A study of the social causes of over-medication in China

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ABSTRACT

This thesis seeks to examine the root causes of over-medication in China. I have applied Donald Light's theoretical model of "Countervailing Powers" in the context of socio-economic transition in China, focusing on the important causes of over-medication (over-prescription) in the healthcare system and seeking to explore how the interacting powers of government, the pharmaceutical industry and the medical profession relate to the phenomenon of prescription drug over-use. The study has mainly used documentary and interview research methods. The primary methods of data collection are: 1) a review of documents and literatures obtained from governmental (e.g. MOH report and Year Book of Public Health, etc.) and non-governmental sources, and 2) semi-structured and structured interviews that focus on doctors in Shandong Province.

The findings of this thesis suggest that a complex of interactive social relationships in China causes its problem of over-medication. These include insufficient government subsidy for hospitals and doctors, loopholes in the drug pricing policy and regulations, close ties between the pharmaceutical industry and doctors, doctors' prescribing practice, and the financial incentives involved in drug sales.

This thesis is the first study to apply the countervailing powers theory in China's healthcare context. The study of the interaction between different groups of actors in the healthcare domain provides a novel understanding of the phenomenon of over-medication in China. The findings are expected to contribute to the development of strategies and recommendations that could reduce drug over-use and improve the healthcare system by improving policy design, implementation and evaluation, doctors' prescribing behaviour and the doctor–patient relationship. The analytical results of this research will also shed some critical light on current global issues concerning the role of the state and effective healthcare policy implementation in the healthcare domain.

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LIST OF ABBREVIATIONS

BEMIS	Basic Urban Employees' Medical Insurance System
BMI	Basic Medical Insurance
BRMIS	Basic Urban Resident Medical Insurance System
CCTV	Chinese Central Television
CDR	Crude Death Rate
CFDA	China Food and Drug Administration
Ch.P	Chinese Pharmacopoeia
CIT	Corporate Income Tax
CMS	Cooperative Medical System
DTCA	Direct-to-consumer Advertising
EBM	Evidence-based Medicine
EF	Ex-factory
EML	Essential Medicine List
GDP	Gross Domestic Product
GIS	Government Insurance Scheme
GMP	Good Manufacturing Practice
GP	General Practitioners
GSK	GlaxoSmithKline
HDI	Human Development Index
HNTE	High/New Technology Enterprise
IMR	Infant Mortality Rate
IRDP	Index of Rational Drug Prescribing
LACP	Local Administration of Commodity Prices
LAIC	Local Administration of Industry and Commerce
LDA	Local Drug Administration
LIS	Labour Insurance Scheme
MAT	Moving Annual Total
MNPC	Multinational Pharmaceutical Company
MOH	Ministry of Health
NDRC	National Development and Reform Commission

NED	National Essential drugs
NHFPC	National Health and Family Planning Commission
NICE	National Institute for Health and Care Excellence
NRCMI	New Rural Cooperative Medical Insurance
NRCMS	New Rural Cooperative Medical System
OECD	Organisation for Economic Co-operation and Development
OTC	Over-the-counter
PC	Price Ceiling
PDA	Provincial Drug Administration
PDR	Physicians' Desk Reference
PPP	Purchasing Power Parity
PRC	People's Republic of China
R&D	Research and Development
RCMS	Rural Cooperative Medical System
SACP	State Administration of Commodity Prices
SAIC	State Administration of Industry and Commerce
SDPC	State Development and Planning Commission
SFDA	State Food and Drug Administration
STS	Studies of Science and Technology
UEBMI	Urban Employee Basic Medical Insurance
URBMI	Urban Residence Basic Medical Insurance
USD	US Dollars
WHO	World Health Organization

CHAPTER 1 – INTRODUCTION

Research question

This thesis aims to explore and examine the root causes of the problem of over-medication in China, not least because, for over the last three decades, China's healthcare system has come under strain. It has been transformed and has changed tremendously with the introduction of new market initiatives since the 1980s. Studies in this field thus far have shown that China's healthcare sector has encountered deep problems since these market-oriented socio-economic reforms were initiated, and the healthcare market is far from mature in the absence of an effective management system and self-regulation. One of the most important problems that needs to be solved is the over-medication or over-use of pharmaceutical drugs in China. This controversial situation has become a commonly acknowledged phenomenon and the focus of public attention in China. In the past few decades, the increasing health service costs and various conflicts in public medical services, caused primarily by greater over-medication in China since the pre-reform era, have become a difficult problem for the Chinese government to solve. Due to varying social and economic environments as well as the difference in medical systems in China, the factors influencing doctors' prescription behaviour in China call for further study (China News, 2014).

This thesis takes a sociological approach that seeks to analyse over-medication as a social issue by examining the social causes of over-medication in China. I have attempted to understand and explain over-medication through the way in which groups and individuals interact within a society. As C. W. Mills, in his book *The Sociological Imagination* (1959) states, personal troubles and public issues are inextricably linked: 'Neither the life of an individual nor the history of a society can be understood without understanding both' (1959: 1).

This thesis explores how over-use relates to and interacts with the power relationships between three significant actors: government, the pharmaceutical industry, and the medical profession. In order to do so it seeks answers to the following important research questions within this context:

How and to what extent do these three actors interact to lead to over-medication?

What are the aspects of their activities that cause over-medication?

How do these factors shape and change the nature of medication use in relation to over-medication?

These questions will be addressed through a number of theoretical perspectives, my primary data being drawn from extensive research I conducted in Shandong Province in China, and the vast range of documentary sources (secondary literature) on the subject (further detail about primary and secondary data is provided in Chapter 4).

Definition, measurement and criteria

This thesis seeks to make sense of the phenomenon of over-medication in the Chinese healthcare domain. It is necessary to define the term "over-medication" more explicitly in order to facilitate the following discussion in this thesis. Based on the Conference of Experts on the Rational Use of Drugs, released by the World Health Organization (WHO) in Nairobi in 1985, over-medication is defined as "an irrational medical treatment that occurs as a patient takes excessive or unnecessary medications". However, in order to facilitate the better understanding of the issue of over-medication in China, I have found it useful, initially, to understand the term as highly or mainly related to doctors' over-prescribing practice in China. Thus my main focus in this thesis is on "over-prescription", which implies the use of a medication in excess of the amount needed, and prescribing unnecessary or inappropriate costly medicines.

The World Health Organization (WHO) (1993), Joncheere (2002), Melander (2002) and Dong *et al.* (2011) provide comprehensive and useful criteria for drug use, with five measurements to assess inappropriate drug use: the percentage of encounters with a medicine (esp. antibiotics) prescribed; the average number of drugs per encounter; the percentage of encounters with an injection prescribed; the percentage of drugs prescribed by generic name; and the percentage of drugs prescribed from the National Essential Medicines List or Formulary.

In contrast, Zhang and Zhi (1995) developed the Index of Rational Drug Prescribing (IRDP), which was used as a further measure of appropriate drug use for the comprehensive appraisal of medical care. Their method has been validated and used in medical and health research. In this study, prescriptions with five or more drugs were defined as polypharmacy. The index of polypharmacy was measured by the percentage of non-polypharmacy prescriptions (Zhang and Zhi, 1995).

The 1985 WHO report of the Conference of Experts concluded that "the rational use of drugs requires that patients receive medicines appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and the community" (WHO, 1987: 299). However, a consumer's or user's perspective on appropriate medication may differ from the WHO definition; and what is appropriate use of medication as defined by the WHO

may be over-use for the consumer and vice versa. For the patients and users, the rationality of using a drug is based on the interpretation of its value for daily life, influenced by cultural perceptions and economic conditions. People may buy only a few pills because they cannot afford more; or they may spend money on analgesics to relieve their misery, while good food and rest would have been better for their health. The term "drug use" in this overview represents both prescribed and self-administered usage, unless indicated differently in the thesis. In order to prevent confusion, the term 'inappropriate' is employed when referring to self-administered use, and 'irrational' when referring to prescribed use.

Evidence of medication over-use in China

Medication over-use in China is manifested most prominently in the over-use of antibiotics or injections, a commonly acknowledged phenomenon in China, which is importantly related to the problems of overly high doses and unnecessary and duplicated medicines. In a recent study, Dong *et al.* (2011) assessed a total of 20,125 prescriptions collected from 680 primary health clinics in villages from 40 counties in 10 provinces of western China. They found some evidence of irrational use of drugs, and that prescribing was far from the optimal rational level, especially in terms of prescribing injections and antibiotics. In other words, over-use of injections and

antibiotics was the most significant aspect of irrational drug prescribing (Dong *et al.*, 2011).

One recent study found that 98% of patients suffering from a common cold in the Beijing Children's Hospital were prescribed antibiotics in the year of 2012 (Yezli and Li, 2012). Another study estimated that around 75% of patients with seasonal influenza were prescribed antibiotics, and the rate of antibiotic prescription to inpatients was 80% (Zheng and Zhou, 2007). The research also estimated that about 50% of antibiotic prescriptions in China were medically unnecessary (Cheng, 2005). In China, there is considerable evidence of the over-use of drug injections when oral formulations would be more appropriate (China News, 2014) and this appears to be more extensive than in Western countries. According to the WHO statistical data, in 2004, 5 billion injections were administered in China out of 16 billion injections given worldwide. Thus China is the world's largest "injection country" (Xinhua News, 2011). For another more recent instance, published statistical data shows that a total amount of 10 billion bottles (bags) or more of injections/infusions were used in 2011 by the 1.3 billion Chinese population, which is equal to 8 bottles (bags) per person on average, much higher than the international average standard of 2.5 to 3.3 bottles (bags) per capita (Xinhua News, 2013a).

China has a high rate of antibiotic usage for both inpatients and outpatients. On average, each Chinese person consumes 138g of antibiotics a year, over ten times that consumed in the US (Heddini *et al.*, 2009). A 2009 study also notes that antibiotics in Chinese hospitals were prescribed in as many as 74% of all patient visits, in order to treat their illness or as a preventive measure, compared with the international average of 30% (Wei, 2009a). Hu *et al.* (2003) found that two-thirds of inpatients used antibiotics in China, compared to about a third of inpatients in many other countries. Guo (2004) noted that the World Health Organization has recommended that Chinese hospitals decrease the rate of in-patient antibiotic usage to the maximum level of 30%. Shan (2011) argued that some experts have said that 70% of those who receive in-patient medical treatment on the Chinese mainland are given antibiotics, where only 20% of them actually need the drugs. In particular, about 97% of surgical patients in China were prescribed antibiotics, but a large number of them would not have needed antibiotics if hospitals had conducted proper medical measures in individual cases (MOH, 2011). Dong *et al.* (1999a) and Zhang and Unschuld (2008) found that antibiotic use is high among out-patients attending hospitals or visiting doctors in China: 40%–60% use antibiotics. In comparison, in the US, the out-patient rate of antibiotic use is from 15% to 18% (Roumie *et al.*, 2005).

The consequences of over-medication

From the perspective of socio-economic effects, the over-use of drugs increases the fiscal burden on the government and results in both the wastage of scarce medical resources and widespread health hazards. A World Bank report showed that China's expenditure on medicines accounted for 52% of total health expenditure in 2003, in comparison to 15%–40% in most countries in the world. Based on international standards, 12%–40% of China's total health expenditure was wasted (World Bank, 2004). With the widespread phenomenon of over-medication in China, healthcare costs have grown significantly. As a result, an increasing proportion of the Chinese population cannot afford healthcare services, even with rapid economic growth (Gu, 2008). For example, in 1993, only 5.2% of people could not afford out-patient care when they were sick. However, the number increased to 13.8% in 1998 and 18.7% in 2008. Today, an increasing number of Chinese people cannot afford healthcare services, even out-patient care, as a large proportion of health bills are payable out-of-pocket by the patients, and these costs may be unaffordable and create access barriers for the poorer patients (Yang, 2013). Consequently, the increasing healthcare costs have engendered great dissatisfaction among the ordinary people, and have become one of the top social issues in China (Gu, 2008).

From the perspective of medical treatment effects, the problem of over-medication in the Chinese healthcare system not only leads to increasing pharmaceutical expenditures and the escalation of healthcare service costs, but also brings side-effects and increasing instances of adverse drug reactions, leading to unnecessary pain and casualties. For example, according to a report, drug-induced death accounted for 10% of total deaths of inpatients. About 10%–20% of drug users had an adverse drug reaction, and about 200,000 people died each year from adverse drug reactions between 2004 and 2008 (Wei, 2009b), 40% of which deaths were caused by the over-use of antibiotics (Li *et al.*, 2002: 9).

Moreover, drug resistance, such as bacterial resistance caused by the over-use or abuse of antibiotics, makes the clinical treatment and therapy for infectious diseases more difficult. This has always been a serious social problem in China, and nowadays is attracting a great deal of attention. Another study also noted that there are 10 million cases of people becoming deaf-mute as a result of antibiotics abuse among 50 million disabled people in 2005; more than a million children became deaf or suffered neurological disorders due to the over-use of antibiotics in 2005 (Cheng, 2005). The most recent statistics of the China Food and Drug Administration (CFDA) show that the health of 2.5 million Chinese people has been affected every year due to the over-use of medicines. Almost 200,000 died, which is about twice the number of deaths from traffic accidents (China News, 2014).

Antibiotic resistance due to antibiotic abuse has been described as a major threat to global public health by the World Health Organization since there are now few, and in some cases no antibiotics available to treat certain life threatening infections (WHO, 2000a). In recent years, pig streptococcus appeared in Sichuan province, and patients with this streptococcus could only use broad-spectrum antibiotics, such as vancomycin to control the bacteria. This situation is regarded as an antibiotic crisis, and in future further use of antibiotics will not be effective in the treatment of severe infections and super bacteria (Wei, 2009b: 215).

The potential threat of antibiotic resistance is likely to be one of the greatest challenges to global health during the 21st century, with a direct effect on health indicators in all countries, whether low income, middle-income or high income. In a study of resistance patterns of several common bacteria in China in 1999 and 2001 (Zhang *et al.* 2006), the mean prevalence of resistance among hospital and community-acquired infections was 41% and 28%, respectively. Comparable figures for the US were 17–20% and 13%. Moreover, Zhang *et al.* (2006) argued that the high prevalence of antibiotic resistance in China was accompanied by a rapid growth in the rate of resistance. The annual growth rate was on average 22% between 1994 and 2000 in China, while the growth rate was only 6% between 1999 and 2002 in the US (ibid). Sun *et al.* (2008) argued that over-prescribing patterns contribute to the global problem of antimicrobial resistance. The consequences of overuse of

antibiotics and antibiotic resistance in China are severe, because it produces drug-resistant mutant bacterial strains (MOH, 1991; Reynolds and McKee, 2009). However, the misuse or over-use of medicines is not simply a matter of medical knowledge and the dissemination of treatment guidelines; there is still a key debate as to whether the general pattern of inappropriate use or over-use of drugs is driven less by misinformation than by an underlying structure of financial incentives that reward doctors and hospitals for over-prescription (World Bank, 2010a). This is also an argument I consider and discuss in this thesis.

Plan of the thesis

This thesis has eight chapters. Following this introductory chapter, Chapter 2 reviews international research on the factors that cause over-medication and highlight the key theoretical perspectives that researchers have used in their studies of the social causes of the over-use of drugs. I also discuss in detail the concepts of "medicalisation" and "pharmaceuticalisation", and the theoretical framework of "countervailing powers" that supports my thesis (Light, 1995, 2000, 2010a).

Chapter 3 outlines the methodology used in the course of this study. I provide a discussion of the methods used to examine the social causes of over-medication. I also describe how I designed my research and how I collected primary and secondary

data, and discuss the limitations and challenges that I faced when applying my research strategy.

Chapter 4 provides a historical overview of the Chinese healthcare system, with information about the evolution and the development of China's healthcare system between 1949 and 1978, and from 1978 to the present day.

Chapters 5, 6 and 7 utilise the theory of "countervailing powers" as a model to develop a multi-dimensional analysis of the phenomenon of over-medication in China, focusing on the interactions between the government, the pharmaceutical industry, and the medical profession.

Chapter 5 considers the political and economic context from which the practice of over-prescription emerges and in which it operates, including an analysis of, and the relationship between, the state and its healthcare sectors, as well as state intervention in relation to the pharmaceutical industry and the medical profession. I argue that the government's reluctance to fund healthcare, and instead to embed the profit motive in drug policy, encourages not only the pharmaceutical industry but also healthcare institutions to seek profits from pharmaceutical sales.

Chapter 6 addresses the question of "co-optation": the way the pharmaceutical companies interact with the healthcare sector, the medical profession and the public to encourage over-prescription and the use of costly medicines. It discusses the role of the "medical-industrial complex" in incorporating perverse incentives for drugs to be over-prescribed by the medical profession, the pervasive influence of pharmaceutical marketing in shaping the symbiotic relationship with hospitals and the medical profession, and the encouragement of the over-prescription of medicines by doctors and over-use by patients.

Chapter 7 provides a micro-level analysis of the issue of over-prescription. This chapter addresses the question: "What impact does doctors' prescribing have on the use of drugs?" This chapter adapts my fieldwork data to explore issues of professional autonomy and dominance in medicine interventionism, professional knowledge, self-financing and profit-seeking practices in a specific political and economic environment. I argue that all these factors affect how they practise and prescribe and the utilisation of medication in China, while the way in which doctors interact with the state and the pharmaceutical industry, and respond to these factors, constitutes a key influence on the level and character of the medication prescribed.

Chapter 8 draws together the arguments and summarises the research findings and the thesis's contribution to knowledge. It suggests some directions for further research and the policy implications for China.

Conclusion

This thesis seeks to extend the current understanding of over-medication in China, which is dominated by the studies of medicalisation and pharmaceuticalisation. I attempt to provide a fuller picture of over-medication through the concept countervailing powers which gives a more balanced sociological analysis of the interplay between the government, the pharmaceutical industry and the medical profession. The thesis also offers new insights into the dynamic and multi-layered social relations implicated in over-medication in China and elsewhere.

CHAPTER 2 – LITERATURE REVIEW: RESEARCHING THE SOCIAL CAUSES OF OVER-MEDICATION

Introduction

There has been a strong interest in medical practice among scholars and many issues and views have been published in this area. From the extensive literature in the field, I have chosen three key theoretical concepts or perspectives that are relevant to my research. They are "Medicalisation", "Pharmaceuticalisation" and "Countervailing Powers". These three approaches provide useful sociological models and tools to examine over-prescription and the phenomenon of over-medication in a market-oriented society. However, I have singled out only the concept of countervailing powers as the key theoretical framework of this study. Drawing on the perspective of countervailing powers, I have identified the following powerful actors influencing over-medication of prescribed drugs: the government, the pharmaceutical industry, and doctors. These actors interact in complex ways and reveal quite different ideological views about the issue of over-medication in the Chinese context. I will discuss each of them briefly later in this chapter, but I shall start by exploring all three theoretical perspectives: in order, medicalisation, pharmaceuticalisation and countervailing powers.

The concepts of medicalisation and pharmaceuticalisation

Concept of medicalisation

Medicalisation is one of the concepts of medical sociology that has been widely and powerfully discussed and applied in sociological studies since the 1960s. It has developed to a position from which to criticize the entire medical system and its dominant position. Most studies draw on the medical profession, inter-professional or organisational contests, social movements and interest groups as the prime movers toward medicalisation (Conrad, 2005). Although there have been various studies of medicalisation, the term has not always been clearly defined and has been used in different ways, without a general consensus on its exact meaning. In an early study, Conrad termed it as involving "defining behaviour as a medical problem or illness and mandating or licensing the medical profession to provide some type of treatment for it" (Conrad, 1975: 12). Zola (1983: 295) proposed one of the most straightforward definitions of medicalisation as a "process whereby more and more of everyday life has come under medical dominion, influence and supervision". Conrad (1992: 209) in a later paper defined medicalisation as "a process by which nonmedical problems become defined and treated as medical problems, usually in terms of illnesses or disorders." These definitions focus on the process and outcome of human problems entering the jurisdiction of the medical profession, and hence come under the

authority of doctors and other medical professionals to study, diagnose, prevent or treat.

In this respect, medicalisation can be referred to as the process by which human problems are transformed into medical problems. In Conrad's words: "The key to medicalisation is definition. That is a problem is defined in medical terms, described using medical language, understood through the adoption of a medical framework, or 'treated' with a medical intervention" (2007: 5). According to Conrad, medicalisation has been encouraged by a faith in science and progress and by the prestige of the medical profession, and he also puts emphasis on the pharmaceutical industry as a driver of medicalisation (ibid.).

However, according to Foucault's early studies (1973, 1977), this form of medical social control suggests that certain conditions or behaviours come to be perceived through the prism of the "medical gaze", "surveillance" and "governmentality" to which doctors may lay claim in their activities. From a Foucauldian perspective, the development of this "medical gaze" promoted an asymmetric and dehumanised doctor–patient relationship, in which the patient was subjected to the authorised expertise of the physician who ignored patients' views (Foucault, 1973).

In the context of medicalising deviance, Conrad (1979) distinguished three types of medical social control: medical ideology, collaboration, and technology. He argued that medical ideology imposes a medical model (that behaviour is a symptom of illness) primarily because of accrued social and ideological benefits. In medical collaboration doctors assist, often in an organisational context, as information providers, gatekeepers, institutional agents, and technicians. Medical technology suggests the use of a medical model for social control of medical technological approaches, especially drugs, surgery, and genetic or other types of screening. While these are overlapping categories, they do allow us to characterize types of medical social control. There is substantial literature about debates on, or critiques of, medicalisation, concerning the relationship between medicine and lay people and the expansionist tendencies of medicine in the West. Freidson (1970), Zola (1972), Conrad (1975) and Szasz (1963) argued that the expansion of medical authority into domains of everyday existence was promoted by doctors and was a force of social control they termed “medical imperialism”.

However, Zola (1972) and Conrad and Schneider (1980b) argued that “medical imperialism” cannot be considered the central explanation for medicalisation, in that the doctor’s role in the phenomenon of medicalisation is complex, and the organisation and structure of the medical profession have an important impact (Gill & Horobin, 1972). Freidson (1970: 251) proposed that professional dominance and

monopolization have certainly played a significant role in giving medicine the jurisdiction over virtually anything to which the label “health” or “illness” can be attached.

Illich (1976) argued that technological development and an over-expanded medical bureaucracy are the major medical professional factors causing social control. In particular, he contended that as medical bureaucracy continuously expanded, technology abuse, medical/professional monopoly and centralised jurisdiction all induced people to rely on medicine. However, Zola (1972) argued that medical expenditure is not only a fiscal burden for individuals and government, but also destroys self-healing because of over-use of treatment (surgery) and drugs. As Conrad and Schneider (1980b: 8) also argued, “the greatest social control power [of medicalisation] comes from having the authority to define certain behaviours, persons and things” as medical problems.

In this context, the term “Iatrogenesis” was introduced into social science by Ivan Illich (*Medical Nemesis*, 1976), who used the term in his discussion of medicalisation. Iatrogenesis means “brought forth by the healer”, its meaning derived from the Greek words *iatros* (‘healer’) and *genesis* (‘brought forth’). An iatrogenic disorder or illness is one that is caused by medical intervention itself. Iatrogenesis therefore refers to this process. In other words, an iatrogenic disease or injury is one

caused by doctors. Hence, iatrogenesis literally means “doctor-generated”, the term referring to sickness produced by medical activity. It is possible that there is considerably more iatrogenesis in medicine than the professionals would be prepared to admit. Widely recognised as a phenomenon, an example would be the way in which certain bacteria have become resistant to antibiotics as a result of their over-use as medication through inappropriate prescription. Illich claims that iatrogenesis outweighs any positive benefits of medicine, and in fact goes so far as to state (1976: 24):

> The pain, dysfunction, disability and anguish resulting from technical medical intervention now rival the morbidity due to traffic and industrial accidents and even war related incidents and make the impact of medicine one of the most rapidly spreading epidemics of or time.

This can be considered as part of his more general attack on industrial society and, in particular, its technological and bureaucratic institutions for limiting freedom and justice and for corrupting and incapacitating individuals. Illich (1976) proposes that iatrogenesis occurs on three levels.

The first level, clinical iatrogenesis, concerns ill-health contracted in hospital, which largely comprises the unwanted side-effects of medications and doctor ignorance, neglect, malpractice or lack of professional knowledge that can poison, maim, or even kill the patient (ibid.: 49).

Social iatrogenesis refers to the process by which "medical practice sponsors sickness by reinforcing a morbid society that encourages people to become consumers of curative, preventive, industrial and environmental medicine" (ibid.: 49). It makes people into hypochondriacs, too willing to place themselves at the mercy of medical experts – a dependence on the medical profession that allegedly undermines individual capacities.

Finally, cultural iatrogenesis implies that societies weaken the will of their members, by paralysing "healthy responses to suffering, impairment and death" (ibid.: 49). Here, the whole culture becomes "over-medicalised", with doctors assuming the role of priest, and political and social problems entering the medical domain (ibid.: 49).

The authors discussed above help clarify how the concept of medicalisation explains the extension of the medical domain. I now turn to look at the concept's use to imply that this resulted from medical imperialism. However, one seldom finds the term "medicalisation" used in the literature relating to underdeveloped countries. This is partly because it is a concept introduced by Western scholars who assume that medicalisation benefits the medical profession, who are mainly based in the West. The reason why I have applied the concept of "medicalisation" to the Chinese context is because I see that it can happen through the imposition of Western concepts of illness on the rest of the world as a complex phenomenon, and it encompasses more

than the doctor–patient interaction. Medicalisation can also happen simply because the state wants to use medicine as one of its social control mechanisms. In other words, this thesis views medicalisation in a broad sense and argues that the use of medicine is not only for medical professionals' benefit or patients' interest; it can also serve other purposes, such as the interests of the state and the pharmaceutical industry.

As mentioned above, the concept of medicalisation was also developed and used for explaining how medical knowledge is applied to a series of behaviours over which medicine exerts control (White, 2002: 42). Medicalisation has also be termed "disease mongering" (Conrad, 2005), and doctors themselves are aware of this process. Moynihan *et al.* (2002) warned of inappropriate medicalisation leading to disease mongering, where the boundaries of the definition of illnesses are expanded to include personal problems as medical problems, or where the risks of diseases are emphasised to broaden the market for medications. As the authors noted, the emphasis has come to be placed on "over-medicalisation" rather than "medicalisation" in itself:

Inappropriate medicalisation carries the dangers of unnecessary labelling, poor treatment decisions, iatrogenic illness, and economic waste, as well as the opportunity costs that result when resources are diverted away from treating or preventing more serious disease. At a deeper level it may help to feed unhealthy obsessions with

health, obscure or mystify sociological or political explanations for health problems, and focus undue attention on pharmacological, individualised, or privatised solutions (2002: 886).

Concept of pharmaceuticalisation

Although the doctor remains an authority figure who prescribes medicines to patients, with a consideration of the social context in which medicalisation arises, some researchers argue that "medicalisation is a much more complex, ambiguous, and contested process than the 'medicalisation thesis' of the 1970s implied" (Ballard and Elston, 2005: 228). Over the decades since the 1970s, when sociologists started to study the pharmaceutical industry, they have used a variety of approaches to address the question of why, where, and how human conditions have been turned into problems that need treatment or enhancement with pharmaceuticals.

In recent years interest has risen along with the increasing role of the pharmaceutical industry in people's lives and the expanding marking power. In this sense, some scholars have suggested that a new concept of pharmaceuticalisation is required to understand the contemporary importance of pharmaceuticals and their manufacturers (Gabe, 2014), and whether the pharmaceutical industry has been "profit" instead of "scientific" oriented. This has been accompanied by other calls to rethink or go

beyond the notion of medicalisation (Abraham, 2009b; Law, 2006; Moynihan et al., 2002; Williams *et al.*, 2009) and explore whether the industry has targeted markets that lie beyond medicine's control (Williams *et al.*, 2011a), with this process having been termed "pharmaceuticalization" (Abraham, 2009b; Williams *et al.*, 2011a).

The process of pharmaceuticalisation occurs both for conditions "previously outside the jurisdiction of medicine" as well as established medical conditions already in the medical domain (Abraham, 2010: 604). It combines "the biological effect of a chemical on human tissue…the willingness of consumers to adopt the technology as a 'solution' to a problem in their lives, and the corporate interests of drug companies" (Fox and Ward, 2008: 865).

Williams, Gabe and Davis (2008) in their introduction to the special issue of *Sociology of Health and Illness*, on pharmaceuticals, claim that early studies of medicalisation explored the role of pharmaceuticals, but attention to the role and power of the pharmaceutical industry "within these processes remained a somewhat muted or neglected theme in the medicalisation literature" between the 1970s and the 1990s (2008: 813). Since the 2000s, this has changed, as scholars began to advocate and contribute to the body of research on the pharmaceutical industry in the development of pharmaceuticals; its effect on the expansion of drug use; and the role of the state, the medical profession, and the public/consumers. Studies of

pharmaceuticalisation by sociologists have mostly focused on developments in the prescription-only drug sector in the last 15 to 20 years in Western society (Abraham, 2010: 606).

As mentioned earlier, Conrad (2005, 2007) identified pharmaceuticalisation as one of the "shifting engines" or drivers of medicalisation over time, noting how doctors are no longer the primary drivers of medicalisation. Other sociologists such as John Abraham (2007, 2011) engaged in a lively debate about phamaceuticalisation with Joan Busfield (2007) and with Williams, Martin and Gabe (2011a, 2011b). While the definitional centre of medicalisation still lies with medicines, there is a shift to a new techno-scientific era of biomedicalisation, as Conrad *et al.* (2010) explained that some researchers attributed medicalisation to the growth of medicine's professional jurisdiction, increased consumer demands for medical solutions and the pharmaceutical industry expanding the markets for drugs.

In this respect, pharmaceuticalisation has also been defined by Williams, Martin and Gabe (2011a: 711) as "the translation or transformation of human conditions, capabilities and capacities into opportunities for pharmaceutical intervention". There is also widespread concern regarding the extent of pharmaceutical marketing direct to doctors and other healthcare professionals, for example through visits by sales people; the funding of journals, training courses or conferences; incentives for prescribing;

and the routine provision of “information” written by the pharmaceutical company (Abraham, 2010; Williams *et al.*, 2011a). It is often said that leading drug companies now spend more on marketing than on research and development (Angell, 2004). Undoubtedly, drug company discoveries have profoundly improved our capacity to treat illness, but pharmaceutical marketing today is more closely aligned with consumer marketing in other sectors than with medicine’s values, and this can lead to disastrous consequences (Applbaum, 2006).

The increasing amount of work being done on the phenomenon of pharmaceuticalisation has led to range of definitions and interpretations. Abraham takes a realist approach and identifies five mutually interactive, competing factors that have contributed to the growth of pharmaceuticalisation: medicalisation, industry drug promotional marketing, the ideology or policy of the regulatory state, biomedicalism (which is defined as “the progressive capacity of biomedical science to discover pharmaceutical solutions to new or established illnesses”), and consumerism (Abraham, 2010: 605–606). Moreover, Williams *et al.* (2011a) draw upon both medical sociology and studies of science and technology (STS) to develop a broader concept of pharmaceuticalisation than either Abraham or Busfield (discussed later in this chapter). They also define a broader range of concerns, notably, how pharmaceutical products are used outside of the medical domain and

how what they call “pharmaceutical futures” shape our thinking (Williams *et al.*, 2011b: 730). Accordingly, pharmaceuticalisation is:

> A dynamic and complex heterogeneous socio-technical process that is part of the long-term and ongoing construction of the pharmaceutical regime, including distinct socioeconomic activities and diverse actors such as clinicians, patients or consumers and regulators. These activities contribute to the overall dynamics of pharmaceuticalization and are part of the ongoing process of the pharmaceutical industry, extending its power and reach. The extent of pharmaceuticalization will therefore vary from case to case and depends on the context and the interplay between particular sets of actors in any one case (2011: 721).

This appears to be a more relevant concept for this thesis than medicalisation, but given the recent emergence of the concept, and the likelihood of the need for scholars still to respond to what pharmaceuticalisation may be and how to understand it, it is too early to judge this conclusively.

Although medicalisation and pharmaceuticalisation are not merely the causes of over-medication, these causes may be partly identified and interpreted in terms of the sociological concepts of medicalisation and pharmaceuticalisation. Over-medication is then seen as one of the consequences of medicalisation and pharmaceuticalisation. In this respect, the concepts of medicalisation and pharmaceuticalisation are useful for my analysis in terms of the role and power of the state, medical professions, the pharmaceutical industry, and society and also their implications for ordinary people whose self-identity and life-decisions may depend on the prevailing concepts of

health and illness (Conrad and Schneider, 1980a). However, in this thesis, the obvious question raised is how the state, doctors and the pharmaceutical industry are engaged in the process of over-medication. Indeed, what are their activities and how do they interacted with each other?

Although medicalisation and pharmaceuticalisation are both powerful concepts and they are widely used in medical sociology, I have not applied them as the key theoretical framework of this research. The limitation with the term medicalization is that it focuses only on the impact of the medical profession, whereas I understand the phenomenon to involve the interaction of a range of parties. While pharmaceuticalisation emphasises the pharmaceutical industry's effect on the expansion of pharmaceutical use, it does take cognizance of the role of the medical profession, the state and the public in this expansion. However, the concept of countervailing powers offers a means of understanding the nature of these interactions. It therefore clarifies understanding of the causes of over-medication; refines the idea of pharmaceuticalisation from a broad, multi-dimensional perspective encompassing different actors in the healthcare domain; and offers a useful and broad-ranging framework for the analysis of the interplay between different parties in the field. This means that the nature of the interaction of these actors (pharmaceutical industry, medical profession, state and public) has been theorised with adequate clarity. However, I do make use of the concepts of medicalisation and

pharmaceuticalisation from time to time in analysing my findings, given the substantial overlap between the subject matter and premises of these three constructs.

Countervailing powers

As mentioned above, compared with the concept of medicalisation, countervailing powers is a relatively comprehensive, useful, and well-developed sociological framework to consider the interactions between different groups with power. According to Donald Light (1990), the idea of countervailing powers was first developed in the eighteenth century by Montesquieu (1748), who argued that absolute power is abused by the state and that there is a need for counterweighing centres of power (Montesquieu, 1748). James Stuart (1767) developed this idea further in his treatise about the monarch's encouragement of commerce to reinforce its domain and wealth generated by using the countervailing power of the mercantile class that mitigated the absolute power of the monarch and created a set of interdependent relationships (Stuart, 1767).

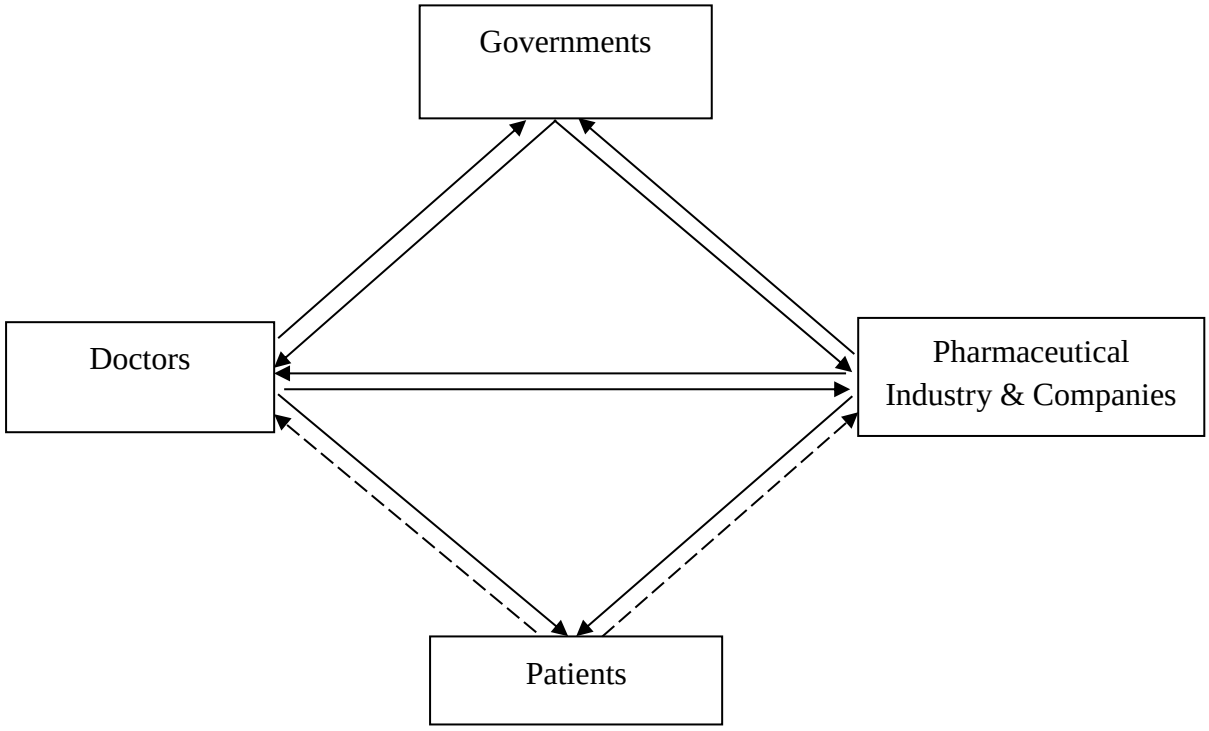
In 1952, Galbraith set out his view of the dynamics of countervailing power in oligopolistic markets in his controversial book *American Capitalism: the Concept of Countervailing Power*:

> The fact that a seller enjoys a measure of monopoly power, and is reaping a measure of monopoly return as a result, means that there is an inducement to those firms from whom he buys or those to whom he sells to develop the power with which they can defend themselves against exploitation. It means also that there is a reward for them, in the form of a share of the gains of their opponents' market power, if they are able to do so. In this way the existence of market power creates an incentive to the organization of another position of power that neutralizes it. (Galbraith, 1952: 119)

Galbraith also proposed that economic power on one side of a market induces a countervailing power on the other side. In his words, "economic power creates both the need for, and the prospect of reward to the exercise of countervailing power from the other side" (1952: 113). Though not using the term "countervailing powers", Johnson (1972) and Larson (1977) also developed such ideas further in their discussion of the interactions between groups or actors.

Donald Light (1995) used the concept of countervailing power in his analysis of healthcare services and distinguished four main powers: the state (government), the medical-industrial complex (pharmaceutical industry and companies), the medical profession (doctors), and patients. He argued that countervailing powers are powers in dynamic relation to each other, in which if one power is dominant, its dominance tends to elicit a reaction from another power or powers to redress this imbalance.

Figure 2.1: Countervailing powers in US healthcare services

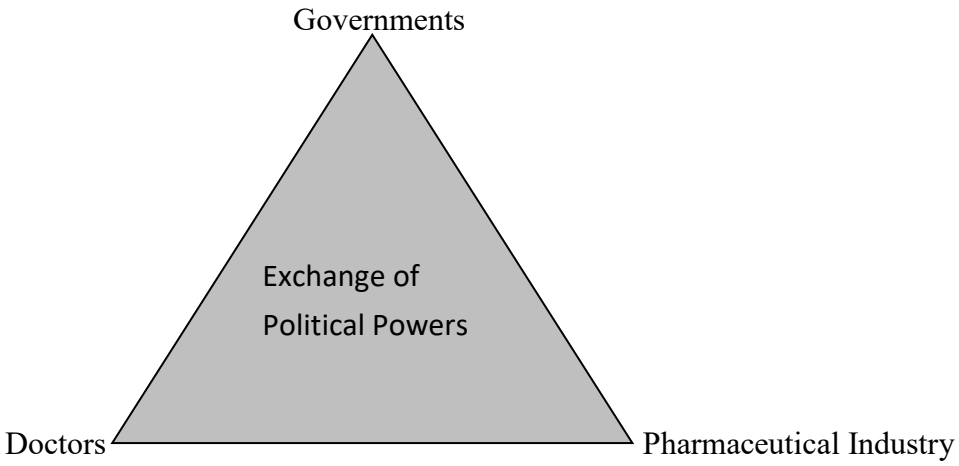


Note: hatched lines indicate patients only collectively play a role as a countervailing power.

Figure 2.1 illustrates the interactions or changing relationships over time between the four main powers involved in healthcare services, in which each corner of the rhombus represents dominance by one of the four powers, and the lines represent the interrelations of cooperation and conflict between pairs of powers. Applying this model to analyse the healthcare issues in China provides a framework for the changing power structure around government policy and guidelines, pharmaceutical markets, the medical profession and patients.

This model provided in Figure 2.1 above can be sub-divided into two triangles of powers for examining the relationships between different forces. The first upper triangle analyses political power, which is dominated by the government (see Figure 2.2).

Figure 2.2: The triangle of political powers



Government plays a dominant role in setting the institutions and rules to supervise prescribed drug use and control drug prices. This section focuses on conceptualizing the role of the state, law/regulation and healthcare profession in healthcare systems and the relationship between them. The conceptual model will then be used to help us better to interpret the multilateral relationships between Chinese medical practitioners and China's state-led healthcare governing mechanisms. The ultimate goal of this chapter is to develop a preliminary model or framework to represent how Chinese health practitioners are governed, so that it can be tested, modified and developed

through further analyses encompassing historical, empirical and theoretical approaches.

I will now concentrate on the relationship in a broad sense between the state and the medical profession, first briefly examining the major effects of state healthcare financing and delivery policies on the practice of medicine. I then sketch the influence of professional regulation on medical practice.

Frenk and Durán-Arenas claim that "states are central to the working lives of doctors" (1993: 4). The challenge of professional development cannot be fully understood without reference to the role of the state in our society. The state is perceived narrowly by Frenk (1990, 1994) as the institutions of government that provide the administrative, legislative, and judicial vehicles for the actual exercise of public authority and power. The way in which healthcare is organised and delivered is influenced by a state's social, organisational, economic, political and cultural background. Comparativists, such as Terris (1978), rightly note that there is great variety in the degree to which states and their agencies exercise centralised control over social and economic institutions (Terries, 1978). With respect to the role of the state, different types of healthcare systems vary mainly in terms of their prevalent founding values or principles, and corresponding means of financing, service provision and regulation (Rothgang, 2005).

Contemporary medicine is, in general, practiced within healthcare systems, namely: a state-funded health service. The way in which a country's healthcare system is structured determines the nature of its healthcare institutions and the scope of service delivery, and simultaneously affects the character of healthcare practice. This was well expressed by Shipler (1983: 216) when he said that the system of medical care expresses the full range of strengths and weaknesses in society: "It is a model of the country's hierarchy, reflecting the instincts of authoritarianism, conservatism and elitism that pervade all areas of life". In the case of China, we have witnessed large-scale market forces becoming involved in the state-funded healthcare system, which in the end transformed the nature of healthcare delivery as well as the "guiding values" of professional practice (the transition of the Chinese healthcare system will be discussed in more detail in Chapter 5).

Having briefly discussed the relationship between the state and medical profession, I now turn to explore the regulatory structure of the medical profession, and the broad influences that professional regulation has on medical practice.

It is understandable that the objective of any system of regulation should be to advocate and ensure standards, accountability and efficiency in practice; thus most states play a role in the regulation of medical practitioners (Frenk and Durán-Arenas, 1993). The medical arena, on the other hand, has its own particular interests, values

and power structure. In practice, these features have a distinctive influence on the way a country regulates its medical profession. Before discussing the role of law in regulating medical practice, it must be recognised that knowledge, experience and values have been built up and developed within the medical community and that the state has its role in steering or controlling professional regulation, from its formulation to its implementation. Medical practice is governed by technical and generational values and ethical standards. The ethical standards, as "collegiate values independent of individual choices made by doctors" (Montgomery, 1989: 570), evolve as a normative standard to guide or control professional behaviour. This does not mean that governments lose legitimacy in the enforcement of law concerning morality or propriety of medical practice. Instead, laws, as a system of rules, help to "ensure predictability through their normative or prescriptive force; they impose obligations and create corresponding entitlements, which are publicly acknowledged and collectively enforced" (Beetham, 2003: 65).

The extent to which judicial "intervention" in medicine is appropriate emerges as a paradox. Lord Woolf's statement sheds some light on this: "Although it will never be a substitute for proper standards of professional ethics, the law can provide a base below which standards should not fall and guidance as to what actions are lawful. If an action is unlawful, then it will certainly be unethical" (2007: 117). In fact, an increasing role of law in regulating healthcare professionals has been pointed out by

many scholars, such as Montgomery: “The discipline of healthcare law is at risk of being transformed – moving from a discipline in which the moral values of medical ethics (and those of the non-medical health professions) are a central concern, to one in which they are being supplanted by an amoral commitment to choice and consumerism” (2006: 186). Jacobs also argues, “Law has no substantial place in regulating medicine because although some rules establish structure, the law’s prime concern is with the untoward” (1988: 166). Harvard expresses similar frustration with legal threats to medicine (1982: 612).

In short, medical practice identifies strongly with morality through medical ethics. Yet debates over the relationship between law and medical practice are becoming more difficult, since moral and ethical debates are increasingly accommodated into the discourse of law. In Frankford’s opinion, law is a system of rules that “enables capitalist modes of production in medicine to exist through infusing capital into the medical industry and by maintaining the whole structure through legitimatizing the activities of powerful players in the medical game” (1993: 44). The role that medics play in this “medical game”, however, remains ambiguous: the medical profession is “often presented from the outside as powerful, while it nevertheless remains subject to the underlying logic of the game.” (ibid.).

The involvement of the state in professional regulation implies that politics lies at the heart of regulation. A political process involves "the exercise of power and authority in struggles between competing interests; and it is a process in which the struggle for control of state power" (Moran and Wood, 1993: 26). As Dingwall and Hobson-West put it, "The fundamental challenge to medicine is not from law but from the governmentality that favours law as its operative strategy" (2006: 57). Professional regulation is, by nature, political. Nevertheless, traditionally medicine has been regulated by professional ethics, while law has been the tool of the state; thus the reality is that political power is a strong shaping force with respect to the regulation of the medical profession. This, at least, has been true of Western states (I will explore the situation in China shortly).

In the area of healthcare, particularly in most developed countries and many middle-income countries, governments have become central to social policy and healthcare. The state normally participates in healthcare through three major mechanisms: regulation, financing, and direct delivery of services. Its involvement is justified on the grounds of both equity and efficiency. The medical professionals of these countries, on the other hand, may not necessarily be completely under the rule of the state, but can exert varying degrees of influence on state-led control mechanisms.

To sum up, based on what Montgomery suggests: law should be facilitative, stressing the importance of ethics and values of the healthcare profession, rather than proactive, taking over the determination of ethical issues and promoting patient rights (2006: 185). When professional ethics provides only guiding but not binding principles, there is still a necessity for law with respect to accountability. Having examined the major effects of state healthcare policies and regulation on the practice of medicine, the next section will discuss the impact of the medical profession on state policies and regulation.

Levenson (2008: 7) in *Understanding Doctors* writes, "There is a tendency in our over-centralised and largely state-controlled health system to blame government and politicians for all the ills facing the profession. Yet it is clear that many of the pressures and challenges on the medical profession are not confined to the United Kingdom or to this profession and instead reflect wider social and technological change". This section aims to examine how the healthcare profession responds to state governance and legal controls.

The Western medical profession generally tends to represent a "privileged and satisfied stratum" in society (Vollmer & Mills, 1966: 321). In the West, various terms have been used to describe doctors: healers, scientists, professionals, entrepreneurs, politicians (Moran & Wood, 1993: 3). The use of the term 'politicians' indicates that

Western doctors, both individually and collectively, access and possess many political resources. The profession can intervene positively in public policy debates about healthcare by using its positive public image, its expertise and reputation to function as an influential lobbyist.

There are vast variations between different countries in the extent to which the medical profession is regulated. Each country has to make decisions based on the following factors: how medical students are selected and trained; how much commercial competition is allowed; what ethical standards will govern their practices; what institutional settings should be provided; and how professionals are paid (Moran & Wood, 1993: 19). The content of healthcare regulation is important, but what matters more is the determination of regulation. This raises questions, such as: What is the ultimate source of healthcare law and rules? How influential or dominant is the medical profession or state in determining the regulations in the first place? Fundamental to these questions is a polemic about the power of the medical profession.

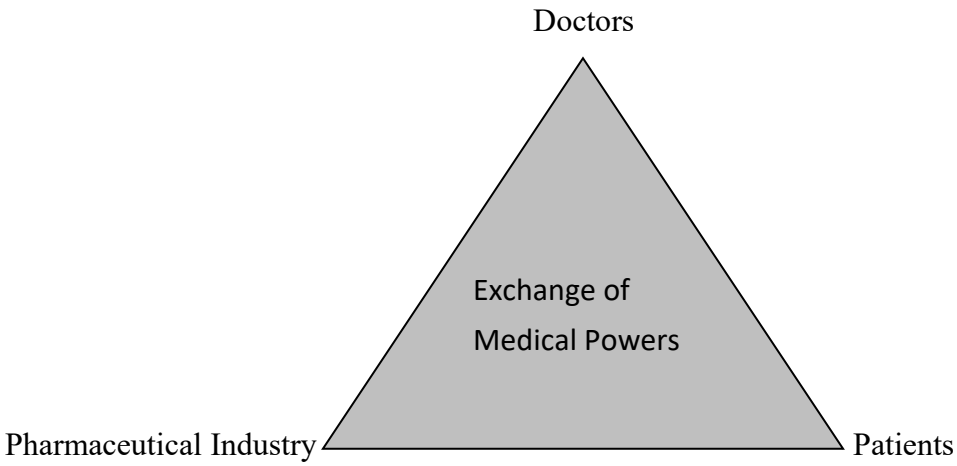
Although, as discussed earlier, the nature of professional regulation is political, one should not ignore how the profession, as an agent, also shapes the political and social process. The prestige of science may act as an authoritative source for rules of social organisation, providing its own quality control or self-management. But does this

mean that the medical profession is powerful, and/or that this power is legitimate? Legislation in a contemporary democratic society is often expected to represent the will of the majority. The degree of professional dominance over healthcare regulation, so to speak, is decided through negotiations between the public, government, and medics. Therefore, the legitimacy of professional-influenced health legislation depends greatly on its local context.

However, there appears to be a general understanding that the medical profession should not be the subject of political instrumentalisation, that is, we would expect medical professionals, not merely not to accept the consequence of governmental desire, but to be free to express and engage in possible conflict "between the aims and desires of government and the norms of the domain to be governed" (Strong, 2004: 101). Generally speaking, there are a great range of possible conflicts, which can arise frequently. For instance, government policies are typically influenced by the performance of doctors and the pharmaceutical industry within the legal framework. If doctors, pharmaceutical companies or government officials abuse their powers, neglecting their legal duties or moral obligations (e.g. GSK commercial bribery in China), this may make it more likely that government is pushed to take a series of new actions against them (e.g. reforming the system and institutions, adjusting the health policy, abolishing the permissive laws, and introducing stricter rules and regulations), otherwise the government officials may collude with pharmaceutical

companies and doctors in this corruption. Although the state could be seen as the dominant power in healthcare, Foucault affirmed that "where there is power, there is resistance, and yet, or rather consequently, this resistance is never in a position of exteriority in relation to power" (1980a: 95). In other words, there is no absolute power, as resisting forces always exists therein. Such forces are presented as resistance everywhere in the power network. In some respect, Foucault's notion of power is consistent with the Light's countervailing powers.

Figure 2.3: The triangle of medical powers



The second lower triangle (see Figure 2.3) examines medical powers and shows the links between doctors, the pharmaceutical industry and patients. The medical profession could be a major independent force since the quantity and quality of the clinical treatment provided to the patients in any healthcare system is determined by doctors' decisions (Salter, 2004: 19). For the purpose of pursuing "the best clinical medicine for every sick patient and enhancing the stature of doctors" (Light, 1995:

33), the medical profession is involved in technical elaboration and specialization. One area of elaboration and specialization is through medicines. Indeed, doctors now depend heavily on medications for their own power and status. Thus they are willing to support the pharmaceutical industry. Equally, the pharmaceutical industry and companies are keen to get the support of doctors, to encourage them to use their products. In general, doctors promote the development of pharmaceutical and medical technology companies to strengthen their professional powers for doing something for the patients through the use of such technologies. These firms do not just reinforce doctors' powers and extend their field, but at the same time may give doctors favourable access to drugs, increasingly serving the companies' goals of growth and profit (Light, 1995: 26).

Consequently, there is typically a strong link between doctors and the pharmaceutical industry. According to Light (1995), the multi-dimensional field of the countervailing powers allows for the creation of alliances between two or more actors of the domain in order to enhance their power. Viewed from this perspective, one could argued that the medical professionals have been co-opted by the pharmaceutical industry to create an alliance that undermines the power of the state. Recognition of the broader national and global dimensions of health and the inextricable relationship between pharmaceutical companies, health professionals and healthcare systems within what has been called a "medical-industrial complex" reinforces the notion that there are

ethical considerations that extend beyond the physician–patient relationship (Relman, 1980).

Pharmaceutical companies are in effect the partners of the doctors, and the medical profession has welcomed medical supply, pharmaceutical and medical equipment companies all over the world, since the partnership enhances the status of, and the rewards to, the medical profession. Pharmaceutical companies typically support many professional activities, from providing journals to continuing medical education, so that doctors are heavily reliant on the pharmaceutical industry and shaped by its interests. Therefore, in order to achieve economic success, the medical-industrial complex develops new drugs and has established a broader network involved with medical professionals, stimulating some doctors to gain bonuses or commissions from prescribing. In other words, these doctors' prescription privileges have served the medical-industrial complex's goals for generating significant economic growth (Light, 1995: 36).

Last but not least, patients have the potential to act as a powerful actor, but their powers are more likely to be limited unless operating collectively through user groups against other powers. Under the dominance of doctors, patients are heavily dependent on the drugs prescribed by doctors; meanwhile, the pharmaceutical industry has developed drugs that it encourages patients to request. It can be expected that once

patients increase their participation in the medical process, they will exert a greater market force in their treatment, expecting multiple choices and more information about medical products. Therefore, doctors will be more respectful and responsive to patients' rights and views, and the pharmaceutical companies will have to contribute to the patients' interests (Salter, 2004: 49) by satisfying their demands and preferences. In addition, "any treatment at any cost is worthwhile if it promises recovery. This urgent need, however, can lead to the rise of quacks, charlatans and corrupted professionals as well as to great cost" (Light, 1995: 35).

However, Evans (1985: 3), who wrote extensively on the political economy of health, claims that patients who "perceive themselves as in *extremis* are forced into an exchange relationship with the physician whose terms may equally be 'your money or your life'". Nevertheless, if doctors were to behave as profit-seeking businessmen, "the opportunities for, and indeed, the virtual certainty of exploitation of power relationship is apparent" (Evans, 1985: 4). Such an authority relationship between the government, hospitals and the medical profession is political, which motivates the collective relationship between the state and healthcare providers.

Most importantly, Busfield (2006, 2010) has applied the countervailing powers theory to analyse the power of the pharmaceutical industry and the significant increase in drug use over recent decades, using England as an example. She identifies

the government, the pharmaceutical industry, doctors and service users or patients as the main actors, and suggests that a complex interaction of forces is responsible for the rapid expansion in medication use. On the basis of her analysis the following arguments can be made. First, government, in theory, has much greater power to control the pharmaceutical industry, being responsible for funding healthcare and licensing drugs. However, the role of government as a countervailing power is constrained in some contexts, such as where the pharmaceutical industry makes a contribution to a country's economy, when the government may face intense lobbying from the industry and also where state regulatory bodies are inclined to corporate bias in favour of the pharmaceutical industry (Busfield, 2006, 2010). Second, the pharmaceutical industry is the important player in relation to the other actors by seeking profit, engaging in promotional marketing, and controlling science and disease mongering. Third, doctors are incapable of resisting the propositions and persuasion that pharmaceutical companies make and are unlikely to mobilise against them. Fourth, the public rarely act as a countervailing power, except when in some cases a specific drug is considered as causing major harm or a certain drug is not available in their healthcare system, the demand of patients' group could collectively be seen as a countervailing power (Busfield, 2010).

However, this thesis aims to explore how the interacting powers of government, the pharmaceutical industry and the medical profession relate to the over-medication of

prescribed drugs in China. Hence, my research is focused on these three powerful actors, which have been actively involved in the process of prescribing. Before moving on to an examination of China's over-medication problem, I review perspectives on the state, pharmaceutical industry and medical profession as follows.

The state, healthcare provision and incentives

Many scholars focus on the incentives for healthcare service within the broad political, economic and social environment and how government policies have changed and shaped the healthcare sector and the nature of medical work performed in specific settings, such as hospitals and clinics. In countries with socialized healthcare systems, medical autonomy is limited by state intervention, as Gill and Horobin (1972) have noted for Britain. In the UK at least this does not affect the societal status of the medical profession or their collective self-regulation, but it affects their power. The key challenge facing each country is how to balance professional autonomy against the control mechanisms of the hospitals and the state. I am also concerned with how – within the context of China's market-oriented healthcare reform – – the role of the government and the power of state intervention have been defined. It is important to note that, while government is by no means understood to be a homogenous entity, my understanding of state authority and top-down control of various agencies in the Chinese context (e.g. CFDA, MOH, etc.)

allows for an understanding whereby public hospitals and doctors are compelled to do what they are asked to do in the state's interests. In the context of state policy on healthcare and its implementation in China, therefore, one can for the sake of parsimoniousness treat the state as a homogeneous entity.

It has been widely noted that the unique political and economic features of a society place constraints on and shape the way in which the healthcare sector has been formed and operates (Berman and Bossert, 2000; Twaddle, 2002: 4). In China, structural and economic changes imposed by the transition to a market economy have had a profound impact on the healthcare sector. The "opening-up" policy initiated in 1978 dismantled the state-centred mechanism for financing healthcare. The sudden introduction of market forces into a state-centred system resulted in inadequate support for urban hospitals and led to distortions and problems in the healthcare system, as highlighted by Berman and Bossert (2000: 5):

> These changes unleashed a variety of subsequent changes such as privatization of village doctor practices, introduction of financial autonomy for hospitals, and cost escalation as prices were liberalized and providers were free to try to increase revenues. Health sector change in China has largely been in response to these economic reforms.

The 1997 World Bank report *Financing Health Care: Issues and Options for China* also addressed problems and challenges in China's healthcare sector, such as the over-use of medical services, over-prescription and the "leverage effect", that is, use

of expensive treatment to cross-subsidise basic medical treatment. (World Bank, 1997a). Diverging from the pure economic approach of privatisation, the World Bank stated at the very beginning of the report that the lesson for China is that "health is a sector that cannot simply be left to market forces" (Wong *et al.*, 2006: 63).

As pointed out by Singer and Baer (1995: 66), one way in which healthcare in China has become a profit-making effort is in health-related fields such as hospital construction, purchasing and supplying high-technology medical equipment, and costly medical services, commonly seen in healthcare provision. Apart from these interests, it is noted that since the government began decreasing financial support to hospitals and allowing them, as a measure to make up this shortfall, to mark-up drug sales by approximately 15%, the over-prescription and over-use of medical services have also become common practice in hospitals (Liu *et al.*, 2000; Yip and Hsiao, 2008). Pranab (2008) also indicated that hospitals need to generate enough revenue to compensate for the loss of government subsidies, and doctors are encouraged to over-medicate and prescribe unnecessary diagnostic tests in order to drive up health costs. Chen (2005) and Gong (2009) found that drug sales now account for over 50% of all hospital revenues and that antibiotics account for 47% of all drug sales. While hospital doctors in China are generally salaried employees, their performance bonuses often depend on the volume of revenues generated. This approach is officially described as "feeding hospitals or doctors by selling drugs" (yi yao yang yi) (Huang

and Yang, 2009). Hospitals and other healthcare institutions have come to see these incentives as their financial salvation, and I explore these incentives further in my own study.

From the perspective of healthcare provision in rural China, Sun *et al.* (2009) argued that there are two main reasons why over-prescription and the over-use of injections are more likely to be created by village doctors themselves. Firstly, the rural healthcare market provides strong incentives for village health stations to sell drugs. In 2004, among China's total 551,600 village health stations, 30.2% were privately owned (CHSI, 2005). Without financial help from the government or the village collective, health workers are expected to make a living from selling drugs and fee-for-service payments. Unlike urban hospitals, which can charge higher prices for certain technology-intensive procedures and diagnostic tests, most village doctors earn money from only a limited number of healthcare services such as injections, acupuncture, and massage. Thus, village doctors also rely heavily on selling more drugs, with prices marked up above wholesale prices to make more profit (Sun *et al.*, 2009).

Scholars have also argued that the Chinese healthcare system faces both a high level of pressure on government funding and state intervention, which links to a certain level of policy failure, such as the drug pricing policy (Cockerham, 2000: 473; Yip

and Hsiao, 2008). As I shall argue, although the state is the dominant actor with great authority in the Chinese healthcare domain, its power seems conflicted. The government wants not only the economic growth of the industry and for hospitals to make profits, but also lower healthcare costs (Light, 2000: 204). Hence, its healthcare bureaucrats and institutions tend to be less willing to enforce policies that are seen to be detrimental to their private and local interests. Huang and Yang (2009) have noted that the central government has failed to control drug prices as the drug pricing policy allows pharmaceutical manufacturers to set separate prices and charge higher profit margins for "new" drugs, which also provides a strong incentive for doctors to seek profits by over-prescribing new and expensive drugs.

In recent years, the government has also become more involved in the production and provision of pharmaceuticals in China and can decide which drugs are to be approved and included in the drug lists by the process of drug approval and registration. The inclusion of a drug on the lists can be critical for a manufacturer's survival. However, government can approve a drug but not put it on the list, thus increasing the possibility of, and trend towards, official corruption. As Wei (2009b) has claimed, in order to pursue departmental or personal interests, some government officials from the Department of Drug Administration and Supervision (especially the Department of Registration and Approval) use their executive power or privilege to participate directly or indirectly in the pharmaceutical market for rent-seeking and bribe-taking,

which finally leads to official-merchant collusion, and merchants colluding with bureaucracy, trading power for money. For example, in 2006, the director of the Drug Registration Department of the State Food and Drug Administration (SFDA) (Wen Zhuang Cao, 2002–2006) and the minister of the SFDA (Xiao Yu Zheng, 1997–2006) were sentenced respectively to life imprisonment and death as a result of enormous corruption involving drug approvals.

Although Putnam *et al.* (1993) also clearly argued that government policies actually work better when they seek the participation of potential users, as mentioned above, in China the government and its bureaucrats lack the incentives to channel and carry out drug policies to control over-use of pharmaceuticals. The Chinese political system lacks the "concrete set of social ties that binds the state to society" which provides "institutionalized channels for the continual negotiation and renegotiation of goals and polices" (Evans 1995: 12).

The pharmaceutical industry

At this level, I am interested in the pharmaceutical industry as one domain where healthcare has become a profit-making activity, and which plays an active role in the encouragement of the use and over-use of drugs. I also seek to examine the industry's impact on the pattern of prescription of drugs. As noted by Starr (1982: 4–8), the

development of modern medicine cannot be understood with reference only to the growth of science or even the internal forces of the healthcare sector alone. It has to be placed within large fields of power and social structure, as well as the political and economic dimensions of health and medical care. As Starr (1982: 4) explains:

> Medicine is also, unmistakably, a world of power where some are more likely to receive the rewards of reason than are others. From a relatively weak, traditional profession of minor economic significance, medicine has become a sprawling system of hospitals, clinics, health plans, insurance companies, and myriad other organizations employing a vast labor force. This transformation has not been propelled solely by the advance of science and the satisfaction of human needs. The history of medicine has been written as an epic of progress, but it is also a tale of social economic conflict over the emergence of new hierarchies of power and authority, new markets, and new condition of belief and experience.

Singer and Baer (1995: 66) have also argued that the medical-industrial complex has largely influenced the healthcare scene and is becoming a growing network of businesses supplying healthcare services to patients for a profit. Researchers have examined the marketing strategies of pharmaceutical corporations, the commercialisation of medical research and the questionable value of much of the work done by researchers employed by pharmaceutical companies (Bodenheimer 1985: 192; Singer and Baer 1995: 66).

However, James Paul (1978: 272) contends that the political economic function of the pharmaceutical industry should be understood in terms of its function as an arena for "the voracious search for ever wider markets and profitable deals", and one important

way in which healthcare has become a profit-making endeavour is through the operation of the pharmaceutical industry. The case of the US from the 1960s to the 1990s confirms the above argument. Reilly (1991) noted that during this period, US pharmaceutical companies were recorded as the most profitable of all Fortune 500 companies, separating pharmaceutical companies from other big businesses. The average cost increase per prescription was double the rate of inflation during the 1980s, while new drugs at wholesale prices were sold at three to six times more than it cost to develop and produce them. The enormous profits generated from drugs sales enabled pharmaceutical companies to pour funds into aggressive advertising and drug marketing (O'Reilly 1991: 50).

McKinlay uses the term "predatory" in his book *Issues in the Political Economy of Health Care* to describe the profit-seeking activities of large-scale pharmaceutical companies as "the act of invading, exploiting, and ultimately despoiling a field of endeavour – with no necessary humane commitment to it – in order to seize and carry away an acceptable level of profit" (1985: 2). Despite the acrimony in McKinlay's words, the concern attributed to the issue of drug use is clearly about the economic character (i.e. profit-making/commercial) of the pharmaceutical industry, which has such a large impact on the domain of healthcare. In this regard, Waitzkin (1986) has provided a detailed example of how the Warner-Lambert Pharmaceutical Company collaborated with different levels of healthcare institutions, such as hospitals, the

American Heart Association, and the W.R. Hewlett Foundation in order to develop, promote, and proliferate coronary care technology, the efficacy of which had not been proved.

Waitzkin's general line of analysis can also be applied to the case of Chinese healthcare. The healthcare market in China is unquestionably lucrative for both domestic and foreign companies. Wang *et al.* (2007) pointed out that in 2004 prescription sales in China grossed more than US$10 billion, with a rate of increase of 27% over the previous year. China's pharmaceutical retail value totalled more than US$97 billion; the profits for the pharmaceutical industry were US$30 billion, and US$44.4 billion for hospital sales (ibid.: 70). As Cheng and Zhu (2012) also evaluated, from 2005 to 2010, the compound growth of the pharmaceutical market was more than 20%, and the market size reached US$147.9 billion (926.1 billion yuan) in 2012. Domestic pharmaceutical companies expanded with increasing demand. At the same time, foreign pharmaceutical companies play a role of great importance in China. In particular, they account for a remarkable market share in the provincial-level hospitals in China. A huge potential demand of pharmaceuticals is arising from an ageing population and the increase in purchasing power through economic development It has been estimated that the pharmaceutical market will expand by more than 12% annually between 2013 and 2020 (Cheng and Zhu, 2012: 25).

Zhang and Liu (2009) note that with the rapid expansion of the pharmaceutical industry and other forms of medical-industrial corporations attracted by the lucrative market, pharmaceutical companies have developed various marketing strategies, including spending substantial sums of money promoting their drugs among doctors and hospitals, on advertising and on marketing their products to the public, on lobbying healthcare bureaucrats, and offering drug "kickbacks" to doctors to motivate prescribing. Powerful pharmaceutical industrial corporations in China have now developed new relationships with doctors. These corporations include pharmaceutical manufacturers, companies, wholesalers and distributors and the whole supply chain. Elliott (2004), for example, has suggested that scientific impartiality in biomedicine has been corrupted by the possibility of biomedicine attaining financial gain in its alliance with the pharmaceutical industry. He argued that the pharmaceutical industry's practice of gift giving to doctors was used to persuade them to follow a market-oriented prescription. As in the US, large sales teams (i.e. drug representatives) from these companies are sent to hospitals. These drug reps use their personal contacts to get in touch with doctors, befriend them and sell their products. In return, doctors receive kickbacks or other forms of drug commissions or compensation. Goldacre (2012: 274) notes that medical doctors are inundated with gifts, patient educational materials, free samples and, most of the time, kickbacks on prescription.

Wei (2009b) concluded that there are many conflicts of interest between wholesalers' distribution systems and their product promotion strategies, between the role of hospitals as a public service and their approaches to funding in order to survive, and between the ways doctors treat patients and the ways they gain revenues. All parties in the pharmaceutical market are acting in their own interests. Although this makes sense personally or institutionally, it may be contrary to the interests of patients and public health, leading to an inappropriate or over-use of medicines. In such a pharmaceutical market, high pricing becomes an optimal choice for pharmaceutical manufacturers. Actually, this kind of pricing strategy is the simplest approach to save transaction cost for pharmaceutical manufacturers (Liang *et al.*, 2009: 2). Drugs sold at retail prices in hospitals are five to ten times more than their ex-factory prices (Wei, 2009b).

As indicated in Light's (1995) framework, the pharmaceutical industry is considered to be the primary commercial actor influencing healthcare. It plays a key role in developing and producing medicines, has an obvious interest in maximising medicine use in order to maximise the goal of seeking profits. As many scholars such as Galbraith (1956) and Moynihan and Cassels (2005) have argued, pharmaceutical companies are capitalist enterprises seeking to make profits in the market, and actively encouraging medicine use well beyond the meeting of health needs in order to create demand. As noted, Abraham further defined this generation of demand as

"pharmaceuticalization", which is "the process by which social, behavioural or bodily 'conditions' are treated, or deemed to be in need of treatment, with medical drugs by doctors (or patients)" (2009a: 100). Busfield concluded that "the main reason for the increase in medicine use is companies' success in expanding their markets and encouraging more extensive use of their products" (2010: 935). Pharmaceutical companies use various strategies to create and expand demand for their products. The first and most important campaign is marketing and promotion, including the intensive publicising of patented medicines using their brand names. Referring back to Light (1995), the industry is engaged in expanding its marketing power in the different relationships between the government, the medical profession and the public.

As Busfield (2010) argues, developing patented "new" drugs is one way in which pharmaceutical companies can increase profits. However, drug approval, the first step in the process, which is dominated by the government approval bodies, can determine whether products should be approved and released onto the market. The government can also attempt to control drug prices and decide which drugs must be prescribed, which can be sold over the counter, and whether direct-to-consumer advertising is permitted. Therefore, the pharmaceutical companies' have put considerable effort into lobbying to ensure that government regulation and control is limited. Light (1995) argued that governments have the potential to act as a countervailing power,

regulating the industry through a range of mechanisms. Nevertheless, as with the medical profession, they may be keen to support the industry, because of its contribution to the economy or to secure favourable access to products.

As we have seen, in order to increase profits, some large and powerful multinationals seek to expand markets and increase demand. Although the major pharmaceutical companies are still primarily based in Western countries (Angell, 2005), China's own pharmaceutical industry has faced significant change in recent decades. As Cheng and Zhu (2012) note in the *Annual Report on China's Pharmaceutical Market 2012*, China has become the most rapidly expanding market for pharmaceuticals, reflected in the country's greater economic growth and increasing levels of pharmaceutical use. Consequently, the industry's commercial character is reflected in its considerable marketing power, while government regulation of the industry is not especially tight due to the industry's contribution to the economy (Busfield, 2006).

Pharmaceutical companies are especially sophisticated at marketing their products both to doctors and the public and in encouraging the demand for and use of medicines, sometimes beyond appropriate levels. As Busfield (2006) makes clear, the medical profession is potentially an important countervailing power and could be a major independent force constraining the power of the industry. In general, however, the medical profession is largely supportive of the industry, since the profession relies

heavily on the use of medicines for its own status and power. At the same time, the industry has been very active in securing the support of doctors, since industry requires the profession's prescribing role. Therefore, direct marketing to doctors and other health professionals is pervasive; they are also subject to a variety of persuasions from the industry. As Busfield notes:

> Pharmaceutical companies are free to promote branded products to doctors, their key audience, using familiar incentives such as providing pens, mugs and post-its, and sponsoring conferences, their efforts reflecting the importance of doctors in facilitating increased medicine use (2010: 936).

In her analysis of the key forces contributing to the expansion in medicine use, she shows how the pharmaceutical industry, "through its pursuit of profits and skillful use of marketing, its control of science, and its disease mongering, has been a major driving force in the current (medicine) expansion" (2010: 940).

Studies show that the most advertised brands are the most widely prescribed (e.g. Prosser, Almond and Walley, 2003; Wazana, 2000), and evidence also indicates that marketing activity, even small gifts, can influence doctors' behaviour (Katz, Caplan and Merz, 2003). However, Prosser and Walley (2003) argue that companies often justify themselves by claiming that doctors' prescribing is not influenced by the industry's persuasions and campaigns, proposing that professionals themselves favour the industry and that such marketing activity is designed simply to inform the professions about new, more effective products.

Last but not least, the evidence shows that patients themselves are also influenced by such promotional activities (Mintzes *et al.*, 2002). Although direct-to-consumer advertising (DTCA) is banned in most countries (except for the US and New Zealand), pharmaceutical companies readily find alternative forms of publicity. Such advertising and product marketing is still extensive and highly effective through the mass media, with pharmaceutical companies producing copy for journalists and medical publications. Busfield (2006, 2010) further argued that companies make considerable use of press releases about products and the illnesses they are intended to treat, often emphasising how the illnesses can go undetected. For instance, "they have long used press releases to make brands better known (especially successful in the case of Viagra)" (Busfield, 2010: 936).

Consequently, the public often learns about new products through newspapers, magazines and television. Nowadays, companies encourage individuals to use simple online tests to identify whether they are at risk and should be taking certain kinds of medicine, and "they use TV commercials that, whilst not mentioning specific products, give the name of the company funding the advertisement, and refer to particular problems, such as sexual difficulties, suggesting that doctors can provide help for them" (ibid). The gap between this and direct advertisements to the public is not large and the aim of expanding demand is the same. In order to guard against this

force and resist it, patients/users can be a countervailing force, but their power tends to be limited unless operating collectively through patients'/users' groups.

Doctors' prescribing practices

Doctors' behaviour plays a unique and central role in prescribing. Studies have been carried out to address the factors influencing doctors' prescribing practices. The emphasis in these studies further implicates doctors' prescribing practice as it has a key impact on drug use patterns. According to Yip *et al.* (2010), for instance, many factors including training, education, professional ethics, altruism, practising norms, regulation, and financial incentive structures affect how physicians practice. How physicians respond to these factors often depends on the organisational context, including the practice's setting and market conditions (ibid.: 1120). However, the complexity of forces affecting how physicians practice and the different emphases of the sources of information make the formulation of a theory about their prescribing behaviour difficult (Smith, 2000; Alvanzo *et al.*, 2003).

A large number of studies were carried out, aimed at finding out the factors influencing prescribing. In the early 1990s, researchers in the US analysed a number of patterns in doctors' prescribing. Raisch (1990) and Haaijer-Ruskamp (1992) used a model to examine the special factors affecting prescribing since the late 1980s. They

noticed that during this period prescribing was influenced by the government policies or hospital management practice, such as prescription regulations and medication guidance. However, most importantly, they found that a doctor's prescription was not only affected by these direct factors but also by more indirect factors, such as the provisions of prescribing restrictions, prescription guidelines, advertising, sales representatives, as well as the continuing education of doctors. Most of them were related to factors such as the effects, security, usage and the expense of drug uses.

As suggested in certain literature on drug use in previous studies, we can also recognise how marketing factors have affected drug distribution, choice, and prescribing by doctors. Information from drug companies about their products, sales commission or gifts to prescribers can also influence the hospital doctors' behaviour (Avorn *et al.,* 1987) regarding the drug chosen by prescribers and patients (Avorn *et al.*, 1982). Because direct-to-consumer-advertising (DTCA) circumvented the law through using certain media channels, most pharmaceutical manufacturers in China have been actively promoting their products, using a variety of means, including hiring numerous salespersons, sending medical representatives to promote prescription in hospitals, advertising in journals, newspapers and TV for over-the-counter (OTC) products, etc. so that some prescribers are influenced to write prescriptions that otherwise they would not issue (Poulsen, 1992).

I now turn away from China to consider research in other countries. Margolis *et al.* (2002) carried out a five-year research study on the misuse of psychiatric drugs provided through inappropriate prescriptions. This research mainly concentrated on the use of psychotropic drugs by elderly people in the United Arab Emirates, using information derived from 474 cases. The increase of the inappropriate use of prescription drugs such as over-use in terms of amounts or doses of drugs and unnecessary pharmaceutical costs occurred over the period 1994 to 1999. This research suggested the importance of increased tracking and recalls of prescription drugs for the healthcare system. Compared with studies elsewhere, Chinese researchers mostly focused on how to ensure rational use of drugs (esp. antibiotics), how to control medical expenses, and how strengthen regulations on doctor's behaviour.

Taking the prescription of antibiotics as an example, one perspective focuses on the demand side and blames the consumer. The argument is that patients and even doctors take antibiotics as a panacea and therefore demand them even when they are unwarranted (Cars and Hakansson, 1995; Sun *et al.*, 2009). Bi *et al.* (2000) argued that patients may also demand newer antibiotics, perceiving them to be more efficacious, or they may fail to follow dosage instructions. Schwartz *et al.* (1998) proposed that patients expect antibiotics, and as doctors are pressed for time, they may find it easier to write a prescription than to explain to the patient why they are

not necessary. On the supply side, it has been argued that physicians may over-prescribe antibiotics because they lack professional knowledge about proper antibiotic usage (Yao & Yang, 2008; Sun *et al.*, 2009), want to prevent potential infections (Dar-Odeh *et al.*, 2010), or simply believe that is what patients want (Bennett, 2010). However a further supply-side reason for antibiotic abuse is likely to be particularly important in China: as noted, hospitals and physicians have substantial monetary incentives to prescribe medications, and in China, most outpatients are seen by doctors in hospital clinics.

In regard to rural areas, Sun *et al.* (2009) analysed factors influencing village doctors' prescribing behaviour from the demand and supply side of healthcare, and found that the patient's income, age, sex, occupation, insurance coverage and educational or cultural background can affect their willingness to accept a particular drug or a method of drug administration. As a result, such factors can influence the village doctor's prescribing behaviour. In addition, peasants often ask for injections because they believe injections help them recover sooner. To meet patient demand, village doctors often prescribe multiple medications for simple, self-limiting illnesses (such as colds) and use intravenous antibiotics for upper respiratory tract infections.

In 1996, Chen (1996) carried out an overview and systematic analysis of the factors affecting doctor's prescribing in China. Subsequently, in interviews with health

providers in rural China, Dong *et al.* (1999b) found that some doctors prescribed more drugs than necessary, which is attributed to marketing activities or patient demand. Other Chinese scholars such as Zhang *et al.* (2001) and Yu *et al.* (2002) have analysed the factors influencing doctors' prescribing behaviour and identified six influential factors: hospital compensation mechanisms, the medical insurance system, customers' demand, the medicine itself, drug promotion and media propaganda. Furthermore, Yang *et al.* (2004, 2005), Zhu *et al.* (2005), Chen *et al.* (2006), Gan and Shi (2007), and Li (2007) explored some new aspects of the prescribing problem based on certain emerging phenomena. These researchers concluded that the factors influencing prescribing behaviour in public medical services fell into three interest categories: doctors' interests, patients' interests and social (i.e. political and economic) interests. They argued that apart from the patients, the doctors' authority over clinical matters has also been greatly influenced and shaped by the social and political relations surrounding them. Chinese doctors often feel that they are under great pressure to generate more profits. Most hospitals have designed detailed schemes for each medical department to fulfil their quarterly revenue target by managing drug incomes and revenues from medical services. Doctors are told to see more patients and prescribe more drugs. In addition, Meng (2006) argued that the distorted and irresistible economic incentives on prescribing provided by the pharmaceutical companies also make poorly paid doctors become more profit-driven.

Neither the medical profession nor the healthcare systems as a whole has escaped negative comment. In the US, from the moment prospective doctors enter medical school, they are “bribed” and “brainwashed” by the pharmaceutical companies who offer them funding and other rewards. Practising doctors become “corrupt”, getting used to receiving various kinds of benefits from pharmaceutical companies (Bodenheimer 1985: 202). Poulsen (1992) argued that such activities (sales commissions, kickbacks, or gifts) directed at hospital managers and/or doctors who purchased or prescribed their products, have greatly influenced prescribing behaviour. In addition, advertising has also affected the choices of medicines by both service providers and users, as also found in other countries. The financial incentives given by the manufacturers to the hospitals and doctors may have resulted in less effective prescribing by hospitals, and more expensive medicines, improper prescribing, and polypharmacy (ibid.).

Waitzkin criticized doctors’ behavour saying that they:

> are overly concerned with making money, exert too much professional dominance over the conditions of practice, do not show enough humanistic concern for patients, spend too little effort on communication, accept expensive technologies and drugs uncritically, cause needless suffering through the harmful impact of their action, and so forth (1986: 6).

In China the situation is even worse. As mentioned, with the rapid expansion of the pharmaceutical industry, doctors’ prescribing practice is more involved or influenced

by the pharmaceutical companies than by prescription regulations and medication guidance (Meng, 2006). Over-prescribing of drugs by doctors and overpaying for drugs by hospitals is very common in China and is often related to the over-medication. Compared with studies in other countries, Dong *et al.* (1999c) argued that the incentives of sales commission for hospitals and prescribers can lead to hospitals purchasing low quality or expensive drugs, inappropriate prescribing or over-prescribing and polypharmacy. Obviously, the hospital pharmaceutical revenues are determined not only by the drug prices, but also by the amounts consumed, which are largely dominated by the doctors' prescribing behaviour.

Generally, according to the research of Blumenthal *et al.* (2005) and Yip *et al.* (2008), most Chinese hospital directors focus on setting revenue targets for each service department, to be delivered by doctors, instead of focusing on the quality of patient care. As bonuses are tied to revenues and profits that are earned from drugs and tests, doctors over-prescribe drugs and expensive tests. More than a third of Chinese drug spending goes toward unnecessarily prescribed drugs (Blumenthal *et al*., 2005; Yip *et al*., 2008). Chinese hospitals and doctors have turned themselves into profit-seeking entities and professional ethics have been largely lost. As Liang *et al.* (2009) and Wei (2009b) have argued, drug prescription patterns may be influenced by the kickbacks, rebates or bonus doctors and hospitals received from pharmaceutical sectors, rather than by patients' needs. However, this pattern has currently evolved into a "kickback"

competition for marketing branded drugs to hospitals in China. Kickbacks exist at almost every stage of the supply chain including distributors, wholesalers, directors and doctors in hospitals. The more kickbacks there are, the more easily drugs can be sold (Liu and Mills, 2003).

Conclusion

This thesis uses the concepts of medicalisation, pharmaceuticalisation and the theory of countervailing powers described above to study the social causes of over-medication in China. I will argue that the problems of the healthcare sector should not be understood by looking only at the actors and agents of healthcare delivery; rather, the dynamic and interactive power/force in healthcare provision is closely related to the social factors. The political and economic order in a country influences the activities and the structure of the healthcare sector (Navarro, 1993: 11). Therefore, it is important to understand healthcare research in the context of a broad-ranging structural analysis of the overall healthcare sector and the political and economic forces that influence and shape the content of the healthcare sector (McKinlay, 1985: 2).

CHAPTER 3 - RESEARCH METHODOLOGY

1. Introduction

This thesis aims to present evidence from purpose-designed empirical studies and discovered empirical data to explore my initial questions: How and to what extent do the interaction of three actors – the state, the pharmaceutical industry and the medical profession – lead to over-medication? How do these actors shape and change the nature of medication use in relation to over-medication? This chapter seeks to indicate the type of data used in the study and to highlight the decisions and problems experienced when designing, conducting and analysing the empirical research.

The development and theoretical framework of the study

Initially when I was planning this research, my major academic interest was in drug prescribing in China. I was primarily concerned with the role doctors played or how they were involved in prescribing practices, and to what extent over-prescribing related to the issue of over-medication in China. As a result, my initial idea for this study started from the premise that doctors play a key role in the prescribing of medicines and hence the use of medicines in China. As over-medication has always been a sensitive subject in China, there have been relatively few studies done in this particular area, and most research has used mainly quantitative methodology focusing

on the range of prescriptions, only rarely addressing doctors' behaviour in relation to over-medication. Hence I initially chose to focus on doctors, and to use semi-structured and structured interviews to collect the data from target doctors.

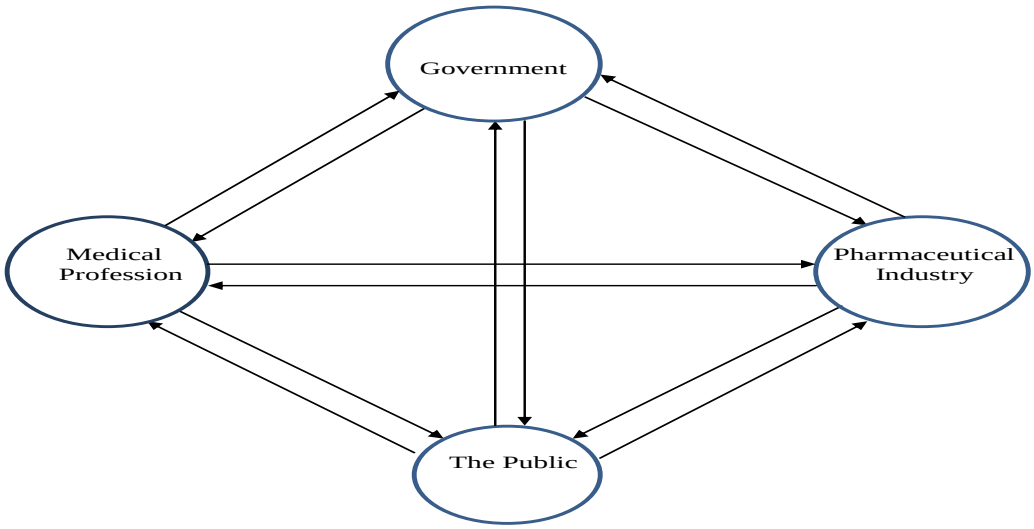
As the data collection continued, it provided me with a deeper understanding of research in this field. However, I started to realise that in addition to the role which doctors played, the government, the pharmaceutical industry and the public are equally important actors in determining the use of drugs, and to some extent, all parties contribute to over-medication in China. There were plenty of official documents and scholarly studies focused on government drug policy, pharmaceutical marketing and public drug use patterns in China. I therefore decided to rely on these documents and literatures, which I obtained from government and non-government sources (see Table 3.1) in order to form a broader picture of the influences on prescribing and developing my arguments. As a result, I employ both primary and secondary data to develop, illustrate and support my arguments in this study.

In order to address the research questions, I applied Donald Light's model of "countervailing powers" as a theoretical approach to explore the influences of government, the pharmaceutical industry, and the medical profession on medication over-use, and the relevant data was collected according to this model. As demonstrated in Chapter 2, "countervailing powers" is a framework for explaining the

interplay between different groups of actors and for considering the relative dominance of one group over the other, at different points in time – or, in this instance, for considering how the field of healthcare provision is constituted, contested and changed through the actions and reactions of different actors within the field (Light, 2000).

I have discussed Light's countervailing powers framework in the previous chapter. In my research, in the context of China's healthcare domain, the changing power structure between the social relations of government, pharmaceutical industry, the medical profession and the public could be sketched as an interacting system as shown in Figure 3.1 below.

Figure 3.1: The framework of countervailing powers in China



Note: The government's influence on the public's use of medicines is usually indirect via the medical profession and the pharmaceutical industry.

Research design and data collection

Data collection is an essential, yet often complicated, component of any research. One of the initial difficulties faced is selecting the best method, even though O'Leary argues that "one method of data collection is not inherently better than another" (2004: 150). The strategies I have employed in this research combine two main methods: 1) the collection and review of documentary sources, and 2) semi-structured and structured interviews. As demonstrated in the literature review, prior research on the over-use of medicines comprise mainly quantitative studies conducted by medical professionals, health economists and policy makers. In order to contribute a more sociologically-grounded account, I found documentary sources mixed with semi-structured and structured interviews were appropriate for this study, for the following reasons.

The use of a wide range of existing documentary sources, which are relevant to my research questions and concerns about the government, pharmaceutical sectors and the public in China, is validated by other sociological researchers. Scott advises that these documents "be studied as socially situated products" (1990: 34). Using a document based research approach "undoubtedly provides a more coherent set of guidelines for the analysis of text than its predecessors" (McDonald, 2008: 295). Also, as the documents are usually assembled for other purposes, the researcher is not

in a position to be biased by the subjects, and the authors of documents are unlikely to assume they will be used in research studies (Webb *et al.*, 1984: 114).

Moreover, a further strength of a documentary research method is the fact that the researcher can obtain data without being present in the field, which can save a great deal of time where the period for research is limited (Up to a maximum of four years in the case of a PhD study). In this respect, the data is readily available, and most documents are open access, or inexpensive to obtain.

On the other hand, survey research is a commonly used approach in sociological research, and can be administered in person (face-to-face survey interview), via mail/email, or telephone. In particular, survey research is common in studies of health and health services (Kelley *et al.*, 2003). The survey research method is often used to explore thoughts, opinions, and feelings, while psychologists and sociologists often use survey interviews to analyse behaviour (Shaughnessy, 2011). However, in order to examine the role doctors play in prescription-related over-medication in China, I have chosen a mixed methods research strategy, in the form of semi-structured interviews and structured questionnaires, as my primary research methods. In this sense, semi-structured interviews provide the opportunity for the interviewees to express their opinions, therefore providing me with detailed data to analyse and relate

back to my research questions, as well as helping to formulate the structured questionnaires.

Documentary sources

In order to collect comprehensive documentary sources for this research, at the first stage, I spent three months (July 2011 to October 2011) researching in the National Library of China, the Institute of Medical Information & Library, and the Shandong Provincial Library. I reviewed relevant documents in China and collected quite a wide range of documentary sources related to the research questions and concerns, including official statistics and surveys, policy documents, databases, publications (e.g. books, newspapers, magazines, pamphlets, and scholarly articles or research papers). These documentary materials contain a comprehensive range of information concerning China's healthcare system, regulation and policies concerning pharmaceutical drug use, "the medical-industrial complex" (Relman, 1980) and patients' adherence and drug use patterns. The later chapters in this thesis rely heavily on the content of these documentary sources. In addition, during the data analysis period (2012–2014), I continued collecting data relevant to this research. Details regarding these documentary methods are set out in the following section.

Table 3.1 Main documentary sources used in this research

Government sources		Non-Government sources	
Author/date	Content	Author/date	Content
MOH, 2007a, 2013	Health statistical yearbooks	OECD/WHO, 2012 WHO, 2011	Organisational health statistic data
MOH, 2007b, 2012	Drug policy documents	BMI, 2011 IMS, 2011	Health information company analysed data
SFDA, 2012	Official drug use survey report		
CFDA, 2010-2013	Official drug advertising survey reports	Sohu Health, 2005	On-line survey data report
Central GOV. website, 2013	Official on-line news	Zhang, 2014	Newspaper report
Xinhua News, 2013c Guangming News, 2013	Official Newspapers reports	Yu *et al*., 2007 Huang & Yang, 2009 Wei, 2009b Zhang & Liu, 2009 Ma & Lou, 2013	Drug pricing and pharmaceutical marketing research papers

In order to answer the research questions, the main documentary sources have been adopted for the arguments developed in Chapters 5 and 6 as shown in Table 3.1 above. In Chapter 5, in terms of government power, I examine some important materials to address the issue of over-prescription related to the power of the government in China. I primarily used the official statistical data of the Ministry of Health (MOH) to explore the trends in government subsidies to the health sector. Secondly, in order to establish that loopholes in drug pricing regulation allow profit-

seeking on drugs, I have also reviewed some Chinese scholars' research papers (e.g. Yu *et al.*, 2007; Wei, 2009b, etc.) on the actual drug retail prices in Chinese hospitals to demonstrate that government price control is ineffective and the drug retail mark-up is high. Further, I drew on another research paper (e.g. Huang and Yang, 2009) to show that there is a drug regulation-induced profit mechanism in China. Moreover, I have also applied some evidence from studies (e.g. Wei, 2009b; Huang and Yang, 2009, etc.) to show the existence of a low threshold of drug registration and approval process in China. Finally, I used reports (e.g. Zhang, 2014) from major Chinese newspapers, such as *China Daily*, which provided evidence that in some cases there is corruption among government officials in the drug approval process.

In Chapter 6, with regard to the power of the pharmaceutical industry, first I mainly used and analysed statistical data from the Organisation for Economic Co-operation and Development (OECD), the World Health Organization (WHO), BMI Healthcare (BMI) and IMS Health (IMS) to demonstrate the significant increase in pharmaceutical sales in China and also to show the trends and performance of drug manufacturers and companies in China's pharmaceutical market. Secondly, in order to analyse the processes of co-optation I show how the pharmaceutical industry acts to align the medical profession and the public to its interests (Light, 2010a; Abraham, 2009a). I focused on some studies of pharmaceutical marketing and drug promotion in China to argue that the extensive doctor-oriented marketing campaigns adopted by

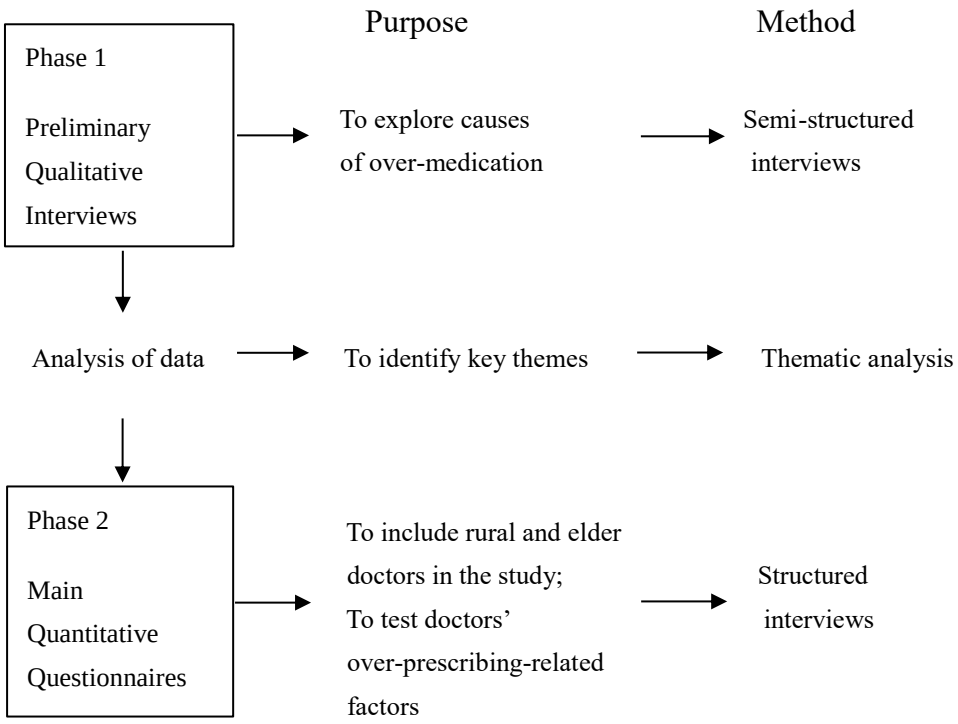
the pharmaceutical companies have a great impact on prescribing practice, thereby encouraging the greater use of drugs (e.g. Zhang and Liu, 2009; Ma and Lou, 2013, etc.). Moreover, I used the online survey data (e.g. Sohu Health, 2005 & CFDA, 2010–2013) and official news (Xinhua News, 2013c; Guangming News, 2013; Central Government Website, 2013) to show how direct-to-consumer advertising (DTCA) is employed to persuade the public to use drugs rather than "educating" them on the rational use of drugs by means of advertising slogans and images.

Mixed methods research

I employed mixed methods research, in the form of qualitative interviews and quantitative questionnaires, in my fieldwork. In Chapter 7, I will mainly use the data obtained from these interviews. Interviews presents various advantages: the ability to fill a gap in knowledge that other methods could not bridge effectively; to investigate complex behaviours and motivations; to examine a diversity of meanings, opinions, and experiences; and to show respect for and empower the people who provide the data by valuing their points of view (Dicicco-Bloom and Crabtree, 2006). The mixed methods research I carried out consisted of two stages, as presented in Figure 3.2 below: the preliminary semi-structured qualitative interviews, in order to explore the research questions and identify key themes; and the main structured quantitative questionnaires. There are several concerns that led me to this research strategy. Since

my academic background was in Economics and Economic History, this was my first attempt to use survey interview methods to conduct a sociological study. Therefore, in order to familiarise myself with interviewing and to design the survey questionnaire, I decided to conduct preliminary interviews.

Figure 3.2: The mixed methods research design



Semi-structured interviews

The semi-structured interview is a common research method in the social sciences. It is a useful method that combines the elements of structured and unstructured interviewing. Semi-structured interviews allow for initial, general questions to be asked, and the answers can then be used to adapt the questions which will

subsequently be put to the interviewee. In other words, semi-structured interviews offer flexibility for the interviewee's response, and allow them to alter the direction of the interview or clarify responses within these questions. This means that semi-structured interviews are able to adapt much more easily to the research situation at hand (Bernard, 1988). In this respect, semi-structured interviewing is more flexible than standardised methods such as the structured interview or survey, which also allow informants the freedom to express their views, ideas and concepts in their own terms but are more limited in respect of the opportunity for a nuanced response. Therefore, using a semi-structured interview allows the doctor's points of view and experiences to be expressed, and the inclusion of open-ended questions also provides the opportunity for identifying new ways of seeing and understanding the topic at hand. The flexible nature of this method allows for a greater range of response through reflecting on, and reacting to, the nature of the answers provided, and also allows the researcher to assess how difficult it might be to gain access to the field. In addition, such interviews also allowed me, as the interviewer, to redirect the responses towards my research subject.

Moreover, although I had identified some general topics for investigation in the interview guide of the semi-structured interviews, this method still allowed me to explore emergent themes and ideas rather than relying only on concepts and questions defined in advance of the interview. Richardson *et al.*, (1965) and Smith (1975) argue

that semi-structured interviewing is well suited to the exploration of attitudes, values, beliefs and motives (cited in Barriball and While, 1994: 329). Further, it provides the opportunity to evaluate the validity of the respondent's answers by observing non-verbal indicators, which is particularly useful when discussing sensitive issues (Gordon, 1975); and semi-structured interviews can also provide reliable, comparable qualitative data (Barriball and While, 1994).

Questionnaires

The development of a questionnaire requires a clear topical focus and a well-developed understanding of the topic at hand (Bailey, 1994). Questionnaires are best used following the use of less structured interviewing or other observational methods, which provide the researcher with an adequate understanding of a topic, to facilitate the construction of meaningful and relevant close-ended questions (Bradburn and Sudman, 1981; Fowler and Mangione, 1989). The analysis of the data provided by the semi-structured interviews allowed me to refine my understanding of the research topic necessary for developing relevant and meaningful questionnaires for structured interviews.

There are many strengths of questionnaires, which is a research method widely used by researchers (Fowler and Mangione, 1989). Firstly, they enabled me not only to

examine a respondent's ideas about a particular topic that I identified in the preliminary survey, but also allowed for the exploration and discovery of how a respondent felt about a specific topic.

By using questionnaires in structured interviews, all respondents are asked the same questions in the same way, and this makes it easy to repeat/replicate the interview (Bradburn and Sudman, 1981), so this method offers a standard of comparison between interviews. In other words, this type of research method is relatively easy to regulate or standardise. Therefore, by using this method, the researcher is able to survey large numbers of people quickly, easily and efficiently (Fowler and Mangione, 1989). It can be predicted that, if it is possible to apply this method reasonably to my relatively small-scale, representative sample of people, it should also be relatively easy to generalise my findings from the sample to the general/target population.

Study setting and fieldwork

All interviews were conducted in Shandong Province. My personal background influenced my choice of Shandong as the fieldwork site. I was born and lived in China for more than 25 years before I came to UK to pursue my higher education. Being a native of Shandong, I am familiar with the culture, the people, the language,

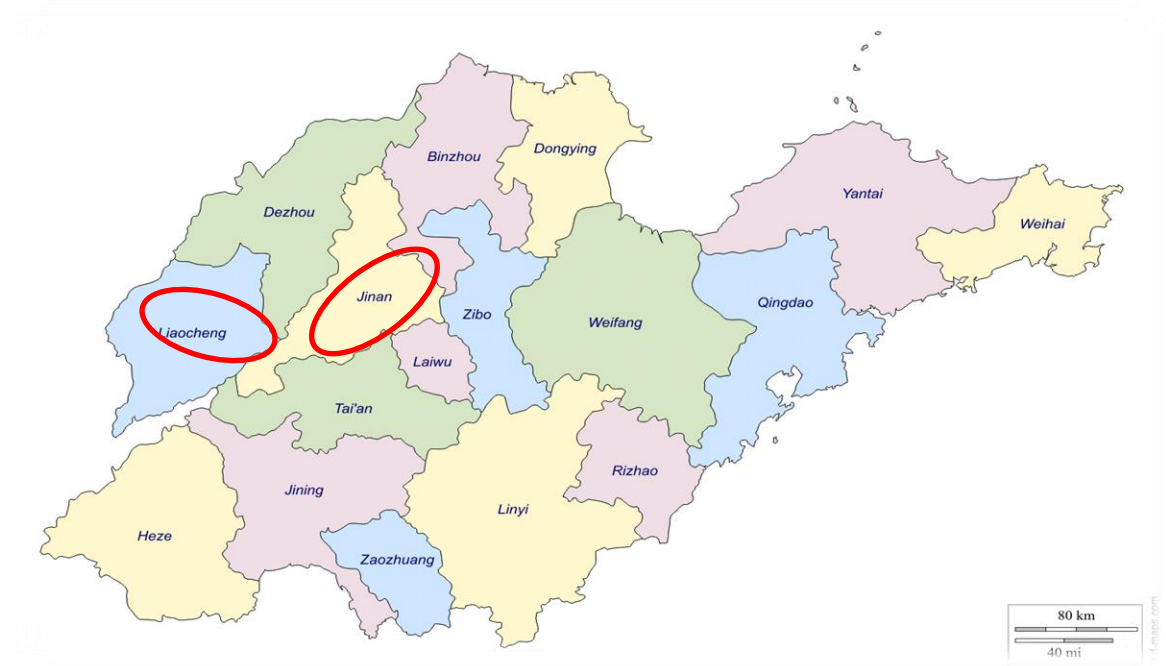
and the local society. My personal network in Shandong also guaranteed me adequate resources for conducting my fieldwork.

Map 3.1: The location of Shandong Province in China

Shandong Province is located in the east of China (see Map 3.1) and its total population by the end of 2010 was 95.8 million (Bureau of Statistics of Shandong, 2011). The province has the second largest population in China while the resident population, the household population and the population density are all listed as the second highest in the country. Shandong also has a relatively strong and rapidly developing economy, as the eastern provinces in China have generally been doing rather better economically than the western provinces of China, and Shandong

achieved a GDP of 3.94 trillion Chinese yuan with a GDP per capita of 41,106 yuan (US$6072) in 2010, placing it third in the nation (ibid.). It is therefore wealthier than most other provinces, and the data collected in Shandong is more likely to indicate future trends of China as a whole. Importantly, as Shandong is one of the major provinces in China for its economy, agriculture and culture, data collected in Shandong will probably become representative of the Chinese population.

Map 3.2: The location of Jinan & Liaocheng City in Shandong Province, China



Both the preliminary semi-structured interviews and main structured interviews were carried out in two areas (Jinan and Liaocheng) of Shandong (see Map 3.2). Jinan, the capital city of Shandong Province, was selected as a typical urban area, with a total population of 6,814,000, 71% of whom were not employed in agriculture, while the GDP per capita was 58,533 yuan (US$8869) at the end of 2010 (see Table 3.2 below).

The average net income of non-agricultural residents compared with peasants was 25,321 yuan and 8,903 yuan in 2010, respectively (Bureau of Statistics of Jinan City, 2011). Liaocheng is a typical agricultural city with extensive rural areas close to Jinan with similar geography, culture, and healthcare policy and regulation (including drug policy and administrative strategies). However, there is a big difference in socio-economic conditions compared with Jinan. The total population of Liaocheng was 5,789,900 at the end of 2010 and 71% were peasants, while the GDP per capita was 25,251 yuan (US$3826) at the end of 2010, far lower than in Jinan (see Table 3.2 below). The average net income of peasants and non-agricultural residents was 6,377 yuan and 17,889 yuan in 2010, respectively (Bureau of Statistics of Liaocheng County, 2011). Jinan and Liaocheng were selected as locations because they have direct links with my family. Jinan is my hometown, I was born there and my family has been living there since 1983, and Liaocheng is our original family home. My father and grandfather were both born there and lived there for more than 20 years, so I and my family have a well-connected network in both the areas of Jinan and Liaocheng. My familiarity with these areas also helped me with accessing local doctors and carrying out research in a cost-effective way and with greater ease.

Table 3.2: Population, GDP per capita and Net Income in Jinan and Liaocheng

	Jinan	Liaocheng
Population (million)	6.8	5.8
Non-agricultural population (%)	71	29
Peasant population (%)	29	71
GDP per capita (Yuan)	58533	25251
Net income (Non-agricultural)	25321	17899
Net income (Peasant)	8903	6377

Source: Bureau of Statistics of Jian City, 2011 & Bureau of Statistics of Liaocheng County, 2011

Access and sampling of doctors

A representative sample "reflects the population accurately so that it is a microcosm of the population" (Bryman, 2012: 87). It is generally assumed that a representative sample is more likely to be the outcome of random selection, though random selection of a sample cannot guarantee an absence of bias. The need to sample was inevitable, and the first question raised was how to select representative samples for my qualitative and quantitative studies.

My first formal fieldwork trip to Shandong, when I carried out the preliminary qualitative survey, lasted about two months between January and March 2012, and my second-round fieldwork trip to Shandong was undertaken from September to December 2012 when I carried out the main questionnaire survey. During both the

first and second periods of fieldwork, my work included contacting informants, arranging interviews and formulating the interview questions, conducting interviews, and transcribing the interview data.

There are many restrictions when studying a social phenomenon in China in its real-life context, especially when data collection is based on interviews conducted by representatives of foreign academic institutions and research institutes, even though I am Chinese. Therefore, some flexibility was built into the basic research design. Due to the difficulties in collecting data in China, Croll (1987) has recommended that empirical data be limited to the "icing on the cake" with the main study being based on documentary studies. However, based on personal contacts and connections in China (so-called "Guanxi" in Chinese), individual scholars have been able to carry out their own research. Guanxi is conventionally translated into English as "relationship". Hamilton and Zheng (1992: 23) describe "[a] society resting on networks", of which China is a good example, as one that "contains no sharp boundary lines, but only ambiguous zones of more or less dense and more or less institutionalized network configurations". Traditional relationships or networks (with relatives, friends, colleagues and former classmates) are still dominant in daily, personal or social life.

Before conducting the interviews, I had already obtained the necessary ethical

approval from the University of Essex (see Appendix 1). In China, I had discussed the research with three government level officials and researchers who agreed that I could carry out the research, and an approval letter was also provided by the Health Department of Shandong Province. The research utilised a snowball sampling technique to help me gain access to a number of healthcare institutions. Likewise, the sample for the semi-structured interviews and the questionnaires were both based on snowballing. This involves approaching suitable subjects, and then requesting the initial respondents to encourage any friends or colleagues who meet the criteria to participate (Denscombe, 2007: 16). The target informant groups were medical doctors. Although I had an official approval letter from the Health Department of Shandong Province, as a Shandongnese with existing links to the research area[1], I found the best way to establish contacts with doctors was to tell them that I am a friend or relative of a doctor in his or her department/hospital, before showing them the formal documents. The next step was to invite him or her to an interview. After the interview I asked the doctor to introduce me to other doctors they know to see if they would agree to an interview.

With the help of personal Guanxi, I could easily access some of the medical professionals who were working at the sampled hospitals and health clinics. Because

[1] I have several relatives who work or worked in hospitals as doctors; my grandmother was a hospital doctor who worked in a gynaecology and obstetrics department, and both of my aunts are hospital doctors – one works in the cardiology department, Shandong Provincial Hospital, Jinan, and another works in the paediatrics department, Liaocheng People's Hospital, Liaocheng.

of the trust relationship built previously when I was in the field, respondents emerged through a process of reference from one person to the next, and the sample snowballed into the cities of Jinan and Liaocheng. However, I realised that snowball sampling could cause problems in generalisation and might result in potentially biased findings. I therefore tried to extend the informant pool from my own social network of Guanxi to the widely extended social networks of friends, families, relatives, and former classmates. Once I became familiar with a particular institution, I attempted to conduct simple random sampling of healthcare workers in order to keep sampling biases to a minimum. However, it is very difficult to use random sampling to ensure every doctor in the institution had an equal chance of being selected. According to Bryman: "It is incredibly difficult to remove any bias and deliver a truly representative sample; what needs to be done is to ensure that steps are taken to keep bias to an absolute minimum" (2012: 89). Nevertheless, this ripple-effect helped me to reach doctors with a range of different durations of practitioner experience, specialism, affiliations to different levels of health institutions from various classifications, and locations.

In this respect, the fieldwork reflects a range of different Guanxi that have made possible the project results. Guanxi is important in conducting research in China. Besides its snowballing effects, it is extremely helpful for building trust between researchers and research participants. Trust is a key factor in influencing people's

willingness to collaborate and supply honest and full answers, especially in China where public speech is sometimes under scrutiny.

Semi-structured interviews and questionnaires

My original intention was only to carry out the in-depth interviews in the empirical studies, but I decided later to combine the semi-structured interviews with structured self-administered questionnaires in this study. The reasons why I also used questionnaires in the analysis were as follows: first, considering both the sensitivity of this research topic and doctors' working pressures, not all informants responded to the interview request; only about 40% of respondents fully completed the interviews. A lot of doctors did not provide all the information requested due to various reasons, such as, "not applicable", "refused to answer", "don't know", "forgot to answer". For example, Dr Bu is a director of a hospital department who said she had never come across such questions before, and that some issues were politically sensitive. She also wondered about the time taken to complete the interview. She said it took her more than 30 minutes to finish it, and she doubted whether other busy medical professionals such as physicians would be willing to take 30 minutes out of their working day. She recommended, therefore, that I simplify those time-consuming open-ended questions. Some other doctors also had similar suggestions on the type of questions, contending that it would be more reasonable to use close-ended questions

with clearer wording in my survey since those doctors would be more willing to complete it.

Second, interestingly, I found it was easy to talk to doctors when they had completed their interviews. Hence, I tried as much as possible to talk to doctors in the field, especially after they had completed the set interview questions. Questions asked in these more informal interviews followed the same structure as the more formal organised ones. Some doctors often gave a little bit more information, and they were more likely to list their answers and rank them in order, even though my conversation with them was often very short. Eventually I found it necessary to use follow-up questionnaires when I finished collecting all the preliminary qualitative data. This process can be referred to as a technique of cross-checking findings deriving from both qualitative and quantitative studies (Bryman, 2012: 275). The combined method of qualitative interviews and quantitative questionnaires meant that I could start seeking "close involvement with the people being investigated" (ibid.: 286).

Before the start of interviews and the questionnaire survey, informants were required to complete a consent form (see Appendix 2) confirming that they understood and agreed to being interviewed (I give more details on ethical issues later in this chapter). Basically, the interview and questionnaire included their background and opinions about some issues relevant to the utilisation of pharmaceutical drugs and

medication in China. Participants were interviewed individually, and the preliminary interviews and completing the main questionnaires took approximately 30 minutes in total.

My original intention was to audio-record all my interviews in the preliminary survey. However, five (10%) of my informants rejected this request. I understood that the issues were sensitive, so I respected my informants' decision and took detailed notes as a method of recording the interviews. As a result, only two of the preliminary survey interviews were audio-recorded and six of them were captured in notes, as I noticed that most of Chinese doctors are uncomfortable talking openly to researchers while having their answers tape-recorded. As shown earlier in Figure 3.2, the first stage consisted of semi-structured interviews and the second stage (using a different sample) of questionnaires. Many of the questions in the preliminary interviews were formulated by reading previous research and analysing the questions raised and left unanswered or interpreted in a way that could be contested. I asked a number of pre-planned questions from the interview guide (see Appendix 3 for more details) as well as allowing the interview to follow its own natural course. As I have mentioned, the questionnaire technique used in many surveys relies on the analysis and understanding of adequate data and information collected from the preliminary interviews. Another original intention of this research was to interview government officials such as directors of health departments, pharmaceutical company

representatives and the medical professions. However, in the end only doctors were interviewed in the empirical studies. The reasons were fourfold. First, it was very difficult to get access to the government officials and the pharmaceutical representatives. Second, I began to realise that, given the sensitivity of the topic, the pharmaceutical corporation would not be very likely to cooperate and give me direct and relevant information. Third, it would be unethical if academic research was to be coloured by political or administrative coercion, and doctors could not opt in or out as they wished, but would be forced to participate. Fourth, if doctors' answers were uniformly "correct", the research would lose its purpose. In the field, I insisted on going to different hospitals to disseminate the questionnaire myself for as long as time and finance permitted. During this process, I began to better understand their working environment. Such observations could be used to supplement the quantitative data by giving it a context. At the same time, I also tried to have a dialogue and foster a relationship of trust with doctors. Last but not least, it was relatively difficult to carry out a large-scale survey given the limited duration a of PhD study, so the period of data collection in China had to be restricted.

The preliminary interviews and main structured interviews were conducted in hospitals or health clinics during office hours. Interviewees were seated in a quiet and comfortable position, and the interviews were not interrupted. It is my belief that having the interviews in hospitals or health clinics helped to make the doctors feel

empowered, more relaxed and therefore more inclined to open up in the interview. Since my interviews were done in a medical setting, when I was interviewing doctors in hospitals I was also able to observe the environment and subjects around me and became involved in a multitude of informal conversations throughout the initial fieldwork period. Also, by having well-prepared questions and having practiced the interview process prior to the actual interview, I could steer the questioning in the direction the research required.

After the completion of the interview or questionnaire, each participant was paid up to £5 (RMB50) for their participation and to compensate them for their time. However, there was no significant financial incentive to engage in this survey study, since this is only a small amount of money. I also informed all respondents of this payment in the consent form before interviewing, in order to encourage them to be active in interviews and questionnaires. Later, the interviews were then transcribed verbatim, and the transcribed data was coded thematically and analysed to discover emergent patterns, trends and themes related to the research. I would argue that this is particularly important with inductive research when the researcher is not always aware of the ideas or concepts that are going to arise from the data.

The preliminary sample

In the preliminary interviews, a total of 48 hospital doctors were included in the sample from three hospitals in Shandong. The characteristics of the preliminary survey sample are as listed in Table 3.3:

Table 3.3: Hospitals in Jinan and Liaocheng

Name of Hospital	Administration Level	No. of Informants
Shandong Provincial Hospital, Jinan	Provincial	20
Qilu Hospital of Shandong University, Jinan	Provincial	11
Liaocheng People's Hospital	City	17
Total		48

As Table 3.3 shows, 31 hospital doctors came from the two hospitals in the higher status 'provincial' city of Jinan, and 17 hospital doctors were from a third hospital in the lower city-level hospital of Liaocheng. However, all of them are in the same level of Tier 3 Grade A hospitals (discussed later in Chapter 4). As Table 3.4 below shows, 33 informants came from the departments of internal medicine, 14 were from the department of surgery, and one doctor came from another department.

Table 3.4: Number of informants based on specialty

Specialty	No. of Informants
Internal Medicine	33
Surgery	14
Other	1
Total	48

It can be seen from the Table 3.5 below that male doctors and female doctors accounted for 60.4% and 39.6% respectively of the 48 hospital doctors interviewed in Shandong. Comparing this result with the percentage of the total hospital doctors by gender in China, we find that there is a similar ratio of 58.1% and 41.9% of male doctors and female doctors respectively (MOH, 2012a).

Table 3.5: Gender of hospital doctors

Gender	Sample	
	No.	**%**
Male	29	60.4
Female	19	39.6
Total	48	100

As shown in Table 3.6 below, the age range from 20–49 accounts for more than 90% of the total sample of doctors, with the age range 20–39 accounting for more than 80%. In China as a whole, the age range 25–54 accounts for nearly 90%, whereas the age range 25–44 is only 66% (ibid.), indicating that my sample was somewhat younger than the age distribution of all doctors in China.

Table 3.6: Age of hospital doctors

Age Range	Sample	
	No.	%
20(25)-29*	22	45.8
30-39	17	35.4
40-49	5	10.4
50-59	1	2.1
60 or above	3	6.3
Total	48	100

*Note: Five years undergraduate study in medical science is normally required to become a licensed/registered doctor in China, so that most are at least 25 before they become qualified doctors.

Comparing the hospital doctors' working experience as shown in Table 3.7, we find that half the hospital doctors interviewed had less than five years (post-qualification) working experience, but according to the *China Health Statistical Yearbook 2011*, only 14.8% of all hospital doctors had worked less than five years. Therefore, the sample had a higher proportion of younger doctors with less working experience.

Table 3.7: Working experience of hospital doctors

Working Experience	Sample	
	No.	%
Less than 5 years	24	50
5-14 years	12	25
15-24 years	7	10.4
25-34 years	4	6.3
35 years or more	5	8.3
Total	48	100

Moreover, according to the *China Health Statistical Yearbook 2011*, the proportion of all hospital doctors with the highest undergraduate qualification in China was 77.5% (MOH, 2012a), but from Table 3.8 below we can see that in the sample of hospital doctors, 66.7% had higher (postgraduate or PhD) qualifications. In general, those aged 60 or over are not as well qualified as younger doctors, since they have been employed since before the 1978 Mao era, or more specifically during the Great Cultural Revolution.

Table 3.8: Education level of hospital doctors

Education Level	Sample	
	No.	%
PG/PhD	32	66.7
BSc Degree	15	31.3
Lower	1	2
Total	48	100

There were two main limitations of the preliminary survey sample. Initially, I only focused on urban hospital doctors and did not include rural hospital or health clinic doctors. However, in the preliminary interviews of urban doctors, the medical professionals were asked to what extent they think over-medication was a serious problem in China, and most urban doctors actually found it difficult to focus purely on urban issues, often comparing urban and rural hospitals. I therefore had to make adjustments to the preliminary interview questions and the main questionnaire

(discussed later in this chapter). Hence, I recognised from the preliminary interviews that urban hospital doctors are not representative of Chinese doctors as a whole, and I also noticed how important it was that I collected data from rural doctors to compare with that of the urban doctors. Although Liaocheng, as a typical agricultural city, has an extensive rural area, the doctors interviewed in Liaocheng People's Hospital cannot represent rural doctors as a whole. In order to represent rural doctors, I needed to include country hospital doctors and health clinic doctors in the main questionnaire study.

Secondly, as can also be seen from the preliminary sample, younger doctors with less working experience accounted for a large proportion of those interviewed. I was therefore aware that I needed not only to collect more data from rural areas to compare with urban data, but also to target more middle-aged and elderly doctors with greater working experience in my main questionnaire . However, it should also be noted that this preliminary survey not only facilitated the sampling of doctors for the main questionnaire survey, but also informed my main questionnaire design. This preliminary interview tested whether the statements were comprehensible to the informants, which statements or questions should be removed and which should be used or added to in searching for the causes of over-medication that related to doctors.

The main sample

The main questionnaire sample of 120 doctors was selected from five hospitals and two health clinics in Shandong as follows:

Table 3.9: Hospitals and health clinics selected in Jinan and Liaocheng

Name of Hospitals/Health Clinics	Administration Level	No. of Informants
Shandong Provincial Hospital, Jinan	Provincial	20
Qilu Hospital of Shandong University, Jinan	Provincial	13
Liaocheng People's Hospital	City	19
Yanggu County Hospital, Liaocheng	County	24
Chiping County Hospital, Liaocheng	County	24
Xihu Township Health Clinic, Liaocheng	Town	10
Litai Township Health Clinic, Liaocheng	Town	10
Total		120

As shown in Table 3.9 above, 33 doctors were selected from the two hospitals in the higher status 'provincial' city of Jinan, and 19 doctors from a third hospital in the lower city level hospital of Liaocheng. Forty-eight doctors were selected from two other county hospitals in Liaocheng. Twenty doctors were selected from the two health clinics in Liaocheng. To classify these doctors and hospitals into different categories, we may divide them into two groups: urban and rural. Fifty-two doctors were selected from the first three urban hospitals and the remaining 68 doctors were selected from four rural hospitals and health clinics.

Overall, therefore, as shown in Table 3.10 below, 43.3% of the hospital doctors interviewed were from the urban level hospitals and 56.7% from the rural levels hospitals. According to the *China Health Statistical Yearbook 2011*, at the end of 2011 there were 1377 urban hospitals and 1948 rural hospitals and health clinics out of total 3325 hospitals and health clinics in Shandong. Thus urban hospitals and rural hospitals account for about 71.8% and 14.2% respectively of all hospitals and health clinics in Shandong.

Table 3.10: Number of informants and hospitals/health clinics in Shandong and China

	Sample		China	
	No.	**%**	**No.**	**%**
Urban Hospital	52	43.3	1377	41.4
Rural Hospital/Health Clinic	68	56.7	1948	58.6
Total	120	100	3325	100

Source: MOH, 2012a.

As Table 3.11 shows, in the urban hospitals there were 38 respondents from the departments of internal medicine, 13 from the department of surgery, and one doctor came from another department. In rural hospitals and health clinics, 50 doctors were from departments of internal medicine, 17 from the department of surgery, and one from another department.

Table 3.11: Departments/specialities of informants between urban and rural hospitals and health clinics

	Internal Medicine	Surgery	Other	All
Urban Hospitals	38	13	1	52
Rural Hospitals/Health Clinics	50	17	1	68
Total	88	30	2	120

Furthermore, as shown in Table 3.12 and Table 3.13 below, in total the 88 doctors from the departments of internal medicine accounted for 73.3% of the sample, including 36 from cardiology, 26 from paediatrics, nine from neurology, eight from haematology, four from pneumology, three from urology and two from endocrinology. On the other hand, of the 30 doctors from the department of surgery who accounted for 25% of the interviewed doctors, 12 were from general surgery, nine from orthopaedics, three from urology surgery, two from thoracic surgery, two from cardiac surgery, one from neurosurgery and one from dermatology. Finally, two doctors came from the department of gynaecology and obstetrics. The reason for the preponderance of doctors in the sample from internal medicine is that doctors of internal medicine mainly focus on the art of diagnosis and treatment with medication. Although surgery usually involves some drug treatment, physicians who practice internal medicine are more likely to prescribe and treat their patients with drugs than surgeons are to do.

Table 3.12: Departments of hospital/health clinic doctors

Department	Informants	
	No.	%
Internal Medicine	88	73.3
Surgery	30	25
Others	2	1.7
Total	120	100

Table 3.13: Specialities of hospital/health clinic doctors

Department	Speciality	No. of Informants
Internal Medicine	Cardiology	36
	Paediatrics	26
	Neurology	9
	Haematology	8
	Pneumology	4
	Urology	3
	Endocrinology	2
	Total	**88**
Surgery	General Surgery	12
	Orthopaedics	9
	Urology Surgery	3
	Thoracic Surgery	2
	Cardiac Surgery	2
	Neurosurgery	1
	Dermatology	1
	Total	**30**
Other	Gynaecology and obstetrics	**2**
	Total	**120**

According to the *China Health Statistical Yearbook 2011*, there were 1,155,534 licensed doctors in China at the end of 2011. As Table 3.14 below shows, male doctors and female doctors account for 58.3% and 41.7% respectively of the 120 hospital and health clinic doctors interviewed in Shandong. This is similar to that for the whole of China (as noted earlier) of 58.1% and 41.9% of male doctors and female doctors, respectively (MOH, 2012a). As mentioned earlier in Table 3.5, male doctors and female doctors accounted for 60.4% and 39.6% of the sample for the preliminary survey. This therefore indicates that the gender balance in the main questionnaire was closer to that of the gender balance in the preliminary sample than that of doctors in China as a whole.

Table 3.14: Gender of hospital doctors

Gender	Sample		China	
	No.	%	No.	%
Male	70	58.3	671,365	58.1
Female	50	41.7	484,169	41.9
Total	120	100	1,155,534	100

Source: MOH, 2012a.

As shown in Table 3.15 below, the age range 25–34 accounted for about 32.5% of the total sample of doctors, with those aged 35–44 accounting for 35%, and those aged 45–54, 55–59, and 60 or above accounting for 21.7%, 6.7% and 4.2%, respectively. In China as a whole, as the table below shows, the age ranges 25–34, 35–44, 45–54,

55–59, and 60 or above all have quite similar ratios to the sample percentages, accounting for 32.6%, 34.6%, 21.6%, 6.9% and 4.4%, respectively.

Table 3.15: Age of hospital doctors

Age Range	Sample		China	
	No.	%	No.	%
25-34*	39	32.5	376,704	32.6
35-44	42	35.0	399,815	34.6
45-54	26	21.7	249,595	21.6
55-59	8	6.7	79,732	6.9
60 or above	5	4.2	50,843	4.4
Total	120	100	1,156,689	100

Source: MOH, 2012a.

*Note: 5 years undergraduate study in medical science is normally required to become a licensed/registered doctor in China, so that most are at least 25 before they become qualified doctors.

In the same way, comparing the hospital and health clinic doctors' working experiences as shown in Table 3.16 below, we find that 15% of the hospital and health clinic doctors interviewed had less than five years (post-qualification) working experience, 14.2% had 5–9 years working experience, 31.7% had 10–19 years, 22.5% had 20–29 years, and 16.7% had 30 years or more. According to the China Health Statistical Yearbook 2011, the percentage for China as a whole - 14.8%, 14.6%, 31.5%, 22.1% and 17.1% for less than 5 years, 5–9 years, 10–19 years, 20–29 years, 30 years or more working experience – were much the same. Therefore, the sample closely replicated the age and working experience of all doctors in terms of national

statistical data. In addition, it should be mentioned that no assistant doctors were included in my sample as they only have limited prescribing rights.

Table 3.16: Working experience of hospital doctors

Working Experience	Sample		China	
	No.	%	No.	%
Less than 5 years	18	15	171,019	14.8
5-9 years	17	14.2	168,708	14.6
10-19 years	38	31.7	363,993	31.5
20-29 years	27	22.5	255,373	22.1
30 years or more	20	16.7	197,596	17.1
Total	120	100	1,156,689	100

Source: MOH, 2012a.

Moreover, from the Table 3.17 below, we can see that for both the sample and for China as a whole, there was the same proportion, 77.5%, of all hospital and health clinic doctors with highest undergraduate qualification. Also the sample and China have the same ratio - 12.5% and 10% - of those with postgraduate or PhD qualifications and lower BSc qualification, respectively. As noted earlier, generally those aged 60 or more are not well qualified, since they have been employed since before 1978.

Table 3.17: Education level of hospital doctors

Education Level	Sample		China	
	No.	%	No.	%
PG/PhD	15	12.5	144,442	12.5
BSc Degree	93	77.5	895,539	77.5
Lower	12	10	115,553	10
Total	120	100	1,155,534	100

Source: MOH, 2012a.

Survey questions and questionnaire

The main questionnaire, as discussed above, aimed to explore the factors that encourage over-prescribing by doctors, hence over-medication, in China. The questionnaire was generated from the results of the preliminary interview. Through reviews of relevant documents and literatures, it appeared that doctors' over-prescribing behaviour is related to three key factors that I call "medical interventionism", "professional knowledge" and "financial incentives".[2] I sought in both the interviews and questionnaires to explore these areas.

In the preliminary interviews (see Appendix 4 for more details), for the first set of questions, I aimed to identify how often doctors prescribe and when they consider it necessary to increase the prescription or drug dosage. I found that the informants'

[2] Also see an interview guide in Appendix 2 and a coding frame for semi-structured interviews in Appendix 3.

responses to the question about the prescribing rate per visit varied from less than 10% to more than 90%. Therefore, I set this range in the main questionnaire to examine the frequency of prescription issue that commonly appears in Chinese hospitals and health clinics. In the preliminary interviews, I also found that some doctors interviewed thought that in some cases it was necessary to increase the amounts prescribed to elderly or severely ill patients, or to patients returning and requesting more prescriptions. Based on this, I formulated certain questions in the main questionnaires to examine whether these are, in fact, the circumstances under which all doctors increase the dosage of medication.

For the second set of preliminary survey questions, I focused on the doctors' primary consideration regarding the choice of drugs. However, from the respondents' answers, I noticed that some important issues were overlooked, such as how the doctors learnt about the drugs, how they know about the characteristics/features of the drugs, and through which channels doctors obtained information about new drugs. I therefore included these questions in main questionnaire survey to examine the doctors' knowledge on choosing drugs. Moreover, in the preliminary interview, doctors' views about over-medication were mainly reflected in responses about types of drug over-use, which I found could be classified into seven categories. I then used these in the questionnaire as the multiple choice question for antibiotics, infusions/injections, expensive drugs, chemotherapy drugs, psychotropic drugs, hormone drugs, and heart

nutritional drugs.

Furthermore, I found the preliminary questions about the financial incentives were too general and unspecific. As a result, I added six more questions to the main questionnaire to examine the impact of pharmaceutical marketing on doctors' prescribing behaviour and the doctors' need to make a profit. I noted from the preliminary survey that one open-ended question asking doctors about the key factors that cause over-medication in China produced answers that directed any blame away from the doctors themselves. The blame was placed firmly with the government, the medical profession as a whole, the pharmaceutical industry and the public. Key factors leading to over-medication in relation to the medical profession as a whole, according to doctors, were the "medical profession's extensive prescribing power", "insufficient professional knowledge of the medical profession", and the "medical profession's profit-seeking drivers caused by financial incentives".

Consequently, the main questionnaire consisted of 25 questions (24 close-ended questions and one open-ended question) (see Appendix 5 for more details). However, I initially decided to remove some questions that did not link to the findings from the first stage, and add some questions based on the results of the preliminary interviews. The structured questionnaire data was analysed under two categories (urban and rural) since the types of hospital provision differs. The questionnaire data was based

on preliminary codes (key themes) (see Appendix 4 for more details). The areas covered by this questionnaire are shown in Table 3.18 below. The first part of the questionnaire data that was analysed concerned how the doctors' privileges in prescribing (medicine intervention) and knowledge on the use of medicines were related to over-prescription, addressing their prescribing decisions, how they know about drugs and their characteristics, and how to choose suitable medicines. It was also concerned with the doctor's wish/plan to "do something for the patient", for instance, in some contexts to increase the prescription in order to avoid incurring any potential risk of not treating patients. The second part of the questionnaire considered the government-induced financial incentives for over-prescribing behaviour. Since there is a profit-chain between the pharmaceutical industry and doctors, these questions were designed to investigate the doctors' prescribing behaviour driven by financial incentives such as kickbacks, bonuses and rewards, etc.

Table 3.18: The content of the main questionnaire

Factors/Variables	Contents
Medicine interventionism	Frequency of prescription
	Increasing dosage of medicine
Professional knowledge	Knowledge of Choosing drugs
	Definition of over-medication
Pharmaceutical industry-related financial incentives	Pharmaceutical marketing
	Profit-oriented prescribing

The reliability of the research data

I will now turn in this section to make some observations about the reliability of the research data. In this research, although I attempted to use random sampling, I did not ultimately do so (as discussed above). Snowball sampling was mainly employed to collect the data. A snowball sample (also known as chain-referral sampling) is a non-probability (non-random) sampling technique that is appropriate to use in research when the members of a population are difficult to locate, or when characteristics to be possessed by samples are rare and difficult to find (Babbie, 2001). A snowball sample is one in which the researcher collects data on the few members of the target population (representativeness) he or she can initially locate, then asks those individuals to provide information needed to locate other members of that population whom they know (ibid.).

To assess the reliability of respondents' answers to questions concerning over-medication involves knowing whether they were giving accurate/honest answers and whether, if interviewed by someone else, they would give the same answers. Since most qualitative and small-scale studies tend to be unrepresentative, this presents a certain number of concerns about data rigor. Social methodologists, however, have argued that the quality of qualitative research depends more on indicators of originality and discovery than on positivist ideas of validity and reliability. As Seale

(2008: 72) states, “perhaps, for example, the quality of a study can be judged according to whether it promotes insight, understanding or dialogue, or in terms of whether it gives voice to particular social groups whose perspective has been hidden from public view”.

On the other hand, there is no point in conducting qualitative research unless the researcher can convince the reader that the data collected is plausible and generalisable. Peräkylä (2008: 295), in an article on the notions of reliability and validity in research based on social interaction, asks the usual question: how can findings derived from small samples be generalisable? He suggests approaching the problem of generalisability from a different perspective, and he also states that “the concept of possibility is a key to this. … The possibility of various practices can be considered generalizable even if the practices are not actualized in similar ways across different settings” (2008: 297). For example, in the research reported here, the specific strategies of closure used by the medical profession were developed through the use of a small sample and in a particular context. Therefore, they are possibilities.

In this research, I was attempting to gain theoretical and empirical insights, not reliability in its statistical sense. In this respect, they can be generalisable as strategies that can possibly be used by other professionals, that is, as plausible and believable strategies. Bryman (2012) develops the issue of generalisability by arguing that

qualitative research findings are useful for generalising theory rather than generalising the population of the group studied. This is what Seale (2008) calls "theoretical generalization", or the judgement of the significance of a new phenomenon discovered "by reference to its contribution to some existing body of knowledge or 'theory'" (2008: 26). Williams (2000) similarly talks about a "moderatum generalization", which, he says, occurs when the researcher draws comparisons and forges linkages with the findings from other studies. We will see how the next set of empirical chapters, for example, theorizes "over-prescription" / "over-medication" and places the findings in a relevant theoretical context, therefore making significant use of theoretical generalisation.

In order to enhance the reliability of the research data, I followed the advice offered by Silverman (2010) and Denscombe (2007) and I put emphasis on the following ways of thinking critically about qualitative data analysis:

(1) Demonstrate openness throughout the research analysis, even if the influence of the researcher's worldview is most of the time unavoidable in the research process;

(2) Call for "comprehensive data treatment", for instance, the incorporation of all cases of data in the analysis, regardless of whether they are deviant cases. Thus, the principle here is that all cases increase the knowledge of the researcher;

(3) Compare the data, i.e. the interview data collected should be triangulated with data from alternative sources, such as documentary search and quantitative data, in order to obtain a wider perspective of the topic studied;

(4) Demonstrate the originality of the data by linking the latter to theory.

Ethical issues

Ethical issues are central in empirical research; they represent the moral principles a researcher has to bear in mind so that the participants feel comfortable and are willing to share their experiences (Bryman, 2012). This study was committed to keeping all the information gathered confidential to protect respondents from any potential vulnerability or embarrassment due to their participation, and participants were not identified in any way in writing up the research. Any personal data was only to be used for academic purposes, and the findings are presented anonymously. To ensure confidentiality (and therefore protection from harm), I used pseudonyms to replace the real names when I transcribed the interviews and when I refer to the responses in my written research report. I also deleted the data when I finished my analysis of those research data. The information participants provided has been used for this thesis alone, and not for any other purpose.

The other ethical issue I considered and took action on is the participants' right to withdraw; participants must be assured that they have the right to withdraw throughout the research. Prior to all contact with my participants, they were shown a copy of the Approval Letter of the Health Department of Shandong Province, and the Ethical Approval form of University of Essex[3] and I asked all participants to sign an informed consent form, explaining how all information would be kept confidential and anonymous so that no details would identify a particular participant. All participants read the study information given, and were free to withdraw from the study at any time, without needing to provide reasons and without penalty.

Due to the fact that my research aimed to find out to what extent the doctors' behaviour may have caused over-prescription/over-medication in China, we can see this research is a controversial topic (sensitive subject) so there are chances for ethical issues to arise. The definition of a "sensitive" research topic is dependent on both context and cultural norms and values. Sieber and Stanley early defined "socially sensitive research" as "studies in which there are potential consequences or implications, directly for the participants in the research or for the class of individuals represented by the research" (1988: 49). However, this definition of sensitive research is very general and almost all social research could be defined as sensitive under its application. All research has consequences of some kind; some may be more directly

[3] Only shown prior to preliminary interviews.

harmful than others. Lee puts forward another definition of sensitive research that encompasses the topic, the consequences, the situation and any number of other issues that may arise by saying that sensitive research is "research which potentially poses a substantial threat to those who are or have been involved in it" (1993: 4).

Lee also goes on to criticize the definition proposed by Sieber and Stanley, stating that it focuses on "the consequences of the research rather than the specific technical and methodological issues that are inherent in sensitive research" (1993: 3). In order to develop a comprehensive understanding of the issues in sensitive research it is important to examine more than just the consequences of undertaking the research. Lee proposes that it is important to investigate the methodological issues as well, and to examine them from the perspective of both researchers and participants. He suggests that studying "sensitive" topics creates both methodological and technical issues for the researcher. The issues may include (1) conceptualisation of the topic, (2) defining and accessing the sample, (3) mistrust, concealment and dissimulation between the researcher and participants, and (4) safety (ibid.).

Lee suggests that sensitive research can be seen as threatening in three broad areas. The first type of these threats is "intrusive threat", which are those considered private, "stressful or sacred" (ibid: 4). The second type of threat is the "threat of sanction", which relates to studies of deviance and involves the possibility that research may

reveal information that is stigmatizing or incriminating in some way. The third type of threat that may be associated with sensitive research is a 'political threat' where researchers may study areas subject to controversy or social conflict. This refers to the 'vested interests' of the powerful in society, and in these situations researchers may trespass into areas that involve some sort of social conflict.

Although I provided the signed consent form and obtained ethical approval, as mentioned, some issues seen by the doctors as "sensitive" in China could lead participants to feel stressed and/or hesitant in sharing personal experiences with the interviewer. Some respondents in my preliminary interviews thought there might be some political risks even after I showed them the approval documents. In fact, the statements in this official approval letter made some respondents cautious and they appeared only to say what they thought acceptable, for example: "Over-prescription here (in my own hospital) is very rare", "Doctors don't prescribe as much as before", and "The Health Department has already forbidden over-prescription in the local hospital". I therefore decided not to show the respondents the government approval letter prior to the interviews in my main questionnaire survey. These complexities further confirmed that carrying out a preliminary interview was very useful.

Data analysis

The open-ended questions in preliminary interviews were used for generating detailed, descriptive data mainly for explaining the impact on the prescribing behaviour of medical professionals, and for formulating the questionnaire. The data I gathered in the interviews were textual, and were read, reread, coded, rearranged and interpreted on both cumulative and individual bases. All qualitative data I collected from the interviews were transcribed into a raw data spreadsheet and further categorised in terms of their common themes using Microsoft Excel 2013.

In the questionnaire, a number of closed questions were used in order to minimise the amount of time that respondents would need to complete them. This type of question was formulated as a single or multiple choice question and mainly asked for the respondents' attitudes towards, and knowledge of prescribing. Before analysing the questionnaire data, completed questionnaires were given unique identifiers so that apparent inconsistencies generated in the data could be located and checked. Data were then typed into Microsoft Excel's 2013 spreadsheet, analysed by cumulative frequency distribution, and presented in the report as ratios.

Limitations

In conducting my interviews and collecting data using questionnaires, I found that my responsibilities to my participants and to those to whom I will present my findings were the key issues. Firstly, it is important to recognise in advance that bias is inevitable in various research methods and it is a more productive and realistic approach to try to minimise this bias as opposed to trying to eliminate it completely (Mehra, 2002). As the first attempt to provide a sociological analysis of over-medication in China, this obviously confronts many difficulties and challenges.

The first limitation is that in this research I relied heavily on documentary sources. There are several criticisms of documentary research methods. A key criticism of this method of research has to do with data collection. By using documents as a source of data, researchers may generally rely on something that has been produced for other purposes and not for the specific aims of the precise investigation (Denscombe, 2007: 170). This could be said to be applicable to my own research. However, as Bailey notes, "the data collection method itself generally does not change the data being collected" (1994: 303). However, I do not believe that my research was biased or selective either in my choice or my understanding of documents, and I did not only selectively choose specific documents to support my thesis (ibid.).

The documents produced by other researchers are often based on interpretations rather than reality, and much research is produced by powerful political, cultural and economic groups who are keen to project an image that may also differ greatly from reality (May 1997: 164; Denscombe, 2007: 170). Remaining aware of this in my own research, and in order to avoid this limitation, I paid more attention to the critical reading matter (e.g. newspapers) and to the social context or construction of the documents (e.g. government and organisation reports) that researchers were using. However, I tended to overlook that the use of documents should reflect the importance of individuals in society. Plummer criticized the belief that "sociology should be far too concerned with the changing nature of social structures and the suffering they generate to focus primarily on individuals" (1983: 149) and contends, instead that "sociology was twin born: the problem of determined structure can never make sense without a complementary focus upon creative individuality".

Secondly, there are the limitations of the interview and questionnaire data I collected. It seems there is an element of under-reporting of prescribing by the respondents, which appeared as an issue in the first stage of this study, since this research topic is very sensitive especially for medical profession groups and the survey also contains some sensitive questions. For this reason I found it difficult to control the issue of under-reported information. Also, owing to the huge number of patients that each doctor must see every day, Chinese doctors are often extremely busy. As a result, I

was unable to use in-depth interviews (which typically vary in length between 1.5 and 2 hours) and other observational research methods to collect a greater depth of information (Berg, 2001). However, in-depth interviews are the most popular method used in qualitative research due to strengths such as flexibility, face-to-face interaction, the freedom to ask questions that follow interviewees' replies, as well as the rich data and detail that is generated (Bryman, 2012).

However, I did not conduct in-depth interview since there were some potential problems in conducting in-depth interviews in China. The first was Chinese culture. The Chinese scholar, Chen, has pointed out the problem of trying to apply Western research methods to China, as Chinese people do not like to express their personal opinion and tend to convey opinions in accordance with social norms (Chen, 1994). Before conducting interviews, I was cautious about the validity of their responses to politically sensitive issues and the possibility therefore of reluctance to respond to some of my questions.

My second concern was that patriotism or nationalism might affect Chinese medical professionals' expressions and feelings. Though the Chinese people may in their own way be pressing for their rights and improved lives, they have simultaneously exhibited unmistakable signs of nationalism that make them less receptive to the virtues of democratization. My worry was that participants would feel embarrassed to

say anything bad about the system in which they were working, and especially when they realised that my report would be accessible by foreign scholars. Their loyalty to the state might mean that nationalism would bias them against telling the truth and speaking their minds.

Thirdly, I was concerned about the influence of state propaganda. The recent political agenda has broadly focused on building a "harmonious society"[4]. Through its media, textbooks, and propaganda machinery, the Chinese government emphasises that democratization, political liberalization, a free press, and anti-government protests will only bring about the collapse of the current regime and are hence dangerous and destabilizing for Chinese society. Chinese medical professionals might feel hesitant to criticize the government and might even treat their problems in work as a necessity for China's economic modernization. Therefore, it would be difficult to understand the extent to which they face dilemmas and problems related to the system.

Moreover, there is another limitation with regard to the sample size in the research. I

[4] The theory was originally derived from Confucian thinking. It was adopted by the previous president Jintao Hu as the latest political slogan. The objective of the harmonious society envisioned by Confucius was to bind individuals and groups to preciously defend social roles and to regulate permanently the relationships between these roles by means of a hierarchical, tightly-knit nexus of mutual obligations. China published a resolution on building a harmonious society in 2006. The resolution was adopted at the conclusion of the Sixth Plenary Session of the 16th Central Committee of the Communist Party. The resolution stresses that the harmonious socialist society is to be built and shared by all Chinese along the road of socialism with Chinese characteristics and under the CCCP leadership by 2020. It is available at: http://www.china.org.cn/english/2006/Oct/184810.htm (Last visited on Nov. 13, 2009).

was unable to obtain a larger sample and access more doctors in this fieldwork, not just due to limited time of PhD study and the short period of data collection in China as mentioned, but also several other factors. The reasons for the small sample for the questionnaire survey are as follows: getting approval from relevant authorities is unavoidable when conducting large-scale social research in China. Although authorisation might have allowed me to access a large pool of respondents, it would bring more uncertainty to the fieldwork management. Not only would my research questions be scrutinized, but the way I planned to conduct the research would also be subject to political guidance. The frequent need to obtain authorisation from the relevant authorities when undertaking interviews and questionnaires would make it difficult for me to retain direct control over the data collection activities.

Moreover, I worried that, once I finally received the governmental permission, my academic research might be tainted by this top-down approach, at least in the eyes of potential participants who might confuse this fieldwork with a governmental survey. Informed consent to participation might be misunderstood by research subjects as a forced duty. This problem was compounded by a lack of guarantee that subsequent studies would not be disrupted or challenged by the governmental department, especially since my research was supported by a foreign university. There is a lack of transparency about what is permissible in a social survey in China (Jacobson, 1991). Manion has noted that “sampling is not the only serious obstacle to survey research in

the People's Republic of China. Many other problems challenge the ingenuity of social scientists in adapting standard methods to distinctively non-standard conditions" (1994: 139). Given the considerations outlined above, I decided against a large-scale nationwide random sample using a relatively small-scale approach, but decided to use snowball sampling in order to access different hospitals and healthcare institutions by means of existing relationships. Though the limitations of this survey method meant that the fieldwork could not provide a full picture that represented all Chinese medical professionals, I was attempting to gain theoretical and empirical insights, rather than statistical reliability. Consequently, my hope was that these small-scale "local" survey samples could serve as a "snapshot" of the thoughts of a number of contemporary Chinese healthcare practitioners and get at least a few doctors' voices heard, so as to end this group's long-term silence. However, statistical reliability is important. Consequently, since the sample size was relatively small, further larger studies are required to confirm the results of this study.

Hence, this study provides a preliminary social investigation that looks at Chinese doctors as a group; the difference and diversity between doctors (such variables as the time taken for diagnosis, and work pressures) was not examined. Further, doctors' over-prescribing behaviour in their own setting was not directly observed. The Chinese province of Shandong has the second highest population in China, one of the strongest economies, and some of China's best resources in terms of healthcare,

healthcare management and policy implementation. In contrast, several provinces in western China are significantly poorer and are far weaker in these areas. This means that in order to get a clearer overall picture of Chinese doctors' views, it would be necessary to include samples from these provinces, too.

Conclusion

Carrying out research on the social causes of over-medication in China is not an easy task. This chapter has outlined the research methodology employed and the underlying principles of the research investigation. It has attempted to combine the research concerns with the theoretical insights into research practice developed in the previous chapter. This chapter has also described the principles that guided the investigation of this research, and presented the empirical strategies used for data collection. I have argued that using semi-structured interviews and questionnaires supplements the current tendency to analyse over-prescription using quantitative data and provides a more comprehensive approach to the research on over-prescription.

Moreover, the research has attempted to clarify important factors, including medical interventionism (prescribing privileges), professional knowledge (how, what, and which drugs are to be prescribed or used) and financial incentives (the profit-chain of selling drugs). In Chapters 5 and 6, I mainly review and discuss documents and

literature obtained from government and non-government sources. Using these data sources has allowed me to explore the research topic and research questions which I had not previously anticipated and has provided me with new avenues to explore. In Chapter 7, findings and results of both qualitative and quantitative data will be presented to explain the social causes of over-prescription in China.

CHAPTER 4 – CHINA'S HEALTHCARE SYSTEM IN HISTORICAL CONTEXT

Introduction

The history of the healthcare system and the evolution of healthcare policy in any society is largely the product of social, economic, and political processes unique to that society (Anson and Shifang, 2005: 10). This chapter situates the healthcare provision and healthcare policy evolution in the larger context of China's economic and political transition. It provides a dense and essential historical presentation that sets the scene for further discussion in the following chapters. Such a presentation is important because the issue of over-prescription or over-medication to be discussed in the following chapters is embedded in and highly related to the historical context of China's healthcare provision and healthcare policy.

China is the third largest country in the world by total area, covering about 9.6 million square kilometres, and China is also the world's most populous country (about 1.3 billion). According to a UN report, China represented about 20% of the world's total population (6.7 billion) in 2010, so one in every five people on the planet is a resident of China (UNFPA, 2010). China's population is distributed over 23 provinces, five autonomous regions (Xinjiang, Tibet, Inner Mongolia, Guangxi and Ningxia), four municipalities directly under the central government (Beijing,

Shanghai, Tianjin and Chongqing) and two special administrative regions (Hong Kong and Macao) as shown in Map 4.1 below.

The provinces possess a high degree of fiscal independence and are themselves divided into 2182 counties (averaging 400,000 residents), 47,000 townships (averaging 18,000 residents) and 740,000 villages (averaging 1000 residents) (CPDRC, 2010). Therefore, on average, each province has 69 counties, each county has 22 townships, and each township has 16 villages, but there are large variations between provinces.

Map 4.1: Map of China: Location of provinces, autonomous regions and municipalities

In 1949, China's population was only about 541 million, and the population grew significantly through the following decades to more than 1 billion in the early 1980s (Shi, 1993: 725). China is the largest agricultural country in the world with nearly 80% of its population living in rural areas in the early 1980s. However, urbanisation in the People's Republic of China also increased rapidly after the initiation of the reform and "opening-up" policy since 1978 (see Map 4.2). As the criteria for what constituted an urban area were changed from 1984, in most cases, people who live in county seats and in many smaller towns are now classified as urban residents (Shi, 1993: 723) and in the following years, the proportion of the population defined as urban increased substantially. By 1990, the rural population was about 74%, which declined to about 64% in 2001. At the end of 2010, China's mainland (excluding Hong Kong and Macau) total population reached 1.37 billion, with over 665 million (49.68%) and 674 million (50.32%) residing in the rural and urban areas respectively (CPDRC, 2010). Meanwhile, with the decreasing rural population and increasing urban population, China's main industrial focus and economic activity also moved from the rural to urban areas. China's population will have about an equal number of people residing in the rural and urban areas by the end of 2015 (UNFPA, 2010).

Map 4.2: % Urban population 2007 by province in China

China's healthcare system in historical perspective

The history of the healthcare system and the evolution of healthcare policy in any society is largely the product of the interaction of social, economic, and political processes unique to that society (Anson and Shifang, 2005: 10). Ongoing changes in these conditions guide the development of health and health services in a community. In this chapter, I describe the healthcare provision and healthcare policy evolution in the larger context of China's social-economic transitions. This provides a historical overview and perspective that sets the scene for further discussion in the following

chapters. Such an overview is important because the issue of over-prescription and over-medication discussed in the following chapters involves and is highly related to the historical context of China's healthcare provision and healthcare policy.

The year 1978 may be considered as a watershed: this year saw the first major socio-economic transition in China's healthcare system since 1949 (the year of the establishment of the People's Republic of China). Until 1978 government power and authority in China was centralised, and most urban residents in China were covered by the state-run health insurance scheme. The government was responsible for almost all the healthcare costs for the people, and healthcare for most urban Chinese workers was extremely affordable and essentially guaranteed (Economic Intelligence Unit, 1998: 17). Post-1978, the second major socio-economic transition occurred in China when the healthcare provision system moved towards a new era as China was heading towards transition into the market economy. The government decided to decentralise responsibilities in healthcare financing and healthcare management. It gradually retreated from its role as a universal healthcare provider, with the responsibility for state-owned hospitals devolved to local and regional authorities and state-owned hospitals made responsible for their own profits and losses (Wang *et al.*, 2007a: 7). Following the significant post-reform reduction in direct subsidies from the government, the remainder of the funding required was generated by user fees and reimbursements from the country's healthcare insurance schemes (ibid.). However,

while the two major socio-economic transitions can be divided into three major phases based on the different aims or focus of healthcare reforms, other divisions can also be identified, and the timing and characteristics of each phase varies in different parts of the country. The three major phases are as follows.

The state-centred phase (1949–1978)

Before the establishment of the People's Republic of China (PRC) in 1949, the Chinese had suffered from centuries of feudalism, colonialism, war with Japan, and civil war. The country was troubled with many problems such as social and political turmoil, inadequate sanitation, housing problems, poverty, famine, serious flooding and so on. In particular, the conflict with Japan and a protracted civil war had greatly weakened the healthcare system. Before 1949, the health status of the Chinese population was extremely poor and healthcare resources were very scarce. For instance, infant mortality was about 200 deaths per thousand (20%) live births (Wang, 2004: 7) and maternal mortality was at 150 per 100,000 (Anson and Shifang, 2005: 11). The average life expectancy at birth in China was only around 30 years (MOH, 2006).

Although social and economic stability was regained and improved after the founding of the PRC, the country was still in extreme poverty. President Mao Zedong

established socialist rule, the basis of which was the communist ideology of Marx, Engels and Joseph Stalin. Mao Zedong made a concerted effort to reduce inequality and to achieve welfare for all by instituting a universal welfare system. The "Four Principles" relating to nationwide welfare and healthcare provision were introduced. These were: 1) Healthcare should be provided by publicly owned and financed health services; 2) Healthcare provision should integrate both traditional Chinese medicine and Western medicine; 3) Priority should be given to public health, with special attention to the prevention of communicable and infectious diseases and to mother and child care; 4) Healthcare should be combined with health campaigns aimed at eradicating endemic infectious diseases and be supported by health education presenting the benefits of personal hygiene and nutrition (Mwabu *et al.*, 2001: 307).

Following the model of the socialist economies, the government gradually took over all healthcare services. The Ministry of Public Health became responsible for all healthcare activities and established and supervised all facets of health policy. Along with a system of national, provincial-level and local facilities, the ministry regulated a network of industrial and state-owned hospitals and other facilities covering the health needs of workers of these enterprises. In 1950, the First National Health Conference enacted the general healthcare guidelines for "serving workers, peasants, and soldiers; putting prevention first; and developing both Western and traditional medicine" (Chen, 1985, cited in Shi, 1993: 724). As a result of China's large rural

population, it is not surprising that the first guidelines emphasised the need to serve rural peasants along with urban workers. The guidelines also introduced a centralised three-tier delivery system, made all health providers state employees, and linked healthcare work with mass movement, such as the use of mass mobilisation campaigns.

The organisation and funding of urban and rural healthcare services were fundamentally different: urban healthcare services were mainly provided at government-funded hospitals, but the basic rural healthcare services were provided at village and township clinics by the commune-based cooperative medical system (CMS) (Ma, 2008). Mao invented China's industrial and agricultural "work units" and created the CMS to cover the healthcare provision of the "work units". CMS is a financing and delivery system in rural China that aims at providing preventive services, primary care and curative services. In urban areas, two types of health insurance schemes, namely the Government Insurance Scheme (GIS) and the Labour Insurance Scheme (LIS) were introduced in 1951. The former covered the state cadres and students, which accounted for 2% of the population in China. The latter covered 100% of medical expenses of workers and employees from factories and firms and 50% of the expenses of their family members (Chen, 2001: 460).

The emphasis in health policy from the beginning of the 1950s was on public health and preventive treatment rather than curative medicine on the premise that preventive medicine is “active” while curative medicine is “passive”. At that time the Party began to mobilise the population to engage in mass “patriotic health campaigns” aimed at improving the low level of environmental sanitation and hygiene and attacking certain diseases. One of the best examples of this approach was the mass assault on the “four pests” (i.e. rats, sparrows, flies, and mosquitoes) and on schistosoma-carrying snails. In addition, particular efforts were devoted in the health campaigns to improving water quality through such measures as deep-well construction and human-waste treatment.

As a result of preventive efforts, such epidemic diseases as cholera, plague, typhoid, and scarlet fever have been almost eradicated in China. For example, the mass mobilisation approach proved particularly successful in the fight against syphilis, which was reportedly eliminated by the 1960s. The incidence of other infectious and parasitic diseases was also reduced and controlled, and there was a relaxation of certain sanitation and anti-epidemic programs since the 1960s.

As part of the healthcare effort, many new medical and nursing schools were established throughout the country, although most graduates worked in urban areas. With the exception of massive famines during the period known as the Great Leap

Forward (1958–60), the health of the nation advanced dramatically, mainly because of improved sanitation, water quality, and nutrition. In 1965, Mao called upon the Ministry of Public Health to make concerted efforts to promote rural healthcare (Sidel and Sidel, 1984; Rifkin, 1973). The period known as the Cultural Revolution (1966–76) was one in which all institutions in the country were profoundly affected by upheaval when different factions vied for political control and the provision of healthcare became part of the process of politicizing the population (Phillips, 1998). Universities and medical schools were closed for five years and their students and faculty members sent to the countryside (Hesketh and Wei, 1997).

In this period, Mao initiated the plan of "barefoot doctors" in which urban doctors en masse were regularly sent to rural areas and gave three to six months of medical and paramedical training to tens of thousands of peasants and urban youth who provided preventive and basic health services to rural residents (Zhang and Unschuld, 2008). As a result, the first tier of healthcare comprised "barefoot doctors" working out of village medical centres (clinics) in rural areas, which became integrated into the "rural collective health system" or "rural cooperative medical system" (RCMS). In other words, this initiated a system under which the village collective ran and financed the clinics, paying the "barefoot doctors" to provide medical care to the villagers, and this established the primary healthcare model and dominant healthcare system at the grass-roots level (Goldstein, 1986). Medical expenditures at higher

levels could also be reimbursed up to a certain percentage. Health statistics were politicized, so little reliable data on the status of the nation's health over this period is available. However, it made primary healthcare services accessible from the "barefoot doctors" or other health workers, and strengthened the status of the commune health centre and the training of its personnel (Chen, 2001: 459).

The "barefoot doctors" provided preventive and primary care services, with an average of two doctors per 1,000 people. At the next level were the township health centres, which each functioned as out-patient clinics for about 10,000 to 30,000 people. These centres each had about 10 to 30 beds, and the best qualified members of the staff were assistant doctors. The two lower-level tiers made up the RCMS that provided most of the country's medical care. Only the most seriously ill patients were referred to the third and final tier, the county hospitals, which served 200,000 to 600,000 people each and were staffed by senior doctors who held degrees from five-year medical schools.

Healthcare in urban areas was provided by paramedical personnel assigned to factories and neighbourhood health stations. If more professional care was necessary the patient was sent to a district hospital, and the most serious cases were handled by municipal hospitals. To ensure a higher level of healthcare, a number of state

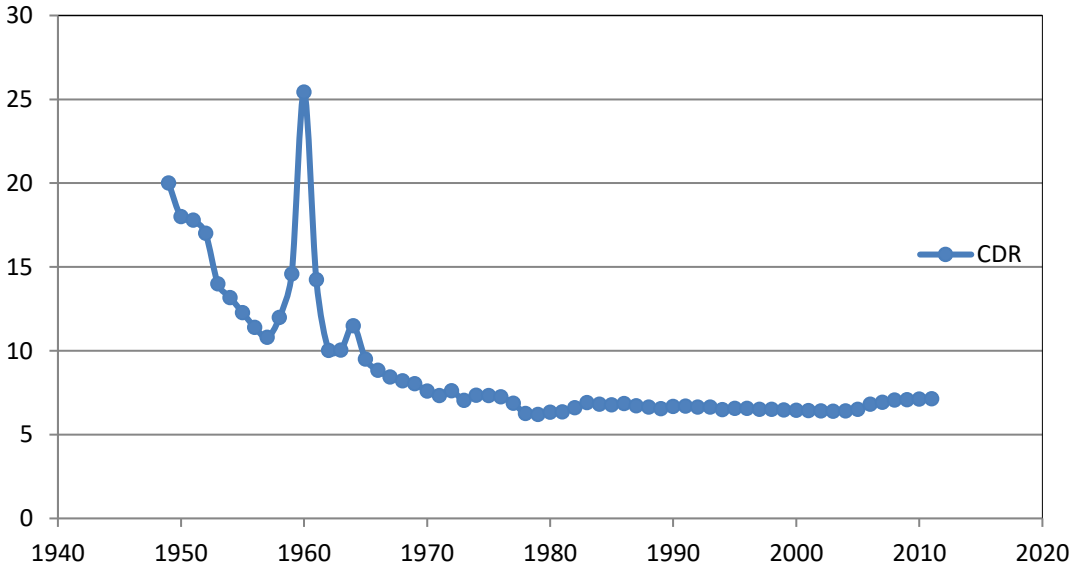
enterprises and government agencies sent their employees directly to district or municipal hospitals, circumventing the paramedical, or “barefoot doctors” process.

In fact, one of the most remarkable achievements of the Maoist era (from 1949 to 1976) in health work was the significant improvement in access to healthcare for China’s citizens, especially those living in the rural areas and the urban poor. Healthcare provision was greatly decentralised and diffused throughout the countryside and city neighbourhoods during this era. The rapid economic growth that epitomized the first stage of the post-1949 Chinese society can be, in part, attributed to the decision of the Chinese government to “democratize” healthcare, with “barefoot doctors” and health clinics widely available to segments of the Chinese population that had never had such access before.

Through this state-centred phase (1949–1978) China’s healthcare system significantly improved the health of the people. According to the official death rate, China’s mortality rate declined dramatically from 1949. Figure 4.1 below shows that the crude death rate (CDR) decreased from 20 to 6.25 per 1000 population from 1949 to 1978. The mortality rate in China has decreased considerably over the past 62 years, especially in the early years of the People’s Republic. A sudden and continuous decline of the CDR from 1950 saw mortality rates reduced by almost half from 1949 to 1957. In 1957 the CDR was 10.8 deaths per 1,000 people, but between 1958 and

1961, mainly because of policy errors during the Great Leap Forward and nationwide natural calamities, China experienced a period of famine that led to excessive numbers dying and a large increase in the CDR, reaching a maximum figure of 25.43 in 1960. However, after the crisis period (1958–61) there was another period of improvement. As the country recovered, mortality levels steadily declined once more with the CDR dropping below 8 (7.6) by 1970, below 7 (6.87) by 1977, and reaching its minimum level of 6.21 by 1979. Since the 1980s the CDR has maintained this level with small fluctuations in 1990s and 2000s, though the recorded CDR in China for 2011 was 7.14 per 1000, which is among the lowest in the developing world.

Figure 4.1: China's crude death rate (CDR), 1949–2011

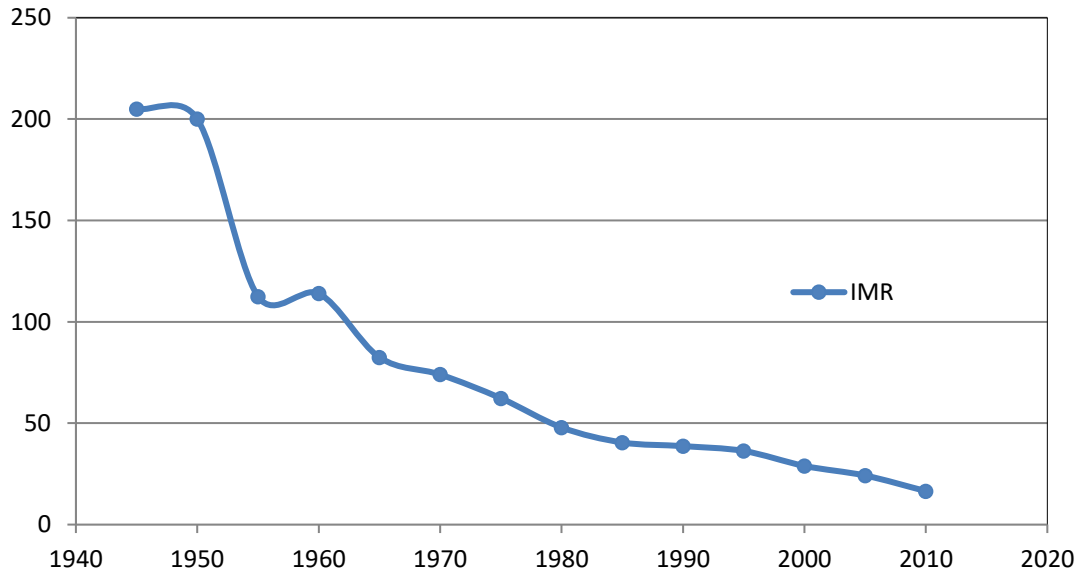


Source: National Bureau of Statistics, PR China (NBSPRC) (*China Statistical Yearbook*, 2011).

The infant mortality rate (IMR) is an important indicator because it relates not only to health and mortality, but also to the level of development of a nation, since it is very

sensitive to socio-economic changes and to women's education levels. The infant mortality rate (IMR) in China has also declined dramatically from about 200 deaths per 1000 live births (20%) before 1949 to the current level of 1.65% in 2011, which compares favourably with the average for middle-income countries, which is 3%, and the world average IMR, which is 4.4% (Wang, 2004: 7). The infant mortality rate has dropped rapidly over the last six decades, with the greatest reduction occurring in the 1950s and 1960s; although the IMR slightly increased around 1960 (due to Great Leap Forward and three years' famine) the considerable achievement of a continuing IMR decline between the 1960s and 1970s, with decrease having further progressed since the 1980s as shown in the Figure 4.2 below. Based on these indicators, the general health status of China's people now matches the level of a middle-income country.

Figure 4.2: China's infant mortality rate (IMR), 1945–2010

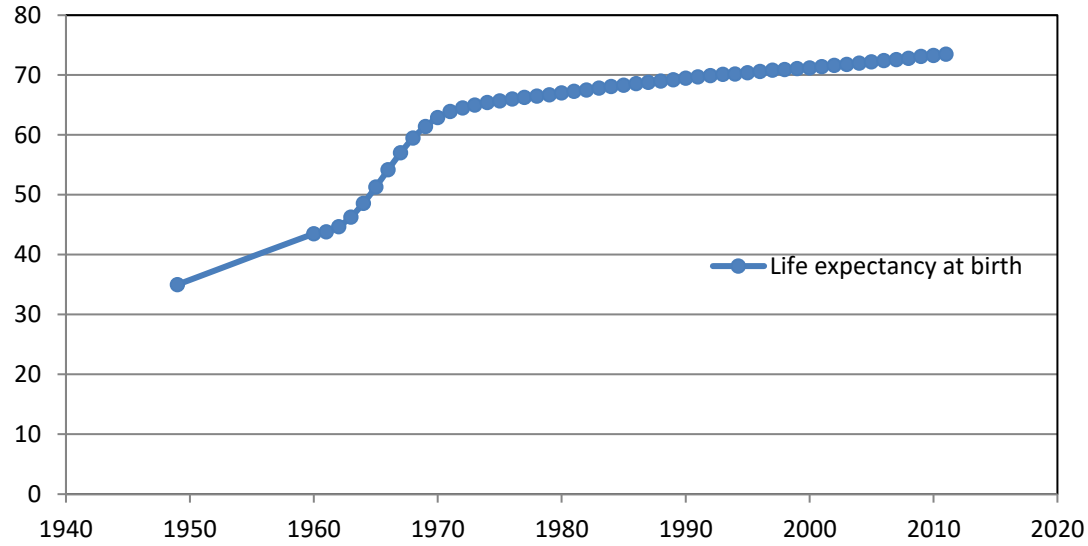


Source: National Bureau of Statistics, PR China (NBSPRC) (*China Statistical Yearbook*, 2011).

Early programmes focused on relatively inexpensive goals and campaigns, such as local environmental clean-up programmes and training programmes for local health personnel that contributed to lower mortality. However, China's mortality rate decline was interrupted at several points by temporary but often severe disruptions tied to political, economic, or social changes (e.g. the Great Leap Forward).

China's government officials often proudly point out that China's life expectancy has increased more than twofold, from a mere 30 years before 1949 to over 73 years by 2011, where male and female expectations are 71.79 years and 75.27 years respectively, higher than the average for the whole world (65 years) and for middle-income countries (69 years). As shown in Figure 4.3, the significant increase in average life expectancy was mostly achieved before 1978 (during the Maoist era): average life expectancy between 1949 and 1978 increased by more than 30 years, from about 35 to nearly 67 years. However, the average life expectancy increase has considerably slowed since 1980s, causing a mere 6.2-year increase, from 67.3 to 73.5 years, over a period of three decades from 1981 to 2011 as shown in Figure 4.3. However, the higher life expectancy rises, the harder it is to make further gains and the more slowly it increases, underlining the marked increase of average life expectancy in China during the period of state-centred healthcare system.

Figure 4.3: Average life expectancy at birth in China, 1949–2011



Source: National Bureau of Statistics, P.R China (NBSPRC) (*China Statistical Yearbook*, 2011).

The healthcare system during the Maoist period was evaluated by the World Bank and the World Health Organization as the most efficient system in the world (Wang *et al.*, 2007: 11). The size of China's GDP was undoubtedly much smaller and income per capita was much lower, compared with that in the period of socio-economic reforms post-1978. However, by the end of the 1970s, China had emerged as a country with a relatively comprehensive healthcare system covering nearly the entire population. China's human development index (HDI) was much better than its economic level might indicate by world standards.

The government-led healthcare system focused on the prevention and eradication of infectious diseases – "prevention first", as opposed to "treatment first". It relied on

mass mobilisation in health education and public hygiene improvements, by creating a nationwide healthcare framework composed of urban public health and rural cooperative healthcare systems. By shifting the healthcare (medical) resources from urban complexes into the countryside and encouraging health professionals to work in rural areas where most people lived, China was able to provide low cost and decent healthcare services to the population.

These experiences, later known as the “China model”, created a low cost and wide coverage primary healthcare system, which set an example of successful health work for developing countries. The China model allowed the country to provide basic healthcare services and to maintain rapid and steady health improvement with 3% of its GDP spent on health, thanks largely to its effective institutional arrangements. However, despite these significant achievements, China’s healthcare system has since become market-oriented and is facing new problems. From a social policy perspective, changes in the healthcare system not only reflect health reform measures, but also the impact of the general economic reforms. China experienced three decades of Maoist-style Communism, followed by three decades of economic and structural reform since 1978.

Healthcare early reform phase (1978–1990s)

The first phase of healthcare reform was the early reform period (1978–1990s) following the "opening-up" policy initiated by former Chinese leader Deng Xiaoping in 1978. China's economy entered into a new era of post-Mao socialism, which is also described as the period of transformation from a planned economy to a market-oriented economy. It was this era of rapid economic development, decentralisation of political and economic power, and opening up to the global economy that fundamentally transformed the social, economic and political life the nation, including the framework of China's healthcare system in ways that affected the population's health. China's Ministry of Health (MOH) launched market-oriented reforms in 1985, to gradually decentralise responsibilities in health management and regional development, to expand existing facilities and to improve productivity through financial incentives to medical staff as well as to encourage individual responsibility towards healthcare (Wang *et al.*, 2007: 138).

The basic principles of healthcare policy developed over the previous three decades remained the same. The three most important principles for health development in the 1980s implied the continuation of previous policy: (1) To further strengthen and improve both urban and rural primary healthcare services; (2) To put into effect the principle of "prevention first" and reinforce disease prevention and control; and (3)

To develop and promote traditional Chinese medicine and its integration with Western medicine.

According to Dong (2003), the reform resulted in three major changes in the healthcare system. First, it limited the public funds for healthcare by covering only basic wages of personnel and new capital investments, consequently allowing the private market to play a role in the healthcare sector. Second, the government gave hospitals and other health providers a large degree of financial independence and autonomy, with hospitals allowed to make profits through the provision of medical service and sales of pharmaceutical products. Third, the government also allowed private ownership of health facilities and private medical care practices.

The first and most important stage of economic reforms was a fundamental transformation of the rural healthcare system in 1987. The decollectivization of agriculture resulted in a decreased desire on the part of the rural populations to support the collective welfare system, of which healthcare was a part. Surveys showed that by 1984 only 40%–45% of the rural population was covered by an organised cooperative medical system, as compared with 80%–90 % in 1979 (Zhou, 2005: 70). A series of important factors contributed to this shift in the rural healthcare system. The lack and limitations of financial resources for the cooperatives led to a fall in the number of “barefoot doctors”, which meant that health education, primary

and home care suffered, and in some villages sanitation and water supplies were checked less frequently. Also, the failure of the cooperative healthcare system limited the funds available for continuing education for "barefoot doctors", thereby restricting their ability to provide adequate preventive and curative services. The costs of medical treatment increased, preventing some patients from obtaining necessary medical attention. If the patients could not pay for services received, then the financial responsibility passed to the hospitals and commune health centres, in some cases creating large debts. The ownership of health services remained public, but financing was gradually privatised (Blumenthal, 2005; Ma, 2008).

Consequently, in the post-Mao era of modernization, rural areas were forced to adapt to a changing healthcare environment. Many "barefoot doctors" went into private practice, operating on a fee-for-service basis and charging for medication. Hence, with the replacement of the prevention-focused rural Cooperative Medical System (barefoot doctors) by under-trained fee-for-service village doctors, who had no incentive to provide preventive services, many families could not afford healthcare and few had medical insurance to protect them from disastrous medical expenses. However, soon farmers were asking for better medical services as their incomes increased, thus bypassing the "barefoot doctors" and going straight to the commune health centres or county hospitals. Moreover, a number of "barefoot doctors" left the

medical profession after discovering that they could earn a better living from farming, and their services were not replaced (ibid.).

A standardised examination was established in the mid-1980s for all "barefoot doctors" (MOH, 1986 & Huang, 1988). All those who passed the examination were given the new title of "country doctor" and licensed to practice medicine, and those who did not pass usually became farmers. There was also a great increase in the number and quality of healthcare personnel in China, although there were still extensive shortages in 1986. There were only 33,000 nurses and 363,000 practising doctors in 1949, but the numbers had increased dramatically to 637,000 nurses and 1.4 million doctors by 1985. Some 436,000 doctors' assistants were trained in Western medicine and had two years of medical education after junior high school. Official Chinese statistics also reported that the number of paramedics rose from about 485,400 to more than 853,400 between 1975 and 1982. The number of students in medical and pharmaceutical colleges in China increased from approximately 100,000 to about 160,000 between 1975 and 1982 (Rao, 2006: 45).

Efforts were also made to improve and expand medical facilities. The number of hospital beds increased from 1.7 million to 2.2 million between 1976 and 1984, which was equal to 2 beds per 1,000 in 1981 compared with 4.5 beds per 1,000 in the US. The number of hospitals rose from 63,000 to 67,000 between 1976 and 1984, and

the number of specialized hospitals and scientific research institutions doubled during the same period (ibid.: 47).

The availability and quality of healthcare varied widely from city to countryside. According to 1982 census data, the crude death rate in rural areas was 1.6 per 1,000 higher than for urban areas and life expectancy was about 4 years lower. The number of senior physicians per 1,000 population was about 10 times greater in urban areas than in rural areas; national expenditure on medical care was more than 26 (yuan) per capita in urban areas and less than 3 (yuan) per capita in rural areas (Song, 2009: 15). There were also around twice as many hospital beds in urban areas as in rural areas. These are aggregate figures, but certain rural areas had much better medical care and nutritional levels than others.

Furthermore, the emphasis on healthcare services was also reflected in the specific objectives of the government. In 1992, the State Council initiated another round of healthcare reforms through the enactment of the decree “Decisions of Deepening Healthcare Reform”. The government continued to appeal to hospitals to be responsible for their own profits and losses and improve their productivity through medical services and pharmaceutical incomes. The total healthcare budget as a proportion of national expenditure declined from 3.1% from 1980–85 to 2.54% in 1995; government subsidies to healthcare institutions decreased as well, from 20.5%

in 1980 to 11% in 1994; the share of government input of healthcare spending, which comprises government, society and individual input, also decreased, from 36.38% in 1980 to 16.97% in 1995 (Mwabu *et al.*, 2001: 279).

Health service price adjustment was enforced along with the healthcare reform. Instead of government subsidies, the income from medical services provision became one of the most important sources of hospitals' revenue. The proportion of medical service income constituted 38% of hospitals' revenue in 1995 compared with 17.6% in 1980 (Mwabu *et al.*, 2001: 279). At the same time, the market economy transition reached the pharmaceutical industry. Pharmaceutical companies no longer relied on the government's production plan; instead they produced pharmaceutical products according to the demand of the market. The retreat of government distribution networks also boosted efficiency and effectiveness in pharmaceutical products' distribution. The government had previously organised the drug distribution network, but since the 1980s, drugs have been sold through distributors or directly from manufacturers and the length and cost of the drug distribution chain has been greatly reduced (Dong *et al.*, 1999a).

To sum up, while the Chinese government has basically espoused healthcare principles built on earlier policies, substantial changes have occurred in rural health policy since 1978. The fee-for-service system has replaced the cooperative medical

system and many collectively employed “barefoot doctors” have now become private practitioners. The healthcare delivery system is based on market mechanisms, exacerbating the disparity between rural and urban health. The existing problems in both urban and rural health system include a rapid increase in healthcare expenditure; an increasing share of personal income spent on healthcare; decreases in government health input and health insurance coverage; limited access to healthcare service and resources; high medical expenses but poor service qualities and health inequality in both regional and economic sectors.

These problems are symptoms of the absence of government activity to insure people’s basic healthcare needs, the weakness of the public health system, the inefficiency of the three-tier health system, the lack of government regulations, and failures of the healthcare market. Consequently, after 30 years of economic reform, China’s healthcare system has not improved as much as the economy has. Instead, it has deteriorated in many respects: patients, providers and government are all unsatisfied and medical costs are escalating significantly and rapidly.

Healthcare late reform phase (1990s to the present)

The new healthcare market is far from mature, and in the absence of an effective management system and self-regulation, China’s medical system has come under

strain and suffers from internal conflict. Studies in this field thus far have shown that China's healthcare sector has encountered deep problems since the market reforms were initiated.

Structure of the current healthcare system

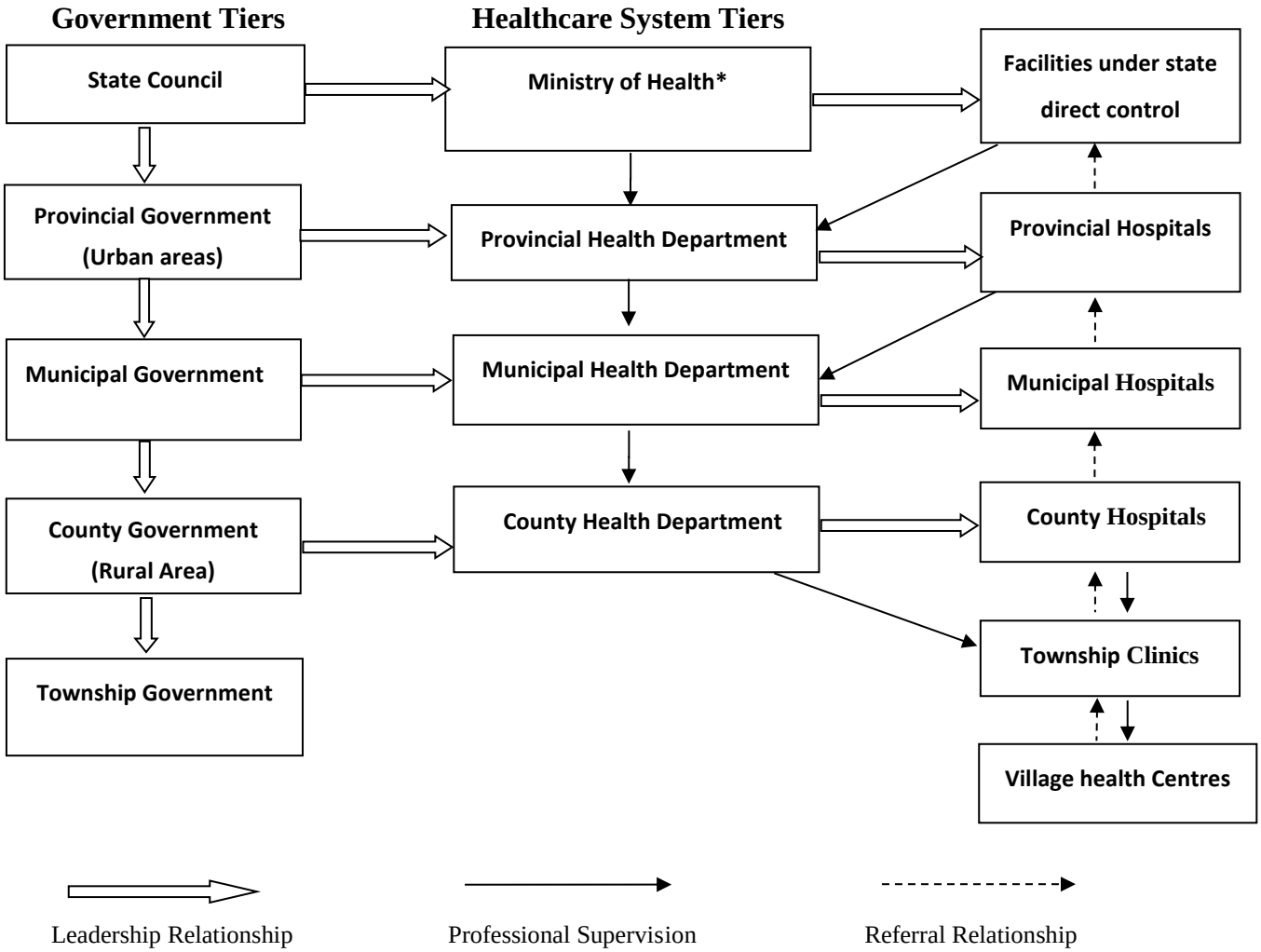
In the late reform period (1990s to the present), China's healthcare reform has been deepened and extended in the sense that more radical mechanisms and policies have been introduced. Current healthcare is provided in both rural and urban areas through a three-tier system. Figure 4.4 illustrates schematically the current Chinese healthcare system, and the management structure of the government healthcare system. To some extent, it can be described as "dual control" with control by government units along with supervision by the professional health units to transmit orders and regulation to the lower level of departments, clinics and health centres. The State Council is the prime governmental body responsible for national policies regarding all China's 23 provinces, four municipalities and five autonomous regions, and has direct jurisdiction over them. Power relations between the State Council and the provinces fluctuate, although usually the centre remains dominant. However, since the mid-1980s a degree of fiscal decentralisation has occurred and provinces have had more control over their budgets. The State Council itself remains heavily influenced by the Communist Party, which maintains a structure that parallels the organs of government

from the central to local level. The extent and force of Party control is a controversial issue in China but there is no doubt that its power remains paramount (Hillier and Shen, 1996). A corresponding, lower-level urban structure is the prefecture or city government. The latter is a development of the 1980s and represents the wish to promote more efficient administration for large urban centres by separating their government from that of the province. Directly below the municipal government is the county government. The county exercises supervision over the tier below, which is the township. Independent township governments are also a product of administrative reform and have replaced the communes. The basic administrative unit and the lowest in the hierarchy is the village.

The MOH/NHFPC is at the top of the pyramid and is accountable to the State Council. The MOH/NHFPC holds a central budget and directly dominates and finances medical schools, some hospitals and specialized research institutions. Through special agencies it coordinates task forces concerned with the eradication of infectious and parasitic disease and the support of maternal and child health; these agencies are, however, usually administered locally. The MOH/NHFPC has a relatively small capital building programme. Each tier, down to the county level, has a Department of Health. Most township governments have financial responsibility for village clinics and health centres, which provide preventive and primary health

services, but from the bottom level these facilities are directly supervised by the upper level facilities up to county level.

Figure 4.4: Overview of governmental and healthcare system tiers in China



* Note the Ministry of Health (MOH) was reformed and named the National Health and Family Planning Commission (NHFPC) in 2013.

At the provincial or municipal level, there are several advanced large public hospitals funded by the state, and richer provinces and municipalities may have more of these

because people increasingly demand healthcare services in richer provinces or cities, and the government aims to relieve the pressure on overburdened healthcare services in urban China (Wagstaff *et al.*, 2009a). Also at this level, there are institutions involved with maternal and child health, maintaining pharmaceutical standards and the prevention of epidemics. The capital city of a province will generally have a university or middle-ranking medical school and other medical institutions involved with training healthcare professionals. At the county level, the government health department manages one or more county hospitals and one traditional Chinese medicine hospital (Hillier and Shen, 1996). Moreover, at county level there are also smaller medical schools for training rural doctors, an agency for the prevention of epidemics and an agency involved with maternal and child health exists also. A township usually has a small hospital, mostly staffed by doctors who may have been trained at middle-ranking medical schools (Hillier and Shen, 1996). At the village level there is the small village clinic, staffed by a few village health workers, who were previously called “barefoot doctors” and are now known as “rural doctors” (if they are licensed) and commonly provide healthcare on a fee-for-service basis (ibid.).

In China, the government’s responsibility for provision and financing has shifted to emphasise local government institutions and individual households. (Skinner *et al.*, 2003). Regional healthcare planning providers try to satisfy requirements from the national government by setting guidelines for the allocation of healthcare resources

across the provinces, which have implemented various monitoring systems and control frameworks. An example of a primary care reform model was the Basic Health Services Project, implemented between 1998 and 2007 by the Government of China in 97 poor rural counties in which 45 million people live. Its aim was to encourage local officials to test innovative strategies for strengthening their health service, to improve access to competent care and reduce the impact of major illness. In particular it supported county implementers to translate national health policy into strategies and actions meaningful at a local level (Bloom *et al.*, 2009).

Government-owned city hospitals form the backbone of China's healthcare system. However, government health structures are not the only institutions involved in healthcare delivery. There are many large enterprises, such as the People's Liberation Army, who, as non-government providers, have their own medical schools, military hospitals and clinics that also serve the general public, and some large state-owned industries such as the railways also have their own hospitals (Bloom, 2005). These hospitals and medical schools are all controlled by their respective ministries rather than the MOH/NHFPC; they are still state-owned property but with more operational independence (Hillier and Shen, 1996). There are also growing numbers of private facilities and private hospitals and clinics and commercial pharmacies for the provision of healthcare services, and some evidence to show these are now playing a significant role in the provision of China's healthcare in rural areas (Lim *et al.*, 2002).

There has been little analysis of how the less-planned and less-regulated private health sectors affect the national health system (Huang *et al.*, 2009). Even though the MOH/NHFPC of China publishes yearly statistics on doctors, nurses, hospitals and beds for every province, there is limited data on the numbers and types of private hospitals.

Healthcare systems commonly involve the provision of services and their financing (WHO, 2000b). Medical institutions at provincial, municipal and city prefecture level are usually called “urban” in China, and those at county level (whose populations vary from approximately hundreds of thousands to one million) or below are referred to as “rural”, even though they may be located in a county town or local township.

Hospitals are categorised by both ownership (public or private) and tier (based on capability and responsibility levels) (IMS, 2014). Tier 1 medical organisations are mainly established in small cities and towns or in the countryside (e.g. town hospitals, health centres in the city, regional hospitals and the hospitals are run by mines and/or other enterprises). These provide primary care, including prevention, medical services, health maintenance, and rehabilitation services in the community. Tier 2 medical organisations are mainly the borough hospitals in the county, city or municipality directly under central government. These provide general medical services to multiple communities, with some teaching and research responsibilities,

and they constitute regional preventive technical centres, which form the centre of the three-level system. Tier 3 of medical service organisations are mainly the large (tertiary) hospitals of the provinces and big cities, and hospitals affiliated to medical colleges. These constitute the technical centres of medical and scientific research and teaching, which form the top of the three-level system providing high standard, specialized medical services across regions, with advanced teaching and research responsibilities (Hu, 2003; IMS, 2014)[5].

The three-tier system is designed to act as a referral chain from primary to secondary or tertiary care and a means of technical assistance from city health departments to the villages. For more serious illnesses, doctors refer patients to the second tier: township health clinics (rural) or county hospitals (urban). The most seriously ill patients are referred to the third tier: county hospitals or municipal-level hospitals. Such a system makes it possible to extend healthcare services rapidly to most localities (Chow, 2006).

Of more than 23,000 hospitals with official records, 58% are public hospitals. These account for 87% of total bed capacity, 91% of total hospital visits and 90% of total in-

[5] In addition to the three-tier system that recognises a hospital's ability to provide medical care, medical education, and conduct medical research (Primary (Tier 1), Secondary (Tier 2) or Tertiary (Tier 3) institutions), these three levels are further subdivided into three subsidiary grades (A, B and C) according to the level of service provision, size, medical technology, medical equipment, and management and medical quality.

patient stays in 2011, but their numbers are declining. Most private hospitals are by comparison small, accounting for only 9% of nationwide service volume, although their numbers are growing fast. According to MOH figures, the number of private hospitals increased from 5,400 in 2008 to 10,877 by the end of October 2013, but many of them are small in size. Sixty-five percent of all hospitals are general hospitals, accounting for 72% of bed capacity. The number of the top level Tier 3 hospitals is growing rapidly, showing an increase of 16.1% in 2012 (IMS, 2014).

Table 4.1: Number of out-patient and in-patient visits to various medical institutions, China, 2010

Medical institutions	**Out-patients (100 million)**	**In-patients (10, 000)**
Hospital	20.40	9524
Township health centre	9.01	3677
Community health centre	4.85	262
Clinic	0.66	11
Maternal and child healthcare institution	1.60	622
Specialized disease prevention and treatment institution	0.19	33
Other	0.04	45
Total	**36.75**	**14174**

Source: MOH, 2012a

As shown in Table 4.1, hospitals (including township health centres) accounted for most of the provision of healthcare services in 2010, including up to 80% of out-patient visitors and 93.1% of in-patient visitors. There is no system of general

practitioners (GPs), but each individual can go directly to any type of healthcare provider. In urban areas, patients typically go directly to a hospital out-patient department, and that department performs the function of the GP. In rural areas patients may also go to clinics or hospitals. It is possible to be transferred within the system (both horizontally and vertically) based on the choice of the patient. The determinants of patient choice are various, including individual preference, type of disease, insurance status and income.

A patient may have various preferences affecting his/her choice of the different levels of hospital; some patients may pay more attention to the hospital's reputation, and some may only care about the doctor's professional level. Patient preference may also differ according to other factors such as hospital/health centre location, the doctor's attitude, the medical procedure and its cost. In addition, an anxious patient may have a strong preference to go to a higher-level hospital, while a patient with low anxiety does not have such clear preferences (Tang, 2012: 1121). Secondly, as we would expect, those patients who need surgical treatment are more likely to go to higher-level hospitals than those who merely need medication, since the lower-level hospitals may lack high-tech medical facilities or experienced professionals. Also, a patient with a chronic disease seems to be more likely to visit higher level hospitals (Yip *et al.*, 1998: 320). And in rural China, the patients who are covered by the New Rural Cooperative Medical System (NRCMS) (see below) are more likely to choose a

county hospital than those without medical insurance, while in urban China, patients with basic medical insurance (BMI) or any kind of support from the government are more likely to choose a high level hospital in the city than rural or urban patients who are not covered under any medical insurance system (Yip *et al.*, 1998: 319). Consequently, we can predict that high-income patients are more likely to visit higher-level hospitals in China.

The financing of the current healthcare system

The "financing" of a healthcare system has an important effect on the use of medicines. According to the WHO (2000), the financing of healthcare consists of three interrelated elements: revenue collection, resource pooling and the purchasing of interventions. In most insurance schemes, revenue collection and pooling, which are traditionally known as the "insurance function", are integrated in one organisation and one process (ibid.).

Following the economic reforms during the 1980s, in China's health system power was devolved, leading to a weakening of the government role in healthcare financing. In particular, the responsibility for financing healthcare services has been transferred almost entirely to the local government (local governments currently account for about 90% of total government expenditure) (Tang *et al.*, 2008; Hougaard *et al.*,

2008). The health funds come from direct central taxation although local governments also collect tax and fiscally transfer a share to higher levels, while having full control over their own centrally allocated budgets (World Bank, 2002). Over the past three decades, China's total spending on health has increased rapidly from 143.2 billion yuan in 1980 to 1992.14 billion yuan in 2010. Overall, China is spending more and more on healthcare, having increased from 3.15% of GDP in 1980 to 5.01% of GDP in 2010 (MOH, 2011) (see Table 2), though this is still considerably less than Western countries. However, the share of government and social funding in the total health expenditure has been decreasing.

As shown in Figures 4.5 and 4.6, comparing China with Organization for Economic Co-operation and Development (OECD) Countries, in 2010, total health spending accounted for about 5% of GDP in China, which is much lower than the OECD average of 9.5%. Health spending as a share of GDP among OECD countries is highest in the United States, which spent 17.6% of its GDP on health in 2010. Health spending tends to rise with income, and generally countries with higher GDP per capita also tend to spend more on health. It is not surprising, therefore, that China also ranks below the OECD average in terms of health expenditure per capita, with spending of only 379 US Dollars (USD) in 2010, which is calculated based on purchasing power parity (PPP), compared with an OECD average of 3268 USD.

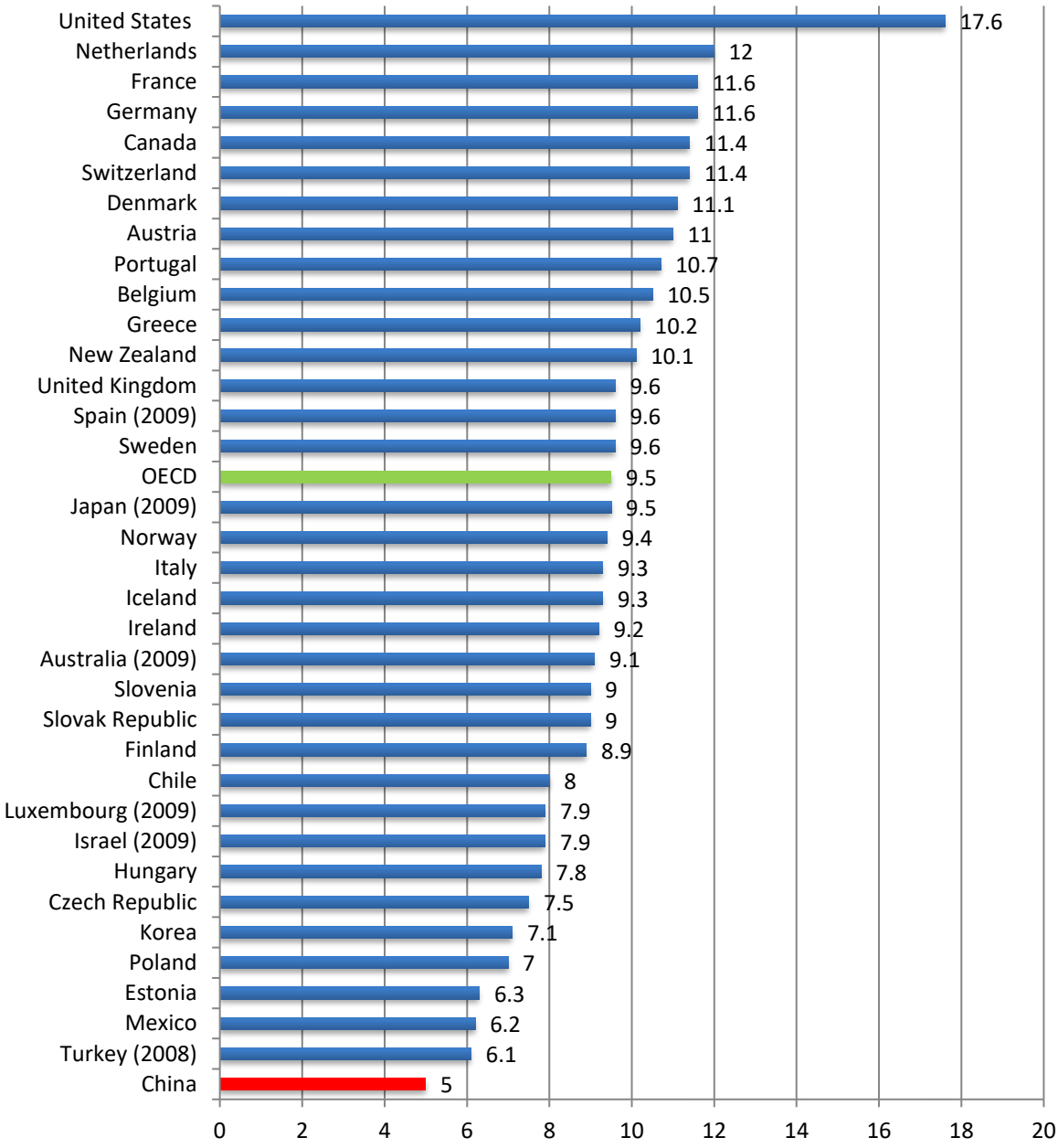
From Table 4.2 below, it is also important to note the trends in health financing between the allocation of government, social, and personal health expenditure since the beginning of the healthcare and economic reforms. Government funding covered in the total health expenditure declined from 36.2% in 1980 to 28.6% in 2010, with the historic low of 15.5% in 2000. The social funding (including enterprise units health expenditure, non-profit units health expenditure, administrative units health expenditure and rural collective health expenditure) in the total health expenditure declined from 42.6% in 1980 to 35.9% in 2010, with the historic low of 25.5% in 2000, The personal funding in total health expenditure rose from 21.2% in 1980 to 35.5% in 2010 with the peak of 59% in 2000. The increased share of personal out-of-pocket payment is partly due to the low coverage of healthcare insurance.

Table 4.2: Total health expenditure, China, 1980–2010

Health expenditures	**1980**	**1990**	**2000**	**2010**
Total health expenditure (100 million Yuan)	**143.2**	**747.4**	**4586.6**	**19921.4**
Government health expenditure	51.9 (36.2%)	187.3 (25.1%)	709.5 (15.5%)	5688.6 (28.6%)
Social health expenditure	61.0 (42.6%)	293.1 (39.2%)	1171.9 (25.5%)	7156.6 (35.9%)
Personal health expenditure	30.3 (21.2%)	267.0 (35.7%)	2705.2 (59.0%)	7076.2 (35.5%)
Urban total health expenditure	__	396.0	2624.2	__
Rural total health expenditure	__	351.4	1962.4	__
% of GDP	**3.15**	**4.00**	**4.62**	**5.01**
Per capita health expenditure (Yuan)	**14.5**	**65.4**	**361.9**	**1487.0**
Urban	__	158.8	813.7	__
Rural	__	38.8	214.7	__

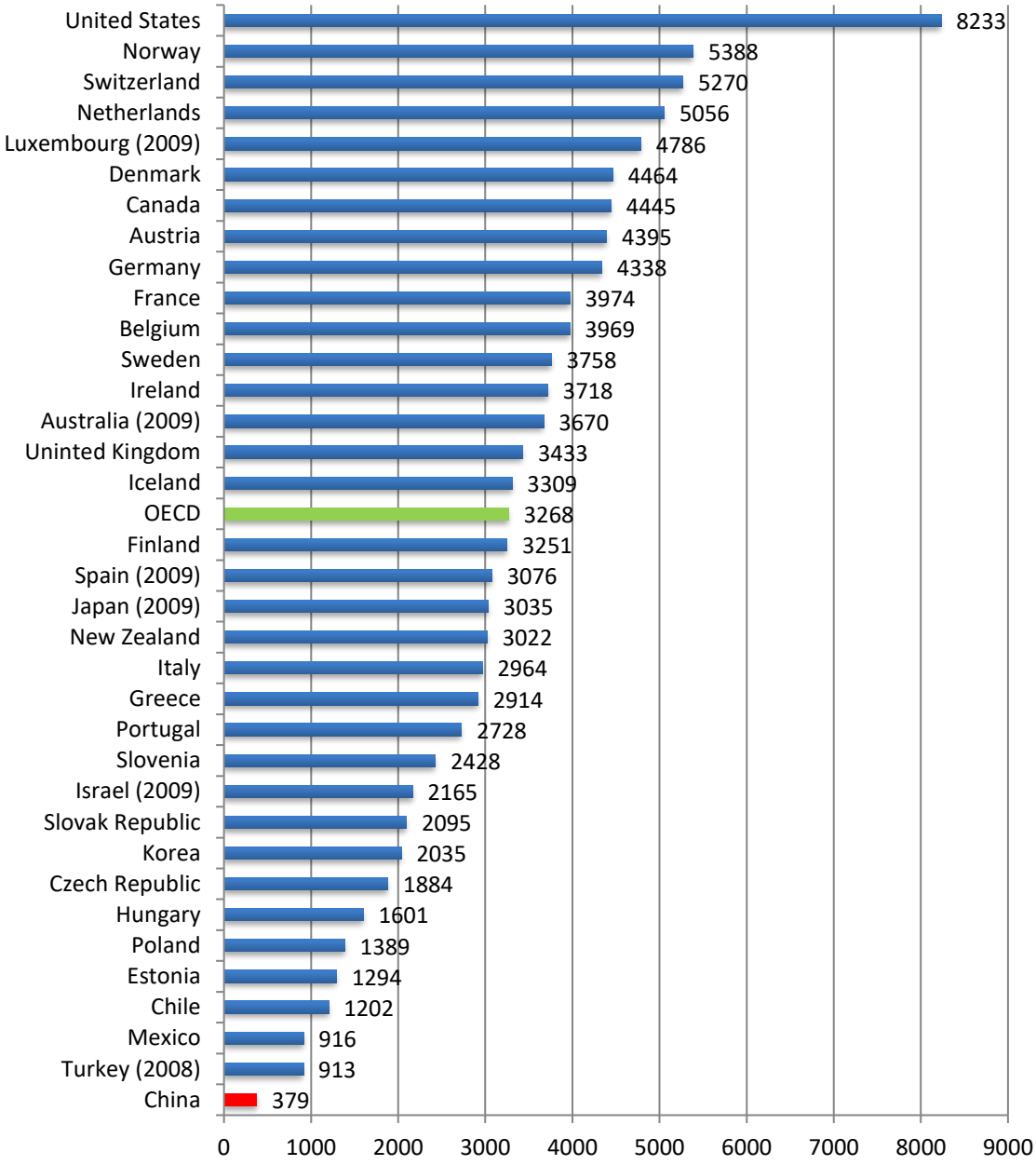
Source: MOH, 2012a.

Figure 4.5: Total health expenditure as a % of GDP, OECD Countries, 2010



Source: OECD, 2012 and MOH, 2011.

Figure 4.6: Health expenditure per capita in US$ PPP*, OECD countries, 2010

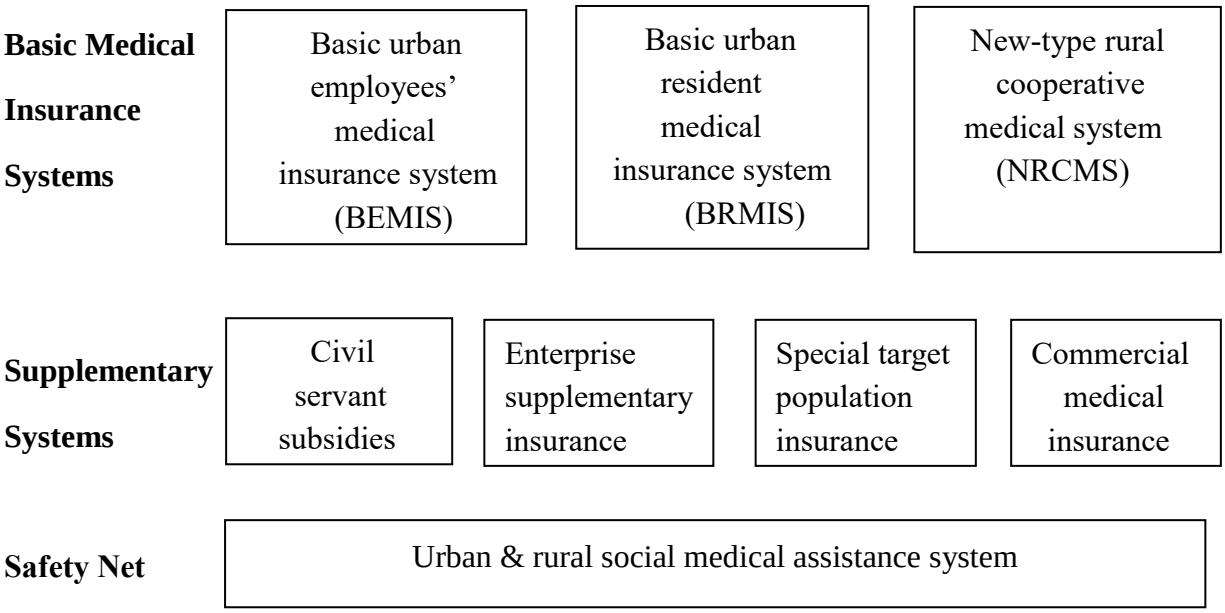


Source: OECD, 2012 & MOH, 2011.

* Data are expressed in US dollars adjusted for purchasing power parities (PPPs), which provide a means of comparing spending between countries on a common basis. PPPs are the rates of currency conversion that equalise the cost of a given 'basket' of goods and services in different countries.

As in many other countries, it is a huge challenge to develop systems of health insurance and community financing that allow coverage for most people when the population is ageing and treatments are becoming more sophisticated and costly. Several different insurance schemes have been developed across the country in an attempt to address the problems (Liu *et al.*, 1996). The reform of the healthcare insurance system began in the 1990s. The current healthcare insurance system in China is a multi-layered medical security system. The majority of the population in China are now covered by one of the basic medical insurance systems as the backbone of multi-layer medical security system (see Figure 4.7), including the Basic Urban Employees' Medical Insurance System (BEMIS), the Basic Urban Resident Medical Insurance System (BRMIS), and the New-type Rural Cooperative Medical System (NRCMS). The BEMIS only covers the former public sector workers in urban areas, and the BRMIS covers the dependants from the workers and employees in urban areas. Also, the greater part of coverage for the peasants, workers and employees in rural areas is through the NRCMS. The BEMIS and the BRMIS are organised by the Ministry of Human Resources and Social Security, and the NRCMS is under control of the Ministry of Health.

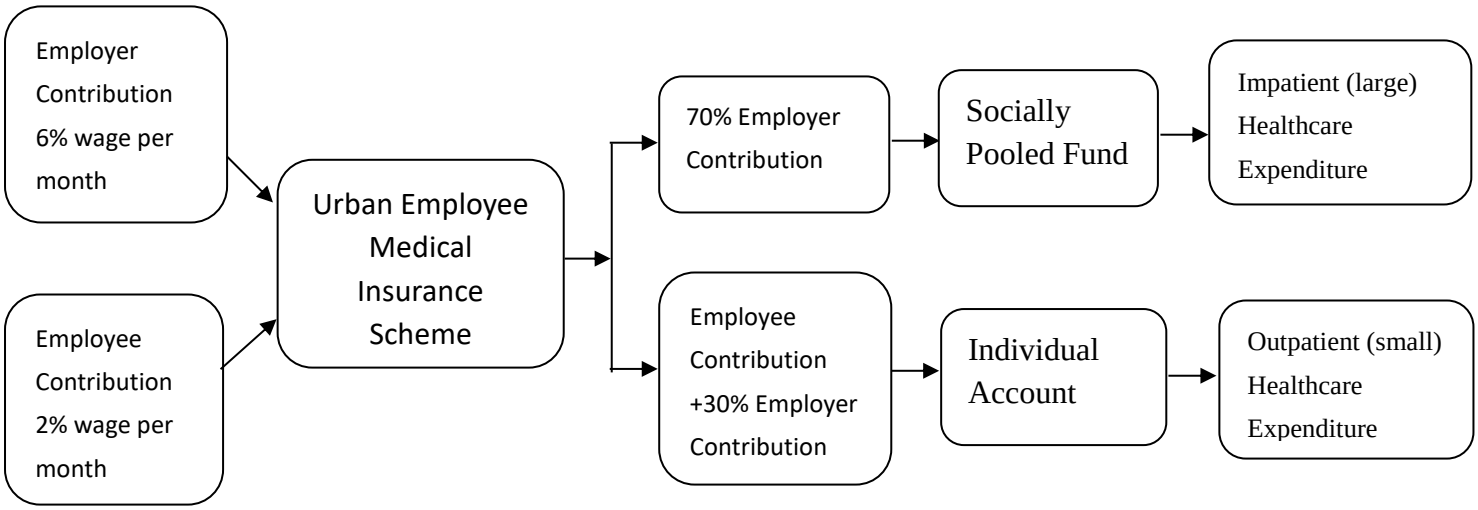
Figure 4.7: Multi-layered medical security system in China



As indicated in Figure 4.7, some supplementary systems also subsidise some groups of people. The civil servant subsidies scheme and the enterprise supplementary insurance scheme offer a limited subsidy to workers and employees in either public or private sectors, and the special target population insurance scheme covers the special group of people such as the migrant population, university students and children. Commercial medical health insurance is private, and includes any type of health insurance offered and managed by a non-governmental organisation. Commercial health insurance companies are for-profit corporations and offer their insurance services through group insurance schemes as well as individual or personal schemes. In all cases, a commercial insurance of this type is available only to those who are willing to pay premiums in exchange for the coverage. In addition, there is a "safety net" to provide basic support for certain groups of poor people who meet the low income and medical cost threshold, but even qualified applicants can only claim for

the limited range of diseases. Overall, until 2011, urban employee and resident medical insurance had enrolled about 432.1 million, and the coverage rate was 94% in urban China. The number of participants in the rural cooperative medical system was 835.6 million, and the coverage rate was 96% in rural China. Thus, the total insured reached 1.27 billion by 2011, and the coverage rate increased to 90% of Chinese population (MOH, 2011). This rise reflects the government's effort in reaching the universal coverage.

Figure 4.8: Framework of the basic health insurance system for urban employees



The framework of the basic urban health insurance system was established in 1998 (see Figure 4.8). The funding model is as follows: the employee contributes 2% of his/her wage to the health insurance fund and the employer contributes 6% of the wage each month; the fund is divided into two accounts: employee contributions plus 30% employer contribution to a personal account and 70% employer contribution to a

social coordinating account. The employee's contribution is owned by the employee and can be inherited (State Commission of Economic Reform *et al.*, 1996). The payment procedure for drawing on these funds involves a three-phase model: first, the insured person draws money from their personal account to pay medical bills; second, if and when the personal account is depleted, the insured person pays the bills out of pocket; third, when self-payment exceeds the pre-set threshold, the medical bills are jointly paid by the socially pooled account and the insured (Wong *et al.*, 2006). The self-payment threshold that activates the socially pooled fund is 10% of the average annual local wage and the maximum that can be pooled out of the socially pooled fund is four times the average annual local wage (The State Council, 1998). This applies to all urban employers including government organisations, state-owned enterprises, collectively-owned enterprises, foreign enterprises, social organisations and private entities. The enrolment of workers in the township enterprises and individual economic entities is decided by local government. In 2003, the New-Style Rural Cooperative Healthcare System was jointly established by the Ministry of Health, Ministry of Finance and Ministry of Agriculture. The following is a comparison between some features of the earlier rural cooperative medical system (RCMS) and newer NRCMS.

First, the NRCMS, initiated and organised by the government, is a government-subsidised and voluntary scheme, which makes it attractive to low-risk households. In

contrast, the RCMS relies on the local collective economy, which is organised by communes and is rather more compulsory. The NRCMS fund is largely financed (subsidised) by the government, and a rural participant's contribution to the premium is kept relatively low. In many regions, individuals are expected to contribute only about 10 yuan ($1.6/£1.06) per person per month, while the rest is paid for by central and local governments (MOH *et al.*, 2003). Second, the NRCMS fund is managed and allocated on the county level while the RCMS fund is managed at the village level (ibid.). As a result, the NCMS offers rural residents access to a range of health facilities, from village clinics to county/municipal hospitals, though the reimbursement rates for healthcare services received differ from one facility to another. Third, the NRCMS is primarily used for serious illnesses that lead to hospitalization and large health expenses, while the RCMS can be used only for a wider range of primary healthcare services (MOH *et al.*, 2003).

However, the current NRCMS has developed into more comprehensive coverage over time with more government subsidies to insurance premiums, which have significantly increased from 10 yuan ($1.6/£1.06) in 2003 to 240 yuan ($38.4/£25.5) in 2012. Since 2007, the coverage of the NCMS has expanded from mainly serious illnesses to out-patient and preventive care (Xinhua News, 2012). Moreover, as the coverage of the scheme has become a key performance indicator for key government officials, administrative means have been employed to expand the coverage, resulting

in more people being insured (Yang, 2013). According to official data from National Bureau of Statistics of China (NBSC), the coverage of NCMS reached 97.5% of China's 832 million rural Chinese by 2011. As shown in Table 4.3 below, in 2004 there were 678 experimental counties (cities and towns) and this number had increased to 2637 in 2011. At the same time, the rural population participation in the NRCMS had significantly increased from 179 to 832 million (NBSC, 2011).

Table 4.3: Changes to the NCMS insurance coverage, 2005–2011

Year	Counties participating	Enrolment (100 million)	Enrolment as % of total population	Average government subsidy per participant (Yuan)
2005	678	1.79	75.66	42.10
2006	1451	4.1	80.66	52.10
2007	2451	7.26	86.20	58.90
2008	2729	8.15	91.53	96.30
2009	2716	8.33	94.19	113.36
2010	2678	8.36	96.00	156.57
2011	2637	8.32	97.5	246.2

Source: NBSC, 2011.

Limited access to healthcare resources

Although the percentage of health insurance coverage in China reached 90% of the total population, the extent of protection is often very limited. Traditionally, Chinese researchers have viewed the system as consisting of two separate parts, an urban and a rural system as I have described. In this sense it can be linked to the so-called

"hukou" system, which is a population registration system whereby people are classified according to their geographical location. The BEMIS and BRMIS are for people with city-hukou while the NRCMS is for people with rural-hukou. However, an individual's hukou-status may change with job changes. For example, if a student with rural-hukou moves to a city university he/she will receive a temporary city-hukou which may become permanent if they get a job in the city after graduation. But there are also many examples where people with rural-hukou are actually working in the city without a hukou change. As we shall see, this mix between job function and hukou-status often leaves marginal groups (e.g. migrants) in the population uncovered by the healthcare insurance. In particular, rural migrants with poor living conditions and less focus on health issues may become vulnerable to poor long-term health. As health insurance schemes are likely to remain limited for the foreseeable future, the focus should be on providing affordable healthcare to both uninsured migrants and the urban poor (Hesketh *et al.*, 2008).

The NRCMS has been very successful in its coverage of the rural population and in risk pooling in rural areas. However, there are several problems with the design of the rural health insurance system. The first problem is voluntary participation. Although the initial intention of making participation voluntary was to avoid the additional financial burden on the peasants, the result is that the system actually excludes the poorest population in rural areas – those who must make every yuan in their pocket

count in order to survive, and so cannot afford the 10 yuan premium. As a result, the government subsidies of 20 yuan go to the relatively rich people in rural areas. This is "regressive" and hurts the poor most. The second problem is that reimbursement levels are low; the scheme is primarily for serious illnesses and commonly needed out-patient services are often excluded from service benefit packages. This means that, despite being insured, patients still pay high medical costs out of their own pockets for many illnesses (Hu *et al.*, 2008; Liu and Mills, 2002).

In fact, many people in need of healthcare services are left without any means of receiving help, even though they are covered by the healthcare system. This happens because considerable additional out-of-pocket expenses are required for healthcare (Hu *et al.*, 2008). Often insurance premiums are low, resulting in limited benefit coverage, in terms of low reimbursement rates (20%–30%) for both out-patient and in-patient services (Hu, 2004), and this creates highly limited access. Even officially investigated data indicates serious problems. For example, the proportion of people in 1993 who should have received a medical service but did not was 36.4% and has risen to 48.9% in 2003. In particular, for rural areas, the ratio was 63.7% in 1998 rising to 75.4% (in 2003) (MOH, 2004a). However, these figures are arguable due to the lack of more recent data from MOH/NHFPC.

China's current health system also shows considerable inequities in utilisation and

outcomes between provinces in rich and poor areas, and in urban and rural areas across income groups. The significant disparities across different regions and provinces raises further concerns and is getting worse. In some cases, local governments are able to increase the government subsidies to offer more comprehensive coverage to the residents in the more affluent eastern and coastal regions (Tang *et al.*, 2008). For example, in the urban employee basic health insurance scheme, the per person financial contributions from government and beneficiaries are equivalent to 14% of the annual salary in the eastern province of Shandong, but only 8% in most of the western provinces, and there is a large difference in salaries between the most and the least developed regions in China. Until 2007, in Shandong, the government's and beneficiaries' financial contribution per person in the rural cooperative medical scheme was around 450 yuan per person compared with only 50 yuan per person in most provinces in poorer central and western China (The State Council, 2000; Wu, 2007). Further, in the rural cooperative medical scheme and in the urban resident health insurance schemes, provisions for cost-matching do not take sufficient account of the constrained fiscal status of many local governments in central and western China.

As discussed in Chapter 1, since the economic and healthcare reforms, generally speaking, the overall health status of the Chinese population has improved, if more slowly than the world average and more slowly than prior to the reforms. However,

overall numbers are misleading in the sense that they mask the health inequality between subgroups: rural vs urban, rich provinces vs poor provinces, high-income population vs low-income population, etc. The infant mortality rate (IMR) declined between 1990 and 2005 in both rural and urban areas (MOH, 2006; United Nations 2005), yet the IMR in rural areas was two to three times higher than that in urban areas in China, despite the fact that the gap has been narrowing since 1990 (MOH, 2006). Up to now, inequality of health status still exists among different provinces, and the poor quality of healthcare is partly reflected in the slowing of progress in raising life expectancy and in the persistent inequality in health outcomes and life expectancy between richer and poorer provinces. Although the differences in health also reflect many other social and environmental factors, life expectancy is higher in richer provinces than in poor provinces (Tang *et al.*, 2008).

Inefficient allocation of healthcare resources

In China, healthcare system resource allocation is highly segmented. The fragmentation of the system leads to high operational costs while consensus building between different ministries and stakeholders is time consuming. Further, resources are not well allocated to where they would have the greatest health benefit. Secondary and tertiary hospitals receive a much larger share of a total health expenditure than do primary health and preventive or promotional services: 609 billion yuan, or about

65% of the total 937.4 billion yuan, in 2010 (MOH, 2011). Only 10.8% of health expenditure in 2010 went to the enormous number of urban community health centres and rural township health centres (ibid.). Almost no government funding is budgeted for primary care (village health centres) despite their importance as first-line providers of out-patient services for the rural population. In the new healthcare system, the supply and demand for healthcare is predicated on people's ability to pay. As the majority of the healthcare facilities are historically based in towns and cities, this has produced a further skewing of resources towards those areas where incomes are greater, or where widespread insurance cover exists.

Widespread inefficiency and low productivity weaken the health system's effectiveness and waste resources. Bed occupancy averages around 65% for hospitals and below 40% for health centres in townships (MOH, 2004a), compared with an average of almost 80% in countries in the OECD (Gottret and Schieber, 2006). Two sources confirm that the average occupancy rates for township health centres is less than 50% and most health professionals there work at only half of their capacity (MOH, 2008; Martineau *et al.*, 2004). Doctor–patient contacts per day suggest further inefficiencies: according to some reports, whereas doctors at certain hospitals see over 70 out-patients daily, much lower figures ranging from 4.5 to 6.9 out-patient visits have been documented in some studies, and from 5.8 to 15.3 in Ministry of Health statistics.

As more and more patients choose to go to the higher-level hospitals or city hospitals since they have more elaborate high-tech medical facilities and high level professionals, more government funding is allocated to the city hospitals to meet increased demand. As a result, there is a shortage of qualified doctors and health staff, in remote areas or at primary-level facilities. Filling the staffing gap would be a lengthy and expensive process (Liu *et al.,* 2008). Consequently, more and more resources were transferred to the city hospitals. From 1980 to 2004, the number of beds in city hospitals rose from 903,323 to 2,089,410, while the number of beds in county hospitals dropped from 1,281,100 to 956,437 (MOH, 2005).

In terms of service delivery, inefficiency is also common. According to Hsiao's early study the average length of in-patient hospital stay in China is about three times that in the US. Further, more recent data shows that China has one of the longest durations of in-patient hospital stay among OECD countries, over eight days on average, which is two to three times longer than other OECD countries such as Sri Lanka, Bangladesh and Thailand (OECD, 2012). Prior to an operation, patients need to stay in the hospital to wait for the operation, and they are often admitted to hospital several days early due to the low efficiency of surgery scheduling. This problem is due to the organisational structure of the hospitals. Hospital directors usually do not have the power to fire staff and very few of them have had the incentive to improve the operational efficiency since the costs of services became the primary focus. For

example, in recent years, about 90% of the income of public hospitals has been earned from patients, not from government subsidies (Tu, 2014). As a result, their main responsibility is to make revenue cover expenses, transferring the pressure of securing up-front payments to medical professionals. If the patient escapes from the medical bills, the doctor who treated the patient could be punished (ibid.).

In 2000 the WHO ranked its 191-member nations on the overall performance of their health systems, and China was ranked 144 out of 191 countries (WHO, 2000b). Despite a relatively high ranking for levels of population health, China's system was deemed to be weak in the distribution of healthcare and responsiveness, as well as in controlling the costs (Eggleston *et al.*, 2008). Cost inflation has been difficult to control, and as a result the huge inequality in access seems to have become even greater. Aside from these factors, the health system reform itself has made people uncertain about their health rights. In addition, the lack of regulation exposes the system to more corruption, hence worsening the situation (Wang, 2004). As a result, according to a recent report released by the Development Research Centre of the State Council, China's health system reform has been unsuccessful due to the fact that reforms have failed to improve access and reduce health costs for the Chinese people (Development Research Centre of the State Council of China and WHO, 2005), in spite of the State Council of China emphasising that one of the key principles of the new health reforms in the 2000s was to improve health equity. In particular, this

included “universal health insurance coverage”, “equal access to healthcare for equal needs” and “affordable health for all” (Xinhua News, 2007a). In 2013, the State Council re-emphasised that the objectives of the health reforms in China included the drive to “improve equitable access to healthcare for equal needs”, “improve equitable access to healthcare for the rural and urban population”, “enhance universal coverage of health insurance and high quality of care for all” and “provide financial protection for the Chinese people against catastrophic illness” (Xinhua News, 2013b).

Conclusion

Following the launch of the market-oriented healthcare reforms in China in the 1980s, China’s healthcare system faced tremendous changes and developments. However, the results of healthcare reforms have been far from effective in achieving the goal. Some of the weaknesses in China’s healthcare reform are due to the sudden introduction of the healthcare sector into the marketplace after the market economy reform and the less than enthusiastic financial support of the government that followed. Although recent debates criticize the market reform for distorting the provision of healthcare services, the above arguments prove that, rather than the market economy itself, it is the design of the health system, the absence of sufficient government regulation in places – and loopholes in regulation where it does exist – that are responsible for distorting market regulations and healthcare delivery.

Therefore, unsuccessful healthcare reform is attributed to the insufficient role that government has played. In particular, the state does not play an active role in financing and regulating its healthcare sector. Without the state's active role, healthcare reform has failed to achieve health system goals and has generated unexpected distortions in the system.

In this context, the healthcare system in China has been transformed by the introduction of new market initiatives, and this has had an impact on the dynamic of the countervailing powers. The continued transformation of the healthcare system affects the interplay of the powers of the state, the pharmaceutical industry, the medical profession and the public. In the next chapter, I will first discuss how this failure of China's market-oriented healthcare reform is contributing to the issue of over-medication and how drug prescription relates to governmental power.

CHAPTER 5 - THE POWER OF THE GOVERNMENT

Introduction

This chapter uses the countervailing powers framework to address the following research question: how and to what extent does the state interact with the pharmaceutical industry and the medical profession to produce the phenomenon of over-medication? According to Light (2010a), the exercise of power between actors is a dynamic process: as one actor makes a move for dominance, it can be constrained or encouraged by countervailing moves by other actors. Another element that Light discusses is the processes of alliance between different actors, such that they might combine their efforts to constrain the activities of other actors. For example, the professions may be co-opted by pharma to create an alliance which undermines the power of the state, and Light (1995) identified this as a part of the medical-industrial complex.

Based on the definition of "countervailing powers" (see Page13–14 in Chapter 2 for more details), I shall now turn to explore various dominant power arrangements that pertain at different times in terms of the dynamic processes. In the case of China, I argue that initially the state was focused on reforming the healthcare system and regulating healthcare market, which elicited the countervailing response from the

medical profession and the pharmaceutical industry (pharma). Later their alliance become more dominant and attempted to undermine the power of the state. However, the state as a countervailing power appears to have conflicted as it not only wanted to lower health costs, but also wanted to achieve economic growth in the form of the industry and hospital increasing their profits. Drawing on Light's arguments, although the state is the dominant actor in the Chinese healthcare domain, as a countervailing power it is conflicted, since it wants the economic growth of the industry and hospital profitability, but at the same time also wants to lower healthcare costs (Light, 2000: 204).

The state as a countervailing power deserves special comment. The countervailing powers framework does not depend on any one view of the state. For example, after World War II, the East German state eliminated all professional associations as countervailing powers that corrupted its communist mission. In West Germany, the democratic state allowed the organised medical profession to exploit universal healthcare to maximise its income and control until the 1980s, when the state and insurers as countervailing powers allied to harness professional practice to the needs of an affordable, universal healthcare system. Nowadays, in pharmaceuticals, too, dominance has prompted countervailing responses in Germany (Light, 2013).

The countervailing power framework allows one to trace and map historical changes among key stakeholders, take measure of their power, describe their alliances and contests for power, and document the effects on costs, products or services, scope, and culture. For instance, in the early 20th century, American medical organisations came to dominate all other stakeholders in the US through legal and economic legislation which its members then exploited (Light, 2004, Salter, 2009). This dominance increasingly prompted other stakeholders such as employers, insurers, and taxpayers to develop increasingly powerful countervailing strategies to limit the legal and economic dominance of the profession, and now something similar is also happening to the pharmaceutical industry (ibid.).

The government has great power in controlling drug prices, licensing drug approvals and funding healthcare services. According to the theory of countervailing power, it also has a potential role to play in restraining the power of the pharmaceutical industry or promoting its products and growth (Gabe *et al.*, 2012: 2358). Most importantly, the approval bodies have been established by governments to protect the population from dangerous drugs, lack of access to services, and disparities in the level of healthcare services (Light, 2010b; Yip and Hsiao, 2008; Blumenthal and Hsiao, 2005; Liu and Mills, 2003). In China, the China Food and Drug Administration (CFDA) is responsible for reviewing and approving the applications of new medicine registration on the grounds of medicine safety and efficacy, while

the National Development and Reform Commission (NDRC) is mandated to approve and regulate the prices of new products that are suggested by the manufacturers based on so-called “separate prices”. According to the current policy, the NDRC is responsible for pricing management for all prescription drugs and OTC drugs within the national medical insurance reimbursement drug list. However, the government authorities for medicine pricing management have not sufficiently and effectively controlled or reduced drug prices, but to a great extent have left loopholes in the drug pricing regulation with the result that drug prices are set at the level that meets pharmaceutical companies’ interests.

The Chinese healthcare system is facing many challenges: high drug prices, insufficient government subsidies and official corruption in drug approval. High pharmaceutical prices have attracted great attention from the public and government. In particular, hospital pharmaceutical prices have long been criticized by the public for being much higher than prices for the same products sold at most local non-hospital pharmacies. Although policy makers have worked hard to correct the disproportionate hospital pharmaceutical prices, they have not yet found an effective balance between government regulation and other forces (the industry and the profession) (Wang, 2009). The cost of healthcare services in China has increased significantly, mostly because of over-use of high-tech diagnostic tests and medicines. To relieve the financial burden produced from this rise in healthcare costs, the

government has reduced its funding of healthcare. Although government officials on approval bodies have extensive and broad power on new drug registration and drug pricing, they have also been prone to the bribery frequently practised by the pharmaceutical industry.

This chapter discusses the Chinese government's influence on the character of healthcare services and on the use of medicines in relation to two key actors: the medical profession and the pharmaceutical industry. The government's influence on the public's use of medicines is usually indirect via the medical profession and the pharmaceutical industry. To facilitate an understanding of government policy development and the implementation process that affect medicine use, I start by referring back, with greater detail, to the context of these government policy changes, exploring the implications for medicine use of the decentralisation of authority over the health sector through the diminishing of the government's direct role. Secondly, I discuss how the reduced government role in subsidising and regulating the healthcare sector builds incentives for the profit-seeking behaviour within the healthcare provision system, leading to the escalation of over-use of pharmaceuticals and high-technology diagnostic procedures. In particular, I examine the effect of Chinese government funding of healthcare on prescribing, focusing on the reduction in government subsidies and a salary scheme that generates incentives for hospitals and doctors to prescribe. Thirdly, I argue that the Chinese government's intervention in

the form of a price-setting for the mark-up of medicines creates incentives to over-prescribe. As healthcare costs have increased dramatically the Chinese government has been determined to cut healthcare costs and spin-off commercial drug interests. A set of complex and comprehensive policies has been established to combat "improper" behaviour in the healthcare sector and to build an effective healthcare system, such as setting up a maximum price for regulated-drugs and limiting the hospital mark-up of drugs to 15%. However, these efforts have been largely ineffective in controlling either drug commissions or over-prescription practice. Moreover, it has to be noted that new pharmaceutical products and diagnostic procedures do not drive up costs in themselves, but it is rather the way in which the healthcare system applies those pharmaceutical or diagnostic procedures and the operation of market incentives that are creating a system for over-pricing (Evans, 1985: 15–16). Finally, I review the permissive drug price regulation or low threshold of drug registration and approvals, resulting partly from corruption among government officials in connection with drug approval, which allows the pharmaceutical industry to obtain "new" drug status with higher prices for existing generic drugs.

The devolution of authority over the health sector

Several government policy changes in the 1980s particularly affected medicine use. The most important change was decentralisation, which affected government functions and the extent of private practice, especially in rural areas. In this period, the Chinese government adopted hierarchical administrative subdivision, devolving responsibility for the implementation of national policy to progressively lower levels (Wong, 2010; Zhou, 2010). This policy change has had a major impact on health services and the use of medicines in rural areas, where the implementation, funding and evaluation of China's current healthcare system exemplifies the hazards of decentralising authority. However, there has also been an effect on community health centres and clinics in urban China.

In China's current healthcare system, the devolution of responsibility for financing and management of township health centres to township governments occurred as part of the broader economic and institutional reforms instituted since the late 1980s. For example, in 1983–84 the government replaced the commune and brigade system of collective organisation with township governments and village administrative committees. The rural economy was de-collectivized and all townships and villages adopted the "household responsibility system", which entitled each household to work an amount of land proportionate to its size (Powell, 1992). As a result,

households now have full financial responsibility for production. This has reduced the capacity of local administrative bodies to mobilise resources for collective use. In the meantime, local governments and state enterprises were given greater autonomy. An important aspect of financial reform was a rearrangement of revenue sharing between the central and local governments in both urban and rural areas (Wong *et al.*, 1995).

At first the richer counties implemented the devolution of authority over healthcare, but as more and more county health bureaucrats hoped that township governments would increase funding for their health centres, this policy became popular and was extended throughout China. Devolution in the health sector was believed by policy makers to be consistent with the ongoing economic reform that emphasised improvements in efficiency and effectiveness (Sheng *et al.*, 1992). In theory, this devolution also brought pressures on township governments by allocating additional funds to health centres in the belief that decentralising the financing and administration of the health sector could enhance the quality, equity, and responsiveness of local services. However, this assumes appropriate prioritisation of local authorities and adequate vertical and horizontal accountability and governance (Uchimura and Jutting, 2006). In China, local government remains largely accountable to higher-level authorities, not the local population, and economic, not social development is its primary objective (Zhou, 2010).

Chinese economic reforms have had a particularly substantial impact on the organisation and finances of its rural health services (Jamison *et al.*, 1984; Huang, 1988; Young, 1989; Yu, 1992; Bloom and Gu, 1997). The relationships between county health departments, township governments and health centres has changed remarkably. Health centres, which previously received funds from the county health department, are now funded by township governments. The township governments are responsible both for defining and developing local healthcare plans and for the appointment of personnel. Since devolution, the county health department can no longer control the appointment of health centre directors, or the recruitment of health centre staff. Township governments are now responsible for these activities in consultation with the officials in county health bureaux. County health departments still transmit national guidelines to township governments and provide technical support when requested. However, health centres do not necessarily have to take these into account (Tang and Bloom, 2000). Consequently, while the higher-level government bodies may expect the lower-level government bodies to carry out certain medical plans or programmes, sometimes the lower-level government bodies do not entirely follow their guidance.

As an unintended consequence of devolution, the local government bodies have permitted private medical practices, given increasing autonomy to public health institutions and allowed the public health institutions to contract activities and partly

outsource the services (Zhang, 1987; Kan, 1990). In rural areas, village health stations were sold or contracted to individuals while township hospitals were closed or sold to private practitioners; and public health facilities declined quickly with the rapid expansion of private medical care. Since 2000, the local government has further encouraged the reform of health property rights and many village health stations are now privately managed and many village health workers charge for services.

There are three main features that account for the sharp criticism levelled at the way the development of Chinese private health sectors has affected medicine use in rural areas. Firstly, the quality of health services provided by private clinics in rural China is generally poor due to the fact that rural private medical practitioners are usually less qualified, and there is reduced government control over the doctors' behaviour, which tends to be driven by financial motivation regardless of the health benefit to patients. For example, private doctors are less likely to refer their patients to a higher level of health service when referrals are needed (Meng *et al.*, 2000). Secondly, private village doctors are considered to be less willing to provide preventive healthcare services than are doctors working in public clinics, since preventive healthcare services are not economically profitable (Lin and Ma, 1990). Consequently, with lack of attention to disease prevention in rural China, the opportunities for medication use are increased. Finally, as the government decided to devolve its responsibilities in healthcare financing and management, it gradually

retreated from its role as a universal healthcare provider (Wang, Zhang and Wang, 2007), and devolved responsibility for state-owned hospitals to local and regional authorities. State-owned hospitals were told to be accountable for their own profits and losses. Consequently, privatisation has given local politicians and governments strong incentives to encourage profit-seeking on the sale of pharmaceuticals and prescriptions (White, 1993; Oi, 1999), which is why rural private practitioners are more likely to provide unnecessary healthcare and medicines, their income coming entirely from charges for services (Hou, 1990; Liu *et al.*, 1994).

In contrast, in urban areas, the Chinese government's interests have been aligned with the state-owned hospitals' interests. For example, all presidents of state-owned hospitals hold administrative titles equivalent to those of governmental officials; furthermore, the performance of a state-owned hospital is an important criterion for evaluating the performance of the government official responsible for monitoring that hospital. On the other hand, the government is responsible for monitoring hospital performance on behalf of its citizens. Arguably, the government has been playing two roles: a player in the game with strong self-interests and a referee who should be fair and impartial. These roles conflict with one another, and an effective external monitoring system has not been established to coordinate them or to resolve the tension.

Instead of being a responsible subsidy provider or supervisor, the government has retained its administrative power as health manager of public hospitals inherited from the planned economy era. At the same time, hospital administrators also hold positions and titles of political authority. The state-owned hospitals at provincial, city/county level have never functioned as independent entities with autonomous development planning and decision-making power. In effect, they are being micro-managed by government bureaucrats (Wang, 2009). As a result, competition in the medical market in urban China is limited due to the government's monopoly power. However, in order to decentralise responsibilities in health management and regional development, to expand existing facilities and to improve productivity through financial incentives to medical staff, the government announced its decision to restrain government spending on healthcare and said that state-owned hospitals should be responsible for their own profits and losses as mentioned earlier. Using pharmaceutical income to compensate for the losses from the government subsidies has been encouraged by the government and widely adopted by hospitals since the reduction of government subsidy (World Bank, 2010a).

Although there are private hospitals in urban China, they are not prominent in the market and the private hospital sector remains fundamentally undeveloped, not only in terms of market share but also in the scope of its medical professional knowledge and treatment level offerings. This means there are very few choices available to

patients, even though most would still prefer to choose public hospitals as their health provider. Nevertheless, a degree of competition in the medical market will be essential to correct the current problems in healthcare services, because China's healthcare sector acts silently in driving state-owned hospitals towards profit-orientation; and in order to maintain their incomes, doctors have to use other defensive means for funding. The dual pressures of the market-based orientation in hospital management alongside the intensive pharmaceutical promotion mean state-owned hospitals not only monopolize most of the major healthcare services, but also exercise great control in all aspects of doctors' work by imposing management decisions, such as department revenue tasks, on individual doctors. Consequently, without competition and with the lack of inherent developmental forces to overcome such monopolisation, health policy and regulation and the behaviour of medical professionals can hardly be improved. Doctors have little choice but to engage in over-prescription in order to ensure their own livelihoods and the interests of the institutions in which they work. After all, any possible transformation of social medicine requires the government's recognition of the problems and taking initiatives for reform (Du, 2007).

Reduced governmental investment and the implication for incentives

I now turn to look at the countervailing moves of the government in relation to the medical profession and the pharmaceutical industry. Fundamentally, there are two further key government policy changes of particular importance for medicine use in China.

The first is the reduction of government funding for health services, which has had a significant effect on prescribing through distorted incentives for hospitals and doctors arising from lack of resources and inadequate medical salaries. Before the economic reforms of the 1980s, Chinese public hospitals and doctors' salaries were fully supported by the government. With the formation and development of a market-oriented healthcare system, a new salary scheme was instituted by government: now, the public hospitals and doctors have to be self-supporting, they have to make their own management decisions and take full responsibility for their own profits and losses. This also means hospitals have to run themselves and sustain all staff remuneration without government subsidies (World Bank, 2010b).

However, there are two aspects involved: the political and the economic. The economic/political paradox is that central government has withdrawn economic support, forcing the hospitals to become profit-seeking, but continues to exercise

political control (‘micro-management’). From the perspective of countervailing powers, this is obviously a typical situation, given the way it opens up competing interests, squeezing doctors between government administrative control and the marketplace dominated by pharma, and requiring them to play these two powers off against each other.

For example, public sector healthcare providers, such as public hospitals, face financial pressures such as shrinking government budgets caused by dramatic cuts in subsidies. There has been a gradual shift in hospital financing from an average of 50% government provision of public hospital revenues in the 1980s to less than 10% in 2000. This also means that the average percentage of Chinese state-owned hospital’s income from government sources declined by 40% in two decades (Eggleston and Yip, 2004; Ramesh and Wu, 2009), though these hospitals continued to be called public. This reduction meant that public hospitals – the large majority of hospitals in China – were forced to operate like for-profit private providers in order to generate sufficient revenue (Yip and Mahal, 2008). Consequently, malpractice, misuse of drugs, and supplier-induced over-utilisation of pharmaceuticals have become increasingly common (Wang, 2009).

To compensate for the loss of funding, public hospitals were allowed to charge payers or patients themselves more than the average cost for services, such as high-

technology diagnostic procedures and many prescription drugs (Eggleston and Yip, 2004: 268). As I shall discuss in more detail in the later section, the pricing scheme is potentially a second-best government intervention, trading off price efficiency for equitable access. Unfortunately, the distorted incentives implicit in this pricing system can lead to large adverse consequences when combined with supply-side (pharmaceutical companies and hospitals) market power in healthcare. As could have been predicted, Chinese hospitals began to view high-technology medicine and prescription drugs as their financial salvation, subsequently putting pressure on medical professionals to increase the use of these services.

The health sector faces difficult financial problems, particularly in poor areas (World Bank, 1997b). As explained earlier, the cooperative medical schemes, which were partly funded by the collective economy at township and village levels, collapsed in most of the country. Their coverage declined from almost 90% of villages in the late 1970s to less than 10% in the early 1990s (Feng *et al.*, 1995). Most rural residents now pay for health services out of pocket. This has allowed particular affluent regions and sectors (eastern coast rural China) to race ahead, whilst some poorer regions (western remote rural China) have experienced major financial difficulties. A further example of disparity is how township level health services have also changed a great deal, although the direction of change varies between rich and poor localities. Some health centres in rich townships have expanded and acquired new equipment (Xiang

and Hillier, 1995). In contrast, there are many health centres in poor areas that face severe difficulties related to lack of funding and loss of skilled medical professionals (Tang *et al.*, 1994; Gong *et al.*, 1997).

Government financial support can significantly decrease the drug expenses of a facility, thereby decreasing the use of medicines and injections (Zhang and Wang, 2005). However, few studies have used representative survey data to indicate the effect of government subsidies on injection or prescription utilisation. Although the WHO has claimed that sufficient government subsidy is needed to promote rational drug use (Gosden *et al.*, 2000), little statistical data has been reported on the direct correlation between funding and prescriptions for medicines and injections. High government subsidies may increase the possibility of appropriate prescriptions for medicines and injections. On the other hand, a previous study has suggested that medicines and injections have been overused in 126 primary healthcare institutions in rural China because of the insufficient government subsidy for both the facilities and the staff, which encourages over-prescribing (Zhang and Wang, 2005). Another study examined the prescription behaviour of village doctors. A total of 20,125 prescriptions were collected from 680 primary health clinics in villages from 40 counties in 10 provinces of western China, in which it was found that government subsidy can actually help improve prescription quality and reduce the use of antibiotics and injections (Dong *et al.*, 2011).

The decrease in government subsidies has led to a significant reliance on the part of state-owned hospitals on non-state revenues, primarily in the form of user fees and drug sales. The data showed an increasing percentage of income from 1985 to 1999 came from the sale of drugs (39% to 47%) and user fees (26% to 37%) (Eggleston and Yip, 2004). Although there was a slight increase in government subsidies from 2001 to 2003, income from drug sales and medical services have been major ways of hospital cross-financing in China (see Table 5.1). The government subsidies were less than 10% of the total revenue of China's general hospitals between 1999 and 2006, while drug sale revenues accounted for more than 45% of total revenue as also shown in Table 5.1 below.

Table 5.1: Shares in the total revenue of China's General Hospital, 1999-2006

Year	Government subsidies (%)	Drug-dispensing revenue(%)	Medical services & other revenue (%)	Total
1999	8.8	52	39.2	100
2000	8.3	51	40.7	100
2001	9.1	50	40.9	100
2002	9.4	47.6	43	100
2003	9.5	47.4	43.1	100
2004	8.2	46	45.8	100
2005	8	46.1	45.9	100
2006	8.4	45.2	46.4	100

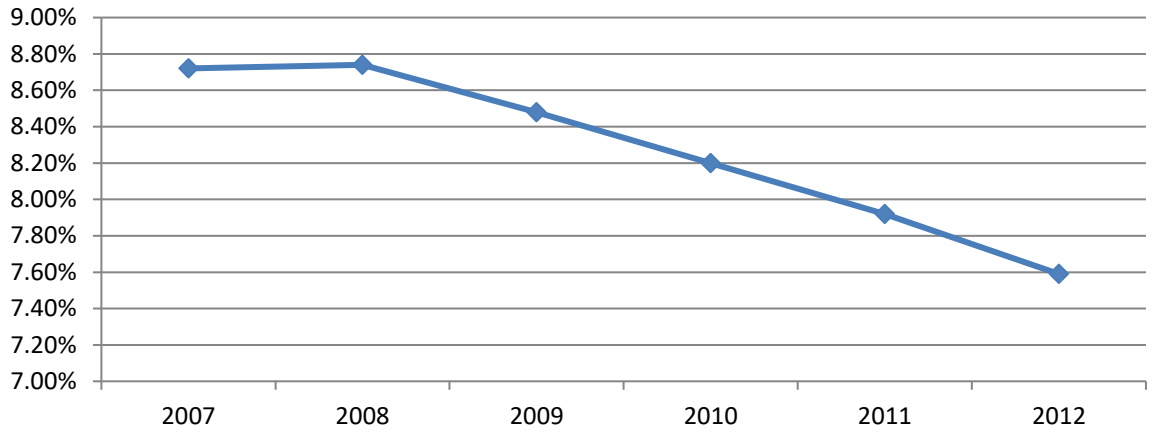
Source: MOH, 2007a.

However, greater autonomy in revenue generation has not been accompanied by better performance by hospitals. The reliance on user charges for financing has driven the hospitals' focus from health improvement to profit-seeking. According to Wu *et al.* (2013), who studied therapeutic choices in China, substitution between generic drugs and branded drugs increased pharmaceutical expenditure and typically showed a trend of transfer from cheap products to expensive ones (Xiao and Zheng, 2008). Doctors prefer expensive drugs, and low-priced, cost-effective generics have been replaced by expensive equivalents. Further, expensive high-tech diagnoses have been utilised more frequently, even unnecessarily. As I have noted, doctors currently have an incentive to prescribe expensive drugs unnecessarily, as revenues from these more expensive drugs go directly to the hospital, and hospitals give the doctors a higher bonus or salary as a reward for the increase in revenues (Wang, 2009).

Because hospitals are to a certain extent permitted to increase prices on drugs and medical examinations, the "mark-up" in the prices are "profits" that can be controlled by hospitals, and these have become the main source of hospital revenues, providing a legal way for medical professionals to create income. "Profit-making" has become the mainstream and active behaviour of hospital and doctors. Consequently the entire health services environment has gradually turned towards a market-oriented path. As shown in Figure 5.1 below, the decrease in government funding from 2007 to 2012, and greater autonomy given to health services has led to a market orientation that

makes it possible, and necessary, for doctors to ‘mark-up’ prices and produce profits to supplement their falling income.

Figure 5.1: The percentage of government support in total revenue to public hospital, 2007- 2012



Source: MOH, 2013.

The effect of market-oriented healthcare reforms by the Chinese government over the past 10 years has been negative for doctors. Doctors in China have long been a group of people whose low financial income and social position contrasts with the high training costs, advanced academic degrees, the technical demands of their career and professional risks (Chen and Godfrey, 1991). Incentives have arguably removed the independence of the profession and are eroding the adequacy, safety and social values of health services (*Lancet*, 2000). Difficulty in seeing a doctor and the high cost of getting a diagnosis and treatment are common in China. The primary cause of this problem is the policy of turning the task of curing the sick and saving the dying into a commercial competition (Blumenthal and Hsiao, 2005). At the same time, the

government uses some official media reports (i.e. Chinese Central Television (CCTV), China Daily, local news channels and newspapers, etc.) to influence public attitudes by suggesting that the scarcity and high cost of medical attention is a reflection of a decrease in social morality on the part of the medical profession. Thus in the eyes of many ordinary Chinese people, the term "doctor" is likely to be linked with "grey income", "prescription abuse", "excessive examinations", or even "medical accidents" (Yang *et al.*, 2008).

Therefore, with a low basic salary, the components of Chinese doctors' remuneration have changed. The percentage of the entire income made up by the basic salary provided by the government has decreased to approximately 30%, while other components, such as performance-related bonuses and incentives for physicians, have increased significantly (Wang, 2009: 601). The bonuses distributed by the hospitals have been largely dependent on hospitals' profits, which are driven by the sales of profitable medical services and drugs. That is why doctors now share the same interests as hospitals, resorting to providing profitable drugs and services, which are primarily high-tech diagnostics (interventions and prescriptions). This has transformed some doctors from healthcare providers into healthcare "salesmen." The over-use of high-tech services and highly-price drugs has contributed to the healthcare expenditure escalation in China during the past several decades (ibid.).

Government-regulated drugs (price-setting) and the implication for incentives

Another key change of government policy that influences the use of medicines is direct government price control in the market-oriented healthcare sector. From the early 1980s, with the privatisation of China's economy, there was a sizeable disruption in healthcare services. The Chinese government believed that the healthcare price schedule needed to be revised, and prices needed to be aligned with actual costs. These efforts were needed to reduce existing incentives for over-prescribing pharmaceuticals and unnecessary medical procedures. Also during the 1980s, as the market reforms began to take effect, the Chinese government set prices for basic healthcare below cost in order to maintain a low cost of care to the patient at the point of delivery and to ensure access for the poor. Hence, a system of price regulations was established. Controls over what publicly owned hospitals and clinics could charge were put in place in an effort to ensure access to basic care (Chee, 2006).

In an effort to control over-charging for drugs, between 1980 and 2000 the government controlled entire tiers of drug prices, from manufacturers' exit prices, to wholesale and retail prices. Manufacturers' exit prices were based on production cost plus a 5% mark-up, to which a 15% mark-up was added for the wholesale price, and the addition of a further 15% mark-up produced the retail price (CSCPD, 1998). The

term of “corporate bias” refers to the interest of the state being restricted by the interest of corporate groups, which in this context is the pharmaceutical industry. “Corporate bias” usually occurs when the government is subject to intense lobbying from the pharmaceutical industry, and also where state regulatory bodies are in line with the interest of the pharmaceutical industry (Busfield, 2006: 2010). Corporate bias is of value in an account and explanation of Chinese drug regulation insofar as it incorporates the interests of both the state and the pharmaceutical industry, particularly in connection with drug pricing policy (Davis and Abraham, 2013). However, faced with the rapid expansion of the pharmaceutical sector and asymmetry of access to cost information between price regulators and manufacturers, the government was unable to generate the necessary cost estimates for setting appropriate sale prices. Furthermore, since mark-ups for both wholesalers and retailers, including hospitals, were a fixed percentage, expensive drugs were preferred by both parties. In order to attract wholesalers and hospitals to their products, manufacturers requested higher prices from government drug approval bodies. Under this system, drug prices in China were thought to be unreasonably high; for example, the ex-works price of Azitromycin Dispersible Tablets (antibiotics used to treat inflammation) for the pack of 0.5g/unit×12 is less than 5 yuan, but the retail price per pack is nearly 70 yuan on average, which is 15 times more than the ex-works price (Hu and Li, 2001; Du, 2002; Wang and Wei, 2003).

The term "regulatory capture" within a UK context refers to the situation in which "most or all of the benefits of a program go to some single, reasonably small interest (and industry, profession, or locality) but most or all of the costs will be borne by a large number of people (for example, all taxpayers)" (Wilson, 1989: 76). However, an important difference arises when this concept is applied and developed in relation to China: within the Chinese context "Regulatory capture" occurs when special interests co-opt political bodies (regulatory agencies) or policymakers to further their own ends.

With regard to corporate bias, which locates regulation in a broader political context of government policies responsive to industry interests, there is no need for direct capture of regulatory agencies, since corporate interests are placed at the forefront of the political agendas that shape the expectations and demands on regulatory bodies (Davis and Abraham, 2013). Since 2000, new government price-setting policies have come into effect (CSCPD, 2000). Pharmaceutical price regulation includes government-regulated and market-determined prices, in line with the principle of combining macroeconomic control and market adjustment (Huang and Yang, 2009). The government pricing agencies are a powerful department of the central government called the National Development and Reform Commission (NDRC)[6]

[6] The NDRC, also known before 2003 as the State Development and Planning Commission (SDPC), has been responsible for these price controls since 1997. Since 2000, the SDPC has only set the prices of prescription drugs and the provincial price bureau has set OTC medicine prices. After 2003, the NDRC began to set factory prices and maximum retail prices for selected samples of drugs.

which has lower-level commissions on price-managing departments in every province, autonomous region, and municipality. The NDRC is responsible for setting maximum pharmaceutical retail prices (i.e. price ceilings) for drugs on the Urban Employee Basic Medical Insurance (UEBMI[7]) reimbursement drug list[8] (Wu *et al.*, 2014), which includes drugs considered essential and frequently used. For those drugs not listed, prices are determined by market forces.

The UEBMI reimbursement drug list was first released in 2004, and is revised every five years. The newest version of this list, released in 2009, includes more than 2800 types of drugs, but still only covers about 20% of all drugs by quantity on the market and 60% by sales (Wang and Ge, 2009). There are two parts to the list, A and B. Prices of Part A drugs are set by the central government and are definitive ceilings for retailers, setting maximum retail prices for A-list medicines on the UEBMI drug lists, and for patented innovative and new drugs (i.e. newly discovered drugs or preparations; a new ingredient and the materials required in its preparation extracted from plants, animals or minerals, and chemical synthesis, etc.), which have not

[7] UEBMI is one of China's three basic government-run medical insurance systems. It is designed to cover all urban employees (220 million as of 2007). Within China's universal basic medical insurance system, the other two government-run medical insurances are Urban Residence Basic Medical Insurance (URBMI) and New Rural Cooperative Medical Insurance (NRCMI). The reimbursement drug list for URBMI is almost the same as that of UEBMI, but with paediatric medicines added. To date, there is no national reimbursement drug list for NRCMI, and every province develops the drug list with reference to that of UEBMI.

[8] The regulated drug price list of the NDRC, also known as the drugs listed in the National Drug Catalogue of Basic Medical Insurance and Worker Injury Insurance, and a few other special pharmaceutical products not listed in the catalogue (including anaesthetic drugs, psychoactive drugs, prevention and immunity drugs, contraceptives, etc.).

previously been on sale in China. The central government also sets the factory price of new drugs used in mental health, anaesthetics, immunization medicines, and family planning medicines, leaving retail pharmacies and public hospitals to set their own retail price – which cannot be higher than the maximum retail price (CSDA, 2004). In addition, the central government also sets the guide prices used by the provincial governments for Part B drugs. Provincial governments set prices for B-list drugs, and the wholesale prices and retail prices of first-class drugs used in mental health and anaesthetics. Provinces can set price ceilings 5% higher or lower than the central guide prices for Part B drugs. All retail prices charged to the users must be lower than these ceilings. The government declared that retail prices should be reduced by an average of 15% before the end of 2001 (ibid.).

As mentioned above, for the drugs falling under government regulation, the NDRC stipulates the final prices charged to healthcare users. In setting prices, the maximum retail prices are based both on a mark-up of the average acquisition cost declared by manufacturers and calculated as factory or import prices with duty/taxes and retail distributional profits incorporated[9]. However, the NDRC also considers other factors

[9] Formula to Calculate Drug Retail Price: The formula to calculate drug retail price of domestic drugs is "retail price=factory price (inc. tax)*(1+distribution price differences)"; The formula to calculate drug retail price of imported drugs is "retail price= border price*(1+distribution price differences)"; The formula for the factory price of domestic and imported sub-package drug is "factory price=(manufacture costs+period expenses)/(1-sales profit rate) * (1+VAT)"; The formula for the border price of imported drugs is "border price = C.I.F. * (1+duty rate) * (1+VAT) + border expenses". Note: C.I.F.= Cost, Insurance and Freight; VAT=Value-Added Tax.

such as supply and demand, therapeutic value, the price of similar drugs, and the desire to encourage research and development (R&D) (Huang and Yang, 2009). Drug manufacturers may apply for special pricing permission (separate pricing) for higher prices, if they can present evidence that their product has a higher standard or efficacy than those of other manufacturers producing the same drug that would justify a higher price (Wu *et al.*, 2014). Consequently, this loophole in the government price policy allows pharmaceutical manufacturers to set higher prices, driving drug prices up, especially benefiting the multinational pharmaceutical companies with patent drugs. For example, even when the government has set the retail price caps for selected drugs, the difference between the drugs' ex-factory (EF) price from the factories and the retail price to the patients in China is still large (usually several times, and sometimes more than ten times higher) as shown in Table 5.2. Some patent drugs produced by foreign enterprises have "separate prices", which exceed even ten or a dozen times the price ceiling (PC) of some domestic drugs as shown in Table 5.3.

Table 5.2: Ex-factory drug prices and retail prices, 2005

Generic Name	Category	Drug Unit	EF Price (Yuan/ Unit)	Retail Price (Yuan/ Unit)
Ceftazidime	Antibiotic	1g	7	47.5
Cefoperazone Sodium and Sulbactam Sodium	Antibiotic	1g	6	40.9
Muscular Amino Acid and Peptides and Nucleosides	Heart Nutrition	2ml	4	34
Fluconazole	Antibiotic	200ml	4	76

Source: CPPCC, 2005.

Table 5.3: Selected patent antibiotics' EF and PC price* compared with the retail price from foreign pharmaceutical companies (2005)

Generic Name	Category	Drug Unit	EF Price (Yuan/ Unit)	PC Price (Yuan/ Unit)	Foreign Retail Price (Yuan/Unit)
Ceftriaxone Sodium	Antibiotics	1g	1.6	10	93.8 (Roche)
Cefoperazone Sodium	Antibiotics	1g	2.3	10	46.1 (Pfizer)
Cefoperazone Sodium and Sulbactam Sodium	Antibiotics	0.5g	2.5	21	80.3 (Pfizer)
Cefuroxime sodium	Antibiotics	0.75g	3	18.8	37.2 (GSK)
Ceftazidime	Antibiotics	1g	4.6	18	78(GSK)

Source: Wei, 2009b: 209.

*North China Pharmaceutical Co., Ltd.

Although the current drug price regulations allow new and special drugs to be priced independently, this was intended to encourage pharmaceutical manufactures to invest in R&D. However, loopholes in the process have made it easy for manufacturers and wholesalers to change unprofitable drugs into "new" drugs, enjoying the higher profit margins that "separate pricing" allows (I discuss this further in Chapter 6) (Huang and Yang, 2009; Wang, 2006).

The price of off-patent innovations can be set up to be 35% higher for injections and 30% higher for formulae other than generics produced by Good Manufacturing Practice (GMP) certified manufacturers (CSDA, 2004). For patented drugs, manufacturers or distributors can set prices themselves in the year after they receive their import registration license, but after one year, the NDRC makes an official assessment of the price. However, as mentioned previously, all prices not set by the Chinese central government have to be registered with the government pricing authority on the basis of market prices. Drugs with GMP Certification can be priced up to 40% higher for injections and 30% higher for other dosage forms than non-GMP certified products (ibid.). In practice, the factory price set by manufacturers is usually much higher than the actual production cost, because the government pricing authority does not have enough capacity to check these costs. Different prices for the same drug exist in different areas of the country because of local competition, lack of procurement transparency and local protection. For medicines with market pricing,

the retail price is based on production costs, and market supply and demand. Wholesalers, retail pharmacies and hospitals can set the actual selling price but cannot exceed the retail price set by the manufacturer (Chen and Schweitzer, 2008).

Recently China also established a National Essential Medicine System to regulate basic drug availability. The WHO (2007) defines essential medicines as those that satisfy the priority healthcare needs of the population. Essential medicines should be available within the context of functioning health systems at all times, in adequate amounts, in the appropriate dosage forms, with assured quality, and at a price the individual and the community can afford. The Essential Medicine List (EML) should also guide the procurement and supply of medicine in the public sector and schemes that reimburse medicine costs, medicine donations, and local medicine production. In 2012, the Chinese MOH released the newest edition of the EML; in principle, the list is subject to change every three years. Any drug listed in the EML must be a drug in the Pharmacopoeia of the People's Republic of China and be subject to an existing drug standard issued by the MOH/SFDA. The EML only covers a total of 520 types of national essential drugs (NEDs), including 317 types of chemical drugs and biological products, and 203 types of traditional Chinese medicines. The MOH (2012a) recommends that the medical profession uses the NEDs as the first choice in medical practice if applicable (MOH, 2012b).

However, the central government has failed to control the over-prescription of "new and costly" drugs. As mentioned above, China's list of government-regulated drugs is based on the UEBMI reimbursement drug list, updated in 2009, while the EML was updated in 2012, so China's drug price regulation is not integrated with the National Essential Medicine System. Moreover, although the EML is a guideline, it is not linked to clinical usage and there is no compulsory enforcement in hospital, so doctors are using other drugs not listed in the EML. In addition, the central government allows the provincial government to add more drugs to the EML as needed. There are also some permissive government policies at provincial and local level for essential medicine production, distribution, usage, and related fiscal and tax issues. As a result, when the NDRC released documents listing reduced drug prices, many drugs listed in the documents disappeared from hospital pharmacies and appeared in slightly modified forms as "new" drugs with similar therapeutic effects as the originals, but at prices that were much higher (Zhang and Liu, 2009; Huang and Yang, 2009). These loopholes in drug pricing policies allow pharmaceutical manufacturers, wholesalers and hospitals to escape easily from producing the drugs listed in the price-reducing documents by using "differentiation" (changing dosage forms, specifications and packaging types, etc.) to achieve greater profits from so-called "new" drugs to circumvent pharmaceutical regulation (I discuss this further in Chapter 6).

Generally speaking, therefore, government price controls have not been effective. As the government has permitted health facilities to earn profits from new drugs, new tests, and technology (Blumenthal and Hsiao, 2005), hospitals have benefited from the investment in high-priced technologies and the sale of new drugs in a variety of ways. For example, due to special price schemes, the prices for drugs and technology-based diagnostic procedures such as computerized tomography scans, magnetic resonance imaging, and ultrasound were set high and often well above the average cost for other hospital services. This unbalanced pricing of hospital services has created distortions in the mix of services provided. There has been an incentive for hospitals to use high-technology equipment frequently, especially for those insured patients who bear much less of the personal cost of these procedures. At the same time, in order to compensate for hospital running, public hospital pharmacies are allowed to charge a profit margin on the retail price of drugs as noted, encouraging hospitals and medical profession to over-prescribe pharmaceuticals, especially new and expensive drugs (Huang and Yang, 2009).

The drug retail price includes the costs of production as well as those involved in the wholesale and retail distribution chain. As mentioned above, although there is a government-regulated 15% mark-up for the final prices charged to patient, in fact, profit margins for hospitals and brokerage fees paid to doctors and hospital administrators are usually much higher than that, and form about 30% to 70% of the

final retail price of a drug sold. Therefore, in China, retail mark-ups constitute an extremely high proportion of retail prices, the drug ex-factory price representing only 10%–50% of the retail price, and mark-ups for wholesalers accounting for another 3 to 20% (Zhu, 2007). Table 5.4 below shows, for instance, that the mark-ups in the retail chain account for 66% of the retail price of Omeprazole capsules, a much higher proportion of the price than for wholesalers (20%) and manufactures (14%).

Table 5.4: The Price Chain of Omeprazole Capsules (Gastric drugs)

Retail Price Composition	%
Mark-ups in the retail chain (hospitals)	66
Profit margin for hospitals	30
Brokerage paid to doctors	30
Brokerage paid to hospital administrators	4
Expense for bidding	2
Mark-ups in the wholesale chain	20
Cost of sales promotion (mainly paid to medicine deputies)	4
Profit margin for drug wholesalers	7
Profit margin for drug agents	5
Tax	4
Total expense of production chain (ex-factory price)	14
Production cost	6
Sales expense	1
Management cost	2
Cost of R&D	2
Profit of pharmaceutical manufactures	2
Tax	1

Source: Yu *et al*., 2007.

The high level of use of new high-technology medicine and drugs contributes to a rapid increase in hospital spending. From 1995 to 2005, the average annual medical expense per out-patient in China's general hospitals increased from 39.9 yuan to 126.9 yuan (or from roughly US $5 to $16), and expense per in-patient increased

from 1667.8 yuan to 4661.5 yuan (or from roughly US $211 to $590) (MOH, 2006). Pharmaceuticals accounted for half of all healthcare costs, much higher than that in other country (e.g. US and UK) (Hesketh *et al.*, 2005). In the 1990s, a revenue-related bonus increased doctors' pay through the provision of services and use of prescription medications. This system encouraged unnecessary admissions and surgical procedures as well as over-prescription of many medications (Liu and Mills, 2005). At this time, many hospitals instituted bonus systems linked with the use of high-tech equipment and new expensive drugs, where doctors were offered monetary compensation for new expensive drug sales and for ordering diagnostic procedures. At the same time, hospitals were overcharging for superfluous health services such as unnecessary tests and prescriptions (World Bank, 2005).

As mentioned earlier, insufficient government funding combined with a pricing policy allowed profit-seeking on drugs, creating the mechanism whereby medical care services are supported by the proceeds from the sale of drugs, which has been introduced and inserted into the pharmaceutical supply and profit-chain. In order to create higher profits, this mechanism is an incentive for the medical profession to dispense/prescribe more expensive drugs in larger quantities than might be necessary (Huang and Yang, 2009). As hospitals mainly rely on selling prescription drugs, there is a rather imbalanced pattern of pharmaceutical dispensing revenue within the supply chain. Hospitals' prescription drugs account for roughly 80% of total pharmaceutical

sales (Sun and Meng, 2009). Drug revenue is a hospital's main revenue source, generally accounting for over 40% of total revenues in the period 1990–2006. From 1999 to 2003, hospitals' total revenues remained above 43%. Although in recent years the ratio of drug dispensing revenue to the hospitals' total revenue has decreased slightly, it is still at a high level of over 40% (refer back to Table 5.1).

Therefore, encouraging prescribing as a means of raising revenue is a key factor that increases use of medication. This policy-induced profit mechanism empowering hospitals has a strong market power in dispensing drugs and can encourage their doctors to prescribe, since hospitals usually employ doctors at relatively low baseline salaries but with bonuses linked to profits (Liu and Mill, 2003). In 2004, the government stipulated a code of conduct to regulate and supervise doctors' behaviour and professional ethics (including guidelines for doctors on the safe use of medicines (MOH, 2004b), although doctors do not comply with these guidelines in practice. For example, in 2007, the government further launched the administrative rules on prescriptions, setting maximum number of five drugs for doctors to prescribe per prescription sheet (MOH, 2007b). However, given the overriding necessity to generate a higher profit for the hospital, doctors often just write multiple prescriptions to circumvent the regulation on the specific quantity limits of drugs per prescription. Consequently, these strong hospital financial incentives driven by government pharmaceutical regulation have long been blamed for aggravating the over-use of

medication in China. In fact, an early study found that 98% of out-patients with a common cold were prescribed antibiotics (Zhan *et al.*, 1998). As reported in Chapter 1, another study has estimated that roughly half of antibiotic prescriptions in China were medically unnecessary and implicated in over one million children becoming deaf or suffering neurological disorders (Cheng, 2005).

In addition, there are artificially low prices set by government regulation for basic care (i.e. relatively low salaries for medical professionals), which do not reasonably reflect doctors' efforts in practice. Because Chinese hospitals integrate the functions of prescribing and dispensing, drugs' retail prices in hospitals are almost certainly linked to subsidising other healthcare services in China, As a result, doctors are encouraged by this profit mechanism to use pharmaceuticals to cross-subsidise the below-cost pricing for basic services.

Although the purpose of the economic reform was to increase access to health services, providers sought instead to increase utilisation of high-revenue services such as pharmaceuticals and high-technology testing, creating inequity of finance and barriers to access (Wagstaff *et al.*, 2009b). This regulation-induced incentive to increase prescribing was added to existing incentives from the market. Pharmaceutical companies often share profits with prescribers, and physician's bonuses from their clinical department may be based on how much revenue their

services generate (Reynolds and McKee, 2009). It has been argued that high levels of supplier-induced demand have ensued due to these "perverse incentives to overprescribe drugs and high-tech diagnostic services and procedures" (Yip and Mahal, 2008). Today, it is estimated that at least 30% of drug spending in China is on unnecessary prescriptions (Hsiao, 2008). Although the government has set guidelines to patients on safe use of medications, mostly indirectly via medical profession and the pharmaceutical industry, these guidelines do not have much effect on reducing the greater use of medicines.

These countervailing moves can be summarized by saying that there was an initial push by the state to control drug pricing, which was countered by the alliance of professions and industry. This alliance was successful in that it constrained the actions of the state (this will be discussed further in Chapter 6 and 7). In this way, perhaps there is nothing contradictory in the apparently conflicted nature of the state response noted above. This could be read as the state seeking another ally (either doctors or the pharmaceutical companies) with which it might collaborate to undermine the combined power of pharma and the professions. The state seeks to lower health costs by involving other actors who might seek to constrain the costs of providing care (so other actors can maximise their own profit), and the most recent of their countervailing moves is simply a question of the state identifying another actor (i.e. doctors or the pharmaceutical companies) to attack the power of one or the other.

Drug approval and the implication for incentives

Drug approval, another important power in the hands of central government, is designed to ensure the safety and efficacy of drugs. However, in China, there is also a risk of a very low threshold in the drug registration and approval process due to corruption, which leads to more "new" drugs coming onto the market. Light (2013) claims that institutional corruption occurs in a force-changing situation of countervailing powers. Corruption at the organisational or institutional levels involves a larger group of stakeholders who participate in or are affected by such corruption.

I now turn to look at the matter of government corruption in China. In the past, corruption in drug administration at the state (SFDA), provincial (PDA) and local (LDA) levels has been extensive, particularly as some officials in the drug approval department have long been blamed for taking bribes in exchange for new drug approvals for the products of existing generic drugs of pharmaceutical companies. For example, in 2001, the former head of Zhejiang PDA (Hang Zhou) was convicted of accepting bribes, and became the first convicted government official at the provincial level of drug administration in China since 1949 (Wei, 2009b: 213). Later, a number of provincial and local government officials were found guilty of corruption: the former head of Guangzhou LDA in Guangdong Province (Weidong Yang), the

former deputy head of Jilin PDA (Qingxiang Yu), the former director of the marketing supervision department of Xiamen LDA in Fujian Province (Jianping Chen), the former director of the drug registration/approval department of Shaanxi PDA (Yangsu Mi), the former head of Jingzhou LDA in Hubei Province (Changyu Zhao), the former head of Liaoning PDA (Shushen Zhang), and the former head of Zhejiang PDA (Shangjin Zheng), and several others (ibid.).

More recently, in the drug registration/approval process of the SFDA, some government officials have accepted substantial bribes from pharmaceutical manufacturers to facilitate the issue of numerous so-called "new" drugs. During 2005 and 2006, two government officials of the SFDA were found guilty of corruption, one the former director of the drug registration/approval department of SFDA (Wenzhuang Cao), the other the former director of the medical device department of SFDA (Heping Hao). In 2007, in one of the most shocking SFDA official corruption cases in China, the former chief (from 1998 to 2005) of SFDA, Xiaoyu Zheng, was sentenced to death. He was convicted of taking bribes of 6.5m yuan ($850,000; £425,400) from eight pharmaceutical companies to register and issue approvals of new drugs, which is one reason why such an astonishing number (more than 150,000) new medicine approvals were issued in 2004 (Santoro and Liu, 2009).

Recently, the central government's ongoing anti-corruption unit investigated the National Development and Reform Commission (NDRC), one of the most powerful macroeconomic management agencies among 25 agencies under the Chinese State Council, which has broad administrative and planning control over the Chinese economy (Huang and Yang, 2009). More than 19 current or former NDRC officials were detained under investigation of bribery from May 2013 to September 2014, five of them from the pricing department of the NDRC (Zhang, 2014). The pricing department is in charge of auditing and monitoring 11 key fields, including electricity, water and other monopolistic products and public services. The department is also responsible for developing important pricing policies and assists in setting or adjusting pricing standards for products and services controlled by the central government. The department also monitors oil and pharmaceutical pricing. As the nation's top economic planner of the central government, the department sets broad economic policies, approves major investments, mergers and acquisitions, and has the authority to influence commodity prices (NDRC, 2008).

The NDRC is open to corruption since the power and authority to assess and approve decisions and projects is concentrated within this single government body, and other departments of the NDRC possess a great deal of control over the operations of the country's economy and the supervision of various industries. NDRC officials have the ultimate power to decide the results of a major project, a company's development

model, or nationwide prices for certain products. It is therefore unsurprising that the department has become prone to conflicts of interest, which create opportunities for bribery. With broad powers to make authoritative decisions on issues that will have a major impact on markets and society, it becomes the case that, as Lord Acton (1887) said in a letter to Bishop Mandell Creighton, “Power tends to corrupt, and absolute power corrupts absolutely.” As mentioned earlier, according to current regulations on drug prices, pharmaceutical companies can set prices for new drugs and ask the NDRC to approve them. The NDRC examines these applications for “separate pricing” on a case-by-case basis and, if the application is approved, sets the drug’s maximum retail price accordingly (Huang and Yang, 2009).

With regard to Light’s arguments, a central principle of countervailing power theory is that dominance by one party in ways that corrupt the mission of a social institution and societal function of other parties will over time prompt them to organise and alter the balance of power (Light, 2013). In the context of the Chinese healthcare system, this undermining appears to be happening to the industry as government is a dominant party on setting the drug pricing policies, and in order to maximise its profit, the pharmaceutical industry tries to avoid these regulations. This industry has abused patents by developing “innovative” drugs that are usually little better than existing ones, encouraging medical professionals to prescribe more “new” drugs, lobbying government officials, and threatening the ability of countries to afford

universal healthcare by charging exorbitant prices (also see further details in Chapter 6 and 7) (Healy, 2012).

For example, in 2014, the former director (Changqing Cao), the current director of the pricing department (Zhenqiu Liu), and three deputy directors (Wangjun Zhou, Caihua Li and Jianying Guo) were detained in order to be investigated for corruption. Changqing Cao, as the head of the price department of the NDRC from 2007 to 2014, was responsible for the review and supervision of a variety of commodity prices. Several times he attempted to reduce pharmaceutical prices, but all attempts failed. Jianying Guo used to be Cao's assistant, and he was responsible for prices in the pharmaceutical industry. Guo and Cao are currently under investigation for taking bribes to help pharmaceutical firms secure approvals for their "new" drugs' prices (Zhang, 2014). As a result, there were additional "new" expensive drugs launched on the market by pharmaceutical companies, and because of the financial incentives, hospitals and doctors were encouraged to prescribe and dispense them in larger quantities.

Conclusion

The government has taken a series of measures to deal with over-prescribing, including price cuts on a wide range of medicines. However, the pharmaceutical

industry and the medical profession have been quick to adopt countermeasures: pharmaceutical companies produce “new” drugs to attract higher prices and doctors, in order to seek higher profit margins, switch to more expensive alternatives or prescribe a greater amount of unnecessary drugs. For example, according to an estimate of the MOH, the average Chinese person consumes 10 times more antibiotics than the average American (2007b).

The government has also faced a policy dilemma. On one hand it is willing to keep mark-ups of drugs under control, but it is also faced with insufficient funding to run the public hospitals. As a result, the regulations have exacerbated the problems of corruption, since the central government department with broad power on drug registration/approval, and the setting of drug prices, does not let the industry or doctors take kickbacks openly, so they do it under the table. For instance, some government officials, in their own interests, are taking bribes in exchange for approving so-called “new” expensive drugs, and this distorts the drug market and generates incentives for the greater use of “new” expensive drugs in China’s hospitals.

The combination of rapid economic growth and unprecedented commercialisation has led to market failures in the Chinese healthcare sector. The market is too immature to provide all of the services previously provided by the government in China. However,

contrary to the opinion that over-medication problems in Chinese healthcare are primarily caused by market failure, this chapter argues that the uncertain and inappropriate roles of government in the provision of healthcare and the use of medicine should be re-examined. As we can see, the government has played a crucial role in the healthcare sector and medicine use, and is a powerful actor. Hence, finding the optimal balance of power between the industry, the profession and government is the first future priority of government control in managing Chinese over-medication problems.

CHAPTER 6 - THE POWER OF THE PHARMACEUTICAL INDUSTRY

Introduction

The pharmaceutical industry is a key actor in relation to the use of medicines. This chapter begins with an overview of the industry in China and then discusses the pharmaceutical industry in relation to three more key actors (the government, the medical profession and the public), indicating ways by which the industry encourages the greater use, and hence over-use, of drugs. I then argue, firstly, that the industry plays an important role in influencing government policy, as the government is subject to "corporate bias" in favour of the industry, "permitting the industry privileged access to, and influence over the state, not afforded to any other interest group" (Abraham, 2009a: 100). In the case of China, the government's loose regulation of drug approval and the existence of pricing loopholes allows pharmaceutical manufacturers to circumvent the pricing policy by superficial differentiation of drug products to enhance sales (see also Chapter 5). In addition, they pay bribes to the government officials of regulatory bodies in exchange for 'new' drug approvals, while claiming that the 'new' drugs are more effective or better (Santoro and Liu, 2009; Zhang and Liu, 2009). However, in fact, as in the United States, "most new drugs offer little or no advantage over existing drugs to offset their greater risk" (Light, 2010b: 2). Introducing a new drug is a means by which the

industry can justify a higher price. In turn, these new drugs can encourage hospitals and doctors to prescribe and dispense more new and expensive drugs in larger quantities than might actually be necessary.

Secondly, in regard to the process of co-optation, while Light (2010a) argued that an alliance of the state and the industry undermines the power of the medical profession, I shall argue that in China, the industry aligns with and co-opts the medical profession to encourage the prescribing of its pharmaceutical products. There is also a potentially symbiotic relationship between the pharmaceutical industry and the medical profession, with extensive marketing campaigns directly targeted at doctors being a concrete way by which pharmaceutical companies attempt to influence prescribing practice, thereby encouraging the greater use of drugs to boost sales. In order to persuade doctors to use their products, the industry tries to develop favourable relationships with hospital administrators and doctors by various promotional activities, such as giving free drug samples, producing entertainment and funding continuing medical education, as well as ‘kickbacks’ and bribes (Zhang and Liu, 2009). Doctors rely heavily on the information and products provided by the industry, and the sales representatives of drug companies are often one of the most important sources of information about new medicines. Consequently, there is an overlap or homogeneity of interest between the pharmaceutical industry and doctors in respect of encouraging the greater use of such drugs.

Thirdly, pharmaceuticals are being inappropriately advertised and promoted as daily commodities and this can significantly affect the public's use of drugs. Pharmaceutical marketing tactics are therefore not only directed at persuading hospital administrators and doctors to recommend more prescription drugs, they are also directed at 'educating' or (more accurately) persuading the public, by means of advertising slogans and images, to use the drugs that the companies produce. This is largely achieved via advertisements on television, in newspapers, journals and online, which significantly influence the beliefs and behaviour of the public regarding the drugs' efficacy and their need for them, which then alters the patterns of use, not least through encouraging greater self-medication. Promotion has a considerable impact on the public's purchasing of over-the-counter (OTC) drugs and the requests they make to doctors, increasing the risk of unnecessary drug use and the demand for prescription drugs. In addition, drug companies financially support some lay public groups or associations to advocate the greater use of their pharmaceutical products in China.

In short, the industry has extensive power in the context of China's healthcare, not least because the government aligns its interests with industry, and the industry co-opts the doctors and assimilates patients as allies, and this undermines the state's countervailing power against corporate bias (Abraham, 2009a). Busfield's (2006) framework for understanding pharmaceuticalisation identifies key actors in terms of

countervailing powers that generate the expansion of pharmaceuticalisation: pharmaceutical companies, doctors, government and the public (also see Light, 1995, 2000). In this context, corporate bias of the pharmaceutical industry in terms of countervailing powers is an industry-dominated process with regard to lobbying the government officials, co-opting or assimilating the medical profession and patient groups as allies. This will undermine the corporate bias of the state. However, in China's healthcare domain, the interests of the state are pulled between incompatible goals: wanting to reduce the public cost of healthcare and also wanting the industry to contribute to the country's economy. Thus the state in a dilemma in its role as a countervailing power in relation to regulations (see Chapter 5). In addition, co-optation is also involved in the movement of countervailing powers, a process in which one larger power converts an opponent or previously independent group into a supporter (Tiefer, 2000: 273; Holdford, 2005: 392). In this chapter, I argue that the endogenous "corporate bias" in terms of countervailing power and pharmaceuticalisation, in which the pharmaceutical industry lobbies government officials and co-opts or assimilates the medical profession or the public (with related interests) will encourage over-use.

Overview of the pharmaceutical industry in China

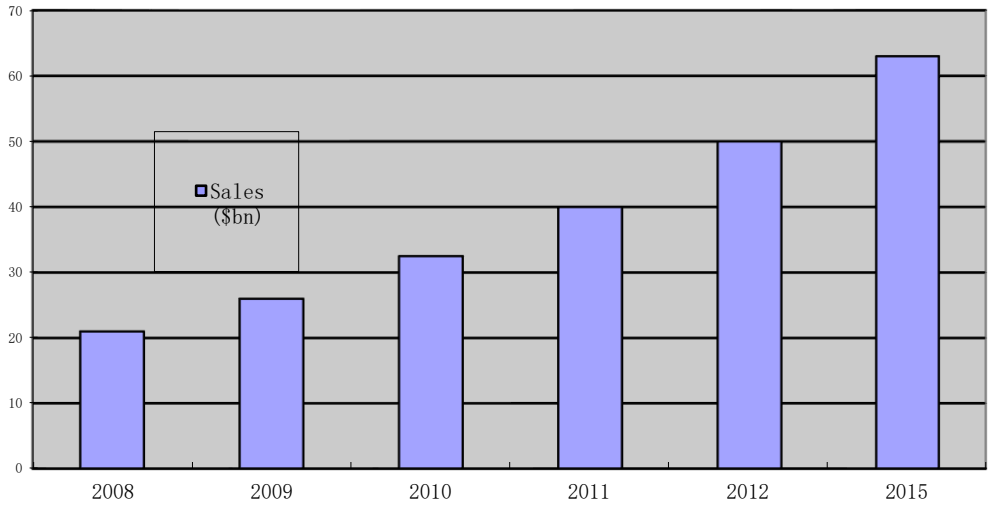
With the ending of patents and replacement of patented drugs by cheaper generic drugs, the pharmaceutical industry's annual growth rates have been declining globally, but in developing countries such as China, Brazil and India, sales are now expanding more rapidly than in the West from a lower starting base (Busfield, 2010: 934). Asia currently has the world's highest rate of pharmaceutical sales growth, at an average annual rate of 15% between 2007 and 2012 (OECD/WHO, 2012). Pharmaceutical drugs are a major component of total healthcare spending in China, accounting for around 40% of the total health expenditure, far higher than the average of 16% for OECD countries (IMS, 2014). This is well ahead of the US and Europe, the traditional focus regions for big pharmaceutical companies, that experienced low single-digit growth over the same period. As in so many other areas, the Chinese market is distinctive. Healthcare spending has more than doubled from $156 billion in 2006 to $357 billion in 2011[10], and is estimated to reach $1tn by 2020, about 6% of the country's GDP. In particular, pharmaceutical sales have significantly increased from $21 billion in 2008 to around $50 billion in 2012 (see Figure 6.1). It is predicted that by 2015 pharmaceutical sales in China will reach $63 billion, larger than the markets of Brazil, Russia and India combined (OECD/WHO, 2012).

[10] All $ refer to US $.

In the hospital sector, in 2012, official data indicates that drugs revenue accounted for over 40% of total revenue, across all levels and categories of hospitals. This increase in hospital drug spending is encouraged by the importance of pharmaceuticals and medical technology as a source of hospitals' revenue. The drug pricing policy aimed at eliminating the mark-ups and controlling health service costs derives from public hospitals' drug dispensing and forms a major proportion of their total income (IMS, 2014).

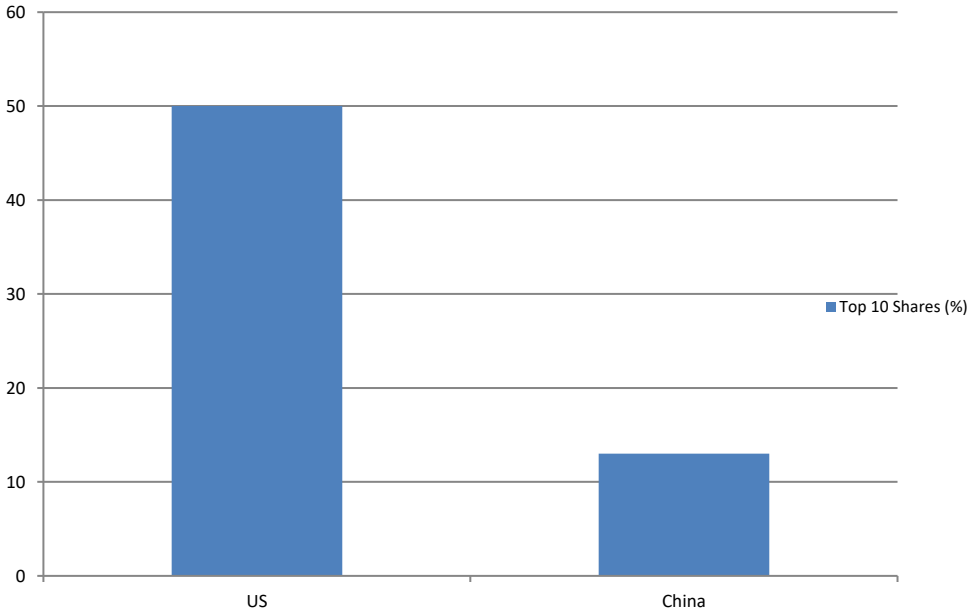
In China's complex pharmaceutical market, domestic players operate in a highly fragmented environment. China has more than 5,000 domestic pharmaceutical companies. However, nearly 90% of China's pharmaceutical manufacturers are small-sized or medium-sized companies. According to an analysis by BMI Healthcare, the China's top ten pharmaceutical companies in 2011 accounted for only 13% of the industry's overall revenues, whereas in the US this figure is more than three times larger at 50% (see Figure 6.2).

Figure 6.1: Pharmaceutical Sales in China, 2008-2015



Source: OECD/WHO (2012).

Figure 6.2: Market Share of 10 Top Pharmaceutical Companies in China and in the US



Source: BMI (2011), IMS (2011).

In addition, China's pharmaceutical distribution channel has multiple layers and many distributors. In 2009, the market comprised a total of 13,000 wholesale pharmaceutical enterprises, more than 341,000 retail and chain store enterprises and 554,000 rural supply outlets (SCPRC, 2008; Tse *et al.*, 2009). Between six and nine supply-chain links exist from production to final sales to patients (Wei, 2009b). However, public hospitals (tertiary, secondary and primary) are the major distribution channels for pharmaceutical products, accounting for about 80% of total pharmaceutical sales. Stand-alone pharmacy stores account for the remaining 20% (Sun and Meng, 2009).

Based on Moving Annual Total (MAT) revenues as of the first quarter of 2011, the total revenues of drugs sales of the top 10 domestic pharmaceutical companies in China (in descending order) are shown in Table 6.1 below. In addition, some of the world's top multinational pharmaceutical manufacturers have extensive operations in the country, including R&D facilities, joint ventures and entirely owned companies (Anand, 2011). These are more concentrated, with the top ten external players accounting for more than half of the multinationals' 30% market share in China (see Table 6.2).

Table 6.1: Top 10 Domestic Pharmaceutical Companies in China, Q1 2011

Rank	Company	Revenue MAT (US$ million)
1	**Sinopharm**	6886.52
2	**Shanghai**	5512.73
3	**Harbin Pharmaceutical**	1552.77
4	**Yunnan Baiyao Group**	1044.34
5	**Sichuan Kelun**	590.32
6	**Shanghai Fosun**	563.60
7	**Jiangsu Hengrui Medicine**	544.95
8	**Kangmei Pharmaceutical**	346.98
9	**Shenzhen Hepalink**	325.41
10	**Shandong Dong-E E-Jiao**	301.72

Source: BMI (2011).

Table 6.2: Top 10 Multinationals by Hospital Drug Sales in China, Q1 2011

Rank	Company	Sales (US$ million)	Share (%)	Annual Growth (%)
1	**Pfizer**	835	8.32	31
2	**AstraZeneca**	749	7.47	32
3	**Bayer HealthCare**	663	6.61	20
4	**Sanofi**	620	6.18	31
5	**Roche**	531	5.29	31
6	**Merck**	443	4.42	15
7	**Novartis**	440	4.39	25
8	**GlaxoSmithKline**	378	3.77	30
9	**Novo Nordisk**	359	3.58	30
10	**Johnson & Johnson**	288	2.87	30

Source: BMI (2011).

Table 6.3 presents the sales data for both Chinese and foreign pharmaceutical companies at ex-manufacturer prices for the third quarter of 2011 on a 12 month MAT basis. Foreign consumer health companies generally form joint ventures with indigenous players, who dominate this sector (KPMG, 2011). Pfizer's merger with Wyeth in 2009 promoted this US multinational into being the top performing pharmaceutical corporation in China. Pfizer achieved RMB 7763 million of revenue, jumping from its previous second position to occupy the leading position in the Chinese hospital market in 2011. AstraZeneca and Sanofi moved down to second and third positions (RMB 6629 million and RMB 6309 million) respectively, ahead of Bayer. Jiangsu Yangzijiang was the top domestic company with hospital drug sales of RMB 5414 million. The sales performances of the leading companies vary widely. Among the leading multinationals, Pfizer in 2011 listed the strongest sales growth rate of 23.4% in the previous year, while the second ranking AstraZeneca recorded a growth rate of 16.3%. Relatively, local companies showed much smaller variations in growth, ranging from the top domestic company Jiangsu Yangzijiang at 22.8% to a rate of 19.2% for the Ke Lun Group.

Table 6.3: Top 10 Company Suppliers by Hospital Drug Sales in China, MAT Q3 2011

Rank	Company	Sales (RMB million)	Market Share (%)	Annual Growth (%)
1	**Pfizer**	7763	2.2	23.4
2	**AstraZeneca**	6629	1.9	16.3
3	**Sanofi-Aventis**	6309	1.8	23.2
4	**Bayer HealthCare**	5937	1.7	21.0
5	**Jiangsu Yangzijiang***	5414	1.5	22.8
6	**Ke Lun Group***	4968	1.4	19.2
7	**Shandong Qilu***	4830	1.4	24.9
8	**Roche**	4732	1.3	18.8
9	**Jiangsu Hengrui***	4155	1.2	20.9
10	**Merck**	3910	1.1	22.1
	Total Market	352072	100	18.1

Source: IMS (2011).

Note: * indicates Chinese companies

The top four ranked companies in terms of sales by value are all multinationals. They dominate with 10% of the combined market share of hospital pharmaceutical sales, while there are only four domestic companies within the ten top performing companies: Jiangsu Yangzijiang (fifth), Ke Lun Group (sixth), Shandong Qilu (seventh) and Jiangsu Hengrui (eighth). Their combined market share is just about half of the multinationals', underlining just how much the Chinese market is fragmented.

Table 6.4 shows the sales of the 10 leading products (MAT Q3/2011) in the hospital sector at ex-manufacturer prices. Here we find that local brands dominated the best-

selling hospital products by sales value in 2011, with just three multinational brands featuring among the top ten products. Sanofi-Aventis' antiplatelet agent, Plavix (clopidogrel), captured the largest share of sales, while Bayer Schering's Glucobay (acarbose) remains the best-selling oral antidiabetic. AstraZeneca's anti-ulcerant, Losec (omeprazole), remains among the leading brands with sales growth of 26.1% in 2011. Two of the seven local products among the top 10 are traditional Chinese medicines and one is a tonic. Guangxi Wuzhou's ginseng product, Xue Shuan Tong, was the fastest-growing hospital product. The top 10 drugs accounted for just 4.4% of hospital sales, according to IMS health data for the 12 months ending September 2011.

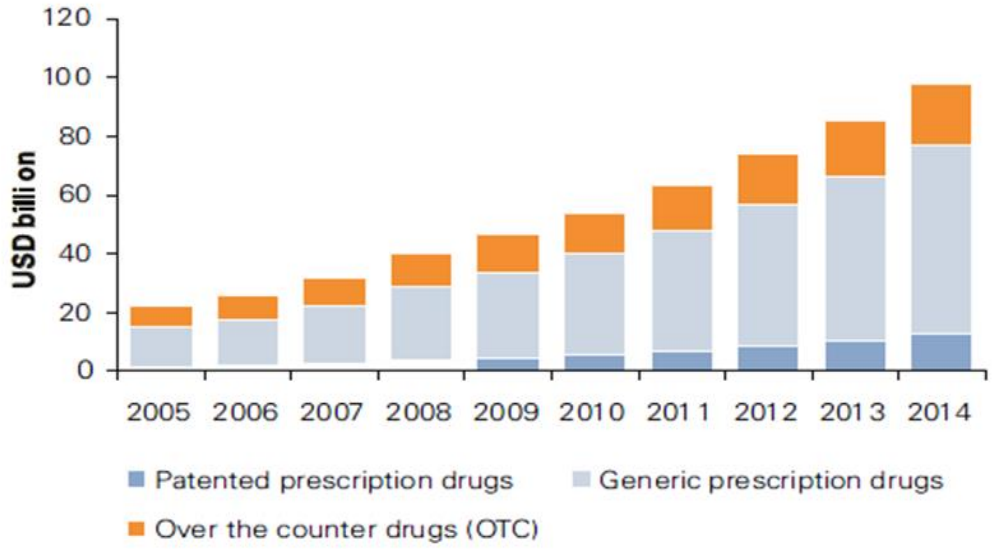
Table 6.4: Top 10 Products by Hospital Purchase Value in China, MAT Q3 2011.

Product	Manufacturer	Sales (RMB million)	Market Share (%)	Annual Growth (%)
Plavix	**Sanofi**	1238	0.6	40.1
Bei Tong	**Shandong Jinan Buchang**	1028	0.5	33.6
Xue Shuan Tong	**Guangxi Wuzhou**	1016	0.5	49.8
Shu Xue Tong	**Mudanjiang Youbo**	975	0.5	13.6
Ke Lin Ao	**Beijing Sihuan**	943	0.4	18.1
Shen Jie	**Shandong Qilu**	885	0.4	21.2
Glucobay	**Bayer Schering**	832	0.4	21.5
Xin Tai Lin	**Shenzhen Jiuxin**	804	0.4	42.5
Losec	**AstraZeneca**	792	0.4	26.1
Zuo Ke	**JS Yangzijiang**	767	0.4	22.2

Source: IMS (2011).

Generic drugs are the backbone of China's pharmaceutical industry. The Chinese drug market comprises a complex system of regional markets where manufacturing is dominated by generics, and most sales shown in Figure 6.3 come from generic prescription drugs. The generic prescription drugs sector, which was valued at less than $20 billion in 2005, is predicted to reach to roughly $70 billion in 2014 (IMS, 2011).

Figure 6.3: Proportion of Drugs Prescribed or Sold OTC in China, 2005-2014



Source: KPMG (2011).

Note: OTC includes both patented and generic OTC pharmaceuticals.

Local, foreign and joint-venture manufacturers sell more than 50,000 pharmaceutical products in China (Wang and Ge, 2009). As mentioned earlier, most of China's pharmaceutical companies are small or medium sized. Ninety-eight percent of 5,000 pharmaceutical domestic companies produce generic drugs, and there are often as

many as 70-80 domestic pharmaceutical manufacturers producing the same drug, with many offering duplicate products of inconsistent quality; since there are many producers, quality varies across their production (Sun *et al.*, 2008). This high level of duplication causes a surplus of productivity and supply in the pharmaceutical market. As shown in Table 6.5 below, more than 1,000 pharmaceutical manufacturers produce the compounds Sulfamethoxazole and Metamizole, and more than 900 produce Norfloxacin and Metronidazole. To some extent, the number of companies producing seems high and this might cause a surplus. Consequently, these companies tend to face heavy price competition and therefore their profit margins and market shares are low. One study showed that more than 70% of these companies had annual sales of less than RMB 50 million (£5 million) in 2012 (SFDA, 2012). This creates an incentive for domestic pharmaceutical companies to try to differentiate their products. Currently, all generic drugs are sold under their brand names, so consumers cannot distinguish between patented products and unbranded generic versions. Since 2005, the total investment in R&D has equalled about 1.02% of total sales (NDRC, 2006; Yang *et al.*, 2009), much lower than in major Western companies.

Table 6.5: Selected Drugs and Numbers of Domestic Manufacturers

Generic Name	Category	No. of Companies
Compound Sulfamethoxazole	Antibiotic	1172
Metamizole	Analgesic (pain reliever) & Antipyretics (fever reducer)	1049
Metronidazole	Antibiotic	974
Norfloxacin	Antibiotic	941
Oxytetracycline	Antibiotic	815
Acetaminophen/Paracetamol	Analgesic & Antipyretic	747
Chloramphenicol	Antibiotics	738
Berberine	Antibiotics	713
Compound Paracetamol and Chlorphenamine Maleate Granules	Analgesic & Antipyretic	707
Inosine	Hepatoprotective	695
Somedon	Analgesic & Antipyretic	683
Rifampicin	Antibiotic	673

Source: Wei (2009b:190).

The pharmaceutical industry and government

As mentioned in the Chapter 5, the dominance of government has given power to the pharmaceutical industry despite the governments' cost-efficiency objectives. Therefore, the discussion in this section is intended to demonstrate how the aims of the state and the pharmaceutical industry align, thereby limiting the extent to which the state seeks to oppose pharma's activity. This is crucial to understanding the nexus of forces that constrain, or, in this case, fail to constrain, pharma's actions.

I now turn to the ways in which the industry encourages over-use. With regard to Light's argument concerning national interests (2000: 204), since the pharmaceutical industry plays a valued and unique role in healthcare, helping to supply drugs for the country's fundamental health needs, its contribution to the health of the country becomes a weapon that can be used by the pharmaceutical industry to increase sales, necessary for the discovery and development of new drugs. Bearing this in mind, a major source of the industry's power derives from loose government regulation and its encouragement of pharmaceutical R&D and pharmaceutical production. The government allows the industry lower taxes and costs on R&D (Wei, 2009b). For example, since 2008, the new Corporate Income Tax (CIT) law and other regulations have been issued to provide tax incentives and schemes to encourage R&D activities within China. The key income tax incentives are available to pharmaceutical

companies developing new drugs in China, with companies qualified as a High/New Technology Enterprise (HNTE), based on the relevant authority's evaluation, being entitled to a reduced CIT rate of 15% as compared with the standard CIT rate of 25%. To further encourage pharmaceutical R&D activities, companies are allowed an extra 50% expense deduction for eligible R&D costs. Eligible R&D costs include expenses incurred through the development of new technologies and products. They also cover salary expenses for R&D personnel and the depreciation of instruments and equipment used for R&D purposes (PwC, 2009).

These tax incentives have facilitated the expansion of the pharmaceutical industry. The pharmaceutical industry also contributes to China's economy and health by creating job opportunities. As Busfield asserts, "the pharmaceutical industry is a major power within the global economy and some national economies" (2006: 299). This also encourages the government to support the industry. The pharmaceutical industry (including generics) employs large numbers of people in China – more than 1.3 million in 2011 (IMS, 2014). It provides high-skilled jobs via direct employment, and induces the creation of many more indirect jobs in functions such as logistics. Apart from jobs directly and indirectly created by the pharmaceutical industry, there is also the acquisition and dissemination of knowledge through these jobs. Employees working for a pharmaceutical company often receive training and are exposed to new technologies and processes. This knowledge becomes an asset for the country's

workforce, as the employees may later change jobs or start their own companies, thus facilitating economic development (IFPMA, 2011: 41–43).

The second source of industrial power comes from generating tax revenue. The government's support for the industry is encouraged by the fact that pharmaceutical tax revenue comprises an important part of the government's financial capability. According to a WHO (2011) assessment of total pharmaceutical sales and tax revenues across nine selected countries, as shown in Table 6.6 below, the rapid growth of pharmaceutical sales in China has assisted the Chinese government to gain the highest proportion (1.66%) of total tax revenues from sales taxes on pharmaceuticals. This may be attributed to the fiscal policy of central government, in which local and regional government finance is made more flexible by allowing local authorities to collect more taxes from the pharmaceutical sector (IMS, 2014). This was much higher than in some developing countries such as South Africa (0.044%) or Brazil (0.27%) and also proportionately more than in some developed countries such as the UK (0.65%). The tax on pharmaceuticals as a percentage of total tax revenue is calculated from the World Bank's data for total tax revenue and GDP. However, the World Bank's indicators for total tax revenue inevitably underestimate total tax revenue, as the bank focuses only on "compulsory transfers to central government" (WHO, 2011:21) and overlooks the fact that in countries such as China, provincial or local government bodies may also levy taxes on pharmaceuticals because of

decentralised tax regimes. Therefore, in China the percentage of tax from pharmaceuticals in the total tax revenue may be underestimated. Nevertheless, it is clear that identified taxes on pharmaceutical sales alone generate a high level of revenue, and this gives some idea of the importance of taxes on pharmaceuticals as a source of national revenue in China (WHO, 2011).

Table 6.6: Estimates of tax revenue from medicine sales, selected countries

Country	Pharma sales (year) $ million	VAT or sales tax on medicines	Tax revenue from pharma sales $ million	Total tax revenues as %GDP	GDP $ million	Total tax revenue $billion	Tax on medicines as % total tax revenue
Bolivia	70 (1998)	13%	9.1	17	16.7	2.8	0.03
Brazil	3900 (2002)	18%	702	16	1639	262.2	0.3
China	44000 (2008)	17%	7480	9.9	4552	450.5	1.7
Jordan	397 (2009)	4%	15.9	18.3	17	3.1	0.05
Morocco	1380 (2008)	7%	96.6	25.1	75	18.8	0.05
Peru	1000 (2009)	12%	120	15.6	107.5	16.8	0.7
Philippines	2580 (2009)	12%	309.6	14	144	20.2	1.5
South Africa	2340 (2008)	14%	327.6	28.8	286	73.8	0.04
UK	28400 (2009)	17.5%	4970	28.5	2663	759	0.7

Source: WHO: 2011: 22.

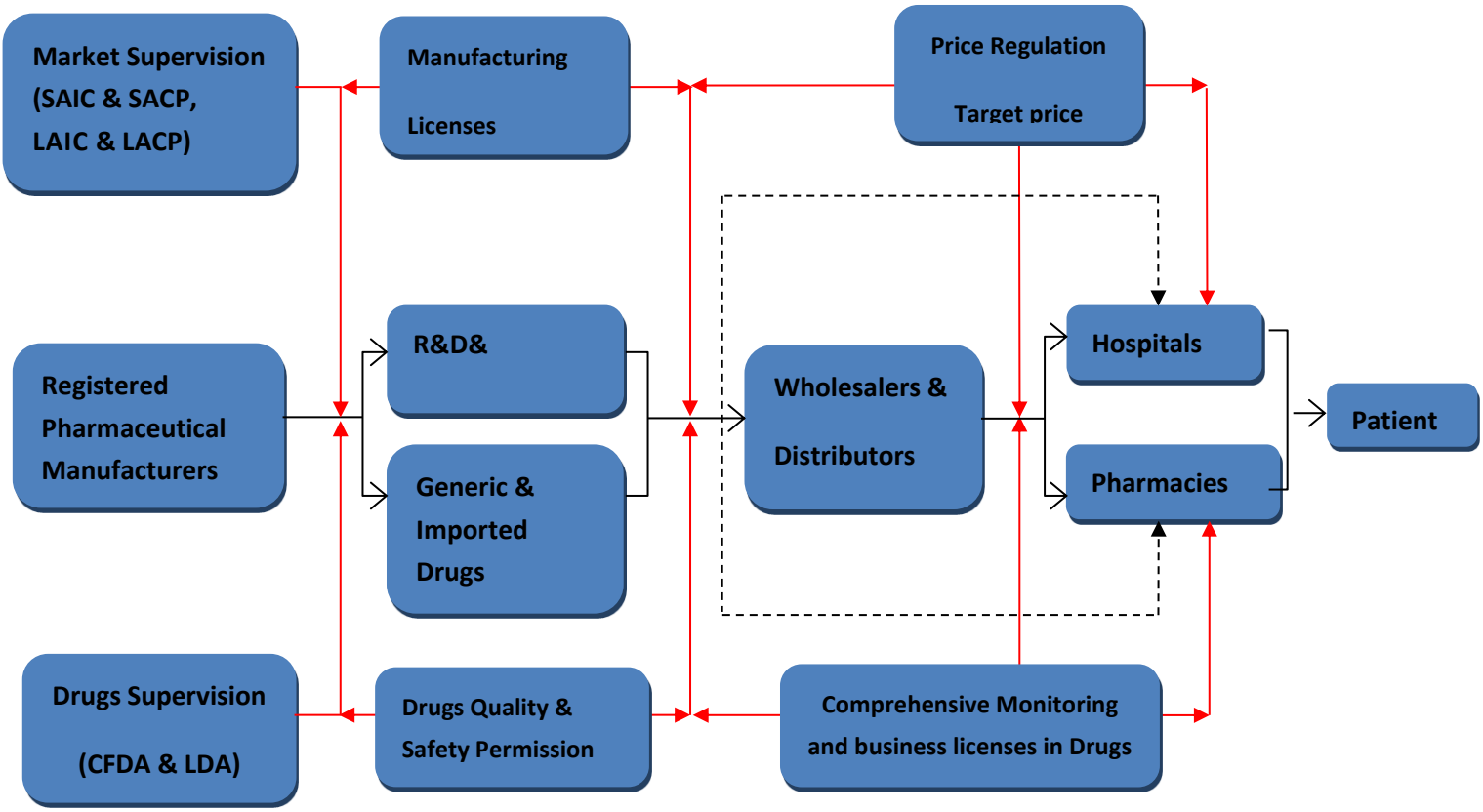
Moreover, there is an increasing demand for pharmaceuticals to prevent and treat the growing health threats from current and potential changes in China's lifestyle. With

dramatic economic expansion and increases in household income and consumption in China, the domestic demand for pharmaceuticals has increased remarkably in recent years. For instance, one side-effect of higher incomes is the illnesses associated with increased urbanisation, such as heart disease, respiratory conditions and cancer. Nowadays people with such illnesses consume medicines that they previously could not afford. In addition, there is an increasing concern about population ageing in China. As a result of the increase in life expectancy and the effects of the one-child policy since 1980s, it is expected that by 2050 approximately one-third of the total Chinese population will be aged 60 or over (Li, 2012). Consequently, the effect of the one-child policy means there will be fewer working adults of a particular generation to support an increasing proportion of ageing people (i.e. their parents). This is likely to further raise the demand for pharmaceuticals addressing age-related diseases such as respiratory and cardiovascular problems, chronic arthritis and osteoporosis (ibid.). Thus, it is easy to understand that when threatened by a health crisis (e.g. SARS), the healthcare system is challenged to respond to the demand for care, giving rise to the pharmaceutical industry lobbying government, which is in turn also "challenged by health advocates to alleviate the plight of the sick by lowering or abolishing taxes on medicines" (WHO, 2011:22).

Moving on the consideration of the process of co-optation, this can be achieved in a variety of ways. One is to place a supporter in an opposition group. This might be

done by encouraging a supporter to serve on a regulatory agency that is blocking a pharmaceutical industry initiative (Holdford, 2005: 392). Consequently, the powerful lobbying and the economic and social importance of the industry for the state prevent governments from acting as a countervailing power in relation to the governance of the new drug pricing`, registration and approval process (Busfield, 2010; Davis and Abraham, 2013). As shown in Figure 6.4 below, the China Food and Drug Administration (CFDA) and Local Drug Administration (LDA) control the registration and the supervision of new drugs, and other government regulatory bodies such as the State Administration of Industry and Commerce (SAIC), Local Administration of Industry and Commerce (LAIC), State Administration of Commodity Prices (SACP), and Local Administration of Commodity Prices (LACP) are responsible for new drug pricing. However, the drug registration process is less stringent than the international standards observed in well-developed markets (Sun *et al*., 2008; Yu *et al*, 2010). New licences can be readily obtained for changes in drug dosage, administration route, preparation or packaging. Generally speaking, clinical trial evidence is only needed when changing a drug's method of administration for injectable products. Corruption has also been seen to be a major issue contributing to looser registration. For example, the former head of the SFDA was convicted of corruption and executed in 2007 (see Chapter 5). In addition, the CFDA does not require locally-produced generics to be the bio-equivalent of their originals in order to be approved (Wang and Ge, 2009).

Figure 6.4: The Flow Chart of Drug Distribution Channels and Supervision



SAIC = State Administration of Industry and Commerce, **LAIC** = Local Administration of Industry and Commerce**,** **SACP** = State Administration of Commodity Prices, **LACP =** Local Administration of Commodity Prices, **CFDA** = China Food and Drug Administration, **LDA** = Local Drug Administration, **GMP** =Good Manufacturing Practice, **GSP** = Good Supplying Practice.

→ Supervision on pharmaceutical market ⟶ Supply chain via wholesale

⇢ Supply chain via direct sale

Source: Author.

The less stringent approval process allows companies to enhance their profits by product differentiation. As noted above, Table 6.5 shows the most commonly prescribed generic drugs and those listed account for about 98% of all pharmaceuticals on the Chinese market. Many Chinese pharmaceutical manufacturers

argue that differences in ingredients, formulation or production process, even for the same category of drug, can influence their efficacy and thus they are justified in charging higher prices for some of their products. They also justify their pricing structure by arguing that in order to develop a more effective drug than others belonging to the same category, the amounts of R&D expenditure and production costs will be significantly higher. This inevitably leads to higher prices than those of their competitors (Zhang and Liu, 2009:191). At the same time, there is evidence that consumers are more likely to link higher drug prices with better therapeutic effect, and may not ask for generic versions of the same drugs as alternatives (Morse, 2003). Hence the pharmaceutical companies focus heavily on brand differentiation.

I now describe this differentiation process in more detail. There are three main names for a drug: the chemical name, the generic name and the brand name, of which the most important are the generic and brand names of the drug. The same category and specifications of product made by various pharmaceutical manufacturers can use different brand names. For example, the well-known drug paracetamol (a pain reliever and fever reducer) is a widely used OTC drug. It is chemically named N-acetyl-p-aminophenol, generically named Acetaminophen, but has more than 10 brand names including Panadol, Bufferin, Tylenol, Snaplets and Fortolin. There are also many series of sub-brands derived from Bufferin and Tylenol, with commercial

names such as “Infant…”, “Baby…” and “Child…”, and these are all available on the market in China (Xinhua News, 2007b).

In China, the chemical and generic names of drugs are determined by the Chinese Pharmacopoeia (Ch.P) and the CFDA, but the brand names are chosen by the pharmaceutical companies and only these names need to be recorded with the Drug Registration Department to comply with regulations (Qian *et al*., 2010; CFDA, 2013). The drug regulations in China do not prevent pharmaceutical companies from defining their own product brand names, and the current drug policy allows new and special drugs to be priced separately. Although the pharmaceutical industry’s regulatory system was introduced by government to protect patients rather than to encourage manufacturers to invest in R&D, since 2009 (Wei, 2009b) pricing loopholes in the process have made it easy for manufacturers and wholesalers to change unprofitable drugs into ‘new’ drugs, thus circumventing the price regulations and driving drug prices upwards. Some Chinese companies use these loopholes in the pharmaceutical pricing policy to market their products as ‘unique’ or ‘superior’ drugs in the expectation of securing a higher price and making more profit. To boost drug sales, some companies routinely use this as a marketing technique to differentiate their product from existing drugs, thereby misleading consumers into believing that a ‘new’ product has an improved therapeutic effect (Zhang and Liu, 2009:232).

In order to differentiate their products from those of competitors, many pharmaceutical manufacturers and companies make the generic names (which indicate the main chemical components of products) less visible in the processes of packaging and marketing, altering the brand names of these same drugs, and raising their selling prices. In recent years there has been an ever-increasing number of new brand names for drugs, utilising the same products but with new dosages or package units, followed by aggressive marketing campaigns. This diversification has an even greater potential for expanding a market than product development. According to the official news in China, there are now over 200 types of commonly used drugs. Those with at least four brand names account for 20% of this market, while those with five or more brand names account for the remaining 80%, as shown in Table 6.7 (Xinhua News, 2007b). With large numbers of generic drugs coming onto the market each year, the practice ‘one drug with multiple names’ becomes even more popular, especially for those widely used in clinical practice, such as antibiotics and cardiovascular drugs, which can have dozens of brand names.

Table 6.7: Percentage of all Drugs with Four or more Brand Names in China

Number of brand names	Percentage (%)
4	20
5	25
6	25
7	15
>7	15
All	**100**

Source: Xinhua News (2007a).

As a result, some pharmaceutical companies regularly change their brand names for existing products, add multiple dosage/name combinations, or aggressively market 'new' drugs and withdraw 'old' products from the market, rather than pursuing real innovation. Between 2004 and 2006, 56% of a sample of 449 drugs had changed their commercial names and/or drug dosages (Zhang and Liu, 2009). Take, as an example, the antibiotic ceftriaxone (its chemical name), which has over 11 brand names including Ceftriaxone Sodium, Ceftriaxone Sodium for Injection, Cefoperazone Sulbactam, Cephalosporin, Rocephin, Rocekin and Ro13-9904. They are all the same drug with the same ingredients, but have different packaging and specifications made by different pharmaceutical manufacturers. As every category of antibiotics has an average of four brand names, a clinical doctor working in a provincial hospital needs to remember some 600 to 700 drug names, while a clinical pharmacist has to keep 5,000 to 6,000 drug names in mind. Consequently, such 'same drug, different names' or 'one drug, various names' creates considerable inconvenience for both doctors and patients. In particular, frequent changes in the brand name and dosage of existing drugs undoubtedly makes it more difficult for doctors to prescribe accurately, which increases the likelihood of misuse, repeated-use, or over-use of a medication.

As noted, generic products are the mainstream of pharmaceutical industry in China. Within China's generic drug market, local generics have increased their market share from 69% to 75% in value terms over the past decade, but the trend of unbranded

generics is a decreasing share in both terms of both value and volume (see Table 6.8), and generics are expected to capture a larger consumer base because of the reimbursement Essential Medicine List (EML) introduced by the government in 2009. More recently, on 1 September 2011, the government launched the National Essential Medicine System which was updated in 2013. This placed emphasis on regulating every dimension of the system, including production, distribution, pricing, procurement, payment and usage, which all have a high priority on the political agenda (IMS, 2014).

However, the EML is not linked to clinical usage and compulsory enforcement. Although the 'new' drugs are frequently introduced in hospitals, the EML is only adjusted every three years (as mentioned in Chapter 5) (Xinhua News, 2009). In reality, doctors have many alternatives to choose from when prescribing and they do not necessarily have to use the drugs listed in the EML. Consequently, when the government releases documents listing reduced or selected pharmaceutical prices from which doctors are supposed to choose, manufacturers, wholesalers and hospitals easily avoid this limitation by changing dosages, specifications or packaging types, then charging higher prices for the resulting 'new' drugs. Obviously, this partial regulation leaves plenty of room for manufacturers and hospitals to circumvent government regulations (Huang and Yang, 2009).

Table 6.8: Categories of Drugs Dispensed in the Hospital Sector, 2009-2010

Category	Value Share (%)		Volume Share (%)	
	2009	2013	2009	2013
Original Brands	12.6	12.9	5.9	5.8
Licensed Brands	2.8	3.3	1.6	1.8
Unbranded Generics	8.8	7.7	13.5	9.7
Other Products	75.8	76.1	79.0	82.7
Total	100	100	100	100

Source: IMS (2011), IMS (2014)

Note: Includes products marketed under the generic name of their active ingredient(s). Includes branded generics, copy products, products where there is no evidence of a licensing agreement, products for which a licensing category has not been identified, and non-patentable products.

Moreover, as noted, the regulations for new drug applications are loose, with regard to both the definition of new drugs and their evaluation and approval. For example, in 2004 the SFDA of China processed some 150,000 approvals for over 10,000 ‘new’ drugs, but only 22 of these ‘new’ drug applications were for innovative new drugs with exclusive intellectual property rights. In the USA, the FDA approved 148 new drug applications during that same year (Barboza, 2007; WiCON, 2007). This vast difference is not merely the effect of a growing new market where hitherto unknown drugs are being introduced, but shows how pharmaceutical manufacturers in China are at every possible opportunity deliberately transforming generic drugs into so-called ‘new’ drugs simply by changing the product specification, dosage or packaging, or even adding a small amount of an irrelevant ingredient, at every possible opportunity, to circumvent governmental regulations in the pursuit of profit.

The government is subject to intense lobbying from the industry over the process of new drug approval (Busfield, 2010). There is also published evidence (Santoro and Liu, 2009) that some pharmaceutical companies give bribes to government officials in exchange for new drug approval. For example, as mentioned previously, Xiaoyu Zheng, who was chief of the SFDA from 1998 to 2005, was convicted of accepting bribes of 6.5 million yuan ($850,000 or £425,400) from pharmaceutical companies in order to register and issue approvals for new drugs. This is perhaps one reason why such an astonishing number (150,000) of 'new' drugs were approved in 2004 in China, over 100 times the average number approved by the US FDA. Most of these were produced by the eight domestic pharmaceutical companies: four pharmaceutical companies from Zhejiang province, two from Jilin province, one from Shenyang, Liaoning province and most by the well-known company, Guangzhou Baiyunshan Pharmaceutical Co., Ltd. from Guangdong province. Zheng was also found guilty of dereliction of duty and personally ordering the approval of products without making companies undertake the necessary checks. Government officials taking such bribes has led to a considerable number of so-called 'new' drugs appearing on the market annually in China, which also increases the likelihood of prescribing unnecessarily expensive pharmaceuticals when dispensing these 'new' drugs (Santoro and Liu, 2009).

The pharmaceutical industry and the medical profession

The established "corporate bias" of government allows the industry to gain privileged access to government (over any other interest group), and its power is strengthened by co-opting the medical profession (Abraham, 2009a). Pharmaceutical companies, in general, segment their target users on the basis of their behaviour and decision-making processes. Within the pharmaceutical market, prescription drugs are typically bought by organisations. They are government counterparts, the same as the majority of the medical profession who practise in a formulary situation (where the purchase of pharmaceuticals is decided by members of the therapeutic team). Although the patient is generally the ultimate end user, regardless of whether the medication is prescribed or sold OTC, the medical profession plays a unique and often multiple role in the purchasing process of pharmaceutical products (Liu, 1995). They may be the decision makers who make the buying decisions for their patients when prescribing drugs, or they may play the role of influencer and/or gatekeeper in the context of hospital pharmacies. In China, where the medical profession is permitted to dispense prescription drugs within their hospitals or clinics, the dispensing and prescription markets are integrated. On the other hand, because patients are mostly deferential in China (Huangfu, 2015), whatever drugs the doctors' prescribe become what the patient subsequently requests, thus transferring the doctors' preferences into consumer demand. Also, due to the information asymmetry in knowledge about drugs,

medical professionals (as the agents of patients who are the consumers of drugs) decide which drugs are bought (see also Chapter 7). Therefore, it makes sense that the higher proportion of the pharmaceutical marketing effort is directed towards the medical profession.

Because the medical profession plays an important role in prescribing medicines (discussed in Chapter 7), and doctors develop "new medicines, often in alliance with the industry", and control access to prescription drugs (Busfield, 2010: 937), the industry engages in comprehensive marketing campaigns targeted directly at doctors. This is the most concrete way by which pharmaceutical companies attempt to influence doctors' prescribing practices and encourage the greatest possible use of drugs in order to boost sales (Zhang and Liu, 2009). Most pharmaceutical manufacturers and larger wholesalers actively promote their products using a variety of marketing tools, including sales representatives, drug samples, gifts, kickbacks, sponsorship of educational events and conferences, books, journal articles, magazines and newspapers, drug bulletins and newsletters, videos, and the internet, as in Western countries. Advertising in medical journals and newspapers offers a privileged channel of communication between the pharmaceutical industry and doctors (Hutcheon and Hutcheon, 1987). Medical practitioners rely heavily on printed media, such as medical journal articles, papers or reports of clinical studies, and promotional literature provided by the pharmaceutical companies. In particular, major

kinds of information on current therapeutic regimens, such as advances in pharmacological activities, precautions, adverse effects, and dispensing and prescribing instructions, all come from the pharmaceutical companies and are considered to be highly influential on doctors' prescribing practices (Liu, 1995), though there is less data available on this field.

Nevertheless, since 2012, China has prohibited direct-to-consumer advertising (DTCA) for prescription drugs in China, as is the case in the UK and other developed countries. However, according to the term "corporate bias" (see chapter 5), in this case, the pharmaceutical industry intended to constrain the interest of the state. For example, although advertising in professional journals and other print media is strictly regulated, pharmaceuticalisation is produced through media briefings (instead of advertisements), printed materials left in doctors' offices or pharmacies, patient groups, and online groups (Busfield, 2010; Padamsee, 2011).

Most promotion of prescription drugs in China now takes the form of non-advertising promotion (e.g. through drug reps, educational events, conferences, gifts or bribes) (Ma and Lou, 2013). The Chinese government largely ignores such promotion, and reviews and enforcement are mostly conducted at the provincial level, although not all provinces have the resources or expertise to monitor advertising or non-advertising activities. Because of these resource constraints, and the relatively light legal

penalties given for advertising violations, illegal advertisements of prescription-only drugs are common in China. Unethical non-advertising promotion is also common due to the lack of regulation (Ma and Lou, 2013), in contrast with the regulated Western environment in which such abuses would be prevented or heavily penalized.

Non-advertising promotion often occurs through drug reps' visits, and pharmaceutical companies usually hire numerous salespersons as representatives to promote their prescription drugs in hospitals. For example, in recent years, the scale of sales representatives considerably expanded, with over 80,000 pharmaceutical representatives employed in China, and with some companies employing over 4,000 drug reps each. Multinationals alone added almost 20,000 additional representatives over the past five years. The industry also has an annual 25% turnover rate of drug reps (IMS, 2014). This expansion may be considered outrageous and indicate that something more sinister and deliberate is occurring, over and above what might be expected where a company identifies an opportunity to expand. According to a study by Azoulay (2002), promotion by drug reps has a greater impact on drug-usage patterns than the publication of new evidence via advertising, and doctors who recognise a new drug mentioned by a drug rep tend to prescribe it. Pharmaceutical companies aggressively pursue hospital sales, using drug reps to develop favourable relationships with hospital staff and doctors.

As Goldacre (2012:274) claims, in the West, drug reps, as the pharmaceutical companies' agents, often contact hospital managers and/or doctors directly to sell their products. However, unlike some Western countries, which oblige hospital doctors to see company representatives in groups or in a staff meeting, in China, such agents visit doctors in person to attempt to convince them that their drugs are the best on the market. In doing so, they may also give sales commissions, kickbacks or gifts to the doctors, in exchange for the promise of keeping a long and mutually beneficial relationship with the pharmaceutical company (IMS, 2014). During my fieldwork, I found that the average doctor in Shandong's provincial (largest) hospital receives one visit from a drug rep every one to two days. I also found that most of the doctors interviewed reported they rely heavily on industry-based sources of information, and company sales representatives are often the most important source of information about new drugs and studies. The sources of information about pharmaceuticals considered to be important by the medical profession have changed in rank order, the first being drug reps, followed by journal advertising and detailing to colleagues, conventions, meetings and conferences (see Chapter 7).

Advertising and promotion from pharmaceutical companies are important sources of drug information about new drugs for doctors, and doctors' reliance on this material increases the further along they are in their medical careers (Ma and Lou, 2013). However, the drug reps often provide inaccurate data, or manipulate information to

indicate scientific validity regarding their products to doctors, especially for prescription drugs, and this can lead to increased drug use. For example, these marketing teams may come from either production or distribution companies, and there are lax regulatory requirements on their licences or certificates. A study showed that over 60% of the promotional materials examined contained inaccurate or manipulated information (Zhang and Liu, 2009:229). Such materials often contained 'positive' results designed to meet doctors' needs and thereby encourage the use of their products. Dissemination of inaccurate information is a serious threat to effective drug usage, and heavy promotional techniques may encourage the misuse or over-use of a medication (Cheng and Zhu, 2012). This is particularly so for the promotion of newer, more expensive drugs, which can also lead to the displacement of older, less costly drugs without any real evidence that the newer drugs are more effective.

Moreover, in China, manufacturers employ seminars and expert lectures sponsored symposia, academic workshops, conferences, health hotlines, special television or online health programmes and other modes of dissemination of healthcare knowledge to encourage the public to use their drugs. They are influential in spreading promotional drug information. These include Powerpoint slides or videos and leaflets with a content of special or 'stand-out' features, and other promotional literature. (Liu, 1995). Pharmaceutical companies also use drug samples in general as sales promotional material, and consider them to be as influential as seminars, conferences,

advertising and other sales promotional material (IMS, 2014). This has a greater influence in Chinese hospitals, since there is a permissive legislative control over this practice (Ma and Lou, 2013). Drug samples are often used during trials of new treatments in hospitals, and doctors may dispense samples in separate containers to patients and charge for them. For example, one of the world's largest pharmaceutical companies, Pfizer, has started to use the internet to provide free drug samples to doctors through their online ordering system in China (Bioon News, 2011). All this encourages drug use and, potentially, over-use.

Another strategy might be to co-opt potential opponents with commissions or other financial incentives. The industry's co-opting of doctors with kickbacks and bribes, noted earlier, also acts as an incentive to over-prescribe (Holdford, 2005: 392). Regarding the financial relationships between drug companies and doctors (Bodenheimer, 2000), in general, the higher the price and volume of a product that a doctor prescribes, the greater the bonus or kickback paid by the drug manufacturer to that prescriber (Liu and Mills, 2003). In China, unlike in mature markets, doctors are under-paid members of the civil service, and it is well documented that drug reps are closely involved in widespread kickbacks and bribes to doctors (Zhang and Liu, 2009:232). They empathise with the position that their clients (i.e. doctors) are in and want to address their "unmet need" (i.e. financial benefit) (Cheng and Zhu, 2012). It is therefore a standard procedure for pharmaceutical representatives to give kickbacks

to doctors so that they will prescribe one drug over another. Chinese pharmaceutical company representatives do this in order to remain competitive (Chen and Snyder, 2013).

In general, the practice of pharmaceutical companies giving rewards and benefits to doctors for selling their products is common in China (Zhang and Liu, 2009), especially the huge extent of kickbacks and bribes that are offered to those in important positions in hospital (Cheng and Zhu, 2012). For example, in 2011, two domestic pharmaceutical companies' drug reps were convicted of giving bribes between 2003 and 2010 totalling RMB 500,000 (£50,000) to Dr Hongtao Luo in exchange for her dispensing and prescribing more of their 'new' viral hepatitis drugs (China News, 2012). Dr Luo was the Chief Physician of the Infectious Disease Department at Foshan City First People's Hospital in Guangdong Province. She had been engaged in research, clinical diagnosis and the treatment of infectious diseases for over 20 years, having held a number of important positions within municipal, provincial and national medical institutions. During the SARS outbreak, she used MARS technology to treat the world's first SARS patient, and became well-known as the "anti-SARS hero". Dr Luo was later found guilty of dereliction of duty for introducing these 'new' drugs into her hospital without the necessary checks and for accepting large financial kickbacks in order to enhance drug sales. Dr Luo's position gave her considerable influence: she could decide what drug should be purchased or

used in her department, as well as having the right to amend other doctors' prescriptions. In addition, other doctors would, in general, choose the drugs she recommended, which is why the drug reps gave her such large bribes or kickbacks. Their aim was to build a good working relationship with her, thereby encouraging the use of their drugs in infectious diseases, rather than allowing her to use other cheaper or safer drugs with identical efficacy.

The bribery of doctors has extended to its use by Western companies in China, and many multinational pharmaceutical company (MNPC) representatives have adopted to this form of conduct. They target hospitals and the medical profession, and having these close relationships has dramatically changed the behaviour of some doctors. For example, according to a report in *Financial Times* (17 July 2013), the British MNPC GlaxoSmithKline (GSK) was the ringleader involved in a half billion dollar bribery corruption scandal linked with 700 companies in China (Hook, 2013). The managers in GSK's Chinese business had used travel agencies to arrange trips, dinners, medical conferences and seminars, and also to provide gifts to some hospital doctors. The French MNPC Sanofi reportedly bribed 503 doctors with so-called 'research grants' of 1.69 million yuan ($276,000) to 79 hospitals in Beijing, Shanghai and Guangzhou in 2007 (Yap and Burkitt, 2013). The evidence indicates that people who attend events that a pharmaceutical company holds, or who accept gifts or grants that a

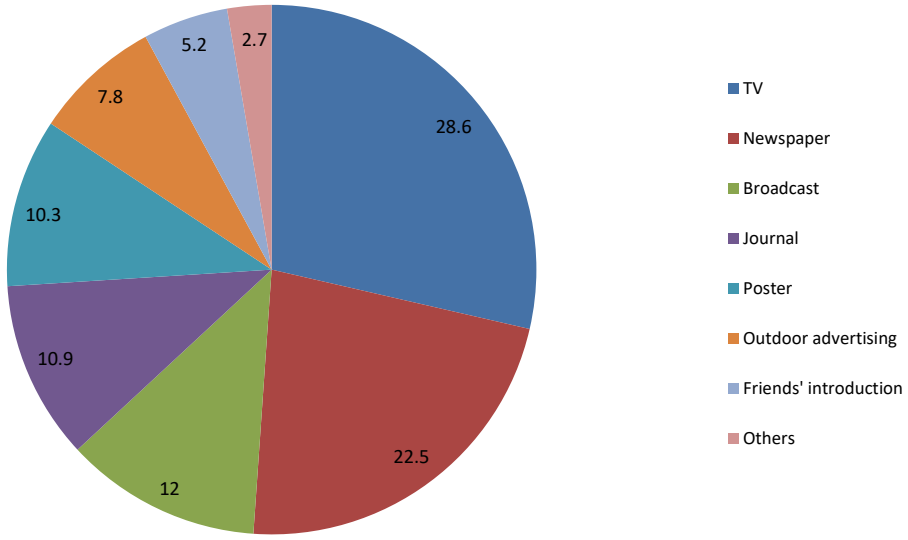
pharmaceutical company offers, tend to prescribe that company's drugs (Goldacre, 2012).

However, co-opting can also occur when opponents find areas of common interests and work together, which makes the industry's co-opting of doctors in the issuing of prescriptions a mutual concern and mutually beneficial (Holdford, 2005: 392; Tobbell, 2012: 8). Obviously, doctors need pharmaceutical products, such as drugs and treatments provided by the pharmaceutical industry as tools for their practice. Drugs play a key role in facilitating the "good results" necessary to attract and help patients, and in supporting the medical profession in sustaining and strengthening their prescribing power (I discuss this further in Chapter 7). However, hospitals have to make profits from selling drugs to cover their own costs since there is a shortage of government funding and the government permission of 15% profit margin for hospitals as mentioned in Chapter 5. From this perspective, the pharmaceutical industry, is a major sponsor of hospitals and doctors, and there is symbiotic relationship between the pharmaceutical industry and the medical profession. As a result, this win-win cooperation between pharmaceutical companies and doctors has not only escalated the expenditure on drugs, but also been influential in changing doctors' prescribing behaviour, and has inevitably encouraged the greater use of prescription drugs.

The pharmaceutical industry and the public

The pharmaceutical industry controls the science underpinning drug development and testing.In order to boost drug sales, it skilfully uses a variety of strategies to generate demand and create markets for its products, and fuels disease mongering (Busfield, 2006). The pharmaceutical industry also seek to co-opt the public through promotion intended to increase drug sales. According to Gamson's (1990) analysis of 53 challenging groups (in which he defined co-optation as challengers gaining access to the public policy process but without achieving actual policy changes), pharmaceutical companies often use DTCA, marketing their products directly to the public. Although this is only permitted for OTC drugs, this is a larger sector in China than in Western countries. DTCA conveys information mainly through key media in China: television, newspapers and journals, broadcasts and posters, with television playing the most important role for the advertising and promotion of pharmaceutical drugs. According to an online survey in 2005 of 3,979 respondents (Sohu Health, 2005) who were asked how they usually got to see drug advertisements, 28.6% of them listed television as the most common, as shown in Figure 6.5.

Figure 6.5: Public Views Regarding Channels of Advertising



Source: Sohu Health (2005).

The DTCA of OTC drugs is defined as "any promotional effort by a pharmaceutical firm to present OTC drug information to the general public through the lay media" (Kessler and Pines, 1990:2410). However, in today's marketplace, as mentioned, above DTCA generally involves multiple layers of marketing communication, including traditional print, broadcasts, television and online advertising. Since most OTC drugs are recommended and prescription-only drug are prescribed and sold by doctors and hospital pharmacies in China (Zhang and Liu, 2009), the pharmaceutical industry utilises the advertising effectiveness model, which focuses on exposure, awareness and action (Grow *et al*., 2006). The model holds that: (1) advertisement exposure raises consumer awareness of conditions and treatments; (2) increased awareness motivates patients to seek medical care and request drug therapy; and (3) patients' requests lead, *ceteris paribus*, to increased prescribing. According to a study that investigated public feelings about drug advertisements on television in China,

65.5% of the lay public said they were impressed by repeated advertising programmes, and 25.5% of them wittingly or unwittingly recalled most of the slogans used in the advertisements (Sohu Health, 2005). This indicates that most people are influenced to some extent by televised drug promotions, as shown in Table 6.9.

Table 6.9: Public Views of Televised Drug Advertisements in China

Category	Percentage (%)
Repeated advertising programme	65.5
Recalled the slogan	25.5
No feeling	8.3
Not clear	1.9
Total	100

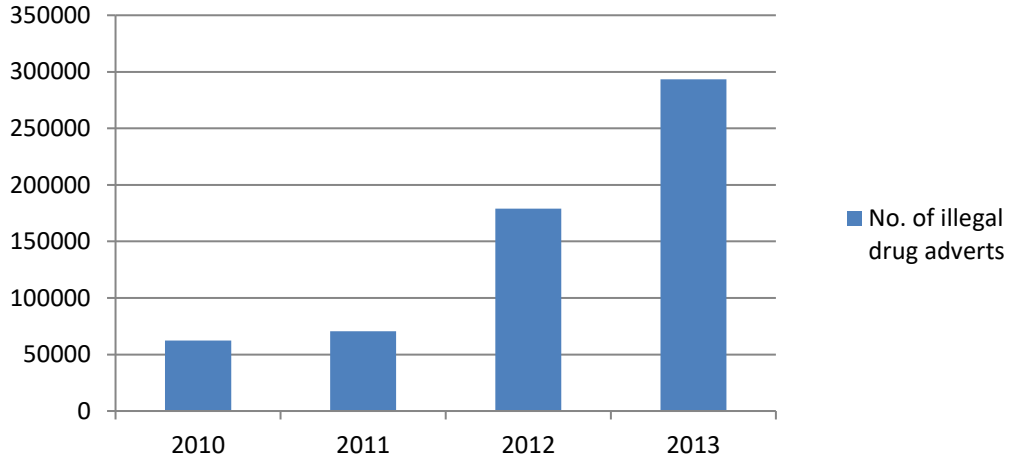
Source: Sohu Health (2005)

The key driver for the OTC market is the popularity of medicine among Chinese people and the cultural tendency to self-medicate for minor health complaints. Through the media (television, the internet, radio, etc.), the urban population has become increasingly health conscious, and an increasing number of people tend to visit a drugstore rather than their doctor when they have a minor illness (e.g. cold, cough, diarrhoea) (Market Avenue, 2010). A study of the retail pharmacy sector in 13 major cities throughout China found that OTC sales were led by cough, cold and other respiratory remedies, followed by vitamins, minerals and nutritional supplements, and pain relievers (IMS, 2011). Multinational products occupy prominent positions among OTC medicines sold through retail pharmacies. In spite of

these purchasing patterns, it is a fact that those suffering from a common cold or diarrhoea do not necessarily have to take any medicine at all, as they only need to drink more water and rest a little to recover.

Although the patients show a tendency towards deference in China, with the development of consumerism nowadays, the exception would be for some 'expert' patients to become more informed from health sources via the Internet. Desiring higher standards of health and healthy living requirements, they tend to seek a greater role in their own medical decision-making. The general public is keenly aware of health issues and therapeutic alternatives from numerous television programmes, newspaper coverage, and magazines and books on health issues. In general, Chinese consumers have a positive attitude towards DTCA that provides information about new drugs and the features of individual brands (Sohu Health, 2005). Unfortunately, illegal DTCA of prescription-only drugs distorts drug use when it conveys inaccurate information or advertises prescription drugs. According to the CFDA study of illegal prescription-only drug advertisements, both on television and in the newspapers, these have more than quadrupled in number, from 62,456 in 2010 to 293,416 in 2013, as shown in Figure 6.6 below.

Figure 6.6: Number of Illegal Drug Advertisements in China, 2010-2013



Source: http://www.sda.gov.cn/WS01/CL0085/index.html

In its examination and supervision of drug advertisements, the CFDA also found that more than 40% of all drug advertisements published in China's main newspapers, and more than 30% of drug advertisements on Chinese central and local television channels, failed to follow the stipulations of China's advertising laws. In addition, some broadcasts and websites were also found to be carrying illegal prescription-only drug adverts.

Based on the Chinese government's official news agency, Xinhua News (2013c), several major 'cover-ups' concerning DTCA have occurred that could have influenced public beliefs and behaviour with regard to patterns of drug use, thereby encouraging greater use of such medications (Cheng and Zhu, 2012). Firstly, the DTCA may not be educating consumers as effectively as the pharmaceutical industry

claims. The brief summaries required by the CFDA do not address the educational differences between consumers and physicians, nor does their placement on a separate page enhance the advertising's educational value. The separation between brief summaries and the colour image advertisements are far from being the educational tool that the pharmaceutical companies claim. In fact, over recent years, some pharmaceutical companies have promoted drug sales through the new promotional tools – such as Web-chat, digital marketing platforms and text messaging – which are being explored. Such forms of communication could reduce the need for regular face-to-face contact, and Chinese doctors are embracing text messages and Web-chat as a preferred method of contact with sales representatives (IMS, 2014).

Secondly, slogans and images employed in OTC drug advertisements are seen as one of the most powerful weapons of drug promotion. The pharmaceutical companies use strong words and imagery to create mythical links between medical conditions and their pharmaceutical products. The exaggerated slogans and images include so-called "secret ingredients" and "patents" for incurable diseases, and terms such as "most effective", "radical", and "superior" therapeutic efficacy (Xinhua News, 2013c), all of which encourage the public to consume more of the advertiser's products. China's DTCA also overlooks the medical risks involved, such as any interaction with other medications, contra-indications or side-effects, which again may lead to over-use

through self-medication due to these public-oriented advertisements underplaying any drug risks (ibid.).

In addition, some pharmaceutical companies use what they present as patients' own experiences to promote their drugs, fabricating their recovery experiences or the medical institution's role (Scott *et al*., 2004) to promote the therapeutic efficacy of certain drugs, and this soft, deceptive propaganda is pressed upon the general public. Sometimes, they also apply celebrity endorsements to pharmaceutical advertising. One reason for using celebrity promotion in pharmaceutical advertising is that pharmaceutical adverts are not allowed by law to make price claims, nor can they appeal to the quality of the manufacturing process, make superiority claims, present specific benefits, or promote the effectiveness of the drug (Paek *et al*., 2011). In the case of OTC drugs, one of the few ways to differentiate a product from its competition, apart from differentiation through brand name or packaging, is through advertising which creates an image. The use of a specific celebrity allows companies to differentiate their corporate or product brand image from competitors or to appeal to specific target groups (ibid.).

Another reason for using celebrity promotion in China is that marketers of prescription drugs are not allowed to promote product brand names (Ma and Lou, 2013). As a result, DTCA tends to rely heavily on celebrities to make their OTC or

prescription drugs become popular through repeating the company's name (i.e. produced by XXX). The use of celebrity promotion for a particular product to the public is prevalent, as it is an effective means to convey a sense of trust in both the company and its products. For example, in 2013, Mike Tyson took part in a "cold boxing" session with children and adults at a promotional event in Beijing to endorse "Kuaike" cold medicine capsules, a product of the Hainan Asia Pharmaceuticals Company. The brand name "Kuaike" in Chinese means "to rapidly overcome", and thus the well-known world champion heavyweight boxer Mike Tyson promotes "Kuaike" for being as rapid as his boxing to "hit" the cold. Although Tyson does not seem to have a good reputation in the West, it is clear that he is still a household name in China and thus has a certain cachet that has the potential to boost sales (Guangming News, 2013). Hence, this more easily raises concerns about the impact of DTCA on the doctor–patient relationship, as DTCA encourages doctors' to prescribe in greater quantities and frequencies. About 80% of all drugs are sold by hospital pharmacies (Zhang and Liu, 2009). Also, in my fieldwork, I found that nearly 80% of doctors would prescribe the drugs that patients requested after a return visit, and the remaining 20% would prescribe multiple drugs if their patients wanted more (see Chapter 7). DTCA therefore has a considerable impact on what the public requests from doctors or purchases as OTC drugs, increasing both the risk of unnecessary drug use by self-medication and the demand for prescription drugs.

Moreover, pharmaceutical companies fund some medical groups and associations for special programmes or conferences, addressing patients indirectly via the medical profession to advocate greater use of their pharmaceutical products. In China, pharmaceutical companies have been banned from having direct contact with patient organisations, and they are only allowed to carry out supportive activities via doctors to reach patient groups and associations (e.g. patients' communication meetings, shared experience events or offering "compassion" to patients, etc.) (Wei, 2009b; Ma and Lou, 2013). This is therefore another understandable reason why pharmaceutical companies have directed additional funds into convincing doctors and maintaining good relationships with the medical profession. For example, the French company Sanofi launched a support programme for breast cancer patients, providing the training and information about breast cancer-related treatment to the medical profession (Central Government Website, 2013). This was designed to establish effective channels of communication between doctors and patients, to help breast cancer patients get through the period of chemotherapy, but most importantly to promote their anti-cancer drugs to the patient groups. By 2013, this campaign had been expanded to 25 cities and 50 hospitals throughout China (ibid.).

Furthermore, information regarding individual patients' prescriptions is freely sold by doctors in China. If a drug rep asks a doctor for their prescribing data, most will agree to share this data, including how many prescriptions they have written, what drugs

they have prescribed to patients, along with their patients' personal details, etc. Using this information, pharmaceutical companies can ascertain whether doctors have kept the promises they made to drug reps about prescribing, but it also enables them to contact the patient directly for sales by phone (Goldacre, 2012:282-284). All this encourages the use and over-use of drugs.

Conclusion

This Chapter attempts to develop Light's idea, applying the countervailing powers theory in the context of China's healthcare to demonstrate the power of the pharmaceutical industry in relation to influencing three other key actors – the government, the medical profession and the public – as a means of maintaining its own dominance. Generally, I argue that the industry's extensive power derives from coincidence with government interests, and from collusion with the medical profession to encourage the greater use, and hence over-use, of drugs. In particular, permissive government laws and regulations on drug approval and pricing endows the pharmaceutical industry with greater power, and the pharmaceutical marketing campaigns and strategies further undermine the power of doctors and patients. The evidence presented in this chapter indicates that the pharmaceutical industry in China has great market power that can affect the level of medication, and that it utilises loopholes that allow the superficial differentiation of "new" drugs, persuades the

medical profession to prescribe more “new” expensive drugs and uses marketing campaigns and direct media advertising to patients both for OTC drugs and prescription drugs, to encourage increased medical drug usage.

CHAPTER 7 – THE POWER OF THE MEDICAL PROFESSION AND OVER-PRESCRIBING

Introduction

This chapter presents the interview and questionnaire findings. The research was designed to gather evidence, from the perspectives of members of the Chinese medical profession, to show how, and to what extent the levels and content of prescribing in China are affected by the doctors themselves, the state and the pharmaceutical industry. The chapter is divided into three parts, by theme: interventionism; knowledge and attitudes; interactions and financial incentives. First, it will assess the Chinese doctors' monopoly power on prescribing, followed by an analysis of their professional knowledge and attitudes about medicines. Doctors' interactions with the state and the pharmaceutical industry along with their motivations are considered in the third part of this chapter. The overriding aim is to explore to what extent over-medication is related to Chinese medical professionals.

Doctors play a unique and central role in the prescribing and use of medicines. The pharmaceutical industry needs doctors to prescribe its medicines, while doctors support the pharmaceutical industry not only to sustain and strengthen their prescribing power, but in China also because of the financial incentives associated with over-prescribing. In order to develop a more integrated approach to the medical profession and its relation to over-prescribing, I propose to use a perspective based on the theories of "medicalisation", "pharmaceuticalisation" and "countervailing powers" to analyse my own data, and to evaluate the medical profession's power and

over-prescribing behaviour. However, compared with previous studies mainly focusing on the theory of "medicalisation" and "pharmaceuticalisation", I argue that "countervailing power" is more applicable to answering the particular sociological question posed by this thesis as it relates to changes in the balance of power among the principal groups of players as they interact with one another within the healthcare domain (Busfield, 2006). As mentioned in Chapter 5, in the context of China's healthcare system, the state is the dominant actor in the Chinese healthcare domain, since the medical professions in public hospitals are subject to the various government bodies. According to Light (1991, cited in Gabe, 2012: 2), although one actor may dominate, the balance of power may shift rapidly if other actors find ways to maintain their priorities. With the reduction of government funding, and pharmaceutical companies' co-option of doctors, an alliance was formed between the medical profession and the pharmaceutical industry, and co-opted doctors and the pharmaceutical industry together became an important countervailing power balancing the influence of the state, because they share the interest of drug prescribing and sales. However, government interests at this stage as a countervailing power seem conflicted: they want lower healthcare costs, but also the economic growth the industry can foster and for hospitals to make profits (Light, 2000: 204). There is thus little countervailing power to the strong financial interests of the pharmaceutical industry and the medical professionals' lobbying in health policy and practice.

With regard to my own data, I have analysed and examined the three areas mentioned above: doctors' interventionism and prescribing biases; their knowledge, perceptions and attitudes to medicines; their interactions and the financial incentives they are

offered and/or receive. All these factors affect how they practise and prescribe, and the utilisation of medication in China. How doctors respond to these factors constitutes a key influence on the quantity and type of medication prescribed.

Doctors' interventionism and monopoly power

Medicalisation has been defined as "a process whereby more and more of everyday life has come under medical dominion, influence and supervision" (Conrad, 1992: 210), with medicine becoming a channel for understanding social problems. Alcoholism, obesity and mental disorders are examples of the medicalisation of social problems. Pasquino suggested that, in the 20th century, medicalisation was disseminated across Europe to a great extent (Pasquino, 1991: 116). Zola, an early proponent of the term medicalisation, reports the commentary given by the Dean of a Catholic University in 1969 on the revival of witchcraft on a college campus indicating the shift in handling social problems: "We've really become progressive around here. A couple of hundred years ago we would have burned them. Twenty-five years ago I would have expelled them. Now we simply send them all to psychiatrists" (Zola, 1975: 83).

Foucault has analysed changes from non-medical to medical definitions and their treatment in *Madness and Civilization* (1965), *The Birth of the Clinic* (1973), and *Discipline and Punish* (1977). Foucault (1965) contends that people who incarcerate others for "madness" gain power and control. Lupton, influenced by Foucault, contends that "society is medicalised in a profound way, serving to monitor and administer the bodies of citizens in an effort to regulate and maintain social order as

well as promoting good health and productivity" (1997: 100). Medical interventions in dealing with social problems occur across the world, including China. Critics argue that we are experiencing a medicalisation of social problems, arguing that medicine is infiltrating moral and political matters (Zola, 1972; 1975).

With regard to the causes of medicalisation, some consider medicalisation to be the result of broader social processes to which medical professionals are merely passively responding. Illich, for example, developed his original critique of medicalisation in the mid-1970s, in which he highlighted that, as part of the wider process of industrialisation and bureaucratisation, medical professionals have taken away the public's right of self-determination, especially in the situations of death and dying (Illich, 1976).

On the other hand, others argue that medicalisation is mainly due to medical professionals' quest for power and control (Freidson, 1970). Doctors have authority over identifying illness, officially defining whether a person is ill and determining whether a specific medication is necessary or not. Since fully qualified doctors largely have a monopoly over the prescribing of medicines, they play a crucial gate-keeping role, officially rationing and regulating patient access to specialized medicines, deciding whether any drug is needed and which to prescribe. Freidson notes that professional dominance and monopolization have certainly played a significant role in giving medicine jurisdiction over virtually anything to which the label "health" or "illness" could be attached, and doctors are adept at expanding their roles as a means of maintaining their power and professional status (Freidson, 1988). Consequently, this professional dominance makes it difficult to judge whether a

doctor is prescribing unnecessary medicine or not, since they also have the privileges and power to prescribe using the increasing number of available medicines.

Pawluch (1983) supported this argument, giving a well-researched historical example to provide an insight – the changing focus of paediatrics in a changing social environment. His research shows that paediatricians were able to adapt their orientations to maintain their practices when there were fewer sick children by becoming "baby-feeders" and new "behavioural paediatricians", "treating" children's troubled behaviours (ibid.). Clark provides further support of Pawluch's account when discussing the medicalisation of dying: "We have grown used to speaking of medicalisation as a byword for all things negative about the influence of modern medicine on life and society. The term has become synonymous with the sense of a profession reaching too far: into the body, the mind, and even the soul itself" (2002: 905).

Looking at both sides of the argument in terms of the causes and nature of medicalisation, I argue that medicalisation changes the jurisdiction of the medical profession, whether doctors themselves are directly involved in generating the change or not. I also agree with Conrad's argument:

> [Medicalisation] consists of defining a (non-medical) problem in medical terms, using medical language to describe a (non-medical) problem, or using a medical intervention to "treat" it … This is a socio-cultural process that may or may not involve the medical profession, lead to medical social control or medical treatment, or be the result of intentional expansion by the medical profession. (Conrad, 1992; 209)

When the roles that medical professionals play in medicalisation are passive,

constrained under the control of the government, it is the state interest behind the medicalisation movement which prevails. The country's interests are usually incompatible as discussed in Chapter 5, where the government not only wants to reduce the cost of healthcare, and control the health expenditure but also wants the pharmaceutical industry to make a contribution to a country's economy. In this case, medical practitioners no longer take the lead in extending their jurisdiction, but serve as the state's instruments of social or political control. This is how medicalisation happens in China. My argument is that, in the name of health and the control of illness, medicalisation – potential uses and abuses of medical techniques and discoveries by the state through the medical profession – would unavoidably cause moral dilemmas for doctors in medical practice.

Diagnosis, medical procedures, treatment and medication are all conducted and dominated by doctors, and their authority over their patients in the prescribing process derives from expertise, real and perceived, which is monopolized more or less completely by the medical profession (Freidson, 1988; Busfield, 1989: 124). The prescribing process is not only about choosing a medicine and writing a prescription, but also involves three acts of medical professional practice: diagnosis, inference, and treatment. In diagnosis, a doctor usually puts the information given by the patient and any test results given by medical instruments in the light of the professional knowledge system to classify a disease. Inference is applied when making a choice from a range of treatments with their predicted outcomes, particularly when the connection between diagnosis and treatment is obscured (Abbott, 1988: 40–9). Treatment involves prescribing medicines to patients and taking action to treat their illness. Therefore, medical practice involves decision making about prescriptions. The

implication of this is that medical professionals apply their specialized knowledge and unique skills, and this creates a barrier between them and their patients, and thus preserves their prestige and social distance (Turner, 1995). Medical practitioners prefer a deferential relationship between doctors and patients since it is much easier to deal with naive patients than those who are well-informed. However, they now often have to deal with more well-informed patients, and the power of the doctor may be directly related to the extent of the patients' knowledge of the three aspects of professional work mentioned above (Bennet, 1987: 73).

Consequently, a doctor's ability to maintain his or her power over the patient's ability to understand relies heavily on his or her power to consciously prevent a patient from knowing very much about the course of treatment, the effectiveness of therapy and the specific future actions the doctor might take (Waitzkin & Stoeckle, 1972). Returning to the case of China, another important feature of the Chinese healthcare sector is that patients are usually hesitant to ask questions or to challenge their doctors. Even if they have questions concerning their illness or treatment, the fear that their conditions will not be attentively treated drives them to blindly follow the opinions of medical doctors (Hardina, 2007: 25). In this regard, it is not uncommon for Chinese patients to be deferential and willing to yield control on decision making, simply asking doctors to take over because of their anxiety and discomfort about their limited information and choice and therefore becoming too trusting: "you are the doctors, you know best" (McKinstry, 1992). Goodyear-Smith also supports the idea that that a power imbalance in the doctor's favour can have serious consequences, finding that: "The greater the imbalance of power, particularly when some minimum threshold of power has not been achieved by either party, the greater the capacity for

its misuse" (2001: 450). In this context, patients are unlikely to challenge the social hierarchy; they tend not to question authority and may refrain from contradicting what they believe is a doctor's misperception of medication, while doctors' prescribing privileges may also lead to the misuse of their own power and patient care may suffer. However, the Chinese healthcare system tends to be quite reluctant to punish doctors for inappropriate treatment or medical accidents. Even though patients make complaints, their complaints are often overlooked. The duration for such complaints to be addressed is often very long and usually does not guarantee a satisfactory result (Bardhan, 2008).

Freidson described doctors' interventionism as follows: "The aim of the practitioner is not knowledge but action. Successful action is preferred, but action with very little chance of success is to be preferred over no action at all" (1988: 168). Interventionism is not only founded in altruism, but is also necessary to sustain doctors' status and power in order to retain patients who want something done for them. Medication is seen as a key solution to a wide range of problems and a prescription provides a relatively speedy way of concluding medical encounters. In this respect, a prescription indicates that a doctor has something to offer to help their patients, and the patients' request is generally, "Doctor, do something", not, "Doctor, tell me if this is true or not" (Freidson, 1988: 22), even though sometimes the doctor's help is unlikely to make a real difference to the patient's condition (Butler *et al.*, 1998). This interventionism is also related to what has been called the optimism bias, which is the belief that the patient will beat the odds, no matter how unlikely this might be. The optimism bias leads doctors to encourage patients to undertake treatments that have only a tiny chance of success, in the erroneous and irrational

belief that they will be part of the tiny minority that have a successful outcome, rather than part of the vast majority who do not. Consequently, the requirements of a doctor's job is to solve the practical problems that people bring to them, and try their best to provide "good results" to satisfy patients' needs (Freidson, 1988: 22).

However, medical practitioners do face uncertainty and complexity, such as complicated medical procedures, the inevitable limitations and risks of certain treatments and medications, and the diversity of medical approaches in practice, so that it is difficult for doctors to make an infallible judgement on appropriate medication (Scheff, 1963). A bias towards firmly diagnosing illness may occur in facing this uncertainty. Scheff argued that there are two types of errors in coming to a diagnosis: a Type 1 error occurs if a doctor rejects the hypothesis that the patient is sick and wrongly determines that he or she is well, when it is not the case. A Type 2 error occurs if the patient is actually well, but the hypothesis that he or she is ill is accepted (1963: 97–99). Comparing these two types of error, he argues that a doctor is likely to bear more responsibility if they dismiss a patient's possible illness when he or she is actually sick (a Type 1 error) than to treat a patient when he or she is not actually ill (a Type 2 error). This is because a Type 1 error puts the patient in danger of losing the optimal opportunity for treating the disease at a time when the cure may be less difficult. It also puts the doctor, clinic or hospital in danger of losing their reputation (Scheff, 1963: 99). In this respect, it is far more important to avoid judging a sick person as well than a well person as sick. Hence, doctors may well tend to diagnose illness when in doubt, and so have a bias towards over- rather than under-treating. As prescribing is a lower risk than not prescribing, this has become a core feature of medical practice, and the tendency for doctors to play on the safe side and

treat rather than not treat a patient is, of course, highly relevant to the issue of over-medication.

Regarding to the concept of pharmaceuticalisation, it is currently primarily conceptualised as the process whereby the interests of the medical profession are made subject to the interests of the pharmaceutical industry to a greater and greater extent, and at the expense of patient interests (Abraham and Lewis, 2002). Therefore, medicalisation and phamaceuticalisation often go hand in hand: phamarceuticalisation has been encouraged by the medical profession and has expanded doctors' prescribing horizons within the medical-industrial complex. For instance, doctors' prescribing of drugs may increase because of widening diagnostic criteria regarding conditions for which new drugs are emerging or for which existing drugs may be "re-packaged" and called "new" drugs for a new market (Conrad and Potter, 2000).

My fieldwork research into medical prescribing practice in China and its findings

I now start to examine such processes using my own data. As mentioned in Chapter 4, this is based on a sample 120 doctors from five hospitals and two health clinics that I collected in Shandong using interviews. Fifty-two doctors were selected from the urban hospitals and the remaining 68 doctors were selected from rural hospitals and health clinics. The results from this study demonstrate the way in which the medical profession exercises its power in a way that influences prescribing patterns. I begin by examining general prescribing practice in China. Unlike in the UK, where non-physician healthcare professionals (e.g. nurses and pharmacists) other than doctors can write a limited range of prescriptions, only licensed doctors have prescribing

powers in China. Therefore, in China the medical profession has a monopoly over prescribing, and the clinical decision-making process is also mainly dominated by only trained and qualified doctors. With a large information asymmetry between patients and doctors, patients tend to follow what doctors say, particularly given the rather paternalistic manner of consultations (Thistlethwaite *et al.*, 2010: 239).

Table 7.1: Medicines prescribed by doctors per patient visit

≥ 2 medicines per prescription %	Urban Doctors		Rural Doctors		All Doctors	
	No.	%	No.	%	No.	%
<10%	1	1.9	1	1.5	2	1.7
10–25%	2	3.8	2	2.9	4	3.3
26–50%	7	13.5	4	5.9	11	9.2
51–75%	9	17.3	13	19.1	22	18.3
76–90%	11	21.2	16	23.5	27	22.5
> 90%	22	42.3	32	47.1	54	45
Total	52	100	68	100	120	100

As shown in Table 7.1, almost all (85.8%) of the doctors interviewed prescribe on average two or more medicines to over half of the patients they see on every visit, with 45% prescribing two or more to 90% or more. Rural doctors especially were more inclined to prescribe two or more medicines to patients than urban doctors (89.7% of rural doctors compared with 80.8% of urban doctors). This may relate to differences in the doctors' age and working experience as mentioned in Chapter 3. Younger urban hospital doctors with less working experience may first be trained as assistant doctors, and have limited prescribing rights; but this not the case in rural China due to the relative lack of better trained doctors and health professionals in rural clinics compared with those in urban hospitals. A cross-sectional study of prescription patterns in 10 Chinese county hospitals examining 5099 prescription

forms found that the average number of drugs prescribed between 2011 and 2012 was 3.52 per visit with a maximum of 10 (Wang *et al.*, 2013). This indicates a higher prescribing rate in China compared with the WHO standard, which currently recommends the average number of drugs prescribed should be below two per visit. This was based on the data collected from 146 countries in 2003, including high-, medium- and low-income countries all over the world (WHO, 2006: 3–4).

However, an internationally valid indicator for the average number of medicines per prescription has not been empirically established and it varies between countries. Although the WHO standard may need to be modified over time and between countries, compared to other countries the number of drugs prescribed in China is higher than those of developing countries with similar GDP per capita such as Zimbabwe (1.3 prescriptions), Sudan (1.4 prescriptions) and Palestine (1.3 prescriptions) (WHO, 2004; Adebayo & Hussain, 2010). This may be due to imprecise diagnoses and inappropriate or unnecessary prescriptions by doctors in China. The personal economic interests of doctors receiving rebates from pharmaceutical companies may also account for this phenomenon (see below). The possibility of adverse consequences of over-medication is raised by unnecessary combined medications, a practice that increases the patients' risk of adverse interactions between drugs.

As discussed earlier, to avoid taking any risk involved in not treating patients, doctors are more likely to prescribe in situations of uncertainty, therefore their attitudes to risk taking are related to higher prescribing rates (Davis, 1996: 238). The same concerns about risk mean that sometimes doctors decide they should increase the

dosage. This means the fear that drives doctors' tendency to prescribe, rather than risk not prescribing, can also lead them to recommend an over-strength dosage. Table 7.2 shows that 95% of the doctors admit they have increased the dosages (i.e. strength) of medication at least once per course of treatment. However, only a few doctors say they do this often. Table 7.3 shows that 90% of the doctors interviewed consider that the elderly and patients with serious disease/illness or severe conditions should not be taking higher doses or more frequent medicines. They consider there to be no reasons for doctors to increase the dosage of medication in the case of elderly and critical patients above that for other patients.

Table 7.2: How often doctors increase the dosage of medication

Frequency	Doctors	
	No.	%
Often	10	8
Occasionally	62	51.7
Rarely	42	35
Never	6	5
Total	120	100

Table 7.3: Doctors' perception that elderly and severely ill patients need higher doses of medicines

	Doctors	
	No.	%
Yes	12	10
No	108	90
Total	120	100

Interestingly, most doctors think that their prescribing patterns are the same as those of their colleagues. Table 7.4 shows that as many as 96.7% of hospital doctors interviewed believe their colleagues prescribe the same or a higher level of drugs.

Table 7.4: Hospital and health clinic doctors' perceptions of their own prescribing compared to their colleagues

Perception	Doctors	
	No.	%
More Frequently	8	6.7
Same/Similar	108	90
Less Frequently	4	3.3
Total	120	100

When the doctors were asked what they would do if their patient's condition did not improve after using medication and he or she comes for return visit requesting another prescription, most say they would prescribe a different drug. However, 20% of doctors do prescribe additional drugs for their patients which contain the same or similar active ingredients (see Table 7.5). As mentioned above, doctors provide health services needed by the population, and their prescribing privileges allow them to "do something" (i.e. providing treatments) to help their patients. Achieving "good results" through the exercise of good medical practice helps to attract and keep patients, and as this is necessary for the professional's career, the doctor tends to prescribe more where a patient requests more.

Table 7.5: Doctors' prescribing action when returning patients request more medication

Doctors' prescribing after a return visit	Doctors	
	No.	%
Increase the dose of drug	1	0.8
Change the drug	95	79.1
Use multiple drugs	24	20
Total	120	100

Clearly, as I have noted, if multiple drugs are used there are risks associated with polypharmacy, and where drugs on the same or subsequent prescriptions contain

similar ingredients this leads to over-medication. Urban hospital doctors have 21%–30% of outpatients returning after their first prescription, as shown in Table 7.6 below; in contrast, rural hospital and health clinic doctors have 60% of outpatients making return visits after their first medication. As a result, the doctors in rural areas are more likely to give additional prescriptions. This is also linked to doctors' knowledge of medicines, which I now discuss.

Table 7.6: The rate of return visits by out-patients

	Urban Doctors		Rural Doctors		All Doctors	
	No.	**%**	**No.**	**%**	**No.**	**%**
20% or less	19	36.5	13	19.1	32	26.7
21–30%	23	44.2	14	20.6	37	30.8
31–40%	5	9.6	11	16.2	16	13.3
41–50%	3	5.8	7	10.3	10	8.3
60% or more	2	3.8	23	33.8	25	20.8
Total	52	100	68	100	120	100

Doctors' professional knowledge and prescribing biases

There is a great social need for knowledge to explain the causes of illness and physical health and to help us to cope with difficult and painful situations. The medical profession, with its control of knowledge, is a source of power. Szasz (1979) observes a parallel between the role of doctors in modern society and the role of priests or religious men in earlier times. In Brazier and Cave's words: "The doctor deals with the individual's most precious commodity, life and health…He (*sic*) is the man with the skill and experience. In his hands, as the patient sees it, rests the power to cure" (2007: 6). Likewise, the monopoly that the medical profession enjoys gives it considerable political power. In Western sociologists' opinions, doctors are powerful

as they control knowledge about health. Power, in Foucault's view, is inseparable from knowledge. The issues of professional knowledge, power and the power struggle over state control, resonate with Foucault's notion of power:

> No body of knowledge can be formed without a system of communications, records, accumulation and displacement which is in itself a form of power and which is linked, in its existence and functioning, to the other forms of power. Conversely, no power can be exercised without the extraction, appropriation, distribution or retention of knowledge. On this level, there is not knowledge on one side and society on the other, or science and the state, but only the fundamental forms of knowledge/power. (1980b: 131)

Foucault (1980a) argues that power is based on knowledge and its usage. However he does not see having knowledge itself as a means to generate and gain power, but it is rather "the use of knowledge" that decides the place of power.

In Western society, politicians have been more apt to allow professional encroachment to transform political power into professional power, while in China, the government asserts and defends the sphere of politics in opposition to the authority of the professionals. The relationship between state and medical professional bodies in the West is akin to a partnership, where the government determines priorities, guidelines and standards, and at the same time, professionals decide how they should be applied in individual situations on the basis of their expertise (Klein, 1990; Milewa, *et al.*, 2002). However, in an authoritarian country such as China, the relationship between the state and the body of medical practitioners is one of control and being controlled. Henderson says about China that, "This was a world in which physicians were not only employees in large bureaucratic organisations, but they and their organisations were subject to vertical as well as horizontal rule by Chinese Communist Party cadres" (1993: 185). Indeed, in China,

the power of bureaucratic organisations lends authority to a small number of people who are in responsible positions in healthcare organisations and their attached Party branches; while the autonomy of a large number of medical staff and Party members has been limited, especially when their career prospects are greatly dependent on reviews from bureaucratic leaders. However, I agree with Light's (1995) notion that power may not remain the same all the time; if one power is dominant, there will be another power to balance it. This is a dynamic and productive process.

Freidson (1988), as I have noted, argued that the "good results" of medical practice rely on a sound foundation of knowledge. I argue that a number of doctors in China may wittingly or unwittingly contribute to over-prescribing because of inadequate knowledge, given the complexity of choosing a medication from the large variety of medicines and dosages, where doctors lack the time to keep up with pharmacological developments or stay abreast of emerging evidence-based medicine (EBM) knowledge. In China there are some published guidelines for doctors on the use of medicines. The MOH introduced the National Prescription Guide in 2010, which included treatment advice for 199 common diseases, covering 1,336 drugs, with emphasis given to the essential drug list (EDL) products (MOH, 2011). The NHFPC also introduced "nine prohibitions" in 2013 to restrain all hospital activity and doctors' behaviour in prescribing (IMS, 2014). However, a difficulty lies in the variety of choice, and with the various "new" drugs appearing on the market, most of the drugs listed in the National Prescription Guide are ignored even though some old medicines can still be very useful (e.g. aspirin or penicillin). Also doctors have many alternatives to choose from when prescribing and they do not necessarily have to use the drugs listed in the guide (see also Chapter 6). As a result, doctors may still lack

clear norms and guidelines in prescribing practices, or professional knowledge of medicines that could meet the patients' needs.

My study shows that most doctors in China only focus on "good results", and are mainly concerned about the effectiveness of medication, even where "good results" include side-effects. As Table 7.7 below shows, 80.8% of urban doctors and 76.5% of rural doctors take effectiveness into consideration first when selecting drugs, even though the drug prescribed may cause some side-effects. Only 13.5% and 4.4% of urban and rural doctors respectively give the safety of medicines the highest priority. In addition, doctors from both urban and rural areas do not pay attention to the patient's medical history or the patient's own description of conditions, and a thorough drug history may not be held by doctors. So, it would not be surprising to see that most hospitals in China are lacking in good mechanisms to channel the patient's medical history to the hospital administration. As not all prescribed drugs may be listed in the patient's records, particularly if the patient has newly registered or is a temporary resident, this could encourage a drug to be repeatedly prescribed even where that has not worked for the patient in some cases.

Table 7.7: Doctors' primary concerns when selecting a drug

	Urban Doctors		Rural Doctors		All Doctors	
	No.	**%**	**No.**	**%**	**No.**	**%**
Effectiveness	42	80.8	52	76.5	2	78.3
Price	0	0	6	8.8	6	5
Safety	7	13.5	3	4.4	11	8.3
Reputation	0	0	2	2.9	50	1.7
Patient's Medical history	3	5.8	5	7.4	53	6.7
Total	52	100	68	100	120	100

Nonetheless, despite prioritising effectiveness over safety, we can see from Table 7.8 that when asked specifically about attention to the effectiveness of drugs, 30% of the doctors interviewed only occasionally focused on the effectiveness of the drugs that they prescribe, and 7% of doctors interviewed said they rarely or never pay attention to the effectiveness of those drugs they prescribe. This 7% are all from rural hospitals and health clinics. Moreover, 80.8% of urban hospital doctors and 61.8% of rural hospital and health clinic doctors said they often pay attention to the effectiveness of the drugs they frequently prescribe. This suggests that urban hospital doctors take more responsibility for their patients than rural hospital and health clinic doctors.

Table 7.8: Attention to the effectiveness of drugs

Frequency	Urban Doctors		Rural Doctors		Total Doctors	
	No.	%	No.	%	No.	%
Often	42	80.8	42	61.8	84	70
Occasionally	10	19.2	19	27.9	29	24.2
Rarely	0	0	4	5.9	4	3.3
Never	0	0	3	4.4	3	2.5
Total	52	100	68	100	120	100

Evidence-based medicine (EBM) has been defined as “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients” (Sackett *et al.*, 1996: 71). Obviously, modern evidence-based medicine requires clinicians not only to try to find the best research evidence, but also to combine it with their personal expertise, including knowledge of the pharmacology and pathophysiology as well as individual clinical experience, along with others’ (including experts’) views and research results as the authorised evidence suggests. As shown in Table 7.9 below, all the urban hospital doctors say they understand the

idea of EBM and 90.4% of them think it is a reasonable and useful approach to prescribing; however, there are still 15.8% (9.6% in urban areas and 20.6% in rural areas) of doctors who think that it is worthless to apply EBM in their practice.

Table 7.9: Doctors' understanding of "evidence-based medicine" (EBM)

Awareness	Urban Doctors		Rural Doctors		Total Doctors	
	No.	%	No.	%	No.	%
Yes, very useful	47	90.4	31	45.6	78	65
Yes, but do not apply into their practice	5	9.6	14	20.6	19	15.8
No.	0	0	23	33.8	23	19.2
Total	52	100	68	100	120	100

In particular, only 45.6% rural hospital and health clinic doctors say they understand the term, and 54.4% of them do not understand it or do not apply it in practice. This may be related to the process of systematically reviewing, appraising and using clinical research findings to aid the delivery of optimum clinical care to patients (Rosenberg and Donald, 1995). The fact that is fairly difficult for rural doctors to access to the up-to-date evidence makes it unlikely that they can apply EBM to their practice on a daily basis. EBM forms part of the multifaceted process of assuring clinical effectiveness, the main elements of which are as follows: production of evidence through research and scientific review; production and dissemination of evidence-based clinical guidelines; implementation of evidence-based, cost-effective practice through education and management of change; and evaluation of adherence with agreed practice guidance through clinical audit and outcomes-focused incentives (Belsey, 2009). It also indicates the necessity for an increasing understanding of the drug selection processes, since it is important to note that mere availability of the

correct information about the medicine's characteristics on a knowledge basis is not enough; it needs to be applied (Davis, 1996: 239).

As shown in Table 7.10 below, 98.1% of the urban hospital doctors I interviewed and 97.1% of rural doctors say they understand the meaning of "over-medication", but 63.5% of urban doctors and 82.4% rural doctors do not take the idea of "over-medication" into account when they prescribe medicines, some of them arguing that the concept of "over-medication" is not applicable to meeting the individual's need for a prescription. Some doctors said that they prefer to rely on advice from their colleagues and on their clinical practice in the use of medicines.

Table 7.10: Doctors' understanding of the concept of "over-medication"

Awareness of concept	Urban Doctors		Rural Doctors		Total Doctors	
	No.	%	No.	%	No.	%
Yes, very useful	18	34.6	10	14.7	28	23.3
Yes, but does not apply	33	63.5	56	82.4	89	74.2
None	1	1.9	2	2.9	3	4.4
Total	52	100	68	100	120	100

However, Table 7.11 shows that as many as 80.8% of urban and 85.3% rural doctors consider there to be "over-medication" in China. Furthermore, as shown in Table 7.12, a much higher proportion of rural doctors (76.5%) than urban doctors (42.3%) consider there to be "over-medication" in their own hospital. Also, 61.7% of doctors interviewed believe that there is more extensive "over-medication" in rural than urban areas (see Table 7.13). The data in these tables indicates that more rural than urban doctors consider "over-medication" to be present, which seems likely to reflect the reality of higher levels of medication in rural China.

Table 7.11: Doctors' perceptions of the existence of "over-medication"

Perception of over-medication	Urban Doctors		Rural Doctors		Total Doctors	
	No.	%	No.	%	No.	%
Yes	42	80.8	58	85.3	100	83.3
No	10	19.2	10	14.7	20	16.7
Total	52	100	68	100	120	100

Table 7.12: Doctors' perceptions of the existence of "over-medication" in their own hospital

Consider there to be over-medication	Urban Doctors		Rural Doctors		Total Doctors	
	No.	%	No.	%	No.	%
Yes	22	42.3	52	76.5	74	61.7
No	30	57.7	16	23.5	46	38.3
Total	52	100	68	100	120	100

Table 7.13: Doctors' beliefs as to extent of "over-medication" in urban and rural areas

Where More Extensive	Doctors	
	No.	%
Urban	46	38.3
Rural	74	61.7
Total	120	100

I now turn to doctors' views as to the quality of medicines they prescribed. Some 69.2% of doctors think that the quality of medicines is good or very good; only 1.7% of them think the quality is poor, as shown in Table 7.14 below. However, Table 7.15 shows that 58.3% of hospital doctors interviewed recommend branded/patented drugs when prescribing and consider that the higher priced branded/patented drugs are more effective than commonly used generic drugs with the same approved quality (Good Manufacturing Practice (GMP)). However, as argued earlier, Chinese doctors often over-prescribe and encourage patients to use costly medical instruments or diagnostic

tests to drive up health costs. As insurance schemes only reimburse basic medical services and pharmaceuticals, patients are left to pay a large proportion of the bill for treatments, even where there is sometimes a generic equivalent for the branded drug that would have been cheaper. Branded/patented drugs are indeed more expensive than generic drugs, but the high price does not necessarily mean a "better" drug or "superior" (more effective) medicine, where there are equivalents (Light, 2010b).

Table 7.14: Doctors' views on the quality of commonly prescribed medicines

Quality	Doctors	
	No.	%
Very Good	9	7.5
Good	74	61.7
Fair	35	29.2
Poor	2	1.7
Total	120	100

Table 7.15: Doctors' views on the effectiveness of branded/patented medicines

Branded/patented medicines are more effective	Doctors	
	No.	%
Yes	70	58.3
No	50	41.7
Total	120	100

As shown in Table 7.16 below, we can see that most (70.9%) doctors rely on medication guides published by pharmaceutical companies and on other colleagues' (doctors' and pharmacists', etc.) for information about the characteristics of drugs, rather than consulting the *Physicians' Desk Reference* (PDR) or medical textbooks and journals. With the growing number of medicines, doctors' knowledge of pharmacology is often limited; even the "specialists" may lack access to a reasonable knowledge of medicines used in their field, which may or may not be unique to China, but which certainly plays a role in this (Wei, 2009b). Most doctors I

interviewed said they could not keep up to date with new information in terms of efficacy, risks, and side-effects in the limited time they have. Neither had they been able to read all the prescribing information received the previous year. In this respect, it is more difficult for doctors with limited knowledge of medicines to play an appropriate gate-keeping role on the use of medicines in the face of patients' expectations.

Table 7.16: Doctors' drug information sources

Drug Information Sources	Urban Doctors		Rural Doctors		Total Doctors	
	No.	%	No.	%	No.	%
Medical Textbook/ the PDR/Journals	6	11.5	11	16.2	17	14.2
Pharmaceutical Manufactures' Presentation and Representatives	8	15.4	6	8.8	14	11.7
Medication Guide	20	38.5	27	39.7	47	39.2
Other Colleagues	15	28.8	23	33.8	38	31.7
Patients	3	5.8	1	1.5	4	3.3
Total	52	100	68	100	120	100

For example, in many cases in the UK, pharmaceutical company-sponsored information is the only source of information doctors used prior to prescribing a new medication (Prosser *et al.*, 2003), and doctors often learn about new medicines from pharmaceutical representatives rather than independent sources (Busfield, 2010: 938). This is also true in China, where doctors are more suggestible to the information offered by market-oriented pharmaceutical industry. The reliance on one source of information is too restrictive, and repeated contact and meetings with pharmaceutical representatives may encourage the use of their products alone (especially where those reps emphasise a particular drugs' effectiveness) and this can lead to poor quality prescribing, as one might expect (Muijrers *et al.*, 2005).

Also, as in the UK to some extent, doctors generally interact with each other, and the information they exchange may influence each other's choice of medication. In particular, doctors with training responsibility often act as the role models for their trainees' prescribing. Sometimes hospital specialists or experts with more experience also contribute to relatively less experienced doctors' awareness of new medications through referral and informal contact. Some doctors are influenced by the status of hospital consultants and their perceived endorsement of a new medication when prescribing to their patients (Carthy *et al.*, 2000; Prosser *et al.*, 2003). In addition, although doctors are more likely to prescribe if patients request more medicine, in China, where patients are often deferential, almost all doctors I interviewed say they rarely take the patients' perception of medication into account when prescribing.

Consequently, doctors' knowledge and perceptions of, familiarity with, and attitudes to medication are all key factors influencing prescribing decisions. Doctors' personal knowledge and perception/familiarity towards medication tend to depend on past experiences, a "unique... idiosyncratic individual index to decide whether, what to prescribe" (Carthy *et al.*, 2000). The results of this UK study also apply in China. Over-prescribing may be related to doctors' lack of knowledge of the pharmacological profile of certain drugs, the lack of awareness on patterns of drugs use (e.g. the importance of EBM and over-medication were overlooked by some doctors) leading to inappropriate choice of prescription, and negative attitudes towards the use of each drug information source.

Doctors' income, prescribing and financial incentives

One of the key ways in which modern professions achieve a dominant position is by acquiring power and authority from the state (Moran & Wood, 1993). Freidson says, "The foundation of medicine's control over its work is thus clearly political in character, involving the aid of the state in establishing and maintaining the profession's pre-eminence" (1970: 23). As discussed in Chapter 5, the state is a dominant actor in the Chinese healthcare domain, and the Chinese healthcare system has not performed well since it underwent a privatisation process and government funding was reduced. Due to a lack of government funding, hospitals have had to rely too heavily on a fee-for-service principle. For years, doctors in public hospitals have mainly functioned using profits from medical services and drug prescriptions. Without sufficient oversight, this results in rampant over-prescription and, often, outright corruption. This has caused dilemmas for many Chinese doctors who want to practice ethically. As interviewed in my preliminary study, a reform of the healthcare financial system is at the top of the Chinese doctors' wish list. However, as also discussed earlier, China's healthcare system is finally undergoing a new reform plan for the period 2009 to 2020. The 2009 healthcare reform opens a door of opportunity for change. Since the reforms started to be implemented several years ago, a series of regulations and guidelines has been introduced (MOH, 2009). But China's healthcare reform process is likely to be lengthy. One question raised about the health reform plan is how it might affect Chinese medical practitioners and their practice. There are two main areas of reform that will affect them directly. First, the state plans to reform the public health system by providing free basic care to almost all Chinese citizens (MOH, 2010). This means there will be much more financial support from the state to

the public hospitals. Public hospital medical practitioners will therefore be far less likely to rely on over-prescribing drugs in order to make a profit for their hospital. The reform initiative, however, does not address payment methods or any financial incentive mechanism to supplement funding for Chinese hospitals and doctors. Nor does it address the role that patients could have in the new healthcare system. But one can expect that (Wei, 2009b), based on healthcare resource allocation, with more state funding in place, China's healthcare will become a better organised, centrally planned national health service. However, the reform will not necessarily lead to an increase of Chinese doctors' incomes (Huang and Wang, 2008).

Currently in China doctors have to rely on financial incentives to prescribe because of their low salaries. Medical doctors in China are paid a fixed salary independent of the number of patients they see, a number that is usually quite low relative to the nature of their work and their workload (Bardhan, 2008). According to the *Annual Report of Chinese Doctors Salary Online Survey,* from 2012 to 2013, investigating 20834 doctors from 31 provinces in China, doctors' average income varies in different regions in China and there is a big gap among different provinces. A doctor in Beijing has the highest average income, of more than 8700 yuan. In Shanghai and Guangdong a doctor's monthly income is 6600 yuan or more; and doctors in Ningxia, Henan, Hebei and other mid-west provinces ranked at the low level of average income from approximately 3500 to 4000 yuan per month. A Chinese doctor's average monthly salary is 5000–6000 yuan, which is much lower than that of other professions in China such as registered accountants and engineers (7000–8000 yuan), and lawyers (8000–9000 yuan). The doctor's average monthly salary in Shandong hospital is only

around 4500 yuan, which is below the average level of Chinese doctors as a whole. In the preliminary study, Chen, a 52 year-old doctor noted:

> Compared with the average salary of 1500RMB [equivalent to 150 GBP] for the general Chinese public, many doctors' incomes are at or below the average public income level. Only a very small percentage of doctors can receive a relatively high income, such as 5000–6000 RMB [equivalent to 500–600 GBP] or more a month. There is a serious income inequality problem among Chinese doctors. For example, working in the same city, physicians in some departments of a Level III Central Hospital could receive a salary plus bonuses totalling over 10,000 RMB [equivalent to 1000 GBP] a month; while we doctors who work at a Level II hospital are very demoralized as most of us are getting less than 2000 RMB [equivalent to 200 GBP] a month. Our workloads are similar to the others; we have to keep diagnosing, writing prescriptions, double-checking for mistakes, chasing patients for payments, earning medical security savings, and thinking how to achieve the hospital and departmental income targets. If we can't achieve the targets, we don't receive a full salary. We feel so tired!

A government sponsored research study conducted by the Chinese Medical Doctor's Association (CMDA, 2009), the 2009 Chinese Doctor Career Survey of 3182 doctors found that 63.61% of Chinese doctors were dissatisfied with their practice environment, 63% would not encourage their children to choose medicine as their future career, and 44.82% had even considered giving up their medical careers.

In addition to this government sponsored research, in 2008, a nationwide joint survey was conducted by one Chinese newspaper *Life Times*, together with two health-focused websites *Sohu Health* and *Ding Xiang Yuan*, on Chinese doctors' living and working conditions (Jiang, Yang and Liu, 2008). This online survey collected views from 2067 internet-user doctors. It likewise showed that a majority of those surveyed were worried about their jobs. In response to the question "Do you enjoy your medical career?", only 6% of doctors said that they liked it very much. The remaining 94% held either negative views (21% admitted practising merely to make ends meet;

23% felt medicine was a meaningless and a disappointing career; while 6% worked for money), or partly positive views (44% liked it but were scared of being confronted by angry patients) (ibid.). What is more, as many as 95% of those doctors surveyed felt tired with the job, both physically and mentally (39% felt very tired and 56% felt a bit tired) (ibid.).

The research found that a majority of doctors had feelings of depression, dissatisfaction, and tiredness related to their medical careers. However, the question remains as to why these Chinese doctors were dissatisfied and discouraged with their careers. In my preliminary study, there was an open-ended question in order to further understand how Chinese doctors view their living and working conditions. I found most of them complained about their salaries, their work pressure and the devaluation of their job. The three most common answers indicate that Chinese doctors felt they were under-paid, under-valued, and were even forced to face the possibility of becoming involved in corruption or other unethical behaviour to gain financially.

As discussed in Chapter 3, when designing this questionnaire, I realised that it would be a very sensitive matter to ask doctors directly whether they had ever experienced a work-related moral dilemma. This kind of question seemed to presume that Chinese doctors had been put into difficult positions in making decisions that they would not want to make. To eliminate sensitivity, while still providing a chance for respondents to express their feelings towards the job, I asked whether they had experienced feelings of satisfaction about their salary. As in my study, 90.8% of hospital doctors interviewed think that their salary is only fair or poor, and none thinks it is very good (see Table 7.17).

Table 7.17: Hospital doctors' views of their salary

Salary	Doctors	
	No.	%
Very Good	0	0
Good	11	9.2
Fair	62	51.7
Poor	47	39.1
Total	120	100

However, apart from their fixed salary, another element of doctors' income is from the department bonus that is largely associated with the revenue generated by their department. Most hospitals establish complex plans of incentives to encourage prescribing and the use of medical services. Hospital administrators usually notify departmental directors and doctors when the quarterly target for departments and hospitals is not met. Generally, according to the research by Blumenthal and Hsiao (2005) and Yip *et al.* (2010), most Chinese hospital directors focus on setting revenue targets for each service department instead of focusing on the quality of patient care, and they also set revenue targets for its doctors.

In this regard, with insufficient government subsidies for medical services (see also Chapter 5), public hospitals have implemented a revenue-related bonus scheme that relies on a doctor's individual contribution towards revenue generation (Liu and Mills, 2003). As a result, many doctors admit that to obtain higher bonuses they are forced to induce demand artificially to fulfil the hospital's "quota", and may need to engage in other unethical practices just to earn enough to survive. Bonuses are tied to revenues and profits earned from drugs and tests, and this practice provides the strongest incentive for doctors to over-prescribe drugs and expensive tests (Liu and

Mills, 2003: 92). Two interviewees further expressed their personal experiences of ethical-financial dilemmas as listed below:

> I had a dilemma once. A woman was due to give birth at our hospital. She didn't have any family to accompany her and had no money to pay for the deposit. We still operated. The woman left without paying anything. In the end, the whole team who participated in saving her had to pay for the medical cost ourselves, and even got fined for doing this.[11]

> The healthcare system needs to be changed. We have some patients who are too poor to pay for the treatments. We have to repeatedly ask the patient to pay. We have sympathy for these poor patients, but if we can't claim back the medical bill, we doctors have to pay the cost ourselves. Our incomes are not high. In a public hospital, we have a profit-making target for each department. If one department reaches the profit target, everyone in that department will get a bonus. Commercialisation has changed the "public" meaning of the hospital.[12]

It is clear that the rapid expansion of the pharmaceutical industry and market forces in medicine have changed the social and economic relationship between pharmaceutical companies, doctors and patients, and subsequently affected medicine use (see also Chapter 6). Doctors in China are now considered to have developed new relationships with a powerful pharmaceutical industry including pharmaceutical manufacturers, companies, wholesalers, distributors, etc. Consequently, the commercial nature of medical professional practice has become even more explicit in the process whereby pharmaceutical companies aggressively promote their products to doctors. Large pharmaceutical sales teams from these corporations are sent to hospitals, in which drug reps use their personal contacts to get in touch with doctors and befriend them in order to promote their products and encourage the prescription of their drugs to patients. These pharmaceutical representatives believe that selling drugs is a business that is no different from selling commodities that people can easily get in the supermarket.

[11] Li, 46, doctor, female
[12] Ding, 48, doctor, female

Market-oriented reforms in the past three decades have brought unprecedented economic prosperity to China. At the same time, “they dismantled the structure of China’s equitable, albeit rudimentary, health care system” (Li *et al.*, 2012: 1075). Now, with the Chinese Ministry of Health setting very low prices for doctor consultations, hospitalization, and services, drug “mark-ups” have become the major source of revenue for healthcare providers.

The medical profession as a whole has never exactly escaped negative comments. In the US, from the moment prospective doctors enter medical school, they become subject to attempted co-option by the pharmaceutical companies who offer them funding and other rewards. Practising physicians become used to receiving various kinds of benefits from pharmaceutical companies (Bodenheimer, 1985: 202). Critics have claimed that doctors are overly concerned with making money, exert too much professional dominance over the conditions of practice, do not show enough humanistic concern for patients, spend too little effort on communication, accept expensive technologies and drugs uncritically, cause needless suffering through the harmful impact of their actions, and so forth (Waitzkin, 1986: 6).

In China, the situation is even worse. Unlike the US and many other countries, China does not have a widespread retail pharmacy system. Patients typically fulfil their prescriptions at the same hospital or clinic that they visit for care. These healthcare providers do not receive a dispensing fee, but rather earn the difference between the wholesale and retail price of medicines. Because these drug-related revenues are a major source of financial support for healthcare providers, one of the consequences is unnecessary prescribing (SCRDC, 2005). Inappropriate prescribing is exacerbated by

loopholes in drug price regulation (see Chapter 5) and loose supervision of doctors. Consequently, doctors are likely to prescribe “new” drugs with higher prices. This environment poses a potential risk for patients’ health and sources of healthcare (Chen, 2010).

Undoubtedly hospital and primary care doctors in China remain authority figures in their areas who play a key role by prescribing pharmaceuticals and especially prescription-only medicines to patients. However, as discussed in Chapter 6, there is also another important actor, the pharmaceutical industry, and there is widespread concern regarding the extent of pharmaceutical marketing directly to doctors and other healthcare professionals, for example through visits by salespeople, funding of journals, training courses or conferences, incentives for prescribing, the routine provision of “information” written by the pharmaceutical company, gifts, patient educational materials, free samples, etc. In my interviews, most doctors responded that drug reps play an active role in the level of drug prescribing. In response to an open-ended question about the frequency of drug reps’ visits, 33 doctors interviewed gave answers. As shown in Table 7.17, 42% of them have been frequently visited – every one to two days per quarter, and most (about 70%) doctors have been visited by drug reps every one to four days per quarter. It also should be noted that almost all of them complained that drug reps did not mention important safety information on drug use, but only focused on presenting characteristic features or the superiority of their pharmaceutical products.

Table 7.18: How often doctors have been visited by drug reps

Quarterly frequency	Doctors	
	No.	%
1–2 days	14	42.4
3–4 days	9	27.2
7 days	3	9
10–12 days	1	3
15 days	2	6
20 days	1	3
30 days	3	9
Total	33	100

Occasionally, as I was doing my fieldwork research in a hospital, waiting for a doctor outside his office, I noticed several men standing outside chatting. They looked healthy and carried briefcases and I could tell from their conversation that they were drug representatives. Just like me, they were waiting for doctors, but for a very different purpose. At one such time, I had an informal conversation with a drug rep. He told me that hospital administrators and doctors in large hospitals were usually surrounded by drug reps from different pharmaceutical companies. These people approached the doctors like "servants" (his term). The drug kickbacks were paid monthly, quarterly or yearly, through the more sophisticated system of a bank transfer to doctors' account nowadays, whereas previously reps used to hand doctors cash in an envelope. The amount was based on the sales volume of their products. I later asked if he had ever been rejected by doctors for bribery. He laughed and answered me with absolute assurance: "No, I have never been rejected."

As McKinlay (1985: 6) makes clear, medical activity now is actually conducted on behalf of "the prerogatives of financial and industrial interests", which increasingly exert controls over doctors' behaviour and strongly influence the prescription pattern

and doctors' decision. As a result, Chinese hospitals and doctors have turned themselves into profit-seeking entities, and in the process professional ethics have largely been lost. However, it not only doctors who exploit the profit-making opportunities created by the health system transformation: many of those interviewed (74.2%) believe that the level of drug use in hospitals is affected by pharmaceutical marketing (see Table 7.19).

Table 7.19: Doctors' views that pharmaceutical marketing affects medicine use

	Doctors	
	No.	**%**
Yes	89	74.2
No	31	25.8
Total	120	100

Therefore, the linkage between the interests of hospitals and the pharmaceutical industry encourages doctors to increase prescribing, and this economic incentive becomes an inducement for over-medication. Although the government imposed severe regulations and punishments in an effort to ban this behaviour in 2007, these practices are still serious and commonly appear in Chinese urban hospitals (Hsiao, 2008). Pharmaceutical and medical supply manufacturers or companies offer kickbacks to hospitals and doctors and thereby exercise great control over the process of drug prescribing via doctors who are encouraged to prescribe their products (see also Chapter 6). This may encourage doctors to prescribe more drugs than are strictly necessary or prescribe more expensive ones for profit. In fact, more than a third of Chinese drug spending goes toward unnecessarily prescribed drugs (IMS, 2014).

As discussed earlier in this chapter, following economic reforms, public hospitals in China now receive very limited financial support from the government, thus hospitals

have been forced to generate income to cover costs. Cuts to hospital subsidies have left Chinese doctors reliant on finding ways to make ends meet. Moreover, this implies a financial incentive to over-treat and over-medicate. The conflict of financial interest and ethical responsibility pose a threat to Chinese doctors' ability to retain their professional integrity. In their own words, "the system is forcing the good women to become prostitutes"[13], which sheds some light on such struggles and hardship. The following interviewee's comment expressed not only the feeling of being a doctor who has to bear financial pressures, but also thinking about the reasons for and consequences of this financial-ethical dilemma:

> Most doctors' delegates to the National People's Congress are senior doctors. Those who are on high payrolls may not understand the struggles of the large number of low-paid junior doctors. Some of those have started to accept financial kickbacks from drug companies; other juniors refuse to practise unethically and quit for better paid jobs outside medicine. One of my colleagues said publicly, 'Because being a surgeon earns me so little, my main income has to come from somewhere else, such as stock trading'. Since Chinese doctors cannot concentrate on their profession, I would not be surprised if medical malpractice will happen more frequently in the future. But then, whom should we blame for the adverse consequences?[14]

As also shown in Table 7.20, 85.8% of doctors believe some doctors have profited from pharmaceutical manufacturers/firms. Hence, the drug prescribing patterns are often influenced by the kickbacks, in the form of money or bonuses, which doctors and hospitals receive from distributors, rather than by patients' needs. This pattern has currently evolved into a "kickback" competition for marketing branded drugs into hospitals in China. Kickbacks exist at almost every stage of the distribution chain including wholesalers, directors and doctors in hospitals. Doctors' bonuses rely on hospitals and the number of patients' visits, but kickbacks can be obtained from either pharmaceutical manufacturers/firms or wholesalers. Thus, doctors appear to be

[13] Chen, 52, doctor, male and Wang, 53, doctor, male
[14] Wang, 53, doctor, male

happily complicit in a system where the more drugs they prescribe, the higher the kickback they receive as shown in Table 7.21.

Table 7.20: Doctors' beliefs about their colleagues' acceptance of industry kickbacks

Frequency	Doctors	
	No.	%
Often	20	16.7
Occasionally	42	35
Rarely	41	34.2
Never	17	14.2
Total	120	100

Table 7.21: Doctors' receipt of kickbacks

Frequency	Doctors	
	No.	%
Often	20	16.7
Occasionally	33	27.5
Rarely	43	35.8
Never	24	20
Total	120	100

In such a drug market, high pricing naturally became an optimal choice for pharmaceutical manufacturers. The retail price of a drug can be dozens of times higher than the ex-factory price. From Table 7.22, one can see that 70% of doctors believe the pharmaceutical industry is a "lucrative industry". Actually, a high margin strategy is able to produce high profits and offset transaction costs for pharmaceutical manufacturers (Liang *et al.*, 2009: 2). In this respect, public hospitals are more like for-profit healthcare providers racing to introduce costly drugs and high-tech diagnoses with high profit margins (Yip and Mahal, 2008). In Shandong, the situation

is no different. In order to generate more revenue for hospitals and receive more drug kickbacks to compensate their salaries, poorly paid doctors are over-prescribing or prescribing costly drugs to patients, and frequently accept drug kickbacks and gifts offered by drug reps. However, the government also wanted the general public to bear more of their own medical costs (see also Chapter 5) and as healthcare costs have increased dramatically over the past years as a result of the drive for profit, many Chinese patients now cannot afford healthcare services, even as out-patients (IMS, 2014).

Table 7.22: Doctors' beliefs that pharmaceutical industry is a "lucrative industry"

	Doctors	
	No.	**%**
Yes	84	70
No	36	30
Total	120	100

The interaction between doctors and drug reps seems to be an interpersonal process. However, we need to understand that this process is not driven solely by self-interest. Self-interest alone does not guarantee the practice of over-prescribing, at least not in the widely adopted manner seen in China. In China, the basis for expansion and profit in hospital care relies on the growth in the volume of medical work and the use of drugs, so doctors' profit-seeking behaviour (accepting drug kickbacks from pharmaceutical companies) is largely legitimated by the underlying structural constraints imposed by hospitals. Unlike in some of the Western societies, where doctors sometimes act as private practitioners in their own medical settings, the structural relations between Chinese doctors and their affiliated hospitals are different in the sense that a majority of the Chinese doctors are practising in state-owned public

hospitals. These hospitals tend to impose a strong form of control over doctors' behaviour, so the need for doctors to generate revenue together with their low salaries makes them over-prescribe.

Consequently, there is a political dimension to the relationship between doctors and hospitals and healthcare institutions that can actually direct and exert control over doctors' behaviour. The "financial incentives" offered by pharmaceutical companies have influenced the behaviour of healthcare institutions. Similarly, the underlying political relationship between individual doctors and hospitals also reflects the alliance between healthcare institutions and the state. The medical profession has the right to, and routinely does, exercise its functions to fulfill requirements made by hospitals, and a refusal to do so leads to unpleasant outcomes such as loss of extra bonuses and income. The higher the drug price, the greater is the financial incentive to procure and prescribe it for hospitals and doctors. As shown in Table 7.23, 72.5% of doctors believe doctors' bonuses/rewards are linked to the drug-related income in their own hospital. Consequently, they see a relation between the distorted salary structure for doctors and the distorted financial reimbursement structure for hospitals (Meng, 2006). As Ding, a 48-year-old medical doctor, also pointed out: We, doctors all know – pharmaceuticals feed hospitals. Most of the profits in hospitals are from the sale of pharmaceuticals and the provision of medical services. How much bonus we receive depends on how much pharmaceutical sales and medical services income we generate… Mostly it is the pharmaceutical (that accounts for a large portion of the hospitals).

From Ding's response, it is clear that medical professionals are well aware of such a directive. Since their bonus largely depends on the amount of drugs they prescribe, doctors are motivated to prescribe more drugs for self-interest and to fulfil the hospital targets. Consequently, as generating more revenue has become the most important goal for the hospitals, the social functions of the healthcare services are often overlooked. As pointed out by Chen,

My bonus is associated with the performance of the department. I am in the internal medicine department; generally, we receive more bonus than other departments because we have more patients than others…My bonus was paid quarterly. This quarter it is around 2500 yuan, sometimes I received more if the department target is fulfilled…The income of the department is from drug prescription and the provision of medical services. In order to fulfil the department target, we will encourage most patients to undergo expensive and excessive medication through the prescribing process. It is not invented by me; it was required by the hospital.

Table 7.23: Doctors' beliefs that bonus/rewards in their hospital are linked to drugs income

	Doctors	
	No.	**%**
Yes	87	72.5
No	33	27.5
Total	120	100

In addition, I asked doctors if they thought there was a relationship between patients' medical insurance and over-medication. Although incentives may motivate doctors to prescribe more drugs than optimal for both insured and uninsured patients, insurance coverage allows doctors to increase drug expenditures by a larger amount to insured patients than to uninsured patients. In other words, insurance coverage may exacerbate the extent of over-prescribing problems and contribute to greater health expenditures for insured patients (Arrow, 1963). As one would expect, since doctors can profit from selling drugs and services, and patients have limited knowledge about proper treatments, doctors with such financial incentives may recommend treatments to increase their own income rather than their patients' well-being.

Half of the informants agree that certain hospitals in China abuse the health insurance funds to prescribe more drugs for patients, and this encourages the over-use of drugs as shown in Table 7.24. However, while 70.6 % of rural doctors agree, this figure is only 23.1% for urban doctors. Hence, we may expect that the phenomenon of medical insurance abuse to be more extensive in rural China.

Table 7.24: Number of doctors' believing that "over-medication" relates to medical insurance

	Urban Doctors		Rural Doctors		Total Doctors	
	No.	**%**	**No.**	**%**	**No.**	**%**
Agree	12	23.1	48	70.6	60	50
Disagree	40	76.9	20	29.4	60	50
Total	52	100	68	100	120	100

I also asked doctors a further question to obtain more detail about the areas where "over-medication" is greatest. As shown in Table 7.25, 90.8% of informants believe the most serious "over-medication" phenomenon occurs in antibiotic use, which is first on the list. This result is not surprising since it is well-known that antibiotics have been commonly overused all over the world. As I noted in the introduction, in China, over-prescription of drugs is prominently manifested in the over-use of antibiotics. Statistics show antibiotics account for 74% of total medicine usage in China, about 20% to 50% more than in Western countries (Huang, 2009). Although any side-effects of the inappropriate use of such medicine may not appear immediately, taking too much of these medicines, or taking them too often, would definitely lead to some potential detriment of the human body. It is noted that antibiotics are one of the most commonly used class of drugs from among 5000 types of drug available in China, and constitute about 16% of total pharmaceutical products prescribed in China (IMS, 2014). However, the common over-use of antibiotics for patients in hospitals has caused an increasing number of side-effects and wastes money in China. According to the WHO, antibiotic spending per capita in China is 10-times higher than in the US, 183 out of 200 diseases (91.5%) were treated by antibiotics in China and 37.4% of patients received more than three types (ibid.). Zhang and Harvey (2006) argued that the unnecessary use of antibiotics was significantly influenced by financial incentives (e.g. kickbacks) given by

pharmaceutical companies to the medical profession. Consequently, this unnecessary and inappropriate use of antibiotics may unavoidably lead to the increase in the prevalence of bacterial resistance. For example, penicillin (one of the first and most widely used antibiotics), together with other antibiotics, successfully treated many bacterial infections in the last century. It was predicted that the time had arrived for humanity to conquer bacteria, but the abuse of antibiotics is making bacteria increasingly drug-resistant.

Table 7.25: Doctors' views on the most common types of over-medication

	Urban Doctors		Rural Doctors		Total Doctors	
	No.	%	No.	%	No.	%
Antibiotics	47	90.4	62	91.2	109	90.8
Infusions/Injections	36	69.2	51	75	87	72.5
Heart nutritional drugs	31	59.6	42	61.8	73	60.8
Expensive drugs over-prescribed	30	57.7	32	47.1	62	51.7
Psychotropic drugs	21	40.4	15	22.1	36	30
Chemotherapy	22	42.3	6	8.8	28	23.3
Hormone drugs	12	23.1	10	14.7	22	18.3
Total	52	100	68	100	120	100

On the question of over-use, injections/infusions ranks second, accounting for the views of 72.5% of those questioned. It should be noted that all the injections have to be prescribed by doctors first, and then nurses carry them out. One factor contributing to their high use is the belief held by many Chinese patients that complicated procedures involving medical staff are more effective than medicine taken by patients themselves. (Li and Wang, 2012)

Another factor is that doctors often prescribe as many drugs as the patients can afford. Based on doctors' view of prescribing patterns in urban and rural institutions, one surprising perception was that primary health institutions in poorer counties and villages seemed to prescribe a greater number of drugs than those in richer cities, but with lower cost prescriptions. It seems likely that urban institutions prescribe fewer but more expensive drugs, while the rural institutions prescribe more but less expensive drugs (Li *et al.*, 2012). However, further study may be needed to increase understanding of this phenomenon. In addition, all chemotherapy patients have to be treated in a provincial or city level hospital. This may be the reason that 42.3% of urban doctors recommend chemotherapy, but only 8% of rural doctors do.

Conclusion

The doctor–patient relationship in China is mostly not a patient-centred one, but a "professionally-oriented" interaction. While the state is dominant in the Chinese healthcare system, due to lack of funding, medical professionals act as a countervailing power. With financial incentives, most doctors have an interest in prescribing the pharmaceutical industry's products, and in supporting the pharmaceutical industry, so they often act as a partner of industry, rather than as a countervailing power against the industry (Busfield, 2006: 308–9). On the demand side, patients could collectively be an important countervailing power against the alliance of doctors and the pharmaceutical industry, but patients have typically been deferential towards the medical profession, except in rare cases where they have become well-informed or influenced by advertising and may challenge the doctor's drug choice or demand the drug of their own choice. Chinese doctors have extensive

power and as a result, as in the UK, their biases and errors are often unchallenged (Bennet, 1987: 75), though there are signs of change in this respect. From this perspective, the lay public constitutes a relatively weak countervailing power in China; they tend to be passive, accepting medical advice on trust and lacking the expertise to question it, often taking the risks that come directly from the actions of the prescribing doctors and indirectly from the pharmaceutical industry. This imbalanced power triangle arises because government failure in channelling resources away from pharmaceutical sales – or in other words, the process of co-option – has occurred between the medical profession and the pharmaceutical industry, and this alliance of the medical profession and the pharmaceutical industry acts as a countervailing power against the state. However, the medical profession only rarely acts as a countervailing power against the pharmaceutical industry, and patients as a group or individually are also not strong enough to neutralize the industry's power (see also Chapter 2). Consequently, doctors and the pharmaceutical industry are not challenged and this contributes to over-prescribing.

Prescribing is not a straightforward practice, and the dominant factors are not yet well understood. However, fundamental factors such as professional knowledge, the range of perceptions, attitudes, experiences, and the preferences of doctors, all have a greater or lesser influence on medication use. Although the overriding responsibility of the medical profession is to try to cure the disease, doctors often misuse their power in any of the three dimensions of power that I have proposed: social authority, knowledge and finance, and this can lead to an inappropriate prescribing or unnecessary medication (Turner, 1995). The pharmaceutical industry, hospitals and doctors in the marketplace tend to act in their own interests, which may make sense

personally or institutionally, but may be the opposite of the interests of patients and public health, leading to an inappropriate or over-use of medicines. Last but not least, this study offers, for the first time, doctors' own views on the over-use of heart, nutritional, psychotropic and hormonal drugs. This data may serve as a baseline for future studies on inappropriate prescribing as well as for doctor and patient action in reducing over-use.

CHAPTER 8 – CONCLUSION

In this thesis, I have provided a sociological analysis of over-medication in the context of socio-economic transition in China, focusing on an important source of over-medication, over-prescription, in the healthcare system and seeking to explain its social root causes. The investigation examines the macro and micro level forces. These include insufficient government subsidy for hospitals and doctors, "corporate bias" oriented loopholes in the drug pricing policy and regulations, the process of co-optation between the pharmaceutical industry, the medical profession and the public, close ties between doctors and the pharmaceutical industry, doctors' domination of prescribing practice, and financial incentives involved in drug sales. All these contribute to the problem of over-prescription, and are causes of substantial over-medication in China.

Key findings

Drawing on the studies by Donald Light (1990, 1995, 2000 and 2010a), I identified dynamic powers in changing patterns of relationships between the state, the pharmaceutical industry and the medical profession in China. I argued that the state as the dominant actor has played a crucial role in relation to the other actors, regulating and supervising the healthcare sectors and medicine use. Although the government is a powerful actor, it has failed to control the over-use of drugs due to a permissive drug regulation and price policy. Hence, there are two clearly important issues in future government control over the Chinese over-medication problems: the need to find an optimum balance of power between market and government; and reform of

the healthcare system with strict supervision. Given the evidence, the ambiguous and inappropriate roles of government in the provision of healthcare and the use of medicine should be re-examined.

The pharmaceutical manufacturers and pharmaceutical companies also play a powerful role and influence the other key actors – the state, the medical profession and the public – carrying out lobbying and co-optation of the government, the doctors and the public in a way that encourages the greater use and, ultimately, the over-use of drugs. Pharmaceutical companies focus on a profit-seeking orientation of drug marketing, which has a subsequent effect on dispensing and prescribing. Consequently, medicines are often inappropriately advertised and promoted like daily commodities, while the social function of medicines as healing agents is often attenuated. The pursuit of profits translates into different forms of distortion, such as over-prescribing practices, in healthcare service delivery and in medical doctors' daily work. This leads to over-medication and is a great threat to individual patients. Unfortunately, local governments lack the motivation to enforce regulation to control excessive profit-seeking and bribery, and most of the health bureaucrats and government officials responsible for regulating the healthcare market are themselves part of a corrupt system.

Doctors depend heavily on supplying medications to the sick for their own power and status, and they are thus willing to support the pharmaceutical industry and medical-industrial companies. Also, in order to survive, hospitals interact with pharmaceutical companies in a reciprocal manner to encourage over-prescription. Equally, the pharmaceutical industry and companies are keen to get the support of doctors, and

encourage them to prescribe their products. In general, based on the concept of medicalisation and pharmaceuticalisation, doctors use their prescribing privileges and knowledge to promote the development of pharmaceutical and medical technology companies, and in doing so, to strengthen their own professional powers by prescribing drug technologies as a means of doing something for the patients. The pharmaceutical companies have not simply reinforced the medical profession's powers and extended their field of activity, but at the same time have provided favourable access to drugs, increasingly serving the companies' goals of growth and profit. Consequently, most doctors have an interest in prescribing the pharmaceutical industry's products, and in supporting the industry, and often act as a partner of the industry, rather than acting as a countervailing power.

The collaboration between the pharmaceutical industry and the medical profession, sometimes referred to as part of the medical-industrial complex, functions as a powerful actor, devoted to profit-seeking activities. The success of the drug marketing strategy is associated with both the capitalistic nature of the pharmaceutical companies and the trend towards the commercialisation of the Chinese medical profession. The pharmaceutical industry now has great influence over the healthcare sector. It is evident that the business ties between the pharmaceutical companies and hospitals are becoming even closer than before; the two are reciprocal in promoting drug prescription to the mutual benefit of both parties.

On the demand side, only by acting collectively can patients be an important countervailing power against the alliance of the doctors and the pharmaceutical

industry, and patients have typically been deferential towards the medical profession. Consequently, the doctor–patient relationship in China is mostly not a patient-centred relationship, but a "professionally-oriented" interaction. So, the medical profession only rarely acts as a countervailing power against the pharmaceutical industry, and patients as a group or individually are also not strong enough to neutralize the industry's power. Consequently, doctors and the pharmaceutical industry are not challenged and this contributes to over-prescribing. In this respect, the lay public constitutes a relatively weak countervailing power in China; However, I found that doctors gave way to patient demands for repeat prescriptions and greater dosages, but they tend to be passive, accepting medical advice on trust and lacking the expertise to question it, often taking the risks that come directly from the doctors' prescribing actions and indirectly from the pharmaceutical industry.

Contributions related to countervailing power theory

This field has attracted enormous interest among scholars. However, as prescribing and over-medication have always been a sensitive subject in China, there has been relatively little research done in this particular area. This provides an added incentive and challenge with regard to my research, but it also offers added value to this thesis. My thesis is the very first in the English language on the issue of over-medication in China, offering a new critical perspective in understanding the relationship between the state, the pharmaceutical industry and the medical profession. The study of the interaction between these different groups of actors in the healthcare domain has been the key here to an understanding of "over-medication" in China. This thesis has made several contributions based on the countervailing power framework. Far from

demonstrating a weakness of the theory, this thesis offers and demonstrates the utility of the countervailing powers theory in China's healthcare context. At the point of finishing this thesis, the countervailing power framework had been only applied in the Western countries (e.g. UK and US).

In his later work, Light talks of the idea of a "buyer's revolt", whereby the state, in collusion with the medical-industrial complex (i.e. private healthcare companies and "big pharma") work together to undermine medical dominance (Light, 2000). Light also talks about alliances between and across different actors. However, in this thesis, I argue that the state is a dominant actor in relation to the governance of drug safety, efficacy and pricing, with the pharmaceutical industry and the medical profession attempting to countervail against it. However, due to corporate bias or the process of co-optation, the state has, to some extent, allied with the medical profession and pharmaceutical industry, rather than against them in China, to provide a new market in healthcare provision. The state allows the profession and industry to make profits from selling drugs, enables them access to the "medical-industry complex" in the healthcare domain through legislation, thus creating a new market opportunity, and the doctors and pharmaceutical industry (manufacturers and companies) have exploited that opportunity. In a sense, it may be argued that the actions of "big pharma" are intended to reduce the power of all other actors, whereby they seek to undermine the state, the medical profession and the public, as a means of asserting and maintaining their own dominance in the field. Meanwhile, as the role of the state is different, I also found a strong link between the pharmaceutical industry and medical profession, which is a powerful "industrial-professional complex" in China's healthcare context that makes it difficult for any other actors, particularly the state, to

act as a countervailing power against these allies. With the development of this alliance in China, the pharmaceutical companies are now starting to play an important role in changing patterns of drug use by marketing and prescribing. In the case of China, over-prescribing is related to over-medication, which becomes an important source of over-medication, Consequently, I can conclude that over-medication in China is caused directly and indirectly by the dynamic relationship between the medical profession, the pharmaceutical companies and the state. This represents an important development of Light's theoretical argument, and one well worth applying to other developing countries like China (see later).

I attempt to link Chapters 5, 6 and 7 in this thesis within my developed countervailing power framework. The results of my empirical research will, I hope, contribute to strategies and recommendations to reduce medication over-use by the following measures: by addressing the role of the state and effective healthcare policy implementation; by improving the healthcare system with policy design, implementation and evaluation; by changing doctors' over-prescribing behaviour; and by improving the doctor–patient relationship in China. The analytical results of this thesis will also shed some critical light on the current global issues that concern the effective interaction of the state, the pharmaceutical industry, the medical profession and the public in the healthcare domain.

Policy implications

In China, the healthcare sector is in a dilemma because of market failures and inadequate government intervention that have contributed to supplier-induced over-

consumption of pharmaceuticals and costly medical services. Although the central government has adopted several measures to restrain the behaviours of healthcare providers, the results are far from effective in achieving the goal, diverging from the intent and even proceeding in an opposite direction. It has to be noted that over-prescription is largely a product of under-funding of hospitals, which then seek ways to generate more revenue. Since the doctors' income largely depends on the amount of drugs they prescribe, poorly paid doctors are motivated to satisfy their self-interest and to fulfil the hospital targets by prescribing more drugs. Consequently, as generating more revenue has become the most important goal for the hospitals, the social and personal functions of the healthcare services are often overlooked. Examining all these practices presents us with a whole picture of necessary healthcare reforms in China and reveals the endogenous problems of the corrupted healthcare provision system and the ineffective health bureaucracy.

The bureaucratic structure of the healthcare domain is a key factor that stands in the way of channelling effective regulatory policies. It is often assumed that controlling drug prices and establishing comprehensive regulatory mechanisms will be sufficient to bring about reforms. However, the fact is that an endemic corrupt bureaucratic culture, showing no signs of being open to change, prevents these drug regulatory policies from functioning effectively. Healthcare bureaucrats are either unwilling to channel local funding to the healthcare sector, or fail to act as attentive supervisors to regulate the healthcare market. The state and healthcare providers are also seen as bureaucratic, corrupt and profit-driven.

This thesis has two major implications for policy makers, which are drawn from the perspective above. First, over-prescription, or more broadly over-medication in China, could be considerably reduced with sufficient political will, but it is very hard to correct because most of the strategies aiming to prevent and eradicate illicit practice barely touch the root causes. Neither central nor local government is paying enough attention to the funding problems of hospitals nowadays. Most hospitals largely rely on incomes from sales of drugs and medical service revenue. In order to survive, the cash-starved hospitals have forced doctors to prescribe more medicine to their patients to generate profits. Campaigns aimed at resisting the improper behaviour of healthcare providers cannot be effective since the incentives for the providers remain unchanged. Furthermore, the enormous profits in selling drugs helps to explain why central and local levels of healthcare authorities and institutions lack the incentives to regulate the healthcare market, especially when regulation would harm their own interests (Huang, 2000: 138).

The failure of China's market-oriented healthcare reform shows us that successful healthcare reform requires several conditions that are difficult to achieve. These conditions may include an adaptive healthcare organisational culture in hospitals; healthcare surveillance departments in local and central government; a coherent and comprehensive healthcare reform plan appropriate to the situation in the country; and an active role of the state in financing and regulating its healthcare sector. Some of the weakness in China's healthcare reform is due to the sudden marketization of the healthcare sector as a result of economic reform together with the less than enthusiastic financial support of the government that followed. Without the state

playing an active role, healthcare reform may fail to achieve health system goals and lead to unexpected distortions in the system.

Second, it is clear that the over-use of pharmaceuticals has a significant impact on the efficacy of healthcare, and causes unplanned effects such as making for unaffordable medicines and health service costs, increased household financial burden and threatened health status. In order to improve access to effective medicines, to reduce inappropriate drug use, and to control over-medication, well-designed pharmaceutical regulations and policies need to be developed. International comparisons may contribute to the discussion of how the policies are developed and implemented. Although some policies are of limited relevance and transferability, and different healthcare systems have their own characteristics in terms of drug pricing and dispensing process, it would be desirable to try to learn from others' experience.

It has to be noted that there are many different strategies and guidelines to deal with the over-use of pharmaceutical products in Europe, such as in the UK. In order to improve the quality of healthcare provision, government develops guidelines addressing general issues of the management of a medical condition. Researchers have found that after a systematic review of 59 studies of medical outcomes under clinical guidelines, significant improvements in healthcare provision were verified (Chapman, Durieux and Walley, 2004: 150). In addition, strategies such as computerized decision support systems to aid in clinical decision making, and offering incentives to reduce utilisation of healthcare resources, have also been widely discussed and adopted in European countries (Walley and Mossialos, 2004: 178).

Moreover, nowadays public organisation can also play an important role in the control of drug use in the clinical practice. For example, in order to improve health and social care in the UK, the independent organisation National Institute for Health and Care Excellence (NICE) often provides guidance and advice. In 2014, new NICE guidelines seek to protect patients/users by refusing to recommend various (licensed) products on grounds of evidence and costs, and suggest doctors should advise against use.

Further study and future research

In this thesis, although I have used survey interviews I have not gone as far as in-depth interview methods due to both Chinese doctors' working pressures and the time limitation of my fieldwork in China, so further study may be needed to explore over-medication in China in a deeper and more comprehensive manner, as it would be desirable to interview four groups in-depth: government officials in related healthcare institutions, pharmaceutical salespersons, medical profession in hospitals and health clinics, and patients who have had recent hospital out-patient visits and hospitalization experience. In addition, environmental problems (such as pollution and air quality) and the mass media should also be taken into account in future research, as current and future global healthcare issues, including China's, are likely to encounter more severe environmental problems, which doctors may use as an excuse for over-prescribing as a means of protection, while the mass media often plays an important role in the development of medical controversies (Seale, 2002). The main fields of empirical research I would like to explore in the future aim to develop the "new medical sociology" using a developed "countervailing power"

framework. However, it is unclear whether the lessons learned from China can also be applied to other developing countries, or more broadly speaking, whether or not this theory can be applied universally. Therefore, future research may be needed to examine the possible advantages of the countervailing powers theory being applied to other developing countries or worldwide.

Moreover, it should also be noted that over-medication is not an isolated process. It should be seen within the background of healthcare system reforms. In order to control the over-use of drugs, healthcare policy should consider providing a "good" institutional background for the cultivation of healthcare provision and establish a firmly grounded foundation for the appropriate use of pharmaceuticals. Further research on the cultural background, groundwork and conditions that constitute the phenomenon of over-medication will be helpful in understanding the social causes of over-medication in China's modern healthcare domain.

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APPENDICES

Appendix 1: University of Essex, Departmental Ethical Approval Form

Application for Ethical Approval of Research Involving Human Participants

This application form should be completed for any research involving human participants conducted in or by the University. 'Human participants' are defined as including living human beings, human beings who have recently died (cadavers, human remains and body parts), embryos and foetuses, human tissue and bodily fluids, and human data and records (such as, but not restricted to medical, genetic, financial, personnel, criminal or administrative records and test results including scholastic achievements). Research should not commence until written approval has been received (from Departmental Research Director, Faculty Ethics Committee (FEC) or the University's Ethics Committee). This should be borne in mind when setting a start date for the project.

Applications should be made on this form, and submitted electronically, to your Departmental Research Director. A signed copy of the form should also be submitted. Applications will be assessed by the Research Director in the first instance, and may then passed to the FEC, and then to the University's Ethics Committee. A copy of your research proposal and any necessary supporting documentation (e.g. consent form, recruiting materials, etc) should also be attached to this form.

A full copy of the signed application will be retained by the department/school for 6 years following completion of the project. The signed application form cover sheet (two pages) will be sent to the Research Governance and Planning Manager in the REO as Secretary of the University's Ethics Committee.

1. Title of project: A study of the social causes of over-medication in China

2. The title of your project will be published in the minutes of the University Ethics Committee. If you object, then a reference number will be used in place of the title. Do you object to the title of your project being published? Yes ☐/ No ☐√

3. This Project is: ☐ Staff Research Project

   √☐ Student Project

4. Principal Investigator(s) (students should also include the name of their supervisor):

Name:	Department:
Yi Fan Wang	Sociology
Joan Busfield	Sociology (Supervisor)

5. If external approval for this research has been given, then only this cover sheet needs to be submitted

External ethics approval obtained Yes ☐/ No ☐√

Declaration of Principal Investigator:

The information contained in this application, including any accompanying information, is, to the best of my knowledge, complete and correct. I/we have read the University's *Guidelines for Ethical Approval of Research Involving Human Participants* and accept responsibility for the conduct of the procedures set out in this application in accordance with the guidelines, the University's *Statement on Safeguarding Good Scientific Practice* and any other conditions laid down by the University's Ethics Committee. I/we have attempted to identify all risks related to the research that may arise in conducting this research and acknowledge my/our obligations and the rights of the participants.

Signature(s):

.....……
…….

Name(s) in block capitals: YI FAN WANG

Date: 03/11/2011

Supervisor's recommendation (Student Projects only):

I recommend that this project falls under Annex B / should be referred to the FEC (delete as appropriate).

Supervisor's signature:

..……..…….

Outcome:

The Departmental Director of Research (DoR) has reviewed this project and considers the methodological/technical aspects of the proposal to be appropriate to the tasks proposed. The DoR considers that the investigator(s) has/have the necessary qualifications, experience and facilities to conduct the research set out in this application, and to deal with any emergencies and contingencies that may arise.

This application falls under Annex B and is approved on behalf of the FEC

☐

This application is referred to the FEC

☐

Signature(s):

.....……..……..……
…….

Name(s) in block capitals:

.....……..……

Department:

……..……
……

Date:

……
……..

The application has been approved by the FEC

☐

The application has not been approved by the FEC

☐

The application is referred to the University Ethics Committee

☐

Signature(s):

.....……
…..

Name(s) in block capitals:

….....…….

Faculty:

…….……...……
……

Date:

…….……
……

Details of Funding

1. Will this project be externally funded?

Yes ☐ No ☐√

If Yes,

2.	What is the source of the funding?

Details of the Project

3.	**Proposed start date**: 01/02/2012
4.	**Probable duration**: 01/02/2013
5.	**Brief outline of project** (This should include the purpose or objectives of the research, brief justification, and a summary of methods. It should be approx. 150 words in everyday language that is free from jargon).
	In this proposed project, I first seek to examine the root causes of the pharmaceutical drugs over-use or over-medication in China. By this mean, there is considerable evidence of this overuse, and it appears to be more extensive than in western countries. I will explore how this overuse relates to the features of China's healthcare system and policies. The proposed research is expected to contribute the strategies and recommendations to reduce this overuse and improve healthcare system with policy design, implementation, and evaluation. The analytical results of this research will also shed some critical light on the current global issues addressing the role of the state and effective healthcare policy implementation in the healthcare domain. The proposed research will use both qualitative and quantitative methodology. The primary methods of data collection are: 1) structured and semi-structured interviews and survey, 2) quantitative data analysis (MOH report and year book of public health), 3) review of documents and literatures obtained from government and non-government sources. The research will focus on Shandong province, my home province.

Participant Details

6. Will the research involve human participants? (indicate as appropriate)

Yes ☐√ No ☐

7.

Who are they and how will they be recruited? (If any recruiting materials are to be used, e.g. advertisement or letter of invitation, please provide copies). Target informant groups are ①government officials (focus on Shandong province) and government researchers in related health care institutions, ②pharmaceutical sales persons, ③medical doctors, and ④patient who have been hospitalized experience within the past two years, or used out-patient facilities over a period of two years. Selecting informants' sample: a total of 50 to 60 informants (12 to 15 people from each of 4 groups). Eligible informants will be 18+. The study will utilize a snowballing technique to approach subjects; I will use the personal networks to approach subjects and then requesting existing informants to introduce their friends or colleagues who meet the criteria to participate.
Will participants be paid or reimbursed? Yes.

8. Could participants be considered:

(a) to be vulnerable (e.g. children, mentally-ill)? √ ☐ NO

(b) to feel obliged to take part in the research? √ ☐NO

If the answer to either of these is yes, please explain.

Informed Consent

9. Will the participant's consent be obtained for involvement in the research, orally or in writing? (Please attach an example of written consent for approval):

Yes ☐√ No ☐

See attachment.

Please attach a participant information sheet where appropriate.

Confidentiality / Anonymity

10. If the research generates personal data, describe the arrangements for maintaining anonymity and confidentiality or the reasons for not doing so.

This is an academic study, and participants will not be identified in any way in the report I prepare. Any personal data will only be used for academic purposes, and the findings will be presented anonymously. I will use pseudonyms to replace real names in the written research report, and I only intend to keep the data until I finish my research report.

Data Access, Storage and Security

11. Describe the arrangements for storing and maintaining the security of any personal data collected as part of the project. Please provide details of those who will have access to the data.

In the project, personal data is contained in paper file, which will be kept in a password-protected Laptop, just Yi Fan Wang and my supervisor Joan Busfield will have access to it.

It is a requirement of the Data Protection Act 1998 to ensure individuals are aware of how information about them will be managed. Please tick the box to confirm that participants will be informed of the data access, storage and security arrangements described above. If relevant, it is appropriate for this to be done via the participant information sheet ☐√

Further guidance about the collection of personal data for research purposes and compliance with the Data Protection Act can be accessed at the following weblink. Please tick the box to confirm that you have read this guidance (http://www2.essex.ac.uk/rm/dp/research.shtm) ☐√

Risk and Risk Management

12. Are there any potential risks (e.g. physical, psychological, social, legal or economic) to participants or subjects associated with the proposed research?

Yes ☐ No ☐√

If Yes,

Please provide full details and explain what risk management procedures will be put in place to minimise the risks:

13. Are there any potential risks to researchers as a consequence of undertaking this proposal that are greater than those encountered in normal day-to-day life?

Yes ☐√ No ☐

If Yes,

Please provide full details and explain what risk management procedures will be put in place to minimise the risks:

Since this is a controversial and sensitive topic in China, it is possible to have some political risks to me. However, I will be carrying out my research in Shandong province and I have already discussed it with one or two government level officials and researchers who have agreed I can carry out my research.

14. Are there any other ethical issues that have not been addressed which you would wish to bring to the attention of the Faculty and/or University Ethics Committees

None.

Appendix 2: Consent Form and Participant Information Sheet

What is the project about?

The project is about the root causes of the pharmaceutical drugs over-use or over-medication in China. We would like to understand the contribution of the policy and behaviour in the use of the pharmaceutical drugs, your views and opinions about the role of healthcare system and regulation, doctors' and patients' behaviour in over-medication that varies between individuals.

What does participating involve?

It involves completing a questionnaire and being interviewed, which includes your background and some relevant issues to the utilization of pharmaceutical drugs and medication in China. The interview will be audio-recorded, and participation will take about half an hour. You will be paid up to £5 (RMB50) for participating.

Please tick the appropriate boxes	**Yes**	**No**
Taking Part		
I have read and understood the project information given above.	☐	☐
I have been given the opportunity to ask questions about the project.	☐	☐
I agree to take part in the project. Taking part in the project will include being interviewed and audio-recorded.	☐	☐
I understand that my taking part is voluntary; I can withdraw from the study at any time and I do not have to give any reasons for why I no longer want to take part.	☐	☐

Use of the information I provide for this project only	**Yes**	**No**
I understand my personal details such as name, email address and phone number will not be revealed to people outside the project.	☐	☐
I understand that my words may be quoted in publications, reports, web pages, and other research outputs.	☐	☐
Please choose one of the following two options:		
I would like my real name used in the above.	☐	☐

I would not like my real name to be used in the above. ☐ ☐

Use of the information I provide beyond this project	**Yes**	**No**
I agree for the data I provide to be archived at the China Data Archive.	☐	☐
I understand that other genuine researchers will have access to this data only if they agree to preserve the confidentiality of the information as requested in this form.	☐	☐
I understand that other genuine researchers may use my words in publications, reports, web pages, and other research outputs, only if they agree to preserve the confidentiality of the information as requested in this form.	☐	☐

Name of participant [printed] Signature Date

Researcher [printed] Signature Date

Project contact details for further information:
Yi Fan Wang Email: yfwang@essex.ac.uk Telephone: 0044-(0)7412408187

Appendix 3: Guide Sheet for Semi-Structured Interview

The interviews were carried out attempting to grasp doctors' opinions, feelings, attitudes and the meanings that are implicit in their actions from their own viewpoints. Technically, the qualitative research interviews were semi-structured and carried through following the same themes but not exactly the same questions to be asked to different individuals. Following questions were asked of each interviewee during the one-to-one interview**.** The questions were designed to be open-ended. Various follow up questions were asked depending on the interviewee's answers. Interviews lasted averagely around 30 minutes.

1. Do you think doctors have to write out a prescription to their patients? How do you understand or apply it in your daily practice?

2. Can you give me your opinion on the patient's own description of condition?

3. Do you think the efficiency of drugs is relevant to your profession? How do you understand or apply it in your daily practice?

4. How do you prioritize your consideration when you select a drug in your practice? Why?

5. Do you think return visits is relevant to your profession? How do you understand or resolve it in your daily practice?

6. Have you experienced any dilemma with increasing prescribing to your patients, in what situation you think it is necessary to? Could you give me an example? If you haven't, have you heard from a colleague who has? How did you or your colleagues resolve those dilemmas?

7. Have you heard about patients with the coverage of New Rural Cooperative Medical System (NRCMS) and Basic Medical Insurance (BSI) are the main objects/groups of "over-medication". What do you think?

8. How do you understand by "over-medication"? In current situation, how do you feel about it in China? Why?

9. Can you give me your opinion about types of overused drugs?

10. How do you think about your salary? Do you expect changes to happen in the future? What are your expectations?

11. How do you think about pharmaceutical marketing? In current situation, how do you feel about it in your hospitals or clinics? Why?

12. Can you give me your opinion about the major responsibility for the over-medication in China?

13. How do you think about my fieldwork in general? Could you give me any comments? Would you mind if I contact you again in the future to verify some answers?

Appendix 4: List of Preliminary Codes (Key Themes)

Prescribing Privileges/Monopoly

Assessing the prescribing privileges of doctors: writing out a prescription

Assessing the prescribing privileges of doctors: increasing prescribing

Reason to increase the dose of medication

Reason to prescribe more medication

Assessing the frequency of return visits of out-patients

Prescribing Knowledge

Assessing doctors' primary consideration of selecting a drug

Assessing the frequency of tracking the efficiency of drugs

Developing "Over-Medication": awareness of Evidence-Based Medicine" (EBM) and Over-medication

Assessing the quality of current common medications

Assessing the efficiency of branded/patented medicines vs generic medicines

Stating types of drugs overused in China

Financial Incentives

Assessing the impact of pharmaceutical marketing: Drug Reps

Assessing the impact of pharmaceutical marketing on the level of medicines use

Assessing the doctor's salary

Assessing financial incentives to the doctor's prescribing: bonus/rewards

Assessing the relationship between the pharmaceutical: rebates/commissions

Assessing the health insurance fund in relation to the overuse of drugs

Appendix 5: The Main Doctors' Questionnaire

☆ My research is concerned with the use of medicines in China. Thank you for agreeing to participate. This is an academic study, and you will not be identified in any way in the report I prepare. Now I would like to start by asking you a few questions about yourself.

What is your gender?

A. Male B. Female

What is your age? _____

What is your educational background/qualification?

A. Below BA/BSc B. BA/BSc C. MA/MSc D. PhD

How many years do you work for this hospital? _____

Are you a trainee doctor?

A. Yes B. No

Which department do you work in this hospital? _____

☆ Now I want to ask you some questions about the use of medicine.

1. How often do you have to write out a prescription (in percentage)?

   A. 10% or less B. 25% C. 50% D. 75% E. 90% or more

2. Have you ever been in a situation where patient made a request for increasing the dose of medication?

A. Often B. Occasionally C.Rarely D. Never

3. As a doctor, do you think that the elderly and the patients with serious disease/illness or bad conditions should be taking higher doses or more frequent medicines?

   A. Yes B. No C. Don't know

4. Would that be the same/similar (percentage) for most of your colleagues? In other words, do they prescribe more or less frequently than you?

   A. Less frequently B. Same/Similar C. More frequently

5. If your patient's condition does not improve after using medication and he or she comes for return visit requesting another prescription, you will?

   A. Increase the dose of drug B. Change the drug C. Use multiple drugs
   D. Don't Know

6. The rate of return visits of out-patients after your medication.

   A. 20% or less B. 30% C. 40% D. 50% E. 60% or more

7. What is your primary consideration when you select a drug?

   A. Effectiveness B. Price C. Safety D. Reputation
   E. Patient's Medical history

8. Do you keep tracking of the efficiency of drugs that you often use?

   A. Often B. Occasionally C. Rarely D. Never

9. Do you understand the term of "Evidence-Based Medicine" (EBM)?

   A. Yes, Very meaningful B. Yes, but don't make much sense C. No.

   D. Don't Know

10. Do you understand the term of "over-medication"?

    A. Yes B. No C. Don't know

11. Do you think that there is "over-medication" phenomenon in China?

    A. Yes B. No C. Don't know

12. Do you think there is "over-medication" in your hospital?

    A. Yes B. No C. Don't know

13. Between urban areas and rural areas, which one do you think is more extensive on "over- medication"?

    A. Yes B. No C. Don't know

14. How do you like the quality of current common medications in hospital?

    A. Very Good B. Good C. Fair D. Poor

15. Do you find that you prescribe branded/patented medicines more effective than commonly used generic medicines?

    A. Yes B. No C. Don't know

16. Through which approach you know more about the character and efficiency of drugs?

    A. Textbook B. Pharmaceutical marketing promotion C. Medication guide D. Colleague exchange information E. Patients' recommendation

17. How often have you been visited by drug reps recently?

_____

18. What do you think about your own salary (wages + bonus/rewards) as a doctor in your hospital?

A. Very Good B. Good C. Fair D. Poor

19. Do you think that pharmaceutical marketing affects the level of can affect the level of medicines use in hospitals or clinics?

A. Yes B. No C. Don't know

20. As far as you know, whether or not some doctors have gained profits from pharmaceutical manufacturers/firms by medication.

A. Often B. Occasionally C.Rarely D. Never

21. As far as you know, whether or not some doctors have the behaviour of rebates?
A. Often B. Occasionally C.Rarely D. Never

22. Do you think the pharmaceutical industry is a "lucrative industry"?
A. Yes B. No C. Don't know

23. Are doctors' bonus/rewards linked to the drugs income in your hospital?

A. Yes B. No C. Don't know

24. According to some views, there are some certain hospitals in China abuse the health insurance fund to prescribe more drugs for patients that caused the overuse of drugs. Do you agree or disagree?
A. Agree B. Disagree C. Don't know

25. In your opinion, what are the most common types of over-medications in China?

A. Antibiotics B. Infusions/Injections C. Expensive drugs

D. Chemotherapy drugs E. Psychotropic drugs F. Hormone drugs

G. Heart nutritional drugs

Thank you very much for completing this survey!

For investigator use only

Location: _____ province (city) _____ county (town) _____ hospital

Hospital Level: Tier _____ Department_____

Survey No.:____

Date: ___/___/____