Journal of Asian Economics 19 (2008) 400–412

Contents lists available at ScienceDirect

Journal of Asian Economics

From plan to market in the health sector? China's experience

Karen Eggleston [a,*], Jian Wang [b], Keqin Rao [c]

[a] Shorenstein Asia-Pacific Research Center, Stanford University, Palo Alto, CA, United States
[b] Center for Health Management and Policy, Shandong University, PR China
[c] Center for Health Statistics and Information, Ministry of Health, PR China

ARTICLE INFO

JEL classification:
I18
O12
P36

Keywords:
Health
Insurance
China
Reforms
Universal coverage

ABSTRACT

Countries worldwide confront the challenge of defining and achieving appropriate roles for government and market forces in the health sector. China—as both a developing and a transitional economy—represents an important case. This paper uses an international comparative perspective to examine how the health of China's population and other aspects of health system performance changed during the reform era. We draw on standard public finance and health economics theory, as well as the more recent incomplete-contracting theory of property rights, to summarize the comparative advantages of government and market for financing and delivery of health services, particularly in developing and transitional economies. We then describe and analyze against this theoretical background the transformation of China's health sector and recent commitment of government funds to move toward universal coverage.

© 2008 Elsevier Inc. All rights reserved.

1. Introduction

Countries worldwide confront the challenge of defining and achieving appropriate roles for government and market forces in the health sector. Although extensive theoretical, empirical and policy-oriented scholarship analyzes this issue for established-market economies, much work remains to be done to understand the institutional challenges of developing countries and countries transitioning from centrally planned to market-based economies.

China – as both a developing and a transitional economy – represents an important case. China's economic reforms since 1978 spurred unprecedented economic growth and lifted millions out of poverty. To what extent these achievements can be sustained and deepened will not only impact the lives of one-fifth of mankind, but will also affect the global course of such health threats as tuberculosis and HIV/AIDS, as well as the world's ability to achieve the Millennium Development Goals.

How has the health of China's population, as well as the performance of its health system, changed during the reform era? International comparison provides a useful lens for evaluating China's experience. The World Health Organization (WHO) applied one such set of metrics to a cross-section of countries in the World Health Report 2000. In a ranking of health system performance, China ranked 144 out of 191 countries. Despite a relatively high ranking for level of population health (61), China's system was deemed to be weak in the distribution of health and responsiveness, as well as particularly unfair in distributing financial burdens of health coverage and illness expense. Although many might quibble with the WHO's

* Corresponding author. Tel.: +1 650 723 9072; fax: +1 650 723 6530.
E-mail address: karene@stanford.edu (K. Eggleston).

1049-0078/$ – see front matter © 2008 Elsevier Inc. All rights reserved.
doi:10.1016/j.asieco.2008.09.002

performance metrics, few would disagree that China's health sector faces tremendous challenges, as the crisis of Severe Acute Respiratory Syndrome (SARS) in 2003 brought into the international spotlight.

More recently, China has announced ambitious reforms aiming to achieve basic universal coverage by about 2010. The government has committed major new funds to the health sector, and expanded social insurance programs to the formerly uninsured majority. The New Cooperative Medical Scheme (NCMS) offers subsidized basic insurance in rural areas, and insurance programs have been piloted for the urban residents not covered by the Basic Medical Insurance (BMI) for formal sector employees.[1]

Thus, 30 years into reform, as part of efforts to build a ''harmonious society'' and address the disparities across different segments of the population, China's leadership has launched major initiatives to correct perceived dysfunction in the health sector and meet the expectations of a population with ever-increasing per capita income. To understand the prospects for newly infused government funds to translate into effective health care service delivery and improvements in population health requires understanding the starting point: how China's health sector evolved over the first quarter century of reform.

This paper examines the factors underlying China's uneven health sector performance since 1980. The first section examines how several key health status indicators have changed over the past few decades, compared to other countries and relative to income per capita. China began the reform era as an international outlier, having achieving high population health status for its relatively low per capita income level. One might have hoped that China's above-average economic growth would have reinforced China's previously above-average health indicators. Instead, compared to unprecedented economic growth, health status measures have improved more slowly, or even stagnated at the aggregate level, with growing population disparities. By 2000, life expectancy, infant mortality and under-five mortality rates were all about average for countries of similar per capita income. Sections 2.1 and 2.2 consider several alternative explanations for this ''regression to the mean,'' including the stresses of systemic transformation, reverse causality from health to subsequent growth, and changes in health care financing and delivery.

Depending on which measures of health and health sector performance one chooses to analyze, China's performance in the health sector is neither significantly better nor spectacularly worse than its Asian neighbors. Some developing Asian countries, such as Indonesia, experienced more balanced improvements in health along with GDP, but with similar overall results.[2] India, with a population also over one billion, has had lower life expectancy and higher infant mortality since 1980, with only a modest reduction in the gap by 2005; both China and India have had high out-of-pocket spending and large disparities between the rich and poor in terms of disease and financing burdens (Yip & Mahal, 2008). In developing Asia, as elsewhere in the world, systems of health care financing and delivery are closely shaped by historical and cultural context; although China might benefit from specific elements of many systems and from the ''advantage of backwardness'' (Gerschenkron, 1962), no single health system model offers a panacea. For example, South Korea and Taiwan have established National Health Insurance (in 1989 and 1995, respectively), assuring their populations universal access to health care. Yet neither faces China's challenges in reaching a large rural population. China has borrowed from Singapore, implementing a system of individual Medical Savings Accounts combined with social risk-pooling funds. China has also built upon its own successful experience with subsidized rural community financing to extend NCMS to rural residents, and has largely followed a path similar to that of other transitional economies (in Eastern Europe and the Former Soviet Union) of adopting social insurance rather than a National Health Service model. Future reforms may feature a mixture of models designed to fit China's wide geographic and socioeconomic variations across provinces and rural versus urban areas.

In Section 2.3, we draw on standard public finance and health economics theory, as well as the more recent incomplete-contracting theory of property rights, to summarize the comparative advantages of government and market for financing and delivery of health services, particularly in developing and transitional economies. We describe and analyze the transformation of China's health sector and recent commitment of government funds against this theoretical background.

The first three sections feature positive economic analysis; the final section summarizes normative judgments and policy recommendations for China's health system reforms.

2. Performance of China's health system: an international comparison

To analyze how China's population health and health system have evolved during its transition from a centrally planned to a market-based economy, we examine how China's health system indicators have changed, compared to other countries and relative to income per capita. We use analogs of the famous ''Preston curve'' exploring the relationship between life expectancy and gross domestic product (Preston, 1975).[3] Figs. 1 through 5 present data on health, health care and economic

[1] For recent overviews of China's health sector reforms, see Ma, Lu, and Quan (2008); Eggleston (2008); Evans and Xu (2008); Yip and Mahal (2008); and Wagstaff and Lindelow (2008).

[2] For example, Indonesia and China both dramatically decreased under-five mortality rates from similarly high levels in the mid-1960s, but with divergent paths. Indonesia achieved steady falls in under-five mortality rates along with increases in per capita income. By contrast, China's under-five mortality rate fell rapidly during a period of meager economic growth to a level that was by 1980 comparable to that of Indonesia in 1995. However, China's under-five mortality rate has virtually stagnated since then, while per capita income has grown dramatically (Wagstaff, 2004).

[3] See Deaton (2004) for the millennium version.

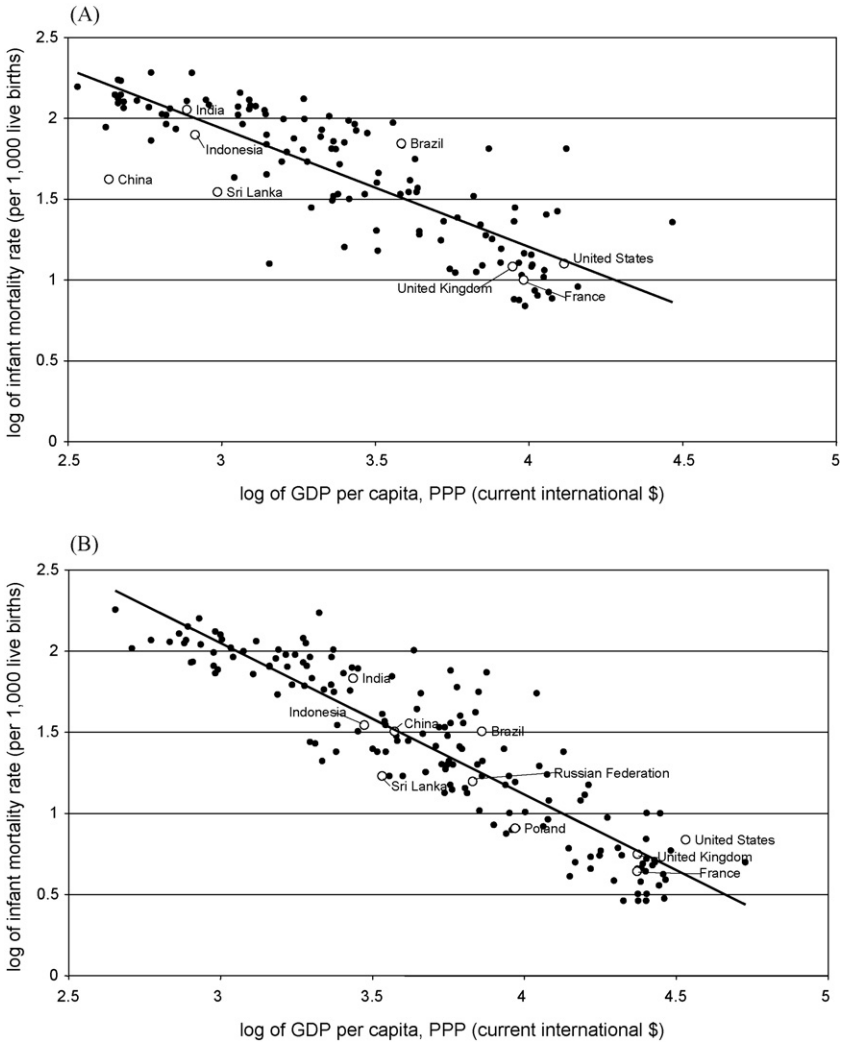


Fig. 1. Infant mortality rate and per capita GDP, 1980 and 2000. (A) Year 1980 Data. (B) Year 2000 data. *Source*: World Development Indicators, World Bank (2000).

development for over 100 economies, using the World Bank's *World Development Indicators* (World Bank, 2000). The top panel (panel A) of each figure shows China's position early in the reform era (1980 or 1990, depending on the figure); the lower panel (panel B) shows data for 2000. The vertical axis plots the health system indicator of interest, while the horizontal axis depicts GDP per capita.[4]

The data show that China began the reform era as an international outlier, achieving high population health status for its relatively low per capita income. Indeed, China's dramatic improvement in population health between the 1950s and 1970s is well known (Hsiao, 1995; Jamison, 1984). Over the reform era, economic growth outstripped improvement in health status indicators. Currently, health status indicators are about average for China's level of per capita GDP. This "regression to the mean" is evident in the infant mortality rate (Fig. 1), the under-five mortality rate (Fig. 2) and life expectancy (Fig. 3; also see working paper appendix Fig. 1). What factors explain China's experience? We explore several alternative explanations.

[4] Thus, an upward-sloping line suggests that the indicator (e.g., life expectancy or health expenditure) is higher in countries with higher per capita income. A downward-sloping line, such as for the infant mortality rate, shows the opposite: higher levels of income per capita are correlated with lower infant mortality. The appendix to the working paper (Eggleston, Wang, & Rao, 2005) presents seven additional figures that compare China to other transitional economies and OECD countries, using data from WHO (2002) and the Ministry of Health (1998, 2001).

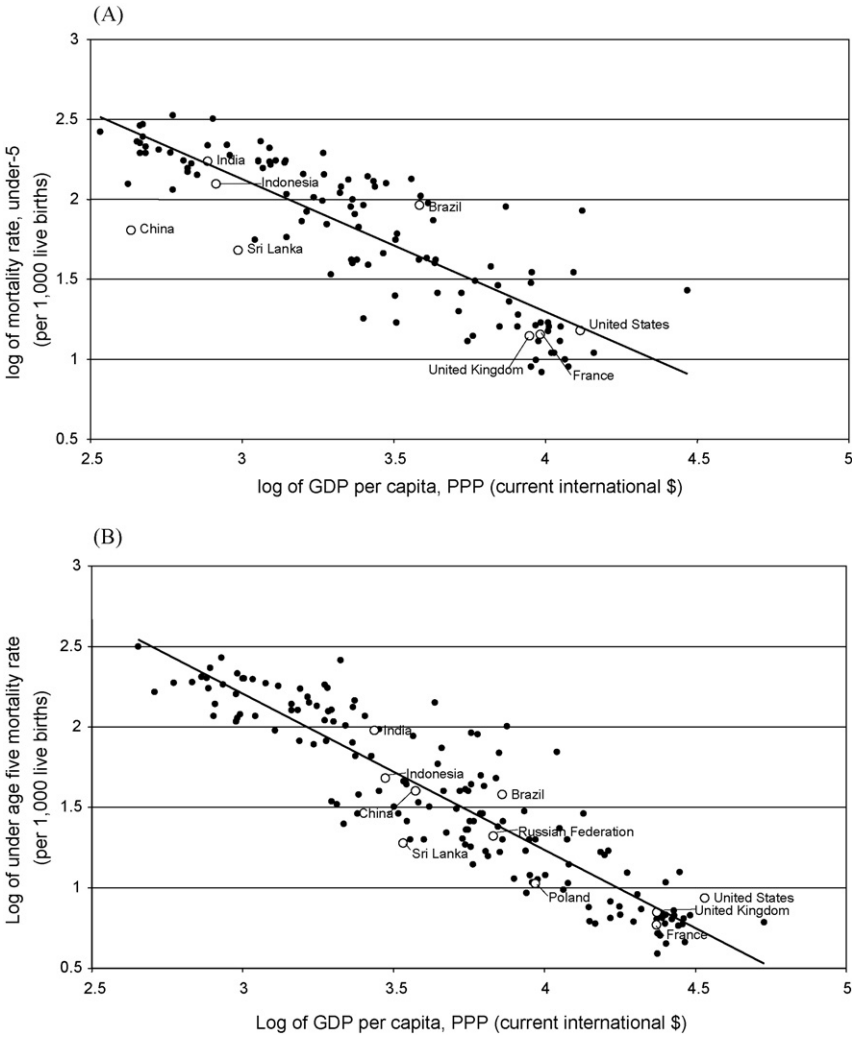


Fig. 2. Under age five mortality rate and per capita GDP, 1980 and 2000. (A) Year 1980 data. (B) Year 2000 data. *Source:* World Development Indicators, World Bank (2000).

2.1. Transition from plan to market and urbanization

Countries transitioning from central planning to market-based economies have experienced unexpectedly high social costs of transition. Literacy rates and school enrollments have fallen, poverty and inequality have increased, and health has suffered (European Bank for Reconstruction and Development, 1999; Campos & Coricelli, 2002; Svejnar, 2002). Noting the dramatic rise in male mortality in Russia during the early 1990s, the World Bank poses the question, "is transition a killer?" (World Bank, 1996, 128) Since China and Russia are the two largest transitional economies, their experiences with health transition have some similarities (Liu, Rao, & Fei, 1998). Perhaps the systemic transformation itself has contributed to China's slowing in improvement of health and health system performance.

Although this explanation has some plausibility (and we return to market-driven health system explanatory factors below), we discount it as a leading hypothesis. The vast majority of transitional economies – including all central and eastern European countries and republics of the former Soviet Union – suffered transformational recessions (Kornai, 1994). China, in contrast, has grown continually throughout the past quarter century. Moreover, if systemic transformation – and its accompanying stress from unemployment, crime and drinking – played as important a role in shaping health in China as in Russia, the larger adverse health impact of transition would probably have been in urban areas, which are more similar to Russia and eastern Europe than are China's vast rural areas. Yet the largest stagnation in health improvement has been in China's rural, rather than urban, areas (Liu, Hsiao, & Eggleston, 1999).

These facts suggest that mechanisms other than the direct stresses of transition are at work in China. The disparity between health status in China's urban and rural areas also suggests that the process of urbanization – along with its

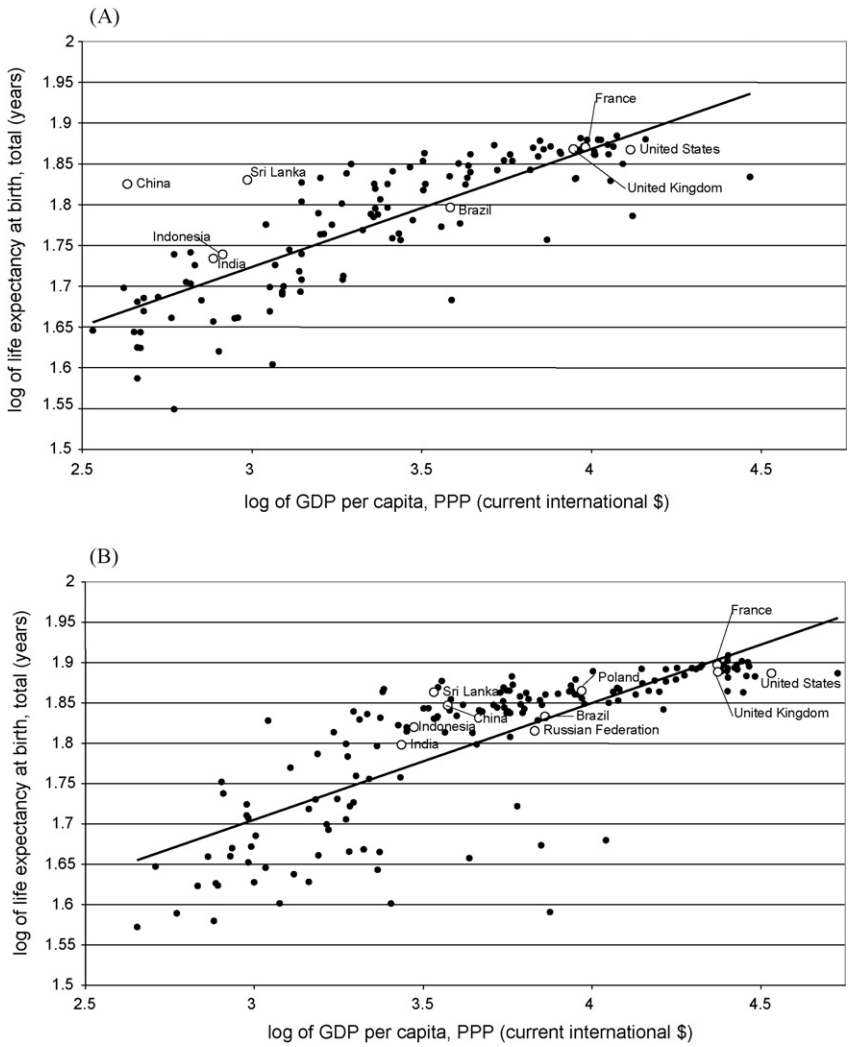


Fig. 3. Life expectancy at birth and per capita GDP, 1980 and 2000. (A) Year 1980 data. (B) Year 2000 data. *Source*: World Development Indicators, World Bank (2000).

accompanying lifestyle changes contributing to congestion, poor public health, sedentary lifestyles and growing obesity (Popkin, 1999, 2008) – can only partly explain the overall pattern of China's health changes during the reform era.

2.2. Earlier health investments spurred economic growth

Health, in addition to its intrinsic value, contributes fundamentally to an individual's and a society's ability to raise standards of living. Numerous empirical studies document how a healthy population enhances economic growth (e.g., Barro & Sala-i-Martin, 1995; Strauss & Thomas, 1998; Bloom, Canning, & Sevilla, 2001).[5] The direction of causality from health to growth can help to explain China's experience. We are not the first to argue that higher-than-average investment in basic health and education in the 1950 s through the 1970 s directly and significantly contributed to subsequent high economic growth (see Deaton, 2004; Drèze & Sen, 2002).

Nevertheless, the health-growth nexus does not completely explain China's experience. What factors prevented translating a doubling of per capita income into a proportional improvement in population health? The following sections

[5] For example, Barro and Sala-i-Martin (1995) estimate that, controlling for standard macroeconomic determinants of growth, life expectancy remains economically and statistically significant in explaining subsequent GDP growth: "a one-standard-deviation increase in life expectancy (which is equivalent to 13 years in 1965–1975) is estimated to raise the growth rate by 1.4 percentage points per year" (p. 432). As emphasized in a recent WHO report on health and economic development, "a typical statistical estimate suggests that each 10% improvement in life expectancy at birth is associated with a rise in economic growth of at least 0.3–0.4 percentage points per year, holding other growth factors constant. . .which cumulates to enormous effects over time" (WHO, 2001, 24).

examine changes in China's health system during the period of rapid economic growth and how benign neglect (Hsiao, 1995; Hsiao & Liu, 1996) contributed to uneven health sector performance.

2.3. From plan to market in the health sector?

In this section, we briefly summarize economic theory regarding the comparative advantages of government and market for financing and delivery of health services in a developing, transitional economy. We describe and analyze the transformation of China's health sector against this theoretical background.

Medical care is only one factor shaping population health; genetic and environmental influences and lifestyle choices (e.g., hygiene, substance abuse, exercise) are often more important determinants of health (Fuchs, 1998). Nevertheless, access to health care can be critical for maintaining health and extending life. Moreover, society may value a well-functioning health system for reasons beyond the central objective of contributing to better health. Social solidarity, social stability and poverty alleviation all benefit from a well-functioning health care system, as does the economy and its expanding service sector.

Salient features of health sectors in developing and transitional economies include (i) limited institutional and administrative capacity; (ii) non-universal coverage (especially in developing economies); and (iii) public ownership of most health care delivery organizations. Numerous traditional healers and individual providers may be self-employed; but more "high-tech" clinics and virtually all hospitals are usually government-owned. Lack of universal coverage frequently means that governments try to assure access through subsidized direct delivery, with administrative pricing of services as a mechanism for coverage. During reforms, most such economies are experimenting with privatization, competition and incentives in their health sectors, as in other sectors of their economies (Kornai & Eggleston, 2001).

Much of the theory on government role in the health sector applies just as readily, if not more acutely, to the developing and transitional economy context as to industrialized, established-market economies. Public goods and externalities justify some government intervention. Canonical examples include control of communicable diseases like SARS and promotion of health activities with positive externalities, like immunizations. The developing country context reinforces other traditional arguments for a government role as well. For example, imperfect and asymmetric information (about how diseases are spread, the importance of sanitation and nutrition, the addictive effects of smoking, the quality of health care and pharmaceuticals, etc.) is more acute and problematic for a semi-literate population than for a well-educated populace. Furthermore, the lack of market institutions in many developing and transition economies, at least in the initial stages, seems to call for government to step in to fill the gap with market-promoting institutional development, if not direct command and control.

Yet governments in developing and transitional economies frequently have limited capacity to undertake these roles, both in terms of tax revenues and managerial expertise. Institutional weaknesses exacerbate government failures as well as market failures. Limited administrative capacity suggests that complex, data-intensive payment policies and contracting mechanisms are infeasible or not cost-effective. Arguably these economies need to start simple (Eggleston, Posner, & Zeckhauser, 2000) and evolve toward "international best practice" using appropriate "transitional institutions" (as China has in other aspects of its reforms; Qian, 2000) or "second-best institutions" (Rodrick, 2008).

2.4. Health spending, financing and insurance

Fig. 4 illustrates how China's total health expenditures as a percentage of GDP have evolved in international comparative perspective. Between 1990 and 2000, China's health expenditures and GDP per capita both grew rapidly, with health expenditure growth outstripping growth in per capita income. Thus, although China pre-reform was a relatively low spender for its income level, by 2000 China's health spending (at 5.3% of GDP; Zhao, Gao, & Wan, 2002) was about average for its per capita income. Currently China spends about 5.5% of GDP on health. China spends more of its national income on health than India, Indonesia or Sri Lanka; about average for transitional economies (lower than most eastern European countries, but higher than most of the republics of the former USSR); and less than high-income OECD countries (see working paper appendix Fig. 2). In sum, China has devoted an increasing proportion of its national income to health and health care, and health spending growth does not seem unsustainable in light of China's income level and rate of economic growth.

More dramatic and worrying was the change in structure of China's health spending. Most countries increase the proportion of public spending as they develop (Fig. 5). In China, by contrast, the share of health spending paid by public sources – government financing and social insurance – declined significantly over the reform era, with an ever-larger burden falling directly on consumers as out-of-pocket financing. Fig. 5 shows that public health expenditure as a percentage of GDP fell slightly between 1990 and 2000, while overall health spending increased at double-digit rates.

Out-of-pocket payments by Chinese patients increased from 20.4% of total healthcare expenditures in 1978 to 49.3% by 2006.[6] China relies much more on out-of-pocket spending than OECD countries, and more than many middle-income economies. Among transitional economies, China is also an outlier (working paper appendix Fig. 3); very few (e.g., Georgia) finance more of their health spending through private sources. If under-the-table payments, which are pervasive in China

[6] China Health Economics Institute, China Health Accounts Report 2007, cited in Sun, Santoro, Meng, Liu, & Eggleston (2008).

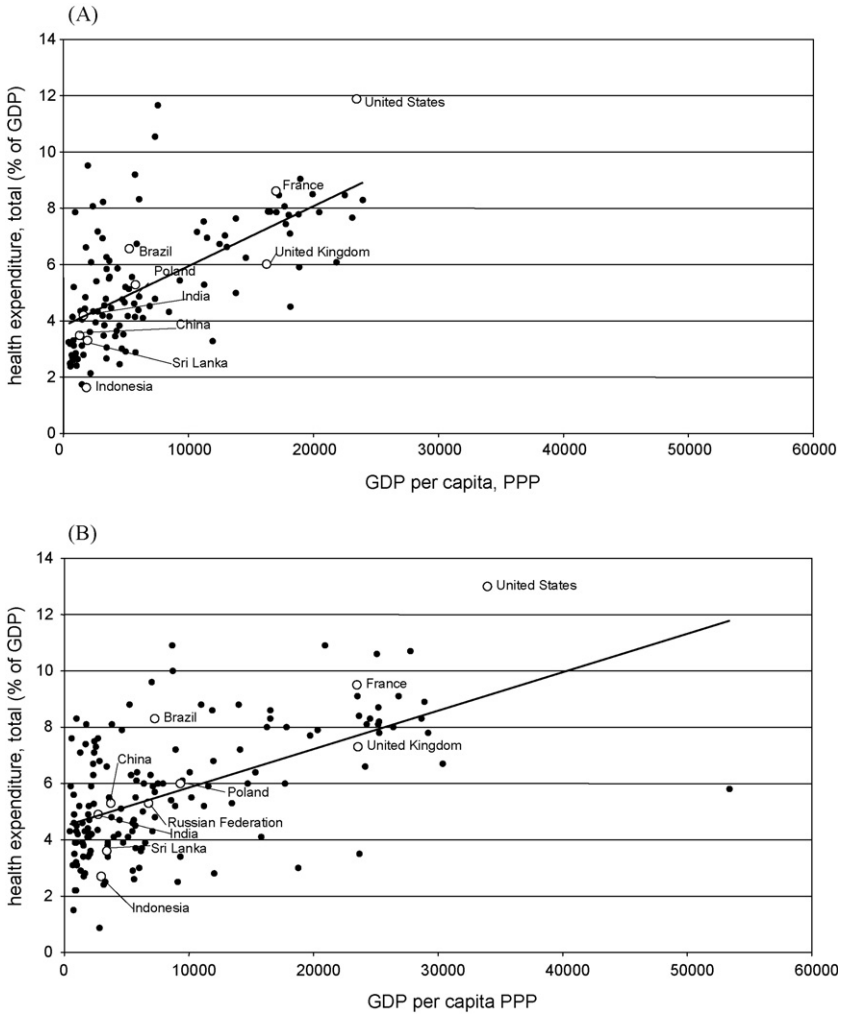


Fig. 4. Health expenditure and per capita GDP, 1990 and 2000. (A) Year 1990 data. (B) Year 2000 data. *Source*: World Development Indicators, World Bank (2000).

and many other transitional economies, could be included in these financing statistics, the proportion of spending coming from private sources would presumably be even higher.

This shift toward private financing, particularly out-of-pocket spending, left Chinese exposed to risk of significant financial hardship from catastrophic illness expenses and a potentially vicious cycle of illness-induced poverty. The recent expansions of social insurance aim to reverse this trend, but large coinsurance requirements (especially for NCMS) still leave many Chinese exposed to large financial risk when ill or injured.

The cause of the adverse financing trends is not difficult to identify. Collapse of China's community financing institutions in rural areas, combined with lack of true risk-pooling in urban areas, produced a dramatic fall in coverage at the onset of economic reforms. CMS drew a large part of required revenues for village doctors and health stations from commune welfare funds. Following agricultural de-collectivization in the early 1980s, the CMS system collapsed. Most village doctors became private practitioners and now rely on fee-for-service payment. As a result of these changes, the fraction of Chinese with health insurance cover fell precipitously, from about 70% of the population in 1981 to only 20% by 1993 (World Bank, 1997), and has rebounded only since the 2003 implementation of NCMS.

The vacuum created by the collapse of community financing was not filled by direct subsidies for public care, as might have been the case if China had opted to establish a UK-style National Health Service. Instead, like many other transitional economies (Kornai & Eggleston, 2001), China has chosen to establish social insurance.[7] The strategy has been two-pronged: pool risk at the municipal level in urban areas, and re-establish community financing in rural areas (Yuan & Chen, 1994). At

[7] Indeed, for most providers, government budgetary subsidies constitute only a minor revenue source—less than 10% for government hospitals (Ministry of Health, 1998, 2000).

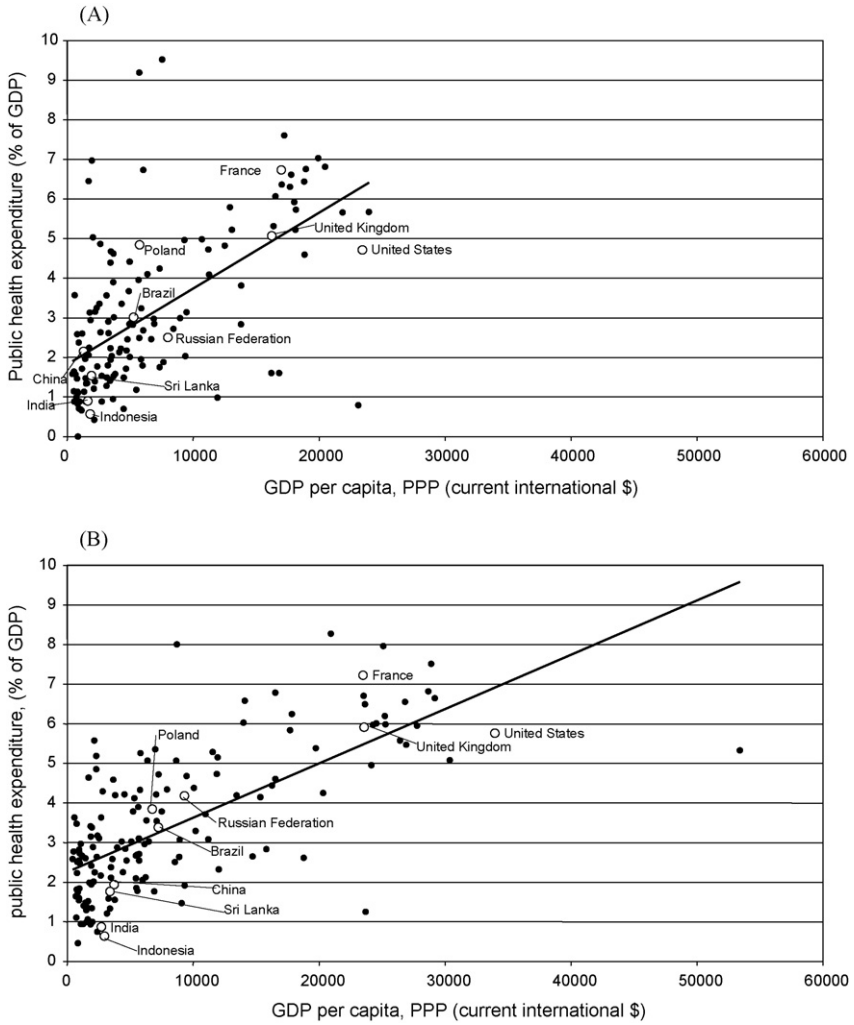


Fig. 5. Public health expenditure and per capita GDP, 1990 and 2000. (A) Year 1990 data. (B) Year 2000 data. *Source:* World Development Indicators, World Bank (2000).

first implementation was relatively slow, because of lack of financing; but large government commitment of funds since 2003 have made the goal of universal basic coverage possible by 2010.

In urban areas, the original pillars of health protection were subsidized public health insurance programs for government employees and workers in state-owned enterprises (SOEs). To expand coverage, pool risk at least at the municipal level, and revise incentives to encourage greater efficiency, experiments with various financing reforms began in pilot cities in the 1990s. These reforms attempted to overcome the limitations of previously small insurance pools and the linkage of benefits to employers' fiscal conditions (Henderson et al., 1995; Liu, Zhao, Cai, Yamada, & Yamada, 2002).

The stated goal of urban social insurance is *di shuiping, guang fugai* ("low benefit level, wide coverage"). A payroll tax, nominally divided between employer and employee, finances coverage. The insurance benefit structure, which borrows from the Singaporean model and resembles recent U.S. "consumer-driven health plans," combines individual Medical Savings Accounts (MSAs) with a social risk-pooling fund for catastrophic expenditures.[8]

The expansion of insurance progressed rather slowly at first. Zhang (2002) reports province- and municipal-level coverage rates in 2001 ranging from 13.9% in Chongqing to 60% or more in Fujian, Hunan, Qinghai and Tianjin. The majority of uninsured – workers' dependents, the self-employed, migrant and informal sector workers – paid out of pocket for health

[8] MSAs and out-of-pocket payments primarily fund outpatient services. Inpatient care draws financing from the Social Risk Pooling Fund, usually after the employee pays a deductible equal to 10% of his or her annual wage. Patients are also responsible for co-insurance, with rates that are graded. The benefit package varies according to local economic conditions. A ceiling on the insured amount of individual medical expenditures (equivalent to four times the average wage in the region) decreases the value of social insurance for protecting against catastrophic illness (Liu, 2002).

services. By 2006, the employee-based basic health insurance (BHI) scheme covered only about 27% of urban residents (Ministry of Labor and Social Security, 2007).

China's incomplete insurance coverage has undermined the income- and health-protection aims of social insurance. Moreover, gaps in coverage exacerbate the problem of adverse selection (see Cutler & Zeckhauser, 2000). China is not nearly as regimented as many in the west perceive it to be; citizens routinely undermine official policies through various strategies of self-interested behavior or passive 'resistance.' For urban health insurance reforms, for example, although firms are under pressure from local social insurance bureaus to pay insurance contributions, "these agencies do not have the legal authority to force participation, because China does not yet have a social insurance law" (Liu, 2002, 143). Unsurprisingly, therefore, adverse selection plagues China's social insurance system. The insured population in BMI is far more elderly and ill, on average, than the general population. The firms that choose not to participate employ disproportionately young and healthy workers, whereas the firms that do participate have higher burdens of older workers and retirees.

The disproportionate coverage of retirees among the insured gives some indication of the magnitude of the adverse selection problem. In 2001, retirees (*lixiu, tuixiu, tuizhi renyuan*) totaled only 5.5% of the number of currently employed (Ministry of Labor and Social Security, 2002, 501 and 604). Although the concentration of retirees is higher in urban areas, they are clearly overrepresented in urban health insurance pools. Retirees constituted 24.9% of the insured population (*canbao renshu*; Ministry of Labor and Social Security, 2002, 643), and the number of insured retirees was 33% of the number of insured employees (18,152,000/54,707,406; Ministry of Labor and Social Security, 2002, 644). In some regions, the disparities have been much larger than these national statistics reveal. For example, in Beijing and Tianjin in the early 2000 s, the ratio of retirees to currently employees was 59 and 50%, respectively (Ministry of Labor and Social Security, 2002, 644). The insurance risk for supporting elderly retirees has not been spread over a large population, but concentrated on the employees of firms that join the formal sector social health insurance scheme. China has combated adverse selection partly by stipulating that the social insurance benefits cover only "basic" services.[9]

Taken to an extreme, firms on the margin about where to locate might favor areas with low social insurance burdens, such as urban areas with a concentration of young workers (such as Shenzhen). This effect has been limited by the many other factors driving firm location decisions, and the ability of many firms to avoid social insurance payments even when located in areas with ostensibly mandatory contributions.

China's current push for universal basic health insurance will go a long way toward addressing this problem. However, the policy of voluntary coverage (e.g. in NCMS) complicates achieving universal coverage, and the differences across risk pools within and across locations, as well as the options for supplementing the basic package with commercial or mixed insurance, mean that China's policymakers will continue to confront issues of adverse selection in the health insurance system.

2.5. Pricing and payment

Provider payment in China is predominantly on a fee-for-service (FFS) basis, with a government-regulated fee schedule. The problems with administered FFS prices are well known (Newhouse, 2002). In China, the salient feature of administered prices is their distortion from average costs, intentionally designed to provide implicit insurance to poor patients. Prices for basic services often do not cover even marginal cost. To compensate providers for lost revenue, some other services – primarily high-technology diagnostic procedures and most pharmaceuticals – are priced well above-average cost. These distorted prices give perverse incentives, helping to drive cost escalation and compromise patient access to care (see discussion in Eggleston & Yip, 2004; Eggleston, 2008).

China's pricing strategy for health services closely resembles its "dual-track pricing" in other sectors of the economy. By allowing firms to sell above-quota output at market-driven prices, while enforcing deliveries under the remaining plan prices and quotas, China achieved Pareto-improving economic reforms, or "reform without losers" (Lau, Qian, & Roland, 2000). This "dual-track" strategy – continuing to enforce plan prices and output while allowing market-driven profit maximization on the margin – was tremendously successful for agricultural and manufactured goods. Yet similar policies applied to the health sector proved dysfunctional. Why?

Unlike manufactured goods, health service production cannot be directly regulated to ensure the appropriate quantity of "plan track" basic services. The government does not know how many basic services any particular patient or population needs. Instead, China regulated prices, with "basic services" priced below marginal cost so that even low-income patients could buy the services they needed. The "market track" of expanded production allowed providers to charge prices well above cost for new "high-tech" services and drugs. These cross-subsidies ostensibly would assure that uninsured poor peasants could access basic services, while allowing health care providers to recover costs on "market track" services (since direct subsidies to government-owned providers declined precipitously; see Eggleston & Yip, 2004 and Eggleston, 2008).

[9] If the benefit package was more generous, as would be sensible to protect against catastrophic illness (e.g., Liu, 2002), even fewer healthy, young workers – or firms that employ them – would find it attractive to participate. Although in principle supplementary insurance could fill the gap created by low-benefit basic coverage, commercial insurance companies have been understandably reluctant to expand with widely affordable supplementary insurance because consumers most eager to enroll would be high-risk. Some Chinese social insurance bureaus fill the gap by offering supplementary insurance directly (Zhenjiang and Suzhou) or through commercial insurance companies (Xiamen; Liu, 2002, 146).

Instead, distorted prices embody perverse incentives for hospitals and other health care providers, who have greater power over consumer decisions than suppliers in many other sectors. Providers can make money by over-treating patients with costly diagnostic procedures (such as CT and MRI scans) and prescribing drugs, while skimping on unprofitable basic curative and public health services. The risks of this kind of supplier-induced demand – a controversial phenomenon documented to some degree in the U.S. and other high-income countries (McGuire, 2000) – are even greater in developing countries where consumers are even less discerning than in developed countries, and therefore more vulnerable vis-à-vis providers (except that wealth and liquidity constraints preclude many from following advice for expensive treatment). Moreover, developing countries face large opportunity costs of excessive spending on high-tech medicine, since the burden of disease is primarily in areas addressed cost-effectively with public health and lower-tech services.

The unintended (but hardly unpredictable) supply-side reaction to distorted FFS reimbursement spurs cost escalation and exacerbates the very access problems that distorted prices were meant to prevent. Recognizing these distortions, several social insurance bureaus have experimented with aggregate forms of payment, such as case-based payments or fixed budgets with bonuses and withholds tied to performance (Eggleston, Li, Meng, Lindelow, & Wagstaff, 2008). Policymakers also intend to adjust the fee schedule so that fees better reflect actual resource costs, and may rely on direct supply-side funding of community health centers for some regions and services.

2.6. Toward a pluralistic delivery system

Health care delivery in most established-market economies includes a mixture of government and private ownership. In the U.S., 70.8% of community hospital beds are private not-for-profit, 13.4% are for-profit, and 15.9% are government-owned (AHA, 2002, 2–5). Mixed ownership prevails among European health sectors as well, with typically a larger share of government control. Nevertheless, on average more than one in five hospitals in the EU are privately owned (22.4% in 1996; WHO European Health for All database), and in several countries a substantial fraction of total beds (including long-term care beds) are investor-owned.

Economic theorists have long debated whether ownership of health care providers matters for how patients are treated and for the overall performance of the health sector. In particular, should government use public financing to "make" health services in public clinics and hospitals, or "buy" health services from the private sector? This "make or buy" decision has no clear theoretical answer (Eggleston & Zeckhauser, 2002; Poterba, 1996; Shleifer, 1998). Government can use monopsony to counteract the power of the medical profession and purchase services at lower prices. Yet private provision avoids bureaucratic monopolies that become inefficient and unresponsive to patients.

According to the property rights theory of ownership, the "make or buy" decision depends upon how well governments can write, monitor and enforce contracts (Hart, Shleifer, & Vishny, 1997). A well-written and enforceable contract can harness private efficiency while proscribing quality distortions and selective treatment of profitable patients. Indeed, if a buyer could specify in a contract exactly what services, for whom, at what quality and cost, they wish to buy, then the ownership of the provider should not matter. In practice, however, contracts can never specify all the details about treatment for every patient. In developing and transitional economies, contracts are even less likely to be comprehensive and enforceable, so that perverse incentives for providers to skimp on noncontractible quality are even more of a concern. Health sector institutions such as the Hippocratic oath of medical ethics or the prevalence of nonprofit providers can be seen as responses to these concerns (Arrow, 1963).

China, like most transitional economies, is moving from "make" to "buy" on the "make or buy" continuum. Village doctors and individual urban providers became self-employed, charging for services on a FFS basis. Clinics and hospitals are mostly government-owned or operated by SOEs. Recently, however, Chinese policymakers have increasingly come to view government hospitals as a form of SOE, meriting experimentation with managerial autonomy, incentives and property rights reforms (Li & Song, 2002). Some of the same trends driving ownership reform elsewhere in the economy – such as harder budget constraints and competitive pressures (Cao, Qian, & Weingast, 1999) – also spur property rights diversification in the health sector. Official policy now differentiates providers by ownership and tax obligations. Hospitals and other health care providers must register as government, private nonprofit, or private for-profit entities. Government and private nonprofits are tax-exempt and subject to administered prices. Government hospitals continue to receive some direct financial support from local or provincial governments. Private for-profit providers are free to set their own prices but required to pay taxes.

Eggleston and Yip (2004) calibrate a simulation model of the impact of China's ownership and pricing reforms on cost, quality and access. Both theoretic and simulation results show how providing implicit insurance through distorted prices leads to over/under use of services by profitability, which in turn fuels cost escalation and reduces access for the poor. The authors suggest that regardless of ownership structure, broadened insurance coverage and mixed payment are better options than continued implicit cross-subsidies through distorted FFS. Lim, Yang, Zhang, Zhou et al. (2004) and Lim, Yang, Zhang, Feng, and Zhou (2004) also emphasize the need for careful sector-wide regulation and quality assurance.

3. Discussion and conclusion

Modifying the policy recommendations of Kornai and Eggleston (2001) to the Chinese context, we argue that the most pressing priority should be to (re-)establish social solidarity in the health sector through expanded community financing in rural areas and social insurance in urban areas, while upholding what progress had been made in allowing, and being

responsive to, individual choice. Encouragingly, China has made significant progress toward achieving universal coverage and reversing its reliance on patient out-of-pocket financing of health care services. It remains to be seen how effectively the new government financing can be harnessed to address priority public health challenges and build a sustainable system that overcomes the perverse incentives implicit in the current financing and delivery system.

As shown in Fig. 4, health spending in China has grown considerably over the past two decades, exceeding even the blistering pace of growth of China's overall GDP. Can China afford to devote an increasing share of national income to the health sector? The concept of "affordability," although vague, can be made specific (Chernew, Hirth, & Cutler, 2003). Arguably, by conventionally accepted methods of measuring affordability, China can afford to continue to have health spending increase at a rate slightly higher than GDP growth, and thus for the health sector to absorb an increasing share of GDP, for at least the next decade or two. Indeed, this will hold true if the experience of other developing and industrialized countries is any guide, because the elasticity of health spending with respect to per capita GDP appears to be greater than one (Gerdtham & Jonsson, 2000). An aging population, epidemiologic transition to more chronic diseases, increasing obesity and smoking-related illness, along with a significant burden from communicable diseases like tuberculosis and HIV/AIDS—all these factors make it difficult to envision health spending not growing as fast as, if not faster than, per capita income.

What China cannot afford is to have that spending concentrated on the urban elite, to the exclusion of basic coverage for the majority of China's population. The dramatic expansion of the NCMS program in rural areas since 2003 has gone a long way toward redressing the imbalance. But the sustainability of such a system, and its effectiveness in addressing illness-induced poverty, will depend on complementary reforms of the health care delivery system in both urban and rural areas.

Universal health coverage, even at a limited coverage level, could be one enabling factor for improving population health and for helping to overcome disparities in health status exacerbated by inequitable access to care. Health insurance expansion is also socially valuable beyond its link to improved health. For example, health insurance provides risk protection, helping to prevent illness-induced poverty and to promote social solidarity. Universal health insurance can also make workers more productive, spur labor mobility between jobs, and reduce social welfare burdens on enterprises—allowing governments to harden budget constraints and transition to a market-based system with a social safety net separate from SOEs.

In many countries (such as the U.S.), public insurance expansion must balance the benefits of increased coverage against the costs of "crowding out" private insurance. In China, however, private health coverage has been modest to nonexistent. An "advantage of backwardness" (Gerschenkron, 1962) from relying on such extensive out-of-pocket private financing is that China's current expansion of social insurance will not crowd out private insurance.

Expanded public financing also strengthens the government's ability to use its role as purchaser to promote quality care at reasonable cost. Social insurance bureaus can take the lead in promoting effective purchasing through payment reform, quality assurance initiatives, and beneficiary education.

A second urgent priority is promoting population health (Rao, 2003); examples include educating consumers more broadly about individual behaviors such as the risks from smoking, drinking, unprotected sex and sedentary lifestyles, and controlling infectious diseases that have become more difficult and costly to treat, such as multi-drug resistant tuberculosis. In fact, expanding insurance coverage and promoting population health are intimately intertwined. Consider one example: addressing the needs of China's "floating population," the millions of workers who migrate from rural to urban areas in search of better employment and life opportunity. To date this population has been uninsured. Loss of productivity and poverty-induced illness for this population will adversely influence overall standards of living and economic growth, particularly since China's continued economic development will depend upon flows of labor out of agriculture and into urban industrial or service occupations. As labor mobility increases, epidemic diseases find an easy way to spread among the population. Expanding health coverage to the floating population will be critical for effective prevention and control of epidemic diseases and for closing the widening gaps in health status across subpopulations in China. Thus, the success of health reforms will be shaped to a large extent by how migrant workers are incorporated into the rural or urban insurance schemes and how effective population health initiatives are in reaching the migrant population.

A third and final important government role is in providing prudent regulation of a pluralistic delivery system. Theory does not dictate what the appropriate mix of public and private ownership is, and international experience provides mixed results (Eggleston et al., in press; Preker & Harding, 2003; Sloan, 2000; Shen, Eggleston, Lau, & Schmid, 2007). Nevertheless, most established-market economies have moved toward public financing and pluralistic delivery. Although China initially moved in the opposite direction during the reform era – with less public financing and continued public delivery – recent reforms foretell greater convergence to international norms.

With expanded public financing and effective regulation of pluralistic delivery, China may yet be able to reform the health sector into a model for other countries, as it once was and as other aspects of China's socioeconomic development continue to be.

References

American Hospital Association (AHA). (2002). *Hospital statistics*. Chicago: American Hospital Association.
Arrow, K. J. (1963). Uncertainty and the welfare economics of medical care. *American Economic Review, 53*, 941–973.
Barro, R. J., & Sala-i-Martin, X. (1995). *Economic growth*. New York: McGraw-Hill.
Bloom, D. E., Canning, D., & Sevilla, J. (2001). *The effect of health on economic growth: Theory and evidence* (NBER Working Paper 8587, November).
Campos, N., & Coricelli, F. (2002). Growth in transition: What we know, what we don't, and what we should. *Journal of Economic Literature, 40*(3), 793–836.

Cao, Y., Qian, Y., & Weingast, B. (1999). From federalism, Chinese style, to privatization, Chinese style. *Economics of Transition, 7*(1), 103–131.
Chernew, M. E., Hirth, R. A., & Cutler, D. M. (2003). Increased spending on health care: How much can the United States afford? *Health Affairs, 22*(4), 15–25.
Cutler, D. M., & Zeckhauser, R. J. (2000). The anatomy of health insurance. In Culyer, A. J., & Newhouse, J. P. (Eds.), *Handbook of health economics* (Vol. 1A). Amsterdam: North Holland.
Deaton, A. (2004). Health in an age of globalization. *Brookings Trade Forum, 2004*, 83–110.
Drèze, J., & Sen, A. K. (2002). *India: Development and participation*. Delhi: Oxford University Press.
Eggleston, K. (2008). Kan Bing Nan, Kan Bing Gui: Challenges for China's healthcare system thirty years into reform, Walter H. Shorenstein Asia-Pacific Research Center working paper.
Eggleston, K., Posner, E., & Zeckhauser, R. J. (2000). The design and interpretation of contracts: Why complexity matters. *Northwestern University Law Review, 95*(1), 91–132.
Eggleston, K., Li, L., Meng, Q., Lindelow, M., & Wagstaff, A. (2008). Health service delivery in China: A literature review. *Health Economics, 17*, 149–165 http://dx.doi.org/10.1002/hec.1306.
Eggleston, K., Shen, Y., Lau J., Schmid, C. H., & Chan, J. (in press). Hospital ownership and quality of care: What explains the different results? *Health Economics*. (http://dx.doi.org/10.1002/hec.1333).
Eggleston, K., Wang, J. and Rao, K. (2005). *From plan to market in the health sector? China's experience* (Tufts University Economics Department Working Paper).
Eggleston, K., & Yip, W. (2004). Hospital competition under regulated prices: Application to urban health sector reforms in China. *International Journal of Health Care Finance and Economics, 4*(4), 343–368.
Eggleston, K., & Zeckhauser, R. J. (2002). Government contracting for health care. In J. D. Donahue & J. S., Nye, Jr., (Eds.). *Market-based Governance: Supply side, demand side, upside and downside*. Washington, D.C. Brookings Institute.
European Bank for Reconstruction and Development. (1999). Social developments in transition, *Transition Report 1999: Ten Years of Transition*, Annex 1.1, pp. 13–19.
Evans, D. B., & Xu, K. (2008). Funding public health. In J. Lou & S. Wang (Eds.), *Public finance in China: Reform and growth for a harmonious society* (pp. 265–286). Washington D.C World Bank. (Chapter 12).
Fuchs, Victor R.. (1998). *Who Shall Live? Health, Economics, and Social Choice, expanded edition* Singapore: World Scientific.
Gerdtham, U. G., & Jonsson, B. (2000). International comparisons of health expenditure. In Culyer, A. J., & Newhouse, J. P. (Eds.), *The handbook of health economics* (Vol. 1A). Amsterdam: Elsevier North Holland.
Gerschenkron, A. (1962). *Economic backwardness in historical perspective: A book of essays*. Cambridge, MA: Belknap Press of Harvard University Press.
Hart, O., Shleifer, A., & Vishny, R. W. (1997). The proper scope of government: Theory and an application to prisons. *Quarterly Journal of Economics*, Nov.: 1127–1161.
Henderson, G., Jin, S., Akin, J., Li, A., Wang, J., Ma, H., et al. (1995). Distribution of medical insurance in China. *Social Science and Medicine, 41*(8), 1119–1130.
Hsiao, W. C. (1995). The Chinese health care system: Lessons for other nations. *Social Science and Medicine, 41*(8), 1047–1055.
Hsiao, W. C., & Liu, Y. L. (1996). Economic reform and health: Lessons from China. *New England Journal of Medicine, 335*, 430–432.
Jamison, D. T. (1984). *China: The health sector*. Washington, D.C. World Bank.
Kornai, J. (1994). Transformational recession: The main causes. *Journal of Comparative Economics, 19*, 39–63.
Kornai, J., & Eggleston, K. (2001). *Welfare, choice and solidarity in transition: Reforming the health sector in Eastern Europe*. Cambridge: Cambridge University Press.
Lau, L., Qian, Y., & Roland, G. (2000). Reform without losers: An interpretation of China's dual-track approach to transition. *Journal of Political Economy, 108*(1), 120–143.
Li, W. P., & Song, W. G. (2002). A practical analysis of the hospital property right system. *Chinese Health Economics, 21*(3), 1–5.
Lim, M.K., Yang, H., Zhang, T. Zhou, Z., Feng, W., & Chen, Y. (2003). The role and scope of private medical practice in China, *Final Report to the World Health Organization (WHO) and the United Nations Development Programme (UNDP)*.
Lim, M. K., Yang, H., Zhang, T., Feng, W., & Zhou, Z. (2004). Public perceptions of private health care in socialist China. *Health Affairs, 23*(6), 222–234.
Liu, G., Zhao, Z., Cai, R., Yamada, T., & Yamada, T. (2002). Equity in health care access: Assessing the urban health insurance reform in China. *Social Science and Medicine, 55*, 1779–1794.
Liu, Y. (2002). Reforming China's urban health insurance system. *Health Policy, 60*, 133–150.
Liu, Y., Hsiao, W. C., & Eggleston, K. (1999). Equity in health and health care: The Chinese experience. *Social Science and Medicine, 49*, 1349–1356.
Liu, Y., Rao, K., & Fei, J. (1998). Economic transition and health transition: Comparing China and Russia. *Health Policy, 44*, 103–122.
Ma, J., Mingshan, L., & Hude, Q. (2008). From a national, centrally planned health system to a system based on the market: Lessons from China. *Health Affairs, 27*(4), 937–948.
McGuire, T. G. (2000). Physician agency. In Culyer, A. J., & Newhouse, J. P. (Eds.), *The handbook of health economics* (Vol. 1). Amsterdam: Elsevier North-Holland.
Ministry of Health. (2000). In *Yearbook of Health in the People's Republic of China*. Beijing: People's Medical Publishing House.
Ministry of Health. (2001). *Zhongguo Weisheng Nianjian [Yearbook of health]*. Beijing: Ministry of Health.
Ministry of Health. (1998). *Research on national health services—An analysis report of the second national health services survey in 1998*. Beijing: Ministry of Health.
Ministry of Labor and Social Security. (2002). *Zhongguo Laodong he Shehui Baozhang Nianjian* [China labor and social security yearbook]. Beijing: Ministry of Labor and Social Security.
Ministry of Labor and Social Security. (2007). *The Statistical Report on the Development of Labor and Social Security in 2006*, http://www.molss.gov.cn/gb/news/2007-05/18/content_178167.htm (accessed 31 March 2008).
Newhouse, J. P. (2002). *Pricing the priceless: A health care conundrum*. Cambridge, MA: MIT Press.
Popkin, B. M. (1999). Urbanization, lifestyle changes and the nutrition transition. *World Development, 27*(11), 1905–1916.
Popkin, B. M. (2008). Will China's nutrition transition overwhelm its health care system and slow economic growth? *Health Affairs, 27*(4), 1064–1076.
Poterba, J. (1996). Government intervention in markets for education and health care: How and why. In V. R. Fuchs (Ed.), *Individual and Social Responsibility*. Chicago: University of Chicago Press.
Preker, A. S., & Harding, A. (Eds.). (2003). *Private participation in health services*. Washington, D.C. World Bank.
Preston, S. H. (1975). The changing relationship between mortality and level of economic development. *Population Studies, 29*, 231–248.
Qian, Y. (2000). The process of China's market transition (1978–98): The evolutionary, historical, and comparative perspectives. *Journal of Institutional and Theoretical Economics, 156*(1), 151–171.
Rao, K.Q. (2003). *Transition economy and health system reform: A consideration of health reform in China*. http://www.moh.gov.cn/tjxxzx/ztyjjbg/1200209180007.ppt.
Rodrick, D. (2008). *Second-best institutions* (National Bureau of Economic Research working paper 14050, June 2008).
Shen, Y., Eggleston, K., Lau, J., & Schmid, C. H. (2007). Hospital ownership and financial performance: What explains the different findings in the empirical literature? *Inquiry, 44*(1), 41–68.
Shleifer, A. (1998). State versus private ownership. *Journal of Economic Perspectives, 12*, 133–150.
Sloan, F. (2000). Not-for-profit ownership and hospital behavior. In Culyer, A. J., & Newhouse, J. P. (Eds.), *The handbook of health economics* (Vol. 1). Amsterdam: Elsevier North-Holland.
Strauss, J., & Thomas, D. (1998). Health, nutrition and economic development. *Journal of Economic Literature, 36*, 766–817.
Svejnar, J. (2002). Transition economies: Performance and challenges. *Journal of Economic Perspectives, 16*(1), 3–28.
Sun, Q., Santoro, M.A., Meng, Q., Liu, C., & Eggleston, K. (2008) *Pharmaceutical Policy in China* (Health Affairs 27, no. 4 (2008): 1042-1050; 10.1377/hlthaff.27.4.1042).
Wagstaff, A. (2004). China's rural health challenges. *Paper presented at the World Bank conference on reforming China's rural health sector*.
Wagstaff, A., & Lindelow, M. (2008). Health reform in rural China: Challenges and options. In Jiwei Lou & Shuilin Wang (Eds.), *Public finance in China: Reform and growth for a harmonious society* (pp. 265–286). Washington D.C. World Bank. (Chapter 13).

World Bank. (2000). *World Development Indicators 2000*. New York: Oxford University Press for the World Bank.
World Bank. (1997). *Financing health care: Issues and options for China*, China 2020 Series. Washington D.C.: World Bank.
World Bank. (1996). *World development report 1996: From plan to market*. New York: Oxford University Press for the World Bank.
World Health Organization. (2002). *WHO European Health For All database*. WHO Regional Office for Europe, Copenhagen, Denmark. www.euro.who.int/HFADB.
World Health Organization. (2001). *Macroeconomics and health: Investing in health for economic development*, Report of the Commission on Macroeconomics and Health, chaired by Jeffrey Sachs. Geneva: World Health Organization.
World Health Organization. (2000). *The world health report 2000, health systems: Improving performance*. Geneva: World Health Organization.
Yip, W., & Mahal, A. (2008). The health care systems of China and India: Performance and future challenges. *Health Affairs, 27*(4), 921–932.
Yuan, M., Chen, M. (1994). The Chinese rural health care reform, *People's Daily*, July 2.
Zhang, J. (2002). 2001 Nian Bufen Shengshi Yiliao Baoxian Zhidu Gaige Qingkuang [The status of health insurance reforms in selected provinces and municipalities in 2001], *Shehui Baoxian Yanjiu* [Social insurance research] 2002/4: 6–10.
Zhao, K., Gao, G., & Wan, Q. (2002). 2000 Nian Zhongguo Weisheng Zongfeiyong Cesuan Baogao [A report on the calculation of China's total health expenditure in 2000]. *Zhongguo Weisheng Jingji [Chinese health economics], 21*(3), 29–32.