# Inclusiveness of Economic Growth in the People's Republic of China: What Do Population Health Outcomes Tell Us?

AJAY TANDON, JUZHONG ZHUANG, AND SOMNATH CHATTERJI

Despite the People's Republic of China's (PRC) remarkable economic growth, improvements in population health outcomes slowed during the reform period. Along with increasing commercialization of the health sector, urban–rural disparities in health have increased; there are large health inequalities between the rich and the poor; and income has become a major constraint to health. Noting the current debate in the PRC on models of the health care system, the paper argues that whatever model is followed, there has to be a greater public sector role in funding basic health care, providing protective health cover to the poor and vulnerable groups, and regulating various actors in the health market. If not, the PRC's growth process risks leaving a large section of its population behind in terms of key development indicators such as health.

## I. INTRODUCTION

The People's Republic of China (PRC) has achieved spectacular economic growth during the past three decades. However, whether or not this growth has been inclusive has become an issue of concern, and increasingly so in recent years. It is widely noted that inequality, especially between urban and rural populations and between coastal and interior provinces, has increased significantly after the PRC embarked on economic reforms in the late 1970s (Ravallion and Chen 2007). Most studies on inequality in the PRC have tended to focus on income inequality. More recently, inequality in other dimensions, especially in health and education, has begun to attract attention (see, for example, Zhang and Kanbur 2005).

This paper focuses on the issue of inclusiveness of growth from the perspective of population health. Health is a key aspect of human welfare and an intrinsic goal of development, as reflected in the prominence of health among the

Millennium Development Goals. The distribution of population health outcomes, namely, average levels of health attainments of a country's entire population (e.g., life expectancy) or its subgroups (e.g., infant mortality and child mortality rates), is a key indicator of the inclusiveness of economic growth (Sen 1998). Arguably, levels and distribution in health outcomes can also serve as proxies for the concern a government has for all its citizens, and for the extent to which a government is pro-poor. Population health outcomes and their distribution are now also an important focus of the PRC government's strategy toward a harmonious society, as reflected in its 11th Five-Year Plan.

This paper attempts to contribute to the discussion and debate on the inclusiveness of the PRC's growth by asking two specific questions regarding population health. First, has spectacular economic growth over the past three decades been accompanied by similar achievements in terms of improvements in population health outcomes? Second, how inclusive have the improvements in health outcomes been? To answer the first question, we compare the PRC's life expectancy outcomes during the postreform period (i.e., post-1978) with those achieved during the prereform period, and compare the performance of the PRC with some of its regional peers. To assess the inclusiveness of improvements in population health outcomes, we examine inequality in health outcomes and health care coverage, and the relationship between health and income using aggregate and micro-level data.

Three key messages emerge from the analysis. Firstly, despite the PRC's remarkable economic growth, the pace of improvements in population health outcomes has actually slowed in the postreform period, that is, after the country moved away from an exemplar public health system to an increasingly commercialized one. Secondly, there has been convergence in health indicators across provinces (i.e., reduced interprovincial inequality in health), but divergence between rural and urban areas (i.e., increased rural–urban inequality in health) during the reform period. Furthermore, there is evidence that the relationship between health and income at the provincial level has strengthened over time. Thirdly, as suggested by evidence from household health survey data, there are glaring disparities in health outcomes and health care coverage between the poor and rich households (and, by association, between rural and urban populations); and income now constitutes a major constraint to achieving better health for households, especially the poorer, and by association, rural households. One key policy implication of these findings is that redressing health-related inequalities must now be a priority for the government. If not, the PRC's growth process risks leaving a large section of its population behind in terms of key development indicators such as health.

## II. HEALTH OUTCOMES FROM HISTORICAL
## AND COMPARATIVE PERSPECTIVES

To examine whether the PRC's spectacular economic growth has been accompanied by similar improvements in population health, we compare its life expectancy outcomes during prereform and postreform periods with those of India, Republic of Korea (henceforth Korea), and Philippines (Figure 1).

For the PRC and India, we have data from as far back as the 1930s, when the two countries started off at very similar levels of population health, and average life expectancies ranged between 25 and 35 years. India gained independence in 1947 while in the PRC, the Communist Party came to power in 1949. Subsequently, for more than three decades, the PRC and India had very similar levels of per capita income, until around the mid-1980s when the PRC had a gross domestic product (GDP) per capita of about US$290 compared with India's US$261 (in constant 2000 US$ terms; see World Bank 2006). However, during the three decades prior to the initiation of reforms in 1978, the PRC's improvements in life expectancy far outstripped those of India. Except for a dip in the late 1950s and early 1960s due to its "Great Leap Forward" and the associated famine, the PRC consistently had life expectancy figures that were 10–15 years higher than those of India. The PRC also outperformed the Philippines in life expectancy by about 5 years during the late 1960s through the mid-1980s, and was at par with Korea, although the average per capita income of the Philippines was 15 times, and Korea four times, higher than that of the PRC during this period (World Bank 2006).

Many attribute the PRC's success in improving health outcomes in the prereform period to the implementation of several effective public health interventions. These included, among others, programs for the elimination of pests such as flies, mosquitoes, and rats; high levels of and wide access to primary health care; and training of a legion of "barefoot" doctors that descended on rural areas (see Hesketh and Zhu 2004). A relatively equitable income distribution was also likely to have been conducive to achieving better population health outcomes during the period.

Figure 1. **Life Expectancy over Time in PRC, India, Korea, and Philippines**
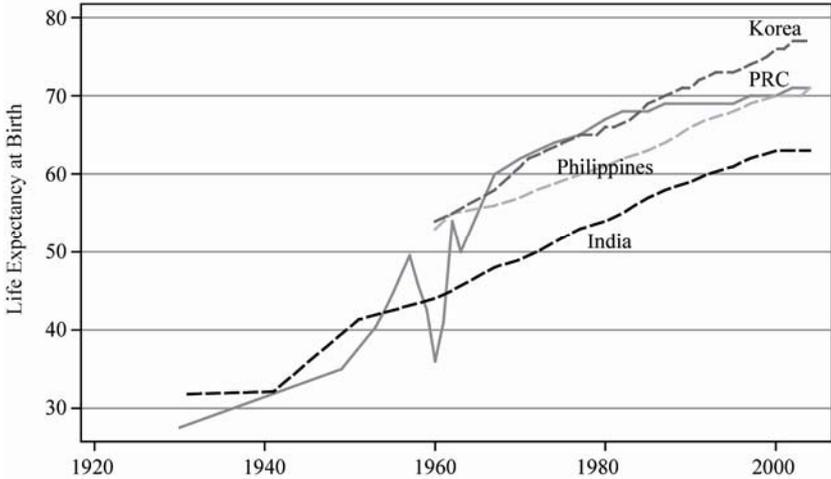


Sources: *World Development Indicators* (World Bank 2006), Banister (1984), and Indiastat (2006).

Figure 1, however, also shows that the pace of growth in the PRC's life expectancy slowed significantly after the initiation of reforms in 1978. Cornia and Menchini (2005) estimated that the PRC's life expectancy grew by 0.80 percent annually in the 1970s. By the 1980s, the pace of growth had slowed to about 0.30 percent per year on average. In the 1990s, it dropped further to an annual rise of about 0.20 percent. In comparison, India, Korea, and Philippines all managed to keep the pace of growth in life expectancy more or less unchanged during the past three decades. As a result, growth of life expectancy in the PRC has gravitated toward the (lower) trajectory of that of the Philippines, instead of following that of Korea's. Sen (2006) estimates that, in the PRC's postreform period, India's pace of improvement in life expectancy has on average been at least three times faster than that of the PRC, resulting in a narrowing of the gap between the two countries. A leveling-off in improvements in other population health indicators such as infant mortality has also been noted in the PRC since the 1990s (Zhang and Kanbur 2005).

It may be argued that the slowdown in the pace of improvement in population health indicators in the PRC is a result of "diminishing returns." From a biological perspective, it gets progressively more and more difficult to raise life expectancy (or to lower infant and child mortality) beyond a certain point. Furthermore, for natural, sociological, or cultural reasons, it is also difficult to actualize health improvements among certain marginalized population subgroups. However, comparisons with other countries, in particular Korea—which has maintained a steady growth path for life expectancy since the 1960s (the earliest period covered by the data available to us)—suggest that the slowdown in the PRC should not be entirely attributed to diminishing returns. Further evidence of

the decline in the PRC's relative health performance can be seen in comparison with other countries at similar income levels when using a larger, global sample. For example, Grigoriou et al. (2005) show that in 1980–1984 the PRC was far above the average with regard to the child mortality measure relative to other countries in the same income class. By 1995–1999, its relative standing had declined and its child mortality was significantly closer to the average for its income level.

Hence, at least in terms of national averages, the PRC's spectacular growth during the past three decades has not been accompanied by similar achievements in improving population health. There is evidence to suggest that the country's economic success has, paradoxically, had somewhat of an inimical impact on health outcomes in that the pace of improvements in health slowed and performance worsened when compared with its own historical achievements and with those of its regional peers such as India, Korea, and Philippines.

## III. SPATIAL INEQUALITY IN HEALTH AND INCOME

In order to better understand national trends, in this section we examine what is happening at the regional level within the PRC with regard to health outcomes. Across provinces, per capita incomes have clearly diverged during the postreform period (Figure 2). The difference between the average income for the richest five provinces and that for the poorest five provinces was Yuan 3,719 in 1981. This difference rose to Yuan 5,622 in 1990; Yuan 13,111 in 2000; and Yuan 20,188 in 2004 (in constant 2000 yuan terms). The Gini coefficient for the provincial real per capita incomes increased from 0.22 in 1981 to 0.25 in 2000, and to 0.27 in 2004 (Table 1). An important question is whether the divergence in provincial incomes has led to divergence in provincial health outcomes.

An examination of provincial-level health indicators suggests that the divergence in incomes has not led to divergence in health outcomes. In fact, levels of health indicators such as life expectancy and infant mortality at the provincial level have been converging over time during the reform period (Figure 3). The difference in the average life expectancy between the top five provinces and bottom five was 11.7 in 1981, 10.8 in 1990, and 8.6 in 2000; and for infant mortality, the difference was 82.7 in 1981, 68.2 in 1990, and 17.0 in 2000. The Gini coefficients of provincial life expectancies and infant mortality rates were 0.03 and 0.25 in 1981, and the two fell to 0.02 and 0.18 in 2000, respectively (Table 1). In many ways, this convergence in health outcomes in the presence of divergence in average incomes across the PRC's provinces mirrors similar trends observed globally as noted by Kenny (2004).

Table 1. **Gini Coefficients of Provincial Income and Health Indicators**

|                   | 1981 | 2000 | 2004 |
|-------------------|------|------|------|
| Per capita income | 0.22 | 0.25 | 0.27 |
| Life expectancy   | 0.03 | 0.02 | n.a. |
| Infant mortality  | 0.25 | 0.18 | n.a. |

n.a. means not available.
Note: Gini coefficients take into consideration of different provincial population sizes.
Sources: Authors' estimates using data from various issues of the *China Statistical Year Book* (National Bureau of Statistics of China, various years) and *Health Statistical Year Book* (CMOH, various years).



Figure 2. **Distribution of Income by Province in the PRC, 1981–2004**
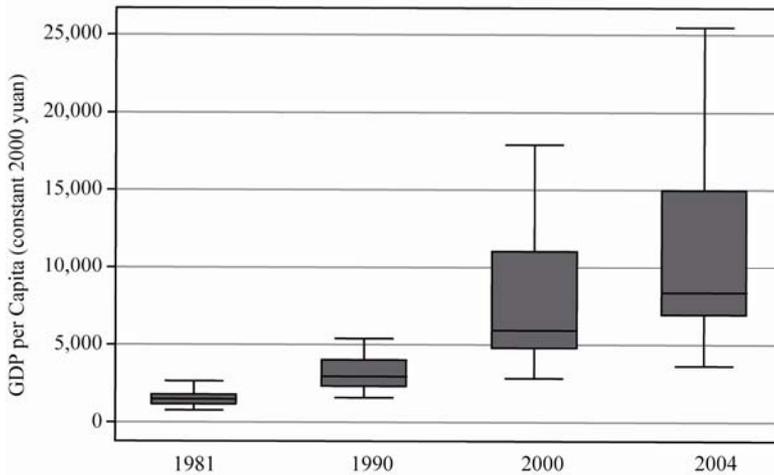
Note: The graph shows the distribution using a box plot: the horizontal line inside the box represents the median. The top and bottom lines are the 75% and 25% percentile, respectively. The extended tails are 1.5 times the 75% and 25% percentile.
Source: *China Statistical Yearbook* (National Bureau of Statistics of China, various years)
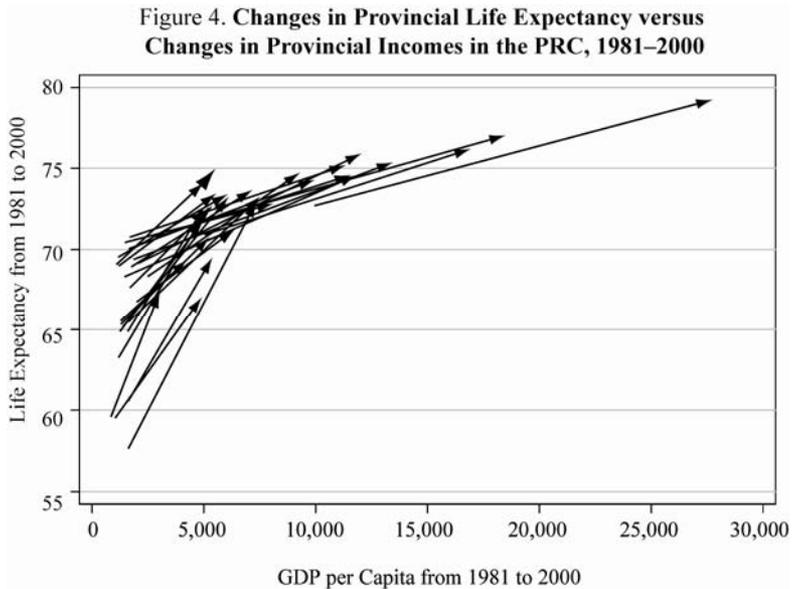
Figure 3. **Distribution of Health Indicators by Province in the PRC,
1981–2000**
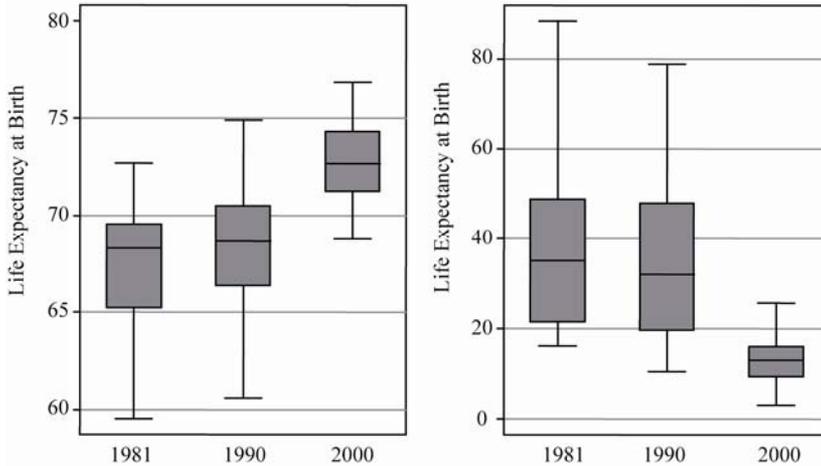


Note: Distribution is represented by box plots (excluding outliers).
Source: *China Statistical Yearbook* (National Bureau of Statistics of China, various years).

The convergence in provincial health indicators means that provinces with poorer initial health achieved greater improvements than those with better initial health during 1981–2000. This is clearly shown in Figure 4 where the provincial life expectancy is plotted against the corresponding provincial per capita real GDP (in yuan) in 1981 (the base of the arrow) and in 2000 (the head of the arrow). The slope of each arrow represents the ratio of absolute changes in life expectancy between 1981 and 2000 to absolute changes in per capita incomes during the same period. As can be seen, provinces that had lower life expectancies in 1981, most of which were also poorer, tend to have steeper slopes, and hence achieved greater improvements in life expectancy during 1981–2000 per unit of incremental income, than those that had higher initial life expectancies (most of which were also richer). Figure 4 also shows that, between 1981 and 2000, initially poorer provinces grew slower than those that were initially richer, leading to income divergence and increasing income inequality. But this was more than offset by the poorer provinces' faster improvements in life expectancy relative to the richer ones. This is the provincial analog of a Preston curve—the fact that, at lower levels of income, even a small change in incomes could have a large impact on health outcomes—and provides a plausible explanation for the convergence in provincial health outcomes despite divergence in provincial incomes that has been observed in the PRC. There could be other explanations for the convergence in health indicators as well: if provincial education levels have been converging over time in the PRC—as is likely—this

may offset the effects of diverging incomes on health as education tends to be a significant determinant of health.

Figure 4. **Changes in Provincial Life Expectancy versus Changes in Provincial Incomes in the PRC, 1981–2000**

Source: *China Statistical Yearbook* (National Bureau of Statistics of China, various years).

Despite convergence in health outcomes across provinces, however, there are indications that regional inequality in population health outcomes across the rural–urban dimension has increased during the reform period. Zhang and Kanbur (2005) report, on the basis of the PRC population censuses, that the ratio of rural to urban infant mortality rates increased from about 1.7 in 1981 to 2.8 in 2000 (see Table 2). More recent survey data collected from the areas under government health surveillance show that this ratio remained at 2.4 in 2004 (CMOH 2006). The same survey data show that the ratio of rural to urban maternal mortality rates increased from 2.2 in 1991 to 2.4 in 2004. A similar widening of disparities among rural and urban areas has been reported with regard to growth of children measured using height-for-age indicators (Shen et al. 1996). This is not inconsistent with convergence in provincial health averages: as provinces grow and urbanize, provincial average health outcomes can improve even with increasing rural−urban disparities, as the former would increasingly be influenced by improvements in urban health as opposed to rural health trends.

Table 2**. Rural-urban Differentials in Infant Mortality over Time in the PRC**

| Year | Rural | Urban | Rural/Urban |
|------|-------|-------|-------------|
| 1981 | 39.1 | 23.6 | 1.7 |
| 1990 | 32.4 | 19.1 | 1.7 |
| 2000 | 30.8 | 11.0 | 2.8 |

Source: Zhang and Kanbur (2005).

Others have noted growing disparities in health across the economic spectrum in the PRC, i.e., between the rich and poor. Meng et al. (2004) reports on evidence from urban surveys indicating that nutrition intake among the poor declined during the 1990s, probably a result of removal of price subsidies and rising food prices. Official sources show that utilization of health facilities declined from 1993 to 2003 across all income groups, and particularly so for those at the bottom end (Liu 2006).

Commercialization, rising medicine prices, increasing out-of-pocket health expenditure, and the virtual collapse of the rural cooperative medical system have all been blamed for the rise in rural–urban and rich–poor health disparities in the postreform period. Grigoriou et al. (2005) argue that, as the PRC health system has progressively become commercialized, health outcomes are now increasingly a function of ability to pay. This trend is evident if one looks at the "tightening" of the relationship between provincial incomes and health outcomes over time (Figure 5).



Figure 5. **Provincial Income versus Health Indicators, 1981–2000**
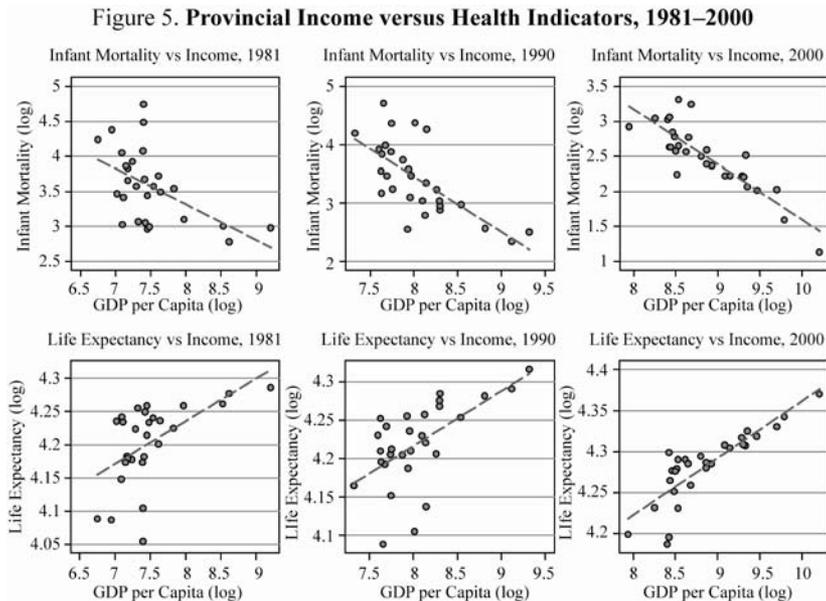
Source: *China Statistical Yearbook* (National Bureau of Statistics, various years).

## IV. HEALTH AND INCOME:
## EVIDENCE FROM HOUSEHOLD-LEVEL DATA

National and provincial averages can sometimes be misleading. Averages may improve even if there are no changes (or even declines) in the health outcomes for certain population subgroups such as the poor. As noted in the previous section, there is evidence that health outcomes for the PRC's rural (and, by association, poorer) population have seen relative declines despite overall improvements in national and provincial averages. In this section, we look at what is happening at the household level, based on a recent *World Health Survey* (WHS) by the World Health Organization (2003).

The WHS data used in this study were collected in 2002, and covered about 4,000 households across 10 provinces in the PRC.[1] The survey uses both household and individual questionnaires, with one individual adult randomly selected from each household as a respondent. The household questionnaire provides information on households' socio-demographic profiles, health insurance cover, permanent income indicators, and expenditure. The individual questionnaire provides health information related to the respondents, including their socio-demographic characteristics; state of health (overall health, mobility, self-care, pain and discomfort, cognition, interpersonal activities, vision, sleep and energy, and affect); health risk factors (access to safe drinking water and sanitation facility, prevalence of smoking and heavy alcohol drinking, nutrition, physical activity, living conditions, etc); child and adult mortality of family members; health care coverage received by the respondents and their family members (diagnosis, screening, and treatment; inventory of medicine and drugs; maternal health care; preventive and curative cares for children; reproductive and sexual health care; vision and oral cares; health emergency care, etc); and health system responsiveness.

An examination of the WHS data for the PRC indicates that there were large disparities in health state and health care coverage between the rich and the poor. Grouping the sampled households into quintiles on the basis of an economic status index,[2] it is found that more than 15 percent of the respondents in the bottom quintile for both rural and urban residents were underweight (with a body mass index [BMI] less than 18.5) as opposed to about 6 percent in the top quintile (Figure 5). A self-reported health index, constructed from 16 health items covering mobility, self-care, pain and discomfort, cognition, interpersonal

---

[1]For more details on the survey, see the WHO website (http://www.who.int/healthinfo/survey).

[2]This was constructed on the basis of the information on housing conditions and possession of household durables as indicated in the household questionnaire.

activities, vision, sleep and energy, and affect, also shows that the poor had significantly lower values, implying poorer health in both rural and urban areas.

The WHS data also show that the health insurance coverage among the poor was particularly low: less than 5 percent of those in the bottom quintile of households had some form of health insurance, as opposed to over 75 percent among the top quintile. This is in stark contrast to the late 1970s when virtually all urban residents and nearly 90 percent of rural residents had some form of health cover (Akin et al. 2004). Unsurprisingly, the data indicate that the bottom quintile spent a greater proportion of their nonsubsistence expenditure on health care than the top quintile: 40 percent compared to 22 percent. Key heath care coverage indicators such as antenatal care, cervical cancer screening, breast cancer screening, and Vitamin A supplementation rates were also significantly lower for the poorer (and rural) segments of the population than the richer (Table 3).[3]

The fact that poorer households have poorer health indicators suggests that income is a major determinant of and hence a constraint to health for households in the PRC. To further test the significance of incomes as a constraint to health, we estimated four health equations relating a health outcome (the dependent variable) to the household economic status (an explanatory variable). To control for effects of non-income factors on the health outcome, we entered education attainment, age, household size, sex, rural/urban residence, and health insurance cover as explanatory variables in two of the four equations.

Table 3. **Coverage Indicators by Economic Status (percent)**

| Economic Status Quintile | Antenatal Care | Cervical Cancer Screening | Breast Cancer Screening | Vitamin A Supplementation |
|---|---|---|---|---|
| 1 (Bottom) | 56.7 | 11.4 | 1.1 | 1.2 |
| 2 | 72.5 | 25.8 | 10.6 | 21.3 |
| 3 | 84.2 | 35.8 | 20.1 | 26.2 |
| 4 | 86.0 | 44.0 | 21.2 | 34.3 |
| 5 (Top) | 96.9 | 66.0 | 41.7 | 49.2 |

Source: Authors' estimates using data from *World Health Survey* (World Health Organization 2003).

Table 4 reports the four health equations estimated from the WHS data. The equations in columns 1 and 2 were estimated using the ordinary least squares (OLS) method, with the dependent variable being the 16-item self-reported health index as described earlier. The equations in columns 3 and 4 were estimated using the probit model, with the dependent variable equal to one if the respondent has a BMI less than 18.5 (implying underweight), and zero otherwise. To estimate the effect of the household economic status on health outcomes, we

---

[3]In the sample, about 95 percent of the respondents in the poorest quintile and 80 percent of those in the second lowest quintile were rural residents.

constructed four dummy variables, each corresponding to a particular economic status quintile group, except for the bottom quintile, which was treated as the reference group.[4] Each of the dummy variables takes the value of one if a household belongs to the quintile group with which the dummy is associated, and zero otherwise. Therefore, the coefficient of, say, quintile 2 measures the difference in health outcomes between the second and bottom quintile; the coefficient of quintile 3 measures the difference in heath outcomes between the third and bottom quintile, and so on.

Table 4. **Determinants of Health Outcomes**

| | Dependent variable = self-reported health (16-item index; OLS) | | Dependent variable = 1 if underweight (BMI < 18.5) and 0 otherwise (probit) | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **Economic Status** (reference group=Quintile 1) | | | | |
| Quintile 2 | 0.23 (0.03)** | 0.18 (0.027)** | −0.23 (0.079)** | −0.18 (0.089)** |
| Quintile 3 | 0.30 (0.03)** | 0.21 (0.030)** | −0.41 (0.083)** | −0.25 (0.099)** |
| Quintile 4 | 0.32 (0.03)** | 0.21 (0.033)** | −0.65 (0.091)** | −0.52 (0.119)** |
| Quintile 5 | 0.43 (0.03)** | 0.29 (0.037)** | −0.55 (0.087)** | −0.32 (0.132)** |
| | | | | |
| **Schooling Attainment** (reference group=No Schooling) | | | | |
| Below primary | | 0.16 (0.039)** | | −0.01 (0.123) |
| Primary | | 0.23 (0.033)** | | 0.06 (0.107) |
| Secondary | | 0.24 (0.035)** | | −0.11 (0.119) |
| High | | 0.26 (0.041)** | | −0.09 (0.141) |
| University | | 0.19 (0.047)** | | 0.17 (0.164) |
| Postgraduate | | 0.08 (0.129) | | -- |
| | | | | |
| **Age** (reference group =18–29) | | | | |
| 30-39 | | −0.07 (0.029)** | | −0.60 (0.101)** |
| 40-49 | | −0.17 (0.030)** | | −0.53 (0.104)** |
| 50-59 | | −0.31 (0.033)** | | −0.51 (0.116)** |
| 60-69 | | −0.44 (0.037)** | | −0.26 (0.122)** |
| 70+ | | −0.88 (0.042)** | | 0.18 (0.132)** |
| | | | | |
| **Female** (reference group=Male) | | −0.11 (0.018)** | | 0.28 (0.064)** |
| **Urban** (reference group=Rural) | | −0.04 (0.024)* | | −0.22 (0.089)** |
| **Insured** (reference group=Uninsured) | | 0.10 (0.020)** | | −0.12 (0.074)* |
| **Household Size** | | 0.016 (0.01)** | | 0.003 (0.034) |
| **Constant** | 5.24 (0.02)** | 5.34 (0.052)** | -0.96 (0.053)** | −0.76 (0.173)** |
| **Sample Size** | 3,948 | 3,526 | 3,948 | 3,563 |

** indicates significance at the 1% level and * significance at the 5% level.
OLS means ordinary least squares.
BMI means body mass index.
Note: Figures in parentheses are standard errors.
Source: Authors' estimates using *World Health Survey* data (WHO 2003).

---

[4] See footnote 2 for the classification of quintile groups.

Results in Table 4 show that the coefficients of the four economic status dummy variables all have the expected signs and are significant at the 1 percent level in all the four equations. Further, as one would expect, the coefficients for higher quintile groups are on average greater than those for lower quintile groups. These results suggest that richer households have better self-reported health and lower probability of being underweight than poorer households, and the differences are statistically significant, implying that income does constitute a constraint to health for the sampled households. These results hold with or without controlling for effects of non-income health determinants.

Non-income explanatory variables used in the health equations include schooling attainment (7 categories, No Schooling being the reference category); age (6 categories, Below 30 being the reference); sex (2 categories, Male being the reference), residence (2 categories, Rural being the reference); and health insurance (2 categories, No Insurance being the reference). Therefore, coefficients of all the non-income explanatory variables measure the difference in health outcomes between the respondents associated with a particular category and those belonging to a reference category.

Among the non-income explanatory variables, schooling attainment has a significant positive effect on self-reported health: respondents with schooling are healthier than those without schooling (the reference group), and respondents with more schooling are healthier than those with less schooling.[5] Schooling attainment, however, does not have any effect on BMI. Age is also an important determinant of health: higher age groups have lower self-reported health state and are more likely to be underweight. Females on average have lower self-reported health and are more likely to be underweight than males. Urban residents have lower self-reported health—likely reflective of differing expectations regarding health status among urban and rural residents—but are less likely to be underweight. Health insurance improves self-reported health and also reduces the probability of being underweight.

## V. CONCLUSIONS

This paper highlights the fact that, despite the PRC's spectacular economic growth during the last three decades, there has been a slowdown in improvements in population health outcomes, which has occurred concomitantly with a rise in disparities in health outcomes between urban and rural populations. It also presents evidence from micro-level data of large inequalities in health care coverage and health outcomes between the rich and the poor, with income being a

---

[5]Except that the coefficient for the university group is smaller than those for primary, secondary, and high school groups, and the coefficient for the postgraduate group is insignificant, possibly due to the small number of observations in these two groups.

major constraining factor for health among the poor: Compared to those in the top economic status quintile, households in the bottom economic status quintile had significantly lower self-reported health status; higher proportion of underweight, lower health insurance cover (5 versus 75 percent); higher share of health expenditure in total household spending; and lower preventive heath care coverage such as antenatal care, cervical and breast cancer screening, and Vitamin A supplementation. The paper further shows that, across provinces, the correlation between income and health outcomes has strengthened. These findings suggest that there has been a weakening of the much-heralded public health system in the PRC. This conclusion appears also to be supported by the following figures released by the government. In 1982, of the total national health spending, 39 percent  was financed by the government budget and 21 percent  by out-of-pocket payments of households; in 2004, the share of the government financing fell to 17 percent  and the share of household out-of-pocket payments increased to 54 percent. Also, between 1982 and 2004, national health spending financed through various social insurance schemes (including the rural cooperative medical system) fell from 40 to 29 percent (CMOH 2006).

The weakening of the public health system and increasing inequality in health outcomes and health care coverage in the PRC have occurred during a period of market-oriented reform characterized by decentralization, profit orientation, and withdrawal of the government from many spheres of the society. During this period, the PRC's health care system underwent significant transformation, as documented by many studies (see, for example, DRC 2005).

First, the abolition of the people's communes and introduction of the household responsibility system in the rural areas in the late 1970s and early 1980s significantly weakened the financial base of township hospitals and village health clinics, leading to a virtual collapse of the rural cooperative medical system. It was estimated that before the initiation of economic reform, the rural cooperative medical system provided free or affordable basic health cover to about 90 percent of the rural population. Now, it only covers 10 percent.

Second, in the urban areas, the health insurance system has also been significantly transformed. Prior to reform, state-owned and collectively owned enterprises provided free or affordable access to health care services to all employees and their family members. Now urban residents are largely covered by localized social insurance schemes, financed through pooling of employer contributions and employee accounts, supplemented with commercial health insurance. With deductibles, limits on reimbursements, and other restrictions, the new system has significantly shifted the responsibility of paying for health care from the state and society toward individuals, leaving the unemployed workers, employees of financially weak enterprises, migrant workers, retirees, other vulnerable groups, and low-income households particularly vulnerable to illnesses.

Third, the reduction in the government funding for the health system and devolution of responsibilities of providing financial resources to all levels of hospitals and public health clinics have fundamentally changed the way these service providers operate. Instead of offering health care as "public goods" and pursuing "social objectives and responsibilities", they have become highly commercialized and profit-oriented, with widely reported overprescribing and overcharging. This, coupled with the deregulation of prices of drugs and supplies, has led to the escalation of costs and fees of hospital services, making them unaffordable and inaccessible to many.

Some have attributed these problems to that fact that reform in the health sector in the PRC has gone too far, arguing that the market-oriented reforms have failed, and calling for the restoration of the dominant role of the government in financing and delivering public health services and basic health care (see, for example, DRC 2005). Some, on the other hand, have argued that the problems are not necessarily due to over-reliance on market and commercial principles, citing the fact that most health care providers are still owned by the state (Zhou 2007). There are also views that the problems are partly reflective of the failure of the government in instituting an effective regulatory framework for health care providers and the drug industry following their commercialization and privatization, as government regulation is essential for efficient functioning of the health market characterized by pervasive information asymmetry.

The PRC government is taking measures to address problems in the health system. In 2003, the government started piloting a new rural cooperative medical scheme. In March 2006, it adopted the Rural Health Service System Construction and Development Program, aiming to improve the level and capacity of rural health services by investing about Yuan 22 billion in hospitals and medical clinics at the township and country levels in the poor areas of western, middle, and eastern regions, to be financed primarily by the central government budget. The Eleventh Five-Year Plan for National Economic and Social Development has also made improving people's health one of the strategic priorities. More recently, it was reported that top PRC leaders have called for a bigger government role in public health with a goal for everyone to enjoy basic health care services (*People's Daily* 2006).

International experiences suggest that there is no one-size-fits-all model of health care, and the role of the government vis-à-vis the market in financing and delivering health care services differs from one country to another, depending on country-specific circumstances—which are often a result of the interplay of political, economic, and historical factors that change over time. Going forward, therefore, the PRC will have to decide what model of health care to follow based on its own circumstances. Some have argued that there is probably no quick fix and the government will have a long way to go in coping with its health care

problems (Bekedam 2006, Liu 2006). With the sheer size of its population, universal assess to basic health care (of good quality) will probably take time to achieve. A phased approach with clearly set stepwise targets is likely to be the way forward. Whichever model of the health care system is chosen, the findings of this paper suggest that there has to be a greater public sector role in funding basic health care, providing protective health cover to the poor and vulnerable groups, and regulating various actors in the health market. While broad overhauls of the system are being considered, establishing a health care safety net targeted at the poor and vulnerable groups should be on the top of the government's health policy agenda.

## REFERENCES

Akin, J. S., W. H. Dow, and P. M. Lance. 2004. "Did the Distribution of Health Insurance in China Continue to Grow Less Equitable in the Nineties? Results from a Longitudinal Survey." *Social Science and Medicine* 58:293–304.

Banister, J. 1984. "An Analysis of Recent Data on the Population of China." *Population and Development Review* 0(2):241–71.

Bekedam, H. 2006. "Road Ahead for China's Health Care Reform". Available: http://www.wpro.who.int/China.

CMOH. 2006. *China Health Statistical Year Book 2006*. China Ministry of Health, Beijing. Available: http://www.moh.gov.cn.

Cornia, G. A., and L. Menchini. 2005. "The Pace and Distribution of Health Improvements During the Last 40 Years: Some Preliminary Results." Draft paper for the UNDP-French Government Forum on Human Development, Paris.

DRC. 2005. *An Evaluation of China's Health System Reform and Policy Suggestions* (in Chinese). Development Research Center, State Council of China, Beijing.

Grigoriou, C., P. Guillaumont, and W. Yang. 2005. "Child Mortality under Chinese Reforms." *China Economic Review* 6:441–64.

Hesketh, T., and W. X. Zhu. 2004. "Effect of Restricted Freedom on Health in China." *British Medical Journal* 329:1427.

Indiastat. 2006. "Health." Available: http://www.indiastat.com/. Downloaded 15 December.

Kenny, C. 2004. "Why are We Worried About Income? Nearly Everything that Matters is Converging." *World Development* 33(1):1–19.

Liu, T. 2006. "China's Health Challenges: Cannot Be Solved in A Day." *British Medical Journal* 333:365.

Liu, Y. 2006. "What is Wrong with China's Health System?" *Harvard China Review* March. Forthcoming.

Meng, X., X. Gong, and Y. Wang. 2004. Impact of Income Growth and Economic Reform on Nutrition Intake in Urban China: 1986-2000. Institute for the Study of Labor (IZA) Discussion Paper No. 1448, Bonn.

National Bureau of Statistics of China. 2006. *China Statistical Yearbook*. Available: http://www.stats.gov.cn/english/statisticaldata/yearlydata/.

*People's Daily*. 2006. "Paying Close Attention to Continuously Improving Population Heath and Developing a Basic Health Care System Covering Rural and Urban Residents." 25 October. Available: http://paper.people.com.cn/rmrb/html/2006-10/25/node_17.htm.

Ravallion, M., and S. Chen. 2007. "China's (uneven) Progress against Poverty." *Journal of Development Economics* 82:1-42.

Sen, A. 1998. "Mortality as an Indicator of Economic Success and Failure." *Economic Journal* 108:1–25.

_____. 2006. "The Challenge of Development." In *Central Banks and the Challenge of Development.* Bank for International Settlements, Basel.

Shen, T., J.-P. Habicht, and Y. Chang. 1996. "Effect of Economic Reforms on Child Growth in Urban and Rural Areas of China." *New England Journal of Medicine* 335:400–6.

World Bank. 2006. *World Development Indicators Database*. Available: http://ddp-ext.worldbank.org/ext/DDPQQ/member.do?method=getMembers&userid=1&queryId=6.

World Health Organization. 2003. *World Health Survey*. Geneva.

Zhang, X., and R. Kanbur. 2005. "Spatial Inequality in Education and Health Care in China." *China Economic Review* 16:189–204.

Zhou, Q. 2007. "Market Orientation of the Health Care Reform in China." Available: http://www.jmnews.com.cn.