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Improving China's Health Care System

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by
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ABSTRACT/RÉSUMÉ

Improving China's health care system

Overall, health outcomes in China have improved tremendously over the past three decades, especially thanks to the reduction in some traditional infectious diseases. However, death rates from chronic diseases have been on the rise, not least owing to changes in life styles and deteriorating environmental conditions. Supply of health care is overwhelmingly provided publicly and hospitals have been absorbing a growing share of the resources. The number of doctors has increased fast but the level of qualification of incumbent doctors is often modest. Demand for care has risen rapidly, in line with incomes, and the relative price of care soared through the early 2000s. Hospital budgets and their doctors' pay are partly based on the pharmaceuticals they prescribe and sell, whose prices are regulated and involve considerable cross-subsidisation. Faced with these problems, the government has launched a number of reforms. New insurance schemes have been rolled out both in rural and urban areas. As a result, coverage and use of medical facilities has increased a lot, except for migrants. In practice, however, catastrophic but also chronic illnesses continue to push people into poverty, especially in the poorer regions, given limited risk pooling at the national level. A new set of reforms was announced in 2009, aiming at universal, safe, affordable and effective basic health care by 2020. They involve investment in medical infrastructure, generalising coverage, more focus on prevention, a new essential drugs system and far-reaching reorganisation, including hospital reform. It will be important to make sure that primary care plays a greater role and that hospitals are managed more efficiently with less of a hierarchical structure. Progress will also require changes in the relative prices of treatments and higher doctors' wages and tobacco prices.

This Working Paper relates to the 2010 *OECD Economic Survey of China* (www.oecd.org/eco/surveys/china)

JEL classification: D19, H41, H51, I18, J61, J71, O15, O53, P21, P36.

Keywords: China, health, life expectancy, diseases, doctors, hospitals, pharmaceuticals, migrants, insurance, tobacco.

Améliorer le système de santé chinois

Dans l'ensemble, les résultats de la Chine en matière de santé se sont considérablement améliorés au cours des trente dernières années, surtout par suite du recul de certaines maladies infectieuses classiques. Toutefois, les taux de mortalité par maladies chroniques sont en progression, en particulier à cause de l'évolution des modes de vie et de la détérioration de l'environnement. L'offre de soins de santé est essentiellement publique et les hôpitaux absorbent une part grandissante des ressources. Le nombre de médecins a vite augmenté, mais leur niveau de formation est souvent peu élevé. La demande de soins s'est rapidement accrue, parallèlement aux revenus, et leur prix relatif s'est envolé jusqu'au début des années 2000. Les budgets des hôpitaux et la rémunération de leurs médecins dépendent en partie des produits pharmaceutiques qu'ils prescrivent et vendent, dont les prix sont réglementés et donnent lieu à un important financement croisé. Face à ces problèmes, les pouvoirs publics ont lancé des réformes. De nouveaux dispositifs d'assurance ont été mis en place dans les zones rurales et urbaines. Par conséquent, la population couverte et l'utilisation des équipements médicaux se sont beaucoup accrues, sauf dans le cas des migrants. Toutefois, dans les faits, les maladies catastrophiques, mais aussi les affections chroniques, continuent de faire tomber dans la pauvreté ceux qu'elles touchent, surtout dans les régions déshéritées, la mutualisation des risques à l'échelle nationale demeurant limitée. En 2009 a été annoncée la mise en œuvre d'une nouvelle série de réformes dont le but est d'assurer un accès universel à des soins de santé de base à la fois sûrs, d'un coût abordable et efficaces d'ici à 2020. Ces mesures prévoient des investissements dans les infrastructures médicales, la généralisation de la couverture maladie, une intensification des efforts de prévention, l'instauration d'un nouveau dispositif pour les médicaments essentiels et des restructurations d'envergure, dont une réforme des hôpitaux. Il importera de faire en sorte que le rôle des soins primaires soit renforcé et que les hôpitaux soient gérés de façon plus rationnelle dans le cadre d'un système moins hiérarchisé. Il faudra en outre modifier les prix relatifs des traitements et augmenter la rémunération des médecins, ainsi que le prix du tabac.

Ce Document de travail a trait à l'*Étude économique de l'OCDE de la Chine*, 2010 (www.oecd.org/eco/etudes/chine).

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Mots clés: Chine, santé, espérance de vie, maladies, médecins, hôpitaux, médicaments, migrants, assurance, tabac.

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TABLE OF CONTENTS

IMPROVING CHINA'S HEALTH CARE SYSTEM	5
Health performance.....	5
The health system	10
Supply of medical resources	10
Price regulation	14
Hospital management.....	15
Financing of health care.....	15
Government initiatives.....	17
Health care coverage	18
The impact of the new systems	19
The 2009 health care reform plan.....	23
Assessment and conclusions	24
Bibliography	27

Tables

1. Staff size of community health centres and station	12
2. Education level of medical staff at health centres and stations	12
3. Number of doctors by level of training.....	13
4. Training required to become a doctor.....	14
5. Reimbursement rules and benefits in different rural medical insurance systems	19
6. The new urban health insurance system: coverage by city	23

Figures

1. Cases of infectious diseases.....	6
2. Years of life lost due to non-communicable diseases.....	7
3. Expected healthy years of life at birth	7
4. Maternal mortality for the migrant and registered population.....	8
5. Cigarette consumption per capita and affordability.....	9
6. Provision of care by level of institution.....	11
7. Health care spending by consumers relative to total health care and total consumer spending	16
8. Health care insurance: the extent of coverage	18
9. Utilisation of township health facilities	19
10. Reimbursement rate for rural scheme.....	20
11. Number of drugs prescribed per insured and uninsured patients	22

Boxes

Box 1. The smoking epidemic	9
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IMPROVING CHINA'S HEALTH CARE SYSTEM

By Richard Herd, Yu-Wei Hu and Vincent Koen¹

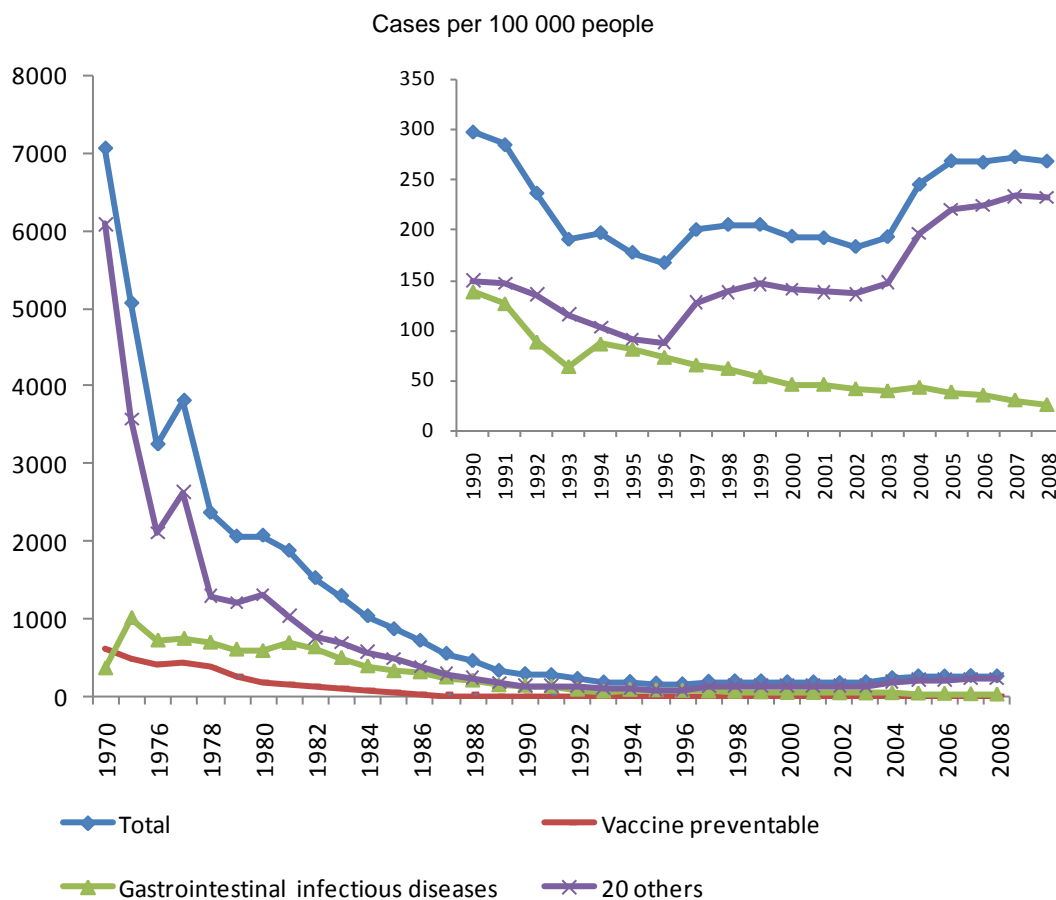
1. During the initial phases of the opening-up of the Chinese economy, the overriding objective was to raise output and incomes. Economic restructuring undermined the health care system, which became increasingly privately financed, though remaining largely publicly-provided. While the population's health status was improving, a rising number of people were priced out of treatment or fell into poverty because of health care costs. The relative price of health care rose markedly until 2000, pushing up the share of overall health care expenditure in GDP (which in 2008 was around 4½ per cent). Hence, a marked change in the equity and efficiency of the health care system was needed. In recent years, several reforms have been initiated, including a number of major changes that have been launched in 2009, introducing two new health insurance schemes, whose design varies throughout the country, in addition to the two existing systems. Overall, nearly all the population is now covered by medical insurance. This paper first describes the evolution of the health status of the population and then turns to the supply and management of resources for health care and to the demand for care. It goes on to discuss financing and recent government initiatives. It closes with an assessment of the latest policy changes and suggestions for further progress.

Health performance

2. China has very successfully reduced deaths from infectious diseases. By the early 1990s, infectious diseases had been almost eliminated (Figure 1). The associated death rate did not fall as much, since the few remaining cases tended to be more severe. Since the mid-1990s, though, the prevalence of infectious diseases has increased anew, due to the growth of sexually-transmitted diseases and AIDS, which now accounts for almost half of all deaths from communicable diseases. However, the epidemic appears to be stabilising at a low level, compared to many countries, of 0.1% for the 15-to-49 age group. The incidence of pulmonary tuberculosis has tripled over the past decade, although the cure rate is high. Of more concern is the spread of multi-resistant tuberculosis, with some provinces having the highest incidence of this disease in the world. In common with many countries, zoonoses are growing problem, especially given the close contact between farmers and animals in areas close to major cities. Notwithstanding these emerging problems, the death rate from infectious diseases is low, comparable to that in many advanced economies. As a result, years of life lost from infectious disease compare well to lower-income OECD countries (Figure 2). The fall in deaths from infectious disease has been mirrored by a fall in infant and maternal mortality. In urban areas, infant mortality has been halved in the past two decades and in rural areas it has been cut by a factor of three. As a result, in urban areas these two death rates are starting to approach those in the OECD area: the infant mortality rate is only one fifth higher than in the United States. The infant mortality rate in rural areas is still high compared to advanced countries but below the national averages for many major lower-income countries (Brazil, India, Indonesia, Mexico and South Africa) and substantially so in the case of India and South Africa. Nonetheless, progress has been slowing and three quarters of deaths are still caused by avoidable problems (UNICEF, 2006).

1. Richard Herd heads the China/India Desk in the Economics Department of the OECD, Hu-Wei Hu was a consultant working on this Desk in 2009 and Vincent Koen heads the Division this Desk belongs to. A shorter version of this paper appeared as a chapter in the *OECD Economic Survey of China* published in February 2010 on the responsibility of the Secretary-General of the OECD. Useful feedback on earlier drafts was received in Beijing from Chinese experts in the context of two seminars organised by the State Information Centre in July and October 2009, and at the OECD from Christophe André, Andrew Dean, Robert Ford, Peter Hoeller, Isabelle Joumard and Luca Lorenzoni. Thomas Chalaux provided technical assistance and Nadine Dufour and Lillie Kee editorial assistance.

Figure 1. Cases of infectious diseases

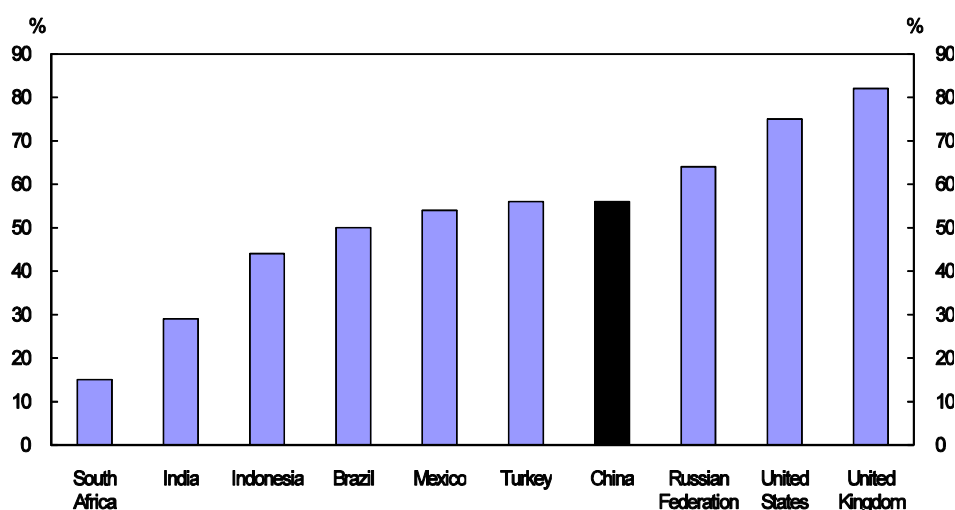


Source: China Health Statistics Yearbook.

3. In contrast to infectious diseases, the death rate from chronic diseases has been on the rise. Death rates from cancer and diseases of the heart and lung have increased substantially since 1990. In particular, deaths from lung cancer have risen sharply, becoming the leading form of death from cancer. There has also been a major increase in chronic obstructive pulmonary disease and pulmonary heart disease, both associated with smoking (Box 1). Other diseases, notably diabetes, hypertension and coronary diseases, may be easier to prevent. The last nationwide survey, in 2001, suggested that diabetes affected 5.6% of the population by 2001 (Chen and Wang, 2009). Its incidence has nevertheless been increasing rapidly and, by 2008, large random surveys in Tianjin and Fujian suggest that it had risen there to 9.5%, slightly below the 2007 US rate (Tian *et al.*, 2009; Lin *et al.*, 2009). Large-scale screening and treatment is needed. Hypertension is also becoming more common. Indeed, high consumption of dietary sodium, used in food preservation, is a major problem. In 2002, the average daily salt intake for an average man (aged 18, with a light level of physical activity) was 12 g per day – approximately twice that recommended by Chinese dietary guidelines (Yang *et al.*, 2008). In some rural areas, average salt intake was as high as 14.7 g. As a result, nearly 18% of Chinese adults aged 15 years and older had hypertension (Cheng, 2009). Many coronary diseases with a growing incidence have well known risk factors and so also lend themselves to prevention.

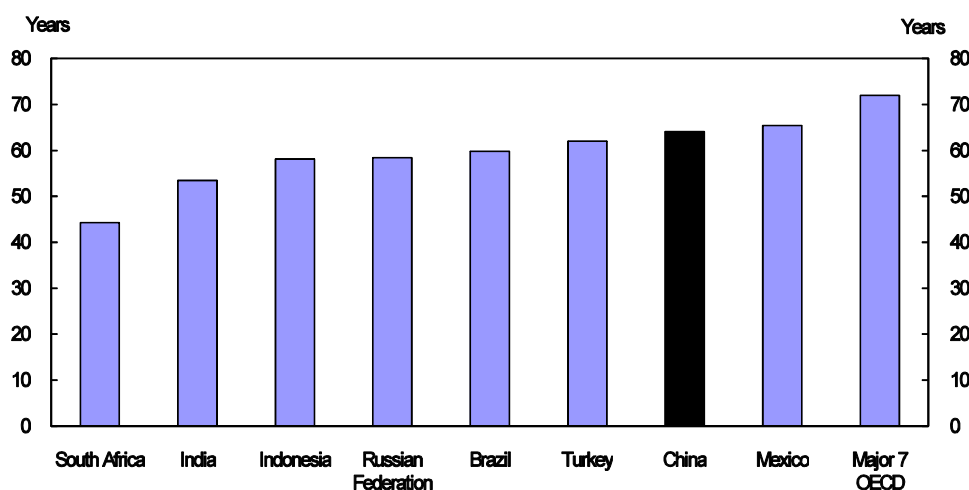
Figure 2. Years of life lost due to non-communicable diseases

As a share of total years lost from disease, in 2004



Source: World Health Organisation.

4. The probability of dying between the age of 15 and 60 has fallen markedly and is now only slightly above that in the United States, though well above that in the rest of the higher-income OECD members. In terms of the overall losses to disease, the decline in infectious and prenatal deaths, added to the fall in adult mortality, has resulted in a significant increase in life expectancy at birth. Indeed, when life expectancy is recalculated to remove years when the person is either unhealthy or disabled, the so-called healthy life expectancy is on a par with that in Turkey and Mexico and well above that in some other emerging market economies, especially India and South Africa (Figure 3).

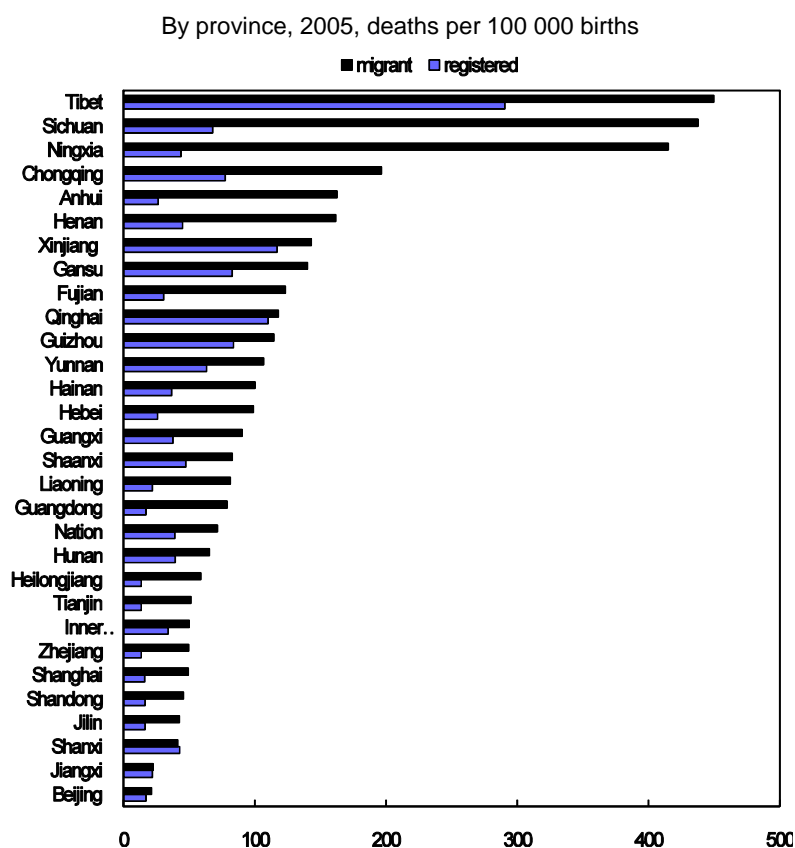
Figure 3. Expected healthy years of life at birth

Source: World Health Organisation.

5. Health outcomes clearly improved in China and continued to do so in recent years. However, while in the late 1970s, the population enjoyed much better health than might be suggested by its income level, this is no longer the case. By 2006, life expectancy had moved back into line with its relative income level (Wagstaff *et al.*, 2009), improving much less than, say, in Indonesia or Malaysia.

6. While overall performance has been good, there remain serious regional problems. The poor health outcomes in lower-income areas are documented in OECD (2010). Within urban areas, severe problems remain amongst migrant families. A nine-city study of migrant children found that vaccination rates were some 10 percentage points lower for migrants than for the nation as a whole (Liang *et al.*, 2008). As a result, the prevalence of measles infection was eight times higher amongst the children of migrants than amongst the registered population in Beijing and Shanghai (Vail, 2009). Malaria, hepatitis, typhoid fever, and respiratory infection were found with a higher incidence among migrants than the local stationary residents in Zhejiang and Guangdong. From limited investigations and reports, the incidence of occupational disease among township enterprise employees was high, at 15.8% in 2002. Rural migrant workers accounted for the majority of workplace deaths in 2003 and about 80% of deaths in the most dangerous industries (mining, construction and dangerous chemicals) were migrant workers (Zheng and Liang, 2005). Finally, migrants' maternal mortality after child birth is 83% higher than for mothers who were registered inhabitants (Figure 4; UNDP, 2008).

Figure 4. Maternal mortality for the migrant and registered population



Source: UNDP (2008).

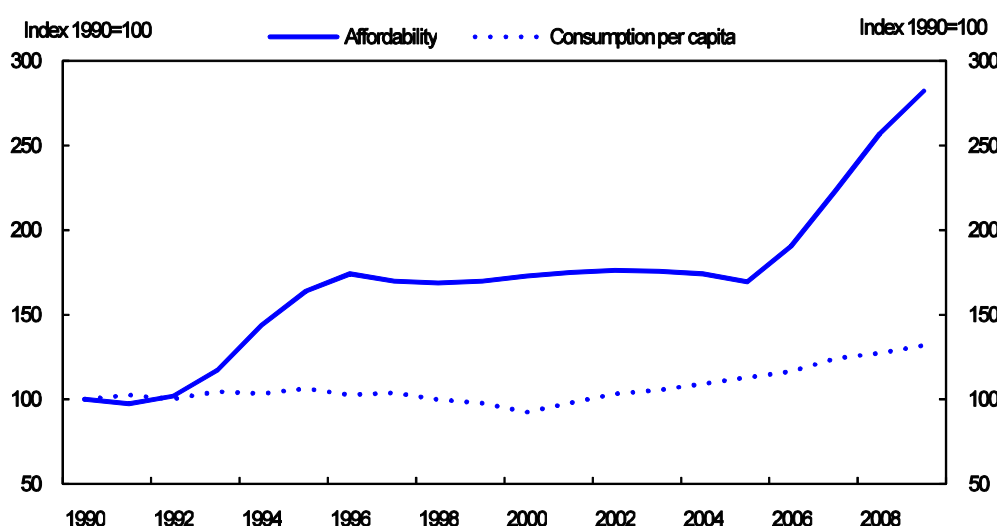
Box 1. The smoking epidemic

A major challenge facing public health at the moment is the smoking epidemic. China accounts for 30% of the world's cigarette consumption against 20% of its population. This development is relatively new. The growth in smoking has followed that in the United States with a 40-year lag. US smoking has started to decline, but in China, after pausing during the 1990s, it has expanded sharply (Figure 5), with total consumption rising 44% in recent years. Individual consumption has reached 15 cigarettes per person per day amongst smokers. About one third of the population over 15 now smoke, but the rate for men is 57% (70% for those aged 30 to 60) and that for women only 3% (Yang *et al.*, 2005).

Public awareness of the dangers of smoking has improved since the mid-1990s. For example, by 2002 the proportion of adults who are not aware that smokers are at increased risk of heart disease had dropped from 96% to 78%, while for lung cancer it had dropped from 60% to 30% (Yang *et al.*, 2005). However, a 2007 survey of doctors in Beijing found that while 91% were aware of the link between lung cancer and smoking, only 63% realized it caused heart disease and only 55% that passive smoking could cause heart disease (Jiang, 2007). In fact, nationwide, 41% of male doctors are smokers, against just 8% in the United Kingdom and 3% in India (World Health Organisation, 2008).

Smoking-related deaths have risen markedly in the past three decades, but are set to increase much faster still unless action is taken quickly. Death from smoking takes 30 years to manifest itself and is most pronounced amongst those who started to smoke by age 20. Indeed, for this group, their probability of dying between the age of 35 and 59 is 50%, a similar probability to that observed in the United States and United Kingdom (Peto, 2009). Moreover, young rural smokers now have the same habits as their urban counterparts. In the Hong Kong SAR of the PRC, where

Figure 5. Cigarette consumption per capita and affordability¹



1. Affordability is defined as the ratio of household disposable income to the price of an average pack of cigarettes.

Source: Hu, Mao *et al.* (2008), updated from China Statistical Yearbook and China Research and Intelligence.

consumption is about 20 years ahead of that in China, deaths from smoking accounted for one-third of all male deaths among ethnic Chinese (Lam *et al.*, 2001). China can expect that within 30 to 40 years deaths from smoking will rise to three million, accounting for one third of annual deaths (Peto, 2009), from one million in 2005 (China Cancer Foundation, 2006).

Not only does smoking cause premature death but it also results in low levels of human capital formation. A comparison of the spending of a sample of smokers and non-smokers in Guizhou showed that extra spending of CNY 100 on tobacco was associated with a CNY 45 reduction in outlays on health and education (Wang *et al.*, 2006). In urban households where the major earner is a smoker, cigarettes account for 8% of spending, rising to 11% in rural areas (Hu *et al.*, 2008). Such a level of spending pushed 50 million people below the poverty line (Liu, 2006).

The government completely controls the tobacco industry in China. The only cigarette producer is the China National Tobacco Corporation (CNTC), which is fully-owned by the state. It is one of the most profitable companies in the country, with costs accounting for only 32% of pre-tax sales. Imports are allowed and some of the main brands are foreign-owned but retailing is controlled by the state monopoly. The industry is regulated by State Tobacco Monopoly Administration, which determines the development strategy for the industry.

Cigarette taxation in China is relatively low. It accounts for only 21% of the average tobacco price (Figure 6). It has an anomalous structure in that the *ad-valorem* excise duty (called a consumption tax in China) is progressive, with a lower rate for cheaper cigarettes. In addition, cheaper cigarettes are cross-subsidised by more expensive brands. Both policies were introduced in order to support the purchasing power of poorer families. In addition to the excise there is also a tobacco leaf tax paid to the local government where the tobacco is produced, so pushing the local government to try to expand the area under cultivation. The CNTC aims to boost production and as part of the stimulus package is set to increase investment in tobacco growing to provide jobs for a million migrant workers.

The government did raise the tax on cigarettes in 2009. However, the STMA indicated that the development plans of the industry might be hurt and so the regulator and the corporation decided to lower wholesale prices by the exact amount by which taxes had been increased. As a result, retail tobacco prices have risen by only 2% over the past decade, against a 111% rise in nominal per capita incomes, making cigarettes far more affordable (see Figure 5 above).

The health system

Supply of medical resources

7. The government has stepped up investment in medical facilities over the past decade. In urban areas, medical care is almost entirely provided through state or local government institutions. Private institutions play a limited role, providing only 5% of hospital beds. The number of general and special hospitals, which barely increased during the 1990s, grew by close to one quarter between 2000 and 2008. The number of beds rose almost as much, although it did not keep up with population growth in urban areas. At 2.9‰ (per thousand), the overall provision of beds is low relative to the unweighted average in the OECD area, but the latter conceals wide variations. The availability of beds in China is only 20% lower than in Australia, Canada, Denmark, Norway, Portugal, Spain, Switzerland, the United Kingdom or the United States. It is higher than in Mexico or Turkey.

8. At the same time, resources have been reallocated between types of facilities. The number of very large hospitals (with over 800 beds) rose almost six-fold, bringing their share of beds to 12%, from 4% in 2000. At the same time, the number of the two lowest, and local, levels of medical facilities (township health centres and various forms of clinics, outpatient facilities and nursing stations) declined by some 20%. Thus, in terms of infrastructure, there has been re-orientation away from primary towards hospital care, which absorbs two-thirds of health expenditure.

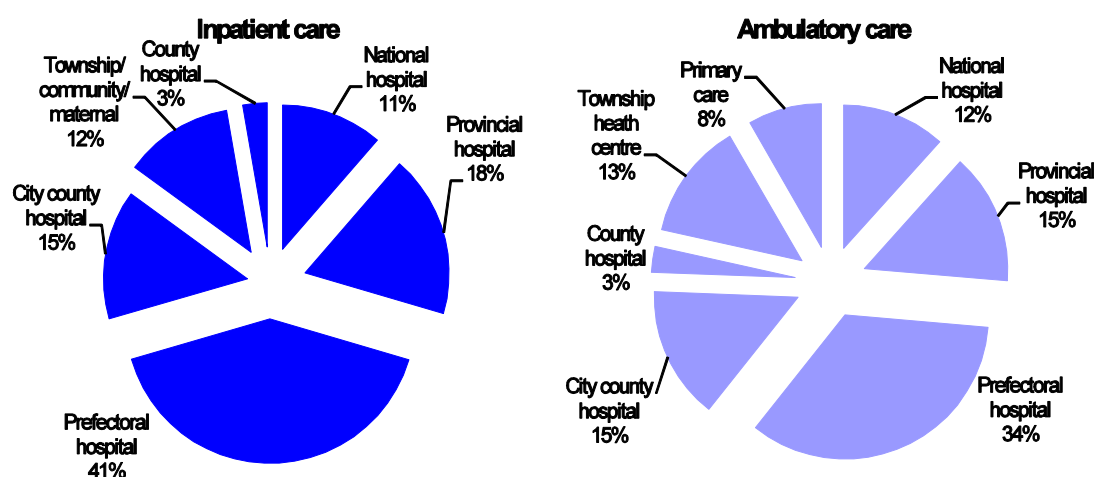
9. Hospitals are graded according to the administrative authority to which they are responsible (national, provincial or county governments). The higher the grade, the more skilled the staff and the better the equipment. Major hospitals with over 500 beds are found in bigger cities while intermediate-sized hospitals are found in county capitals and serve the surrounding rural population. In rural areas, there are also small hospitals in townships. The bulk of inpatient care is provided at prefectural-level hospitals (Figure 6, left panel), which typically serve a catchment area with a population of 600 000.

10. As well as providing inpatient care, hospitals are also the dominant suppliers of primary ambulatory care in urban areas (Figure 6, right panel). Overall, they produce nearly 80% of the value of all first-level medical consultations. The over-reliance on outpatient services is evidenced by the number of outpatient visits per hospital bed, which in 2008 stood at 1 048 per year, against 313 in English hospitals.

As a result of this policy, hospitals treat many illnesses for which they are over-equipped. In a survey of three provinces, it was found that 20% of outpatient visits were for colds or gastroenteritis (Lim, 2002). Government policy has been oriented to devolving primary care to lower-level institutions. The number of urban primary care facilities has expanded in recent years. However, the number of clinically-trained doctors working in these community centres is still small, at only slightly over 13 000 in the whole country.

11. In rural areas, the situation for primary care is even worse. For primary care, rural residents have the choice between village clinics or township medical centres, unless they are close to a county-level city. Nearly all villages have such clinics which are now generally privately run, even if the facilities are owned by the village collective. They are staffed by village medical staff. Since 2002, doctors in these facilities have had to be certified or assistant physicians. However, enforcement of these rules appears poor. Even in rural areas of Beijing, one-third of the professional staff had no qualification beyond junior high school, rising to 70% in poor rural counties (Eggleston *et al.*, 2008). Nonetheless, these doctors have the same prescribing rights as all other doctors despite the fact that some studies have revealed that village doctors rarely prescribe rationally (Zhang *et al.*, 2003), though this phenomena is also found in the largest hospitals in the country (Zhang *et al.*, 2008). Despite the new laws for rural doctors, the density of doctors with at least a college education is only 0.1‰ of the population, compared with 0.9‰ in urban areas (Anand *et al.*, 2008).

Figure 6. Provision of care by level of institution¹



1. Per cent of value of output, with the latter calculated by multiplying the average price per consultation and patient by the number of consultations and patients.

Source: Health Statistical Yearbook and OECD calculations.

12. Family doctor practices are not generally found in urban areas, though there are some family doctors in government-owned community health centres. Indeed, family doctor training was only introduced into medical schools in 1999 and even by 2007 only one-fifth of medical schools had family medicine courses. The result is that most community health centres are staffed by specialists rather than by staff trained in primary care. Community health centres are designed to serve a population of between 30 000 and 100 000, depending on the type of town (Table 1). Each centre is then responsible for a number of health stations. Generally health stations have a catchment area varying from 10 000 to 15 000 people. The size of the health stations is thus broadly the same as that of a group practice in England. They differ in two respects, though. First the level of training is much lower, with doctors at health stations having 2.3 year post-secondary medical education, on average (Table 2). More importantly, they are the bottom

level in a very hierarchically-organised medical system and report to community centres which in turn report to hospitals. Hence, they are unlikely to attract ambitious staff. By contrast, a group practice in England is a privately-owned and managed unit funded by the government.

Table 1. Staff size of community health centres and stations

	Community health centre	Community health station
Doctor	24.0	3.5
Nurse	17.0	2.3
Pharmacist	5.8	0.8
Laboratory assistant	2.8	0.3
Technician	6.2	0.7
Administration	9.4	0.6
Total staff	65	8
Population served	65 000	15 000

Source: Yang *et al.* (2008).

Table 2. Education level of medical staff at health centres and stations

	Doctor		Nurse	
	Health centre	Health station	Health centre	Health station
> 5 years	25.4	19.4	1.8	4.0
3 years	39.0	44.4	21.2	16.0
4 year middle school	29.2	30.6	65.3	68.0
None	6.4	5.6	11.7	12.0

Source: Yang *et al.* (2008).

13. Maternal health care centres have become increasingly underfunded as government support declined. Therefore, many have had to start charging fees, despite the supposedly free nature of the service, leading to an emphasis on treatment rather than prevention. Moreover, in rural areas, many essential treatments are not fully implemented. As a result of this and poor training of doctors, one third of all maternal deaths in rural areas come from haemorrhages after delivery, a rate nearly 13 times higher than in urban areas. Strategies to reduce maternal deaths would also reduce infant deaths, nearly 80% of which occur in the first week after birth.

Table 3. Number of doctors by level of training

In 2005, absolute number and density, ordered by length of training

	Number of doctors		Doctor density	
	Thousands		Doctors per 100 000 people	
Village doctors (medics)	864		66	
Doctors	1 938		148	
Doctors but not physicians	383		29	
Licensed physicians and assistants	1 556		119	
Survey measurement error	50		4	
Assistant physicians	294		22	
Physicians	1 312		100	
Dentists	46		4	
Medical physicians		1 266		97
Secondary school or lower		369		28
Degree but no clinical training		306		23
With degree and clinical training		490		37
Five years plus one clinical and one supervised		438		33
Six years plus two years clinical		42		3
Medical research		11		1

Source: Ministry of Health website: <http://www.moh.gov.cn/publicfiles/business/htmlfiles/zwgkzt/ptjnj/year2008/2.htm>.

14. The number of doctors has risen slightly over time, just ahead of population growth. A long-term comparison is not possible due to the change in the definition of a doctor in 2002. Since that year, official data show that the total number of doctors has risen by 1.7% annually – somewhat faster for the number of licensed doctors. Also, given the income level in China, the number of doctors is seemingly high relative to the population. In addition, there are a large number of less-qualified village doctors. Also, unlike most countries, China has more doctors than nurses (Anand *et al.*, 2008). However, average qualification levels are relatively modest. Indeed, the aim has long been to try to provide basic medical services to as many as possible at a price that society could afford. The emphasis on providing essential care was achieved through using medical staff with a very wide range of training but all of whom were called doctors (Table 3). Even so, the prevalence of doctors is half that in the OECD area at 1.5 per thousand people. Moreover, if the comparison is made for doctors with five years of training including an internship, the density of doctors falls to 0.33‰ in China, against an unweighted average of 3.1‰ in the OECD area. This was very effective as long as the major healthcare problems were infectious diseases and prenatal care, but as income levels rose there was a need to raise qualifications. Starting in 1999, it became compulsory for all new doctors to take a licensing examination before becoming a practitioner. Nonetheless, as yet only one-quarter of doctors have a degree and one year of clinical internship and almost half have no education beyond secondary high school (Table 4). Village doctors in the past did not even need to have completed junior high school.

15. Nearly all doctors are employed by various forms of government agencies on a salaried basis, either in hospitals or in health care centres. The pay and qualifications of the staff generally decline with the prestige of the unit. The best-qualified doctors are found in major hospitals in provincial capitals. At the other end, in township health centres most doctors have just three years of training. In rural villages, first-line medical care is provided by “village medics”, personnel who have a low level of training and are not generally counted as doctors. These are the only group of medical personnel who are paid on a fee-for-service basis.

Table 4. Training required to become a doctor

	Becoming a licensed doctor			Becoming a licensed assistant doctor	
	Years of education after senior high school	Years of clinical internship	Years of work experience after graduation	Years of work experience after becoming assistant doctor	Years of work experience to become assistant doctor
Research degree	8	2	0		
Masters degree	7	2	0		
University degree	5	1	1		
College associate degree	3	0	not possible	2	1
Secondary technical school	0	0	not possible	5	1
High school or lower	0	0	not possible	Phased out after 1998	

Source: Ministry of Health (1998).

16. Over the past decade, the expansion in the number of doctors has not kept up with that of beds, nor with the increase in demand for outpatient consultations. While this called for training more medical students, the surge in their number in recent years, in line with the general massive expansion in tertiary education, exceeds the sector's absorption capacity. By 2009, the number of students graduating with bachelor and associate degrees equipping them to be doctors likely reached 0.4 million, as against a stock of such doctors in 2005 of only 0.8 million. A similar mismatch occurs for associate doctors with less advanced training. There are about 40 000 graduates from the master's degree programme – compared to a total stock of doctors with such qualification of just 42 000 in 2005. In such a situation of over-supply, hospitals tend to only recruit graduates with the highest level of qualification. Even the graduates of the most prestigious universities have problems finding work as doctors. For example, of the graduates of Peking University's five-year clinical medicine programme during the period 2004 to 2006, only 28% were working as doctors in 2007 (Anand *et al.*, 2008).

17. There has been a considerable expansion in the number of nurses and efforts to enhance the quality of their training. The government aimed to increase the number of nurses being trained by 60% (Ministry of Health Study Group, 2003). Nearly all the extra training was planned to take place at college and university level, with the number of graduates from these institutions expected to rise six-fold. The number of nurses trained at secondary vocational schools (representing 85% of the stock of nurses) was to be held constant. As with doctors, this expansion of training has run ahead of the recruitment by hospitals and community health centres. Hence, barely one third of the graduates of these programmes seem likely to use their training. A better strategy might have been to markedly reduce the numbers trained in secondary schools.

Price regulation

18. The price of most basic health care services is regulated by the government. At the heart of pricing policy is the Yellow Book price list – a detailed listing of thousands of medical procedures, services and diagnostic tests, issued by the NDRC's Price Bureau, which establishes the price levels for inpatient and outpatient medical services. These prices have consistently been set below cost. The level of recovery was 25% for hospital bed and board, 30% for basic surgical operations and 40% for general examinations and treatments (Liu *et al.*, 2000). On the other hand, the prices for a CT scan, X-ray exams and pathology tests were set at 70%, 50% and 28% above cost, respectively. Government policy in this area has remained unchanged since then, with several provincial government price bureaus reducing the cost of basic medical treatments despite increasing labour costs (Wang *et al.*, 2007).

19. Hospitals deal with the problem of low regulated prices by unbundling services or over-using facilities with high profit margins, thereby overcoming the problem of unrealistically low regulated prices. The first practice is illegal but if inspectors detect it the fine is small. In the second case, the hospitals often form pools of investors – sometimes drawn from the staff – to provide the equity for bank-financed purchases of equipment. The result has been in line with the NDRC objective of favouring high-tech equipment. The profit from the use of high-tech equipment covers about 5% of operating costs. Hospitals are also allowed a 15% mark-up over wholesale pharmaceutical prices and a 30% mark-up if they purchase directly from the manufacturer. Often these mark-ups are exceeded considerably, rising to as much as a ratio of 10. Even if they are respected, there is no policy aimed at the use of generic drugs. Overall, the mark-up on drugs covers 5% of medical costs (Health Statistics Yearbook, 2008). Hospital management often incentivizes doctors by creating sales targets for pharmaceuticals and high-tech examinations. Departments that beat targets receive bonuses, to which doctors have been shown to respond (Liu and Mills, 2003). Other hospitals link doctors' pay directly to drug prescribing and CAT scanner use. There is also evidence that doctors are rewarded for prescribing the products of certain companies. These practices give rise to over-prescribing, which can be dangerous.²

Hospital management

20. Nearly all Chinese hospitals are public service units with the facilities owned by the government. They are, however, often managed under a “director responsibility” system under which the local authority negotiates a contract in which there is a fixed annual payment and then the hospital has to manage its own activity during the year. However, key components of the budget may be out of the control of the manager – hiring decisions may be taken by the local health bureau and salaries are determined centrally. While the above examples show that hospitals do react to economic signals, there is still concern that hospitals operate under a soft budget constraint that undermines efficiency. In Guangdong, for instance, hospitals where deficits increase receive greater subsidies the following year (Eggelston *et al.*, 2009).

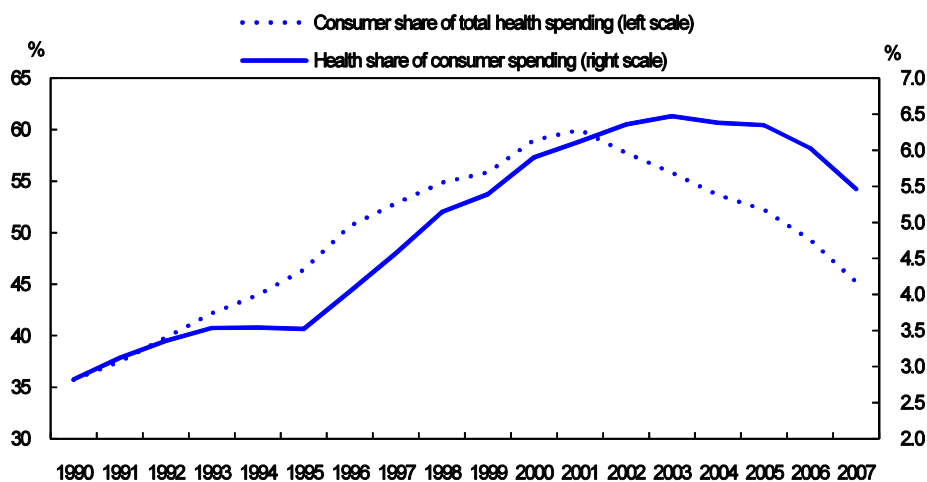
21. There is scope for changing the payment system in hospitals. At present, hospitals generate enough information to allow for the allocation of patient stays by diagnostic related groups. These data can also be related to billing (Gong *et al.*, 2004). Thus, fixed costs per patient could be negotiated with third-party payers, though such systems have their own built-in incentive problems: hospitals may refuse treatment for patients expected to be costly or may skimp on service provision. While information on patient records and billing may be sufficient, hospital accounting may not yet be developed enough to introduce such a system. At present, hospital accounting is cash-based and the relevant Ministry of Health regulation does not call for a balance sheet (Clarke, 2008).

Financing of health care

22. By the second half of the 1990s, the public financing of health care was in crisis. In rural areas, the financing system based on the income of village collectives had collapsed due to the falling income of the collective. Well over half of village clinics had become private enterprises, relying on fee income. In urban areas, the system of enterprise-provided health care was coming to an end and being replaced by medical insurance. With many of the new private sector companies not paying the theoretically compulsory contributions, the extent of health insurance coverage in urban areas fell. As a result, the share of total health care spending financed directly by consumers soared to over 60% by 2001 (Figure 7). Moreover, those with insurance coverage came from the higher-income groups with stable employment. In 2000, the World Health Organisation rated China's health financing system as one of the most inequitable worldwide, ranking China 188th out of 191 countries. The Chinese government recognised that this situation could not continue and described the health system as shameful (Ministry of Health, 2005).

2. The resulting incentive problems are also observed in the Japanese health system (OECD, 2009).

Figure 7. Health care spending by consumers relative to total health care and total consumer spending



Source: Health Statistical Yearbook.

Public sector financing

23. The bulk of public financing of health care comes through insurance systems rather than through the budget. At the beginning of the decade, insurance essentially concerned the urban population, as less than 7% of the rural population had insurance. In urban areas, the basic medical insurance scheme for urban workers (BMIUW) is employment-based. Initially, it did not include government workers, who were covered by a separate scheme but gradually nearly all of these have been integrated into the basic system (Caijing, 2009). The scheme (started in 1998 and completed in 2003) features two components: social pooling (mainly for inpatient expenses) and individual accounts (mainly for outpatient expenses). It is currently financed by employer and employee contributions. On average the payment is 8% of payroll and 2% of the individual wage, respectively. Coverage, however, is far from universal. In 2005, only slightly more than half of employees who are registered urban residents had cover, while only 15% and 36% of unofficial rural and urban employees were covered – a total coverage rate of just over 40% of the urban working population (excluding those engaged in agriculture). This scheme, together with the rural system, covered just a quarter of health care expenses in 2001.

24. Benefits vary according to the city but there is a general pattern. Outpatient costs are met through the individual's medical saving account. This account is fed by the individual's 2% contribution to the basic insurance system and two percentage points of the employer contribution. For the average employee, this is sufficient to cover three consultations per year for the contributor. Children and dependents of the employee are not covered by the employee insurance system. Hospital costs are subject to a deductible equivalent to 10% of the local average annual wage. If expenses are less than four times the annual local wage, 85% of the cost above the deductible is paid by the insurance. This ceiling was raised to six times the local salary in 2009. Employees are encouraged to contribute to a supplementary system but there is still an upper limit on payments. Once the cost of treatment exceeds that threshold, the patient pays 100% of the excess. This scheme does not seem to have reduced catastrophic medical expenditure and may have increased the financial risk from a hospital stay, as hospitals tend to subject insured patients to more procedures (Wagstaff and Lindelow, 2008).

25. Public health care expenditure is generally undertaken locally. In 2007, central government directly financed only 0.3% of total health spending but made earmarked transfers for health spending amounting to a further 5.6% of total spending. The bulk of budgetary expenditure on health is made by

county governments. For example, in Henan, Shandong and Anhui, 90% of expenditure was financed at sub-provincial level. In Henan, close to 60% of spending was financed at the county or township level. The implication is that poor counties will only be able to offer a low level of care to the local population. The provincial government provides supply-side subsidies to hospitals. City hospitals receive 50% of the outlays and township hospitals just 10% (National Health Accounts, 2004).

Individual payments: a barrier to treatment

26. The sharp increase in the cost of health services for individuals was a major barrier for patients, particularly in rural areas. Many people reduced their access to medical services mainly for financial reasons. Overall, in 2007, 38% of the sick were not treated, 70% refused hospitalisation despite a referral, citing financial problems, while over 54% of patients discharging themselves against medical advice cited cost as the reason for their action (Ministry of Health, 2009). There are both income and geographical inequalities. In urban areas, the gap between the hospitalisation rate for the patients in the lower and upper income quintile has been estimated to have widened from 15 to 24 percentage points between 1993 and 2003, though less in rural areas (WHO and DRC, 2005).³ As to differences across space, health care spending per capita in rural areas was only one quarter of that in urban areas.

27. In addition, illness has a major impact on income. In China, deterioration in an individual's assessment of his own health from average to poor, or any other two-step drop, is associated with a 12% fall in income (Lindelov and Wagstaff, 2005). Moreover, it can take two decades to recover from an adverse shock (Yan, 2009). Medical expenses have become the second perceived cause of an individual being below the poverty line, while people pushed below the poverty line due to medical expenses raised the poverty rate from 7% to 10% according to one study (Liu *et al.*, 2003). As noted in OECD (2010), elderly people who paid their own medical expenses were more likely to feel poor than those for whom a third party paid.

Government initiatives

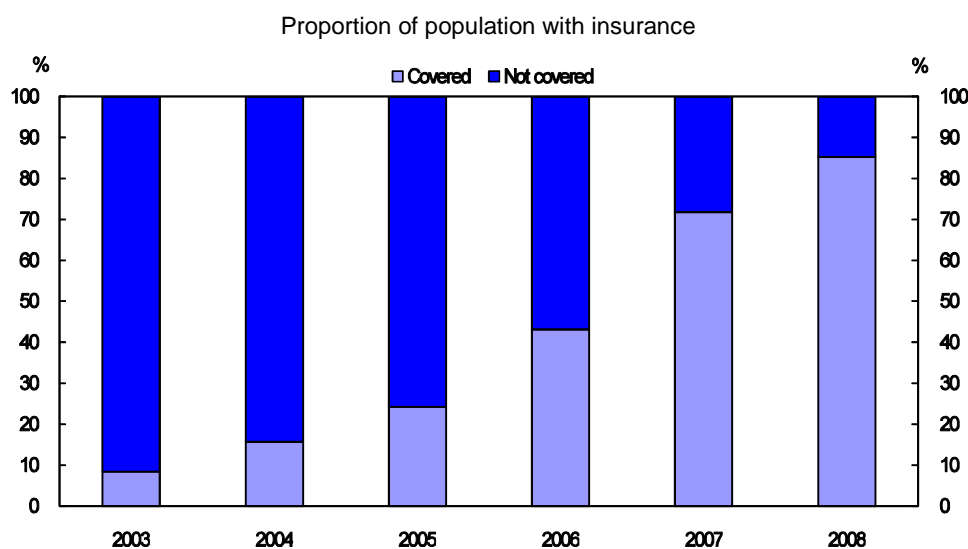
28. A marked change in government policy started in 2003. The conspicuous shortcomings of the financing arrangements led the government to progressively introduce three new financing systems: the new rural cooperative medical scheme (NRCMS), the basic medical insurance system for urban residents (BMIUR) and the medical assistance programme. The first is designed to provide coverage to the rural population, which was the major group without any medical insurance. The second aims to cover urban residents without insurance (children, elderly people without pensions and the long-term unemployed) but not migrants. The first two schemes share many features. Membership in both is voluntary and the central government is to provide a payment for each participant, which the local government is encouraged to match. At the start of the rural scheme in 2003, the annual payment from the central government was CNY 10 per person. By 2008, it had risen to CNY 40, with the participant paying a further CNY 20. With the matching contribution from local government, the total contribution was CNY 100 but the central government subsidy does not depend on income levels by county, which is inequitable (World Bank, 2009). For the urban system, the government payments must be at least CNY 40 (less in western areas). The final scheme – the medical assistance programme – provides medical benefits to those who receive the minimum living allowance.

3. This result, however, is disputed by others who found no increase in inequality except for hospital delivery of babies in rural areas and post-natal care in urban areas (Liu *et al.*, 2008).

Health care coverage

29. Accordingly, health care coverage improved fast (Figure 8). Most spectacular was the expansion of the NRCMS in rural areas. Since the start of the NRCMS in 2003, the number of participants has risen ten-fold, to 815 million, representing a participation rate of 91%.⁴ The take-up of the basic medical insurance for urban residents has also been rapid, reaching 117 million in 300 cities after less than two years. The government has required all cities and towns to adopt it by end-2009. With the increase in coverage, the extent to which consumers have to pay for their own medical care has fallen from the 2001 peak of 60% to 45% in 2007. This did not at first reduce the share of consumer spending on health, as health outlays rose faster than consumer spending but a decline started in 2006-07, as the relative price of health care stabilised. By 2007, consumers were devoting 4% of their outlays to out-of-pocket health spending, on average. However, in rural areas only 3% to 4% of the population actually incur inpatient medical expenses in a given year. For those individuals, out-of-pocket expenses average 78% of average annual income in rural areas, even with the new insurance system.

Figure 8. Health care insurance: the extent of coverage

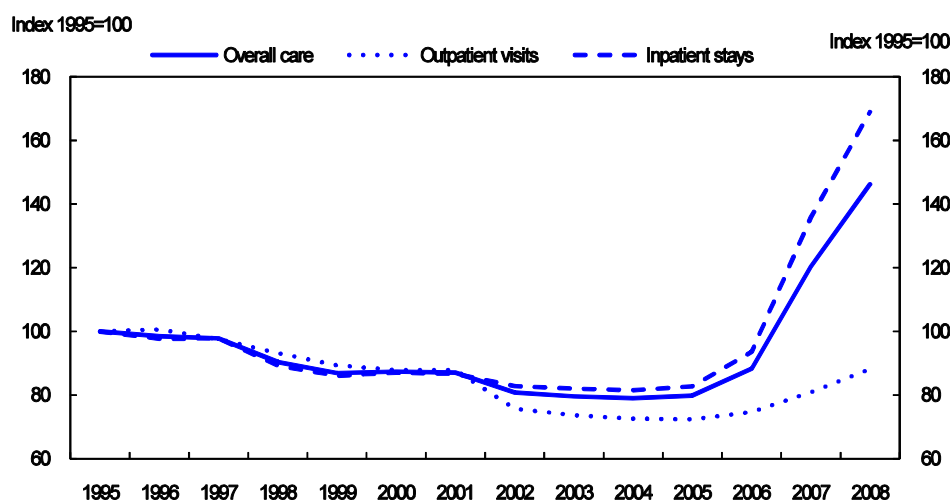


Source: Health Statistics Yearbook.

30. Not only has coverage improved but actual use of the health facilities has increased markedly, especially at the lowest-but-one level of care (Figure 9). For most of the decade to 2003, the number of visits to township medical centres (hospitals) had been falling, while in urban areas a similar institution did not exist. The two new insurance-based schemes were accompanied by a strategy to orient people to existing township centres and to create new urban community health centres at the level of the neighbourhood committee. As a result, the number of visits to township health centres in rural areas rose and urban community health centres spread into more areas. The increase in the utilisation of urban health care centres has been even more spectacular, with a fivefold rise between 2002 and 2008. This increase has come since 2006, as one study using a national survey from that year found that the new system had not had any impact on utilisation (Lin and Lei, 2009). This same study also found that out-of-pocket expenses rose for insured patients, despite the increase in insurance payments. It is not clear whether this effect has persisted over time or whether it is due to insured people choosing better and more expensive care.

4. Participation exceeds the size of the rural population due to the presence of significant rural population in urban areas.

Figure 9. Utilisation of township health facilities



Source: Health Statistical Yearbook.

The impact of the new systems

Rural areas

31. The roll-out of the new system has been rapid and the ability of county authorities to choose the benefit package has resulted in considerable diversity across the country. Three types of scheme dominate. In the first one, both outpatients and inpatients are reimbursed subject to deductibles that increase with the level of the hospital. The second one restricts outpatient reimbursements to selected chronic diseases. The third one involves medical savings accounts fed by the 2% individual contribution, which can be used to pay for outpatient visits. Unfortunately, the savings accounts cannot be pooled within a household, meaning that the household cannot share risks between its members. The choice of scheme varies across the country (Table 5). In the first counties that adopted the schemes, deductibles are quite high (about one

Table 5. Reimbursement rules and benefits in different rural medical insurance systems

2005

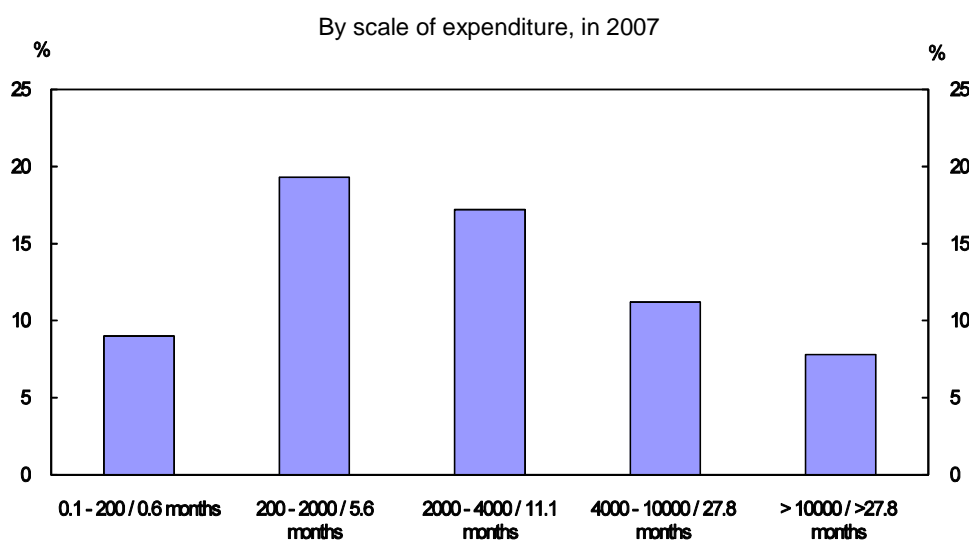
	Announced benefits under different rural medical systems for inpatient care					Typical actual benefits received for inpatient care		Incidence of payments per year	Typical costs
	Median deductible amount per consultation		Median ceiling on insurance benefits		Median insurance payment	Proportion of expense actually covered by insurance	Actual co-payment	Number of people receiving benefits per year	Actual average per capita inpatient spending
	CNY	Months income	CNY	Months income	%	%	Months income	% of participants	CNY
Nation	305	0.9	10 000	29	70	23.4	9.4	3.3	3 344
East	500	1.1	20 000	44	75	22.4	10.0	3.0	4 539
Central	300	0.9	10 000	31	70	24.3	6.5	3.7	2 147
West	200	0.8	5 000	20	70	28.7	6.3	3.6	1 729

Source: NCMS Pilot evaluation team (2006).

month of average rural per capita income). While the co-payment above the deductible appears quite reasonable, in reality the average reimbursement rate for a visit is less than a quarter and the combination of the co-payment and the deductible represents six months of per capita income in rural areas. The type of pool design does appear to exert a significant impact on whether or not the programme meets its goals. In particular, counties that have adopted overall risk pooling appears to perform better in terms of access to health care than those relying on pooled risk sharing for inpatient care and individual risk sharing over time through medical savings accounts for outpatient care (Xu *et al.*, 2009).

32. The reason for the difference between the high promised reimbursement rates and the low actual rate has been the inadequate funding for the system. A nationally representative survey undertaken in the fall of 2007 showed a marked tendency for the reimbursement rate to decline as the cost of treatment increases (Figure 10).

Figure 10. Reimbursement rate for rural scheme



Note: The expenditure categories are in yuan and the upper limits of each expenditure category are shown as a multiple of the average rural per capita household income.

Source: Yi *et al.* (2009).

33. Given these reimbursement rates and the income of the counties in the sample, the administrators could not apply the published schedules. Their choices were stark. For example, if the programme just reimbursed those with catastrophic illness (above one year's income) half of the promised benefit, then the whole fund for the county would be exhausted and those with catastrophic illnesses would still face out-of-pocket expenses of 80%. In order to reverse this situation, the fund would need to have an income of CNY 200 per person. To achieve complete payment of, say, 60% of expenditure between the deductible and the limit for catastrophic insurance would require a further annual payment of CNY 200 per person. The current income of the fund is CNY 90 in western and CNY 70 in central areas. This, moreover, is without allowing for the price elasticity of demand which, while lower than unity, is still sufficient to increase total outlays significantly when out-of-pocket expenses fall (Brown and Theoharides, 2009).

34. The new rural health system may be having positive effects on health status but has not improved financial security. With the system still not fully rolled out, it is too early to look for effects on macro-level health outcomes. However, at the micro level, there has been considerable variation in the roll-out and in the persistence of the older health insurance scheme, which allows to draw some conclusions. Participation in insurance schemes does appear to improve self-reported health status according to one study (Gao and Meng, 2009), but other studies do not present such clear-cut results.

35. The evidence as to whether the financial consequences of catastrophic illness have been mitigated is rather negative. The reimbursement rates for catastrophic illness are low. National studies are lacking at the moment, but a study in Shandong province suggests that the scheme is having a limited impact on catastrophic expenditure (Sun *et al.*, 2009b). Defining catastrophic health expenditure as 40% of annual income less subsistence expenditure (a WHO definition), 9% of families in the studied county incurred catastrophic expenditure before the payment of the NRCMS benefit, and after payment 8.2% still did. In order to reduce the incidence of catastrophic expenditure significantly, the reimbursement rate would have to increase to 70 or 80% from the county average of 18%. Given that the average reimbursement rate in this county is similar to that found in a nationally-representative survey, similar results would obtain nationwide in rural areas. In urban areas, the finding is even worse, in that medical insurance appears to result in an increase in the incidence of catastrophic health care payments (Wagstaff and Lindelow, 2008).

Supplier response

36. The increase in catastrophic spending is perhaps the result of people being drawn into hospital care initially and then being confronted with expensive solutions that they would not have been aware of without insurance. It is also possible that hospitals hike the price for insured relative to uninsured patients – as seems to occur in Guangdong province, where insured patients were charged slightly over 60% more than uninsured patients and incurred pharmaceutical costs 290% higher than uninsured patients (Pan *et al.*, 2009). Of course, it cannot be ruled out that insured patients had worse symptoms or that uninsured patients refused expensive medicines. However, the difference persists even with uncomplicated appendicectomy, suggesting that charging really differs.

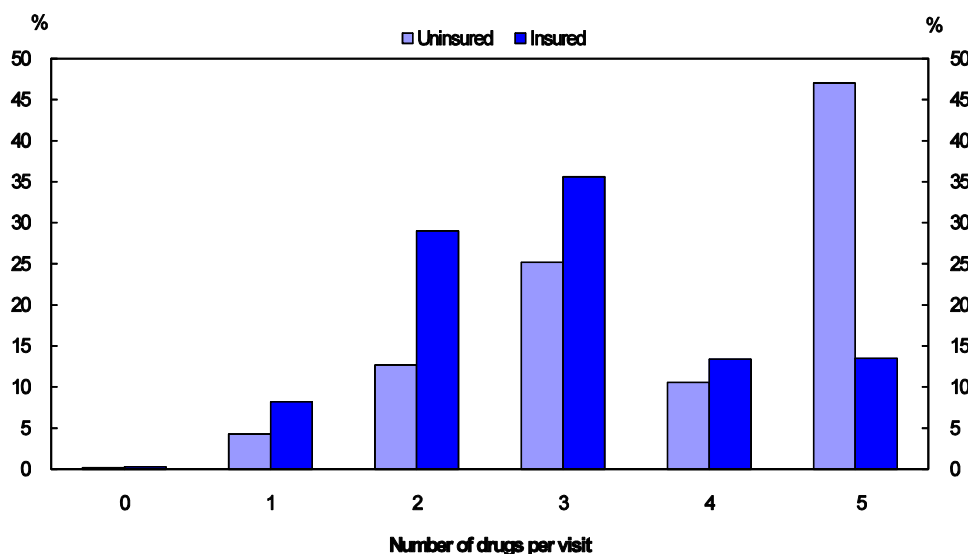
37. This example illustrates the need for enlightened purchasing of health care. This can only be achieved by improving the use of primary healthcare facilities and using them to control referral to higher levels of care. In China, one experiment has suggested that moving from fee-for-service to salaried staff at the village level, coupled with centralised purchasing of pharmaceuticals, can improve health system performance compared to the standard government insurance system (Yip and Hsiao, 2009). For example, for patients with a common cold, the salaried system markedly reduced drug costs.⁵ An experimental system of integrated primary care such as in Finland, Sweden and Québec has been found to work well in a Chinese context (Bhattacharyya *et al.*, 2003). In the tests, the centres acted as purchasers as well as keeping records and contacts with local patients. The major priority for generalising this system appeared to be human resources. New training programmes would be needed to generalise the system.

38. Over- and mis-prescribing appear to be common amongst village doctors. Given that they rely on sales of medicines for part of their income, there is an incentive to over-prescribe. In one group of 30 village doctors in Shandong Province, only 2% of the patients left the visit without some form of pharmaceutical (Sun *et al.*, 2009a), and most with many more (Figure 11). For nearly three quarters of the patients the medicine was an antibiotic, and one-fifth received two or more. Risks were further increased by most of the medicines being given by injections, and most of the latter were intravenous. The average cost per visit was CNY 18.7 for the insured and CNY 11.3 for the uninsured. Given that the scheme paid an average reimbursement of 20%, the out-of pocket expenses of insured patients were greater than those of uninsured patients.

5. However, it did not reduce the extent of mis-prescribing, suggesting that the village doctor system still suffers from inadequate training.

Figure 11. Number of drugs prescribed per insured and uninsured patients

30 village health stations in Shandong Province, in 2005, % of cases by number of drugs received per visit

Source: Sun *et al.* (2009a).*The new urban system*

39. The basic guidelines for the new urban system give cities considerable leeway to adapt the scheme to their available fiscal resources, provided they cover some categories. In a sample of nine cities, there was almost universal acceptance of the need to cover children, but that did not seem to extend to senior secondary school pupils (Table 6). Only cities in the East of the country tended to give universal coverage for residents over 18. Elsewhere, coverage was given to sub-categories – typically the unemployed and elderly. No city had extended coverage to migrant workers living there, who were supposed to register for cover in their place of origin in the countryside or another city. In practice, this meant that they were excluded from medical insurance since most local schemes designate local health care suppliers and have difficult, if any, provision for reimbursement of out-of-area expenses. The new urban system is voluntary and relies on individual contributions rather than government finance. As a result, there is adverse selection into the system and, amongst those who are initially healthy, lower-income families are less likely to join (Lin *et al.*, 2009). Only those with pre-existing fair or good health are satisfied with the reimbursement levels, consistent with the findings on catastrophic insurance.

40. Very few cities have introduced basic medical insurance to which migrants can contribute. Shenzhen, a city with 8.3 million inhabitants, of which 6.5 million were unofficial migrants without local urban registration, created such a scheme in 2006. Contributions are low (CNY 12 per month) and shared with the employer. By end-2006, the coverage rate was 50% amongst migrant workers. Guangzhou, with a smaller migrant population of 2 million against a total population of 7.6 million is reportedly introducing such a system as well. Shanghai has a similar system but it is more expensive than private insurance and has a low take-up rate (Hu, He *et al.*, 2008). Two motivations appear to drive the development of migrant health insurance in the Pearl River delta area: first, the finding that the health of migrant workers is poor (prevalence of illness in the previous two weeks was 10 percentage points above the national average); second, employers are able to switch migrants who are in the urban employees scheme into the new schemes which have a lower cost. Typically employers pay 8% of wages for the urban employees' scheme but only 1-1.5% for the two migrant schemes (Zhu *et al.*, 2008).

Table 6. The new urban health insurance system: coverage by city

City	Baotou	Urumqui	Chengdu	Jilin	Changde	Xiamen	Shaoxing	Zibo
Region	West	West	West	Central	Central	East	East	East
Under 18 neither working nor at school	yes		yes	yes	yes	yes	yes	yes
Kindergarten	no	yes	yes	no	no	yes	no	yes
Primary	yes	yes	yes	yes	yes	yes	yes	yes
Junior	yes	yes	yes	yes	yes	yes	yes	yes
Secondary	no	no	no	no	no	yes	no	no
Residents over 18 not covered	no	no	no	yes	no	yes	yes	no
Unemployed	no	yes	yes	yes	yes	yes	yes	yes
Elderly	yes	no	yes	yes	yes	yes	yes	yes
Severely disabled 16-60	yes	no	no	yes	no	yes	yes	no
Migrants	no	no	no	no	no	no	no	no
Children of migrants	no	yes	no	no	no	no	no	no

Source: Lin and Lei (2009).

The 2009 health care reform plan

41. In April 2009, after extensive consultation, the government launched a new reform plan for the health system, in accordance with a decision of the State Council. It aims at providing safe, affordable, effective basic care to all citizens by 2020. It comprises both demand and supply measures and covers five major areas (Chen, 2009):

- It aims to raise health insurance coverage to 90% by 2011 from 80% at end-2008. As from 2010, the government payment to the rural system will rise to CNY 120 per person from CNY 80.
- A national essential drugs system will be established, with regulated prices and a high reimbursement rate.
- Local medical care will be improved to reduce workloads in over-crowded city hospitals, with family doctors and nurses acting as gate-keepers.
- Basic public health services will be improved for screening and prevention.
- Pilot reforms of public hospitals will be launched aimed at improving their management and correcting the tendency for commercialisation.

42. This programme involves extra outlays of CNY 850 billion over 2009-11 – equivalent to 0.8% of projected GDP over that period. Local authorities are expected to fund 60% thereof. The cost of the transfer to the rural health insurance and urban schemes plus the cost of public health provision will amount to about CNY 160 billion annually (0.5% of GDP and 60% of total outlays). The remaining money will be spent on training and infrastructure. New infrastructure will include 2 000 new county-level hospitals so that every county would have a hospital compliant with national standards. As well, 29 000 township hospitals will be built and 5 000 upgraded. In towns, 3 700 additional community health centres will be set up. Doctors from villages and community care centres will be retrained, while city-level hospitals will have to launch training programmes for the county hospitals for which they are responsible (Ye, 2009).

43. In the area of public health, where outlays will be modest (0.06% of GDP), three major sets of tasks have been established (Ministry of Health, 2009). The first set pertains to the establishment of a unified, standardized health record for all individuals, and the provision of health education and counselling. The second one focuses on infants and young children up to three, with the creation of individual health records, the establishment of childcare manuals and the management of doctor visits (at least five prenatal and two post-delivery visits). The third set involves: *i*) hepatitis B vaccination for school-age children, BCG, polio vaccines and other national immunisation programmes; *ii*) timely detection, registration and reporting of infectious diseases, on-site treatment of infectious diseases and advocacy and advisory services; *iii*) guidance to patients with diagnosed hypertension, diabetes and other chronic diseases, and registration, management and regular follow-up of these cases; *iv*) re-registration of patients living at home with mental illness to give guidance, re-treatment, rehabilitation and follow-up.

44. The new essential drugs programme aims to cut the cost of drugs supplied to patients. At present, pharmaceuticals account for 45% of health care costs (1.6% of GDP). This is far above other countries, where pharmaceuticals typically account for one-quarter of total spending. The government has created a list of medicines (205 chemical or biological and 102 traditional or herbal), covering drugs that treat 60 to 80% of common diseases. The objective is to purchase these drugs through competitive tendering and then supply them to primary care institutions and some hospitals, with the restriction that they must be sold by the practitioner at the purchase price. The government aims to cover 30% of institutions by 2011 and all of them by 2020. In October 2009, the NDRC decided to cut the prices of nearly half of the essential drugs will by 12% on average (whilst raising the prices of some 6% of the medicines in shortage).

Assessment and conclusions

45. The past few decades have seen a significant improvement in the health status of China's population. The prevalence of infectious diseases has been markedly reduced and life expectancy has risen – albeit rather slowly compared to other countries. Overall, health outcomes are not so different from those in lower-income OECD countries such as Mexico and Turkey, despite lower incomes in China. The country now faces new challenges. Chronic diseases are causing more deaths and infant mortality is unduly high in a number of rural areas. Three sets of diseases are growing rapidly – lung-related illnesses (notably lung cancer), heart-related diseases and diabetes. These three diseases are preventable: the first two are related to high tobacco and salt consumption, and the last one to a growing incidence of obesity.

46. The Chinese health system, however, is not oriented toward preventing chronic diseases and even treatment is not uniformly good. The trend in medical care worldwide has been to increase care at the primary level and reduce it at the level of hospitals. China's new reform programme makes a start in this direction with the expansion of urban community health centres. If there were enough of these, they could act as a network for primary care and serve as a cheaper method of treating chronic diseases than hospitals.

47. Currently, however, community health centres and their counterparts in the countryside lack credibility with the population. Patients prefer to go to hospitals, as the doctors offering primary care have low levels of qualification. Many doctors are reluctant to move to primary care because the salaries are low and there is no long-term career path. The new reform programme aims to retrain a large number of the less-qualified doctors. Working in health centres needs to be more attractive and the government needs to take advantage of the ample supply of new graduates, after appropriate family medicine training. The human resources are available but need to be hired at salaries that reflect training. Furthermore, the new community health services need to integrate the previous maternal health service.

48. The reform programme aims to cut the cost of pharmaceuticals by instituting a bulk buying programme for a limited range of essential products that will be sold to centres under the condition that they are resold at cost. However, doctors have proved adept at circumventing previous attempts to regulate

prescribing practices. So there has to be some doubt about how effective the programme will be in reducing cost, as opposed to reducing the prices of a limited number of products. The challenge is to change prescribing patterns and the pay systems within hospitals that link pay to prescribing activity.

49. The reform programme makes no mention of reducing tobacco consumption. More action is called for in this regard. The tax and subsidy policies for tobacco need to be overhauled. Taxes at the moment are progressive with higher-priced brands paying a higher *ad valorem* tax. The *ad valorem* taxation of cigarettes needs to be replaced by a specific tax, with the overall tax on tobacco raised very substantially from its current level. At the same time, much stricter legislation on smoking in public places ought to be introduced.

50. The management and operating practices of hospitals also need to change. The new reform programme stresses this and suggests that hospitals need to become less commercial. In some respects, hospitals resemble state-owned enterprises before reform. They effectively have a dual-track pricing system, with parts of their output sold at regulated prices that are below cost, while other parts are priced above cost in order to cross-subsidise other activities. Hospitals work on a contractual basis with local governments, receiving an annual subsidy and balancing their budget through fees. Like the SOEs of old, they operate under a soft budget constraint: high deficits result in greater subsidies while profitable hospitals receive no funds. As hospitals are public service units, recruitment is often determined by local government bureaus and salaries do not reflect market differentials, nor do the hospitals operate an accounting system that would accurately determine the cost of different activities. Movement to a more enterprise-oriented management and accounting structure is needed. The problems with hospitals acting commercially have not arisen just because they seek to make profits but through their rational reaction to regulated prices. Regulated prices should be gradually abolished and replaced by negotiation between third-party payers and hospitals. The current system in which the hospital is paid on a fee-for-service basis needs to be replaced by one that is based on a fee per procedure, independently of the number of diagnoses that are made. Such a reform would require that an efficient accounting system be put in place.

51. The government has successfully rolled out two massive health insurance programmes in recent years. They increased the share of the population with some form of medical insurance from 10% to 90%. In rural areas, the increase in coverage in what is a voluntary programme has exceeded expectations. In urban areas, though, there are still some problems. The extension of medical insurance to children and those elderly who are not former employees is welcome. Many cities, especially in western and central regions have wanted to keep costs down and so have not extended coverage to employees without cover, presumably on the ground that the employer should have joined the compulsory, but poorly enforced, social security medical insurance system. However, many of these workers are the poorest in the community. Migrants, be they from rural or urban background, generally cannot benefit from health insurance. This clearly hampers labour mobility and is not an equitable outcome.

52. While coverage is broadening, there are still four main health insurance programmes with many different reimbursement rules and they are mostly restricted to limited areas. Once near universal coverage is achieved, including of migrants in their place of residence rather than their place of origin, the government ought to merge the different systems and ensure that a greater portion of their funding be shouldered by the central government. As to the financial management of the health schemes, attention needs to be paid to the high cost of collecting individual contributions and to why the schemes consistently run surpluses of the order of 30% of income which are kept in separate bank accounts that cannot be used by the local authority.

53. The new rural health insurance scheme has been a success: the number of consultations at countryside health centres has increased markedly. The improvement to health status will take more time to become evident. In future, though, more consideration ought to be given to the benefit plan that

produces the best health results. Relying on medical savings accounts to fund all outpatient illnesses may not be optimal. At the least, outpatient treatment for chronic diseases should be covered by the new insurance system as well as a number of preventive medical checkups and treatments.

54. Poverty caused by catastrophic illness remains a major concern. Indeed, patients are paid less than half of the theoretical benefits, the benefits decline with the seriousness of the disease (insofar as serious cases are sent to higher-level hospitals with lower reimbursement rates) and truly catastrophic illness (costing above two years of average per capita income) is not covered at all. Much higher average reimbursement rates are needed. At present, in rural areas, the contributions per participant would probably need to be tripled, to CNY 300, in order to stand a reasonable chance of markedly lowering poverty due to catastrophic illness. In addition, too high a proportion of the cost of the scheme falls on the local population. At present, individuals and taxpayers people in a county are responsible for paying 60% of the cost in the central areas and 100% in the eastern areas. Even in the more affluent eastern regions this can pose problems for some rural counties. In the poorer parts of the country, the problems are severe and a tripling of contributions might not be possible. Therefore, a much greater degree of central government involvement in financing will be necessary.

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