ownership and operational structures that militated against quick, smooth adjustments to the fast-emerging market economic system. In short, *a large proportion of urban poverty in the legacy of China's central planning past*.

Table 18 reports the poverty rate according to gender and age. On the whole, there is no significant gender difference in poverty incidence. There is however a moderate variation in poverty incidence across age groups. Urban poverty is more likely to occur in the young age groups and the oldest age group. The oldest group has a higher incidence of poverty largely due to a very high incidence among females in the group. We note that the age groups 21-25 and 51-55 have unusually low poverty rates, and we think that these two age groups are likely to be two generations in the same household. With two generations employed at the same time, the low dependency ratio will reduce the poverty rate in each of the two age groups.

Figure 2-1 shows that the amount of *dibao* funds dispensed has been rising at an accelerating pace since 1998: from 1.2 billion yuan in 1997 and 1998 to 2.0 billion yuan in 1999, 3.0 billion yuan in 2000, 5.4 billion yuan in 2001, 10.5 billion yuan in 2002, and 15.1 billion yuan in 2003. This accelerating pace the result of the fast-growing urban poverty caused by the further restructuring of state-owned enterprises and of the overall growth slowdown during this period. This large growth in the number of urban poor receiving *dibao* funds is displayed in Figure 2-2: there were 1.8 million recipients in 1998, 2.7 million in 1999, 4.0 million in 2000,
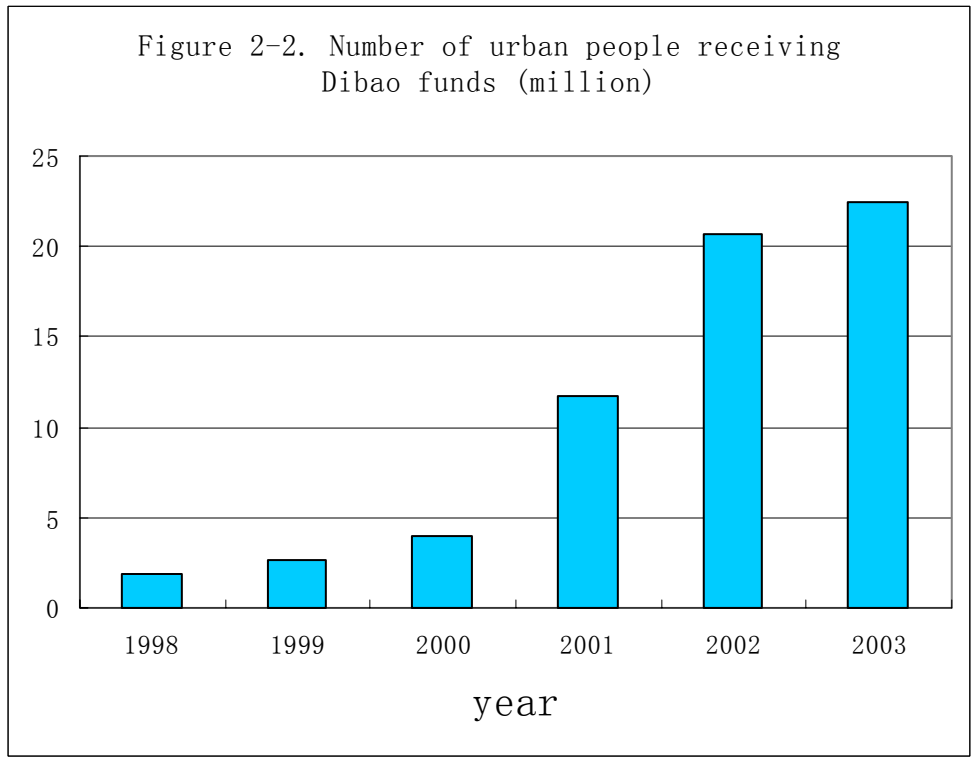
Table 18. Urban Poverty Incidence: Gender and Age Group (1999)

Age group	Poverty incidence (%)			Proportion to average (%)		
	Whole sample	Male	Female	Whole sample	Male	Female
Under 7	7.41	8.26	6.54	100	111	88
7-15	7.62	7.65	7.59	100	100	100
16-20	7.13	6.38	7.89	100	89	111
21-25	3.4	2.28	4.08	100	67	120
26-30	6.83	6.23	7.4	100	91	108
31-35	6.69	6.8	6.6	100	102	99
36-40	6.6	5.34	6.5	100	81	98
41-45	7.36	6.8	7.91	100	92	107
46-50	5.33	5.75	4.94	100	108	93
51-55	3.19	3.63	2.74	100	114	86
56-60	4.55	5.23	3.85	100	115	85
61-65	2.07	0.72	3.15	100	35	152
66-70	4.27	2.74	6.28	100	64	147
71 and over	7.49	3.9	11.21	100	52	150
Whole sample	5.88	5.49	6.25	100	93	106

Source: Li Shi (2001)
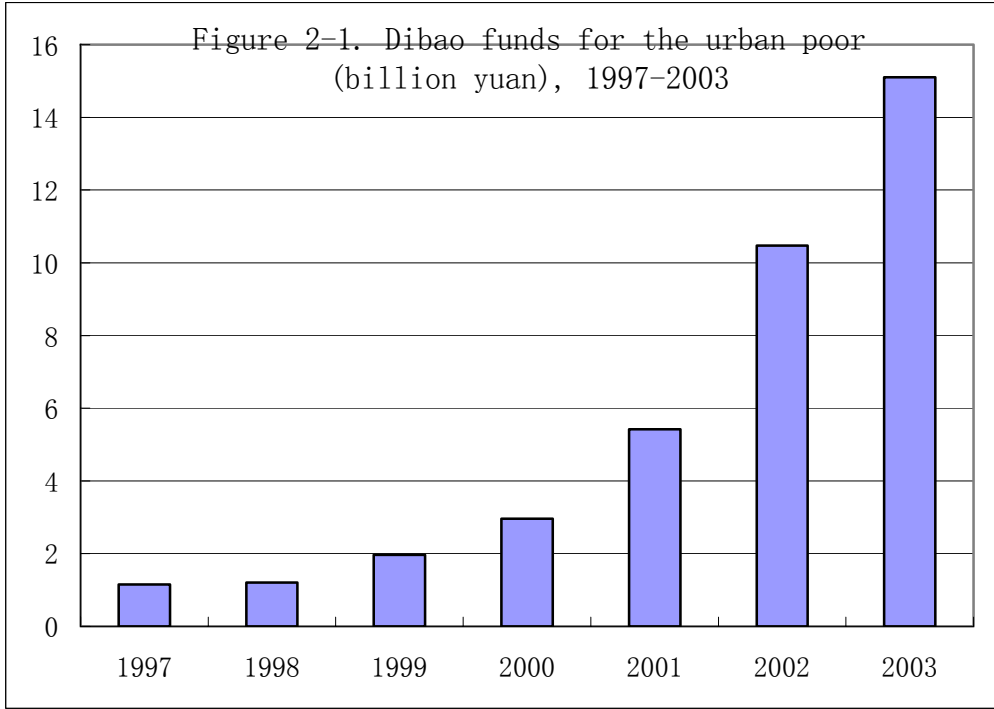
Figure 2-1. Dibao funds for the urban poor (billion yuan), 1997-2003

Source: Annual Report of Civil Affairs in China, 2003.

Figure 2-2. Number of urban people receiving Dibao funds (million)

year

Source: Annual Report of Civil Affairs in China, 2003.

11.7 million in 2001, 20.7 million in 2002, and 22.5 million in 2003.

Section 7: Conclusions: New Thinking and New Policy Tools to Address Poverty

Tables 19 through 21 document some characteristics of poor households that are important to the formulation of an effective poverty reduction program. Table 19 shows the incidence of poverty among urban residents delineated by their employment status and health condition. Table 21 compares the life situation of three groups (a) the extremely poor who earns less than US$0.50 daily, (b) the fairly poor who earns between $0.50 to $1.00 daily, and (b) the non-poor who earns more than $1.00 daily. Table 21 details the sources of income for rural households broken down by income groups. We see five important characteristics in these three tables that suggest a number of corrective policy actions.

The first observation is that the proportion of unhealthy people who are poor is significantly higher than the proportion of healthy people who are poor,[21] and that the poor people have worse health than the non-poor.[22] We see a possible health-income vicious circle at work. One side of the circle is that people fall sick, incur expenses that thrust them into debt, possibly lose their jobs because of sickness-induced low performance or absenteeism, and finally sink into poverty. The other side is that poor people cannot afford the required medical care and preventive screening, and fall sick more frequently (and, possibly also become sick more seriously) compared to the non-poor.[23] Poverty reduction will require external financial intervention to break this health-income vicious circle.

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[21] For example, Table 19 shows that among the urban unemployed, 50 percent of the unhealthy individuals are poor while only 19 percent of the healthy are poor.

[22] Table 20 tells us that 5.5 percent of the extremely poor suffer bad health compared to 5.4 percent of the fairly poor, and 4.8 percent of the non-poor.

[23] In Table 20, the extremely poor spent 12.7 yuan on medical care while the non-poor spent 129.7 yuan even though the former is in worse health.

Table 19. Urban Poverty Incidence: Health and Employment Status (1999)

Employment status	Poverty incidence (%)			Proportion to average (as 100%)		
	Whole sample	Healthy	Not Healthy	Whole sample	Healthy	Not Healthy
1.Working or employed	3.6	3.47	8.61	100	96	239
2. Retired	3.33	3.06	4.3	100	92	129
3.Waiting for jobassignment	12	11.52	25	100	96	208
4. Laid-off	23.02	22.3	31.43	100	97	137
5. Unemployed	20.87	18.69	50	100	90	240
6. Earlier retired	5.42	4.14	14.29	100	76	264
7.Full-time homemaker	17.86	16.75	21.82	100	94	122
8.Disabled, injured or had chronic disease	26.19	--	26.19	100	--	100
9.Full-time student	7.06	7.1	0	100	101	0
Whole sample	5.88	5.56	9.64	100	95	164

Source: Li Shi (2001)

Table 20: Characteristics of rural households at different income groups, 2002

	Income <US$0.50 *Extremely Poor*	US$0.50< Income <US$1,00 *Fairly Poor*	Income >US$1.00 *Non-Poor*
Average age of the heads of households	46.4	47.0	46.3
Average family size (person)	5.1	4.8	4.0
The number of workers per household (person)	2.9	2.8	2.5
Average educational years of adults (year)	6.3	6.3	7.0
Proportion of people with bad health condition (%)	5.5	5.4	4.8
Proportion of people suffering from deformity or amentia (%)	2.0	1.8	1.3
Mean of medical expenses per capita (yuan)	12.7	27.6	129.7
Mean of educational expenses per capita (yuan)	44.0	49.0	174.0
Proportion children who drop out because the family cannot afford the cost of keeping the children in school (%)	33.3	23.1	7.8
Irrigated land per capita (Mu)	0.5	0.6	0.7
Dry land per capita (Mu)	0.9	0.9	0.8
Fixed productive assets per capita (yuan)	681.5	825.6	1,266.7
Proportion of agricultural income in total income (%)	74.7	68.7	54.2
Proportion of children dropping out in total of children aged 7-16 (%)	8.1	6.7	5.6
Proportion of household members living in mountainous area (%)	40.9	35.9	19.8
Proportion of minority peoplem (%)	23.2	20.9	12.5
Proportion of people who live counties that are designated nationally poor counties (%)	45.4	41.2	20.2
Proportion of people with access to road (%)	96.5	92.8	96.6
Proportion of people with access to electricity (%)	100.0	99.4	99.8
Proportion of people with access to telephone (%)	89.0	89.5	96.0
Proportion of people with access to elementary school (%)	94.0	86.1	80.3
Proportion of people with access to middle school (%)	6.7	9.7	10.2
Proportion of people with access to clinic (%)	95.8	88.5	90.8

Source: Authors' calculation based on the Chinese Household Income Distribution
   Project in 2002 (CHIP2002).

Table 21: Rural Household per capita Income by Source and Decentile Income Category

Decentile of income distribution	Share of per capita Income According to Source (%)			
	Wage *Non-agriculture*	Family Business *Agriculture*	Property	Transfer
1	29.72	65.10	0.18	5.00
2	28.30	67.15	0.04	4.51
3	30.14	65.88	0.10	3.88
4	29.89	65.41	0.26	4.45
5	33.06	62.23	0.22	4.48
6	33.73	62.03	0.29	3.95
7	34.55	60.19	0.35	4.91
8	33.10	62.13	0.28	4.41
9	42.68	51.36	0.98	4.98
10	45.01	47.66	1.58	5.74

Source: Authors' calculation based on the Chinese Household Income Distribution
  Project in 2002 (CHIP2002).

The second observation based on Tables 19 and 20 also suggests another vicious circle in operation, an education-income vicious cycle that operates across generations. The extremely poor spent less on their children's education than the non-poor (44 versus 174 yuan), and one explanation for this is that fewer of the children from extremely poor families attended school, the drop-out rate being 8.1 and 5.6 percent respectively. Of the children who dropped out, 33.3 of the extremely poor children could not afford the school fees compared to 7.8 percent of children from non-poor families. Breaking this education-income vicious circle will also require external financial intervention.

The third observation is an unsurprising one: urban poverty is concentrated among the people not working (waiting for new assignment, laid-off, unemployed) and among the people in bad health. So policies that increase the growth rate of net business formation, introduce unemployment insurance, and improve the coverage of the healthcare system will reduce urban poverty. Even though Table 19 does not show a high incidence of poverty among the retired, we think that this situation is not going to persist because the system of state-owned enterprises that provides the backbone of the present pension arrangement will be cut back. It is therefore important that the government acts now to establish a funded nation-wide (or, at least, province-wide) pension scheme to replace the firm-specific retirement plans to pre-empt poverty among future retirees.

The fourth observation is that the more dependent a rural family is on income generated from agricultural activities, the poorer it is. Table 21 shows that the richest decentile of rural households derive 45 percent of its income from non-agricultural activities and 48 percent from agricultural operations, and the respective figures for the poorest decentile are 30 and 65 percent. The two obvious tasks for policy are to move people out from agriculture, and to make

agricultural activities more profitable. The former means creating more industrial and service sector jobs in the province, and helping agricultural workers to migrate to the more industrial provinces. The latter means ending state regulations that suppress the rate of return on agricultural production, and undertaking investments in infrastructure and science that would boost agricultural productivity.

The fifth observation is that more investment in general physical infrastructure would not be unable to lower poverty significantly in some cases. Table 20 shows no large differences across the three income groups in their physical proximity to road, telephone, electricity, school, and clinic. This does not necessarily mean, however, that these facilities have not raised the output potential of the village because what this might reveal instead is that the extremely poor cannot afford to pay the fees to use these facilities. There must hence not only be external financial intervention to build the infrastructure but also external financial intervention, at least over the medium term, to allow free access by the extremely poor to the infrastructure.

In Section 4, we saw a strong correlation between geographical factors and the extent and depth of poverty. It seems natural that the output potential of a region would be affected by its location, topography, climate, water resources, soil quality, and flora and fauna. For example, the only desert countries that are rich are those which have abundant oil deposits and small populations. However, it is also clear that geography need not be destiny. This is certainly the case in the United States. Despite its great geographical diversity, the per capita income in different states have actually been converging to a common income level; or, in technical parlance, there is unconditional convergence of income within the United States. The process of unconditional convergence of income has also been verified for western Europe. So an

important question for poverty reduction in China is whether similar catching-up mechanisms also exist there; and if they do not, then how can China set them up?

The evidence for China from almost all studies is that there is no absolute convergence of income within China. Some of the studies find the existence of conditional convergence instead, which is that China could be described as a collection of regions each with a different long-run equilibrium income level, and provinces within each region are converging to it's own region-specific equilibrium income level. There are, however, also studies, e.g. Démurger, Sachs, Woo, Bao, Chang, and Mellinger (2002), that found no reliable evidence of any kind of income convergence, whether unconditional or conditional. This means that one fundamental issue in reducing poverty in China is to first understand what factors have been impeding income convergence at the national level, and possibly also at the regional level.

For our final set of policy recommendations, we outline a proposal given in Woo (2004) that seeks to accelerate the overall growth rate, strengthen the trickling down mechanism, and reduce poverty directly. Woo's (2004) proposal has four components:

1. programs that strengthen the three mechanisms of income convergence

2. programs that provide infrastructure

3. programs that focus on rural poverty

4. programs that mobilise the universities for growth

Strengthen the three mechanisms of income convergence

The US experience suggest three mechanisms of income convergence:

- free movement of goods (the famous Stolper-Samuelson theorem)

- free movement of people (which allows people to move to locations with higher wages)[24]

- free movement of capital (which shifts production facilities to areas with lower labor costs)

Some of the recommended actions for China are as follows. The authorities must redouble their efforts to eliminate the widespread practice of local protectionism so that the increased physical integration created by additional road, rail and air links will actually result in greater economic integration as well.

The household registration system (*hukou*) system should be revised drastically to ease rural-urban migration, and west-east migration. The political and social concerns that easier internal migration might transform many Chinese cities into massive slums (hence merely replacing desperate rural poverty with equally oppressing urban poverty) are real, but this is a problem that can be addressed satisfactorily. To begin with, migration is a voluntary reversible phenomenon, people would stay in the urban areas only if their lives were indeed better than at their places of origin. Their stay in urban areas is harmful to social welfare only if the government is providing growth-distorting subsidies to the urban population.

Because the receiving cities benefit from the cheap labor inflow, they should pay for these benefits by extending basic urban amenities like education, healthcare, safe drinking water, and police protection to the new migrants. It should also be noted that the reallocation of the rural poor to the cities will greatly reduce the cost of delivering educational and health services to their children, and the pressure on the fragile ecology of the western provinces.

In the short run, in the period when the development of the land market and of the private housing construction industry are still inadequate, the local government should seriously

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[24] This has meant the steady depopulation of agricultural states like North Dakota and the appearance of an increasingly bicoastal country.

consider providing low-cost, well-run public housing to migrants on a means-tested basis. However, before launching such a program, the local government should study the public housing programs in Hong Kong and Singapore that had successfully solved their serious squatter problems and avoided the concrete jungle situation that typify most public housing projects in the United States. And, with the maturation of the land market and the private housing construction industry, the local government can then privatise its public housing stock.

The government should improve the investment financing mechanism in the poor provinces by designating (a) one to two major cities in each province to be sites for experimentation in urban financial system reform, and (b) three to six of the poorest counties in each poor province to be sites for rural financial system reform.[25] The financial system experiment would include market-boosting measures like:

- the deregulation of interest rates for loans to investment projects in the poor provinces.

- the formation of private domestic banks in the financial experiment cities, and in the financial experiment counties, but their lending activities (but not their deposit-taking activities) would be confined to within the poorer provinces.

- the establishment of rural banks should be preceded by a study of the successful *Unit Desa* experience in Indonesia in the last twenty years.

- the branches of the four large state commercial banks (Agricultural Bank of China, Bank of China, China Construction Bank, and Industrial and Commercial Bank) in the financial experiment cities should be detached from their present affiliations and be converted into city banks whose lending activities (but not their deposit-taking activities) are confined to the poorer provinces.

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[25] See Woo (forthcoming) for an account by the absence of adequate financial intermediation in the rural areas has lowered rural investment over time.

- the testing in these poor provinces of a new system of vigorous prudential regulation, risk monitoring, and financial supervision that is more in line with the financial oversight systems in the developed economies.

We should make the precautionary remark, however, that while international experiences indicate that labor tends to flow from the poor regions to the rich regions, they also indicate (unfortunately) that capital has a less reliable tendency to flow from high-wage areas to low-wage areas. In not a small number of cases, capital has actually flowed from low-wage to high-wage areas.[26] In some of these "perverse" cases, this reverse flow could be traced to the already prosperous urban centers being the centers of endogenous growth, where continual technological innovations kept the rate of return to investment high. The implication is that when China's metropolises and other large coastal cities do develop into endogenous growth centers in the future, labor mobility is the only easy solution to raise income of the poor.

However, since China's metropolises and other coastal cities are not yet centers of endogenous growth, the reason for the trickle of capital[27] from the coast to the interior obviously lies elsewhere: in the monopoly state bank system and in the continued existence of loss-making SOEs. By using up a large portion of the private saving deposits in the banking system to prop up the inefficient SOEs, the government has hindered the establishment of new businesses everywhere, including those in the interior provinces. The establishment of financial experiment centers in the poor provinces will offset some of the deleterious effects of the monopoly state bank system had on the development of the interior provinces, especially of their rural areas.

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[26] A glaring example in the international context would be the large net capital inflows to the United States in the last twenty years.
[27] Excluding the recent large capital inflow for infrastructure construction.

Invest in Appropriate Physical Infrastructure

The next five-year plan should incorporate at least the following two sets of infrastructure projects.[28] There should be a concerted effort in railway, road and airport construction to promote the integration of the poorer provinces to the rest of China, and to their neighboring countries.

1. number of railroad bottlenecks to the major coastal cities should be drastically reduced, with special attention to faster train services from Lanzhou-Xian to Beijing-Tianjian, from Chengdu-Chongqing to Nanjing-Shanghai, and from Guizhou-Kunming-Nanning to Guangzhou. The preceding three rail routes should also start offering refrigerated services to enable better integration of the markets for specialised agricultural products from the West

2. The absence of beef exports from Mongolia to meet the rapidly rising demand for more meat in the China's diet is symptomatic of the Cold War heritage of poor linkages between China and it neighbors.   Railroad links between large border cities (e.g. Kashgar, Urumuqi, Kunming, and Nanning) with neighboring countries must be improved so that the inland border provinces can benefit from international trade just as the coastal provinces have been benefiting from it since 1979.

The second set of projects is to reduce production and information bottlenecks in the rural area. The state should invest more in expanding and improving irrigation works, implement a rural electrification program, and establish a rural telephone-internet program. The electrification will allow the use of power tools, increase the number of hours that rural children can spend on their education, and connect the villagers to the information age via television,

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[28] This investment in infrastructure must be backed by adequate cost-benefit analysis so that the policymakers are fully informed of the opportunity costs of each project when setting the sequencing and scale of the projects.

telephone and internet. The availability of electricity will make wireless communications easy when improvements in satellite technology make them economical for use in isolated villages.

Pay special attention to rural poverty

Rural-urban migration should be made easier by improving markets for land leases which will, in turn, permit more efficient farming through consolidation and enlargement of landholdings. Because the industries that move inland from the coast will stop first in the central provinces, agriculture will continue to be the mainstay of the economy of western China. There should therefore be a focus on raising agricultural productivity and demand for the agricultural output of the western region through a combination of measures, including:

- establishment of Agriculture Research Centers in each of the distinct ecosystems of the western region. Research focus on new seed varieties (including agro biotechnology), new approaches to water and environmental management, and new approaches to agricultural mechanization.

- improvement of the local livestock through cross-breeding, and through better access to veterinarian services.

- enhanced agriculture extension services to assist farmers in adopting new technologies.

- development of new processed food products (e.g. new fruit drinks, new vegetable stuffing) from the agricultural products of the western Region. This task could also be assigned to the regional Agriculture Research Centers.

Above all, it is most crucial to increase government funding for education and health in low-income regions to ensure:

- universal education of at least nine years of schooling per child.

- the greater availability of vocational training and adult education.

- safe drinking water in all villages

- access to life-saving interventions, e.g. prevention and treatment for malaria, TB, and AIDS. (International donor support may be available for some of these initiatives, e.g. through the Global Fund to Fight AIDS, TB, and Malaria, known as the GFATM.)

- a comprehensive fight against the AIDS epidemic before it gets out of hand

Mobilise the universities for growth

The universities in the poor provinces should be expanded and upgraded, especially their agricultural, scientific and technical departments. One key emphasis is to increase human capital to expand IT-based service industries, such as software services, data transcription, call centers and so forth, as have been pioneered by landlocked Indian cities such as Bangalore and Hyderabad, e.g. English training, software training.

The universities should adopt incentive schemes to promote university-business partnerships that improve production techniques, and develop new products, especially those that are based on the regional resource base. The state should establish new Scientific Research Laboratories, often in conjunction with the Universities, to address critical problems specific to each rural area. These might include:

- A research center on the development of alternate energy (e.g. wind power and solar power) and of methods that use fuel more efficiently and cleanly (e.g. better methods of burning coal).

- A research center on tropical diseases

- A research center on biodiversity

- A research center on the traditional medicine of the region, especially of the minorities

    The universities in the poor provinces must give high priority given to agricultural development by working collaboratively with the new Agricultural Research Centers proposed earlier to effect technology transfers to rural farmers.

    In conclusion, it needs to be re-emphasized that the causes of poverty are many. The frequent focus on the role of poor governance (e.g. ignorance and corruption) and inappropriate economic institutions (e.g. price controls, *hukou*) is correct but not sufficient. Démurger, Sachs, Woo, Bao, Chang, and Mellinger (2002), for example, have found that geographical factors have been quantitatively just as important as deregulation policies in the growth of the coastal provinces, and yet there have been much fewer discussions about solving the geographic barriers to growth in the interior provinces. Physical capital formation to overcome geographic barriers is however unlikely to be the final nail into the coffin in which poverty would be laid to rest. We believe that only human capital formation can come up with better solutions to the centuries-old problem of poverty because there is still a lot about poverty dynamics that we still need to understand.

    The fact is that, once a market economy is in place, technological advancement is the fundamental engine of sustainable development, and education lies at the heart of the ability to acquire and innovate new technologies. The ultimate prize of development efforts is the successful incubation of four or five centers of endogenous growth in the now backward provinces. If the incubation effort is too ambitious, the next objective is to create sufficient local scientific capacity to hasten the diffusion of new technologies from the coastal provinces and foreign countries to the poor provinces. Even in the worst case scenario, in which neither

technological innovation centers nor technological diffusion centers could be successfully established in the poor provinces, good education and good health would enable individuals who migrate to the coastal provinces to get higher-paying jobs and contribute to the technological progress there. Compared to physical capital formation, human capital formation has a much lower wastage rate because humans can move and bridges and tunnels cannot.

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