

REFORMING SERVICE DELIVERY IN CHINA THE CASE OF THE HEALTH SECTOR¹

INTRODUCTION AND BACKGROUND

China has achieved remarkable improvements in health during the last five decades. But the successes are now being overshadowed by growing concerns about health system performance. These problems—dilapidated facilities, poorly trained staff, inefficiency, high costs, etc.—received widespread attention during and after the SARS crisis, including in both the national and international press [1-3]. Although the SARS crisis created a greater awareness of weaknesses in the health system, many of the problems are not new. The economic transformation that began in the early 1980s has brought dramatic changes to the Chinese economy, institutions, and administrative system. As part of these changes, systems for financing health services were overturned, and both the incentives of service providers, and the expectations and needs of the Chinese population, went through dramatic changes [4].² Finally, policy priorities have gradually been shifting, and there is now a growing focus on the “well-to-do” society, and on “balanced development”.

Meeting these challenges in the health sector is a daunting task. The Ministry of Health (MOH), as well as other ministries and agencies with service delivery responsibilities, have introduced various reforms aimed both at addressing system weaknesses and meeting new priorities. But there have also been government-wide initiatives to improve service delivery, in particular through the ongoing process of Public Service Units (PSUs) reform.³ Although the PSU reform process began in the mid-1980s, progress has been slow, and has tended to proceed through an ad hoc and uncoordinated process of sectoral reform and reforms of government wide sub-systems (finance, personnel, etc.). Recently, however, the PSU sector has received increasing attention, and the government has committed itself to accelerating the reform process. Ultimately, PSU reform is about defining an appropriate role for the government in service delivery, and about improving efficiency and quality in the delivery of public services.

¹ This chapter was prepared by Magnus Lindelow (EASHD). It draws extensively on a consultancy report by Ling Li, Peking University. This version (August 9, 2004) has been revised to reflect comments received during a PSU workshop in Beijing in June, 2004.

² As part of the ongoing China has seen a decline in the incidence of many infectious diseases, accompanied by an increase in deaths from chronic diseases, including heart problems and cancer [4]. While there was a decline in some diseases—e.g. cholera, dysentery, hepatitis and typhoid—there was a rise in others, including sexually transmitted diseases [4]. There are marked differences between urban and rural areas, with rural areas lagging behind urban areas in the transition from infectious to chronic disease.

³ The State Council defines a PSU as a “social service organization established by the state for the purpose of social public benefit”; it is created “by a state organ or other organization with state owned assets” and carries out activities in education, science and technology, culture, health or in other areas [5].

While the reform process has the potential of improving service delivery, the pace of reform has so far been slow and lacking in strategic direction.⁴ A variety of views and proposals have been put forward by government agencies and Chinese scholars [6-8]. Much the debate has focused on the appropriateness of a non-profit model for service delivery, the advantages and disadvantages of privatization, the need for improved classification of organizational forms, etc. These are important concerns. However, as these issues are worked through, and as the content, pace, and sequencing of overall PSU reform are defined, it is important that the needs and constraints of the individual sectors are given due attention. This is particularly so for health, which is heavily represented in the PSU sector both in terms of the overall number of PSUs, public spending, and employment. Moreover, PSUs currently dominate service delivery in the health sector, and successful PSU reform has the potential of dramatically transforming the sector.

This chapter provides a background to service delivery in the health sector, an overview of current challenges and ongoing reforms, and some conclusions and recommendations for the future, based on both evidence from past reforms in China and international experience.

THE HEALTH SECTOR IN CHINA: AN OVERVIEW

Health sector administration

The MOH is the lead agency in the health sector, with broad policy and strategic responsibility, direct administrative responsibility for hospitals and other health institutions at central level, and core regulatory functions relating to the licensing of health institutions and personnel and other areas. There are however many other agencies with important financing and administrative responsibilities in the health sector.⁵ Within each area of responsibility, many functions are decentralized to agencies at lower levels of government—province, city, county, and township. At county level and above, local governments agencies manage health institutions at the corresponding level of government, and the fragmentation of responsibilities across agencies mirrors that of the central level. County level governments also have important administrative and oversight

⁴ The 10th Five-Year Plan adopted by the National People's Congress in March 2001, and, more recently, the *Decision on Some Issues Concerning Perfecting the Socialist Market Economic Systems* adopted by the 16th Central Committee of the CPC, have called for accelerated reform of social services.

⁵ The NDRC is responsible for coordinating investment decisions, inter-sectoral prioritization, decisions concerning external financing, and price regulation; the MOF sets the broad fiscal framework, establishes the institutional framework for intergovernmental fiscal relations, and is responsible for certain resource allocation decisions within the sector; the Ministry of Personnel (MOP) has the key administrative responsibility for administering the public sector workforce; the Population and Family Planning Commission (PFPC) administers family planning programs and provide support to the MOH for improving services for the newborn population; the Ministry of Labor and Social Security (MOLSS) administers the new social insurance program in urban areas; the Ministry of Civil Affairs (MOCA).

functions relating to townships, although financing and administrative responsibilities are shared with the township government.⁶

Health institutions and resources

There is a wide variety of health institutions in China. All health institutions can be separated into medical institutions and public health institutions, and further in terms of function (see Table 1). In both urban and rural areas, the health service delivery is based on a three-tier system.⁷ For serious cases, higher levels of care are available from city, provincial, or central hospitals. Moreover, every city has a hospital practicing Traditional Chinese Medicine (TCM), and there are plans for expansion so that every county is covered [9].⁹ In parallel to hospitals, health centers, and village clinics, there is a system of vertical public health services. Maternal and Child Health Centers (MCH) provides maternal and child care, conduct field visits and supervise the lower level institutes, down to townships and villages; the Epidemic Prevention Service (EPS), recently transformed into the Center for Disease Control (CDC) specialize in disease prevention and health promotion, including prevention of infectious diseases, child immunizations, control of endemic diseases and nutritional deficiencies, health education, disease surveillance, and monitoring of sanitation; and the Family Planning and Reproductive Health Program (FPRH) is responsible for implementing the governments family planning program.¹⁰

⁶ As government agencies are not present at village level, village clinics are managed by THCs. In some cases, this takes the form of *Integrated Management of Rural Health*, with village clinics forming part of the THC organization. In other cases, the relationship is considerably less structured.

⁷ In rural areas, village health posts, staffed by village doctors with only limited training, provide basic curative and preventive care. At the second tier, Township Health Centers (THC) serve as the first referral level. They have an average of 15-20 beds and provide both preventive, outpatient and basic inpatient care. At the third tier, county hospitals comprise next, and often highest, referral level for the rural population. In urban areas, the three-tier system comprises street health stations, community health centers, and district hospitals.

⁸ Even after the collapse of the CMS, village health posts remain the cornerstone of the health care system—in 1998, they accounted for 46% of all outpatient visits.

⁹ Traditional Chinese medicine (TCM) began to be integrated into the national health care system in the 1950s. Today, TCM is a popular and important source of health care and practitioners of western medicine report a high level of acceptance and belief in traditional methods and medicines. In 1995, there were 2,522 traditional medicine hospitals [10]. In addition to dedicated TCM hospitals, 95% of the Western hospitals also have departments of traditional Chinese medicine.

¹⁰ The FPRH is managed by the Family Planning Commission, unlike the MCH and EPS, which are managed by the MOH. The FPRH are therefore not formally considered a health institution.

The definition of PSUs in the health sector

Considering both ownership and profit-status, how are PSUs defined in the health sector? Generally speaking, a Public Service Unit (PSU) is a “social service organization established by a state organ or other organization with state owned assets for the purpose of social public benefit and carries out activities in education, science and technology, culture, health or in other fields”. According to this broad definition, any establishment that operates with state assets for social benefit can be considered a PSU. However, in addition to ownership and purpose criteria, PSUs can be defined on the basis of establishment control and price regulation. In particular, Cheng Siwei [5] has proposed that PSUs are (i) fully or partially funded by government; (ii) the government exercises establishment control; and (iii) prices of their goods or services are set and regulated by the government.

Taking these definitions into account, most state-owned health institutions are PSUs. Collectively owned health institutions and institutions established by the SOEs can be considered PSUs under a broad definition (they tend to operate for public benefit with state assets). However, these institutions may not be considered PSU in the narrow sense as their staff do not form part of the government establishment. Hence, from the perspective of profit-status, all PSUs are non-profit health institutions, but not all non-profit institutions are PSUs.

Table 1: Definition of health institutions

Medical institutions	Definition
General hospitals	All types and levels of general hospitals
Traditional Chinese Medicine (TCM) hospital	All types and levels of TCM hospitals
Integrated TCM and western medicine hospitals	All types and levels of hospitals integrating TCM and Western medicine
Minority Hospital	All types and levels of minority hospitals
Specialized Hospital	All types and levels of hospitals focusing on specific diseases or types of care, including gynecology and obstetric hospital, children’s hospital, ophthalmology hospital, orthopedic hospital, stomatology hospital, infectious disease hospital, mental hospital, tuberculosis hospital, tumor hospital, plastics surgery hospital etc.
Sanatorium	Sanatorium for disabled or demobilized army veterans
Health Center	Urban health center, Township Health Center (THC), and Health Service Center for Community (HSCC).
Outpatient Department and Clinic and First aid stations	Dedicated outpatient clinics in hospitals; clinics set up by different types of units (<i>Danwei</i>); private clinics; nursing center
Maternal and Child Health Center	Maternal and child hospitals or centers; all levels of child health protection centers
Specialized Disease Control Institute	Specialized disease centers, including for tuberculosis, occupational health, ophthalmology, stomatology, schistosomiasis, leprosy, mental illness, STD, etc.
Public health institutions	
Center for Disease Control (CDC)	All levels of CDC and other epidemic prevention institutes (not including food inspection institutes and environment inspection institutes)
Other public health institutions	E.g. drug rehabilitation center, leper house, health education station, blood transfusion station.

Source: National Bureau of Statistics of China; State Classification Standard of Industries (MOH, 2002)

In 2003, the total number of health institutions reached 291,300 [11].¹¹ This represents a considerable expansion in infrastructure since 1949, notwithstanding a slight reduction in the number of certain types of health institutions in recent years.¹² In addition to the formal health institutions, there is also a large network of village clinics. The village clinics were the basic building block of the rural health system in the decades following the establishment of PRC. Following de-collectivization, villages continued to run some clinics, but many were turned into private operations. More recently, the number of village clinics have declined.¹³

Ownership and profit status

Formally, there are eight forms of ownership forms in the Chinese health sector [12] (Table 2). Above village level, most health institutions in China are state-owned—either government operated or through affiliation with SOEs (enterprises-founded medical institutions).¹⁴ Collective ownership is relatively common, in particular for THC, but also in the case of specialized and other hospitals. The private sector is important at village level, comprising more than half of village clinics. At township level and above, the private sector is relatively small. It is however expanding rapidly in urban areas, where the private sector provides both primary care and specialized hospital services.¹⁵

¹¹ For details, see Appendixes.

¹² The number of hospital beds has also increased steadily, reaching 2.35 per thousand population in 2003 (compared with 1.94 in 1978). Similarly, there has been an expansion of health personnel, to a total of 5.3 million in all health institutions in 2003 (of these, 81.6% were health professionals, 8.5% support staff, and 6.0% administrative staff.) Although China has seen a steady expansion of both infrastructure and other health resources over time, this expansion has not been evenly distributed across urban and rural areas. In particular, although there was emphasis on investment in rural health in the first decades following the establishment of the PRC, this trend was largely reversed from the early 1980s. This can be seen, for example, from the shift in hospital beds towards urban areas. Of course, this change in emphasis partly reflects the process of urbanization.

¹³ In terms of health service utilization, village clinics and THC continue to play an important role—according to the 1998 National Health Survey, they accounted for 46.3 and 25.3 percent of all outpatient visits respectively. For inpatient care, 35.4 and 46.7 percent of visits are to THC and county hospitals respectively, with the remaining visits accounted for by city or provincial hospitals.

¹⁴ In 1997, state enterprises employed approximately one quarter of all health workers (1.4 million) and operated a quarter of hospital beds. These numbers are currently declining due to privatization of SOEs and efforts to divest health facilities from enterprises that remain within the public sector.

¹⁵ The private sector was banned in China during Cultural Revolution. In 1980s, private practice permitted, with formal encouragement by State Council in 1985. Many private providers emerged through a gradual transition, whereby government or community subsidies dried out and assets and management responsibility were partly or fully transferred to private operators. This was the case, for example, with many village health posts. More recently, the private sector has also expanded in urban areas, and private clinics now provide a considerable share of health services. As a consequence of this gradual transition, the distinction between the public and private sector is unclear. For example, in the case of village clinics, some facilities are fully private (privately owned buildings and equipment), some or fully public (publicly owned buildings and equipment), but in many cases asset ownership is mixed. There is also considerable variation in provider payment modalities [13, 14]. In a 2001 household survey implemented in three provinces, 33% of individuals claimed that their last health care visit was with a private practitioner [15].

Table 2: The Ownership of Health Institutions (2002)

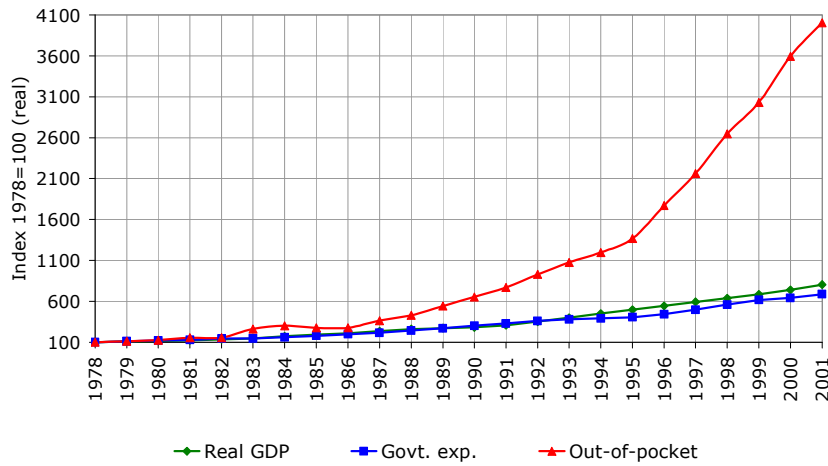
Category	Definition	% of all hosp.	% of spec. hosp.	% of hosp. beds	% of THC	% of MCH
State-owned	Assets exclusively owned by the state, enrolled as non-enterprise unit	81.9%	62.7%	93.3%	57.6%	99.1%
Collective-owned	Assets exclusively owned by the collective, enrolled as non-enterprise unit (excludes Joint-stock cooperative)	7.8%	13.4%	3.4%	41.2%	0.8%
Private	Exclusive investment or holding by physical person; enrolled as for-profit institution	6.1%	16.6%	1.7%	0.4%	
Joint-stock cooperative	Based on the cooperative system; joint investment by employees, combined with private capital; managerial autonomy and full responsibility for its own profits and losses.	1.6%	3.6%	0.6%	0.4%	
Coalition	Merger of two or more hospitals of the same or different ownership; based on the principle of willingness or voluntary, equality and mutual benefits.	0.5%	1.1%	0.2%	0.2%	
Limited Liability	Investment through limited liability company	0.6%	0.8%	0.2%		
Invested by HK, Macao & Taiwan	Investments from HK, Macao & Taiwan reach a certain proportion determined by the government.	0.03%	0.1%	0.03%		
Chinese-foreign joint venture	Foreign investments reach a certain proportion determined by the government.	0.1%	0.4%	0.1%		

Source: PRC National Standards for Health Institutions (MOH 2002); Development of the Health Sector (HSIC 2004).

Financing

Health institutions in China finance their activities from a range of different financing sources, including (i) direct subsidies from the government; (ii) payments from third party payers, including both government subsidized health insurance schemes and community financing arrangements; (iii) out-of-pocket payments by users; and (iv) other sources. In the last 25 years, government financing—both in the form of supply-side subsidies and support to insurance schemes—has increased steadily in real terms. However, it has not kept pace with GDP, and following increases in tax revenues as a share of GDP in the last decade, government health spending has declined as a share of total government expenditures. More notably, however, government spending on health has been dwarfed by out-of-pocket expenditures, which now accounts for approximately 65 percent of total health expenditures. Overall, China devotes approximately 5.3% of GDP to health, somewhat more than other countries in the region.

Figure 5: The evolution of health expenditures



Source: National Health Accounts (2002)

Government supply-side subsidies

Since the 1950s, government financing to health care has increased steadily. A large part of government resources have however been channeled through health insurance schemes operating in government agencies and SOEs. However, the government also provided direct supply-side subsidies to providers. Initially, providers were fully funded by government and all revenues generated by public hospitals were handed over to treasury authorities.¹⁶ The system of supply-side subsidies changed dramatically in the early 1980s. Economic and fiscal reforms led to rising input costs and increased fiscal stress in local governments. In this context, government committed only to a fixed amount of funding, often just sufficient for basic salaries of their staff, while granting the freedom to PSUs to “generate revenue” (*chuang shou*) for themselves through charges for drugs and services.¹⁷ In addition, under the “Management Responsibility System” (MRS), introduced in the early and mid-1980s, health institutions were allowed to retain any surplus at the end of the year [16].¹⁸ Operational surpluses could be used for improving the working condition, developing various programs, and

¹⁶ Even under “full” funding, providers raised some revenues through out-of-pocket payments by clients. From 1960 to 1979, subsidies to public health institutions were primarily meant to cover the salaries of staff. Revenues from services and drugs were retained by the providers, and subsidies took the form of “balance allocations” that were intended to cover the gap between revenues and operational expenditures. There were also “special funds” to finance specific investments or projects.

¹⁷ The financing crisis resulted not only in greater reliance on own revenues, but also to the closure of many facilities, a deterioration of infrastructure, outflow of staff to higher level facilities where bonuses were higher, and a gradual process of privatization [16]. Between the late-1970s and the mid-1980s the number of operating health posts fell from 55,000 to 45,000 and the number of health workers decreased by 36% between 1980 and 1989 [17].

¹⁸ Under this arrangement, the subsidy system became based on the principle “total management, quota subsidy, and residual left for use”. Many health institutions, in particular hospitals, also implemented a personal responsibility system, whereby the financial bonuses and fines are tied to established quality and quantity standards or revenue targets [18].

staff bonuses, although not for increasing personal wage or raising the expense standard [19].¹⁹ Despite these changes, government provider subsidies have been increasing in real terms over time. Nevertheless, because of growing own revenues and rising overall expenditures, the share financed by supply-side subsidies have decreased steadily, and has now reached 40% for disease control and prevention institutions, 27% for MCH providers, and around 8% for hospitals (Figure 13). The bulk of government subsidies (60-70%) are allocated to secondary and higher level health care providers, with the largest share accruing to county and city hospitals. Public health and family planning programs account for 10-20% of supply-side subsidies, with remaining (non-insurance) resources allocated to capital expenditures, traditional medicine, administration, etc.

Table 3: Supply-side subsidies & residual claimant status

Year	Government subsidy	Facility revenues	Residual
1949	Full	Transferred to government	No surplus
1955	Partial	Retained at facility	Returned to government
1979	Partial	Retained at facility	Retained by facility for use

Revenues from out-of-pocket payments and third party payers

As noted above, health care providers—in particular hospitals and other curative providers—finance a large and growing share of their operations from own revenues from consultations, tests and other medical examinations, some preventive services, and pharmaceutical drugs (Figure 14).²⁰ Revenues are derived from both out-of-pocket-payments and third-party payers.²¹ However, given the low coverage of both urban and rural insurance scheme, a large share of revenues come from out-of-pocket payments.

Both out-of-pocket fees and reimbursements from third party insurers are regulated by the Price Commission.²² Prices for basic services have traditionally been set well below cost. This was both to ensure access for self-paying users and, perhaps more importantly, to (artificially) control cost escalation in government health insurance programs. Since the early 1980s, prices have been increased at regular intervals in order to meet the financing requirements of providers, and price setting has been decentralized.²³ However, in order to maintain access to basic services, price increases have concentrated on technology-intensive procedures and diagnostic tests—e.g. X-ray,

¹⁹ Subsequent regulation stipulated that surpluses should be used for establishing program-development fund, personnel welfare fund and personnel reward fund [20].

²⁰ Meng et al. [21] report that 85-90% of health facility revenues now come from user fees and drug revenues.. See also Liu et al. [22].

²¹ See box on urban and rural health insurance schemes for details.

²² As part of the new social insurance scheme, there is an increasing variety of provider payment arrangements that fall outside the main price regulation framework. However, fee-for service is still the norm (see further discussion below).

²³ Prices are now set at provincial, city, and county level under State Price Commission (NDRC) guidelines and are reviewed every 2-3 years.

CT scans and MRI—where prices are set to permit full cost recovery or even profit.²⁴ This pricing structure has created incentives for hospitals to shift supply away from unprofitable services towards services that are priced above costs. Moreover, it does not adequately reflect differences in costs faced by different types of providers.

Drug revenues also comprise an important part of overall revenues, typically ranging from 40-50 percent.²⁵ Since 1950, health institutions have been allowed to add a margin to all drug sales—15% for western medicine and 25% for Chinese medicine. As long as all revenues were transferred to government (or subsidies adjusted to reflect revenues), this policy did not result in incentives to over-prescribe medicines. The situation changed, however, when government subsidies were fixed and health institutions became the residual claimants. Under this arrangement, the mark-up creates incentives to over-prescribe, and for prescribing more expensive (and possibly inappropriate) drugs.

²⁴ A recent study based on cost-accounting methods estimates that cost-recovery rates of official fees is very low (16% for hospital registration, 25% for hospital bed and board, 30% for surgical operations, 40% for general examinations and treatments), and fees were higher than costs for only 4% of assessed services [22].

²⁵ For example, in a study of four county hospitals in 1989, medicine sales accounted for an average of 55% of total income (including government subsidies) [23]. This estimate has been confirmed in other studies, e.g. [22].

BOX: HEALTH INSURANCE AND THIRD PARTY PAYERS IN CHINA

Because the costs to the patient in the event of illness can be substantial, there is a strong argument for some form of health insurance. Thus most health systems have some form of financial intermediary, which channels payments from households to providers via a risk pool. In China, different systems of health insurance have been operating in urban and rural areas. Although the market for private health insurance is expanding, the financial intermediaries have been operated either as government agencies or collective organizations.

In urban areas, health insurance was initially provided through the Government Insurance Scheme (GIS) and the Labor Insurance Scheme (LIS). The GIS was set up in 1952 as a budget financed (central or local government) self-insurance system for government agencies. It provided coverage for civil servants, university students, and retired veterans through agency-operated clinics or hospitals, or through designated state hospitals. In contrast, the LIS, also established in the early 1950s, covered employees at state and collectively owned enterprises. The LIS was financed through mandated contributions by state and collectively owned enterprises, and provided coverage for employees, retirees, and partial coverage for dependents. In both schemes, client moral hazard, combined with soft budget constraints and fee-for-service reimbursement resulted in rapid cost escalation during the 1980s and 1990s, and consequent financial stress for government agencies and SOEs. In some cases, SOEs were forced to default on their health care obligations or limit access to health care [28]. The financial strain of health care costs was sometimes exacerbated by the fact that, as a work-unit based self-insurance system, the risk pool was too small for most enterprises. A combination of cost escalation, growth in non-public sector employment, inadequate risk pooling and other factors has led to a series of reform initiative since the early 1980s. Initially, reforms took the form of ad hoc measures to increase co-payment and to promote risk sharing between agencies and enterprises. It was not until 1994 that a structured health insurance experiment was introduced in Zhengjiang and Jiujiang. As part of these experiments, a mandated social insurance scheme—the Basic Medical Scheme (BMS)—that included both government agencies, state and collective enterprises, and private enterprises was established. From 1998, the BMS has been expanded more broadly, and, although coverage is still limited, the BMS now comprises the main form of health insurance in the urban areas.

In rural areas, the rural Community Medical System (CMS) was developed in 1956 as a mutual assistance mechanism to establish access to basic drugs and primary health care. In the following decades, the scheme expanded, and by the late 1970s, 90% of the rural population were covered for basic preventive and curative care. The CMS was financed by the community, primarily through mandatory contributions to the production brigade or village collective welfare fund, but also through direct contributions by farmers. In the early 1980s, de-collectivization led to the dismantling of the village collective welfare fund, and the eventual collapse of the CMS in most villages. In some communities, insurance schemes based on voluntary contributions have replaced the CMS. These schemes vary considerably in their benefit structure, but in most cases represent a benefit-reduction relative to the “old” CMS. Many of the schemes suffered from poor administration and small risk pools. Moreover, the voluntary nature of these schemes tend to result in adverse selection. In 2002, the Central Committee and State Council endorsed a new voluntary community-based financing model for serious diseases, based on the CMS model and with increased support from the government and a targeted system for the poor—the Medical Care Assistance System. The scheme has already been rolled out on a pilot basis, and is supposed to be implemented nationwide by 2010.

Other revenues

Although government subsidies and income from services and drugs are the main sources of revenue for providers, some health institutions also have other sources of income. This can include “side-line production”, sometimes in areas unrelated to health care. For example, in 1996, it was estimated that 10 percent of THC were engaged in some form of side-line production [16]. Some providers—in particular collectively owned health institutions—also receive subsidies from the village or township collective.

SERVICE DELIVERY PERFORMANCE AND CURRENT CHALLENGES

The most important goal of a health system is achieve the greatest possible improvement in the health of the population with a given amount of resources.²⁶ Since 1950, China has achieved legendary improvements in health outcomes. These improvements were achieved through innovative public health programs, provision of broadly accessible basic curative care, and broad systems of risk protection. How is the system faring now?

Efficiency and quality

Allocative efficiency and public health challenges

From the perspective of broad health system efficiency, current financing levels and arrangements for public health services are inefficient. In particular, inadequate funding for public health activities, combined with the freedom for public health institutions to raise and retain revenues, have led to a displacement of effort in favor of chargeable activities. Liu and Mills [24] summarize some of the findings in this regard.

- ◆ Fee-based health inspection has led to over-inspection of industries and sites that are able to pay, while other, more important sites are ignored.
- ◆ Due to the introduction and increase of fees, there has been a reduced demand for and utilization of preventive services, such as immunizations and treatment of infectious diseases. The results can be seen in reduced immunization rates, increased prevalence of preventable diseases (e.g. schistosomiasis (bilharzias), leprosy, TB).
- ◆ Public health institutions are increasingly focusing on profitable activities—selling drugs, providing “chargeable” services, and expanding inspections—while reducing effort in provision of public goods, such as snail elimination program, disease monitoring, support and supervision to lower level facilities, and health education.

Cost escalation and efficiency

There is great concern with cost escalation in the Chinese health sector. According to one estimate, the total expenditure per outpatient visits in general hospitals increased from 10.9 yuan in 1990 to 99.6 yuan in 2002; in the case of inpatient care, the corresponding increase was from 473.3 to 3,597.7 yuan. In general, health care costs are driven by demographic factors, the epidemiological pattern, medical technology, drug consumption, hospital length of stay, and other factors. In other words, cost escalation is

²⁶ This intrinsic goal includes a number of indirect or instrumental goals—such as access to care, quality, community involvement, and sustainability—which we care about because they contribute to the attainment of the intrinsic objective of good health. Clearly, there is no single indicator that fully captures health outcomes, so we must rely on proxy indicators such as mortality and life expectancy as partial measures of health status. However, it is not sufficient to focus on the level of these respective indicators; the distribution of outcome indicators—geographically and across demographic and socio-economic groups—is clearly also important.

driven in part by factors that lie beyond the health system. Indeed, there are indications that a considerable proportion of the cost increases in China have been driven by general inflation and demographic factors [25]. Rising costs can also reflect individual and societal choices about how to trade off health against other objectives. That said, cost-escalation may also be a reflection of health system inefficiencies—both technical inefficiency of providers and growing use of high cost drugs or procedures with limited therapeutic value. Often, these problems are related to the incentives associated with health financing and service delivery arrangements.

Efficiency concerns the relationship between inputs and outputs. This relationship is important because improvements in efficiency permit the production of more services, or services of higher quality, with the same level of resources.²⁷ There are many approaches to measure efficiency [26]. The simplest measures—often referred to as ratio measures—are concerned with productivity. They include, for example, (i) the number of visits per health worker; (ii) staff per bed ratio; (iii) bed occupancy rate; (iv) average length of stay.²⁸ Although there is only limited rigorous evidence on provider efficiency in China, available data provide cause for concern. For example, bed occupancy rates have been declining steadily in the last fifteen years for all forms of ownership (Figure 6). The problem is particularly severe for health centers, where occupancy rates are now just over 30 percent (Figure 7). The low occupancy rates are likely to be due to a combination of growing problems of health care affordability, low quality, and a lack of incentives and organizational flexibility to adjust the scale of operation [27].

²⁷ It is customary to distinguish between technical and economic efficiency. The production of health services is technically efficient if it produces the maximum feasible output for a given amount of inputs, or alternatively a given amount of output for the least amount of inputs. Conversely, economic or cost efficiency requires, in addition to technical efficiency, that the prices of production inputs are taken into account, such that a given level of output is achieved at minimum cost.

²⁸ Simple efficiency measures must be interpreted with care. Comparisons can be confounded by unobserved differences in quality, case mix, and service mix. Also, for service providers in areas with low population density, low efficiency can also be the result of a lack of demand. More sophisticated measures of efficiency include measures that exploit the interaction between different ratio measures (e.g. Lasso indicator), average or unit cost analysis for different types of services, or statistical measures based on cost or production function estimation.

Figure 6: Bed occupancy rate by ownership classification

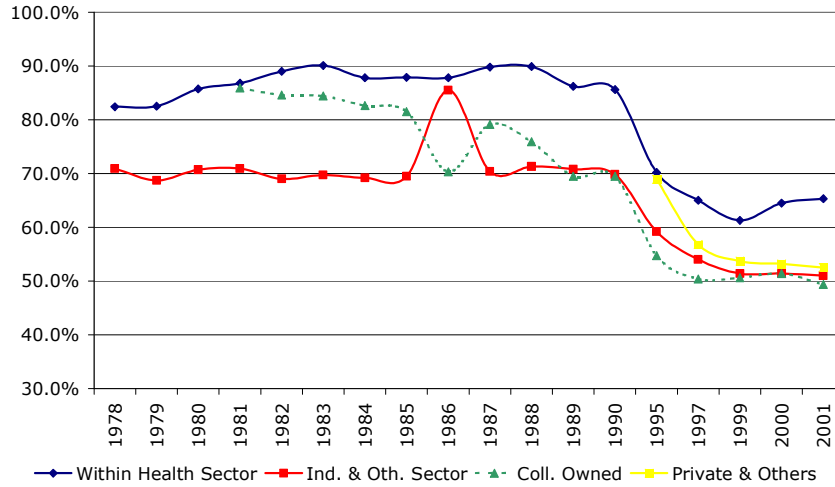
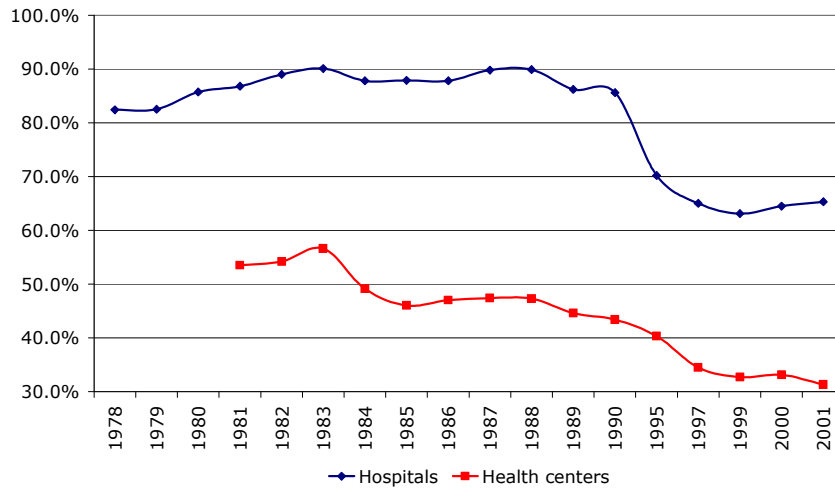


Figure 7: Bed occupancy rate by facility type



Problems of inefficiency can also be seen from the workload of health professionals in different types of health institutions. As can be seen from Table 4, the case load of health workers is low, and the average is most likely masking a considerable geographic variation. Although there is not a systematic difference between for-profit and non-profit institutions, the HKMT invested institutions stand out as achieving greater efficiency.

Table 4: Case load per doctor, hospitals at county level and above (2003)

	Outpatient visits per day	Inpatients per day
Ownership		
State- owned	5.4	1.4
Collective-owned	5.8	1
Joint stock cooperative	5.5	1.1
Coalition	5.8	1.4
Limited Liability	5.1	0.9
Private	5.2	1
Invested by HKMT	20.6	3
Chinese-foreign joint ventures	8.8	1
Profit status		
Non-Profit	5.4	1.3
Profit	5.8	0.9

Source: Reference on the national health conference 2004, MOH, PRC

Another reason for “inefficient” cost escalation is the provision of unnecessary care or over-prescription of drugs. Under fee-for-service payment and profitable drug prescription, providers have a strong incentive to over-prescribe, prescribe expensive drugs, and excessive diagnostic and treatment procedures. These incentives have been sharpened by the use of individual-level incentive systems, whereby the financial bonuses received by doctors are tied to the revenues they generate through provision of services and prescription of drugs.²⁹ In this context, provider moral hazard is only constrained by professionalism, patient ability to pay, or, in the case of insured patients, the capacity of insurers to control providers. Liu and Mills [28] report results that for two tracer conditions (appendicitis and pneumonia), an average of 18-20% of expenditures could be considered unnecessary in the sense that it was not seen as clinically necessary by an expert review panel. Looking only at drug expenditures, more than a third were considered unnecessary. Similarly, a recent study (Haichao et al. 2002) also uses an expert panel to assess the use of CT scans. It found that 16.3% of all scans were unnecessary from a clinical perspective, and that over-use was associated with both the type of medical institution and insurance coverage. Other evidence is pointing in the same direction, including, for example, a rapid and seemingly unjustified increase in the use of cesarean section [29], and variation in drug prescribing depending on insurance status [30, 31]. The problem of over-prescribing is also evident from overall drug spending, which now accounts for 52% of total health spending, compared to 15-40% in most other countries.

Quality

In recent years, health care quality has become one of the central pillars in efforts to measure and improve health system performance in many countries [see, e.g. 32, 33-35].³⁰ In practice, there are considerable challenges in measuring quality [41]. Partly for

²⁹ For example, most county hospitals in Shandong provide a 10 yuan bonus to the doctor for each CT test ordered [22].

³⁰ It is customary to distinguish two domains of health care quality: (i) technical or clinical aspects of health care; and, (ii) the psycho-social interaction between patient and provider [36-39]. The general premise of health care quality is that a specific set of clinical, ethical, and cultural norms can be established for the effective and appropriate

this reason, there has only been limited work on quality in China. On the clinical side, there has been much concern about the skills and qualifications of health professionals, in particular in rural areas. Moreover, as noted above, there is growing attention to the issue of unnecessary care and over-prescription of drugs.³¹

Informal charging and “over-invoicing”

Beyond efforts at providing more services and drugs, providers are resorting to other means of meeting their costs and increase profits. Overcharging has become increasingly prevalent in the post-reform period—either through loopholes or through illegal practices. In a small scale study of hospitals in Shandong province, it was found that hospitals routinely overcharged by a margin of around 90% of the regulated fees [22], typically by “unbundling” services. In many cases, patients also make other forms of informal contributions—including gifts (“red packages”), supplies of drugs and equipment, and informal payments—in order to receive faster or more attentive treatment [43]. Kickbacks from drug or equipment suppliers have also become an important source of extra income for facilities and workers. For a mid-scale hospital, the value of these kickbacks may be as high as the government subsidies [43]. In addition, some workers and facilities are compensated for referrals, for specific procedures, or for prescribing particular drugs. Although some payments are legal as long as they are recorded, little is known about the actual scope and effect of these payments.

Equity: Access to health care and safety nets

Since the early 1980s, there has been a steady decline in insurance coverage, in particular in rural areas [44, 45]. Moreover, due to rising costs and financial stress in both government agencies and SOEs, the benefit package has in many cases been eroded for those who are still insured [46]. Although much of the collapse in coverage occurred during the 1980s, evidence from two rounds of the National Health Survey (1993 and 1998) shows that the proportion of the population that pay for health care out-of-pocket has continued to increase during the 1990s, in particular in urban areas and among the poor (Table 5).

management of a potential or existing health problem, and that departures from these norms or standards result in reduced clinical effectiveness, or a failure to meet the legitimate demands and needs of the client. Along these lines, the Institute of Medicine in the US has defined quality as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” [40].

³¹ In general, it is difficult to determine whether care is necessary or needed. Much of the literature focuses on the considerable variation—geographic and across different types of providers—in the use of different procedures [28, 42].

Table 5: Trends in insurance coverage and self-payment (%)

	Urban		Rural	
	1993	1998	1993	1998
Insurance coverage by type				
GIS	18.9	17.3	1.6	0.6
LIS	33.6	24.9	1	0.1
Semi-LIS	13.2	6.2	0.7	0.1
CMS	-	-	6.6	6.6
Private (commercial)	0.3	3.5	0.2	1.4
Collective	0.7	1.5	0.1	0
Other	7.1	4	4.2	2.9
Self-payment by quintile				
Poorest quintile	38.7	66.7	75.4	85.6
Q2	27.4	50.8	95.6	92.1
Q3	19.8	40.7	93.4	91.5
Q4	16.3	30	86.1	89.3
Richest quintile	16.7	23.4	78.8	82.3
Overall	24.5	42.7	85.6	88.3

Source: NHHIS 1993 and 1998

As a consequence of these trends, the proportion of health financing that comes from out-of-pocket payments has been increasing steadily. The average urban Chinese household spends 5.7% of its income on out-of-pocket payments for health care. But high costs combined with a lack of insurance also restricts access to and utilization of health services. Indeed, between 1993 and 1998, there was a sharp increase in the percentage of people referred to hospital but *not receiving inpatient services*, and “financial difficulty” became the most frequent reason (65% of answers) why people who were referred to hospital did not receive inpatient care (a rise from 40% in 1992) [44]. In addition, non-financial barriers restrict access to health care for some population groups [47].

Health expenditures and a lack of access are particularly severe for the poor. In 1996, a government proposal to introduce equity considerations in charging practices led some hospitals to introduce exemption policies. However, the proposals were not supported by any binding legislation or financial incentives for providers to promote compliance. Evidence from some hospitals suggests that exemptions or fee reductions are often not granted, and that the level of discount is typically insufficient to adequately limit the financial impact of health care costs [21].

RECENT REFORMS

Health financing

The system of health financing is undergoing important changes in China. Although government supply-side subsidies continue to exist, ongoing health insurance and safety net reforms—the Basic Medical Scheme (BMS) in urban areas, the new Collective Medical Scheme (CMS) in rural areas, and the Medical Assistance Scheme—represent serious efforts to establish demand-side subsidies for financing health care. These reforms are already having a profound impact on the financing and incentives of health care providers in China—in particular in relation to how providers are being paid—and the schemes will continue to transform the how service delivery is financed and organized as their coverage is expanded in coming years.

In urban areas, the BMS—a new unified social insurance program—will replace the earlier urban schemes, the GIS and LIS, while also seeking to expand the coverage of urban workers. The BMS, which is modeled on the experiments implemented in insurance piloted in Zhenjiang and Jiujiang, will be managed by Social Health Insurance Bureaus have been established at different levels of jurisdiction (province, city, and county). Although it is meant to cover all urban employees, the mechanisms for enforcing participation are still weak. Moreover, in most cities dependents, unemployed, and many workers in both the informal and formal sectors remain uncovered.

In rural areas, following guidelines by the State Council, a new Community Medical Scheme (CMS) is being implemented on a pilot basis. The guidelines require each province to select two to three counties to experiment the new CMS and sets a target to extend the new CMS to cover all population in rural areas by 2010. The new CMS will be government organized and, while voluntary, will receive financial support from the government (central and/or local depending on the economic conditions of the province). Currently the new CMS is being piloted in 304 counties nationwide, covering approximately 60 million farmers. Notwithstanding ambitious plans for nationwide implementation, important questions about financial sustainability in poor areas, administrative capacity and cost, and benefit package design remain.

In addition to the urban and rural health insurance reforms, the government is implementing a Medical Assistance (MA) scheme to improve access to basic health care for the poor. There are plans for both urban and rural medical assistance schemes, but the details of how the schemes will operate and be financed remain vague.

³² The NDRC is responsible for coordinating investment decisions, inter-sectoral prioritization, decisions concerning external financing, and price regulation; the MOF sets the broad fiscal framework, establishes the institutional framework for intergovernmental fiscal relations, and is responsible for certain resource allocation decisions within the sector; the Ministry of Personnel (MOP) has the key administrative responsibility for administering the public sector workforce; the Population and Family Planning Commission (PFPC) administers family planning programs and provide support to the MOH for improving services for the newborn population; the Ministry of Labor and Social Security (MOLSS) administers the new social insurance program in urban areas; the Ministry of Civil Affairs (MOCA).

³³ As government agencies are not present at village level, village clinics are managed by THCs. In some cases, this takes the form of *Integrated Management of Rural Health*, with village clinics forming part of the THC organization. In other cases, the relationship is considerably less structured.

Ongoing reforms of insurance and safety-net schemes call into question the appropriate scope for and approach to direct provider subsidies. Currently, health institutions continue to be supported through multiple channels, and subsidies are not generally associated with clear strategic objectives. Norm-based (staffing, beds, etc.) are still prevalent, and difficult to reform due the close link with personnel reforms. Other supply-side subsidies are also common, although allocation criteria unclear and not explicitly stated, leaving considerable room for negotiation. Following the SARS crisis, the government commitment to increased funding to public health activities is likely to result in new forms of subsidies.

Provider payment

There is a growing realization that the provider payment system—whether by patients or third party payers (government or insurers)—can have a big impact on both provider behavior and health expenditures. Reflecting this recognition, experiments with new forms of provider payment started already under the old GIS and LIS scheme, where increasing expenditures pushed some cities to introduce capitation based payments to hospitals. The contracts varied considerably in terms of per capita payments and the treatment of deficits, and both the scale and impact of these experiments were limited. The new urban insurance scheme introduced a new model for demand-side cost containment using medical savings accounts, deductible and coinsurance. However, the scheme does not provide specific guidelines on provider payment. Although fee-for-service remains the norm, some cities have moved towards new forms of provider payment, such as the use of case-based payments in Zhenjiang and Dalian, global budgets in Shanghai and Haikou, negotiated service charges in Harbin, and capitation-based payments in Shanghai. Some of the counties piloting the new CMS have also looked for ways of moving beyond FFS payment, but these experiences remain limited.

Pharmaceutical reforms

Since 1997, the government has enacted a series of reforms relating to pharmaceuticals, including:

- ◆ establishment of essential drug lists;
- ◆ increasing competition in retail sector, in particular for over-the-counter drugs;
- ◆ de-linking of prescription and dispensing of drugs, initially by not permitting hospitals to retain drug revenues (achieved through ring-fenced accounting), and later through a clearer organizational separation;
- ◆ increased role of market in determining drug prices, with government regulation of prices confined to setting price ceilings for drugs listed by the BMS; and

- ◆ introduction of a public bidding system, whereby local government organizes purchasers (e.g. hospitals) into regional purchasing groups to improve economy in procurement.³⁴

Price regulation

There is broad recognition that while price regulation make health care more financially accessible and affordable for local governments, it creates adverse incentives for providers. In attempt to address these issues, recent reforms [48] have sought to reduce the scope of price regulation, letting market force play more important roles in price setting. Under these reforms, government will only provide guiding (ceiling) prices for basic medical services provided by not-for-profit health facilities. For non-basic medical services provided by not-for-profit health facilities and all services provided by for-profit hospitals, prices will be market determined. To encourage competition, different levels of health facilities are allowed to charge different fees. Moreover, health facilities are required to follow national norms for medical service pricing, and make price information publicly available through different channels.

Human resources and incentives

Since the early 1950s, the government has exercised strict control over human resources in PSUs, both in terms of total numbers, deployment, and employment terms and conditions.³⁵ However, in 1992, a government decision granted PSUs greater *autonomy in hiring and firing* of staff, although the scale of personnel was still regulated by the government. Subsequent MOH guidelines proposed increase use of market mechanisms for improving staffing, and also gave PSUs the right to fire workers [49]. However, a person who was laid off must be guaranteed a new position either within the same PSU or in another health institution, and, as a result, the ability of PSUs to apply this new policy was severely restricted. Further changes were introduced in 2003, including guidelines to use an open and competitive recruitment process, expand the variety of contracts used for different types of workers, and facilitate the firing of workers. There has also been a separation of professional title and position and compensation of staff. In some parts of the country—e.g. Guangdong and Sichuan—competition in selection has already been introduced.

There have also been changes to *compensation policies* in the health sector. Prior to reforms in the early 1980s, the compensation of health professions was, general

³⁴ There have also been measures to tightened regulation of drug production and distribution, to bring practices into line with international rules, laws, and practices. The new rules also allow that China's medicine retail trade (drug retail stores) will fully open to foreign investors by January 2003.

³⁵ Under that system, which largely remained in place until the early 1980s, health personnel could not change their job freely and managers in health sector PSUs lacked control over recruitment, promotion, and performance rewards and sanctions. As part of general economic and institutional reforms in the early 1980s, a labor contract system was introduced and hospitals and other health PSUs could employ staff on a casual basis, provided that they could be paid from PSU revenues. However, because of lagging social security reforms, it was still difficult for doctors and nurses compensated by government to change their *Danwei*.

speaking, set by the government and based on the length of tenure and professional title.³⁶ From the end of 1979's to 1985, the government issued several policies that permitted the managers of health institutions to distribute operational surpluses to staff in the form of bonuses based on individual or departmental contributions to activities or revenues.³⁷ However, in November the 1998, new regulations by the MOF and MOH, some of the rules for retaining and distributing operational surpluses were revoked, and all expenditures associated with wages, allowances and cash bonuses must be explicitly posted as costs [50].

Hospital organization and management

There is growing recognition of management weaknesses in government health institutions. In response to these problems, some local governments have sought to *professionalize management* through management training and improved procedures for selecting managers.³⁸ In some cases, *contract management* has been introduced, whereby hospitals sign a contract with government, specifying required activities, employment scale, quality standards, and budget arrangements.³⁹ In some cities, *hospital groups* have been formed to exploit economies of scale and scope of some hospital activities; to share equipment, staff, and knowledge; and to facilitate access to capital. In some cases, these groups have been formed through loose cooperation agreements (e.g. Drumtower Hospital Group of Nanjing), while in other cases more formal institutional links have been established (e.g. Oriental Medical Care Group of ShenYang City). In parallel with these different initiatives, the general framework for *information management and financial control* in the health sector is improving.⁴⁰

Contracting, ownership, and profit-status

In recent years, the government has also sought to create incentives and opportunities for the private sector to play a larger role, including through an expansion of the private non-profit sector. Reforms have taken a few specific directions. There have been some experiments with *outsourcing support services*—both through privatization of service departments within hospitals and through contracting out to existing service

³⁶ PSU staff and civil servants share the same pension scheme and medical insurance scheme (which is different from SOE employees).

³⁷ The government allow the health PSUs to deduct 40% from the residuals as the fund of welfare. There is considerable local variation in how the bonus system was implemented.

³⁸ For instance, in Jia Musi of Hei Longjiang province, managers are selected publicly, and in 1999, directors of 4 hospitals are appointed after the competition in the market.

³⁹ This has sometimes taken the form of formal *trusteeships*, where local governments select hospital managers, grant them considerable autonomy over hospital management under a separate governance and accountability structure, and establishes an agreement or contract on service delivery. For example, in 2001, the Health Bureau in Wuxi City established trusteeship in 9 municipal hospitals.

⁴⁰ The introduction of Health Management Information Systems is progressing slowly. Where HMIS have been introduced, they have tended to focus on financial management, but some hospitals are also introducing Clinical Information Systems (CIS) and Picture Archiving and Communicating Systems (PACS). Following regulations by MOF and MOH in 1998, financial management in government hospitals should now be handled by accredited accountants and hospitals are required to set up internal audit systems.

providers—with a view to relieve the management pressure and burden of the hospital managers and increases organizational flexibility. For example, a laundry service has been set up in Nanjing to service the six main hospitals of the city. But there are also a growing experience outright private ownership of hospitals and other providers. Under *privatization*, hospital assets and management is transferred fully to the private sector. The owners appoint the manager, the organization has full decision rights within the overall regulatory framework, and operational surpluses are distributed among the owners. Privatization has been popular with many local governments because it tends to relieve the fiscal burden, provide new sources of revenues, and permit for restructuring and personnel reforms that cannot be implemented within the public sector.⁴¹

In addition to private for-profit providers, there is a growing sector of *private not-for-profit providers*. Following new regulations from 2000, all health institutions are classified as either for-profit or non-profit.⁴² Non-profit medical institutions are supposed to be established and operated for public benefit, and they are expected to provide “basic medical services”. The revenues of non-profit establishments must be used to cover the cost of health care services, and any operating surplus must be reinvested. Non-profit institutions are exempt from payment of tax, while the access to government subsidies and price regulation depends on whether the establishment is state-owned or not (Table 6). In contrast, for-profit medical institutions are required to pay tax, but operating surpluses can be distributed to the owners / shareholders.

Table 6: Ownership status, fiscal treatment, and regulation

Ownership	Taxation	Subsidies	Salaries	Prices
Government owned non-profits	Preferential tax treatment	Entitled to fiscal subsidies	Total wage bill subject to government approval	Regulated prices
Non-government non-profits	Preferential tax treatment	No subsidy	Salary bill must grow slower than surplus and real wage slower than productivity	Indicative prices
Non-government for-profits	No preferential treatment	No subsidy	No restrictions	No restrictions

Patient rights, consumer choice, and access to information

In order to reduce the asymmetric information between health care service providers and patients and guarantee the patient’s right, health institutions are now required to make certain information publicly available—e.g. concerning available drugs

⁴¹ With a view to check this trend the MOH has mandated that at least one township health center in each town should be within the public sector.

⁴² According to State Council guidelines [51], health institutions founded by government, social donations, PSUs and SOEs should be classified as non-profit; private, joint-stock, limited liability, and HK, Macao & Taiwan institutions should, in general, be classified as for-profit; health institutions founded by social organizations, and coalition medical institutions can chose classification. For-profit status is particularly prevalent among outpatient departments and clinics (67.7%), while for hospitals and THC’s, only a small proportion are classified as for profit (10.0% of hospitals and 1.4% of THC’s). At the end of 2002, 47.7% of medical institutions were classified as non-profit, 51.0% were classified as for-profit, and just over 1% were not yet classified. Most state-owned medical institutions are classified as non-profit.

and drug prices. Also, patients have gradually been given increased freedom to choose between providers.

LOOKING AHEAD: RECOMMENDATIONS FOR THE FUTURE REFORM AGENDA

So far, this chapter has provided an overview of health service delivery issues in China, including financing, performance, and past reform efforts. Looking ahead, the health sector faces many challenges. Service delivery reforms must be coordinated with complex reforms of health financing systems and efforts to safeguard access to basic services. Reform efforts must also confront the technical complexity and information problems in the health sector, which render it especially difficult to establish an institutional and organizational framework that promotes good performance. Given this complexity, this concluding section does not provide operational recommendations, but rather seeks to stimulate further discussion and a search for practical solutions to service delivery problems

Improving equity and public health functions through strategic resource allocation

Traditionally, the Chinese health system promoted access to essential health care through a system of supply-side subsidies, financed either through general revenues or community contributions, combined with fixed prices for drugs and services at well below cost. Although this system is now gradually being replaced by publicly subsidized urban and rural health insurance schemes, the transition is incomplete, and current arrangements result in a very uneven distribution of public subsidies. Moreover, subsidies are not being effectively targeted to address key market failures in the health sector. In this context, the GOC has articulated a growing concern about the affordability of health care for the rural poor, and about the social and economic consequences of inadequate access to health care in rural areas. In pursuing this agenda, there are three areas that need attention.

First, under the current fiscal framework, the scope for inter-regional and intra-regional equalizing transfers is very limited. The emphasis on local government financing of health care in China is unusual by international standards. Although there are some special transfers to poor areas, the system of inter-governmental fiscal transfers is currently unable to correct for the large geographical disparities in revenue generating capacity. Moreover, the expenditure responsibilities of lower levels of government has not been matched with revenue assignments or fiscal transfers. As a consequence, there is a highly unequal pattern of government spending on health, both across and within provinces. In the absence of more equalizing transfers, inequalities in access to health care and health outcomes are likely to increase.

Second, achieving equity in the allocation of resources will depend on more than intergovernmental fiscal transfers. Under current financing arrangements, with an expanding role of demand-oriented financing schemes such as BMS, CMS, and MA, actual expenditures will depend on the design and implementation of these schemes.

These issues cannot be adequately covered in this report. However, there are many important questions for the future. What is the appropriate level of government subsidy to different types of health insurance schemes? At the moment, government support to the urban schemes dwarf the subsidies to the new CMS, raising questions about appropriate levels of subsidies to different schemes.⁴³ Within the CMS, there is very limited targeting of government subsidies, both geographically and in terms of individual beneficiaries. Urban-rural disparities in demand-side subsidies are further reinforced by the fact that the majority of the Chinese population is not covered by any form of health insurance. New insurance schemes and safety nets represent important steps towards expanded insurance coverage and risk protection, but there are many outstanding challenges. In rural areas, there are ambitious plans for rapidly expanding the pilot schemes, but important questions about affordability and implementation capacity remain. In urban areas, measures are needed to provide coverage for the currently uncovered urban residents—dependents of workers, the urban poor, the unemployed, migrant workers, and employees in loss-making state and collective enterprises.

Third, public resources must be channeled to core public health priorities. Doing so effectively will depend not only on adequate resource, but also on an institutional and organizational framework that holds public health providers accountable for delivering public health services.

Improved purchasing of health care

There is evidence, both from China and internationally, that more active purchasing of health care can improve the performance of providers. Notwithstanding some pioneering experiments, fee-for-service (FFS) payment combined with norm-based public subsidies to providers remain the norm in China. In combination with other factors, this is contributing to overprovision of care, cost-escalation, and inefficiency. Of course, alternative means of paying providers—e.g. case-based or capitation payment—bring to bear other incentives (risk selection, skimping on quality and quantity of care), and there is no single optimal method for paying providers—all methods generate adverse and beneficial incentives affecting the volume, quality and mix of services. In general, schemes that generate better incentives tend to be associated with higher administrative capacity requirements and costs.⁴⁴

Although there is no silver bullet, there are many of experiences of active purchasing to build on, and evidence to suggest that such approaches can bring important benefits. In OECD countries, evidence suggests that capitation-based payments for ambulatory care is associated with approximately 20% lower expenditure relative to fee-for-service payment [56]. Similarly, evidence from the US Medicare system also suggests

⁴³ In the case of the BMS, government subsidies take the form of employment related benefits, and is hence not strictly comparable with the CMS.

⁴⁴ Arrow [52] made an early contribution on the incentive issues that arise due to the asymmetry of information between patients and providers. More recently Barnum, Kutzin, and Saxenian [53], Gosden, Pederson, and Torgerson [54], and Chaix-Couturier and others [55] have discussed the effects of different systems of provider payment on hospital performance and medical practice.

that prospective payment contributed to slowing the growth of health care costs, without adverse impact on quality [57]. In China, evidence is more limited, and in many cases it is difficult to assess whether the impact of reforms has been due new forms of provider payment or broader changes in the insurance system. There are indications that negotiated prices in Harbin and the introduction of global budgets for hospitals (in combination with health insurance reform) in Shanghai have led to a reduction in health care expenditures, without evidence of reduced access to or quality of care [58, 59]. More rigorous evidence from Hainan province suggest that prospective payment can reduce both overall expenditures and expenditures per admission relative to fee-for-service payment, in particular through reductions in spending on expensive drugs and high-tech services [60-62].

In light of these experiences, there are many purchasers of health care in China that should begin to explore alternative ways of paying providers. The new insurance agencies—Bureaus of Labor and Social security in the case of BMS and county-level agencies for CMS—now perform key purchasing functions in the health system and are hence a natural place to start. As new safety-net schemes are rolled out, they will also need to take on an active purchasing role. Finally, other government agencies may continue to provide direct subsidies to provider, for example to finance specific public health services or to ensure access to low-income groups that are not covered by insurance. This function also needs to be performed more strategically.

There are two related issues that stand in the way for an effective purchasing role by these agencies: technical capacity and incentives. Technical capacity cannot be built overnight. Indeed, experience suggests that payment reforms should start on a small scale—e.g. covering a few specific intervention—and scaled up as technical expertise, risk adjustment procedures, and information and quality assurance systems improve, and provider acceptance becomes more widespread. The problem of technical capacity also points at the need for learning from past and ongoing experiences with new forms of provider payment through rigorous evaluation, and by ensuring that these lessons are broadly available. In particular, county level agencies for the new CMS are likely to be most challenged in terms of both capacity and access to information, and central and provincial institutions can play an important role in assisting these agencies to perform their purchasing function more effectively.

How can purchasing agencies be provided incentives for more effective purchasing? Some health systems permit competition in the insurance markets. This model has advantages, but also limits the bargaining power of purchasers in relation to providers. It may also be inappropriate for smaller risk pools, for example in rural areas. An alternative is for provincial or central government to provide a benchmarking function, whereby the performance of local insurance or medical assistance agencies are systematically compared against each other, possibly linked to a system of performance-related rewards and sanctions.

Competition

Purchasing reforms are often accompanied with steps in increase competition in the provider market. Considering that a majority of patients are paying for health care

out-of-pocket, there is already a considerable degree of competition between providers in China. However, this form of competition is not necessarily desirable, as the combination of consumer choice and information asymmetry can contribute to inappropriate care-seeking patterns and a ‘medical arms race’ [63]. Organized purchasers of health care are however in a better position to collect and analyze information, and many countries have sought to create incentives for improved service delivery—in terms of both efficiency and quality—by introducing purchaser-based competition between providers. The competition could be between public providers that have been given increased autonomy and a financial stake in performance (e.g. the UK), but can also include private providers (e.g. US).

With the expanding role of social and private insurance schemes, China already has separation of purchasers and providers. In principle, it is therefore a small step to introduce a greater degree of competition in the contracting of health care. While this approach has the potential of generating benefits, evidence from OECD countries suggest that it is far from easy to establish and sustain.⁴⁵ In general, the introduction of quasi-competition in the provider market has been a difficult process [68, 69]. The new purchasers often lacked the requisite skills and information to perform their role effectively.⁴⁶ The schemes often met with resistance from both providers and clients, and the market was often insufficiently thick to sustain competition. As a consequence, reforms have been partly or largely reversed in many countries.

The experience with purchaser-managed competition has been very limited in China, but where it has been attempted, many of the problems experienced in other countries have been evident.⁴⁷ Hence, although competitive pressure may bring benefits in the health sector, managed competition depends on a sufficiently thick supplier market, strong information systems, and a capacity to design, monitor, and enforce contracts. Once health insurance agencies and other purchasers of care develop the requisite technical capacity for active purchasing, competition between providers can be a useful complementary strategy for enhancing performance. Where direct competition is not possible—because of a lack of capacity or a thin market—some of the benefits of competition can be achieved through more active purchasing from single providers, based on clear performance benchmarks.

⁴⁵ In some OECD countries, reforms focused on the hospital sector, have sought to separate the provider and purchasing role. Initiatives have taken different forms, including competition between “arms-length” public providers (Sweden), and independent purchasing of care from public and private provider by publicly funded buyers (e.g. UK and New Zealand). In terms of impact on performance, the evidence mixed. There are some indications of increased physician productivity in Sweden [64], New Zealand has seen limited impact, while the UK has seen some evidence of cost reductions, although the evidence is patchy [65, 66]. In general, private participation has been confined to particular niche markets (e.g. elective surgery), and the private sector continued to depend primarily on private financing [67].

⁴⁶ The information problems have not been confined to the purchaser: providers have also struggled to provide detailed information on costs, case-mix, etc. which they have not previously been required to collect.

⁴⁷ The scope for competition is also limited: there is a natural monopoly for some types of specialized services, in particular in rural areas.

Improving the performance of public providers

Although public providers in China are “public” in the sense that they operate (partly) with government owned assets, have some staff on the government payroll, and are subject to a large number of financial and administrative restrictions, they also operate like private providers in important respects. In particular, many government providers are entitled to retain operational surpluses at the end of the year. Similarly to nonprofit providers (in the international sense), these surpluses should be used for public benefits. In practice, however, providers have considerable discretion, and a large share of surpluses are used to finance different types of rewards for staff and managers.

In a framework of appropriate flexibility, competition and accountability, the resultant financial incentives from these arrangements would induce providers to improve service quality and operational efficiency. However, in the Chinese context, providers have very limited flexibility to improve performance (e.g. by firing excessive staff and hiring staff with appropriate qualifications), price restrictions render some many services unprofitable, the competitive pressure is often low, and accountability systems are weak. These factors conspire to push providers to seek profits through overprovision of profitable drugs and services, and through informal or excessive charging. These tendencies are further reinforced by compensation practices which distribute staff bonuses on the basis of revenue generation or activities.⁴⁸

Improved performance in the public sector will undoubtedly depend on a greater degree of managerial autonomy, in particular in relation to hiring and firing, and comprehensive price reform.⁴⁹ However, in order for autonomy and financial incentives to lead to improved performance, they must be accompanied by measures to hold providers accountable for performance. Active purchasing and competition are two important ways in which improved accountability can be introduced. But it is unlikely that this is model will be appropriate for all types of providers or all parts of China. In some cases high-powered incentives may not be appropriate. For example, some health institutions are natural monopolies or perform core public health functions with important public good characteristics. In these cases, strong financial incentives may lead to exploitation of monopoly powers or the displacement of certain activities and outcomes in favor of those that are financially rewarded. For these organizations, alternative models need to be found, including more traditional models of global budgets or retrospective payment.⁵⁰

⁴⁸ The role of individual incentives in stimulating excessive care is not unique to China. A chain of for-profit ambulatory care centers in the US, Health Stop, moved from paying flat hourly wage to bonuses linked to gross income individually generated. Studies found that in one year from the period under the waged system, the number of laboratory tests and X-rays *per visits* rose by 23 and 16 percent respectively. The results indicate that the increase in tests and X-rays were largely “unnecessary” [70].

⁴⁹ Greater hiring and firing rights are likely to conflict with the policy objective of avoiding large scale public sector unemployment. Clearly, reforms in this area must therefore be accompanied with complementary measures in the areas of pensions and unemployment insurance.

⁵⁰ The fact that financial incentives are not appropriate in some health institutions does not mean that we are powerless in addressing performance problems. However, successful organizations or this type often rely on “softer” incentives rather than direct financial rewards to promote performance. This could include promoting a sense of intrinsic motivation, professionalism, and career prospects [71].

What role for the private sector?

Discussions about PSU reform in China often return to questions about the appropriate role for the private sector in delivering health services. Many proposals for PSU reform in China have taken as their starting point a classification of functions—e.g. administrative services, commercial services, pure public benefit, and quasi public benefit—and reached recommendations about financing and delivery arrangements on that basis.⁵¹ In particular, it has been argued that pure public benefit organizations should be retained under government ownership and fully funded, while quasi public benefit should be turned into nonprofit organizations. These proposals have made an important contribution to the debate by strengthening the analytical framework for PSU reform. However, they do not provide clear guidance on what is meant by public benefit, or about how the abstract classification schemes should be used in making operational decisions about service delivery arrangements. Moreover, the classification of service delivery units along a single dimension easily leads us to conflate decisions of financing and provision.

In general, there are well-established arguments in favor of government intervention in the health sector, relating to public goods, externalities, imperfect information, insurance market failures, and equity.⁵² These arguments, which accord with the concept of “public benefit” referred to above, provide a strong case for *why* the government should intervene in the health sector. But they do not help us much in determining *how* the government should intervene. In other words, the case for government intervention does not necessarily imply a case for government ownership and management of service providers.

It is often argued that the private (for-profit) sector has advantages because in the owners are the residual profit takers, resulting in a greater interest in efficiency and performance from those who influence decision making. However, private provision of health care is problematic due to the information asymmetries intrinsic in many health services.⁵³ There are ways of controlling the incentives of private providers—e.g. through regulation, mandatory reporting, active contract-based purchasing, and other means. It is also believed that adverse incentives can be controlled through non-profit status, whereby providers are not allowed to distribute any profits.⁵⁴ Public providers, in contrast, tend to have only a limited (if any) financial stake in performance, and are also often subject to more stringent administrative controls. This mitigates the incentives to over-provide

⁵¹ The debate has of course not been purely conceptual; as in many other countries, proposals to expand the role of the private sector in health in China has been motivated in large part by poor performance in the public sector. These problems—often seen as endemic in the public sector—include dilapidated facilities, waiting lists, shortages and low quality equipment and materials, low productivity, and poor attitudes and performance of staff.

⁵² See Besley and Gouveia [72] for a detailed discussion.

⁵³ Health care is a complex matter, and there is a presumption that the provider knows more about the subject than the patient. This information asymmetry places the patient in a position of trust vis-à-vis the provider, and creates scope for the provider to abuse this position, by administering or prescribing unnecessary or inappropriate care.

⁵⁴ For a discussion of theories concerning the motivation of non-profit providers, see e.g. Pauly [73] and Glaeser and Schleifer [74]. It is argued that nonprofit providers are less prone to exploit informational asymmetries between purchasers and providers to their advantage, thus reducing the need for monitoring [75].

services, but also the incentives to achieve quality and efficiency. The questions about the relative merits of the public and private sector therefore does not have general answer; it turns on the ability to control adverse ‘entrepreneurialism’ in the private sector on the one hand, and the ability to create incentives for performance in the public sector on the other. This, in turn, depends on the institutional and organizational context, management capacity, as well as on the nature of the services.⁵⁵ The general idea is that opportunities for private involvement in delivery are more favorable when contracts can be easily defined and enforced (which depends on measurability and complexity), and when there is either effective or potential competition (which depends on contestability).

The issue of public and private sector performance has generated a considerable debate and literature, in particular in the US, but also in Canada and other countries that have considered a larger role for the private sector in service delivery. Despite these efforts, the literature offers little in terms of general conclusions [67, 75, 80, 81].⁵⁶ While some studies have found evidence in favor of greater efficiency of private for-profit providers, others have found nonprofits to be more efficient, and a large number of studies have found no significant difference in efficiency.⁵⁷ When efficiency comparisons are made with public hospitals, the public sector often fare poorly in relation to for-profit and non-profit providers. However, it is far from clear how these findings should be interpreted. Do they reflect inherent weaknesses of the public sector, or merely poor institutions or management? Lower efficiency in the public sector may also reflect the fact that public providers often serve as providers of last resort, whereby they handle more complex cases and have to provide specific services on small scale and high costs.

In terms of Chinese experience, there is a high degree of satisfaction with private health care providers, but there is also suspicion about credentials and motives in the private sector [15]. There have been some documented successes with outsourcing [83, 84] and contracted management [85]. More generally, however, the limited evidence that is available from China is ambiguous, and rigorous evidence is often lacking. Meng et al. [86] find no observable differences between village clinics of different ownership in Shandong Province in terms of training of health care workers, medical equipment available, working conditions, services provided, and supervisors’ evaluations. Similarly, a comparison of the T.C.M. hospital and the People’s Hospital in Ganzhou City found that while considerable efficiency gains were achieved in the T.C.M hospital, the performance worsened in the People’s Hospital [87].

Despite the ambivalent conclusions concerning the impact of ownership on costs, efficiency and quality, there are a few general conclusions that can be drawn from the literature.

⁵⁵ Here, the literature has focused on the concepts of measurability, complexity, and contestability, where measurability relates to the ease and precision with which inputs, processes, outputs, and outcomes can be measured; complexity refers to the extent to which goods and services stand alone or required detailed information and coordination with other providers; and contestability is associated with low barriers to entry and exit from the market [76-79].

⁵⁶ In part, this is due to the methodological problems that the empirical literature on hospital cost and efficiency must contend with. Hospital costs depend on a wide range of factors, including the number of cases seen (economies of scale), and the composition of cases seen (economies of scope), case-mix, severity mix or case complexity, and it is difficult to adequately control for these factors in the analysis [82].

⁵⁷ Studies do not, in general find significant differences in quality between for-profit and non-profit providers.

- *Private providers respond to incentives and “game” the system if possible.* This can be seen in many areas—e.g. creative cost accounting and charging to increase profits [88, 89], systematic up-coding in response to DRG payment [90], price responses to monopoly power [91], and activity shifting in response to outdated price schedules [92]. “Gaming” may also be a feature in the public sector, although it is likely to take different forms.
- *For-profit and nonprofit providers respond to incentives in very similar ways.* The US literature shows that non-profits and for-profit hospitals respond in very similar ways to changes in incentives, and game the system to the same extent [89-91]. These finding may however be unique to the US institutional and market context.
- *Performance of different types of providers depend on much more than ownership.* Efficiency in the private sector is only likely to obtain in a context of competition or contestability, and where regulation is appropriate and effective.⁵⁸ Similarly, poor performance in the public sector may have less to do with ownership than with financing arrangement, governance, and other factors.
- *Performance monitoring is difficult and costly.* In order to provide incentives for good performance, purchasers—the government, insurers, or patients—need information. However, experience has however shown that the design on effective information systems, and the development of capacity to analyze and use data is far from easy and tends to come at a high cost [67]. However, in the US, this claim is only partly borne out. Of course, information is also required for effective management of public providers but the information needs tend to be considerably lower.

Neither Chinese reform experience to date nor international evidence offer clear conclusions about the appropriate role for for-profit and nonprofit providers in the Chinese health sector. They do however point at a number of clear factors to take into account in guiding further reform efforts. First, in discussing service delivery reforms, there is a need to distinguish clearly between the rationale for government *financing* on one hand, and government *provision* on the other. Second, private providers do not necessarily perform better than public providers, and an effective role for the private sector depends on competition and a strong capacity by government and/or other purchasers to monitor and regulate providers. Third, nonprofit providers face different incentives than for-profit providers, and may be less likely to skimp on quality or other performance criteria that are difficult to observe. However, nonprofits can easily become for-profits in disguise, and in highly competitive environments—such as the US health care market—they tend to respond to incentives in very similar ways to for-profit providers. Finally, as the reform debate proceeds, it will be important to look beyond ownership to consider the broader range of factors that impact on performance, including

⁵⁸ Experience from other sectors has shown that private ownership in the absence of competition is unlikely to result in efficiency gains [93]. Of course, competition can take different forms, including competition in a market, competition for a market (contestability) or pseudo competition through regulation (yardstick competition). See also Osborne and Glaeber [94].

the market structure, financing arrangements, provider payment, and the regulatory environment.

Pharmaceutical reform and rational drug use

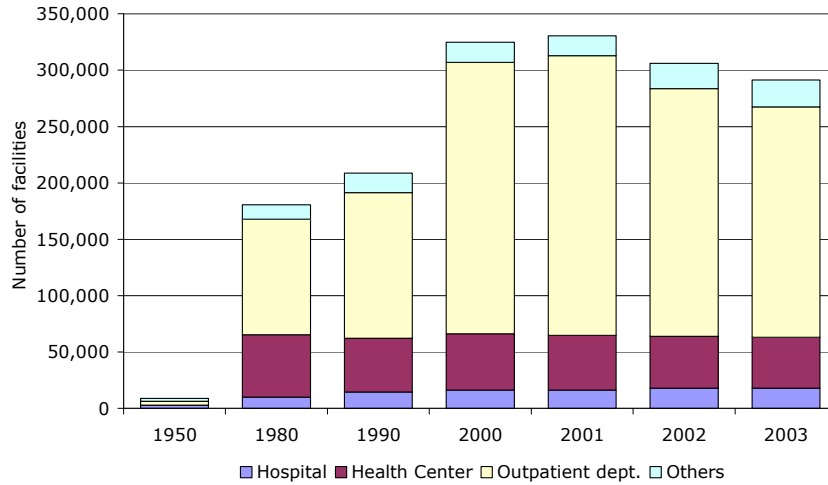
Drug expenditures in China is among highest as a proportion of total health expenditures of any country in the world. (40-50 percent in China compared to an average of 10-14% for OECD countries). The high level of drug spending is at least in part related to the incentives that providers and individual health workers face. This points at obvious areas of reform. Indeed, as indicated above, many measures have already been taken. However, evidence is scarce on the impact of these measures, and in many cases reforms have been stalled due to implementation problems. In particular, hospitals have resisted a separation of the prescription and dispensing of drugs for fear of losing a significant portion of their regular income, and hospitals have often found ways of maintaining their monopoly status in the pharmaceutical area. As a consequence of the strong interests at stake, reforms are now stalled.

The challenges of pharmaceutical reform are not unique to China; other experiences in East Asia point at the difficulty in changing these incentives. Both Taiwan and South Korea have implemented reforms aimed at separating the prescription and dispensing of drugs [95, 96]. The experiences have demonstrated both the strength of interests at stake and the need for an approach that spreads the costs of reform across different stakeholders. The experiences have also shown that the benefits of such reforms are not automatic. In both Taiwan and South Korea, resistance forced the government to water down reforms and compensate health providers. As a consequence, the impact has been limited. For example, the in Taiwan the separation policy reduced drug expenditure and had an impact on prescription behavior, but because compensatory measures were taken in other areas, the policy does not seem to have had an impact on total health expenditures.

Some ongoing pharmaceutical reforms in China—e.g. the use of essential drug lists, public bidding, and measures to increase competition—should be sustained and strengthened. Some of the more controversial reforms, in particular the separation of prescription and dispensing need to be designed and implemented with care, taking into account the interests at stake. China can learn important lessons about how these interests can be managed from experiences in other countries.

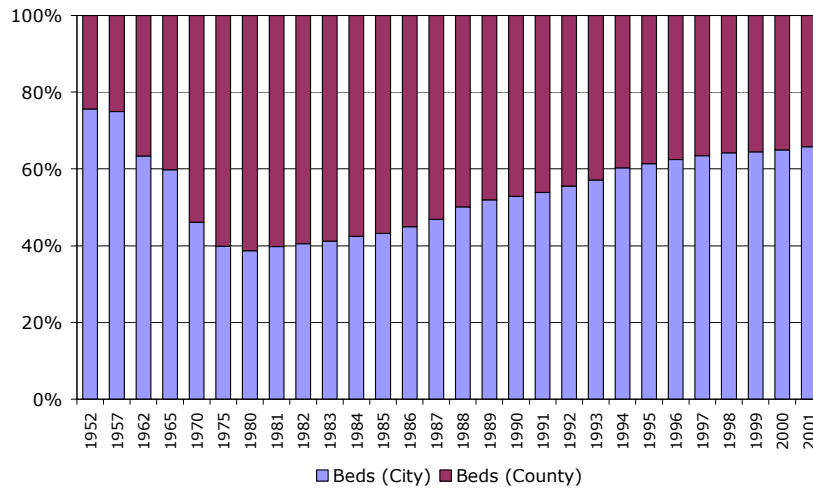
APPENDIX : FIGURES

Figure 8: The Number of health institutions



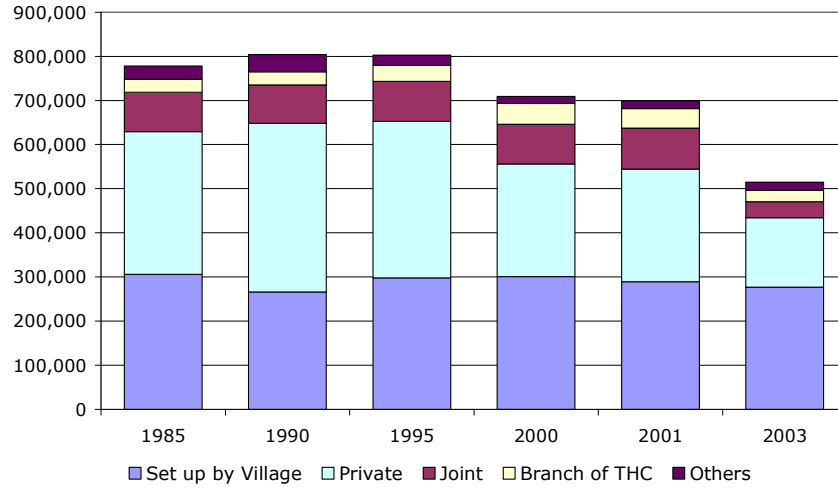
Source: MOH, 1997, 1998, 1999, 2000, 2001, 2002. Year Book of Health, The people's health press; MOH, 1991. Selected Edition on Health Statistics of China 1978-1990, MOH, PRC; MOH, 2004. Chinese Health Statistical Digest 2003, 2004, MOH, PRC.

Figure 9: The proportion of beds in rural and urban health institutions



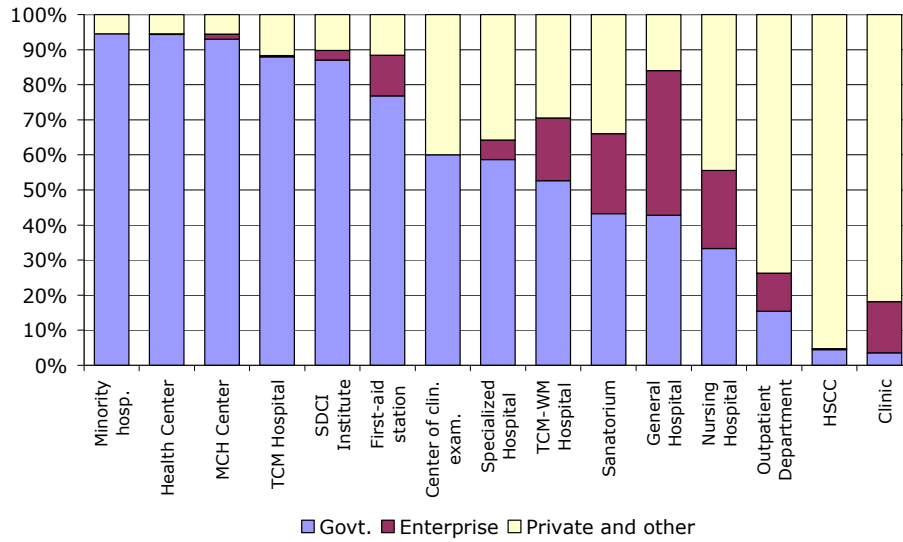
Source: Year Book of Health, MOH.

Figure 10: Village clinics by type



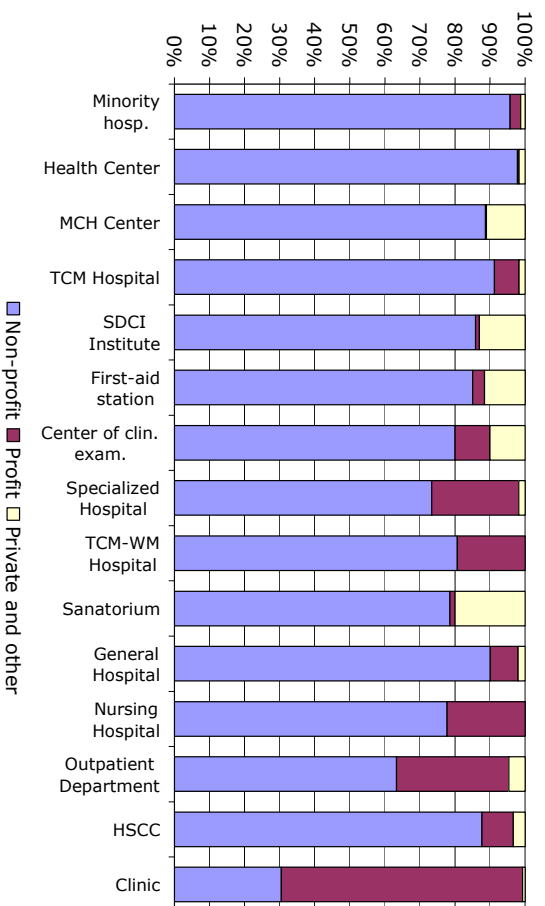
Chinese Health Statistical Digest 2004, MOH

Figure 11: Health institutions by ownership (2002)



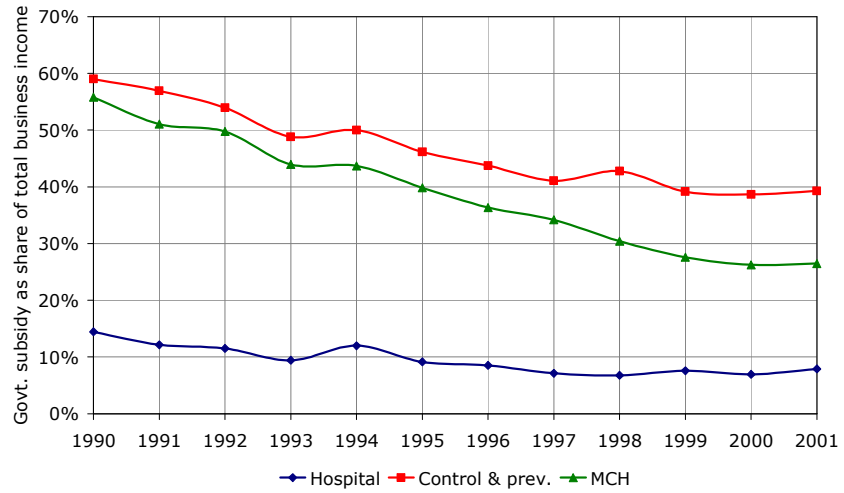
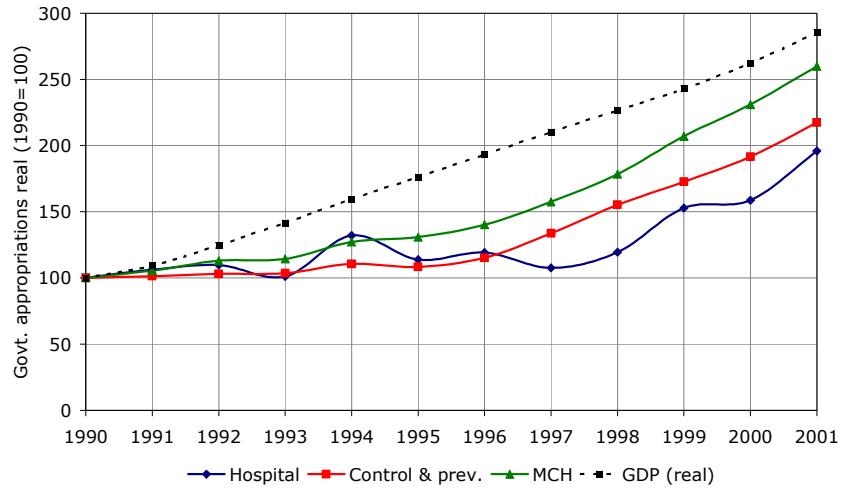
Chinese Health Statistical Digest (MOH, 2003)

Figure 12: Health institutions by profit status (2002)



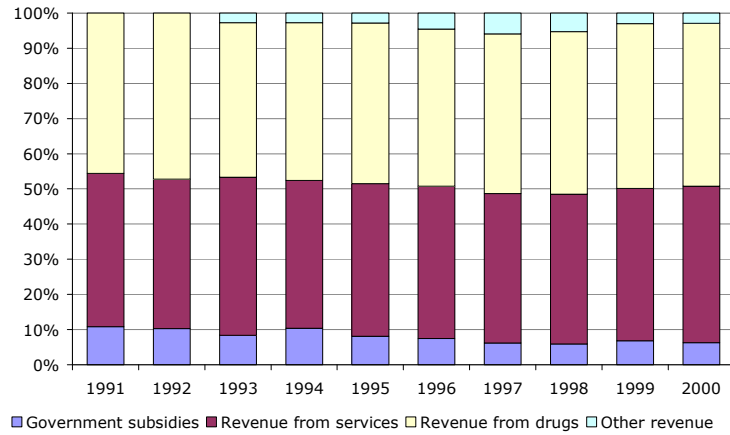
Chinese Health Statistical Digest (MOH, 2003)

Figure 13: Government subsidies to health care providers



Source: National Health Accounts (2002)

Figure 14: The composition of total revenues for hospitals at county level or above



Source: Annual Report of Health Statistics

APPENDIX: TABLES

Table A 1: Number of Health Institutions Classified by Their Functions

	1950	1980	1990	2000	2001	2002	2003
Hospital	2,803	9,902	14,377	16,318	16,197	17,844	17,764
General Hospital	2,692	7,859	10,424	11,872	11,834	12,716	12,599
TCM Hospital	4	678	2,080	2,591	2,617	2,492	2,518
Specialized Hospital	85	694	1,349	1,543	1,576	2,237	2,271
Health Center		55,413	47,749	49,777	48,643	46,014	45,204
Urban HC				548	553	1,022	925
THC		55,413	47,749	49,229	48,090	44,992	44,279
Sanatorium	60	470	650	471	461	365	305
Outpatient dept.	3,356	102,474	129,332	240,934	248,061	219,907	204,468
MCH Center	426	2,745	3,148	2,598	3,132	3,067	3,033
SDCI Institute	30	1,138	1,781	1,839	1,783	1,839	1,749
CDC	61	3,105	3,618	3,741	3,813	3,580	3,584
Medical Research Inst.	3	282	337	405	397	298	284
Others	2,176	5,024	7,742	8,827	8,124	13,124	14,932
Total	8,915	180,553	208,734	324,771	330,348	306,038	291,323

Source: Chinese Health Statistical Digest 2003,2004, MOH, PRC

Table A 2: Number of beds

	1950	1980	1990	2000	2001	2002
Hospital	99,800	1,195,750	1,868,905	2,166,739	2,188,170	2,221,753
General Hospital	84,617	941,143	1,369,014	1,640,885	1,647,706	1,683,796
TCM Hospital	119	49,977	175,655	259,253	267,504	246,747
Specialized Hospital	7,401	128,711	309,163	262,730	268,634	262,141
Health Center		775,413	722,877	741,224	746,499	685,400
Urban HC				6,417	6,439	14,105
THC		775,413	722,877	734,807	740,060	671,295
Sanatorium	6,000	67,941	123,048	96,884	94,510	68,600
Outpatient dept.		81,695	94,454	25,231	24,858	13,063
MCH Center	2,840	16,431	46,567	71,153	73,991	79,774
SDCI Institute		27,276	30,977	28,377	26,980	31,812
Other Institutions	10,479	19,917	38,562	47,392	46,240	35,708
Total beds	119,119	2,184,423	2,925,390	3,177,000	3,201,248	3,136,110
Beds Per 1000 Population in H	0.18	2.02	2.32	2.38	2.39	2.32
City	0.63	4.70	4.18	3.49	3.51	3.69
County	0.05	1.48	1.55	1.50	1.48	1.51

Source: Chinese Health Statistical Digest 2003,2004, MOH, PRC

Table A 3: Health institutions by ownership (2002)

	Total	By ownership			By profit status		
		Govt.	Enterprise	Other	Non-profit	Profit	Other
Hospital	17,844	51.7%	30.4%	17.9%	88.1%	10.0%	1.9%
General Hospital	12,716	42.8%	41.3%	15.9%	90.1%	7.9%	2.0%
TCM Hospital	2,492	88.0%	0.4%	11.6%	91.3%	7.1%	1.7%
TCM-WM Hospital	207	52.7%	17.9%	29.5%	80.7%	19.3%	0.0%
Minority Hospital	165	94.5%	0.0%	5.5%	95.8%	3.0%	1.2%
Specialized Hospital	2,237	58.7%	5.5%	35.8%	73.4%	24.9%	1.8%
Nursing Hospital	27	33.3%	22.2%	44.4%	77.8%	22.2%	0.0%
Sanatorium	365	43.3%	22.7%	34.0%	78.6%	1.4%	20.0%
HSCC	8,211	4.4%	0.3%	95.3%	87.7%	9.0%	3.3%
Health Center	46,014	94.4%	0.2%	5.4%	97.8%	0.5%	1.7%
Urban Health Center	1,022	91.4%	0.4%	8.2%	94.3%	1.7%	4.0%
THC	44,992	94.4%	0.2%	5.3%	97.9%	0.4%	1.6%
Outpatient Department	7,019	15.4%	10.8%	73.7%	63.4%	32.0%	4.6%
Clinic	212,888	3.6%	14.6%	81.8%	30.5%	68.9%	0.7%
First-aid Station	121	76.9%	11.6%	11.6%	85.1%	3.3%	11.6%
MCH Center	3,067	93.0%	1.5%	5.5%	88.7%	0.2%	11.1%
SDCI Institute	1,839	87.1%	2.8%	10.2%	85.9%	1.1%	13.0%
Center of Clinic Examination	20	60.0%	0.0%	40.0%	80.0%	10.0%	10.0%
Total	297,388	22.3%	12.6%	65.0%	47.7%	51.0%	1.3%

*Chinese Health Statistical Digest 2003, MOH, PRC***Table A 4: Village clinics**

	1985	1990	1995	2000	2001	2003
Number of Village Clinics	777,674	803,956	804,352	709,458	698,966	514,920
Set up by Village	305,537	266,137	297,462	300,864	289,091	276,590
Joint	88,803	87,149	90,681	89,828	92,555	35,998
Branch of THC	29,769	29,963	36,388	47,101	44,857	26,343
Private	323,904	381,844	354,981	255,179	255,423	157,733
Others	29,661	38,863	22,876	16,486	17,040	18,256
Village Doctors & Assistants	1,293,094	1,231,510	1,331,017	1,319,357	1,290,595	867,778
Village Doctors	643,022	776,859	955,933	1,019,845	1,021,542	791,856
Assistants	650,072	454,651	375,084	299,512	269,053	75,922

MOH, 2004; Chinese Health Statistical Digest 2004, MOH, PRC

Table A 5: Hospitals and THC by ownership

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total hospitals	14,961	15,235	15,760	15,928	16,010	16,241	16,376	16,468	16,678	16,732	16,781
Within Health Sector	7,249	7,397	7,592	7,655	7,773	7,893	7,944	8,034	8,148	8,215	8,254
Within Industrial & Other Sectors	6,548	6,702	6,918	6,971	7,016	7,215	7,345	7,297	7,348	7,308	7,211
Collective Ownership	919	883	958	952	928	828	763	762	772	763	799
Private	56	49	65	74	71	75	85	115	135	163	219
Others	189	204	227	226	222	230	239	260	275	283	298
Total THC	48,140	46,117	45,024	51,929	51,797	51,277	50,981	50,071	49,694	49,229	48,140
Within Health Sector	17,469	18,447	19,066	21,598	21,684	22,020	22,084	22,394	22,270	22,222	17,469
Within Industrial & Other Sectors								5			
Collective Ownership	30,671	20,670	25,958	30,331	30,113	29,257	28,897	27,654	27,407	26,989	30,671
Private								18	17	18	
Others											

Source: Annual Report of Health Statistics

Table A 6: Hospital and THC beds

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Hospital beds	1,959,448	2,011,331	2,063,964	2,099,062	2,103,043	2,128,831	2,153,577	2,169,870	2,188,661	2,206,669	2,229,601
Within Health Sector	1,306,897	1,348,085	1,386,110	1,415,449	1,425,192	1,459,057	1,483,332	1,501,745	1,518,848	1,539,012	1,564,139
Within Industrial & Other Sectors	573,309	584,830	600,474	607,843	604,706	601,305	603,407	600,325	599,535	595,348	588,760
Collective Ownership	61,725	60,679	59,020	56,703	55,193	53,217	50,552	49,924	49,971	50,450	51,512
Private	2,424	2,353	2,832	3,362	3,289	3,369	4,094	4,857	6,215	7,336	9,494
Others	15,093	15,384	15,528	15,705	14,663	11,883	12,192	13,019	14,092	14,523	15,696
THC beds	729,152	732,754	730,828	732,390	733,064	734,745	742,447	737,693	734,032	734,807	729,152
Within Health Sector	369,177	382,156	402,928	402,691	404,223	405,673	410,036	414,746	412,605	416,233	369,177
Within Industrial & Other Sectors								79			
Collective Ownership	359,975	350,598	327,900	329,699	328,841	329,072	332,411	322,242	320,841	317,948	359,975
Private								626	586	626	
Others											

Source: Annual Report of Health Statistics.

Table A 7: Health personnel

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Number of health personnel	5,025,134	5,307,009	5,215,416	5,307,009	5,373,378	4,927,059	5,516,176	5,535,682	5,570,048	5,591,026	5,583,932
Within Health Sector	2,795,035	3,124,793	3,042,283	3,124,793	3,189,271	3,281,582	3,387,849	3,459,315	3,504,665	3,546,880	3,563,930
Within Industrial & Other Sectors	1,415,223	1,394,558	1,403,292	1,394,558	1,390,694	1,044,101	1,316,449	1,254,808	1,226,136	1,175,023	1,132,859
Collective Ownership	653,194	594,713	591,113	594,713	601,563	583,919	624,853	628,301	638,603	646,901	647,668
Private	151,086	176,864	163,880	176,864	174,925	2,818	164,935	169,839	174,334	194,219	205,698
Others	10,596	16,081	14,848	16,081	16,925	14,639	22,090	23,419	26,310	28,003	33,777

Source: Annual Report of Health Statistics.

Table A 8: Number of Outpatient visits & inpatients to Hospitals at County Level & Above (100 million visits)

Year	Outpatient visits (100 million)				Inpatient visits (10,000)			
	Within Health Sector	Ind. & Oth. Sector	Coll. Owned	Private & Others	Within Health Sector	Ind. & Oth. Sector	Coll. Owned	Private & Others
1980	6.33	4.20			1667	580		
1981	6.57	4.30	0.50		1720	587	43	
1982	7.12	4.52	0.60		1828	603	50	
1983	7.26	4.56	0.65		1944	647	57	
1984	7.37	4.43	0.73		1855	620	58	
1985	7.21	4.31	0.72		1862	611	66	
1986	7.76	4.56	0.70		1960	637	65	
1987	8.50	4.80	0.60		2154	678	62	
1988	8.38	4.88	0.50		2292	733	61	
1989	8.16	4.93	0.50		2304	745	57	
1990	8.58	5.01	0.47		2341	733	55	
1995	7.76	4.02	0.29	0.01	2358	635	43	2
1997	7.95	3.72	0.25	0.01	2425	624	37	3
1999	8.19	3.43	0.24	0.02	2676	622	39	5
2000	8.76	3.37	0.24	0.03	2862	632	41	8
2001	8.74	3.00	0.25	0.04	3030	633	44	12

Source: Annual Report of Health Statistics.

Table A 9: Number of outpatient visits by ownership (2002) (100 million)

	Outpatient visits (100 million)				Inpatients (10,000)			
	Total	Non-profit	Profit	Share	Total	Non-profit	Profit	Share
Total	21.5	95.7%	4.3%	100.0%	5,991	94.8%	5.2%	100.0%
Hospital	12.4	95.5%	4.5%	57.9%	3,997	94.8%	5.2%	66.7%
General Hospital	9.6	95.6%	4.4%	44.9%	3,297	95.1%	4.9%	55.0%
TCM Hospital	1.9	97.3%	2.7%	8.6%	413	96.6%	3.4%	6.9%
Specialized Hospital	0.8	89.5%	10.5%	3.5%	246	87.0%	13.0%	4.1%
Sanitarium	0.0	100.0%	0.0%	0.1%	36	97.2%	2.8%	0.6%
HSCC	0.4	97.2%	2.8%	1.7%	11	100.0%	0.0%	0.2%
Health Center	7.3	97.4%	2.6%	34.0%	1,654	94.6%	5.4%	27.6%
Outpatient Department	0.4	72.1%	27.9%	2.0%	20	90.0%	10.0%	0.3%
MCH Center	0.8	96.0%	4.0%	3.5%	255	95.3%	4.7%	4.3%
SDCI Institute	0.2	86.7%	13.3%	0.7%	19	94.7%	5.3%	0.3%

Source: Chinese Health Statistical Digest 2003, MOH, PRC

Table A 10: Number of inpatients in Medical Institutions -Classified by Non-profit and Profit in 2002 (10, 000 inpatients)

	Total	Non-profit	Profit
Total	5,991	94.8%	5.2%
Hospital	3,997	94.8%	5.2%
General Hospital	3,297	95.1%	4.9%
TCM Hospital	413	96.6%	3.4%
Specialized Hospital	246	87.0%	13.0%
Sanitarium	36	97.2%	2.8%
HSCC	11	100.0%	0.0%
Health Center	1,654	94.6%	5.4%
Outpatient Department	20	90.0%	10.0%
MCH Center	255	95.3%	4.7%
SDCI Institute	19	94.7%	5.3%

Source: Chinese Health Statistical Digest 2003, MOH, PRC

Table A 11: Utilization Rate of Beds and Average Stay Days in Medical Institutions (2002)

	Bed occupancy			Average length of stay (days)		
	Total	Non-profit	Profit	Total	Non-profit	Profit
Total	57.4%	57.6%	49.9%	8.7	8.9	6.6
Hospital	64.6%	65.0%	50.6%	10.9	11.0	7.8
General Hospital	64.9%	65.3%	51.5%	10.1	10.2	7.0
TCM Hospital	57.1%	57.5%	42.8%	10.8	10.9	8.2
Specialized Hospital	70.4%	71.4%	52.2%	21.3	22.6	9.8
Sanitariums	40.7%	41.5%	29.1%	9.3	9.0	5.2
HSCC	68.1%	67.9%	79.2%	19.1	18.8	56.4
Health Center	34.8%	34.6%	36.2%	4.0	4.1	3.7
THC	34.7%	34.6%	35.8%	4.0	4.1	3.7
MCH Center	57.4%	58.0%	32.9%	5.4	5.5	3.0
SDCI Institute	52.0%	52.7%	57.0%	14.4	14.8	18.0

Source: Chinese Health Statistical Digest, MOH, PRC

Table A 12: Bed occupancy rates

	Hospitals at county level or above				Hospitals	Health centers
	Within Health Sector	Ind. & Oth. Sector	Coll. Owned	Private & Others		
1978	82.4%	70.9%			82.4%	
1979	82.5%	68.7%			82.5%	
1980	85.7%	70.7%			85.7%	
1981	86.8%	70.9%	85.9%		86.8%	53.5%
1982	89.0%	69.0%	84.6%		89.0%	54.2%
1983	90.1%	69.7%	84.4%		90.1%	56.6%
1984	87.8%	69.2%	82.6%		87.8%	49.1%
1985	87.9%	69.5%	81.5%		87.9%	46.0%
1986	87.8%	85.5%	70.3%		87.8%	47.0%
1987	89.8%	70.4%	79.1%		89.8%	47.4%
1988	89.9%	71.3%	75.9%		89.9%	47.3%
1989	86.2%	70.8%	69.5%		86.2%	44.6%
1990	85.6%	69.8%	69.5%		85.6%	43.4%
1995	70.2%	59.2%	54.7%	68.9%	70.2%	40.3%
1997	65.0%	54.0%	50.4%	56.8%	65.0%	34.5%
1999	61.3%	51.4%	50.6%	53.7%	63.1%	32.7%
2000	64.5%	51.4%	51.4%	53.2%	64.5%	33.1%
2001	65.3%	51.0%	49.4%	52.5%	65.3%	31.3%

Source: Annual Report of Health Statistics; Chinese Health Statistical Digest, MOH, PRC

Table A 13: Average length of stay

	Within Health Sector	Ind. & Oth. Sector	Coll. Owned	Private & Others
1978	14.3	17.1		
1979	13.8	16.9		
1980	13.7	15.6		
1981	13.9	15.9	22.4	
1982	14.0	15.5	21.0	
1983	13.8	15.4	19.5	
1984	14.9	16.3	20.9	
1985	15.4	16.5	19.4	
1986	15.6	16.8	19.5	
1987	15.6	16.8	17.6	
1988	15.6	16.5	16.1	
1989	15.4	16.7	16.5	
1990	15.5	17.0	16.9	
1991	15.5	17.5	17.4	
1992	15.8	17.4	17.2	
1993	15.2	16.8	15.0	19.4
1994	14.5	16.5	14.8	19.9
1995	14.2	16.7	13.9	19.2
1996	13.7	16.0	14.8	17.0
1997	13.3	15.6	15.7	12.5
1998	12.6	15.1	16.0	13.6
1999	12.1	14.8	14.3	12.6
2000	11.6	14.4	13.1	11.1
2001	11.3	14.2	12.5	9.2

Source: Annual Report of Health Statistics.

REFERENCES

1. Forney, M., "China's Failing Health System", in *Time Asia*. May 19, 2003.
2. The Economist, "Health care in China: Physician, heal thyself", in *The Economist*. February 8, 2003.
3. Noi, G.S., "Sars exposes flaws in China's health system", in *The Straits Times*. May 26, 2003.
4. Cook, I.G. and T.J. Dummer, "Changing health in China: re-evaluating the epidemiological transition model." *Health Policy*, 2004. 67(3): p. 329-43.
5. Cheng, S., ed. *China's PSU Reform: Choice of Models and Guidelines based on Classifications*. 2000, Democracy and Construction Press: Beijing.
6. Cheng, X. and W. Fan. *CMS in Tibet Autonomous Region*. in *International Seminar on Rural Health Financing*. 2000. Beijing: UNICEF and Chinese Ministry of Health.
7. Ge, Y., *Re-thinking and View on Public Service System and Public Institution System*, in *30 Subjects on the Reform: Exploration of Completing the Socialism Economic System*, G. Gaige, Editor. 2003, Zhongguo Fazhan Publishing House: Beijing.
8. Project Team on "Reform of China's Public Institutions and Development of China's Non-profit Organizations", N.R.C.f.S.a.T.f.D., Ministry of Science and Technology,, "Reform of China's Public Institutions: Retrospect and Prospects." *International Journal of Civil Society Law*, 2004. II(I (January)).
9. Hesketh, T. and W. Zhu, "Health in china: Traditional Chinese medicine: one country, two systems." *British Medical Journal*, 1997. 315: p. 115-117.
10. World Health Organization, "Formalisation of traditional health services." 2003, World Health Organization.
11. Health Statistical and Information Center, "The Development of Health Sector in 2003: References of 2004 State Health Conference." 2004.
12. Ministry of Health, *PRC National-Standard for Health Institution*. 2002.
13. Liu, G., X. Liu, and Q. Meng, "Privatization of the medical market in socialist China: a historical approach." *Health Policy*, 1994. 27(2): p. 157-74.
14. Standing, H. and G. Bloom, "Beyond public and private? - Unorganised markets in health care delivery." 2002, Report for World Development Report 2003/04 Workshop, Eynsham Hall, Oxford.
15. Kin, L.M., et al., "The role and scope of private medical practice in China." 2002, Commissioned by UNDP, WHO, MOH China.
16. Liu, X., L. Xu, and S. Wang, "Reforming China's 50,000 township hospitals--effectiveness, challenges and opportunities." *Health Policy*, 1996. 38(1): p. 13-29.
17. Liu, Y., W. Hsiao, and K. Eggleston, "Equity in health and health care: The Chinese experience." *Social Science & Medicine*, 1999. 49(10): p. 1349-1356.

18. Zheng, X. and S. Hiller, "The reforms of the Chinese health care system: County level changes: the Jiangxi study." *Social Science & Medicine*, 1995. 41(8): p. 1057-64.
19. Ministry of Finance, "The Trial Method Being Responsible for One's Budget in the PSUs of the Art, Education and Health Sector." 1979.
20. Ministry of Finance, "Regulations on Financial Management of PSUs." 1989.
21. Meng, Q., Q. Sun, and N. Hearst, "Hospital charge exemptions for the poor in Shandong, China." *Health Policy and Planning*, 2002. 17(1): p. 56-63.
22. Liu, X., Y. Liu, and N. Chen., "The Chinese experience of hospital price regulation." *Health Policy and Planning*, 2000. 15(2): p. 157-163.
23. Zheng, X. and S. Hillier, "The reforms of the Chinese health care system: county level changes: the Jiangxi Study." *Soc Sci Med*, 1995. 41(8): p. 1057-64.
24. Liu, X. and A. Mills, "Financing reforms of public health services in China: lessons for other nations." *Social Science & Medicine*, 2002. 54(11): p. 1691-1698.
25. Liu, X. and W. Hsiao, "The Cost escalation of social health insurance plans in China: Its implication for public policy." *Social Science & Medicine*, 1995. 41(8): p. 1095-1101.
26. Barnum, H.N. and J. Kutzin, *Public Hospitals in Developing Countries*. 1993, Baltimore: Johns Hopkins University Press. [450] p.
27. Gong, Y., A. Wilkes, and G. Bloom, "Health human resource development in rural China." *Health Policy and Planning*, 1997. 12(4): p. 320-328.
28. Liu, X. and A. Mills, "Evaluating payment mechanisms: how can we measure unnecessary care?" *Health Policy Plan*, 1999. 14(4): p. 409-13.
29. Cai, W., et al., "Increased cesarean section rates and emerging patterns of health insurance in Shanghai, China." *American Journal of Public Health*, 1998. 88(5): p. 777-780.
30. Dong, H., et al., "Association between health insurance and antibiotics prescribing in four counties in rural China." *Health Policy*, 1999. 48(1): p. 29-45.
31. Dong, H., et al., "A Description of outpatient drug use in rural China: Evidence of difference due to insurance coverage." *International Journal of Health Planning and Management*, 1999. 14(1): p. 41-56.
32. NHS Executive, "Quality and performance in the NHS: High level performance indicators." 1999, Department of Health: London.
33. Hoggett, P., "New methods of control in the public sector." *Public Administration*, 1996. 74: p. 9-32.
34. Ferlie, E.B. and S.M. Shortell, "Improving the quality of health care in the United Kingdom and the United States: A framework for change." *Milbank Quarterly*, 2001. 79(2): p. 281-315.

35. World Health Organization, "The World Health Report 2000: Health systems -- improving performance." 2000, World Health Organization: Geneva.
36. Campbell, S.M., M.O. Roland, and S.A. Buetow, "Defining quality of care." *Soc Sci Med*, 2000. 51(11): p. 1611-25.
37. Donabedian, A., "Evaluating the quality of medical care." *Milbank Mem Fund Q*, 1966. 44(3): p. Suppl:166-206.
38. Brook, R.H., E.A. McGlynn, and P.G. Shekelle, "Defining and measuring quality of care: a perspective from US researchers." *Int J Qual Health Care*, 2000. 12(4): p. 281-95.
39. Blumenthal, D., "Part 1: Quality of care--what is it?" *N Engl J Med*, 1996. 335(12): p. 891-4.
40. Institute of Medicine, "Medicare: A Strategy for Quality Assurance. Vol I." 1990, National Academy Press: Washington.
41. Donabedian, A., *Explorations in Quality Assessment and Monitoring, Volume 1: The Definition of Quality and Approaches to its Assessment*. 1980, Washington D.C.: Health Administration Press.
42. Andersen, T.F. and G. Mooney, *The Challenges of medical practice variations. Economic issues in health care*. 1990: Macmillan. [176]p, cased.
43. Bloom, G., L. Han, and X. Li, "How Health Workers Earn a Living in China." *Human Resources for Health Development Journal*, 2001. 5(1-3).
44. Gao, J., et al., "Changing access to health services in urban China: Implications for equity." *Health Policy and Planning*, 2001. 16(3): p. 302-312.
45. Gao, J., et al., "Health equity in transition from planned to market economy in China." *Health Policy and Planning*, 2002. 17(Suppl.1): p. 20-29.
46. Akin, J.S., W.H. Dow, and P.M. Lance, "Did the distribution of health insurance in China continue to grow less equitable in the nineties? -- Results from a longitudinal survey." *Social Science & Medicine*, 2003(in press).
47. Zhan, S., Z. Sun, and E. Blas, "Economic transition and maternal health care for internal migrants in Shanghai, China." *Health Policy and Planning*, 2002. 17(Suppl.1): p. 47-55.
48. State Development and Planning Commission and Ministry of Health, "Opinions on Reforming Price Management in Medical Service." 2000.
49. Ministry of Health, "Implementing Guidelines on the Further Reform of Personnel in Health Sector." 2000.
50. Ministry of Finance and Ministry of Health, "Regulation of Hospital Finance and Regulation of Hospital Accounting." 1998.
51. State Council, "Implementing Guideline for Classified Administration on Urban Medical Institutions." 2000.

52. Arrow, K.J., "Uncertainty and the Welfare Economics of Medical Care." *American Economic Review*, 1963.
53. Barnum, H.N., J. Kutzin, and H. Saxenian, "Incentives and Provider Payment Methods." *International Journal of Health Planning and Management*, 1995. 10: p. 23-45.
54. Gosden, T., L. Pederson, and D. Torgerson, "How Should We Pay Doctors? A Systematic Review of Salary Payments and their Effect on Doctor Behaviour." *Quarterly Journal of Medicine*, 1999. 92: p. 47-55.
55. Chaix-Couturier, C., et al., "Effects of financial incentives on medical practice: results from a systematic review of the literature and methodological issues." *Int J Qual Health Care*, 2000. 12(2 (April)): p. 133-42.
56. Gerdtham, U. and B. Jonsson, *International Comparisons of Health Expenditure*, in *The Handbook of Health Economics*, A. Culyer and J. Newhouse, Editors. 2000, Elsevier North Holland: Amsterdam.
57. Cutler, D. and R. Zeckhauser, *The Anatomy of Health Insurance*, in *Handbook of Health Economics*, A. Culyer and J. Newhouse, Editors. 2000, Elsevier North Holland: Amsterdam.
58. Yu, Q., Y. Jiang, and J. Zhao, "The Analysis of Performance on the Maximum Price Limitation on Some Special Disease Categories." *Chinese Hospital Management*, 2000. 12.
59. Guo, S. and S. Ge, "Zhongguo shehui baoxian de gaige yu tansuo (The reform and exploration of China's social insurance)." 1998: Shanghai Caijing University Publishing House, Shanghai, PRC.
60. Yip, W. and K. Eggleston, "Provider Payment Reform in China: The Case of Hospital Reimbursement in Hainan Province." *Health Economics*, 2001. 10(4): p. 325-339.
61. Yip, W., "Medical savings accounts: Lessons from China." *Health Affairs*, 1997. 16(6): p. 244-251.
62. Yip, W. and K. Eggleston, "Addressing government and market failures with payment incentives: Hospital reimbursement reform in Hainan, China." *Social Science & Medicine*, 2004. 58: p. 267-277.
63. Hsiao, W. and Y. Liu, "Economic Reform and Health -- Lessons from China." *New England Journal of Medicine*, 1996. 335(6): p. 4390-432.
64. Van de Ven, W.P.M.M., "Market orientated Health Care Reforms: Trends and future options." *Social Science & Medicine*, 1996. 43(5): p. 655-666.
65. Propper, C., D. Wilson, and N. Soderlund, "The effects of regulation and competition in the NHS internal market: The case of general practice fundholder prices." *Journal of Health Economics*, 1998. 17(6): p. 645-73.
66. Propper, C. and N. Soderlund, "Competition in the NHS internal market: An overview of its effects on Hospital prices and Costs." *Health Economics*, 1998. 7: p. 187-197.

67. Donaldson, C. and G. Currie, "The Public Purchase of Private Surgical Services: A Systematic Review of the Evidence on Efficiency and Equity." 2000, Institute of Health Economics, Working Paper 00-09, Edmonton, Alberta.
68. Le Grand, J., "Competition, cooperation, or control? Tales from the British National Health Service." *Health Affairs*, 1999. 18(3).
69. Le Grand, J., "Further tales from the British National Health Service",. *Health Affairs*, 2002. 2(3): p. 116-28.
70. Hemenway, D., et al., "Physicians' responses to financial incentives. Evidence from a for-profit ambulatory care center." *N Engl J Med*, 1990. 322(15): p. 1059-63.
71. Wilson, J.Q., *Bureaucracy : what government agencies do and why they do it*. 1989, [New York]: Basic Books. xiv, 433.
72. Besley, T. and M. Gouveia, "Alternative Systems of Health Care Provision." *Economic Policy: A European Forum*, 1994. 9(19): p. 199-249.
73. Pauly, M.V., "Nonprofit Firms in Medical Markets." *American Economic Review*, 1987. 77(2): p. 257-62.
74. Glaeser, E.L. and A. Shleifer, "Not-for-profit entrepreneurs." *Journal of Public Economics*, 2001. 81(99-115).
75. Sloan, F.A., *Not-For-Profit Ownership and Hospital Behavior*, in *Handbook of Health Economics Vol 1 B*, A.J. Culyer and J. Newhouse, Editors. 2000, Elsevier: Amsterdam.
76. Preker, A.S. and A. Harding, "The Economics of Public and Private Roles in Health Care: Insights from Institutional Economics and Organizational Theory." 2000, Health, Nutrition and Population Discussion Paper, Human Development Network, World Bank.
77. Vining, A. and S. Globerman, "Contracting out health care services: a conceptual framework." *Health Policy*, 1999. 46(77-96).
78. Shelanski, H.A. and P.G. Klein, "Empirical research in transaction cost economics: a review and assessment." *Journal of Law, Economics and Organization*, 1995. 11(2): p. 335-361.
79. World Bank, *World Development Report 2004: Making Service Work for Poor People*. 2003, Oxford: Oxford University Press and the World Bank.
80. Marsteller, J.A., R.B. Bovbjerg, and L.M. Nichols, "Nonprofit Conversion: Theory, Evidence and State Policy Options." *Health Services Research*, 1998. 33(5).
81. Reinhardt, U.E., "The Economics of For-Profit and Not-For-Profit Hospitals." *Health Affairs*, 2000. 19(6): p. 178-186.
82. Butler, J.R.G., *Hospital Cost Analysis*. 1995, Boston: Kluwer Academic Publishers.
83. Li, G. and S. Hu, "The Evaluation of Performance in Different Graded Hospitals in Shanghai." *Acta Universitatis Medicinalis Secundae Shanghai*, 2001. 21.

84. Ye, J., et al., "Evaluation on Social Effectiveness of Socializing Logistic Services in Hospitals." *Chinese Hospital*, 2003. 12.
85. Yang, Y., "The Experience and Effect Analysis of Trusteeship in Hospitals." *Chinese Journal of Hospital Administration*, 2003. 6.
86. Meng, Q., X. Liu, and J. Shi, "Comparing the services and quality of private and public clinics in rural China." *Health Policy and Planning*, 2000. 15(4): p. 349-356.
87. Xiong, D. and X. Zhu, "The Analysis of Two Reformed Hospitals." *Health Economics Research*, 2003. 1.
88. Maher, M. and L. Marais, "A Field Study on the Limitations of Activity-Based Costing When Resources Are Provided on a Joint and Indivisible Basis." *Journal of Accounting Research*, 1998. 36(1): p. 129-142.
89. Chan, L., et al., "The Effect of Medicare's Payment System for Rehabilitation Hospitals on Length of Stay, Charges and Total Payments." *New England Journal of Medicine*, 1997. 337(October 2): p., October 2, 978-85.
90. Silverman, E. and J. Skinner, "Are For-profit Hospitals Really Different? Medicare Upcoding and Market Structure." 2001, National Bureau of Economic Research Working Paper 8133, February.
91. Duggan, M.G., "Hospital Ownership and Public Medical Spending." 2000, National Bureau of Economic Research Working Paper 7789, July.
92. Imai, Y., S. Jacobzone, and P. Lenain, "The Changing Health System in France." 2000, Organization for Economic Cooperation and Development Economics Department Working Paper No. 269, November.
93. Armstrong, M., S. Cowan, and J. Vickers, *Regulatory Reform: Economic Analysis and British Experience*. 1994, Massachusetts: MIT Press.
94. Osborne, D. and T. Gaebler, *Reinventing government : how the entrepreneurial spirit is transforming the public sector*. 1992, Reading, Mass ; Wokingham: Addison-Wesley. xxii, 405.
95. Kim, H.J., W. Chung, and S.G. Lee, "Lessons from Korea's pharmaceutical policy reform: the separation of medical institutions and pharmacies for outpatient care." *Health Policy*, 2004. 68(3): p. 267-75.
96. Chou, Y.J., et al., "Impact of separating drug prescribing and dispensing on provider behaviour: Taiwan's experience." *Health Policy Plan*, 2003. 18(3): p. 316-29.