

49049



DIRECTIONS IN DEVELOPMENT
Human Development

Reforming China's Rural Health System

Adam Wagstaff, Magnus Lindelow, Shiyong Wang, and Shuo Zhang



THE WORLD BANK

Public Disclosure Authorized

Public Disclosure Authorized

Public Disclosure Authorized

Public Disclosure Authorized

Reforming China's Rural Health System

Reforming China's Rural Health System

Adam Wagstaff
Magnus Lindelow
Shiyong Wang
Shuo Zhang



THE WORLD BANK
Washington, D.C.

© 2009 The International Bank for Reconstruction and Development / The World Bank

1818 H Street NW
Washington DC 20433
Telephone: 202-473-1000
Internet: www.worldbank.org
E-mail: feedback@worldbank.org

All rights reserved

1 2 3 4 12 11 10 09

This volume is a product of the staff of the International Bank for Reconstruction and Development / The World Bank. The findings, interpretations, and conclusions expressed in this volume do not necessarily reflect the views of the Executive Directors of The World Bank or the governments they represent.

The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgement on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

Rights and Permissions

The material in this publication is copyrighted. Copying and/or transmitting portions or all of this work without permission may be a violation of applicable law. The International Bank for Reconstruction and Development / The World Bank encourages dissemination of its work and will normally grant permission to reproduce portions of the work promptly.

For permission to photocopy or reprint any part of this work, please send a request with complete information to the Copyright Clearance Center Inc., 222 Rosewood Drive, Danvers, MA 01923, USA; telephone: 978-750-8400; fax: 978-750-4470; Internet: www.copyright.com.

All other queries on rights and licenses, including subsidiary rights, should be addressed to the Office of the Publisher, The World Bank, 1818 H Street NW, Washington, DC 20433, USA; fax: 202-522-2422; e-mail: pubrights@worldbank.org.

ISBN: 978-0-8213-7982-0
eISBN: 978-0-8213-7983-7
DOI: 10.1596/978-0-8213-7982-0

Library of Congress Cataloging-in-Publication Data

Reforming China's rural health system / Adam Wagstaff... [et al.].
p. ; cm. — (Directions in development)

Includes bibliographical references and index.

ISBN 978-0-8213-7982-0 (alk. paper) — ISBN 978-0-8213-7983-7 (electronic)

1. Rural health services—China. 2. Health care reform—China.

I. Wagstaff, Adam. II. World Bank. III. Series: Directions in development (Washington, D.C.)

[DNLM: 1. Rural Health Services—China. 2. Delivery of Health Care—China. 3. Health Care Reform—China. 4. Insurance, Health—China. WA 390 R332 2009]

RA771.7.C6R44 2009

362.1'04257—dc22

2009015193

Cover photo: This photo was kindly provided by Mr. Bin Hu, Chongqing Municipal Health Bureau, China.

Cover design: Naylor Design.

Contents

<i>Foreword</i>		<i>xi</i>
<i>Acknowledgments</i>		<i>xv</i>
<i>Abbreviations</i>		<i>xix</i>
Chapter 1	Introduction	1
	China's Shift from Economic Growth to "Balanced Development"	1
	The World Bank's Analytic and Advisory Activities on China's Rural Health Sector	5
	Overview of the Book	7
Chapter 2	China's Health Challenges at the Start of the New Millennium	13
	Trends in Health Outcomes	14
	Trends in Health Inequalities	18
	Out-of-Pocket Costs—A Barrier to Care and a Cause of Poverty	19
	Accounting for the Household Burden	22
	Provider Incentives, Costs, and the Quality of Care	25
	Health Insurance Contraction	28

	Inequality in Government Spending	29
	Challenges and Reforms—Creating a Path Forward	30
Chapter 3	The Rural Health Reforms of the 2000s	33
	The New Rural Cooperative Medical Scheme	34
	Medical Assistance	38
	Public Health	42
	Provider Payment Reform	49
	Other Reforms in Service Delivery	52
	Sizing Up the Recent Reforms	56
	Annex: Impact Evaluation of NRCMS	57
Chapter 4	Looking Toward a New Decade: The Big Picture	61
	Health Systems—Goals, Functions, and Actors	62
	Evolving Ideas and International Best Practice	64
	Reform over the Medium Term	72
	Reform over the Longer Term	78
Chapter 5	Financing Rural Insurance Coverage	81
	More Resources for NRCMS	82
	Converting NRCMS into a “Purchaser”	96
	What Should Be Covered?	98
	Strengthening Management and Governance	107
	Priorities and Sequencing	111
Chapter 6	Improving Service Delivery: A Question of Incentives	115
	Changing Provider Incentives	116
	Enabling Providers to Respond to New Incentives	133
	Reform Priorities, Sequencing, and Capacity	143
Chapter 7	Enhancing Accountability and Incentives in Public Health	147
	The Misalignment of Incentives and Accountability	151
	Geographic Disparities in Spending	153
	Roles and Responsibilities across Levels of Government	160
	Clarifying Responsibilities and Financial Incentives at the County Level	171

	Priorities, Sequencing, Political Economy, and Skills	182
	Annex: Case Study of Public Health Financing and Organization in Two Counties	185
Chapter 8	The Longer-Term Reform Agenda	187
	Limitations of the Emerging Health Insurance Model	187
	A Dual Agenda for Financing Long-Term Reform	192
	Getting from Here to There	198
Chapter 9	Conclusions	201
Notes		205
References		219
Index		239
Boxes		
3.1	NRCMS circa 2005	36
3.2	Medical Assistance circa 2005	39
3.3	Challenges in Estimating Public Health Spending and Comparing across Countries	46
3.4	Provider Payment Reforms in Urban China	50
3.5	Prospective Payments and Purchasing in NRCMS	52
3.6	Impacts of Treatment Protocols, Drug Lists, and Other Innovations in the Health VIII Project in Gansu Province	55
5.1	Trends in Financing Health in Rural China	83
5.2	The Benefit Package in Mexico's Popular Health Insurance Program	103
5.3	Medical Savings Accounts in China and Singapore	105
5.4	Merging of NRCMS and BMI	108
5.5	Health Insurance Governance in Estonia and Costa Rica	109
6.1	Price Regulation in China	116
6.2	International Experience with Provider Payment Reforms	120
6.3	The Importance of Inpatient Care for NRCMS	123
6.4	Setting Health Sector Prices in Japan	129
6.5	Approaches to Extra Billing	130

6.6	Impact of Ownership and Profit Status on Performance in China and Abroad	138
6.7	Governance of Autonomous Public Sector Providers	140
6.8	Issues in the Legislation and Regulation of Nonprofit Organizations	142
7.1	What Is Public Health?	148
7.2	The Case for (and against) Decentralization	153
7.3	Changing Patterns of Intergovernmental Relations in China	159
7.4	Cost-Effectiveness and the Challenge of Prioritization	165
7.5	Public Health in a Decentralized Context: How Do Other Countries Do It?	168
7.6	The Challenge of Intersectoral Public Health Coordination	179

Figures

1.1	Declining Poverty and Rising Living Standards, 1980–2007	2
1.2	China-to-OECD Mortality Ratios, 1980–2005	5
2.1	Under-Five Mortality in China, Indonesia, and Malaysia, 1970s–90s	15
2.2	Communicable Disease Mortality in China	17
2.3	Inequalities in Child and Maternal Mortality in China, 2003	18
2.4	Household Cost of Hospital Care in China and Other Countries	20
2.5	Out-of-Pocket Health Spending in China, 1990–2000	21
2.6	Inpatient Care Costs in China and Other Countries	22
2.7	Hospital Efficiency in China and OECD Countries	23
2.8	Technology Adoption in China and Other Countries	25
2.9	Rising Cost of Hospital Care in China, 2003–05	25
2.10	Insurance Coverage, 1993–2003	29
2.11	Impact of Government Health Spending on the Poor and Better Off	30
2.12	Government Health Expenditure by Provincial Wealth and Need	31
3.1	Government Public Health, Total Health, and Total Spending, 1990–2003	44
3.2	Government Subsidies and Business Fees as Income Sources for Public Health Institutions	45
3.3	Government Spending on Prevention and Public Health in China and Other Countries	47

3.4	Government Spending on Prevention and Public Health as a Share of GDP in China and Other Countries	48
5.1	Provincial and Central Government Subsidy Allocations across Counties within Selected Provinces	90
5.2	Inequality in County Government NRCMS Contributions	91
5.3	Making the Financing Mix Fairer for County Governments	92
5.4	“Surplus” Contributions in Jiangsu and Jiangxi Provinces	93
7.1	Government Expenditure on Disease Control by Province	155
7.2	Incidence of TB by Provincial GDP	155
7.3	Financing of Public Health Activities at the County Level	157
7.4	Central and Provincial Public Health Funds by County Activity	158
7.5	Vertical Control and Accountability in China’s Public Health System	162
7.6	Where Is Money for Public Health Going?	164
7.7	Accounting for Public Health Spending by Institutional Type	172
7.8	Service Overlap across Institutions with Public Health Responsibilities	173
7.9	Financing Sources for Prevention and Public Health	175
7.10	Where Do Out-of-Pocket Expenditures on Prevention and Public Health Go?	176
8.1	Financial Flows in the Proposed System	195
8.2	Current (2004) and Possible Financing Mixes	197
Tables		
A3.1	Estimates of NRCMS Impact on Households	59
A3.2	Estimates of NRCMS Impact on Facilities	60
5.1	Proposed Financial, Purchasing, and Delivery Responsibilities by Intervention Type	99
7.1	Key Weaknesses in the Public Health System	150

Foreword

Work on this book began in 2003 during the initial formulations of China's 11th five-year plan, which covers the period 2006–10. The government of China had requested the World Bank's analytic partnership in assessing the rural health sector. With a generous grant from the United Kingdom's Department for International Development (DFID), the work became part of the Bank's Analytic and Advisory Activities (AAA) program in China, a program that includes technical assistance and policy advice. The rural health AAA work continued through 2007. This book was just one of the activities and outputs of this process. During the entire period, the rural health AAA team analyzed the sector and debated reform options with government officials and scholars. It is hoped that this work helped the government in its extensive reform efforts over the past few years.

A lot has happened since the rural health AAA began, and since the first draft of this book was completed in June 2006. The health sector, along with other social sectors, such as education and social protection, become priorities in the 11th five-year plan. The plan called for comprehensive reform of the health system, noting that the current system does not meet the needs of the Chinese population. The 11th five-year plan proposed a wide range of reforms in the areas of health protection, public health

promotion and major disease prevention, the health service delivery system, and human resources.

To date, many targets have been met or even exceeded. For example, the National Rural Cooperative Medical Scheme (NRCMS) is at the top of government's health agenda, as indicated by the fact that NRCMS coverage is the only obligatory indicator on health in the overall plan. It was piloted during 2003–05 and rolled out during the 11th five-year plan.¹ From 2003 to 2005, the implementation was focused on pilots in a few (rural) counties. Under the plan, the government decided to accelerate the implementation nationwide and set the goal of 80 percent coverage by 2008. To support this new objective, the government raised its subsidies to NRCMS over time. In 2006, the contribution from both central and local government was *doubled* to Y 20 per person per year, bringing the total NRCMS contribution to Y 50 per person and bringing the share of the government contribution to 80 percent. In early 2008, the contributions *doubled* again. The central government also made its earmarked fiscal transfer more accessible and based more on actual need of each province. Coverage of NRCMS across counties was 86 percent by the end of 2007, meaning that the goal set in the 11th five-year plan was achieved one year ahead of schedule.

The Ministries of Health and Finance jointly proposed in early 2008 new areas for piloting, including an experiment on outpatient risk pooling, prefecture-level pooling in less populous areas, coordination and harmonization with the urban resident basic health insurance so as to ensure basic medical protection for migrant workers and land-loss farmers, and a link with the new national health reform initiatives announced by the National Development and Reform Commission in late 2008 and 2009.

Challenges remain to be addressed in the new health reform strategy for 2009–11. Nevertheless, the government is to be commended for its remarkably fast march to universal coverage for the rural areas and its focused efforts to address parallel issues in service delivery and basic public health.

The rural health AAA work took place during a period of wide-ranging debate within government on health reform. A decision was taken to

¹ The NCMS was first proposed in 2002 in "Decision of the Central Committee of the Communist Party, State Council on Further Strengthening Rural Health." In early 2003, the State Council document "Suggestions on Establishing the New Rural Cooperative Medical System" formally launched the piloting.

produce a master plan for health involving some 16 different ministries. This was a massive effort and, unsurprisingly, differences of view were apparent. Some favored a demand-driven reform approach; others favored a supply-driven approach. An explicit request was made to the Bank and a number of other agencies to formulate a formal contribution to these deliberations. The ongoing AAA work left the Bank well positioned to respond. The Bank's inputs—lessons from international experience, innovative ways to collect and analyze data and other information, and so on—represented a significant investment by our technical experts team.

A consultation draft of the book was discussed with the government and others toward the end of 2006 and early 2007. Based on these discussions, a revised draft was produced and delivered to the Ministry of Finance in late 2007. Reactions to the revised version varied within the government. Some agencies asked for changes beyond those requested during the consultation. These requests were understandable given that rural reform was moving quickly; there was a concern that the rapid progress was not adequately reflected in the draft. The manuscript was revised accordingly. We are indebted to the Ministries of Finance and Health, in particular, for their careful reviews and useful comments back to the authors. In the end, this is a joint effort, reflecting the partnership of our team with the many experts and policy makers in the government, to whom we are indebted.

This final version will inevitably still be somewhat out of date, given the fast-moving targets and accomplishments of the current health reform activities and the inevitable lag between drafting and publication. Nevertheless, we hope that the publication can serve two important functions: to provide an analytical framework for thinking about what happened in China's rural health system and why, and to present a global perspective on the options for further strengthening the sector. China is well on its way to achieving a modern, equitable, and well-functioning rural health sector, but this is not an easy task for any country. We hope this book can provide a useful reference for policy makers in the next phase of health reform and beyond.

David Dollar
Country Director, China

Acknowledgments

The research upon which this study is based was generously supported with trust funds from the U.K. Department for International Development (DFID). Special thanks are due to Adrian Davis, head of the DFID office. We are also grateful to Martin Taylor and Qiao Jianrong, health advisors in the DFID Beijing office. They provided steadfast support and counsel throughout.

The Chinese government collaborated on this research in many ways. The team is particularly grateful for the overall guidance provided by Vice Minister Wang Longde of the Ministry of Health (MOH). The study team also thanks Dr. Zhu Baoduo and his colleagues in the MOH Foreign Loan Office for facilitating the many dialogues with departments of the MOH as well as with other ministries. Without that support, this exercise could not have been completed. Advice and counsel were also received in many discussions with officials of the Ministry of Finance (MOF), National Development and Reform Commission (NDRC), Ministry of Civil Affairs (MOCA), and Ministry of Labor and Social Security (MOLSS).

The research was greatly enriched through a series of in-depth interchanges with an informal interministerial working group on health reform, which was set up for that purpose. Members of the working group included Chi Yanhua (MOH), Gong Sen (Development Reform

Center of the State Council), Fu Wei (MOH), Gao Jun (MOH), Guan Xiuzhen (MOF), Lei Haichao (MOH), Li Qun (MOF), Liu Zhen (MOCA), Tang Xiaoli (MOLSS), Gong Xiangguang (MOH), Yu Shili (MOH), Zhang Zhaoyang (MOH), Zhu Baoduo (MOH), Zhu Hongming (MOH), Zhu Xunke (MOCA), and Martin Taylor (DFID).

The study benefited too from close collaboration with the Ministry of Health's Center for Health Statistics and Information (CHSI) on the early assessment of the NCMS program, and on other statistical matters. The team is particularly grateful to Professor Rao Keqing, and to Drs. Gao Jun, Xu Ling, and Qian Juncheng. The team also collaborated with the Ministry of Civil Affairs on a study at the provincial and county level of the design and implementation of the Medical Assistance (MA) program, as well as with the MOH Department of Community Health and Maternal and Child Health on a background study of maternal and child mortality. We are grateful to both institutions for their support and engagement.

The team undertook many consultations with its donor and institutional partners. An initial workshop with the DFID and World Health Organization (WHO) offices in Beijing produced useful advice on launching the study. An interministerial workshop in July 2004 provided a strong foundation as the work began to move forward. Participants took stock of what was then known about China's rural health challenges, and they pointed to critical areas where investigation was needed. These workshops and other events—including informal consultations with the China Health Economics Network, and presentations at various academic seminars—greatly enriched the team's evolving understanding of the issues that are discussed herein. The study team also benefited from the constant flow of ideas and insights from field missions, as well as invaluable contributions from provincial government, local government, and health bureau officials.

An external advisory panel consisting of Professor Alan Maynard (University of York, U.K.) and Professor Xue Lan (Tsinghua University) provided advice throughout this exercise. At the World Bank, the study was peer-reviewed by Maria-Luisa Escobar (World Bank), Mariam Claeson (World Bank), and Alan Maynard (University of York, U.K.). The comments and insights of all these colleagues contributed greatly to the quality of this final report.

Many people contributed or coauthored background papers. These include Sarah Bales, Wen Chen, Mariam Claeson, Lv Cong, Li Congdong, Karen Eggleston, Wang Hong, Wang Jian, Zhang Jing, Gao Jun, Qian Juncheng, Ling Li, Tao Libo, Wang Limin, Xu Ling, Gordon Liu, Miao

Mei, Wu Ming, Lu Mingshan, He Minmei, Brian Nolan, Sun Qiang, Meng Qingyue, Hu Shanlian, Wang Shiyong, Peter Smith, Christine Wong, Liu Xingzhu, Zhang Xiulan, Liu Yuanli, Xu Yuebin, Yi Yunni, Ruan Yunzhou, Zhao Yuxin, Yang Zhe, Mao Zhengzhong, and Zhang Zhengzhong.

Several public health specialists assisted and contributed guidance to the case study reported in the annex to chapter 7. These include Zhao Yuxin, Zhang Yuhui, Wan Quan, Liu Jiaming, and Tao Sihai from the China Health Economics Institute; Sun Qiang from Shandong University; and Chen Yongjun, Huang Haibo, Li Huojia, Liu Guguo, Luo Zhuzhi, Meng Donghua, Tan Mingjie, Wei Hui, and Mr. Liang from the Guangxi Zhuang Autonomous Region.

L. Richard Meyers served as task team leader for the large technical team that conducted this work. John C. Langenbrunner took over as task team leader on Mr. Meyers' retirement in 2008. Adam Wagstaff was the lead author of the present volume, and Magnus Lindelow the coauthor. Other members of the core team included Shiyong Wang and Shuo Zhang of the World Bank Beijing office. Helena Chang, Lei Liu, and Shengchao Yu served as research analysts, and Sabrina Terry and Lansong Zhang provided administrative support in Washington, D.C., and Beijing, respectively. Human Development Sector Coordinator Xiaoqing Yu of the Bank Beijing office provided guidance and support throughout. The work was carried out under the general supervision of David Dollar (County Director, China), Emanuel Jimenez (Director, East Asia and Pacific Region Human Development sector), Tamar Manuelyan Atinc (Acting Director, East Asia and Pacific Region Human Development sector), Fadia Saadah (Sector Manager, East Asia and Pacific Region Health, Nutrition and Population), and Bert Hofman (China, Lead Economist).

Sheldon Annis and Ron Weber provided meticulous editing at several stages in the review process. Their contributions are much appreciated.

Abbreviations

AAA	World Bank Analytic and Advisory Activities
AIDS	acquired immune deficiency syndrome
AQSIQ	Administration of Quality Supervision, Inspection, and Quarantine
ATT	average effect of treatment on the treated
BMI	Basic Medical Insurance
BOH	Bureau of Health
CCSS	Caja Costarricense de Seguro Social [Costa Rica]
CDC	Center for Disease Control
CHAI	Commission for Healthcare Audit and Inspection
CHIS	Centers for Health Inspection and Supervision
CHNS	China Health and Nutrition Survey
CHSI	Center for Health Statistics and Information
CMS	Cooperative Medical Scheme
DFID	U.K. Department for International Development
DHHS	Department of Health and Human Services
DHS	Demographic and Health Survey
DOTS	Directly Observed Therapy Shortcourse

DRG	diagnosis-related group
EBF	extra-budgetary funds
EEF	extra-establishment funds
EHIF	Estonian Health Insurance Fund
EPI	Expanded Program on Immunization
EPS	epidemic prevention station
FDA	Food and Drug Administration
FFS	fee-for-service
FPA	Family Planning Agency
GDP	gross domestic product
GIS	Government Insurance Scheme
HBV	hepatitis B virus
HIV	human immunodeficiency virus
HPA	Health Protection Agency
IBRD	International Bank for Reconstruction and Development (World Bank)
IDA	International Development Association of the World Bank Group
IMR	infant mortality rate
LIS	Labor Insurance Scheme
LOR	letter of responsibility
MA	Medical Assistance
MCH	Mother and Child Health
MDG	Millennium Development Goal
MMR	maternal mortality ratio
MOCA	Ministry of Civil Affairs
MOF	Ministry of Finance
MOH	Ministry of Health
MOLSS	Ministry of Labor and Social Security
MSA	medical savings account
NCD	noncommunicable disease
NCHIS	National Center for Health Inspection and Supervision
NDRC	National Development and Reform Commission
NHA	National Health Accounts
NHS	National Health Survey

NPO	nonprofit organization
NRCMS	New Rural Cooperative Medical Scheme
OECD	Organisation for Economic Co-operation and Development
OOP	out-of-pocket
PCT	Primary Care Trust
PHI	public health institution
PPH	Prevention and Public Health
PSM	propensity score matching
PSU	public services unit
RAWP	resource-allocation working party
RHS	Rural Household Survey
SARS	Severe Acute Respiratory Syndrome
SHI	social health insurance
SISBEN	Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales (System to Identify Potential Social Program Beneficiaries) [Colombia]
SOE	state-owned enterprise
TB	tuberculosis
THC	township health center
TSS	Tax Sharing System
UHI	universal health insurance
WPI	weighted poverty index

CHAPTER 1

Introduction

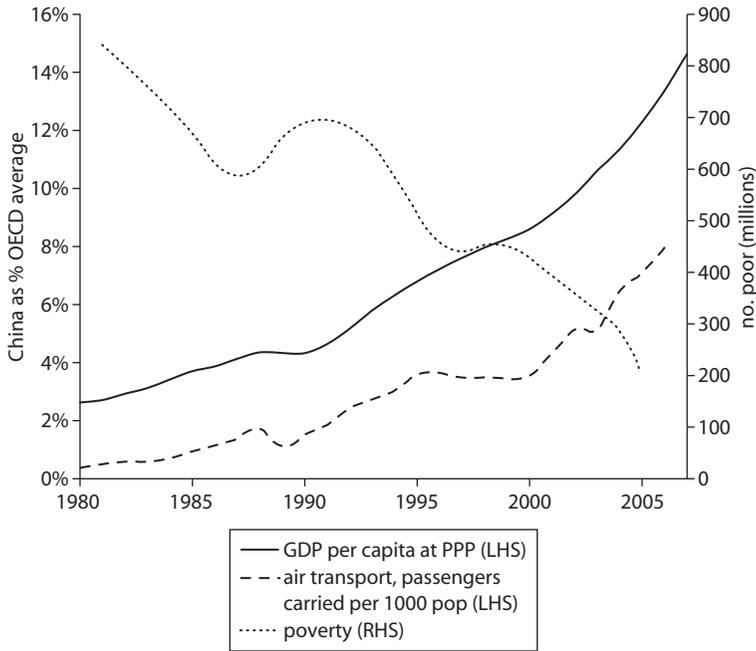
China's Shift from Economic Growth to "Balanced Development"

Since 1978, when it embarked on sweeping agricultural and industrial reforms, China's economic transformation has been remarkable. Its success in transforming itself within just three decades from a very poor low-income country to a successful middle-income country is unparalleled.

In 1980, among the 130 countries for which consistent data on income per capita at constant purchasing power parity exchange rates are available, China ranked 127.¹ Over the period 1980–2007, China averaged an annual average growth rate of per capita income of around 8.5 percent.² No other country came close to this achievement.³ By 2007, China ranked 73 among these 130 countries. In 2007, China's income per head in real terms was almost 10 times what it was in 1980. Comparisons with the Organisation for Economic Co-operation and Development (OECD) countries also help to underscore the scale of China's transformation. In 1980, China's per capita income was just 3 percent of the average of the OECD countries. By 2007, it was 15 percent (Figure 1.1).

China's rapid and sustained growth has heralded substantial improvements in living standards for the Chinese people. Between 1981 and 2005, economic growth lifted around 640 million people above the World

Figure 1.1 Declining Poverty and Rising Living Standards, 1980–2007



Sources: Gross domestic product (GDP) and air transport data are from *World Development Indicators*; poverty data are from Chen and Ravallion (2008).

Note: LHS refers to left-hand vertical axis; RHS refers to right-hand vertical axis.

Bank's new international \$1.25-a-day poverty line (Figure 1.1). In China at the start of the economic reforms, air travel was rare: just 3 people per thousand population boarded a commercial flight in 1980, less than one-half of 1 percent of the OECD rate.⁴ By 2006, the figure in China had risen to 120 per thousand, about 8 percent of the OECD rate. Also striking is the *recentness* of these changes. Between 1981 and 1990, China lifted people above the international poverty line at the rate of 16 million per year. Over the following nine years, the rate of poverty reduction was 27 million per year. From 1999 to 2005, the rate was 41 million per year.

It might be assumed that China's successes in economic growth, poverty reduction, and living standards have been matched by a parallel success in health. Certainly, there *have* been successes.

China's strides in health during the early days of the People's Republic are indeed legendary. Its malaria control program, launched in 1955, brought malaria mortality down from 5,528 deaths in 1955 to just 24 deaths in 1998. In the case of maternal mortality, the rate declined from

an estimated 1,500 deaths per 10,000 live births in 1950 to just 100 per 10,000 live births by 1980. China's under-five mortality rate fell from 225 deaths per 1,000 live births in 1960 to just 64 per 1,000 by 1980, an extraordinary average reduction of 6.3 percent per year.⁵ Results of this magnitude cannot be attributed to economic growth since during this period China grew very little. China's performance in health during this period far outstripped that of many countries around the world with considerably higher per capita incomes, faster economic growth, and more advanced health infrastructures.

China's early achievements are widely ascribed to its broad deployment of grassroots health workers starting in the 1950s. "Barefoot doctors" delivered basic primary interventions that significantly helped to drive down mortality from the kinds of health threats that prevailed at that time. Millions of children were vaccinated against infectious diseases such as measles and polio. Working door to door in virtually every poor and rural area, primary health workers promoted hygiene and disease prevention, as well as family planning and an eclectic mix of traditional Chinese medical techniques and Western drugs.

While primary care of this sort helped to increase longevity and reduce maternal-child mortality, it also helped to advance China toward a different level of need. Diarrhea and pneumonia, the commonest causes of child death in most very poor countries, can generally be treated by health workers with little medical training; but many other causes of child mortality cannot. Even in countries with intermediate child mortality rates, neonatal causes (for example, birth asphyxia and complications of prematurity) account for nearly half of under-five deaths (Black, Morris, and Bryce 2003). Thus, at the same time that China reached low plateaus in communicable and preventable diseases, its medical needs started changing—from basic public health interventions and a grassroots delivery system to a more sophisticated medical technology and a more "modern" health care delivery system.

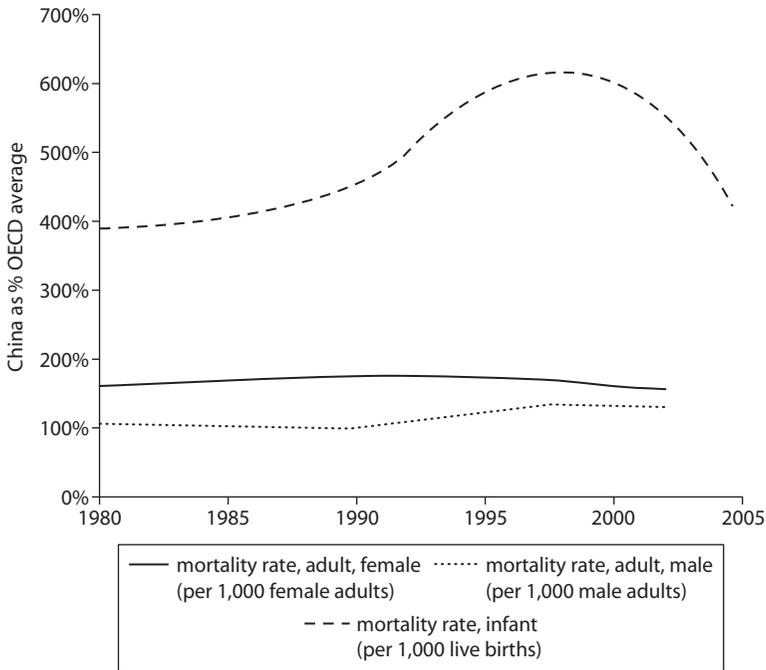
China's economic growth in some respects acted as a positive stimulus to the health sector. Increasing per capita income meant more potential resources per capita for health. But at the same time, the reforms that ushered in the rapid growth presented challenges to health service finance and delivery. The rapid shift away from collective agriculture resulted in an almost total collapse of the commune-based cooperative medical scheme (CMS), the mainstay of free health care for the rural population. In addition, shifts in the tax base during the economic transition and weak tax collection incentives for local government led to a

steady decline in government revenues as a share of GDP. As a result, the government received fewer revenues with which to finance social sector programs, including health. This led to a policy of “financial autonomy” for health facilities, which were allowed to supplement their budget allocations by charging patients for the medicines and the services that they provided. While the government imposed a price schedule, it was structured so that providers incurred losses for “basic” health care while they made profits on drugs and high-tech care.

The result was, first, a shift away from core public health activities and, second, a seemingly inexorable rise in the cost of personal health services. Newly uninsured households were left with a choice between forgoing care they needed or treatment that could push them into poverty. By 2003, 30 percent of *pinkun* (poor) households in the government's National Health Survey (NHS) were reporting health care costs as the main cause of their poverty. Increasingly, health care costs have topped the list of public concerns in government surveys.

The increasing burden of health care costs expressed itself in other ways. Even as China was catching up with OECD living standards, it was *not* closing the health gap on one important measure—mortality rates (Figure 1.2). It is not that mortality increased in China. Rather it is that although China was catching up to OECD countries in terms of per capita income, its mortality rates were not falling faster than those in the OECD countries. In fact, between 1980 and 2000, infant mortality fell *faster* in the OECD countries than in China, despite the fact that the OECD countries had achieved low rates of mortality by this stage, which ought to have made it harder for them to achieve the reductions they recorded.

Parallel concerns began to surface in other sectors, too—the rising cost of education, inequalities between the richer eastern and poorer western provinces, growing rural-urban disparities, damage to the environment, and so on. During the period 2003–2005, as they formulated China's 11th five-year plan for the period 2006–2010, China's policy makers signaled their growing awareness of these concerns through a significant shift in emphasis in national development strategy. The quest for rapid economic growth would continue; however, a series of policy initiatives would be launched in tandem, promoting “balanced development” and a more “harmonious society.” The health sector—in particular the rural sector—was singled out for reform; and true to its word, the government launched a series of ambitious health sector reforms starting in 2003. It is those reforms—and some ideas on how to build upon them—that are the subject of this book.

Figure 1.2 China-to-OECD Mortality Ratios, 1980–2005

Source: World Development Indicators.

The World Bank's Analytic and Advisory Activities on China's Rural Health Sector

In formulating its 11th five-year plan in 2003, the Government of China requested World Bank analytic assistance in assessing its rural health sector. The work became part of the Bank's extensive and growing Analytic and Advisory Activities (AAA) program in China, a program that includes technical assistance and policy advice. The Bank's AAA program in China has become increasingly important over the course of the decade. During the second half of the 1990s, International Bank for Reconstruction and Development (IBRD) lending to China declined because of statutory limits on the permissible share of total lending to any one country; indeed, lending to China had dropped to about a third of its 1993 value by 2001 (World Bank 2005a). Furthermore, International Development Association (IDA) lending to China ceased altogether in 2000. Although China had not reached the income per capita cutoff at

that time, IDA donors decided that China had become sufficiently creditworthy not to require further concessional loans.⁶

With less emphasis on loans came more emphasis on analytic and advisory activities. For its part, the government increasingly sought informed guidance on best practices based on the Bank's broad experience across countries and sectors. China treated lending operations as opportunities to test and adapt some of these new ideas. A pragmatic experimental approach was adopted in which new ideas were tried out in selected geographic areas, and then taken to scale nationally based on results.

In the area of rural health, 2003 to 2007 saw a variety of activities related to this AAA support.

Teams of scholars were assembled to research key issues in the health sector. Each team consisted of a domestic Chinese scholar, a foreign-trained Chinese scholar, and a non-Chinese international expert. Their findings were discussed at an interministerial workshop in 2004 in Beijing, which was attended by provincial and regional policy makers. A series of short background papers were subsequently summarized and widely distributed as electronic briefing notes.⁷

The Bank convened an informal interministerial working group to encourage debate and information-sharing among the multiple ministries that share health sector responsibilities. Starting in 2004, these working group meetings emerged as a forum for discussion and feedback on the multitude of health programs. The World Bank Institute also provided the group with a shortened version of its health financing course.

Statisticians from the Ministry of Health (MOH) collaborated with economists from the World Bank. Together, they studied early experiences of China's new rural health insurance scheme, which from 2003 onwards replaced the largely defunct commune-based rural cooperative medical scheme. The findings of the Chinese-language report, written by the Chinese members, were largely accepted by the government and have been integrated within several important policy documents.⁸ The MOH team subsequently employed the modern impact evaluation techniques used in that study to evaluate other health sector programs.

The Ministry of Civil Affairs (MOCA) collaborated with the Bank to collect and analyze data on its new safety net program to protect vulnerable groups against unmanageable health expenses.

The Bank engaged Chinese scholars to provide up-to-date reports on local governments' approaches to the design and implementation of key policies and programs.⁹

Bank staff engaged in the ongoing study undertook various pieces of analytic work as part of their research activities that have helped to fill remaining knowledge gaps.¹⁰

Economists from the Bank team were invited to make presentations at several conferences, including a senior policy-maker seminar in 2005; a high-level roundtable on public finance cohosted by the Ministry of Finance (MOF) and the Bank in Beijing in 2006; the 2006 Beijing Forum; and a Colloquium on Future Directions for Health Care Reform in China held at St Anne's College, Oxford, in 2008.¹¹

In 2007, the Bank, the World Health Organization (WHO), and several Chinese universities were invited to prepare a paper for a high-level government task force charged by the Premier of China with preparing a new master plan for the health sector.

Overview of the Book

This book represents the culmination of the World Bank's analytic and advisory activities on China's rural health sector. The book greatly benefited from an iterative review and consultation process. A first version was discussed within the World Bank in June 2006. A consultative draft was produced in fall 2006. Consultations with the Government of China and with other agencies, including the United Kingdom's Department for International Development and the World Health Organization, took place at the end 2006 and at the beginning of 2007. Based on those consultations, a revised version was circulated for additional comment in summer 2007. Comments were incorporated into the manuscript in summer 2008, and this final version was revised and updated in the winter of 2008–09.

The book is structured as follows. Chapter 2 (China's Health Challenges at the Start of the New Millennium) begins by reviewing China's pre-2000 health sector performance and the institutional issues that led to the need for significant reforms. The chapter examines why health outcomes were generally disappointing during an era in which it was widely assumed that social progress would follow close upon the heels of economic progress. The chapter looks at the prereform health care system in the context of collapsing rural health insurance, which was followed by transfer of the financing burden first to the provinces, then to health providers, and finally to the shoulders of individual households in need of health care. The chapter considers how out-of-pocket (OOP)

health care costs rose from high to unmanageable levels for many rural households, thus increasing poverty and sharpening rural inequalities. The underlying cause was an inefficient health care system driven by an incentive structure that overly emphasized medical technology, costly drugs, and inpatient clinical services at the expense of prevention and low-cost primary health care.

Chapter 3 (The Rural Health Reforms of the 2000s) outlines reforms introduced in the new millennium to address these challenges. The New Rural Cooperative Medical Scheme (NRCMS) was introduced from 2003 to provide insurance to rural residents. A health insurance program for urban residents not covered by the scheme for formal-sector workers was introduced from 2007. A scheme known as Medical Assistance (MA) was introduced from 2003 to provide financial assistance with health care payments for the poor and vulnerable. Health providers were subject to some reorganization and new regulation, and benefited from additional government spending. Public health saw a variety of initiatives as well as additional government spending. The series of measures were implemented in a phased fashion, a hallmark of the reform process in China; and they were then scaled up to the national level quickly and dramatically. While the ramping up of these initiatives is far from complete, preliminary evidence at the time of this writing (year-end 2008) is encouraging. Signs suggest at least some of the hoped-for effects. The remainder of this book discusses how these early successes can be expanded by fine-tuning and building upon the reform process that the government has set in motion.

Chapter 4 (Looking Toward a New Decade: The Big Picture) provides a “bird’s-eye” perspective of the book’s ideas for reform—those envisioned for the immediate future, as well as those that are less pressing. A key theme of the book is the idea that governments can get locked into a reform track. Shifting gears becomes harder once a particular health system model is set in place. The book therefore devotes some space to pressing the “fast-forward” button—looking at evidence from richer middle-income countries and high-income countries in search of clues on how China might confront some of the challenges that lie ahead. One area where reform rigidities appear likely to be a problem is health insurance. Several upper-middle-income and high-income countries have expressed concerns over their contribution-based health insurance systems. While it is possible to rebalance the sources of financing in favor of general revenues in such systems, it is hard to dismantle them altogether. Thus, it makes sense for China to closely consider these debates now, *before* its health financing system becomes “hardwired.”

Chapter 5 (Financing Rural Insurance Coverage) outlines several steps that could deepen health insurance coverage in rural areas. It looks at options for expanding the NRCMS budget. It explores the possibility of higher household contributions, and explores ways to link these to income levels to avoid creating an undue burden upon poorer households. It concludes that increased government subsidies for NRCMS is essential, but suggests there is scope to increase equity in the financing of these subsidies by targeting central government subsidies more tightly on poorer provinces, and by increasing equity within provinces by pooling risk at the provincial level or through a provincial-level solidarity scheme. The chapter also explores the challenge of transforming NRCMS into a “purchaser” of health services. Health care will remain unaffordable if NRCMS continues as a passive bill payer. At the minimum, proactive purchasing means that NRCMS would reimburse providers through a method—or mixture of methods—that would motivate providers to become more cost-conscious and to focus more on their patient’s needs. The chapter urges that noncatastrophic care be included in the NRCMS benefit package to stimulate primary care, and that any additional tax revenues currently planned for a “basic package” scheme be channeled to NRCMS and to urban insurance schemes. It also suggests that supply-side subsidies currently paid in budgets to health facilities gradually be redirected to the “demand side.”

Chapter 6 (Improving Service Delivery—A Question of Incentives) considers how the performance of health care providers could be improved further. The aforementioned strengthening of the demand side of the system—getting NRCMS and health insurers more generally to become proactive purchasers—is clearly an important part of this agenda. Having insurers behave as purchasers for all types of health care would give providers strong incentives to deliver quality care at a reasonable cost. In addition to strengthening the demand side, some further institutional reforms would be useful. The book argues, however, that these should focus on clarifying and regulating the autonomy that providers are given in different areas (personnel, capital spending, and so on) rather than on changing ownership. Financial surpluses would be reduced through the strengthening of the demand side. It would make sense to allow local facilities to keep those that remain, but to circumscribe their use. Tougher controls on new equipment investment could be relaxed once insurers become more effective as purchasers, because providers would then face set prices based on criteria such as diagnosis. Providers would not be able to recover the costs of sophisticated equipment unless medical demand,

payment rates, and actual use were all properly aligned. The chapter argues that the governance of facilities could be improved if they were to be overseen either by a board of governor or a dedicated government office. It suggests enhanced financial and clinical regulation. The chapter looks at restructuring options such as vertical integration downwards, in which township health centers (THCs) would manage village facilities or county hospitals would operate networks of township and village facilities. The chapter argues the private sector should be allowed to deliver care to publicly insured patients.

Chapter 7 (Enhancing Accountability and Incentives in Public Health) argues for greater clarity in public health roles. It suggests that a single institution—or at most, a very small number of institutions—might be responsible overall for public health at the county level, with other institutions assuming clearly defined, narrower roles. Preventive medical services, for example, would be delivered by regular providers and would be included in the expanded insurance package proposed above. The chapter argues for public finance for public health, suggesting that a dedicated public health agency ought to be fully funded by government. The central government ought to assume at least a part of the cost of the agency in order to ensure evenness across the national public health system. The chapter argues for vertical oversight and support of local public health activities. It suggests that the central government ought to exercise more responsibility in priority-setting and guidance of public health activities at the local level. It explores two options. First, a vertically integrated national or provincial public health agency could be fully funded by the national or provincial governments, but with local offices. Second, local public health agencies could be set up in which central and provincial institutions have distinct responsibilities, incentives, and mandates for providing technical support and guidance. The chapter looks at how skills and professionalism could be improved in public health. It suggests a model in which staff in public health institutions would be selected competitively. They would be contracted in a standard, consistent fashion. Improved in-service training and clearer career paths would help produce a more cohesive public health cadre with a stronger professional ethos. Decisions about who to retain and hire would need to be transparent and based on competitive criteria. Some salary increases for some public health staff—epidemiologists, lab technicians, statisticians, and others—might be necessary.

Chapter 8 (The Longer-Term Reform Agenda) argues that the reforms outlined in chapters 5-7 would do much to address the remaining challenges facing China's rural health system, especially in service delivery

and public health. For health finance, however, some issues would remain unresolved. The chapter discusses several drawbacks inherent in the emerging health insurance model. One is fragmentation across the various schemes, which leads to both efficiency problems and equity gaps. Another is the set of problems associated with any contribution-based scheme, including adverse selection, underreporting of earnings, and avoidance of mandatory enrollment by switching from formal to informal working arrangements. The chapter then looks at how China might move over the longer term toward a unified financing system by gradually putting the existing schemes under joint management, and then merging them into one scheme within a single financing agency. This agency would provide broad cover, including protection against catastrophic and noncatastrophic medical care. The agency would gradually shift toward financing from general government revenues—in other words, the portion from payroll contributions would steadily go down while the portion from taxation would steadily go up. The central government would finance an increasingly generous coverage floor for all citizens. This would be supplemented by local governments in line with their fiscal capacity. Richer provinces would thus offer somewhat more generous provision than poorer ones, but everyone would be protected at a minimum level of security.

Chapter 9 (Conclusion) looks at the broad sweep of health reform—over time and across the various subsectors of health provision. Historians, it is argued, are likely to look back at the 2000s as a pivotal moment in the development of China's health sector. The decade marked a significant break of two decades in which policy makers' attention was predominately occupied by economic growth. The health sector reforms of the 2000s marked a significant shift in emphasis toward "balanced development" and a "harmonious society." Although these far-reaching reforms were implemented in a remarkably short period of time, they represented a beginning rather than a full solution to the full range of health sector challenges that China faced at the start of the new millennium. Some areas necessarily received more attention than others, as would be expected during the first steps of a longer-term reform process.

The concluding chapter likens the health system to a fabric woven of many kinds of threads. Some are brand new. Sometimes the new threads were woven to make good the bare patches that emerged during the rapid economic transformation of the 1980s and 1990s. The new rural health insurance program is an example. Medical Assistance is also a new thread. However, its origins are different: its existence reflects the realization

among policy makers that a rapidly industrializing market-oriented economy like China's requires a social protection system that was unnecessary under the old planned economy. Some threads of China's health system are old and are simply being rewoven. China's extra spending and institutional reforms in public health are an example. The new threads and newly rewoven old threads make for a stronger health system "fabric." In the years to come, the fabric can be made even more durable through further weaving and through the addition of new threads. Examples include casting insurers as purchasers and providing them with the financial instruments to motivate providers to be cost-conscious and to deliver high quality care; clarifying the areas where providers should be autonomous and where their behaviors ought to be circumscribed for the greater good; enhancing accountability relationships in public health; and so on.

They are not easy threads to get right. They are all threads that the OECD countries are still working into their health system "fabrics." So, while China can look to the OECD for ideas, it will largely be China's inventiveness and willingness to pilot new ideas that will determine both the eventual pattern of its health system fabric, and the speed with which it gets woven.

CHAPTER 2

China's Health Challenges at the Start of the New Millennium

It is hard to fully appreciate the need for the reforms of the 2000s, to evaluate their success, or to see what further reforms might be required without first grasping the nature and scale of the challenges Chinese policy makers faced at the start of the new millennium. The previous chapter offered hints. This chapter digs more deeply. It provides a more detailed analysis of the health sector, especially the rural health sector, from the launch of the market-liberalizing reforms (the tail end of the 1970s through the early 1980s) to the first years after 2000, when the government began implementing measures to promote “balanced development” and a “harmonious society.”

This chapter documents China's slowdown in mortality reduction, and the emergence of health inequalities and new public health challenges. To some degree these changes were not surprising. Reducing mortality became progressively harder the lower the mortality levels dropped; and strategies from the 1960s and 1970s that successfully reduced child and maternal mortality (such as barefoot doctors) became less effective at the lower mortality levels. Health inequalities, which have increased as China's economy has grown, tend to be associated with income inequalities and are a feature of all societies. And some of the new public health problems— notably noncommunicable diseases (NCDs) and “overnutrition”—are

everywhere associated with the epidemiological transition and high rates of economic growth.

But the new challenges also reflect changes that were particular to China's health system of the 1980s and 1990s. The old commune-based rural cooperative scheme began its collapse in the 1980s. By the mid-to-late 2000s—when the new rural insurance scheme and the program for urban residents not employed in the formal sector were introduced—the majority of the Chinese population lacked insurance coverage. Local governments were made responsible for health facilities in the 1980s, but lacked the corresponding resources. So a policy of charging patients emerged. Prices were regulated, but in a way that inadvertently gave providers powerful incentives to focus on medicines and high-tech medicine at the expense of basic cost-effective interventions and core public health functions. Personal health care costs rose rapidly. As a result, the majority of households were left with a choice: forgo needed care or face large medical bills. And public health—a major focus of the health system in the 1950s, 1960s, and 1970s—began to receive less attention, leaving the country vulnerable to new diseases like human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), severe acute respiratory syndrome (SARS), and avian flu.

Since 2003, China has come far in addressing these challenges. This will become clear in Chapter 3, which examines and evaluates the policy initiatives of the period 2003–2007 in some detail. But it is hard to appreciate their significance or evaluate these reforms without first grasping the problems that they set out to correct. This chapter therefore is about the period *before* the reforms of the 2000s.

Trends in Health Outcomes

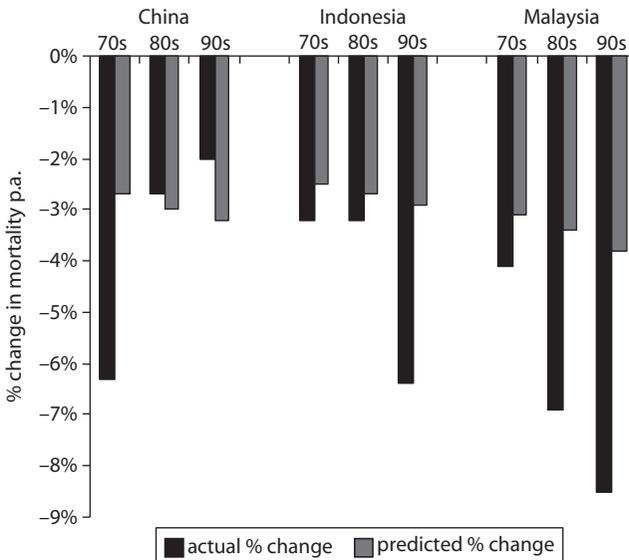
Health systems exist ultimately to improve health. It is, of course, nearly impossible to know the exact extent to which changes in a system's performance affect a population's health. But trends in health outcomes nonetheless give some useful clues to how the system is working.

While there may be some debate about the exact numbers, there can be little doubt that China has been highly successful in reducing mortality. In 1950, China's maternal mortality ratio (MMR) is estimated to have been around 1,500 per 10,000 live births. By 1980, this had been reduced to just 100 per 10,000 live births—a remarkable achievement. According to Yan (1989), the MMR was reduced by 98 percent within just 10 years of the establishment of the People's Republic. During the 1980s, the

MMR continued to fall, albeit at a much slower pace, hitting approximately 95 per 10,000 live births in 1990 (Institute for Health Science 2003). China ranks alongside other star performers—for example, Argentina, Costa Rica, and Uzbekistan—that have achieved unusually low MMRs by developing country standards (less than 100 deaths per 10,000 live births) according to AbouZahr and Wardlaw (2001).

Tracking shorter-term trends in maternal mortality is relatively hard because maternal mortality is a rare event, and trend data are therefore limited in availability. Child mortality data are easier to come by, and shed light on recent trends in China's health outcomes. In 1960, China's under-five mortality rate stood at 225 per 1,000 live births. By 1980, the rate had been slashed to 64 per 1,000, an annual rate of reduction of 6.3 percent (Figure 2.1). This spectacular achievement occurred despite relatively slow economic growth during 1960–80 (China's per capita income grew just 2.8 percent per year in those decades, compared to 8.0 percent per year between 1980 and 2000). Moreover, during the 1960s and 1970s, child mortality fell faster in China than in neighboring Indonesia and Malaysia, and faster than would be expected of a country with China's low per capita income and low rate of economic growth.

Figure 2.1 Under-Five Mortality in China, Indonesia, and Malaysia, 1970s–90s



Source: Derived from UNICEF data at www.childinfo.org.¹²

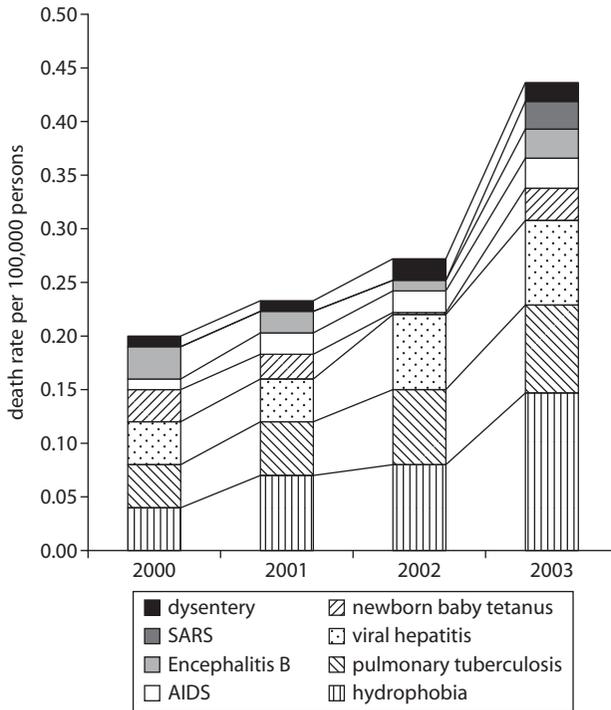
In the 1980s and 1990s, the picture began to change. Child mortality continued to fall in China as it had done in the 1960s and 1970s. However, it fell less quickly than in Indonesia and Malaysia, even though Malaysia, like China, had by then achieved a low rate of mortality. In fact, at the start of the 1980s, China switched from being an overperformer (its rate of reduction in the 1960s and 1970s exceeded its expected rate) to being an underperformer. And while Indonesia and Malaysia went on to exceed expectations even more spectacularly in the 1990s than in the 1980s, China's performance (relative to expectations) slowed further.

A similarly mixed story emerges for communicable disease mortality. China's fight against malaria has been an unqualified success. Before 1949, approximately 30 million malaria cases occurred each year. In 1955, a national malaria control program began and went on to achieve substantial impact. From an estimated 5,528 deaths from malaria in 1955 (Tang 2000), the number of deaths fell to 24 in 1998. The incidence fell from 103 cases per 10,000 population in 1955 to 0.25 in 1998 (Tang 2000). In 1998, indigenous falciparum malaria was found in just two provinces, Hainan and Yunnan.

China's record on tuberculosis (TB) is more mixed; although here, too, there are many successes to report. Prevalence and mortality both have fallen in recent years, thanks largely to the adoption of DOTS (Directly Observed Therapy Shortcourse), which is estimated to have prevented as many as 30,000 deaths per year (Dye et al. 2000; China Tuberculosis Control Collaboration 2004). Between 1990 and 2004, TB prevalence fell at an annual average rate of 2.8 percent, and mortality fell at an average rate of 2.9 percent. This compares favorably with the Millennium Development Goal of the WHO Western Pacific Region—a target reduction of 2.7 percent per year. However, all neighboring countries have reduced mortality faster, and many have reduced prevalence faster. Indonesia, the Lao People's Democratic Republic, Malaysia, the Philippines, Thailand, and Vietnam did better in reducing mortality; and Indonesia, the Philippines, and Vietnam did better in reducing prevalence.¹³

Data from the early 2000s on communicable disease mortality also show a somewhat worrisome trend. Overall communicable disease mortality actually rose in China in the early 2000s. This reflects in part the arrival of HIV/AIDS as well as the 2003 SARS outbreak (Figure 2.2), but also the growth of hydrophobia and viral hepatitis.

At the same time, China was undergoing a rapid epidemiological transition (Cook and Dummer 2004). Heart disease, stroke, cancers, hypertension, diabetes, and chronic lung diseases began to account for a

Figure 2.2 Communicable Disease Mortality in China

Source: Data are from the table "Reported Incidence and Death Rate of 26 Infectious Diseases" in various issues of MOH's Chinese Health Statistical Digest.¹⁴

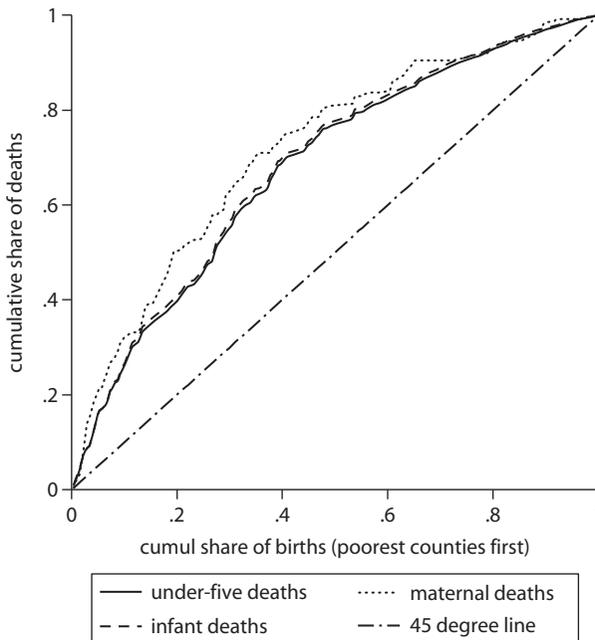
growing share of mortality. The rapid increase in noncommunicable diseases reflect high prevalence of smoking; increased dietary intake of fat, sugar, and calories; and decreased physical activity (He et al. 2005; Wang et al. 2005). According to the 2005 National Health Survey, smoking prevalence was 46 percent; 23 percent of the population admitted to consuming alcohol on a regular basis; and at 7.1 percent, the obesity prevalence was double that of 1995. In the mid-2000s, noncommunicable diseases were estimated to cause more than three-quarters of all deaths. To some degree the increased importance of noncommunicable diseases reflected China's rapid industrialization and the associated increased environmental pollution and occupational hazards (Lee 2004). But such risks can be managed, and the decision of China's policy makers in 2003–05 to accord greater importance to the environment as part of the new policy-making emphasis on balanced development is an acknowledgement of this fact.

Trends in Health Inequalities

Policy makers are typically concerned not just with average health outcomes but also with their distribution. China's new emphasis on social harmony and balanced development reflects a concern over inequalities in general and in the health sector specifically. In the 1990s, children living in the poorer central and western provinces were found to be more likely to be malnourished than those living in the richer eastern provinces, and rates of malnutrition were found to have fallen faster among children in cities than in the countryside (Shen, Habicht, and Chang 1996). Figure 2.3 shows the so-called "concentration curves" (for 2003) for under-five deaths, infant deaths, and maternal deaths. All lie a good distance above the line of equality, indicating substantial inequalities disfavoring the poor at the time. In the poorest fifth of the population covered by China's maternal and child health surveillance system, the maternal mortality rate in 2003 was 73 per 10,000 live births. In the richest fifth, the rate was 17 per 10,000.¹⁵

Comparisons of data from the China Health and Nutrition Survey and data from the demographic health surveys of other countries suggest

Figure 2.3 Inequalities in Child and Maternal Mortality in China, 2003



Source: Data are from the MOH maternal and child health surveillance system.^{16, 17}

that inequalities—at least as far as child malnutrition is concerned—were apparently on the high side by international standards in the early 2000s.¹⁸ And according to Zhang and Kanbur (2005), the gap in infant mortality between urban and rural areas widened during the postreform period.

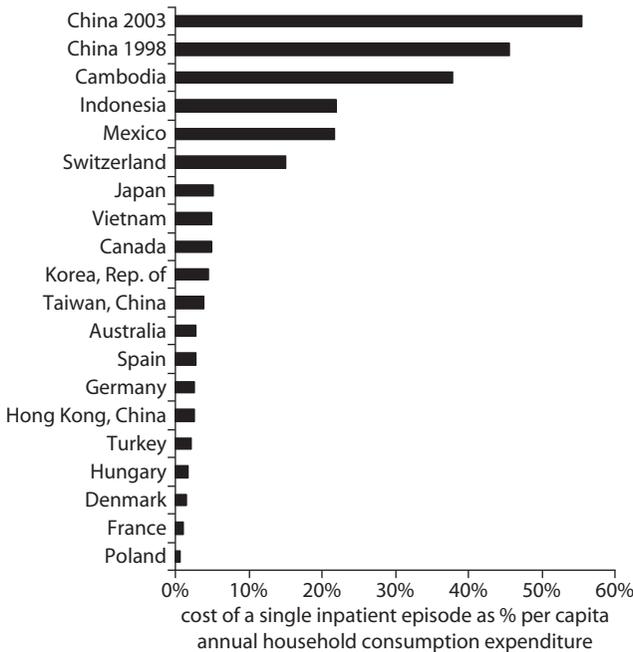
Out-of-Pocket Costs—A Barrier to Care and a Cause of Poverty

Why, then, did China's progress on improving population health apparently slow? And why have inequalities in health become such a feature of China's health landscape?

One explanation could be that people who needed health care did not receive it when they needed it. The evidence for this is not unambiguous. Some evidence shows *increased* utilization of key interventions, including prenatal checkups and attended deliveries. But other evidence shows falling utilization of some services. The National Health Survey, for instance, shows declining consultation and hospitalization rates between 1998 and 2003, as well as a rise in the number of people needing but not receiving care. Of those interviewed in the 2003 NHS, 50 percent of people who had been ill in the previous two weeks had not sought care, compared with the 36 percent reported in 1993. In 2003, 30 percent of respondents who had been told in the previous 12 months they should have been hospitalized never went to hospital. And among those who *did* go to hospital, nearly half discharged themselves early, against their doctors' advice.

Why would so many people who needed health care not use it? While many factors undoubtedly shaped decisions, one factor in particular comes through—cost. Of those in the 2003 NHS who said they should have been hospitalized but were not, most—fully three-quarters of those in rural areas and 85 percent among the poorest fifth of the population—responded that they could not afford the expense. Some data on inpatient care are illustrative. On average, a single inpatient episode in 2003 involved out-of-pocket expenditures equivalent to nearly 55 percent of annual per capita consumption. Furthermore, the cost of hospital care not only rose substantially between 1998 and 2003 in China, it was considerably higher than in countries for which data are available (Figure 2.4).

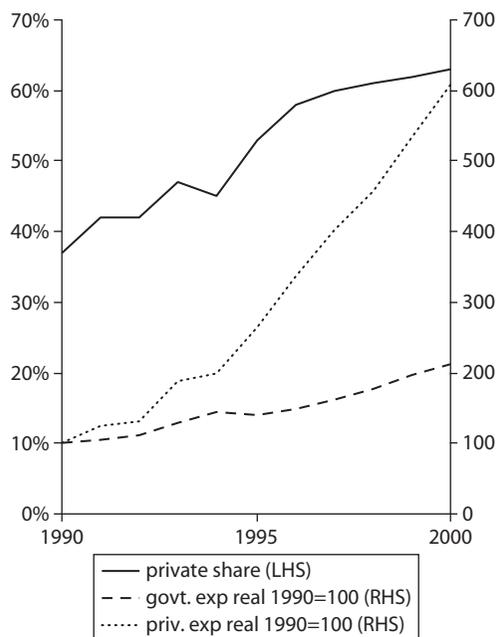
Between 1978 (the year the economic reforms started) and 2003, out-of-pocket expenditures grew in real terms at an annual rate of 15.7 percent; by the end of the 1990s private health spending as a share of total health spending, which was just 20 percent in 1978, exceeded 60 percent (Figure 2.5). Out-of-pocket payments became common even for public health services. Wang, Sun et al. (2006) found that as much as half of public health

Figure 2.4 Household Cost of Hospital Care in China and Other Countries

Sources: Data from *OECD Health Data* and other sources.¹⁹

expenditures were financed through out-of-pocket payments in two counties that they studied. Immunization outside the World Health Organization's Expanded Program on Immunization (EPI) was the largest single source of household expenditure for preventive public health services. Evidence indicates that there were out-of-pocket payments even for EPI immunizations (which were, in principle, free), and for TB treatment outside DOTS (also available free, and perfectly adequate for most TB patients). Evidence from Liu and Mills (2002) indicates that the emphasis on out-of-pocket payments for public health adversely affected coverage rates at the time.

Out-of-pocket payments not only affected whether people ended up getting needed health care, they became a source of financial hardship. In the 2003 NHS, 30 percent of poor (*pinkun*) households blamed health care costs for their poverty. As a share of total household expenditure, spending on health care in China was highest among the poor—a situation unlike that of many other Asian countries (O'Donnell et al. 2008). Furthermore, the fraction of the population experiencing “catastrophic” health expenses (whether defined as more than 25 percent or more than

Figure 2.5 Out-of-Pocket Health Spending in China, 1990–2000

Source: Data are from China's National Health Accounts.

Note: LHS refers to left-hand vertical axis; RHS refers to right-hand vertical axis.

40 percent of nonfood consumption) was higher than elsewhere in Asia, and higher still among the poor (van Doorslaer et al. 2007).

The problem was compounded by the lack of a safety net at the time to protect families not just from rising medical costs but from lost income because of illness, which Lindelow and Wagstaff (2005) suggest had an even greater financial impact than the former. (The same ministry that has since rolled out the aforementioned Medical Assistance program has also launched a more general safety net program known as Di Bao to help vulnerable households with living costs—see Ravallion and Chen (2007) for further details.) In a 2005 survey by the Ministry of Civil Affairs and the World Bank, the most frequently cited strategies for coping with a breadwinner's death or a household worker's illness were borrowing money, eating cheaper food, and healthy family members working longer hours. Yet a substantial number of respondents also reported reliance on savings. This is consistent with the view that fear of the financial consequences of illness became a significant factor behind the high savings rates among Chinese households (*Economist* 2004).

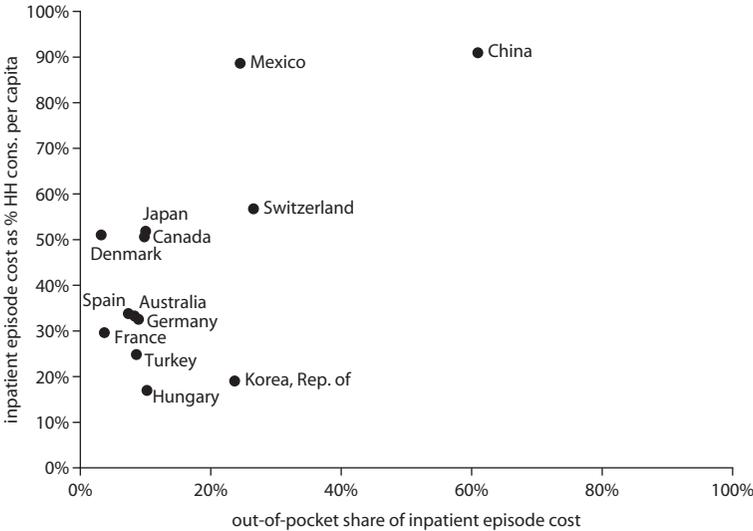
Accounting for the Household Burden

Why did the health care costs borne by households become so costly relative to income during this period? There are two possible reasons. One is that households bore a large *share* of the costs directly because they lacked insurance coverage. The other is that the cost itself was high relative to per capita incomes at the time.

The first is certainly true. As shown along the horizontal axis of figure 2.6, households in China paid, on average, 60 percent of the bill. In the Republic of Korea, Mexico, and Switzerland—the countries with the next highest rates—the out-of-pocket share was just over 20 percent at the time. In most countries, the figure was much less. The high fraction in China reflected the lack of health insurance then (discussed in the next section). However, the vertical axis shows that the cost of care itself was high in China relative to per capita income. Only Mexico came close. Hungary and Turkey—both, like China, middle-income countries—had much smaller inpatient care costs relative to their per capita incomes. Indeed, as a fraction of GDP per capita, care in these countries cost less than in most of the richer OECD countries, being in the region of 1.5–2 percent.

What made health care in China so costly relative to GDP? Here, too, there are at least a couple of hypotheses. One is that health care was

Figure 2.6 Inpatient Care Costs in China and Other Countries

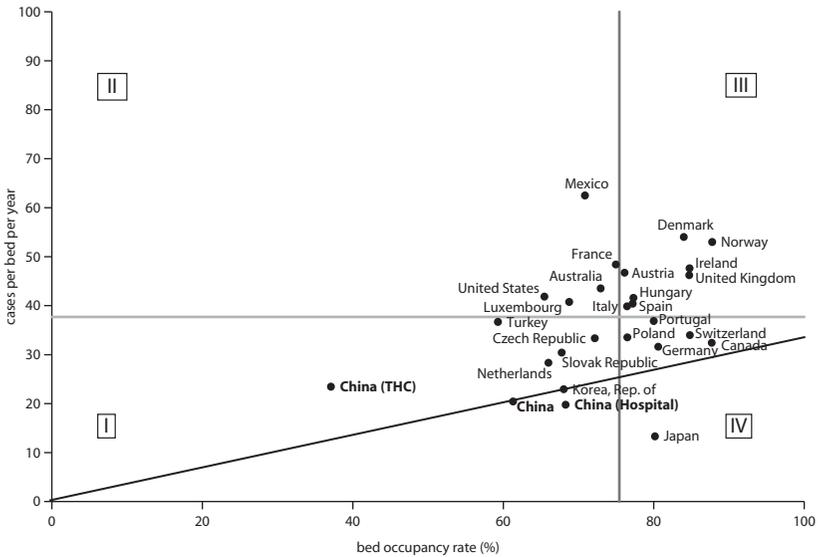


Sources: Data on inpatient costs are from *OECD Health Data* and the *MOH Chinese Health Statistical Digest*. Other data are the same as in Figure 2.4.

produced in a less efficient way than in other countries. Patient hospital stays could have been unnecessarily long, and so on. Another hypothesis is that the mix of health system interventions may have been delivered efficiently but was still overly expensive relative to national income per capita. In other words, China may have been delivering care that upper-middle-income and upper-income countries could afford, but China, at least at that time, could not. Both factors likely were likely to have been at work.

Figure 2.7, adapted from a chart introduced more than 20 years ago (Pabon Lasso 1986) and used widely since, shows the bed occupancy rate (the percentage of beds occupied on average over the year) and case flow (the number of cases per bed per year) for the OECD countries and for China. China's bed occupancy rate (just over 60 percent at the time) was well below the average in these countries, as was its case flow (20 cases per bed per year). China's case flow was half that of Turkish hospitals despite the fact that both had similarly low bed occupancy. This reflects the shorter average length of stay in Turkey. Figure 2.7 shows the length of stay by the slope of the line drawn from a country's dot to the point of origin where the vertical and horizontal axes cross: the shallower the line,

Figure 2.7 Hospital Efficiency in China and OECD Countries



Sources: Data for OECD countries are from the Organisation for Economic Co-operation and Development Health 2005 database. Chinese data are from MOH's *Chinese Health Statistical Digest* and refer to 2005.

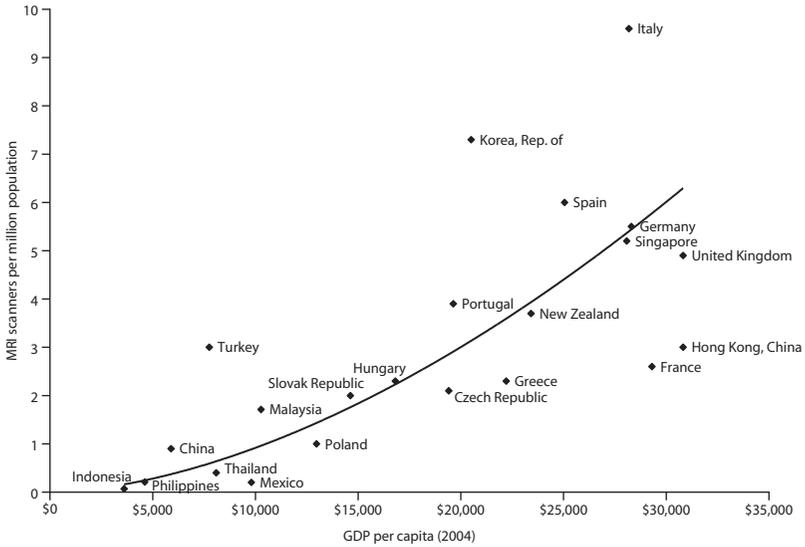
the longer the average hospitalization.²⁰ Only Japan had longer average hospital stays than China. Stays were shorter in Chinese township health centers; but because their bed occupancy rates were so low, their case flows barely exceeded those of higher-level hospitals.

Countries such as China in quadrant “I” have more beds than they need relative to demand for hospitalization. Underutilized beds tend to be accompanied by underutilized staff and overinvestment in equipment. Costs, as a result, tended to be higher than necessary. But how much higher? At county level, we estimate that excess capacity resulted in average costs being around 5 percent higher than they would otherwise have been.²¹ For township health centers, the cost of excess capacity was greater: unit costs in township health centers were around 40 percent higher than they would have been if their excess capacity had been eliminated.²²

It is not just that there was more capacity than necessary for the number of patients. Patients who *were* treated tended to incur very high costs; and in some cases, the higher costs were unwarranted medically. In a study that made imaginative use of clinician expert opinions, Liu and Mills (1999) found that 20 percent of expenditures associated with the treatment of appendicitis and pneumonia were clinically unnecessary. Overuse of drugs was another problem at the time. China had one of the world's highest shares of pharmaceutical expenditure relative to total health expenditure—nearly 45 percent in 2003 according to the Ministry of Health's *Chinese Health Statistical Digest 2004*, compared to an OECD average of around 15 percent (Jacobzone 2000). Unsurprisingly, studies suggest that pharmaceutical spending on this scale was not justified medically, with Zhang et al. (2003) finding that less than 1 percent of drug prescriptions in village clinics were actually “reasonable.” Cesarean sections were another problem area, rising faster than could be explained by increases in risk factors (Cai et al. 1998). In the late 1990s, China had more MRI scanners per million people than more affluent Thailand or Mexico and around two-and-a-half times as many as would be expected on the basis of its per capita income at the time (figure 2.8).

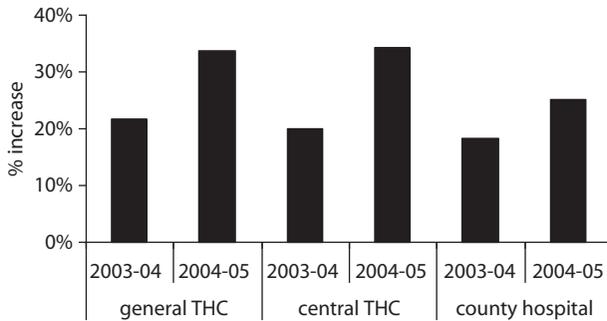
Liu and Hsiao (1995) identified rapid adoption of new technology as a major driver of the cost growth in China's health care system. Between 2003 and 2004, the average cost per case increased by as much as 15–20 percent in central and general township health centers and county hospitals, even after adjusting for case mix (relative numbers of inpatient, emergency, and outpatient care) and other factors such as bed stock and local income per capita (figure 2.9). Between 2004 and 2005, the increase was even higher—in county hospitals, cost per case rose by one-quarter, while in township health centers it jumped by as much as one-third.

Figure 2.8 Technology Adoption in China and Other Countries



Sources: Data on MRI scanners per million are from MOH's *Chinese Health Statistical Digest*, *OECD Health Data*, and Hutubessy et al. (2002). GDP per capita are in international (PPP) dollars and are from *World Development Indicators*.

Figure 2.9 Rising Cost of Hospital Care in China, 2003–05



Source: The data underlying this chart come from the health ministry's provider database.²³

Provider Incentives, Costs, and the Quality of Care

Why was the cost of health care in China so high at the time, and why was it rising? Partly this is because the resource intensity of care is not frozen—it changes as incomes grow and as people acquire insurance coverage. This explains why one recent study (Wagstaff and Lindelow 2008a)

found that some types of health insurance in China actually *increased* out-of-pocket spending: the insured received a more resource-intensive style of care. It also explains why as incomes in China have risen, utilization has either fallen or stayed largely unchanged, but the unit cost of care has grown.

Increased resource intensity could, in principle, reflect patients “choosing” to spend some of their extra purchasing power—whether from insurance or rising income—on better quality care, being guided in this process by medical providers concerned only about their patients’ health. However, it could also reflect doctors and hospitals increasing demand, with some of the prescribed extra care being medically unnecessary.

The scope for provider-induced demand was enhanced by the institutional reforms of the 1980s. Under the planned economy model of the 1960s and 1970s, providers were financed largely from the government budget or commune. That shifted dramatically in the early 1980s when the planned economy model was discarded in favor of one that was increasingly market-oriented. Government revenues fell, starting to rise as a share of GDP only in 1996. Meanwhile, heavier financial obligations were delegated to local governments as the central government share shrank to only 5 percent. Local governments had little choice but to limit their support of government health facilities to a fixed annual subsidy that provided just enough to cover basic salaries, with urban hospitals receiving the lion’s share of these supply-side subsidies. To make ends meet, public facilities were free to generate “business income” by charging patients for drugs and services, and they were allowed to keep year-end surpluses (Liu, Xu, and Wang 1996). Many also implemented a “personal responsibility system,” whereby financial bonuses (or fines) for individual staff were tied to quality and quantity standards or revenue targets (Zheng and Hiller 1995).

Public providers were, nevertheless, limited in hiring, firing, and many other managerial decisions. They were also limited in the prices they could charge through government-regulated price schedules. The government’s policy, implemented through a price commission, was to keep basic care affordable by setting care charges well below cost, while allowing providers to cross-subsidize basic services by pricing drugs and high-tech treatment above cost. The inevitable but perhaps unanticipated result followed: providers began to shift demand from unprofitable low-tech care to more lucrative drug and high-tech treatments (Liu and Mills 1999; Liu, Liu, and Chen 2000).

The shifting of demand from unprofitable to profitable “business lines” was especially evident in public health programs. Under the government’s

DOTS program, all TB patients qualify for free packages of drugs and testing. In treating TB patients, however, some providers apparently delivered care beyond the DOTS regimen because doing so earned them additional money. One TB control manager explained that the DOTS-plus strategy “has been locally adapted . . . to improve effectiveness and generate revenue” (Zhan et al. 2004). These “adaptations” involve treating patients for longer than the recommended six months and providing nonstandard tests and medicines on top of those in the DOTS package. Hence, despite a policy of standardized free treatment for TB, some patients ended up paying considerable amounts out of pocket, equivalent in the case of Shandong Province to as much as 119 percent of per capita household income (Zhan et al. 2004). The same phenomenon was evident at the facility level, too. As with the case of clinical providers, public health providers (the Center for Disease Control, the Maternal and Child Health Centers, and local service suppliers) increasingly had to generate their own revenues to cover their operations. This resulted in steady “mission creep” in which public health agencies expanded activities with revenue potential—such as sanitary inspections, immunizations, and clinical services—at the possible expense of activities for which they were unable to charge (Liu and Mills 2002).

The strong or “high-powered” incentives for public providers were evident among private providers as well. Inspired by the success of privatization in state-owned enterprise and local enterprise initiatives in the early 1980s, some local governments began to privatize clinics and sometimes even township health centers. The aims were to reduce the burden on local government finances and to inject market principles into the health sector. By 1985, private clinics had replaced collectively run health stations as the dominant health care provider at the village level. In urban areas, the number of private practitioners climbed from 18,000 in 1982 to 190,000 in 1993, and many private hospitals were established in the 2000s. In a 2001 household survey of three provinces, 33 percent of individuals claimed that their most recent health care visit was to a private practitioner (Kin et al. 2002).

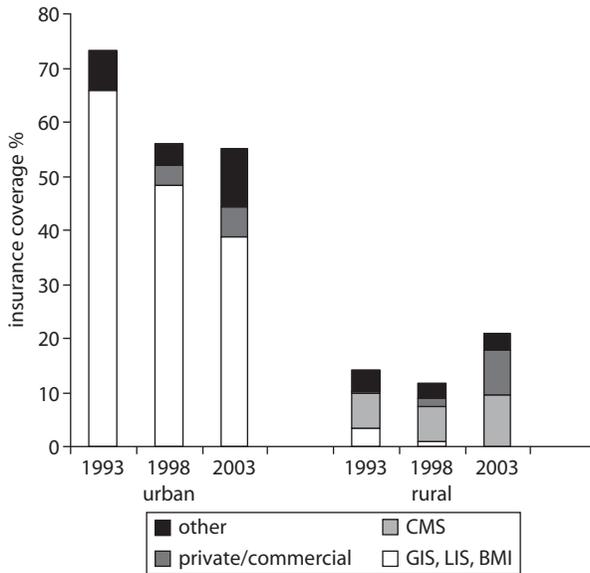
Private providers are rarely completely free from government regulation in China. Some local governments exert influence over private providers’ hiring, firing, and capital investment decisions; and since private providers often compete with public providers, they cannot set prices too far beyond the government-set price schedule for fear of losing business. Nonetheless, private providers, like public providers, doubtless had some opportunity to generate demand for their services and expand the revenues that they received.

Health Insurance Contraction

The unaffordability of health care in China in the 1990s reflected not just its high cost but the proportion that patients had to pay. This reflects the fact that so few people, especially in rural areas, had health insurance at the time.

Prior to the economic reforms of the 1980s, almost all citizens were covered by some form of health insurance. Agricultural workers were covered by the old commune-based cooperative medical scheme (CMS). State-owned enterprise (SOE) workers were covered by the Labor Insurance Scheme (LIS). Civil servants and other government workers were covered by the Government Insurance Scheme (GIS). There were gaps in coverage, such as urban schemes that did not cover dependents; however, gaps of this sort were relatively small. The bulk of the rural population in the 1970s was covered by CMS (albeit probably at a relatively low depth of coverage), and China's spectacular success in improving health outcomes in the 1970s has been attributed by some to its near-universal health coverage (Sidel 1993).

During the transition from a planned to a market economy, health insurance coverage fell dramatically, especially in rural areas. The decollectivization of agriculture led to an almost total collapse of the CMS. By 1993, less than 10 percent of the rural agricultural population were covered by CMS, Government Insurance Scheme, or Labor Insurance Scheme (figure 2.10). Despite attempts to resuscitate the CMS during the 1990s (Cretin et al. 1990, and Carrin et al. 1999), coverage nationally remained stubbornly low. By 2003, 80 percent of China's rural population—some 640 million people—lacked health insurance; only 10 percent of the rural population was covered by a government scheme. During the transition to a market economy, state-owned enterprises—the backbone of the Labor Insurance Scheme—came under mounting pressure. Many state-owned enterprises found it difficult to honor their insurance commitments, and the government gradually withdrew from its role as payer of last resort (Huang 1994). Coverage in China's cities also declined, though less dramatically. In the city of Zhenjiang, more than half of the state-owned enterprises were estimated to be unable to reimburse their employee medical bills fully (Huang 1994). GIS coverage also fell, and by 1998 nearly half the urban population lacked insurance coverage.

Figure 2.10 Insurance Coverage, 1993–2003

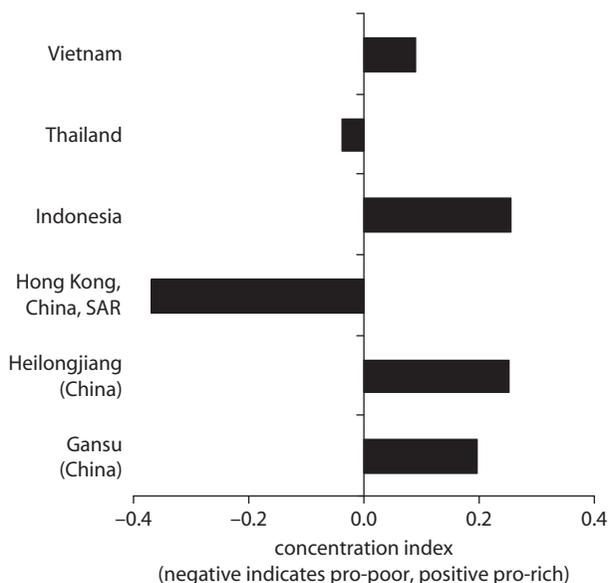
Source: Data are based on the 2003 National Health Survey, as reported by MOH's Center for Health Statistics and Information.

Note: CMS refers to the Cooperative Medical Scheme; GIS refers to the Government Insurance Scheme; LIS refers to the Labor Insurance Scheme; and BMI refers to Basic Medical Insurance.

Inequality in Government Spending

The aforementioned inequalities in China's health system reflected, at least in part, inequalities in government health spending. Except in the case of Hong Kong, China, government health expenditure disproportionately benefits the better off in China (figure 2.11). This reflects the fact that over half of general government health spending supports urban insurance schemes whose members are disproportionately from higher income groups, even within urban areas. And it reflects the fact that supply-side subsidies, which are heavily concentrated in urban hospitals, also tend to benefit the better off. China was not alone in having a government spending program skewed toward the better off: Indonesia's pro-rich bias is as big as China's.

The focus of government spending on cities was reinforced by large geographic inequalities in health outlays. Thus government health spending

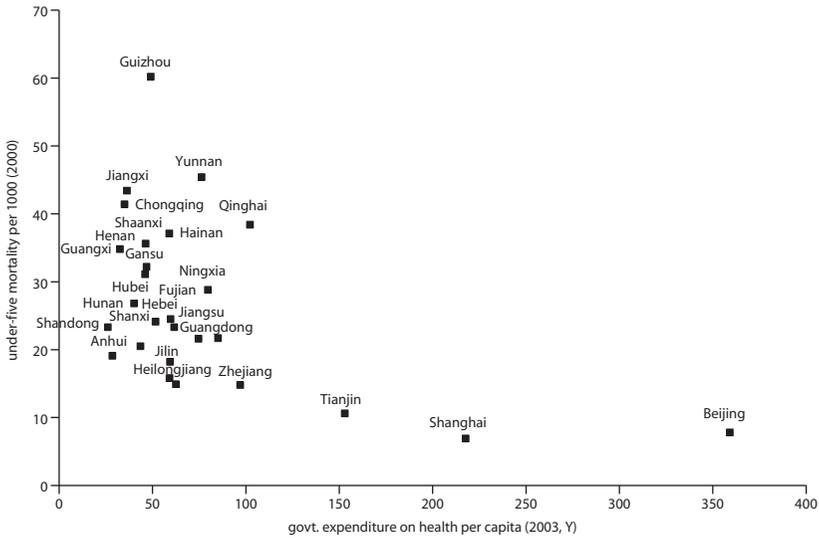
Figure 2.11 Impact of Government Health Spending on the Poor and Better Off

Source: O'Donnell et al. (2007).²⁴

in Gansu, one of China's poorest provinces, amounted to just Y 46 per person in 2003; while spending in Shanghai and Tianjin, two of China's richest provinces, amounted to Y 218 and Y 153, respectively. This is despite the fact that Gansu had much worse health indicators than either Shanghai or Tianjin (Figure 2.12). These inequalities stem from the fact that China's intergovernmental fiscal system weakened—but did not break—the link between local governments' per capita income and their available resources for spending.

Challenges and Reforms—Creating a Path Forward

These, then, were the challenges that China's policy makers set out to tackle at the start of the new millennium. Each of the reforms implemented over the period 2003–2007 addressed these difficulties in different but complementary ways. The government has made it clear that the new policies are the start of a longer reform process. In 2007, a high-level government taskforce was charged with preparing a master plan for China's health sector. In setting up this taskforce, the government was not

Figure 2.12 Government Health Expenditure by Provincial Wealth and Need

Sources: Data are from the National Bureau of Statistics' *China Statistical Yearbook 2004* and the government's provincial maternal and child health surveillance database.²⁵

abandoning the reforms it had instituted during the decade; rather, it believed further measures would be required in the years to come. The next chapter examines the first round of reforms of 2003–2007 in some detail, and assesses them in terms of how well they addressed the challenges facing the country at the start of the new millennium.

CHAPTER 3

The Rural Health Reforms of the 2000s

China entered the new millennium facing sizeable challenges in the health sector, especially the rural one. These were acknowledged at the highest level, and the subsequent health reforms of the 2000s were seen as integral to the government's newly announced agenda of "balanced development" and a "harmonious society." This chapter asks: What were these reforms, and how far did they go to address the challenges of the time?

As discussed at the end of chapter 2, the government of China views the health reforms of the 2000s as a *step* (albeit an important one) down the road of health reform. Indeed, the first few years of implementing these measures have shown remarkable inventiveness and agility on the part of the government. As is common practice in reform implementation, the government has phased in its health reform initiatives. Local governments among the first implementers have been encouraged to experiment with different variants of the program. The second wave of implementers has been able to learn from the first. And by watching how well different designs work in different places, the central government has been able to adjust national policy.

This chapter begins with the rural health insurance scheme, known as the New Rural Cooperative Medical Scheme (NRCMS). This program, launched in 2003, responded directly to the lack of rural insurance

coverage in the wake of the collapse of the old commune-based cooperative medical scheme. (The government subsequently introduced another insurance scheme to cover the gap for urban residents not employed in the formal sector; however, since the focus of this book is rural, that program will not be discussed in detail here.) The chapter then turns to the government's Medical Assistance health-expense safety-net program. Medical Assistance was directed at the same set of problems as the NRCMS and the new urban scheme, but it was designed to complement these programs by providing financial assistance to both the poor (helping them pay premiums and copayments) and to nonpoor households facing unusually large medical bills. The chapter then moves on to public health. The 2000s saw new institutions emerge—including a national Center for Disease Control (CDC)—new legislation, and substantially increased government spending. Finally, the chapter turns to reforms in service delivery. These include provider payment reforms, as well as organizational and regulatory reforms.

The New Rural Cooperative Medical Scheme

Rolled out during 2003–08, NRCMS is a voluntary health insurance program for rural residents not employed in the formal sector.²⁶ It has several features that distinguish it from its predecessor (the cooperative medical scheme, or CMS), which all but disappeared following the shift away from collective agriculture. NRCMS is a voluntary program that covers only those who join. It is funded by enrollee contributions and by subsidies from central and local governments. In comparison, the CMS was funded from commune income and covered everyone. The new scheme operates at the county rather than the commune level and hence has a much larger risk pool. Finally, it focuses in most localities largely on the costs of inpatient care, while the old scheme focused on basic services that included personal and communal preventive interventions.

By the end of 2004, 333 of China's 2,862 counties (cities and districts) were implementing NRCMS. The number of participating counties increased steadily over time: from 21.7 percent at year-end 2005 to 50.7 percent at year-end 2006 and to 86 percent by year-end 2007.

To get a sense of how the program was working in its early days, the Ministry of Health and the World Bank collaborated in late 2005 on a study of first adopters of NRCMS. Questionnaires were sent to local government officials responsible for implementation in October 2005. A short form surveyed officials in 189 counties, and a longer version went

to officials in 27 counties. The study unearthed some common features of the NRCMS schemes, but also differences (see box 3.1 for summaries). The research team combined the program survey data with household data collected expressly for the purpose and routine health facility data to undertake a quantitative study of enrollment patterns and impacts. A qualitative study also was conducted. (Further details are available in Wagstaff et al. (2009) and the annex to this chapter.)

The study found enrollment rates of around 70 percent of eligible people. The high rate reflects considerable promotional efforts among local officials, especially in counties where NRCMS had become a priority. Affordability was the most frequently cited reason for eligible people not joining the program. A further 15 percent of those not signing up reported good health as the reason—pointing to an adverse selection problem. Income and chronic illness in the household were significantly associated with joining NRCMS, though the effects were small. Among those planning to quit NRCMS (10 percent of enrollees), 20 percent cited not having received reimbursement; 20 percent said that the reimbursement was too little; and 17 percent said that reimbursement was too complicated. Those with less education were found to be more likely to be planning to quit, as were people living in counties where average reimbursement is relatively low.

Analysis of the household data suggested that NRCMS increased outpatient visits at township health centers. The facility data also pointed to positive impacts on inpatient episodes at the township health center level. Among general township health centers, the biggest impact was found on inpatient utilization; while among central township health centers, the biggest impact was on outpatient visits. The facility data suggest that NRCMS did not affect township health center or county hospital unit costs, while the household data revealed no NRCMS impact on out-of-pocket spending per (ambulatory) visit or per inpatient episode. The effect on overall out-of-pocket spending was therefore negligible. The scheme—at least at the time—seems to have benefited rural residents by reducing the number of people who go without care when they need it, but did not apparently lead to any significant reduction in their overall out-of-pocket expenditures.

The 2005 study highlighted several features of NRCMS at the time that limited its success. The lack of impact on out-of-pocket payments reflected in part the positive effects of the scheme on greater utilization—clearly a desirable outcome in light of previous evidence that high cost deterred people from seeking needed medical care. But this also reflected

Box 3.1**NRCMS circa 2005**

NRCMS cover. The study found coverage varied by county. All covered inpatient care; however, only one-quarter included outpatient expenses on a pooling basis. The rest covered no outpatient care (10 percent of counties), covered only catastrophic expenses (10 percent of counties), or offered limited coverage through a household account.²⁷ Typically, patients paid for inpatient care up front and were reimbursed later. NRCMS revenues were found to be small compared to average rural per capita health spending (Y 200). Coverage thus was rather shallow: certain services (particularly outpatient) were not or were only partially covered; deductibles were high; ceilings were low; and coinsurance rates were high. Inpatients on average spent out of pocket six times what they were reimbursed. The study unearthed some confusion among farmers about what was covered and how much of its cost was reimbursable.

Financing. The study found that each NRCMS member paid a flat contribution of Y 10 or more, depending on the county's generosity. A government subsidy of at least Y 20 provided the remaining funds. The subsidy was borne entirely by local governments in the richer provinces, and was shared between central and local governments in poorer provinces. Some provincial governments were found to target their subsidy and that of the central government on poorer counties, but others did not. The central government transfers were found to be a larger share of income for poor counties than rich counties, so they reduced—but did not eliminate—the regressiveness of household and county contributions.

Reimbursement. The bulk of reimbursement by NRCMS was found to be for inpatient expenses, even in counties that covered outpatient expenses. Most inpatient reimbursement was for care delivered at county or provincial hospitals. However, in counties where outpatient care was covered through household accounts or via pooling, care delivered in township health centers accounted for 20 to 30 percent of inpatient reimbursement. Most NRCMS schemes were found to have some mechanisms to control repayment expenditures: reimbursement rules were typically less generous for care delivered in higher-level facilities, and most counties required members to use only certain approved facilities. Few counties were found to use the most obvious form of cost control—namely, a provider payment method other than fee-for-service (FFS).

a failure of the scheme to lower the out-of-pocket payments *per contact*. This in turn likely reflects several design features of the scheme at the time. The size of the NRCMS budget was small compared to total health spending. Emphasis on covering inpatient over outpatient care risked shifting both patients and providers away from “basic” cost-effective outpatient interventions (including preventive care) toward less cost-effective inpatient interventions (almost entirely curative). Finally, limited emphasis went to cost control: only a few localities had thus far begun to use so-called “prospective payments” (that is, payment amounts fixed before, rather than after, treatment).

The study highlighted other challenges. One is the issue of equity in how the scheme would be financed. Households that joined paid the same flat-rate contribution irrespective of their income, except insofar as the Ministry of Civil Affairs covered the contributions of those enrolled in the Medical Assistance program (see below). Moreover, counties paid identical contributions regardless of their capacity to pay, except insofar as the poorer provinces received central government assistance and targeted it on poorer counties. A second challenge identified by the study is the issue of adverse selection—the tendency of younger, healthier people not to join. This problem inevitably arises in any voluntary insurance scheme, whether private or public. The final challenge was the sheer complexity of the reimbursement system. Patients had to pay the cost of care up front and then wait for reimbursement. Their net copayment depended on complex rules for deductibles, varying reimbursement rates and ceilings, and varying and often confusing rules about outpatient expenses. Many farmers in the qualitative study focus groups were perplexed about how the reimbursement system worked.

NRCMS has evolved since 2005, in some respects in response to the concerns that emerged from this and other studies. In 2006, the central and local governments each doubled their subsidies to Y 20 per person per year, bringing the total NRCMS contribution to Y 50 per person, of which the government’s share was 80 percent. In early 2008, government subsidies doubled again. In late 2005, some eastern provinces also became eligible for the central government subsidy, which doubtless improved intergovernmental equity. Moreover, the central government amended how its earmarked fiscal transfer was allocated. Only 75 percent of budgeted central funding was prepaid to the provinces in 2005; in 2006, prepayment was raised to 100 percent. And starting in 2007, central transfers were adjusted at the end of each year based on the actual need of each province. If the actual need exceeded what was budgeted, the province

could get the remainder from the central government. These steps likely helped the budgeting and cash flow of poorer provinces. Finally, steps were taken to eliminate the advance payment requirement for NRCMS members seeking health care. And there was some shift away from inpatient-only coverage, which should have helped the scheme exert desirable downward pressure on out-of-pocket spending.

But are these changes sufficient? It will be interesting to see what further studies will show about how the program is faring under the new rules of operation. Doubtless the results will be more encouraging. However, it is important to realize that not all of the key challenges highlighted by the 2005 study have been addressed fully. Because the funding is still small relative to total spending, reimbursement rates remain low (30 percent according to one estimate). The benefit package still tilts heavily toward inpatient care. NRCMS remains largely a passive payer of bills, and has limited tools to control costs and encourage quality. All of these features are likely to make the scheme alter the *pattern* of utilization in a way that drives up costs. The scheme is still voluntary, and while household enrollment is likely to lead to less adverse selection than would individual enrollment, the tendency persists. Finally, the reimbursement rules are still highly complex—even more than in insurance schemes of industrialized countries that are often criticized for being overly complicated.

Medical Assistance

In 2003, the Ministry of Civil Affairs announced a Medical Assistance safety net scheme for rural and urban counties. Initially, the program provided financial support with medical expenses and NRCMS contributions (in areas where it existed) to specified vulnerable groups. As NRCMS rolled out, the focus has shifted toward helping these groups with NRCMS contributions and copayments.

Medical Assistance experienced a slow initial startup. By 2003, only 130 counties had Medical Assistance programs up and running. However, over 800 counties launched efforts in 2004, and another 600 joined in 2005. By the end of 2006, 65 percent of all Chinese rural counties had implemented the program. In 2006, Medical Assistance assisted 18.23 million cases (not necessarily 18.23 million individuals, since some patients may have received assistance more than once).

As with NRCMS, the World Bank teamed up with the government—this time with MOCA—to study how Medical Assistance was working in its early days. Data about Medical Assistance design and implementation

at the local level were collected through a questionnaire administered to local government officials in October 2005. Provincial governments sent the questionnaire to the Bureau of Civil Affairs in 2,659 rural counties, of which 1,645 (62 percent) completed the form. The work was overseen, with the support of MOCA, by the Institute of Social Development and Public Policy at Beijing Normal University, with extensive input from the World Bank. In contrast to the NRCMS study, no household data were collected, and no qualitative study was undertaken. Box 3.2 summarizes contemporaneous program financing, assistance, and coverage and disbursements.

Medical Assistance impacts (for example, on service utilization and poverty) were not evaluated for this study, and they have yet to be examined by others. One reason to suspect a limited impact is the fact that the budget per person uncovered by the study is small, equivalent to less than half of 1 percent of total health expenditure in rural China. Even in terms of spending per person in the target population, the expenditure is small. In 2006, the Medical Assistance rural budget per person in the principal target population—Di Bao, Te Kun, and Wu Bao beneficiaries—was just Y 18. Even if the entire budget had been devoted to these households, the program would have had only enough to pay for the household contribution to NRCMS (Y 10) and just Y 8 for out-of-pocket payments. To put this in perspective, according to the 2006 Rural Household Survey, households in the poorest fifth of the rural population spent an average of Y 100 out-of-pocket on health care. The high per-episode figures in

Box 3.2

Medical Assistance circa 2005

Financing. The Medical Assistance budget (equivalent to Y 1.2 per rural resident in 2006, Y 890 million in total in rural areas)²⁸ was financed mostly by central, provincial, and county government sources, but also supplemented by contributions from townships, lotteries, donations, and development assistance. Findings showed the MA budget to be inversely related to per capita county income until the upper county quintile, which had the largest budget per capita. Township contributions, lottery contributions, and donations were largest in the richest fifth of counties. Central government funding varied relatively little with county income.

(continued)

Box 3.2 (Continued)

Assistance. In non-NRCMS counties, MA program support took the form of direct assistance with out-of-pocket medical expenses. In NRCMS counties, by contrast, MA helped people with their NRCMS contribution or copayments, or both. In the study data, around 80–90 percent of MA counties with an NRCMS program provided assistance with the NRCMS contribution. Only half of those helping with NRCMS contributions also helped with copayments. Only a few helped *exclusively* with copayments; but 10 percent or so of MA counties with an NRCMS helped with neither, presumably mounting an entirely parallel program to NRCMS.

Coverage. Medical Assistance had—and continues to have—three target groups: households that suffer large and potentially impoverishing medical expenses; the poor and other disadvantaged groups—typically Te Kun²⁹ (“extremely poor” households), Wu Bao³⁰ (the “five guarantees” households), and Di Bao³¹ (households eligible for China’s new safety-net program), and additional groups considered to be deserving (the most commonly cited being persons who receive special pensions, laid-off workers, and senior Party officials). The study found that even individuals in these groups typically had to apply for assistance after incurring medical expenses. On average, Te Kun recipients accounted for the largest share of episodes at nearly 39 percent; Wu Bao and catastrophic illness each comprised less than 20 percent; the share of Di Bao was 16 percent; and the remainder was composed of people who fitted none of these categories. These proportions varied depending on the per capita income of the county. In the richest fifth of counties, Di Bao recipients received the greatest share of MA, representing 30 percent of episodes. Catastrophic illness recipients accounted for about 25 percent, while Te Kun and Wu Bao recipients had shares of 20 percent and 15 percent, respectively. This likely reflects the fact that Di Bao eligibility is based on a relative poverty line, while Wu Bao and Te Kun eligibility are based on absolute disadvantage.

Disbursements. In 2004, counties in the poorest quintile disbursed less than Y 1,000 per episode of assistance, while counties in the wealthiest quintile disbursed nearly twice as much, at Y 1,800 per episode. These figures are considerably larger than NRCMS inpatient reimbursements per episode. This suggests that Medical Assistance at the time was focusing on high-cost events and/or reimbursing a larger fraction of out-of-pocket payments than NRCMS. The available Medical Assistance budget per assistance episode was around Y 1,550–1,700 for counties in the bottom four quintiles and approximately Y 2,000 for counties in the top quintile. For the most part, Medical Assistance was underdisbursed in 2004.

box 3.2 indicate disbursements focused on a small fraction of the eligible population, presumably those incurring high-cost infrequent events.

More promising are the findings on targeting. The findings are *indirect*, since no household survey data were analyzed. Rather, the evidence is derived from the finding that 75 percent of Medical Assistance reimbursements went to groups officially classified as disadvantaged—Wu Bao (20 percent), Te Kun (39 percent), and Di Bao (16 percent)—and from the fact that these groups are known to come disproportionately from the bottom end of the (pretransfer) income distribution.

As with NRCMS, Medical Assistance has evolved, and at least some of these issues and those highlighted in box 3.2 may well have been resolved or ameliorated. The Medical Assistance budget has increased substantially, with the central government transfer climbing by 133 percent to Y 3.3 billion and local government transfers rising 40 percent to Y 3.8 billion in 2007. These sums would need to be combined with population coverage data to get a sense of how spending per person in the target population has changed. Nonetheless, anecdotal reports suggest that Medical Assistance, combined with NRCMS, has substantially reduced the financial burden of health care in at least some areas. In Chongqing, for example, Medical Assistance beneficiaries only need to pay 20 percent of their total health costs out of pocket, whereas non-Medical Assistance NRCMS enrollees pay about 60 percent (World Bank 2008). Moreover, intergovernmental equity has improved as the result of central government funds now being allocated via a formula that includes the number of beneficiaries, county contributions, and a county's fiscal capacity, with the latter weighted heaviest. The link-up with NRCMS apparently has also been tightened, with 100 per cent of counties now assisting the scheme's enrollees with their contributions and copayments. Underdisbursement appears to have been an issue only during the first year of the program.

As with NRCMS, however, some challenges remain. The program is tightly targeted on the most vulnerable, but this still leaves a substantial fraction of the population who might be considered poor but are not automatically eligible for Medical Assistance. Those who "prequalify" for Medical Assistance because they are covered by one of the other antipoverty programs comprise less than 5 percent of the population. In 2004, by contrast, the poverty rate in China at the dollar-a-day poverty line was 17 percent. The majority of the vulnerable and the near-poor cannot benefit from Medical Assistance. This is, of course, the age-old dilemma of trading off targeting generous assistance on a small fraction

of the population against distributing less generous assistance to a larger fraction.

A second challenge is the question of whether Medical Assistance should continue to be a standalone program. Insofar as the support goes to groups already covered by the Di Bao, Te Kun, and Wu Bao programs, it might be more efficient simply to include the assistance as a benefit of these programs. Now that NRCMS has been rolled out, this would involve paying the contributions and copayments of those covered. The strongest justification for retaining Medical Assistance as a separate program is its ability to serve as a safety net for households that are experiencing potentially catastrophic medical expenses but are ineligible for the Di Bao, Te Kun, and Wu Bao programs. Among the counties surveyed in the 2005–06 study, 15–20 percent of cases assisted by Medical Assistance fell into this category.

Public Health

During China's 10th five-year plan (2001–05), the government established the three major pillars for public health: a national Center for Disease Control (CDC),³² a National Center for Health Inspection and Supervision (NCHIS) responsible for oversight of industries that pose public health risks,³³ and a set of public health emergency offices within the MOH. The last initiative was spurred in part by the experience of the SARS outbreak in 2003. This also prompted much better coordination across different public health agencies, not only on SARS but on HIV/AIDS, avian influenza, and schistosomiasis. To improve maternal and child health (MCH) services and achieve the MCH-related Millennium Development Goals targets, an initiative known as the Reduction of IMR and MMR and Elimination of Tetanus among Newborns was launched. A major accomplishment in the public health field was the development of a Web-based, real-time disease-reporting system covering major public health institutions down to the township level.

A number of more recent public health initiatives can be cited (some of which have yet to be implemented). First, the beneficiary package for public health has been enlarged—the National Immunization Program now covers prevention for 15 infectious diseases, with free treatment for human immunodeficiency virus (HIV) infection, TB, and hepatitis B virus infection, and the piloting of free screening and scaled-up treatment of reproductive tract infections among women of childbearing age. Second, a safe drinking water initiative was launched with an investment

of Y 65.5 billion to improve access to tap water in rural areas. Third, there was an effort to standardize the subnational CDCs. Finally, the possibility of free hospital delivery for all pregnant women was being actively discussed.

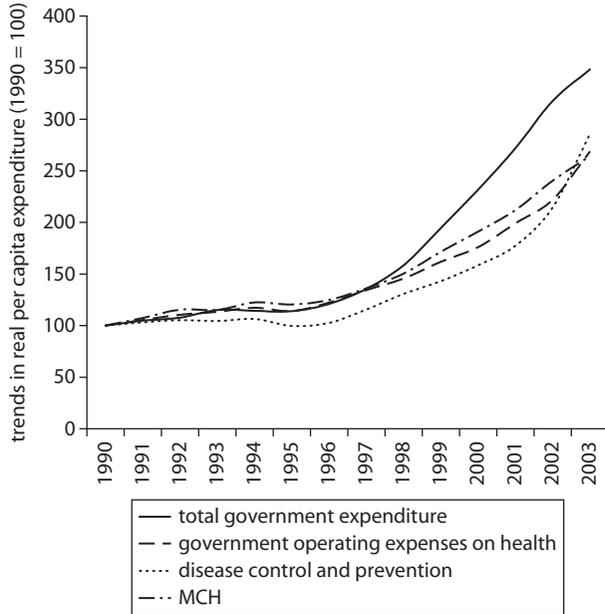
To support and sustain these efforts, government substantially boosted public health spending. Following the SARS outbreak, the central government transferred approximately Y 1 billion (US\$146 million) to help the western and middle provinces develop their public health systems. That increased nearly fourfold to Y 3.7 billion in 2004 (MOH 2005a). Altogether, a total of Y 10.9 billion was transferred across various levels of government for capital investment in the CDC system, as well as Y 11.4 billion for capital investment in health care facilities.

China is mostly on track to achieve its public health targets. The 2010 goals for average life expectancy and MMR already have been met. Very likely that is also true for the 2010 infant and under-five mortality rates. For vaccinatable diseases, only diphtheria, pertussis, tetanus, and oral polio vaccine inoculations are lagging behind the 90 percent 2010 population coverage targets. Otherwise, coverage of the World Health Organization's key EPI vaccines has reached the national target. Key 2010 disease prevention and control targets also have been achieved for HIV infections, DOTS detection, the cure rate for new smear-positive TB, and the hepatitis B virus (HBV) prevalence rate for children under five years of age. The overall HBV prevalence rate is close to the 2010 target of 7 percent. Targets that look less likely to be hit are tobacco control, rural water and sanitation, birth defect prevention, and iodine deficiency.

Beyond the question of whether specific targets are being met, two further issues arise in assessing the status of public health. One is whether China is spending "enough" in this area. The frequently heard claim that the government had abandoned public health prior to recent injections of spending is certainly untrue. Over the period 1990–2003, government allocations to disease control and MCH institutes rose in step with overall government health expenditure—although not quite keeping pace with government expenditure across all sectors (figure 3.1). Increased government subsidies to public health institutions have been overlooked because they have been dwarfed by rising "business income," so that the government share of institutions' overall financing declined steadily during the period (figure 3.2).

Moreover, international comparisons suggest that China's spending on public health programs is not low by international standards. Comparative analysis poses difficult methodological problems (discussed briefly in

Figure 3.1 Government Public Health, Total Health, and Total Spending, 1990–2003

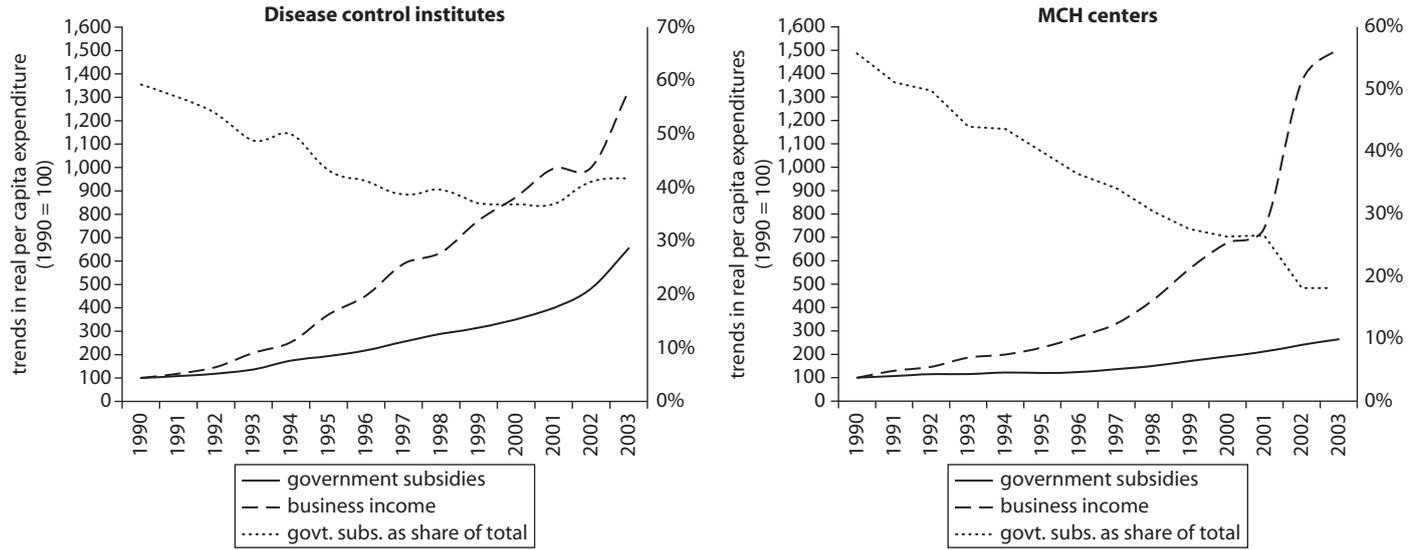


Sources: China National Health Accounts Digest 2002, China Health Economics Institute (2005); Fiscal Yearbook 2004, Ministry of Finance; China Statistical Yearbook 2004, National Bureau of Statistics.³⁴

box 3.3); however, a careful analysis of the numbers suggests that the share of government spending for prevention and public health in China is relatively high. This is the case even if mandated corporate expenditure (such as occupational health measures) and public health expenditures by nongovernmental organizations (important components in some health systems) are included (see the horizontal axis of figure 3.3). In fact, public health expenditure is so high in China that even though overall government expenditure on health constitutes a relatively small share of GDP (see the vertical axis of figure 3.3), government expenditure on prevention and public health as a share of GDP is similar to that in other countries (figure 3.4).

Low aggregate government spending on public health does not, therefore, seem to be an issue. Nonetheless, there are still concerns about the geographic distribution of government allocations. True, the central government has targeted much of the recent increases in spending on poorer provinces to help build CDCs and other components of their public health systems. Yet how far these additional spending allocations have

Figure 3.2 Government Subsidies and Business Fees as Income Sources for Public Health Institutions



Sources: Data on government subsidies to public health institutions are from *China National Health Accounts Digest 2002* for 1990–94, and from an NHA background study for 1995–2000.³⁵

Box 3.3**Challenges in Estimating Public Health Spending and Comparing across Countries**

Cross-country comparisons of health expenditures can be of considerable interest, but how do we make sure that apples are being compared with apples? The system of National Health Accounts (NHA) of the Organisation for Economic Co-operation and Development seeks to ameliorate the dilemma by establishing standards for data collection and compilation on public and private health expenditures (OECD 2000). While NHA analysis often looks at health spending as a whole, the data presented in this chapter focus on one specific “function,” namely *Prevention and Public Health (PPH)*. The orbit of PPH encompasses (a) maternal and child health, family planning, and counseling; (b) school health services; (c) prevention of communicable diseases; (d) prevention of noncommunicable diseases; (e) occupational health care; and (f) other miscellaneous public health services (surveillance, outbreak preparedness, and so forth). Some argue that this definition of PPH is rather restrictive—it excludes expenditures that are outside the domain of the health sector in most countries, for example sanitation and environmental health. While this is a legitimate concern, the NHA data are currently the only ones available for cross-country comparisons, and even these data are only available for a handful of OECD countries.

The standardization imposed by the NHA methodology has improved cross-country comparability considerably. Yet differences in data definitions and coverage persist, perhaps more so for PPH than in other areas. One reason is that the organization of public health activities varies considerably across countries. For example, prevention and public health is integrated in primary health care in many low- and middle-income countries, making it difficult to distinguish PPH from other health care functions. This is also true in some high-income countries where preventive components of outpatient care are not classified as PPH unless they form part of a formal prevention program. Similarly, services financed by nonprofit organizations (NPOs) or private companies are not always included in NHA estimates, and their exclusion could affect total health expenditures by about 1–2 percent (Orosz and Morgan 2004). For instance, Australia, Canada, Denmark, Japan, and the Netherlands do not include data from nonprofit institutions, while Canada, Denmark, the Netherlands, Spain, and Switzerland do not have data available from private companies. Although this seems minor, excluding these financing agents, if they were involved in financing PPH, as is the case in Japan, can have a big impact on estimates.

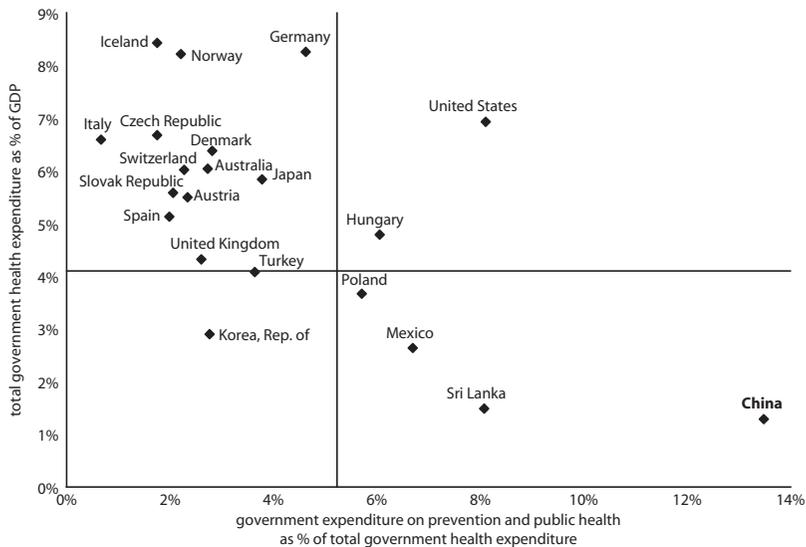
(continued)

Box 3.3 (Continued)

Other definitional issues also affect the interpretation of data presented in this chapter. For example, in Canada, PPH could not be disaggregated from administrative expenditures of the Health Department, causing overestimation of PPH expenditures (Orosz and Morgan 2004). In China, national estimates of PPH expenditures may include some spending on curative care by public health institutions such as MCH centers.

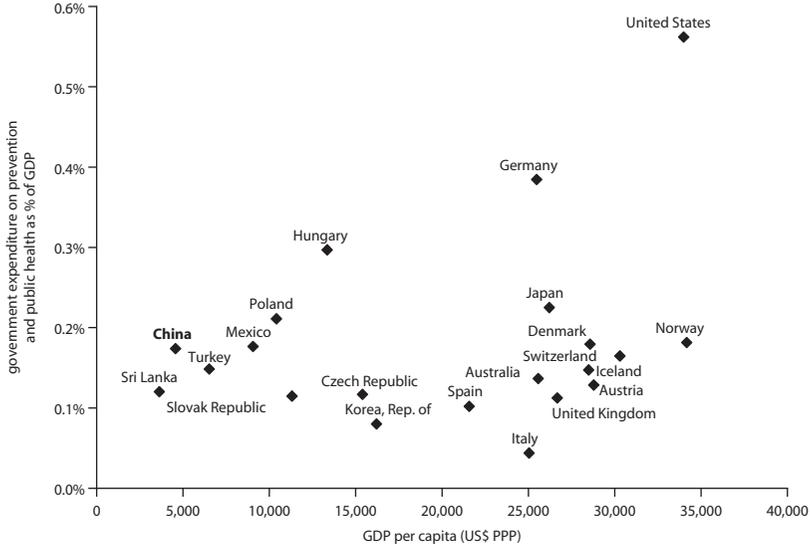
In assessing the relative importance of prevention and public health expenditure, the comprehensiveness of data on overall health spending also becomes important. Again, some important differences exist across countries. For example, nations such as Hungary, Korea, Mexico, Poland, and Turkey exclude long-term nursing care from their NHAs, which can result in underestimation of total health expenditure by up to 10 percent relative to countries using more comprehensive definitions of health spending.

Figure 3.3 Government Spending on Prevention and Public Health in China and Other Countries



Sources: Orosz and Morgan (2004), OECD Health Data, Sri Lanka National Health Accounts (2001), and World Development Indicators 2005.³⁶

Figure 3.4 Government Spending on Prevention and Public Health as a Share of GDP in China and Other Countries



Source: See figure 3.3.³⁷

reduced the preexisting inequalities in government public health spending remains to be established.

Aside from concern about the level and distribution of government spending, the question arises of how far the public health reforms of the 2000s address the interrelated concerns about incentives and accountability highlighted in chapter 2. The answer seems to be “only partially.” The reforms did create new institutions and encouraged coordination among them. Yet public health programs rely on regular service providers—village doctors, township health centers, and hospitals—to make them work. Without changed incentives, regular health workers will still find they need to focus on personal health services—that are billable—rather than public health programs that are not (or for which the returns on permissible billing are low). Indeed, the question of incentivizing public health institutions to stay focused on public health is not addressed by these reforms. Likewise, the accountabilities between different levels of government and different local governments have not been spelled out. In an area like public health, where disease outbreaks do not respect political boundaries, such accountability is vital. Promoting standardization across subnational CDCs is one thing; but allowing them to act as independent entities runs the risk that the national interest will get lost.

Provider Payment Reform

A major challenge—and for some observers, *the* major challenge—facing China at the start of the new millennium was the need to modify the incentives for health care providers. Whereas reform efforts were rather vigorous for health insurance, medical expense safety nets, and public health, comparatively little happened on this front in the 2000s.

Some reforms did aim at reducing providers' incentives to deliver drugs and high-tech care at the expense of basic care. Fees for professional services were increased while those for high-tech care were cut, and a move has been made toward a price ceiling system to encourage price competition. These reforms appear to have reduced but not eliminated the perverse incentives that drive up service prices.

Drug pricing also has been changed, limiting regulation to selected drugs (which together account for only 10 percent of medicinal spending) rather than regulating the entire range. These measures were expected to reduce drug prices through increased competitive pressure and more effective procurement. In practice, hospitals often have been able to maintain high drug revenues by increasing pharmaceutical usage and by shifting from one medicine to another (for example, from regulated to unregulated and from low-margin to high-margin).

Some insurers also have begun to modify the incentives for providers by moving away from fee-for-service. Most of these reforms occurred in the late 1990s and early 2000s but in urban areas (box 3.4). New payment methods included global budgets, diagnosis-related groups, and fixed charges per inpatient or per inpatient day. Typically, reforms have been associated with reductions in unit costs, though impacts on quality have rarely been evaluated.

Following the lead of the Basic Medical Insurance scheme, a small handful of NRCMS schemes also have adopted alternative provider payment methods (box 3.5), including case-based payment for inpatient care and capitation or salary payment for outpatient care. Sometimes these have involved the use of contracts to define explicit performance criteria—for example, specifying the package of services to be delivered, payment methods, and quality standards, especially the use of drug lists to control prescription practices. There is no evidence to date on the impact of these rural reforms on cost and quality, and they have been very few in number.

Reforms to the budgetary subsidy system have been even less visible. Subsidies take two main forms: a general payment to cover part of salary and other operational costs, and a specific subsidy for particular

Box 3.4**Provider Payment Reforms in Urban China**

Traditionally, payments to urban hospitals by both patients and insurance schemes (GIS and LIS) were based on the regulated price schedule. Faced with escalating costs, insurance schemes in some cities experimented with different forms of capped global budgets, or payment per inpatient day with volume caps. When Basic Medical Insurance (BMI) was introduced, the government established a national model for demand-side cost containment (medical savings accounts (MSAs)), but did not prescribe a particular method of provider payment. In any event, most schemes have continued to pay hospital on a fee-for-service basis. There are exceptions, however. Hainan Province, for example, implemented prospective payment—essentially a global budget with a small quality- and volume-contingent bonus—for six key hospitals in January 1997. Average expenditure per admission fell below that of other hospitals that continued to be paid FFS, and spending growth on expensive drugs and high-tech services was reduced dramatically (Yip and Eggleston 2001; Yip and Eggleston 2004). Whether there was any adverse effect on quality is unknown. A similar approach to maintaining volume through a combination of global budget and contingent bonuses has been used in Qingdao (Qingdao Municipal Department of Labor and Social Security 2003).

Jiujiang, one of the original pilot cities for BMI, started out using FFS to pay hospitals, but in late 1996 switched to a fixed charge per inpatient day (Meng 2002). In 2001, the province switched again—this time to capitation—in an attempt to curb expenditure growth further. After the switch, medical expenditure per insured inpatient fell from Y 2,320 to Y 1,778, and the share of drug spending in total spending fell from 76.5 percent to 59.8 percent (Jiujiang Health Insurance Office 2004). Zhenjiang, the other BMI pilot city, started out using a fixed charge per inpatient day, but in 2001 started to experiment with a payment method based on diagnosis-related groups (DRGs) for 82 diseases (Meng 2002; Wu et al. 2004). Variable reimbursement rates were set according to average expenditure incurred over the previous three years in treating each disease, less any “unreasonable” expenditure (Wu et al. 2004). In 2003, the average outlay for diseases under the DRG payment method was 25 percent lower than the province average in the same level hospitals (Wu et al. 2004).

During nationwide implementation of BMI, many cities followed the leads of Jiujiang and Zhenjiang, switching to payment methods other than FFS. Many have adopted a fixed charge per inpatient, although a range of options

(continued)

Box 3.4 (Continued)

is in the mix. For example, in Guangdong Province in 2002, 13 of 18 municipal cities used this method; two used FFS; two used capitation; and one used a fixed charge per inpatient day (Project Team of Guangdong Province 2003). In some cases, a variety of different payment methods is used alongside a fixed charge per inpatient. Overall, however, there is less evidence on impacts for these cities than for Jiujiang and Zhenjiang. However, one study compared cost trends in the urban health pilot city of Nantong that implemented both provider payment reforms and new forms of contracting with the city of Zibo that did not implement reforms (Meng, Rehnberg et al. 2004). It finds a smaller cost increase in Nantong, without measurable impact on quality. Similar results have been found in other studies (Liu, Cai, and Xong 2003).

Interestingly, some providers have moved of their own volition away from FFS toward prospective payment. For example, some urban hospitals have introduced diagnosis-related groups for self-paying patients, hoping to attract more business by developing a reputation for price transparency. The earliest documented experiment of this was in three hospitals in Ha'erbin County in Heilongjiang in 1994 (Liu, Zheng et al. 1999). By the end of 2000, 16 hospitals in Ha'erbin had started using DRGs (Yang, Zhao, and Liu 2001). Since then, DRG use for self-paying patients has been reported in many other parts of China (Bai 2004). There is, unfortunately, little evidence on the outcomes of these initiatives. However, the evidence that does exist suggests that DRG adoption reduced costs. In the Red Cross Hospital of Ha'erbin, total expenditures for acute appendicitis decreased after implementation of DRGs, and the proportion of drug expenditures in total expenditures decreased from 50 percent to 15 percent (Yang, Zhao, and Liu 2001). In Jining Medical College Hospital, total expenditure per case for the five diseases monitored decreased by 30–50 percent following implementation of DRGs; drug expenditure per case fell by 34–64 percent; and average length of stay fell by 0.4–2.0 days (Yin 2004). Nothing appears to be known about the effects of DRG adoption on other dimensions of health care, including quality of care and “cream skimming” (providers deliberately avoiding the more complicated cases within each diagnostic group).

investments in infrastructure or equipment. The former typically are allocated using criteria such as number of staff and retirees or the number of beds, with little or no regard to defined objectives or performance criteria. Recently, government policy (Central Committee of the CPC and the State Council 2002) has required county governments to take

Box 3.5**Prospective Payments and Purchasing in NRCMS**

Following the lead of the Basic Medical Insurance, some local NRCMS offices also have adopted alternative provider payment methods. Some localities have introduced case-based payment for inpatient care. For example, two counties in Shaanxi Province selected 38 conditions for which fixed charges at THC and county hospital levels were established (World Bank Mission 2004). Similar case-based payment systems have been introduced in a few counties in Gansu Province (Bing County NRCMS Office 2004; Gansu Provincial Department of Health 2005).

More frequently, NRCMS introduced forms of capitation or salary payment for outpatient care. For example, in two counties in Xinjiang, the NRCMS established a fixed payment of Y 40–50 per month to each village practitioner. In return, the village doctors are expected to provide free primary care (Hu 2003). Similar arrangements were made in Wuxue County in Hubei Province (Hu 2003; Wang, He, and Zhou 2003; Wang et al. 2004). In one township of Guizhou Province, all contract village clinics were managed by township health centers, and were paid a basic salary plus performance-related bonuses based on number of home visits, patient satisfaction, and cost containment (Wang 2003).

greater responsibility in management and financing of township health centers. The intention is to ensure provision of essential public health programs; however, evidence to date does not demonstrate whether this policy change actually has altered the financing practices of local governments (Xiang, Fang, and Hu 2004).

Other Reforms in Service Delivery

In the 1980s and 1990s, China saw a flurry of privatizations in the health sector. At the instigation of local governments, these began at the village level and later moved up to the township health center level and above. Evidence on the effects of these conversions and of ownership differences is mixed. Some studies have found that township health center privatization has been associated with cost reduction (Li 2000; Wang et al. 2002), but others have suggested that these cost reductions may be the result of scaling back preventive and public health activities (Li 2001; Wang 2002; Wang, Xu, and Li 2002; Xu 2003).

The absence of a clear link between ownership and performance is not out of line with international evidence. It likely reflects the fact that, contrary to what is often thought, no simple one-to-one correspondence exists between ownership and autonomy. Government providers in China have some features of hierarchically controlled budgetary units. But they share many features associated with private for-profit providers—heavy reliance on self-paying patients, hard budget constraints, internal incentive regimes that stimulate revenue generation, autonomy over service mix and capital investments, and so forth. Furthermore, ownership conversions often have made little difference to provider autonomy over key dimensions. Many newly privatized township health centers frequently have continued to receive government budget allocations; and staffing and other management issues have remained largely under the control of the county or township government (Shang, Yuan, and Chen 2001; Jiang 2003).

Rightly or wrongly, the issue of ownership in the health sector became a hotly debated topic in some quarters in China in the 2000s. Some argued that public hospitals are public only in name and need to be put firmly back under government control. Others argued for greater private ownership and more competition in the sector. Aside from issuing documents clarifying the distinction between government-owned and private non-profits, and requiring that there be at least one government-owned health center per township, central government largely stood on the sidelines of this debate.

What *did* occur during the 2000s were reforms geared toward changing provider autonomy without changing ownership. In some areas, autonomy was reduced. Several local governments introduced essential drug lists limiting what physicians could prescribe. Treatment protocols also were introduced in an attempt to standardize diagnosis and treatment. Local governments introduced rules curbing hospitals' power to retain surpluses from drug sales, requiring that they record pharmaceutical sales separately from other revenues and remit all profits from such transactions to the local health bureau. The selection of managers and staff was made more transparent and competitive. In other areas, however, reforms had the effect of *increasing* autonomy. Government increased hospitals' power to fire health workers (if alternative employment could be found for them), and issued guidelines for encouraging an open and competitive recruitment process, expanding the variety of contracts used for different types of workers, and facilitating worker dismissals. Outsourcing increased for support services such as cleaning,

food provision, security, and supply management. And some local governments contracted management from outside. Exactly what impact these reforms have had is unclear. Except for a small-scale unofficial evaluation of the World Bank–funded Health VIII project (box 3.6), little analytic work appears to have been undertaken investigating the outcomes of these reforms.

A variety of organizational reforms were introduced in the 2000s to rationalize service delivery. Some counties decided to integrate village clinics vertically with township health centers, with the township health center becoming the owner of the village clinic. This initiative was to improve quality of care by controlling drug quality and staff competence, and thereby increase the utilization and revenues of township health centers. Some local governments also integrated hospitals and public health agencies. Yet many continued to invest in township health centers despite falling utilization rates, presumably in the belief that the downward trend could be reversed if facilities were improved. These organizational changes have not been evaluated—no information is available, for example, on whether economies of scale and scope have been achieved.

The final two areas where reforms have been evident are licensing and accreditation. The 1999 Law on Physicians raised the training requirements for a medical practice license and for some professional categories, whereas the 2005 Village Doctor Practice Regulation required that village doctors be certified physicians or assistant physicians before being licensed. Enforcing these regulations has proved to be a considerable challenge, in part because many former barefoot doctors continue to practice. In 2005, the government reformed its hospital accreditation system. In terms of structure, grades, and levels, the new system resembles the old one. But the focus moved away from infrastructure and equipment toward a broader range of criteria, including “scientific management,” patient safety, and service quality. The grading and evaluation system is combined with a system of rewards (for example, government budgetary subsidies) and sanctions (for example, fines or risk of closure). These changes are clearly in the right direction. However, the new system has limitations. The national accreditation guidelines give considerable discretion to local government in operationalizing and implementing the system: many provinces do not include the private sector, although some do; and township health centers and village clinics mostly are not covered. Local discretion hampers comparability across localities, let alone between China and other countries, and may undermine the credibility of the system.

Box 3.6**Impacts of Treatment Protocols, Drug Lists, and Other Innovations in the Health VIII Project in Gansu Province**

Health VIII—known officially as the World Bank China Basic Health Service Project—was a broad-brush health reform project that combined supply-side interventions for improving the effectiveness and quality of care (treatment protocols, drug lists, upgrading of THCs, among others) with demand-side measures to resuscitate the old CMS and provide financial support to the very poor through a Medical Financial Assistance scheme that was, in effect, a precursor to the recently introduced national Medical Assistance program. The project began in just seven of China's poorest provinces with the aim of targeting poorer counties within each province, albeit ones with sufficient resources to repay the loan and adequate capacity to implement the project.

Gansu—China's second poorest province—was one of the initial seven project sites. Serendipitously, the Gansu Survey of Children and Families was fielded in both project and nonproject counties just as Health VIII was starting implementation, and again four years later. In addition to the household and village data collected before and after the project started, data from THCs were collected in the second wave for both the current and previous years, making a before-and-after comparison possible for THC outcomes as well as household- and village-level outcomes.

A recent study (Wagstaff and Yu 2007) uses the Gansu data to analyze the project impacts. Before-and-after changes are compared between households, villages, and THCs in project and nonproject counties, after matching counties using propensity-score matching. The results suggest the project reduced out-of-pocket spending, and the incidence of catastrophic spending and impoverishment through health expenses. Especially large impacts were found among the poor. Little project impact, however, was detected on the use of inpatient or outpatient services; and while the evidence points to a reduction in sickness days, the evidence on health outcomes is mixed. Surprisingly, little impact was found on investment in new equipment. Because efforts to revive CMS had been unsuccessful in the sampled project counties as of the date when the second data wave was collected, the project impacts on out-of-pocket health spending must be attributable to a mixture of the safety-net scheme and the supply-side measures to limit drug prescriptions and improve the quality of care.

Sizing Up the Recent Reforms

The sheer volume and pace of China's health sector reforms during the 2000s represent an impressive achievement by any standard. That such a long list of very ambitious measures was introduced so rapidly in a country so large and diverse reflects the government's strong commitment to reforming the health sector and to the promotion of "balanced development." It would be unrealistic to expect that the reforms to date would fully address all challenges outlined in chapter 2. And it would be unrealistic to expect them all to have been problem-free in their design and implementation. Yet taken together, they represent a significant stride toward China's long-term health and development goals. The government has also demonstrated pragmatic flexibility in modifying its policies in the light of evidence about impacts.

The NRCMS provides solid foundations upon which to build. Future challenges include increased budgets to allow for broader and deeper cover; a further tilting of the benefit package to incentivize the use of basic services—including prevention and early treatment of disease—to yield both health benefits and cost-savings; a shift away from NRCMS being a passive bill payer to being a service "purchaser" using payment methods other than fee-for-services to encourage cost-consciousness and quality care; the introduction of measures to counter adverse selection; and the simplification of cost-sharing arrangements.

Medical Assistance also provides some foundation upon which to build. Future challenges here include the need to extend benefits to people beyond those currently eligible, that is, to those who are not extremely poor but who are poor or near the poverty line; and the issue of whether integrating some aspects of Medical Assistance into other safety-net programs makes sense.

Regarding public health, the government showed clear commitment in the 2000s to greater spending and institutional reform. One remaining challenge is how to share the cost of public health programs across different levels of government and across different geographic areas. This is not so much a question of equity but of efficiency, recognizing the fact that public health outbreaks do not respect political boundaries. Linked to this are two related questions: how to reform the payment for public health activities so that health workers have positive incentives to undertake them; and how to establish an accountability system to govern relations between various public health "actors."

Service delivery was the primary arena where the reforms of the 2000s were more timid than they might have been, and where major

health-reform challenges remain. The burning issue is how to reform the payment of providers in ways that reduce the inflationary pressures in the system, and promote the delivery of quality care at a cost that China can afford. Some small steps have been taken, but without larger steps during the next decade, the benefits of insurance expansion will not be fully realized. Instead, as the experiences of other countries have shown, providers tend to deliver health care that is increasingly costly and not necessarily medically justified. Payment reforms need to be accompanied by changes in provider autonomy—not in all areas, but some—but are unlikely to require major changes in ownership. Further efforts at vertical integration, licensing, and accreditation are also likely to yield payoffs.

Annex: Impact Evaluation of NRCMS³⁸

Estimates of the NRCMS impact on households were obtained by comparing changes in status before (2003) and after (2005) introduction of the scheme that occurred between NRCMS-participating households and similar households that could have joined but did not (so-called differences-in-differences, or *diffs-in-diffs*). Propensity score matching (PSM) was used to assess the degree of similarity.³⁹ A similar approach was used to gauge the impact of NRCMS on health facilities (township health centers and county hospitals). Changes were compared before and after the introduction of NRCMS between facilities in NRCMS counties and similar facilities in non-NRCMS counties. The degree of similarity was assessed across a variety of facility-level and county-level variables.

The baseline household data are from the Ministry of Health's 2003 National Health Survey. Households in the 10 counties in the 2003 NHS that subsequently launched an NRCMS were reinterviewed in 2005. (Households in five non-NRCMS counties also were reinterviewed, but the results obtained using these data are not reported here.) It should be kept in mind that the household data are not therefore a random sample of counties joining NRCMS. The 2003 and 2005 facility data are from the Ministry of Health's national health facility database, which includes all township health centers and county hospitals nationwide. For this exercise, all facilities in the 15 provinces and two municipalities that were the first to implement NRCMS were included. The total number of county hospitals and central and general township health centers in the database is 1,746, 4,464, and 14,040, respectively.

A variety of variables thought likely to influence participation in NRCMS were included in a probit equation used to obtain the propensity scores for the household analysis. Kernel matching was then used to obtain the estimates of the average effect of treatment on the treated (ATT). In the facility analysis, Mahalanobis matching was used, which allows matching on a variety of facility- and county-level variables. In both analyses, bootstrapping was used to obtain standard errors, and comparisons were confined to the region of common support.

Table A3.1 reports the estimates of ATT and the t-statistic for the household analysis (the final two columns), along with changes between 2003 and 2005 for the sample as a whole, the “treated” (that is, the NRCMS households), the “untreated” (that is, households who didn’t join NRCMS), and the difference between the changes among the treated and untreated (the column labeled “diffs-in-diffs no matching”). The outcome variables are self-explanatory. The matching estimates point to NRCMS significantly increasing both out-of-pocket payments and the incidence of catastrophic household health spending (at the 10 percent and 20 percent thresholds, though not at the 40 percent threshold). There is no evidence of NRCMS significantly affecting out-of-pocket spending per (ambulatory) visit or per inpatient episode. NRCMS has, however, apparently significantly increased the probability of an outpatient visit, but only at the township health center level. The results contain a hint that NRCMS may have increased inpatient admissions, but the impacts are not statistically significant. With the exception of the results for out-of-pocket payments, these results are evident not only in the matched diffs-in-diffs (with attention confined to comparisons on the common support), but also in the simple unmatched diffs-in-diffs. This suggests that, for the most part, NRCMS and non-NRCMS households are not dramatically different from one another.

Table A3.2 reports the ATT estimates for the health facilities. Again, the outcome variables are self-explanatory. Among county hospitals, there is no evidence of any impact of NRCMS on any of the indicators. This is consistent with the household results. The implication is that NRCMS simply is reimbursing inpatients who would have gone to a hospital anyway; and hospitals provide the same care, incur the same costs, and receive the same revenues as they would have done without NRCMS. Among township health centers, by contrast, table A3.2 points to NRCMS having significant impacts not only on outpatient visits, as suggested by the household results, but also on inpatient episodes. Among general township health centers, the impact on inpatient episodes is very

Table A3.1 Estimates of NRCMS Impact on Households

<i>Outcome</i>	<i>Changes among everyone in NRCMS counties</i>		<i>Changes among NRCMS households</i>		<i>Changes among non-NRCMS households in NRCMS counties</i>		<i>Diffs-in-diffs no matching</i>		<i>Diffs-in-diffs matching kernel weights</i>	
	<i>coeff.</i>	<i>t-stat</i>	<i>coeff.</i>	<i>t-stat</i>	<i>coeff.</i>	<i>t-stat</i>	<i>coeff.</i>	<i>t-stat</i>	<i>coeff.</i>	<i>t-stat</i>
Out-of-pocket payments past 12 months	160.330	14.77	161.072	16.64	158.126	4.75	2.946	0.12	73.212	2.87
Catastrophic payments (exceeding 10% of income)	-0.005	-1.21	-0.001	-0.27	-0.018	-2.07	0.016	1.59	0.023	1.73
Catastrophic payments (exceeding 20% of income)	0.003	0.92	0.011	2.65	-0.021	-3.30	0.032	3.93	0.039	4.01
Catastrophic payments (exceeding 30% of income)	0.005	2.18	0.004	1.53	0.007	1.87	-0.003	-0.64	0.009	1.59
Out-of-pocket payments per visit	6.852	3.69	7.028	3.17	6.277	1.90	0.751	0.17	0.646	0.16
Out-of-pocket payments per hospital stay	34.076	2.88	37.557	2.70	23.190	1.04	14.367	0.52	39.692	1.20
Doctor visit past 2 weeks	0.044	15.52	0.048	14.66	0.032	5.53	0.017	2.50	0.016	2.10
Inpatient past 12 months	0.003	1.68	0.004	1.97	-0.001	-0.21	0.005	1.16	0.007	1.48
No. times in hospital as inpatient past 12 months	0.005	2.19	0.007	2.45	0.000	-0.06	0.007	1.29	0.007	1.21
Outpatient visit village clinic	0.032	14.42	0.033	12.83	0.029	6.58	0.005	0.86	0.003	0.41
Outpatient visit THC	0.003	2.20	0.005	3.17	-0.003	-1.31	0.008	2.67	0.007	1.97
Outpatient visit county hospital	0.009	6.21	0.010	5.88	0.006	2.14	0.003	1.02	0.006	1.50
Inpatient THC	-0.001	-1.35	-0.001	-0.75	-0.003	-1.57	0.002	0.82	0.003	1.24
Inpatient county hospital	0.004	2.65	0.005	2.63	0.002	0.65	0.003	0.84	0.004	0.97
Surgery county hospital	0.002	1.60	0.002	1.45	0.001	0.70	0.000	0.13	0.002	0.64

Source: Authors' calculations.

Table A3.2 Estimates of NRCMS Impact on Facilities

		<i>County hospitals</i>		<i>Central THCs</i>		<i>General THCs</i>	
		<i>ATT %</i>	<i>t-stat</i>	<i>ATT %</i>	<i>t-stat</i>	<i>ATT %</i>	<i>t-stat</i>
<i>Finances</i>	Total revenues	-1	-0.21	18	7.96	13	2.67
	of which subsidies	-9	-0.82	26	6.18	-5	-0.66
	Total expenditures	-3	-0.53	15	6.15	15	2.81
	of which salaries	-1	-0.13	11	5.20	7	1.55
	expenditure per case (log)	-3	-0.17	4	0.43	7	1.27
<i>Inputs</i>	Staff	-1	-0.38	6	4.08	3	1.09
	of which retirees	-7	-1.31	5	2.32	5	1.34
	Items equipment > Y 10,000	-12	-1.31	8	5.36	1	0.22
<i>Activity</i>	Inpatient discharges	13	1.47	8	2.12	44	5.04
	Bed occupancy rate	2	0.91	11	2.07	13	3.89
	Length of stay	7	0.62	11	1.12	-11	-1.10
	Outpatient visits	-5	-0.98	10	3.20	0	-0.01

Source: Authors' calculations.

large. The difference between the results from the household and facility data may reflect the fact that the facility data capture all (first-wave) NRCMS counties in China, while the household data come from just 10 counties. In addition, the comparator is different: households in NRCMS counties not joining NRCMS in the household analysis, and facilities in non-NRCMS counties (typically in the same province) in the case of facilities. Unsurprisingly, in view of the impacts on township health center patient volume, there is evidence of NRCMS significantly increasing the revenues and costs of township health centers. There is a hint that NRCMS also may have raised cost per case in township health centers, but the impact is not statistically significant.

CHAPTER 4

Looking Toward a New Decade: The Big Picture

The previous chapter outlined the many health sector reforms that the Chinese government began implementing in rural areas during the 2000s. These reforms included a new rural health insurance program (NRCMS); a medical expense safety net program (Medical Assistance); greater spending and new policies, programs, and institutions for public health; and a number of service delivery policy and institutional reforms. The chapter argued that these measures constituted a major forward step in addressing the challenges that faced China's rural health system at the start of the new millennium. But it also argued that China's government was—and is—under no illusion that these measures were the end rather than the beginning of a long-term reform process. The various measures have all been—to varying degrees—subject to modification while being rolled out in phases. Moreover, there seems to be widespread agreement that further modifications will likely be required in over coming years, and that additional reforms over the longer term will probably be needed if China is to fully meet the challenges highlighted in chapter 2.

The rest of the book looks to the future by setting out some ideas for both types of reform. This chapter focuses on the big picture, sketching out possibilities for the medium and longer terms. It begins with a discussion of recent international thinking on health reform and evolving notions of best

practice. This contextual background—considered in light of the earlier review of the challenges facing China's rural health system and recent reform efforts—is useful in thinking through future options. A brief overview follows of the book's medium-term reform options, which will be examined in greater detail in chapters 5–7. It also highlights their limitations and spells out how these could be mitigated through the longer-term reforms detailed in chapter 8.

Health Systems—Goals, Functions, and Actors

Increasingly, health systems are seen in terms of actors performing functions geared toward achieving systemic goals (World Health Organization 2000). The two basic goals are better health, and financial protection.⁴⁰ The key actors are patients and households, health care providers, health financiers and insurers, and government.

Health System Functions

The most basic health system function is delivering health care—the proper care for each person when it is needed. This requires multiple resources: skilled personnel (doctors, nurses, pharmacists, and managers), medicines and other consumables, medical equipment, and physical infrastructure. Creating resources (training doctors, developing and acquiring medicines, investing in and maintaining equipment and infrastructure) is thus an important second function. Both sets of tasks entail expenditures, often very large ones. So financing health care—finding the money to pay for the whole enterprise and seeing that providers get paid—is a third key function of any health system.

This third function sometimes is divided into three subfunctions. The first is raising revenues or funding health care. Typical sources of revenue include out-of-pocket payments, contributions to social insurance schemes, taxes and other government revenues, private insurance premiums, and development assistance. The second subfunction is risk pooling. When providers are paid directly by patients out of pocket, risk is borne individually, without pooling. If a village mounts a community insurance scheme, each household pools its risk with others in the locality. In a social insurance scheme, the risk pool is larger and more diverse. A tax-financed health system is also a mechanism for pooling risks. The third subfunction is paying providers or, more broadly, purchasing. Patients and third-party payers (including insurers, ministries of health, and others) can be thought of as buying services from providers. Purchasing has a

number of aspects: Who determines what will be purchased—the provider or the purchaser? What will be the basis for that determination? Who will deliver the service? And how will the provider be paid? These questions are equally important whether the services are matters of public health (whether targeted at populations or individuals) or matters of private personal care.

Each function is exceedingly complex. It needs not only to be performed well, but in close coordination with the others. Overseeing the health system is the task of making sure the actors who perform the various functions do so in a competent and coordinated fashion. This is, in effect, another function of a health system, and is often conceived in terms of stewardship.

Mapping Functions and Actors

There is no simple one-to-one mapping from actors to functions. Indeed, one of the key decisions to be made in any health system is which actors should do what. Thinking on this issue has evolved considerably over the past 20 years or so. Of course, it is health providers—clinics, medical centers, hospitals, and so on—who deliver health care. But their relationship with government differs from country to country and has evolved over time. The function of creating resources is one for which government often takes responsibility, for example, by training doctors and nurses. But other actors, notably health providers, play a role, too.

The financing of health care perhaps involves more actors than any of the other functions. Whatever the financing system or mix of other actors involved, households ultimately pay for health care. Households pay providers directly out of pocket. They pay premiums or contributions to private or social insurers. And they pay taxes that the government uses to subsidize providers or insurers—either way lowering the cost of care to the patient. Rarely does a health system rely exclusively on direct out-of-pocket payments from patients to providers. An insurer or a government serves as financial intermediary between patients and households on one hand, and providers on the other. This enables resources to be pooled across communities. In exchange for a small prepayment via an insurance contribution (or premium to an insurer or a tax to the government), households can rest assured that needed health care can be obtained at a nominal cost (a copayment). The rest comes out of the pool of resources collected through whatever prepayment mechanism is being used. What form the prepayment should take and who, therefore, the financial intermediary should be, are issues that

once generated much disagreement. But as we shall see momentarily, views on the subject are increasingly converging.

While often not thought of as such, the purchasing function frequently has been discharged by governments. Public health is an obvious example. It makes sense for purchasing to be discharged by the same agency responsible for delivering a needed service. This practice has been, and still is, prevalent in public health when an agency responsible for determining surveillance also sets up and runs the system. This pattern also can occur in personal health services, especially in public “integrated” systems financed primarily by taxes. One part of the health ministry is charged with need assessments and service delivery planning; and another is charged with health care delivery. Purchase and provision of health care tend to be split more forthrightly in health insurance systems, with social and private insurers determining the needs of their members and arranging with selected providers to deliver the required services. But the split is widening even in tax-based systems.

The function of oversight or stewardship is one in which government has traditionally played the major role. Monitoring the quality of care in public and private facilities, regulating who can practice medicine and which organizations can run clinics and hospitals, ensuring the safety of medicines, authorizing investment in expensive equipment, approving the construction and modification of facilities, regulating insurers, and regulating provider fees—these are all oversight tasks that seem to fall naturally to government.

Evolving Ideas and International Best Practice

Thinking has evolved greatly over the past 20 years about the nature of health system actors and functions. This reflects growing awareness of the strengths and limitations of market mechanisms’ ability to deliver efficient and equitable health sector outcomes. Awareness has grown of the importance of externalities and public goods. Immunization is an example of the former. In this case, activities confer benefits (or costs) that spill beyond the individual, affecting other people. Public health surveillance is a classic example of activities that confer benefits on everyone and from which no one can be excluded. There also has been growing appreciation of the importance of asymmetric information in the health sector. An obvious example is the asymmetry between patient and provider: the patient lacks the provider’s expertise in assessing what the patient needs are and what care is appropriate. Information

asymmetries also exist in the health insurance sector. An insured person can conceal the full degree of risk from the insurer, or how much effort is being made to stay healthy and limit the need for care. Information asymmetries also arise in the relationship between government, on the one hand, and insurers and providers on the other.

At the same time, awareness has grown of the limits of government in tackling these “market failures.” The days are long gone when analysts blithely assumed that because markets failed to deliver equitable and efficient outcomes, governments would automatically do better. Governments undoubtedly can improve equity, but in many countries (China included) the principal beneficiaries of government health spending are not the poor. And many public policies do not eliminate, and may not even reduce, inefficiencies. In part, these disappointing outcomes represent the hard facts of the political economy of government intervention. Government officials sometimes push program design in directions that benefit narrow interest groups other than the poor. But the architects of the command-and-control health care delivery system also failed to grasp the importance of incentives, financial and otherwise. A consensus is emerging that health systems need to find ways to exploit the market’s power to deliver efficiency, but in such a way as to avoid the failures inherent in a traditional market; hence the interest in “quasi-markets,” “internal markets,” and “marketlike mechanisms.”

Service Delivery: Fine-Tuning Autonomy

In service delivery, the age-old disagreement about who should own facilities has been supplanted by a debate about how much autonomy providers should be given in different areas, and how should government best restrict autonomy appropriately. This reflects realization that a government can pay for health services rather than providing them through directly managed units, and indeed that performance may improve if facilities are not directly managed.

Many OECD countries have moved away from budgetary units with strict hierarchical control, and have sought to increase management autonomy and performance accountability. To do so, new organizational forms have been established that are part of government but are characterized by greater managerial autonomy, different governance arrangements, harder budget constraints, and the ability to retain and use operational surpluses (OECD 2002).⁴¹ In some cases, this also has been associated with increased exposure to “marketlike” incentives. At the same time, private health care providers are rarely fully autonomous

entities engaging in a free market. Rather, they often depend heavily on financing by government or social health insurance schemes, their autonomy may be circumscribed by regulation, and they may have a strong social mission. Consequently, autonomized or corporatized hospitals in the public sector can, in many respects, be very similar to private non-profit hospitals in countries such as Canada, Germany, or the United Kingdom. The increasingly common arrangement in OECD countries, then, is for providers to have a degree of autonomy in at least some areas; to be nonprofit; and to be either government-owned or privately owned, depending on legal and other traditions.

Payer-Led Competition

Emphasis has also shifted in the debate over the merits of competition in service delivery. The notion that efficiency is enhanced by providers competing for individual patients is increasingly viewed as flawed, because patients lack the necessary information to make informed choices. In Delhi, India, it has been found that increased competition leads to worse treatment patterns (for example, inappropriate use of antibiotics) because competent providers must either cater to their patients' ill-informed expectations or lose profits (Das and Hammer 2004). Attempts have been made, especially in the United States, to provide patients with better information about provider quality and to align patients' expectations better with likely needs, but the results have been largely disappointing (Edgman-Levitan and Cleary 1996; Cleary and Edgman-Levitan 1997; Shaller et al. 2003; and The Kaiser Family Foundation et al. 2004).

Recent reforms have been built instead around the idea of providers competing for contracts with purchasers, not for individual patients. This could be an insurer, an agency within the health ministry, or a primary care practice. While competition by providers for ill-informed patients may not encourage delivery of good quality care at a reasonable cost, competition for contracts with well-informed purchasers may do so.

Evidence on the effectiveness of payer-led competition is limited, mostly coming from the United States. Competition for Medicare contracts appears to have improved patient outcomes and lowered costs (Kessler and McClellan 2000). Other studies also have found evidence from payer-driven price competition of reduced prices and costs and reductions in excess capacity (Miller and Luft 1997; Dranove and Satttherthwaite 2000; Glied 2000; and Miller and Luft 2002). Evidence about the impact of competition on quality, by contrast, is mixed (Cookson and Dawson 2006). While informative, the U.S. experience is

somewhat unique in that competition has been promoted in a context of excess supply (Melnick et al. 1992).

Elsewhere in the OECD, several other countries—including Sweden, New Zealand, and the United Kingdom—have experimented with hospital competition for contracts. Evidence about the impact of competition on performance is mixed. Some findings indicate increased physician productivity in Sweden (Van de Ven 1996). The United Kingdom has seen some evidence of cost reductions, although the evidence is patchy (Propper and Soderlund 1998; Propper, Wilson, and Soderlund 1998); and some recent studies suggest that competition actually may have impaired quality (Propper, Burgess, and Green 2004). More generally, the experiment to introduce payer-led competition has been relatively short-lived in many countries. Considerable opposition often has arisen from both providers and patients, and purchasers frequently appear to have lacked the skill and knowledge to overcome information asymmetries and enforce contracts (Le Grand 1999; Le Grand 2002; Docteur and OECD 2004).⁴² Information and capacity problems have not been confined to purchasers. Providers, too, have struggled to provide detailed information on costs, case-mix, and other factors that they previously were not required to collect. Lack of accounting, quality monitoring, and other systems have similarly constrained countries where payer-led competition has been promoted (Cookson and Dawson 2006). Overall, these experiences suggest that payer-led competition can be, but not always is, a force for good; and the benefits are far from automatic.

Purchasers and Better Ways to Pay Providers

Whether or not they stimulate competition, payers (or “purchasers,” as they are increasingly called) are regarded as important actors for improving quality and pushing down costs. In traditional integrated systems, the government officials who manage the systems are generally line managers of hospitals and clinics. The risk is that they identify with the interests of the provider, the supply side of the sector—not with the patient, the demand side. The purchaser—an agent of a large number of patients independent of the supply side—can pressure providers in ways that line managers cannot. Hence, much talk in the 1990s centered on creating purchaser-provider splits, and giving purchasers the information, skills, and resources needed to pressure providers into improving quality, seeing patients more quickly, and lowering costs.

The concept of purchasing also is linked increasingly to how providers are to be paid, another much-debated issue that has driven the reform

agenda. The trend clearly is moving away from fee-for-service as a way of paying providers. Where patients pay providers directly out of pocket, fee-for-service is the obvious payment method. However, when providers are paid by a third party—a purchaser—a payment method can be used that encourages providers both to exercise restraint in the use of resources and to deliver quality care. For some medical interventions, fee-for-service is not a bad method—assuming the payment is by the third party. In many OECD countries, primary care doctors are paid (at least in part) for preventive and other personal public health interventions based on the number and type of interventions they deliver.

Budgets and salaries are the other “traditional” methods of provider payment. They have the merit of not encouraging providers to deliver poor quality care through unnecessary tests, unwarranted antibiotics, and so forth. On the other hand, they do not encourage cost awareness or stretching of resources so that more patients can be treated with available means. Hence, the increasingly common use of “prospective” and mixed payment methods to spur efficiency. Diagnosis-related groups, in which groups of diagnoses are associated with similar costs, are an example of the former. Hospitals receive the same payment for all diagnoses in a given group. Payment by diagnosis-related groups is “prospective” in that the hospital knows in advance the amount it will be paid for patients in each diagnosis group. The United Kingdom’s new so-called two-part tariff is an example of a mixed method. The purchaser contracts with the hospital for a certain amount of “capacity” in each specialty. The hospital receives half of the expected payment up front according to the amount and type of capacity in the contract, and the rest at pre-agreed fee rates as services are actually delivered. In both cases, prices need to reflect costs; otherwise, an incentive is created for providers to focus on profitable care and profitable patients, and ignore the rest.

Coverage Expansion through Tax Financing and Social Insurance

Debate over financing has not been confined to how to pay providers. The issue of how to raise revenues from households also has been much discussed. There is growing acceptance that undue reliance on out-of-pocket payments is bad. It is bad because providers are paid via fee-for-service. It is bad because poor people wind up either paying larger fractions of their income in health care bills or forgoing needed treatment. It also does nothing to reduce the financial risks associated with illness. Consensus is emerging that out-of-pocket payment for personal interventions related to public health ought to be zero (or nearly so), as

with any activity generating positive externalities; while out-of-pocket payment for personal interventions not tied to public health ought to be, at most, "small."

Recent research and country experiences have highlighted the strengths and weaknesses of different approaches to prepaying for health care. Private insurance is the least favored approach in the OECD countries. Because of the aforementioned information asymmetry between insured and insurer, the scheme is vulnerable to adverse selection, with the possibility that the scheme may unravel altogether and hence leave some groups uninsured. Premiums are not explicitly linked to income but may turn out to be higher for those less well off because of risk rating. This raises equity concerns about the affordability of health insurance for high-risk individuals, the worry being that high-risk individuals will not insure or will end up paying larger fractions of their income on health insurance than do low-risk individuals.

Social insurance and tax finance are far more common health financing mechanisms in the OECD. Tax finance has some advantages over social insurance (Baeza and Packard 2006; Wagstaff 2007b). Revenues often fall short of what they ought to be because of nonenrollment and underreporting of earnings. In Colombia, evasion in the contributory scheme (Colombia's system also includes a subsidized scheme) has been identified among the most pressing problems facing the health sector, amounting to US\$836 million in 2000 or 2.75 percent of GDP (Escobar and Panopoulou 2003). Nearly three-quarters of the evasion was due to underreporting, the rest to nonpayment. Social health insurance tends to be a regressive way of raising revenues; in contrast, tax finance tends to be progressive (Wagstaff et al. 1999; O'Donnell et al. 2008). The informal sector is much harder to cover than the formal sector. Governments have made progress enrolling the poor on a subsidized basis, but errors of inclusion and exclusion are common. The costs are often borne by the formal sector, leading to high payroll tax rates. Covering the nonpoor informal sector in a contributory scheme has, however, proved much harder; and those who enroll are often the sickest. Arguments also have been made that social health insurance contributes to the informalization of the economy because people find they are better off enrolling in a private scheme or falling back on Ministry of Health programs than being part of formal sector programs. Employers contribute to this process if they can eliminate their contributions by employing workers on a contract basis. When employers cannot do so, they will likely reduce their demand for labor, especially if they end up footing the bill

for the dependents of formal sector workers and for informal sector workers. Foreign companies may be deterred from investing in countries with high payroll tax rates. Because of problems like these, many Western European countries have abandoned social health insurance or are in the process of reducing reliance on payroll taxes. Chapter 8 discusses these issues in greater detail.

In social health insurance, much of the debate and reform agenda have revolved around the question of how equity can be achieved in both contributions and coverage. In some countries, the goal has been to combine equity with insurer competition, presuming that this will promote efficiency. The problem is that health insurers competing with one another while contribution rates are based on risk profiles leads to skewed coverage. Insurers catering to low risks (the better off) could charge a low premium and still cover their costs, while those catering to high risks (the poor) would be forced to charge high contributions—an outcome that many policy makers would want to avoid for equity reasons.

One approach is for everyone to pay according to a common contribution schedule, with contributions pooled in a central fund. The fund can be supplemented by subsidies from general revenues, and then allocated to insurers through a weighted capitation formula that gives an insurer more for an elderly person or a woman of childbearing age than for a young man. People can choose between funds, and in some countries (for example, the Netherlands) pay an annual flat-rate fee direct to the insurer. An insurer must charge all its customers the same flat rate, but can compete with other insurers on the fee size. Whether risk-adjustment formulas can be fine-tuned to prevent insurers from skimming off the cream within each risk category is a much-debated question (Van de Ven and Ellis 2000).

Variants of this approach exist. In some countries, only a fraction of contributions are pooled in the central fund. This may result in varied contribution schedules across insurers. Those with many high-risk enrollees will find their central fund allocations to be insufficient, and will have to levy additional contributions to cover costs. The weighted capitation approach disburses allocations that are relatively generous, but still insufficient to cover full costs. To prevent poorer insurers from having to levy additional contributions, the government might provide support out of general revenues. Another approach uses the central fund more as a solidarity fund. In Colombia, for example, workers paying into the contributory scheme also pay a “solidarity tax” that is used in part to finance a subsidized scheme for the less well off.

Government as Steward

Government is the natural lead actor for stewardship and oversight. While some other functions can be—and in some countries are—discharged with negligible government involvement, oversight cannot be. Indeed, the more health system functions the government leaves to other actors, the greater challenge it faces vis-à-vis increased oversight. Leaving health care delivery to private nonprofit providers or to autonomous public sector hospitals means that the government workload switches from line management of treatment facilities to creating and operating an effective oversight system. Leaving social health insurance to an “autonomous” health insurance agency, as has been done in many countries, requires the government to establish clear rules setting out the degree of freedom the insurance agency has in different areas, while retaining a voice in agency governance without interfering in its day-to-day decisions.

Thinking about precisely what a government should do in exercising oversight has evolved during the past two decades. In public health, emphasis is now on clarifying core functions, identifying the activities needed to perform those functions and who should perform them. Countries and international organizations have differed on core public health functions, but definitions commonly include prevention and control of disease and injuries, protection against environmental hazards and other health risks unrelated to disease, and public health disaster preparedness and response. Public health functions are sometimes defined more expansively to include, for example, quality control and assurance, equity, and human resources (Public Health Functions Steering Committee 1994; Bettcher, Sapirie, and Goon 1998; PAHO 2002; and the World Bank 2002b). While there may be a case for government intervention to address these issues, they are arguably a function of the health system as a whole and not specifically a public health function.

While government is and always will be the lead actor in oversight, other actors have supporting roles to play. Health professionals often form associations. Such associations engage in self-regulation and set codes of professional conduct. Ensuring delivery of high standards of care is a benefit to all members because malpractice—even by one doctor—inflicts reputational damage on all doctors. Insurers have financial and nonfinancial incentives to ensure that the revenues they collect are used to buy quality health care at reasonable cost. If given the space, they too can become important forces in system stewardship.

Households also have a role to play. One obvious example is litigation. Each year in the United States, patients take providers to court for alleged

malpractice. Courts are not the only venue in which households can make their voice heard. In many countries, consumer groups act as health system watchdogs, providing information to households on insurance policies, hospital quality, drug safety, and so on. Some countries explicitly tell patients what their rights are in the health sector through, for example, a “patients’ charter.” Many health systems have an ombudsman to referee patient complaints. Members of the public often get involved in helping oversee the operation of a specific facility—sitting on a hospital board, for example, as a representative of the local community. The media and the polling booth are other channels through which the public can exercise health system oversight.

Reform over the Medium Term

China has considerable scope for building on these recent developments in international thinking and practice to implement medium-term reforms that would address many of the rural health sector challenges it still faces. Possible options are summarized below and examined more fully in chapters 5–7.

Health Insurance

NRCMS is a major reform for the Chinese government. In the medium term, it makes sense to build on NRCMS to improve its effectiveness. Several useful steps could be taken.

More resources for NRCMS and fairer burden sharing. Between 2005 and 2007, the government increased its per-member subsidy to NRCMS. However, a large fraction of health care costs—at least half—is still financed out of pocket. Extra resources for NRCMS are required to trim the share of out-of-pocket spending. Higher household contributions are an option. However, if raised much higher than present rates, they almost certainly would need to be linked to income. If not, the scheme would be perceived as unfair and would risk nonenrollment by the poor. Some linkage to income already happens through the Medical Assistance scheme. However, raising contributions even more would require linking them to income for a larger fraction of the population—at least for those living below the Y 850 poverty line (12.5 percent of the rural population in 2001), if not those living below the dollar-a-day line (about 25 percent of the rural population in 2001).⁴³ This may be worth trying, perhaps through “proxy means-testing,” but will not be straightforward. Given this,

and the high cost of collecting contributions in the first place, it might make sense to scrap household contributions to NRCMS altogether.

Raising NRCMS revenues is likely therefore to require increased government subsidies, including additional spending by the central government. There is also scope to increase equity in the subsidies to NRCMS. Central government subsidies could be targeted more tightly on poorer provinces; and steps could be taken to increase equity within provinces by sharing the costs of supporting NRCMS more fairly, perhaps by pooling at the provincial level or through a provincial-level solidarity scheme.

Make NRCMS mandatory. If household contributions are still to be collected in NRCMS, a strong case exists for making the scheme mandatory to avoid adverse selection.

Turn NRCMS into a “purchaser” of health services. Health care will stay unaffordable if NRCMS continues to be a passive bill payer. It needs to become a proactive purchaser of health care on behalf of its members. At the minimum, this should mean switching from patients being reimbursed after paying providers through fee-for-service to a system in which NRCMS pays providers directly through a method—or mixture of methods—that encourages providers to be cost-conscious and to deliver care that is appropriate to the patient’s needs. NRCMS also could use—as it already does in some places—contracts to specify which services are to be delivered at what quality by what type of staff, and to be more active in monitoring the performance of health care providers. This is likely to involve a greater role for the province. At a minimum, this is likely to involve provision of technical support and coordination across schemes. There also may be a case for provincial-level pooling and organization of the NRCMS.

Include noncatastrophic care in the benefit package. NRCMS coverage of “basic” services (which in China usually constitutes some—typically unspecified—subset of ambulatory services) is not very generous. Indeed in some counties they are not covered at all by NRCMS. These services rely heavily on government subsidies to facilities (supply-side subsidies) and on out-of-pocket payments. There is some debate in China about the merits of earmarking additional supply-side subsidies for a basic package of services, with the population and providers being told exactly what services the funding will cover. This approach runs the risk that providers will not be incentivized appropriately to deliver such

care. For example, if providers simply receive extra budget for basic care but can charge patients for nonbasic care, they likely will focus on the latter unless penalized for failing to deliver enough basic services—assuming “enough” can be quantified. Incorporating basic care into the insurance package would ensure that NRCMS and providers face the right incentives, giving substantial impetus to primary care. This step would fold in any additional tax revenues currently planned for the “basic package” scheme being channeled to NRCMS (and to urban insurance schemes), and gradually over time redirect existing supply-side subsidies to insurers, too.

Avoid the narrow-but-deep approach to coverage. To ensure that providers do not shift demand from services covered by NRCMS to those that are not, it would be better to cover most types of care and have high cost sharing on some items. At a minimum, the latter should include interventions for which a more cost-effective procedure exists.

Have a cost-sharing policy that is pro-poor and limits the citizen's financial risk. This means removing existing benefit ceilings, having an annual limit on out-of-pocket payments for covered services for each household, exempting the poor altogether from copayments (preferably households below the Y 850 poverty line, not just those eligible for the Medical Assistance program). It would also make sense to discontinue the use of savings accounts in NRCMS.

Strengthen the management and governance of health insurance. Options for strengthening NRCMS management include keeping the current NRCMS administrative setup but strengthening its management, or contracting capacities. Some localities have begun to explore joint management between NRCMS and Basic Medical Insurance, and Chengdu and Chongqing are piloting integrated management of NRCMS and urban resident health insurance schemes. Joint management and some merging of functions could yield considerable savings in administrative costs and in health care delivery. Whatever the management arrangements, capacity improvements are important in identifying health needs, monitoring provider performance, and other key areas.

Health Service Delivery

Chapter 3 argued that while several changes have been directed toward service delivery, the reforms have been more timid than those in other

areas, despite the fact that the need for reform is large. Chapter 6 suggests a variety of service delivery reforms that could be accomplished in the medium term. These are summarized below.

Improve performance through a shift to demand-side financing. Having insurers behave as purchasers for all types of health care would give providers strong incentives to deliver quality care at a reasonable cost. No longer would provider decisions about what care to deliver be unconstrained and based on what is financially profitable. Instead, decision making would be influenced heavily by purchaser efforts to ensure that services are medically necessary and appropriate and carry a reasonable cost. Providers would no longer have *carte blanche* to deliver whatever care they deem fit.

Reform autonomy rather than ownership. Financial surpluses would be reduced by the proposed payment reforms. Those that exist after reforms ought to be left with the facility, but their use ought to be heavily circumscribed. For example, surpluses might be distributed across funds with specific goals such as staff training, patient amenities, or other needs, with restrictions governing the exact mix. Tougher controls on investment in new equipment may be justified, which might be trimmed once insurers become effective purchasers because providers will then face set prices for different types of cases (based, for example, on diagnosis) and will be unable to recover the costs of sophisticated equipment unless the payment rates envisage its use. In other respects, provider autonomy should probably stay as is.

Enhance governance and regulation. Governance of facilities could be improved by having facilities overseen either by a board of governors or by a dedicated government office. Enhanced financial and clinical regulation is required; some data needed to identify outliers in both areas are collected already but are not analyzed for that purpose.

Let demand dictate facility restructuring and the redeployment of health workers. Changes to how providers are paid and the use of other purchasing tools are likely to lead to less oversupply of services. This will be offset, at least in part, by increased demand for services by those who currently cannot afford them. It remains to be seen how far capacity utilization and health-worker productivity will increase. If capacity still needs to be cut, various options are available. One would be through facility

restructuring and consolidation, especially at the level of township health centers. Another would be through vertical integration at the lower levels of the health system, with township health centers managing village facilities or county facilities operating networks of township and village facilities. Decisions about what to restructure, where to consolidate, and what and where to vertically integrate will depend partly on utilization patterns, factoring in costs and quality of care. These decisions are easier in a system in which providers are paid largely by insurers who act as proactive purchasers rather than as passive bill payers. When the insurer can choose between facilities, the facilities that fail to win contracts will be the ones that need to reduce capacity, merge with other facilities, or close down. Where only one facility exists, cost benchmarking from other areas probably will have to guide restructuring decisions. These changes will provide an opportunity to improve rural staff quality, and in particular to (re-)develop primary care.

Allow the private sector to deliver care to publicly insured patients. NRCMS might be allowed to contract with private providers, at least those who have been vetted through an enhanced accreditation process. Cost is likely to be an issue. Private providers do not receive a budget subsidy from the government, and for-profit providers are liable to be taxed on their income. They are, as a result, likely to be more expensive. There is a case for gradually reducing supply-side subsidies and redirecting them to the demand side by reallocating the monies to the insurers. This would help level the playing field and ensure that government money follows the patient rather than ending up being underused in facilities with excess capacity. Reduction of supply-side subsidies cannot happen overnight, but it makes sense to establish a phased withdrawal in which the amounts and timing are known in advance.

Even with this change, private providers still may be more expensive. One option would be to allow patients to pay the difference between the price charged by the provider and the rate the insurer has established to recompense providers for the particular treatment; this is known as “extra billing” in countries like Canada. On the one hand, this keeps government expenditures down but allows patients who are able and willing to pay the difference to obtain additional tests, a more expensive type of treatment, more comfortable amenities, or other added service. On the other hand, there is a risk that providers will deliver unnecessary tests and a more sophisticated treatment regimen that yields tiny added health benefits.

If extra billing is to be allowed in such cases, it would make sense for the insurer—or some other part of government—to monitor and regulate the quality of care dispensed to patients for additional charges.

Public Health

Chapter 3 noted that China's government spending on public health has increased in the 2000s and is large by international standards. It also detailed the various changes in programs and institutions that have been implemented in the field of public health. Despite these reforms, challenges remain, notably in improving accountability and clarifying roles and responsibilities. Some ideas for improvement are outlined in chapter 8. In brief, the ideas are as follows.

Greater clarity in public health roles. A single institution—or at most, a very small number of institutions—would have overall responsibility for public health at the county level. Other institutions would have clearly defined public health responsibilities. Preventive medical services, for example, would be delivered by regular providers and would be included in the expanded insurance package proposed above.

Public finance for public health. The public health agency would be fully funded by government. The central government would need to finance at least part of the cost to ensure evenness in the public health system.

Vertical oversight and support of local public health activities. The central government needs to exercise more responsibility in setting priorities and guiding public health activities at the local level. One option is a vertically integrated national (or provincial) public health agency, fully funded by national (or provincial) government but with local offices. The other is a local public health agency, to which central and provincial institutions have explicit responsibilities, incentives, and mandates to provide technical support and guidance.

Improving skills and professionalism in public health. The move to a model in which most staff in public health institutions are competitively selected, contracted on consistent terms, and provided effective in-service training and clear career paths would help produce a more cohesive public health cadre and facilitate the building of a strong professional ethos. Decisions about who to retain and hire would need to be made transparently and based on competitive criteria. Some salary

increases for some public health staff—epidemiologists, lab technicians, statisticians, and others—might be necessary.

Reform over the Longer Term

The reforms outlined above would do much to address the challenges facing China's rural health system, especially in service delivery and public health. For health finance, however, some issues would remain unresolved.

Drawbacks of China's Emerging Health Insurance Model

The approach outlined above builds on a series of contribution-based insurance schemes catering to different segments of the population—namely, NRCMS for rural residents, the BMI scheme for formal sector workers in cities, and the new urban scheme for other city dwellers. All are intended to act as purchasers, incentivizing providers to deliver quality care at a reasonable cost. To eliminate coverage gaps and the risk of adverse selection, it would make sense for all the schemes to be mandatory, as BMI already is. NRCMS and the new urban scheme for informal sector workers and nonworkers will need to be heavily subsidized if contributions are to be kept affordable for everyone. In fact, if the proposals above were to be acted on, NRCMS contributions might be eliminated. Notwithstanding, two key areas could prove problematic, even with these steps:

Payroll contribution problems. Compliance in the BMI scheme among formal sector workers is likely to continue to be an issue. Workers and their employers may conspire to underreport the worker's earnings to the BMI office. They may even avoid joining the scheme. Or workers may informalize their job status by moving to a contract or self-employment basis with employers, reducing their benefit entitlements but also reducing their contributions even more. There is also a risk that Chinese firms will lose international competitiveness and foreign direct investment to countries that finance more of their health care through general revenues.

Problems from fragmented insurance schemes. Strengthening government health insurance schemes brings with it the problems that come from operating three completely separate health insurance schemes, with target groups being defined partly by occupation and partly by residence. One problem is that the boundaries separating them will

become increasingly blurred. Rural and urban areas are not fixed: their status shifts and is reclassified over time. Nor are their populations static: rural-urban migration continues apace in China. Rural counties also have urban-designated areas within them. In any case, NRCMS and BMI are not separated only by the rural-urban distinction: eligibility depends partly on occupation and industry.

At the same time, however, clear differences exist between the schemes in terms of revenues per member, with the BMI scheme currently receiving on average around Y 1,000 per person and the NRCMS around Y 100. Unsurprisingly, the generosity of coverage also differs dramatically, with BMI members getting more expensive care, though not necessarily paying smaller copayments. These inequalities are likely to breed resentment among the rural population, and go against the government's ideal of creating a harmonious society.⁴⁴

Moreover, fragmentation creates inefficiencies as well as inequities. Opportunities to reap economies of scope and scale in health insurance management are lost by running separate schemes. Each scheme must set up its own provider payment system, certify providers, and create its own financial management and auditing systems. Substantial cost savings could be achieved through consolidated management of the different schemes, which would pave the way for an eventual merger. Fragmentation also makes it difficult to establish provider payment systems that have consistent and coherent incentives; there is a risk that providers may find they make more money treating patients insured with, say, BMI than patients insured with, say, NRCMS. Finally, fragmentation may make it difficult for people to move from one job to another, or from one area of the country to another, thus inhibiting labor market mobility.

Toward a Unified Financing System

The long-term challenges for China vis-à-vis health financing, then, are to narrow the gaps between the various schemes and ultimately unify them, and to shift from a payroll-contribution funding system to a broader base involving general revenues. China will no doubt want a financing system that reflects government's important role generally, acknowledging local government's role in funding social programs while retaining the important unifying role of central government. That said, China will probably want to allow some limited diversity in coverage, both between the poorer and richer parts of the country and among people in those areas with different willingness and ability to pay for health coverage. Full

equality of coverage may be neither feasible nor desirable. Less inequality, by contrast, is feasible; and it is something that the government clearly regards as desirable.

Chapter 8 sets out some ideas for a health system that meets these desiderata, and discusses how to move toward it. In the medium term, the existing insurance schemes would remain. Gradually, though, they would move toward joint management. Eventually all could be merged into a single scheme within a single health care financing agency. This agency would provide broad cover, including protection against catastrophic and noncatastrophic medical care. Including basic care gives insurers the incentive and leverage to encourage it—they can reduce their costs by encouraging prevention and the early detection and treatment of disease. The agency would increasingly be financed out of general revenues, with payroll contributions steadily diminishing in importance while the role of central government tax finance rises. Central government would finance an increasingly generous coverage floor available to all Chinese citizens everywhere. Local governments would supplement this in line with their fiscal capacity so that the actual government-financed coverage in a locality would exceed the floor financed by central government, allowing richer provinces to have somewhat more generous provision than poorer ones. The health financing agency could also operate a public voluntary top-up health insurance scheme, which would allow for even greater diversity of coverage within a jurisdiction, according to people's willingness and ability to pay. Additional diversity could emerge by allowing some out-of-pocket spending and/or private insurance for uncovered services.

CHAPTER 5

Financing Rural Insurance Coverage

With the launch of NRCMS, the New Rural Cooperative Medical Scheme, China's rural health system has started moving away from a 25-year-old system in which out-of-pocket payments dominated health spending and supply-side subsidies accounted for around 25 percent of expenditures. This system left households exposed to financial risk and fostered inefficiencies, including allocation of government spending based on population and other norms rather than on patient activity. Inequities also emerged. The poor not only spent the largest fraction of their income on health, but were also among those most likely to experience "catastrophic" health expenses and least likely to seek treatment because of cost. At the same time, they were less likely to benefit from supply-side subsidies, which tended to concentrate on higher-level facilities and formal-sector health insurance programs.

The launch of NRCMS represents a major step toward a more equitable and efficient rural health financing system. It has met its principal goal of increasing utilization of services. But major challenges remain. The NRCMS budget is small relative to total out-of-pocket spending, so even after the scheme is fully rolled out, most rural health spending will still be financed out of direct payments by patients. Its benefit package emphasizes inpatient over ambulatory care, causing some to worry that

NRCMS will encourage a demand shift by both patients and providers away from “basic” cost-effective interventions delivered in an outpatient setting toward less cost-effective procedures delivered in an inpatient setting. Since NRCMS has begun to look like a real purchaser, adopting prospective payment methods in only a few localities, significant downward pressure on provider costs has yet to be exerted. NRCMS financing is relatively inequitable: member households pay the same flat-rate contribution irrespective of income, and counties basically pay the same contribution irrespective of their capacity to pay. There is evidence of some adverse selection in NRCMS, which might in the future threaten sustainability of the scheme if participation is left voluntary. Finally, the reimbursement system is highly complex, leaving many rural residents confused about what is and is not covered.

This chapter sets out some ideas for reforming China's rural health financing system, focusing on medium-term changes that build on recent government initiatives, notably the NRCMS scheme. It argues for more resources for NRCMS, and suggests that while ways can be found to increase household contributions equitably, higher contributions likely will exacerbate the problem of adverse selection, especially if linked to income. Raising subsidies to NRCMS seems a more practical way forward, and could be done while enhancing intergovernmental equity. The scope for redirecting subsidies from the supply side to the demand side (that is, NRCMS) is also examined. The chapter argues for turning NRCMS into a purchaser by changing how it pays providers and by leveraging better performance through contracts (issues that will be explored more deeply in chapter 6). This chapter also addresses what NRCMS should cover, arguing for a balance between catastrophic and noncatastrophic interventions, with public health interventions financed separately. It discusses options for setting copayments (the portion of the cost that the patient has to pay out of pocket) and how to address the dilemma of uncovered services. Finally, ideas are set out for strengthening NRCMS management and governance.

More Resources for NRCMS

Chapter 3 argued that NRCMS, while being an important start in providing the rural population with health insurance coverage, lacks resources to make much of a dent in out-of-pocket spending. Reimbursement rates may be rising as more government money is pumped into the scheme, but rates are unlikely to rise very far unless much larger sums are injected.

Even then, reimbursement rates are calculated as a fraction of *reimbursable*, not *actual*, expenses. There are high deductibles (the amount of money the patient must spend before NRCMS starts paying part of the cost); reimbursements are capped, often at quite low ceilings; and many services are uncovered. A person's reimbursable expenses for a particular health service could be small. If NRCMS is to become an effective insurance scheme, its budget must increase substantially (see box 5.1).

Box 5.1

Trends in Financing Health in Rural China

Tracing recent trends in the health financing mix in rural China is not straightforward. The Rural Household Survey (RHS) reports average out-of-pocket health spending each year. The figure for 2006 is Y 191. The government reports spending Y 21.5 billion on NRCMS in 2006,⁴⁵ with total NRCMS enrollment at year's end of 410 million persons. Given a rural population of 759 million, the subsidy per rural resident equals Y 28. The government reports household NRCMS contributions in 2006 of Y 11.4 billion, averaging Y 15 per rural resident. Rural supply-side subsidies are projected to be at least Y 30 billion per year during the 11th five-year plan (2006–11), or Y 40 per rural resident. The Medical Assistance program is the other item of rural health spending, accounting for Y 890 million or Y 1.2 per rural resident.⁴⁶ The combined total per capita health spending for rural China in 2006 is thus Y 275 with an out-of-pocket share of 69 percent (see graphs below).

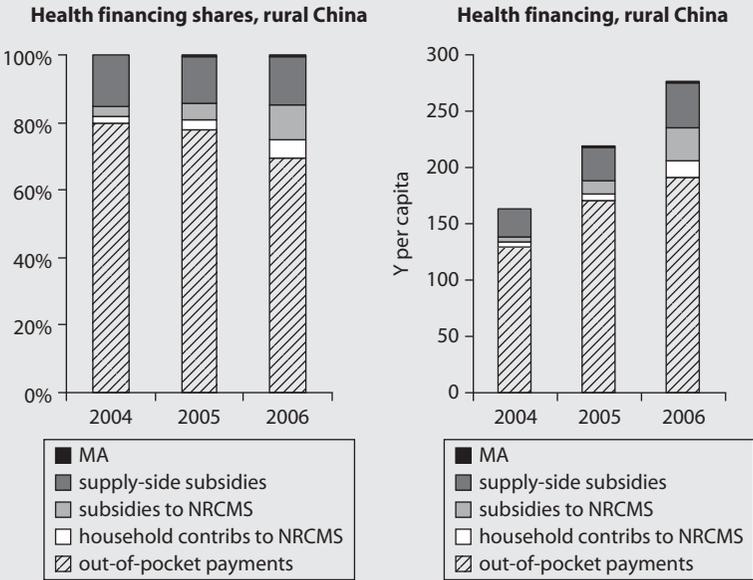
Figures for previous years are less easy to obtain, except for out-of-pocket spending data available from the RHS. For 2004, we made use of a 2005 survey of government officials in 189 NRCMS counties, which gave total subsidies, total household contributions, enrollment rates, and rural population in each of the counties. By the end of 2004, 21 percent of rural counties had introduced NRCMS. From these figures, one can estimate NRCMS household contributions and subsidies on a per capita basis. We made assumptions about the growth of supply-side subsidies and assumed the MA budget had grown in line with the number of counties covered.

Our estimates suggest that NRCMS total rural health spending and out-of-pocket payments have both continued to grow since the introduction of NRCMS, but at a slower rate. The share financed out of pocket has fallen from 80 percent to 69 percent during the period 2004–06, reflecting the expansion of NRCMS coverage and the more generous subsidy level in 2006. The out-of-pocket share

(continued)

Box 5.1 (Continued)

of 69 percent remains high in absolute terms and by international standards. It will likely fall further as NRCMS is rolled out to the remaining counties (80 percent are planned to be covered in 2007, and all should be covered by the end of 2008), but seems unlikely to fall much below 60 percent given present trends. And the fact remains that even in 2005–06, when NRCMS coverage increased by around 20 percentage points and terms became more generous, average out-of-pocket spending by rural households rose by 13 percent, well above the growth rate of per capita income.



Higher Household Contributions

One way for NRCMS revenues to increase would be to raise household contributions. This idea has merit, but it also poses difficulties.

It has the merit of allowing rural households to convert their currently high but very unpredictable out-of-pocket payments for health care into a predictable insurance premium. In 2006, according to the Rural Household Survey, rural households spent on average Y 191 per person on health care. In the poorest fifth of the population, the figure was as much as Y 118. A properly resourced NRCMS, with sufficient revenues

to keep copayments minimal, would enable rural residents to exchange their large but highly unpredictable out-of-pocket payments for a known and stable NRCMS contribution. This is precisely the motivation for insurance: trading a risky and potentially large outlay for a known and regular premium payment. Risk-averse people jump at the opportunity to make such a trade, if the premium they pay reflects the risks involved and the insurer is trustworthy.

But raising household contributions to NRCMS also has disadvantages. One is the risk of adverse selection. This is already evident in NRCMS even though contributions are small and at a flat rate. Enlarging and linking them to income would increase the risk of adverse selection substantially, possibly causing the scheme to collapse eventually. If NRCMS is to be sustainable, larger household contributions almost certainly would require the scheme to be made mandatory. This situation is precisely why social health insurance schemes worldwide are almost always compulsory.

The second drawback involves the impact on equity. Just because the average farmer reasonably could be expected to want to turn uncertain out-of-pocket spending into certain NRCMS contributions does not mean that making everyone pay the same NRCMS contribution would be equitable. Poor rural residents currently pay only marginally less out of pocket for their health care than all but the richest rural residents, making the out-of-pocket payment distribution regressive and hence inequitable. For NRCMS to be considered fair, it would seem highly desirable—if not essential—that the predictable and stable NRCMS contributions which replace the highly unpredictable and uncertain out-of-pocket payments be linked to household income. Enhanced fairness could be accomplished by having the Medical Assistance program pay the contributions of the poor and by linking the contributions of the nonpoor to income.

Paying the NRCMS Contributions of the Poor

Most social insurance systems either exempt the poor or subsidize their contributions. For example, Korea and Taiwan, China, have exemptions or reduced contribution rates for the poor or otherwise disadvantaged (Kwon 2003a; Lu 2005). In the case of Taiwan, China, the poorest 1 percent of households is fully exempt, and a further 4.5 percent have their contributions paid in full or subsidized.

The Medical Assistance scheme is the obvious vehicle for helping the poor with their NRCMS contributions. Indeed, the Medical Assistance program is already used for this purpose. As chapter 3 concludes, however,

Medical Assistance has to be better funded if it is to achieve this objective as well as its other objectives of providing assistance with out-of-pocket expenses to households among the primary target population (Di Bao, Wu Bao, and Te Kun beneficiaries) and households at risk of being pushed into poverty through large medical bills. Expanding the primary target population to include all households living below the dollar-a-day poverty line requires even more resources.

Relating NRCMS Contributions to Income for a Broader Section of the Population

The Medical Assistance scheme thus provides only limited scope for linking NRCMS contributions to income, focusing as it does on the very poor and missing a sizable fraction of the poor. It also leaves open the question of how to link NRCMS contributions to income for the non-poor. This is a hallmark of a social health insurance scheme. Typically, people make contributions that are a fixed percentage of their earnings, up to a ceiling. For the member who draws a salary, the contribution is typically implemented through a payroll tax. For the member who draws a disability or old-age pension from the government, the contribution can be deducted before the pension is paid. The situation is more complex for the self-employed, but most social insurance schemes include at least some of them. However, this is feasible only when the self-employed file tax returns.

What could be done in China? The first option worth exploring is to see what is feasible based on existing data or data likely to exist soon, given current trends. Nationwide household data for rural China—in the form of, say, income declarations for income tax purposes—are unavailable. Various village-level data *are*, however, available. One set comprises village-level incomes reported by village cadres in a nationwide grassroots-based statistical reporting exercise. These figures are, however, unreliable. Village cadres have incentives to inflate their reported local incomes to impress superiors, hit growth targets, and increase their remuneration, which may be linked to progress toward becoming a *xiaokang* (well off) village (Cai 2000). As statistics pass up through successively higher levels of government, officials may inflate them further. This overreporting increases rural residents' tax liabilities. From a statistical viewpoint, the problem comes from the fact that the degree of overreporting is not a given. In some situations, village cadres—often those whose jurisdiction has already become *xiaokang*—will underreport local income, in part to reduce taxes.

A potential alternative data source is the village-level living standards information generated by the process used to designate poor villages. A weighted poverty index (WPI) is constructed from a variety of variables, and villages are ordered according to the index and designated poor or nonpoor depending on the number of poor villages that the local government's budget can support (Wang et al. 2006). As a potential source for constructing a household NRCMS contribution schedule, the WPI data suffer from some substantial shortcomings. The weights and, indeed, the indicators themselves vary across counties so that the scores are not comparable across villages in different counties. The weights are based on a participatory exercise and are highly subjective. Lastly, it seems unlikely that the exercise is conducted for every village, only those that seem potential candidates for being designated "poor."

There is another potential source of local income data, namely poverty maps. These build on census and household survey data to produce poverty and income statistics for small areas. These data, too, have shortcomings, however. To date in China they are available only for Yunnan Province. Furthermore, being based on the census, they are unlikely to keep pace with the rapid income changes currently occurring.

Aside from the disadvantages already discussed, a major drawback of all village-level data is the failure to capture differences in living standards *within* villages. A couple of possible approaches for linking NRCMS contributions to the living standards of individual *households* are worth considering.

One would be to undertake a means-testing exercise across a larger fraction of the population. Means testing is widely used in social programs around the world, mostly to identify households that are eligible for subsidized food, schooling, and health services. Colombia's Sistema de Identificación de Potenciales Beneficiarios de Programas Sociales (SISBEN) index is an example of such a scheme, which has been used in the health insurance regime to make it one of the best targeted of all public subsidies in the country (Escobar 2005). Colombian households wanting to benefit from subsidized health insurance apply to have their means assessed, which involves a government official visiting the house and recording information on 15 living-standard indicators. These include the household's ownership of home appliances, its water source, the schooling-level of its head, its social security status, and its demographic structure. It even includes measures of household income and expenditure (many countries settle for income proxies to create a *proxy means test* instead). These 15 indicators are then aggregated in Colombia through Principal Components Analysis, and

the scores of individual variables are normalized so that the total score lies between 0 and 100. In principle, a similar approach could be used in China for the entire population so that the NRCMS contributions of *all* households could be linked to income.

A means-testing exercise on this scale would be costly, and is unlikely to be considered economical unless other programs could use the data generated, as is the case, for example, in Colombia. An alternative would be to link a household's NRCMS contribution to the rental value or capital value of its dwelling. This would be in line with recent proposals that China reform its existing real estate tax toward one in which the base is defined not in terms of residual value, but in terms of a property's capital or rental value (Ahmad 2006). Such a tax is important to local government revenues in many industrialized countries, and redefining the tax base in this way would raise additional revenues from China's existing property taxes. Survey data from China suggest that basing a household's NRCMS contribution on the rental or capital value of its dwelling would produce a regressive distribution of contributions, but be less regressive than if all households were to pay the same amount. The idea would therefore seem worth exploring, especially since it could be undertaken as part of property tax reform that would benefit other sectors such as education. Implementing such a scheme would require the setting up (or modification) of a valuation register (or cadastre), and while this task is not straightforward, neither is it insurmountable (Ahmad 2006). Tanzania has done so recently, for example.

Larger Government Subsidies to NRCMS

There may be some scope, then, for linking household NRCMS contributions to income beyond the existing Medical Assistance program. The challenges are considerable, however, and the simpler and more obvious strategy is to increase government subsidies to NRCMS.

It is worth putting the current level of government support to NRCMS in perspective. In 2006, government allocated Y 21.5 billion to NRCMS.⁴⁷ This is equivalent to just 0.7 percent of government revenues in 2005 (Y 3,165 billion) and to just 4 percent of the *increase* in government revenues in 2004–05 (Y 525 billion). The case for increasing subsidies to NRCMS is not therefore unreasonable in terms of affordability; possibly even a considerable jump in the NRCMS subsidy could be financed from existing government revenues without raising taxes.

One issue is how much of any increased subsidy should come from central and provincial rather than county governments. A key question involves

intergovernmental equity, which is considered in the next subsection. A second issue that arises is whether any increase in NRCMS subsidies should entail a reduction in budget support to health providers. Should there be, in other words, a shift from supply-side to demand-side subsidies, as is often advocated in health system reform? We deal with this after the question of intergovernmental equity.

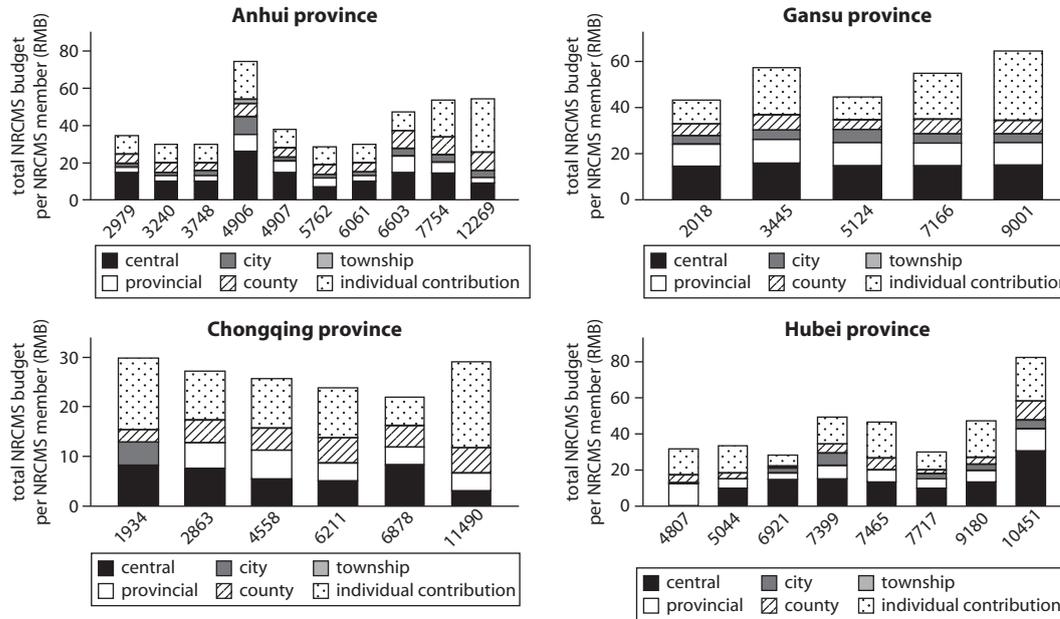
Intergovernmental Equity in NRCMS Finance

China's intergovernmental fiscal system redistributes resources toward local governments with lower fiscal capacity, but it does not equalize fiscal capacity: some local governments, even after the operation of the tax-transfer system, operate with very limited funds. Under the current NRCMS financing system, contributions by county governments do not automatically vary with their fiscal capacity. Richer provinces may have more generous NRCMS schemes, which would be one reason why richer counties might contribute more. And subsidies from central government for NRCMS were targeted on central and western provinces as of 2004, potentially helping to reduce the burden for county and provincial governments in these provinces. In practice, poorer counties within provinces spend similar amounts on NRCMS, and while in some provinces (for example, Chongqing) central and provincial government transfers are targeted broadly on poorer counties, in most provinces this is not the case (figure 5.1). For China as a whole, county contributions are regressive—NRCMS contributions compose a larger share of a poor county's income per capita than of a rich county's. This is shown in figure 5.2, where the concentration curve in the left-hand part lies above the Lorenz curve for income, and where NRCMS contributions—as a share of GDP per capita—decline with income per capita in the right-hand part.

Especially if NRCMS budgets are to increase, it seems desirable to find a way to link county government NRCMS contributions more closely to their fiscal capacity. One obvious option is to keep the county government contribution low, and have provincial governments and central government largely finance NRCMS. Another is to target central and provincial government subsidies more tightly on poorer counties. Both will help ensure that the NRCMS contributions of poor counties remain affordable to them.

A less obvious option is for provinces to raise more resources from the richer counties than are required to finance the NRCMS there, using “surplus” revenues to help subsidize contributions from the poorer counties.

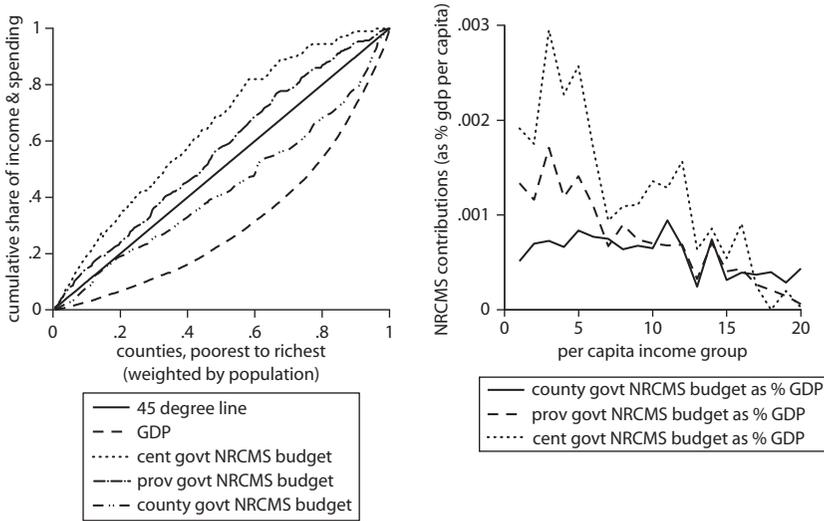
Figure 5.1 Provincial and Central Government Subsidy Allocations across Counties within Selected Provinces



Source: Authors' tabulations of data collected through a Government of China–World Bank 2005 survey of NRCMS programs.

Note: From institutional data from 189 counties (2005 NRCMS survey); counties sorted by GDP per capita.

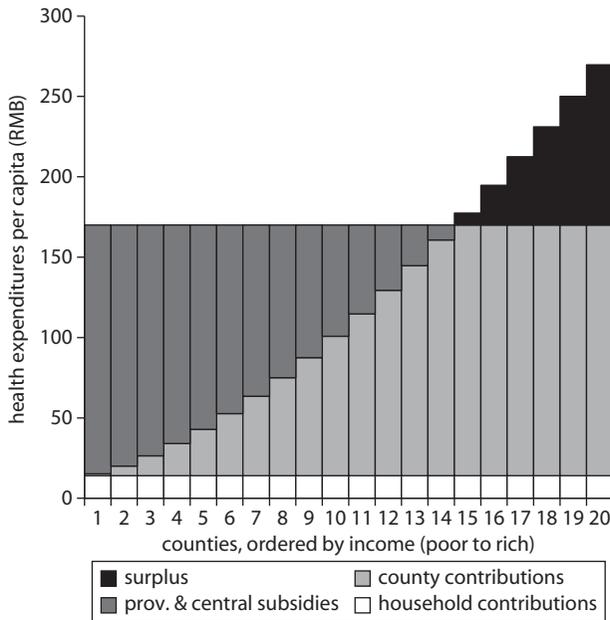
Figure 5.2 Inequality in County Government NRCMS Contributions



Source: See figure 5.1.

Figure 5.3 shows a hypothetical example in which households in all counties of a province—whether poor or rich—pay the same flat-rate contribution. Richer counties pay more per capita toward NRCMS than poorer ones. In this example, strict application of the schedule linking county contributions to county fiscal capacity would result in the richest six counties raising more revenue than is necessary for the NRCMS budget. The excess is marked “surplus” in the chart. The other counties all end up with a shortfall from the NRCMS budget after household and county government contributions have been added together. The shortfall is most pronounced for the poorest county, and grows smaller the richer the county is.

One approach is to leave the surplus in the hands of the county in question, in effect imposing a ceiling on county contributions once the necessary budget for the county has been reached. The provincial government must then rely on its own revenues and central government transfers to plug shortfalls from the NRCMS budget. The other extreme—a second option—is that county contributions are not capped and contributions are *pooled* at the provincial level. In this case, the entire surplus from richer governments could reduce the subsidies from higher-level governments or increase the size of the NRCMS budget for all counties. An intermediate

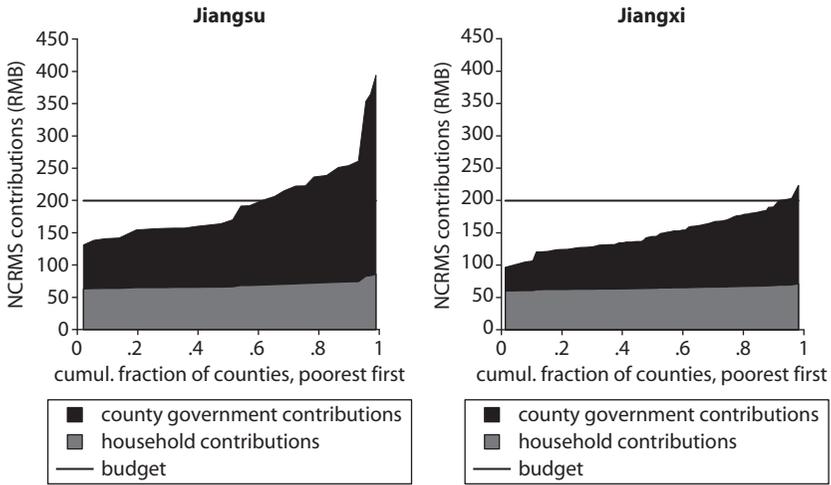
Figure 5.3 Making the Financing Mix Fairer for County Governments

Source: Authors.

position—a third option—is to shift *only part* of any surplus contributions from richer counties toward poorer ones. The remainder would be returned to the surplus counties, allowing them to reduce taxes or increase spending on NRCMS or other programs. This amounts to creating a *solidarity fund*, financed by rich counties, and used to help finance the shortfalls of poorer counties.

The choice among the three options—no solidarity beyond targeted transfers; no cap on contributions and complete pooling; and a solidarity fund entailing less than 100 percent pooling—will matter more in provinces that have large income disparities across counties, and where the richer counties are rich in absolute terms. Figure 5.4 illustrates this, using as examples Jiangsu (a relatively affluent province bordering Shanghai whose counties vary considerably in their income) and Jiangxi (a poorer landlocked province with a much more equal income distribution). The household contributions shown illustrate what might be raised by a scheme that links household contributions to income. For illustrative purposes, county government contributions are set at 1.75 percent of GDP per capita, with no contribution ceiling imposed. In Jiangxi, the

Figure 5.4 “Surplus” Contributions in Jiangsu and Jiangxi Provinces



Source: Authors.

poorer and more equal province, county contributions range from Y 36 to Y 152. By contrast, in Jiangsu, the richer and less equal province, they range from Y 67 to Y 307. Suppose the NRCMS budget were set at Y 200. Then Jiangsu could have enough surplus contributions from its richer counties (combined household and county contributions in excess of Y 200) to fund the entire budget shortfall of its poorer counties. If the pooling policy were in operation, no transfers from higher-level governments would be needed. Even putting only a fraction of the surplus into a solidarity fund would reduce substantially the need for higher-level government subsidies. In Jiangxi, by contrast, the surplus revenues from contributions are tiny, and even under a full pooling policy, the vast bulk of the shortfall among poorer counties would need to be met from higher-level government transfers.

China will want to consider other issues in deciding among the three approaches to solidarity. One is the implication for the amount of subsidies required from central government. No solidarity beyond targeted transfers is most costly in terms of central government subsidies. The full pooling option is least costly. Central government has a stake in which option is selected, of course, because the further a province moves toward 100 percent pooling, the more resources it has available for redistribution so that poorer counties are asked to pay only what they can afford, and the lower the subsidies required from central government. Central government

reasonably might take the view that provinces like Jiangsu with above-average incomes and large inequalities across counties could be asked to generate sufficient surplus contributions from their richer counties to finance the necessary transfers to their poorer ones. That would leave central government free to target its resources on provinces like Jiangxi whose below-average incomes and flatter income distributions leave limited scope for redistribution even with full pooling.

In choosing among the different approaches, China may find it useful to draw on its experience in other sectors, as well as on the experience of other countries with health insurance. For pensions and unemployment insurance, pooling in China occurs at the subprovincial level. This strains local government finances, necessitating transfers from provincial and sometimes central government to assist schemes running deficits (Ter-Minassian and Fedelino 2006). Provincial-level pooling has been advocated, but to date efforts in the northeast to do so have been unsuccessful.

When it comes to health insurance schemes, the experience of other countries with a range of risk profiles and resources shows they often have started with the solidarity fund option rather than pushing immediately for full pooling. One approach to implementing a solidarity fund is to add a percentage point or two to the contribution of those in the better-off schemes and use this "tax" to supplement contributions in the poorer schemes. Colombia's one percentage point *punto de solidaridad* (solidarity point), which is added to contributions of those in the contributory scheme to help finance the noncontributory scheme, was mentioned in the previous chapter. There are other ways to implement the halfway-house solidarity fund approach. In Slovakia's new system, the 2004 Health Insurance Act mandates that 86 percent of contributions be pooled (Colombo and Tapay 2004). In the Netherlands, members of each health insurance scheme pay a contribution directly to their scheme (flat-rate within a scheme, but varying across schemes) and also pay an income-related contribution to a central fund. The contributions to the central fund pool are then reallocated to different schemes, using a weighted capitation formula that gives greater weight to women than to men, to sick than to healthy people, and to elderly than to young people. In Japan—where over 5,000 different plans operate within a national insurance program, each with vastly different risks and resources—the government uses a health insurance fund to redistribute from low-risk, high-income funds to high-risk, low-income funds (Ikegami and Campbell 1999).

While the details differ, the common thread among the Colombian, Slovakian, Dutch, and Japanese examples is that the better off (or people in the better off or less risky schemes) pay slightly more than is required to finance the mandated level of cover, and the surplus is used to help finance health insurance for the less well-off. None of the countries, however, completely pools contributions. Countries *with* pooled contributions typically have brought different health insurance schemes into a universal program with common coverage. Sometimes, the different schemes remain intact, while in others they have been amalgamated into a national scheme. Korea is an example of the latter: in 2000, 350 schemes were merged into a single scheme (Kwon 2005). Some countries have then transitioned from the amalgamated social insurance model to a tax-financed model, or are moving in that direction. Spain switched in 1989, and Germany recently embarked on that course.⁴⁸

Redirecting Supply-side Subsidies Toward NRCMS, and Making them Fairer

How much should any increase in NRCMS funding be at the expense of supply-side subsidies, that is, subsidies to providers that are linked to facility and population characteristics (such as bed stock and population size) rather than to levels of activity (such as discharge of certain public health functions, or the number of children immunized)? In light of the evidence presented in chapter 2 that government subsidies to the health sector in China favor the well off, the question also arises of how to make retained supply-side subsidies pro-poor, or at least less pro-rich?

Many policy objectives underpin supply-side subsidies. For instance, compensating providers for treating poor patients provides limited in-kind insurance against large medical bills by enabling hospitals to charge lower fees. However, recognition is growing that some of these goals could be better achieved through a demand-side subsidy—that is, by redirecting the money to the Medical Assistance program and the NRCMS. One important benefit of doing this is making it easier to hold providers accountable for achieving intended policy goals. It also would have an equity payoff. Many of China's supply-side subsidies go to urban hospitals that are likely to be heavily used by relatively affluent members of Basic Medical Insurance, who may well benefit from lower costs (lower copayments and possibly lower BMI contributions as well). If the money were redirected toward NRCMS, and its subsidies were targeted on poorer counties, benefits would be more likely to reach those who need them most.

Not all supply-side subsidies should, however, be redirected to the “demand side,” or at least not to NRCMS. It is important that institutions with public health responsibilities have sufficient resources to deliver or purchase key interventions. Currently, around Y 15–20 per person is spent by government on public health in rural areas, with nearly the same amount financed out of pocket.⁴⁹ Chapter 7 discusses government expenditures on public health in some depth; suffice it to say for the moment that a reasonable share of the government’s total health expenditure ought to be put aside for public health, and not transferred directly to NRCMS.

Arguably, supply-side subsidies for equipment purchases and construction—that is, capital expenditures—also should be kept, at least for the time being. In the United States, it took a decade for capital costs to be included in Medicare’s DRG system (Eggleston and Hsieh 2004), and countries with advanced social health insurance systems like the Netherlands are still struggling with how to do it. This is coupled with the fact that policy makers are naturally nervous about closing facilities. The fact that recurrent and capital budgets cannot rationally be divorced from one another altogether probably explains, at least in part, why redirecting supply-side subsidies toward the demand side, in practice, takes time. In Colombia, for example, despite the fact that such a shift was an explicit policy objective of the 1993 reform, the shift has been slow.

A final reason often given for retaining supply-side subsidies is to cover fixed costs that cannot be avoided. The obvious example is the cost of paying the salaries of retirees. Ideally, however, proper pension arrangements will be made to handle these costs, which can then be passed on to another government budget. Clearly, in such cases, if the costs are passed on to other budgets, it is likely there will need to be at least some contribution from the health budget. Ideally, however, these would be one-off payments, perhaps subsidized by central government.

Converting NRCMS into a “Purchaser”

Expanding the NRCMS budget is a necessary condition for making health care more affordable in China. But it is not a sufficient one. NRCMS needs to do more to address a key reason why health care is becoming unaffordable, namely the tendency of providers to think more about financial returns than patient needs in deciding what kind of care to deliver. Schemes need to change how they interact with providers,

becoming proactive purchasers of health care on behalf of their members, rather than being passive bill payers, finding ways to cajole providers into efficiently delivering appropriate care. The effectiveness of NRCMS as a purchaser will depend on its ability to coordinate with the local Bureau of Health (BOH) in the case of providers in townships and villages (where the BOH currently performs a significant financing and oversight role) and with BMI in the case of county and higher-level hospitals. These issues are addressed more fully in chapter 6, which examines service delivery in depth.

Switching from Fee-For-Service

At its core, turning insurers into purchasers means having them switch provider payment mechanisms from one that encourages oversupply of expensive treatments and low quality to one that encourages cost-effective quality care. The oversupply of expensive care in China is attributable principally to two interlocking facts: providers are paid largely via fee-for-service; and fees are disproportionately higher for drugs and high-tech care, allowing providers to make a profit on these services and forcing them to take a loss on more-basic care. This tilted fee structure was intended to allow providers to earn profits that would cross-subsidize the costs of delivering basic care, enabling a government with limited revenues to restrict its budget outlays. In practice, a perverse incentive structure has emerged that encourages providers to shift demand from treatments on which they earn low or negative margins to those that yield positive margins.

Health insurers have the power to change this. And in places they already are doing so. Some NRCMS schemes have established fixed charges for 40 or so conditions and use these to remunerate township health centers and county hospitals (rates are higher for the latter). Some have capitation or salary payments for outpatient care. Many BMI schemes are already well down this road, some using case-based compensation methods such as diagnosis-related groups to incentivize better performance. There is considerable scope for developing and extending the use of payment methods that discourage providers from oversupplying care, and encourage cost control and quality improvement.

Leveraging Better Performance Through Contracts

Changing how providers are paid is one way health insurers can become true purchasers. There are others. Among them is the power to improve performance through contracting. Most schemes already have established

contracts with providers, specifying the package of services to be delivered, payment methods, quality standards, drug lists, and other items. Some contracts include provisions for terminating the agreement if, for example, patients were not charged in accordance with the established price schedule. Contracting allows insurers to establish minimum standards—in terms of staff qualifications and infrastructure—that must be met before a provider can work with the scheme. Insurers also can establish service-specific standards whereby providers are reimbursed for particular services only when performed by staff with adequate qualifications and in a manner consistent with established practice protocols and prescription guidelines. NRCMS also can create incentives for a reorganization of service delivery arrangements to better match provision with capabilities. There may be room for improving efficiency and quality by having more primary care delivered by township health centers, and reducing the role of THCs in surgery and other specialist care. Insurers have the power to influence whether such reorganization occurs and how fast.

In short, insurers not only can influence—but *already are influencing*—which services get delivered by whom and at what quality. The challenge is to build on the experiences in China and elsewhere, with schemes that are in the vanguard, distilling lessons that others can use to improve their purchasing capacity.

What Should Be Covered?

It is useful to separate health care interventions and activities into five groups as in table 5.1. General revenues are the natural financing source for population-oriented public health activities—such as surveillance—that are public goods. These activities need to be delivered largely by a dedicated local public health agency such as the Center for Disease Control. It makes sense for that agency also to oversee delivery of personal public health interventions—such as immunizations, treatment of infectious diseases, and similar activities—that are associated with externalities, though it does not need to deliver them; that task can be left—for the most part—to regular providers. These interventions ought to be financed through general revenues. Reliance on out-of-pocket payments will result in levels of coverage that are too low in that they reflect the costs and benefits only to the individual receiving them, not the benefits accruing to the wider community. Whether the Center for Disease Control should be the *purchaser* of personal public health interventions is

Table 5.1 Proposed Financial, Purchasing, and Delivery Responsibilities by Intervention Type

<i>Intervention</i>	<i>Financing</i>	<i>Purchasing agency</i>	<i>Delivery</i>
(1) Population-based “public good–type” public health interventions (e.g., surveillance)	General revenues; no copayments	CDC, in collaboration with service providers	
Cost-effective and commonly required personal interventions	General revenues; no copayments	CDC, or NRCMS under contract to CDC	Village clinics, THCs, hospitals (county level and above), and potentially private providers
(2) Public health interventions (those with appreciable “externalities,” e.g., immunization)			
(3) Purely “private” personal interventions (e.g., cesarean section, appendectomy)	NRCMS revenues (contributions, subsidies) and limited copayments	NRCMS	private providers
(4) “Catastrophic” personal interventions, of low cost-effectiveness	NRCMS revenues (contributions, subsidies) and copayments	NRCMS	THCs, hospitals (county level and above), and potentially private providers
(5) Other personal interventions not covered by NRCMS	Out-of-pocket payments, private insurance	Private insurance if any	THCs, hospitals (county level and above), and private providers

Source: Authors.

debatable. It could be. But it might make more sense to delegate this task to NRCMS, which would receive a capitation fee for doing the job. The Center for Disease Control would, however, need to monitor NRCMS’s performance closely. After its reform in 1993 shifted subsidies from the supply side to the demand side, Colombia found that health insurers who had been charged with certain public health responsibilities in exchange for higher demand-side subsidies failed to ensure that the intended interventions were actually delivered (Arbelaez et al. 2004; Escobar 2005). Purely personal health care interventions—including those that are financially catastrophic—would be covered by NRCMS, or left uncovered, or covered by a private insurer. They would be delivered by regular providers, and financed out of NRCMS revenues and copayments, out-of-pocket reimbursements, and health insurance premiums, if applicable.

Tough decisions will need to be taken on allocation of resources across categories. The government must decide how much funding to devote to public health and how much to devote to subsidizing NRCMS. The CDC will have to decide how much to allocate to population activities and how much to personal public health interventions. NRCMS will need to decide how much to allocate to cost-effective “private” personal health services and how much to less cost-effective catastrophic interventions. Resources will be insufficient to finance everything under each heading, and some interventions—including for public health—will be left uncovered. Each case, therefore, requires prioritization. Chapter 7 takes up the case of prioritization in public health activities and interventions—between population and personal activities, and within each category. This chapter discusses prioritization vis-à-vis different types of “private” health services.

How much should central and provincial government be involved in design of the benefit package? Allowing benefit packages to be chosen locally has the advantage of ensuring that they reflect local preferences and needs. However, two main reasons justify higher-level government involvement, possibly to a significant degree. First, without a system that holds local government accountable to the local population, officials can be expected to focus on services, diseases, and interventions that disproportionately affect them, the people they report to and whose support they require, and the people who live and work in the same milieu. This could lead to more emphasis being placed on interventions relevant to better-off urban dwellers and less emphasis on those relevant to the rural poor, even if the latter are more cost-effective. Second, benefit package design is highly technical, requiring intensive analysis of epidemiological and financial data. Governments often rely on national and international experts for help with this task when it is particularly complex. Although provincial-level institutions will be capable of providing technical leadership and ensuring that benefit packages have broad-based benefits in most instances, central level institutions may have a residual role to play in backup support.

Striking a Balance Between Catastrophic and Noncatastrophic Interventions

NRCMS emphasizes reimbursement of expenses incurred for inpatient care. Is this the best use of resources? An argument can be made for greater focus on cost-effective personal interventions, many of which are not expensive. This clearly makes sense if the scheme's only goal is

to improve health outcomes with a fixed budget. But what if financial protection is also a goal? That would call for focusing on (effective) interventions with potentially catastrophic financial consequences, whether or not they are cost-effective. And since cost-effective interventions *are* cheap, the reasoning goes, people should be able and willing to pay for them out of pocket (Filmer, Hammer, and Pritchett 2000). Such interventions might be subsidized for the poor, especially if demand for them is very sensitive to price. That does not necessarily mean inclusion in an insurance service package—a scheme could be designed (such as Medical Assistance) to help the poor with the costs of these interventions. Yet limiting insurance coverage to hospital care carries the risk that people may delay seeking medical attention until their condition becomes sufficiently serious to require hospitalization, though how often such behavior happens in practice is unclear.⁵⁰

Focusing on cost-effective interventions and leaving catastrophic interventions uncovered also runs the risk that providers will shift demand from the former to the latter. This is especially likely if providers are paid by salary or budget for covered cost-effective interventions and by fee-for-service for uncovered catastrophic ones. Korea's experience in this regard is relevant. When introducing universal health insurance (UHI), Korea opted for narrow but deep cover—a very limited benefit package of services but very limited copayments on those that were included (Kwon 2003a and 2003b; Kwon and Reich 2005). Even some quite common but expensive high-technology services fall outside the country's UHI benefit package. The prices and delivery of uncovered services are largely unregulated, and unsurprisingly the evidence suggests that providers have responded by generating demand for them. Almost 50 percent of total health spending in Korea is still paid out of pocket, despite universal coverage. Nearly half of those out-of-pocket expenses are for uncovered services. For inpatient care, the figure is 60 percent. Not surprisingly, the incidence of catastrophic care spending in Korea is (after Vietnam and China) one of the highest in East Asia (Van Doorslaer et al. 2007).

In sum, the case for including catastrophic coverage in the package rests on two arguments: it is precisely such care that is risky to households from a financial perspective and therefore requires insurance; and leaving it uncovered and unregulated, as previously noted, runs the risk of providers generating demand that runs up exorbitant costs without necessarily improving the quality of health. Should basic cost-effective care therefore be outside the package to conserve resources for catastrophic

interventions? Not necessarily. One reason for including it, even if patients are asked to pay a high share of the cost, is that regulation of service delivery (assuring quality, reducing supplier-induced demand, and so forth) is better when an insurer acts as an agent for the patient than having the patient and government try to monitor on their own the quality of uncovered services. The insurer also is in a better position than a regulator to prevent the moral hazard of people delaying health care until hospitalization is required. And the insurer is better positioned to liaise with the Center for Disease Control when difficulties arise in deciding whether or not a personal intervention is “public.”

The gist of these arguments is that it makes sense for NRCMS to include *both* catastrophic *and* basic personal interventions. Since the insurance case is stronger for catastrophic than for basic personal interventions, the fraction of the cost paid by the patient generally should be lower for the former than the latter. The exceptions would be (a) personal public health interventions that are subcontracted to NRCMS by the Center for Disease Control, which should be free; and (b) basic interventions for the poor, which for equity should be free or close to it.

The proposed approach to coverage responds to China's understandable desire to balance the goal of better health against that of financial protection, and factors in the often-overlooked point that many cost-effective interventions are cheap and do not require insurance. The recent experience of another country provides some perspective. Mexico, through its Seguro Popular health insurance program for informal workers and the rural poor (Knaul and Frenk 2005), decided to divide its budget between frequent high-probability treatments associated with relatively low financial risk and infrequent low-probability events associated with potentially catastrophic financial consequences (see box 5.2). In contrast to what is being proposed here for China, the Mexicans decided to devote only 10 percent of their budget to the latter and to provide zero coverage (that is, 100 percent coinsurance rates) for uncovered items. Even if the template for comparison is far from perfect, the Mexican experience offers insight for China in assembling data on cost-effectiveness and catastrophic health spending.

Setting Copayments

Within each category of intervention, it will be essential, given a limited budget, to differentiate the generosity of coverage. Category (2) in table 5.1 is, of course, the exception, the proposal being that these be

Box 5.2**The Benefit Package in Mexico's Popular Health Insurance Program**

Mexico recently confronted the benefit package design issue in its Popular Health Insurance program (OECD 2005b). The program was part of a broader reform that supported increased spending on public health and community health services. Within Popular Health Insurance, the Mexicans decided to focus the bulk of the budget (around 90 percent) on frequent high-probability treatments associated with relatively low financial risk, and the rest on infrequent low-probability events associated with potentially catastrophic financial consequences. Included in the noncatastrophic component of the insurance package are 165 drugs and 91 medical interventions judged to be essential and cost-effective, which together account for 85 percent of medical services delivered in Mexico. These are provided free of charge at the point of use. Six high-cost-treatment diseases currently are included in the catastrophic component, though the government is committed to further expansion as resources become available and after cost-effectiveness and social acceptance criteria have been met.

free of charge and financed out of general revenues. Some cost-effective interventions are more cost-effective than others; those that are less cost-effective should attract a higher coinsurance rate. Some potentially catastrophic interventions are more catastrophic than others; arguably, only those that have the most catastrophic consequences ought to be totally free or nearly so, while those that are less catastrophic should require some copayment. Keeping this differentiation relatively simple makes sense—the current system of copayments is extremely complex and not well understood by NRCMS members. It might be possible to move to just two tiers within each of categories (3) and (4), with a higher rate for noncatastrophic interventions. Given the earlier discussion, it might make sense to choose the various coinsurance rates and the dividing lines between the low and high tiers such that the bulk of NRCMS outlays go to catastrophic care.

A key goal should be to keep copayments low. In Japan, Korea, and Taiwan, China, coinsurance rates for hospital care are between 10 percent and 20 percent. Since the effective coinsurance rate on inpatient care (taking into account deductibles and ceilings) is currently around 70 percent in China, moving to those much lower rates would be a major

achievement. Doing so will entail big increases in the NRCMS budget—an issue discussed at length below. It would also make sense to eliminate or raise reimbursement ceilings. Present schemes in rural (and urban) China are geared toward limiting the insurer's liability (the insurer will reimburse expenses only up to a ceiling). This leaves the insured at risk of large out-of-pocket expenses. This practice is particularly common in medical savings accounts schemes. However, outside China—except in Singapore (Hsiao 1995; Nichols, Prescott, and Phua 1997)—typically the insured's liability is limited. It is highly desirable that this be the future practice in China. One possibility would be to limit the insured's liability for copayments to the equivalent of 10 percent of national (or provincial or county) per capita income. Japan, Korea, and Taiwan, China, all cap copayments for insured services. In Japan and Korea, the cap applies to spending over a six-month period rather than a year, and in Japan and Taiwan, China, the cap is around 10 percent of average income.

Linking copayments to income is also desirable because the demand for health care by the poor is more sensitive to price than is demand by the better off. Korea and Taiwan, China exempt the poor from copayments, and Japan has a lower copayment cap for low-income households. The obvious mechanism for China is to have Medical Assistance pay the NRCMS copayments of Medical Assistance beneficiaries—in some counties, this already happens, and in some, Medical Assistance picks up only some of the copayments. Linking copayments to ability to pay for people not eligible would be desirable but also administratively more cumbersome. There is also a case within NRCMS for exempting certain groups—people who regularly require expensive medical treatment, the elderly, and children, among others—as happens, for example, in Korea and Taiwan, China.

Partly for simplicity, but also to promote financial protection, it would be worth considering the abandonment of medical savings accounts. These became popular in China's BMI scheme, and now have become a feature in most NRCMS schemes as well. Yet little evidence from China or elsewhere demonstrates that they have achieved their intended effects. By contrast, evidence of negative side-effects does exist (box 5.3). Simpler approaches to demand-side cost sharing along the lines practiced in Japan and Taiwan, China, seem advisable. They would have the added attraction of being more easily understandable by users. Even Singapore's population—which has two decades of experience with medical savings accounts and is highly literate—appears to

Box 5.3**Medical Savings Accounts in China and Singapore**

A major argument of medical savings account proponents is that the accounts will put downward pressure on costs by encouraging patients to reduce excessive expenditures. In actuality, any downward pressure on costs that has occurred since China introduced MSAs appears to have come from the supply-side cost sharing that was adopted when it became apparent that MSAs (a demand-side cost-sharing measure) had not cut expenses (Cai, Wan, and Wang 1999). This experience is consistent with that of Singapore, which resorted to capping annual hospital revenue growth after costs steadily soared following introduction of MSAs (Hsiao 1995; Nichols, Prescott, and Phua 1997). While MSA benefits have proven elusive, certain potentially negative effects have become apparent. There is evidence that the urban insurance reforms in China led to patients substituting outpatient for inpatient care, with the poor substituting the most (Liu, Cai et al. 1999 and 2002). This may or may not be good for health outcomes—regrettably no evidence is available—but there is clearly potential for negative health effects. What is known is that household out-of-pocket spending increased as the result of China's urban health insurance reforms, with all income groups experiencing similar proportionate increases (Liu, Zhao et al. 2003). Because MSAs in China have expenditure caps, as they do in Singapore, the incidence of catastrophic out-of-pocket spending likely will have increased—perhaps substantially.

understand little about the workings of their medical savings account scheme. As a result, patients make health care decisions that were unintended by the designers of the scheme, including excessive use of luxurious services because they believe the government will retain for itself unspent savings account funds (Phua 1997).

The Dilemma of Uncovered Services

The government must decide the optimal way to approach services not covered by NRCMS. There is no right or wrong way. How policy makers approach the subject is likely to depend on the importance they attach to equity (should people be allowed to use their income to get better or more expensive care if they want?), on their view about the information asymmetry between patient and provider (are patients like consumers in other markets or does their lesser knowledge of medical matters leave them vulnerable to demand inducement?) and on their perception of

how easy it is to regulate a market for uncovered services to promote equity and limit demand inducement.

One possibility is to frame the issue in terms of what to cover at the taxpayer's expense and allow the market to resolve the rest. Patients who can afford services not in a public plan should, it is argued, be allowed to purchase them, either out of pocket or through complementary private insurance. The market determines who receives uncovered interventions; private insurance and private providers open and close in response to market demand; and the market determines prices. The government's role in this scenario is to regulate providers and insurers and to license new drugs and equipment. There is a serious risk with this approach that patients end up getting care and tests that are not strictly necessary, medical costs are driven upwards quickly, and a gap emerges between those who can afford uncovered services and those who cannot.

Korea's experience shows the risks of this approach. Providers have an incentive to shift demand from covered to uncovered services—and in Korea appear to have done so. Given that Chinese providers apparently have shifted demand from low-margin to high-margin care under the current distorted price schedule, this is a serious risk for China. Even the poor could end up being convinced by providers—who may be well-meaning—of the need for treatments not on the NRCMS list of covered services. If private insurance is allowed to cover the uncovered services, health care providers and private insurers will have a mutual incentive to drive up the demand for both the uncovered services and the complementary private insurance to obtain them, as well as to press for rapid licensing of new drugs and equipment to keep adding items not on the NRCMS list.

Another approach is to opt for much broader coverage of services in the public scheme and levy copayments on the less catastrophic and less cost-effective items to ensure that the scheme remains affordable, in the hope that the market for uncovered services will be small enough not to worry about. This is in effect what countries like the United Kingdom do. A more extreme position is to impose restrictions on what patients can purchase out of pocket (perhaps even banning out-of-pocket payments for uncovered services altogether), and limit (or even outlaw) private insurance. Japan has gone for the more extreme version of this latter approach, though moves have been taken recently—opposed by the national medical association and the health ministry—to allow patients to pay privately for items not covered by the social insurance scheme (Nomura and Nakayama 2005).

Strengthening Management and Governance

Unlike BMI, which is the responsibility of the Ministry of Labor and Social Security (MOLSS), NRCMS is an initiative of the Ministry of Health. Typically, the responsibility for NRCMS at county level is then assigned to the local Bureau of Health, which typically manages NRCMS as well, often relying on township health centers to reimburse patients. The experiences of other countries, and indeed of different parts of China, are worth consideration when thinking about the governance and management of NRCMS.

Managing NRCMS

Developing competent management in NRCMS is a challenging task, as comparisons with the Basic Medical Insurance plan indicate. BMI typically covers about 10,000 members at the county level, albeit with a more generous benefit package. Each county might have as many as 15 full-time staff. NRCMS, by contrast, is expected to cover an average of 250,000 members per county, and is also more complex in many respects. Its members are likely to be more heterogeneous than BMI members in their health conditions and geographical locations. NRCMS involves a more complicated fund-collection process than does BMI, which collects contributions through a payroll tax. NRCMS also has to deal with a more diverse set of providers.

BOH staff, unlike the staff of the typical bureau of social security, have little experience of running a health insurance scheme. The necessary qualifications, skills, and practice in actuarial sciences, social security management, and so on are likely to be largely absent among health sector personnel in a typical BOH. One approach being explored in 17 pilot counties—mainly in Zhejiang, Jiangshu, and Fujian provinces—is to rely on expertise from commercial insurance. The commercial insurer manages the NRCMS fund, reimburses patients, and in some cases also collects the funds and assumes the risk. No evidence seems available thus far to indicate whether the experiment has been successful or not.

Another option is to have NRCMS managed by the team in the bureau of social security responsible for managing BMI. This would pave the way for eventual merger of the two programs into a unified health insurance scheme. This already has happened in some parts of China (box 5.4), with joint management being the first step in the process. Such a merger would likely yield considerable savings in administrative costs both in the organization of health insurance (large economies of scale are probable)

Box 5.4**Merging of NRCMS and BMI**

In Shanghai, some NRCMS pilot counties have already merged with BMI. Jiading District is a case in point. Initially, the rural residents' scheme and the BMI were jointly managed. Subsequently, however, steps were taken toward a merger, albeit with somewhat different benefit packages. Financing for Jiading's scheme comes from individuals (49 percent), collectives and enterprises (38 percent), and township and district government. Total funds raised amount to Y 267.5 per capita. The collection and management of the fund is executed by the Bureau of Social Security, and done in conjunction with the pension fund (that is, the contributions are collected at the same time and managed together). The district divided the fund for its "rural residents' medical security system" into three parts: individual savings accounts (for clinic reimbursement), a pooled township hospitalization fund, and a district pooled hospitalization fund. A farmer who suffers serious illness or injury can be reimbursed as much as Y 50,000. Jiading rural residents are reimbursed only 10 percent less than Shanghai's BMI members.

Source: Mao 2005.

and in health care delivery (streamlined billing procedures, for example). This was the experience of Taiwan, China when it merged three schemes into a single scheme (Lu and Hsiao 2003). It was also the experience in Korea, where extensive—though less than anticipated—downsizing was achieved as the result of the merger of multiple insurance schemes (Kwon 2003a). On top of savings in administrative costs, a single payer has considerably more bargaining power in negotiating fees and reimbursement rates vis-à-vis providers. In Taiwan, China, the merging of insurance schemes paved the way for substantial changes in the ways providers are paid—changes that would have been harder to implement with multiple plans (Lu and Hsiao 2003).

Governing NRCMS

Besides the concern about NRCMS management, whether or not it is done by the same team that manages BMI, one must also consider the issue of the scheme's governance. Currently, NRCMS lies firmly under the control of MOH/BOH. Yet MOH/BOH has a tangle of other responsibilities, including managing government health providers, being steward of the overall health system, and participating in government

regulation of private providers. It would make sense to have these three functions—insurer, provider, and regulator/steward—performed by separate government departments or agencies. It is easier for an entity independent of the provider network to become a genuine purchaser of health care for its members, contracting with health care suppliers to reduce costs and raise quality, and championing the interests of the insured (see chapter 6 on purchasing). This does not mean that the insuring agency should be free to decide whatever it likes—far from it. Most governments have a strict set of rules defining the parameters within which the agency operates, as well as a governance structure that ensures adequate oversight by government and other stakeholders. Provider interests are represented within this structure, but at the end of the day the interests of the enrolled households must dominate. Recent studies of health insurance governance arrangements in Costa Rica and Estonia provide useful lessons for China (box 5.5), offering a range of comparison, since Estonia has a much firmer split than Costa Rica between the insurance/purchasing agency and providers.

Box 5.5

Health Insurance Governance in Estonia and Costa Rica

The Estonian Health Insurance Fund (EHIF) operates as a legally independent public entity with the right to enter into contractual arrangements with providers. The EHIF is supervised by a 15-member tripartite supervisory board (chaired by the Minister of Social Affairs), with board positions divided evenly (five each) among state, employer, and beneficiary representatives. While the fund has the autonomy to contract with providers, the government and the EHIF board maintain a supervisory and participatory role in the following domains: establishment of the system's objectives and principles, contributions definition and coverage, copayments, the benefit package, provider payment methods and prices, contracting principles, waiting-time limits, and budget. EHIF owns its own assets and, within its defined operational parameters, is liable for its obligations except insofar as deficits are caused by the decisions of others. The EHIF Management Board presents quarterly overviews to the Supervisory Board, which, in turn, presents an annual report to the government. The Management Board's prioritization of increased transparency and efficiency has not gone unnoticed, as evidenced by the *EHIF Annual Report* receiving the Public Sector Transparency Award for three years running.

(continued)

Box 5.5 (Continued)

Several characteristics of the Estonian social health insurance system contribute to its success. The combination of EHIF's legal status as an autonomous entity and solid regulations fosters an environment conducive for purchasing services. While the Supervisory Board has a very narrowly defined role, its existence buffers EHIF from government and provider actions. Strong government commitment to EHIF and to conservative fiscal policy has helped Estonia steer clear of health insurance deficits. Negotiated contracts are the most effective means for EHIF to reach its targets and contain costs. The development of EHIF's transparent reporting and management system was supported by public pressure and hard budget constraints.

Costa Rica has a single mandatory health insurance fund known as the Caja Costarricense de Seguro Social (CCSS) that supports universal coverage in health care provision. The fund has a board of directors, with representatives from government, employers, workers, and physicians. Beneficiaries are not represented. The CEO of CCSS is appointed by the country's President. The Costa Rican system does not have a separate supervisory body for oversight. The CCSS board of directors has the power to change fees paid to providers and exclusive power to define user protection regulations. The CCSS determines its internal regulations based on government objectives and has some power to carry out sanctions against offending providers. Because providers are a part of CCSS, the fund's capacity to regulate providers is somewhat weak; although a Management Agreement is in place, costs have still escalated. The lack of a purchaser-provider split is highlighted by a case of corruption between the CEO of the CCSS and a CFO of a major medical supplier.⁵¹ CCSS appears to have limited domain over any code of ethics or anticorruption regulations and essentially has no authority over setting benefit packages, which are under the auspices of Costa Rica's Constitutional Court.

Source: Savedoff and Gottret 2008.

Especially in view of the management challenges discussed above, China might want to consider a dedicated autonomous government health insurance agency to run both NRCMS and BMI (and eventually a unified scheme), rather than have one of the existing program administrators (NRCMS or BMI) do so. A question that arises in China's decentralized governmental system is at what level this agency should operate. Internationally, the trend seems to be toward centralization of insurance agencies. Estonia, for example, started with several separate

regional health insurance agencies, which were supervised by a national umbrella agency. Subsequently, the national agency assumed responsibility for the country's entire health insurance program, and the regional agencies were turned into regional offices of the national agency. This process resulted in economies of scale.

In China, a dedicated health insurance agency should perhaps operate at the provincial rather than the county level, if not at the national level. This agency would need to have county-level representation to carry out day-to-day administrative functions, but local offices arguably should be part of a provincial organization that can play an effective technical and supervisory role in all the counties of the province. From a political economy perspective, setting up a new agency—rather than having, say, social security manage NRCMS (as in the Jiading district of Shanghai)—has the merit of ensuring that all relevant departments are treated equally in the consolidation process so that one does not simply swallow another. The governance arrangements of the new agency would need to be thought through carefully. Consolidation is likely to happen sooner in some provinces than in others. It makes sense to plan ahead to expedite the process. That way, scale economies and cost savings can be reaped sooner. Furthermore, the better the planning and the sooner consolidation occurs, the smaller is the risk of institutional inertia—it is harder to effect a merger between mature organizations when no eventual merger is anticipated.

Priorities and Sequencing

Implementing ideas such as those outlined in this chapter will take time. It will also require careful study. Some ideas would be better developed after others, and some would merit “testing” before being introduced.

Some ideas are obvious candidates for immediate action. It would make sense to postpone raising additional resources for NRCMS until these ideas have been developed and implemented. Among those addressed in this chapter, likely candidates would include:

- Revising the benefit package to include basic as well as catastrophic interventions
- Clarifying whether free personal public health interventions will be available through the public health system or through NRCMS
- Developing and introducing much simpler cost-sharing arrangements, without ceilings and personal accounts, and with cost-sharing based on

the extent to which interventions are potentially catastrophic and cost-effective

- Helping poor households with NRCMS contributions and copayments by focusing Medical Assistance on poor households, and aligning it with—if not integrating it into—the new rural Di Bao program
- Making local government contributions fairer by targeting central government subsidies more tightly on poor provinces, and targeting central and provincial subsidies on poorer counties within each province.

These are all relatively straightforward, and tackle issues that need addressing before NRCMS is scaled up. Addressing the benefit package issue is particularly urgent if NRCMS is to deliver the sought-after health improvements.

Given China's tradition of piloting ideas before rolling them out nationwide, there is clearly scope for exploring the practicality, costs, and benefits of some of this chapter's more medium-term ideas through evaluated pilots. This could be done with NRCMS at its present financial scale. Obvious candidates for piloting include:

- Linking household contributions to living standards through means testing, a dwelling tax, and other mechanisms
- Increasing financial solidarity within provinces through targeted transfers, a solidarity fund, and provincial pooling, perhaps with some limited solidarity between NRCMS and BMI
- Gradually shifting at least some current expenditure supply-side subsidies to the demand side (that is, to NRCMS), and perhaps some capital expenditure supply-side subsidies as well
- Exploring some of the chapter's ideas for improving the quality of NRCMS management and governance.

Pilots of these and other ideas would, of course, need to be accompanied by careful evaluation, with dissemination of the lessons learned to officials from central government and officials from nonparticipating provinces.

Finally, some ideas in the chapter require detailed practical research and development by the government before they can be implemented. Candidates here include:

- Establishing a benefit package, realistic budget, and simple cost-sharing rules that reflect the concerns to include both catastrophic and basic

interventions in the benefit package, and to have minimal demand-side cost sharing

- Building on the experiences of piloting exercises to develop plans for scaling up NRCMS finance, adopting whichever approaches to promoting equity in household and local government contributions seem to have worked best
- Developing plans for a dedicated health insurance agency that would manage both rural and urban health insurance; initially with different financing and benefit packages, perhaps with some financial solidarity from BMI to NRCMS, and with a view to eventual amalgamation of the two.

Implementing and coordinating these steps involves a great deal of work. But it is work that builds on the bold and historic policy initiatives of 2003, as well as on the international experience in and recent thinking about health reform. It is work that will allow China to transition from a nascent rural health insurance system into a fully fledged one that reflects the country's increasingly modern economy.

CHAPTER 6

Improving Service Delivery: A Question of Incentives

Introduction of new health financing mechanisms, such as the New Rural Cooperative Medical Scheme and Basic Medical Insurance, can go a long way toward improving access to health care and protecting households from financial risk. But many of the problems highlighted in chapter 2—escalating costs, widespread provision of unnecessary care and drugs, low efficiency, a lack of attention to public health, and poor quality—call for more than financing reform. If these problems are not fixed, costs will continue to escalate and patients will remain vulnerable to exploitation by profit-oriented providers. While the NRCMS and the BMI may protect households from large out-of-pocket payments, rising costs will soon be felt through higher social security contributions or tax payments.

How can these problems be fixed? This chapter argues that an essential step is to change the incentive structure for providers. Hospitals, health centers, and other health care providers continually make decisions that directly impact costs, appropriateness of treatment, and efficiency. How patients and insurers pay providers—determined largely through the system of price regulation—is arguably the most important factor shaping these decisions, and one of the biggest obstacles to a more rational allocation of health sector resources. Changing the way hospitals and other providers are financed is hence part of the solution, and the

NRCMS can play a key role in making this happen. As the NRCMS is scaled up and strengthened, it will account for a growing share of rural health expenditures. This puts the NRCMS in a strong position to influence what services providers deliver, and how they do so.

Yet NRCMS cannot improve service delivery on its own. New incentives and standards are needed to shape better provider responses. Administrative and regulatory barriers, capacity, and other factors impede those changes. How health care providers are organized and regulated thus needs to be reformed—a challenging agenda that reaches well beyond the immediate mandate of the Ministry of Health.

Changing Provider Incentives

What is the Problem with the Way Providers are Currently Paid?

For most of the last five decades, revenues of hospitals and other health care providers in China have come from three main sources: out-of-pocket expenditures by patients, payments by insurers, and budgetary subsidies from government. Prices for patients and insurers have long been regulated for most providers, and often account for only a small fraction of service costs (see box 6.1). This arrangement had little impact on

Box 6.1

Price Regulation in China

Regulated prices for medical services have been a feature of the Chinese health system for many decades. Initially, prices were set well below cost to promote access, and government covered any revenue shortfall through flexible budget appropriations (Liu, Liu, and Chen 2000). When government budgetary subsidies were fixed in the early 1980s and providers were made residual claimants, prices were gradually increased. Regulations were used to keep most prices below costs to ensure access, but providers were allowed to offset the shortfall through higher prices for technology-intensive procedures and diagnostic tests such as X-rays, CT scans, and MRI, and by adding a margin to drug sales (15 percent for western medicines and 25 percent for Chinese medicines). To further promote access, the central government proposed implementation of price discounts or exemptions for the poor, but the impact of that effort appears to have been limited (Meng, Sun, and Hearst 2002):

(continued)

Box 6.1 *(Continued)*

Recently, efforts have been made to reform price regulation. In 2000, the government sought to reduce price-schedule distortions by better aligning prices and costs, and by moving to a system of price ceilings to encourage competition (State Development and Planning Commission and MOH 2000).⁵³ For nonbasic medical services by nonprofit providers and all services by for-profit hospitals, prices are to be market-determined. The new policy also allows price differences across levels of health facility, and even doctors with different professional titles. By the middle of 2003, most provincial governments had adjusted their fee schedules, covering around 4,000 items (MOH 2004a). As of yet, there is little evidence on the impact of reforms on the growth and structure of medical expenditure or on access to care. A study in Shaanxi found that the reforms had indeed resulted in the desired shift in outlays from high technologies to basic professional services and in lower expenditure growth rates for secondary and tertiary hospitals, using four diseases as tracers (Jin, Wang, and Peng 2002). However, a study in the provinces of Beijing, Gansu, Shandong, and Henan concluded that high technologies are still extremely profitable, encouraging hospitals to acquire expensive new equipment (Bian et al. 2002; Meng et al. 2002; Sun et al. 2005).

Drug price regulation was also reformed in 2000, moving away from controlling the prices for all pharmaceuticals to setting only guiding prices for selected products (China State Commission of Planning and Development 2000). All drug producers and sellers, including all medical institutions, are bound by the list. Currently, approximately 10 percent of drugs (accounting for 40 percent of revenues) are subject to price regulation. In addition, some drug prices are regulated by local governments. These measures were expected to reduce drug prices through a combination of increased competitive pressure and more-effective procurement. However, a recent study—albeit based on a small sample—found that the new pricing policy did not control expenditures, because hospitals could maintain high pharmaceutical revenues by increasing drug utilization and shifting from medicines whose prices had been reduced to those that were priced higher (Meng et al. 2005).

incentives, however, as long as government subsidies filled any financing gap and as long as providers were not allowed to retain any financial surpluses. This changed in the early 1980s, when providers were allowed (and sometimes encouraged) to generate—and retain—revenue through charges for drugs and services (Liu, Xu, and Wang 1996).⁵²

The upshot of these changes was that health service prices and volumes directly affected providers' bottom lines. As providers began to look more carefully at the relationship between costs and revenues of different types of services and drugs, the system of price regulation began to matter for incentives. Although the regulated prices were updated several times during the 1980s, bringing them closer to costs (Du and Du 1999), most services remain priced below cost, and providers are expected to make up the shortfall through high-tech services with a positive profit margin and through drug sales.⁵⁴ The financial incentives from this pricing structure are clear: limit provision of "unprofitable" basic services and expand provision of high-tech services and drug sales. Hence the problem of overprovision of care and drugs is hardly surprising.

While the system of price regulation creates strong incentives for providers to deliver more drugs and sophisticated services, few incentives are given to deliver simple and cost-effective clinical and public health interventions. Not only are the prices of most basic services set below cost; providers at the township and village level often are expected to undertake population-based interventions such as health promotion, school health, and water and sanitation improvement for free.

It is true that providers receive some budgetary subsidies from government. Ostensibly, these subsidies are paid at least in part to compensate providers for the difference between regulated prices and actual costs, and to support public health functions. In practice, however, allocations tend to be based on criteria such as numbers of staff and retirees or the number of beds, with little or no regard to specific objectives or performance standards. Moreover, government subsidies account for a small and decreasing share of provider financing—ranging from just over 10 percent for township health centers to less than 5 percent for county hospitals (MOH 2004b). Hence, on the margin, government subsidies do little to encourage hospitals, township health centers, and village clinics to make public health and basic services a priority.

Finally, current financing arrangements do not promote an appropriate "division of labor" across different levels of the health system. The current pricing structure makes the provision of drugs and at least some profitable services essential for survival, creating a disincentive to refer complex cases (which are more likely to be income generating) to higher levels. This explains the strong desire for township health centers to invest in inpatient and high-tech capabilities.

Clearly, new ways must be found to finance health care provision. A reformed system should give stronger incentives for cost-consciousness

and appropriateness of care. It should also prioritize basic but highly cost-effective care and interventions, and promote a clearer and more suitable division of responsibilities between different levels of providers. This will require coordinated reforms of how insurers pay providers, the broader system of price regulation, and the system for financing and organizing public health functions.

Promoting Cost-Consciousness through New Payment Methods

The key feature of fee-for-service payment is that providers get reimbursed for each specific item-of-service, affording doctors full discretion over the level and mix of services and treatment options. Although often popular with providers, fee-for-service payment does not create any incentive for providers to find the most cost-effective combination of services to address a particular patient's need.⁵⁵

One option for addressing the adverse incentives of fee-for-service would be to revert to a model in which services are provided by budgetary units, fully financed and operated by the public sector. In this arrangement, the government exercises direct control over the provider by focusing on inputs and process—that is, through the budget process and through administrative rules and regulations. As a result, hospital and clinic managers have few incentives to increase efficiency and improve quality. Moreover, the budget process often becomes historically driven, contributing to misallocation of resources and unproductive competition between providers to increase their budgets over time. Because of the weak incentives for efficiency and responsiveness, many health systems have moved away from this integrated model of service delivery.

An arguably better option is to find alternative payment methods that reduce the incentive for overservicing and reward efficiency. One way to do so is to bundle different service items (and sometimes drugs) into a single fixed payment (key features of different payment methods are summarized in box 6.2). For inpatient care, an increasingly popular approach is to pay providers by the number of cases, with different reimbursement levels for different types of cases. The most prominent examples of this approach are the diagnosis-related groups developed in the US Medicare system in the early 1980s (Newhouse 2002). Subsequently, case-based payment systems have been developed, sometimes under different names, in a wide range of countries (Bitran and Yip 1998; Docteur and OECD 2004; Velasco-Garrido et al. 2005; Wagstaff 2007a).⁵⁶

Under case-based payments, standard costs are calculated for different types of cases and are used to determine the level of provider

Box 6.2**International Experience with Provider Payment Reforms**

In recent decades, case-based payment methods have been introduced in a wide variety of health systems. Evaluating the impact of provider payment reforms poses considerable methodological challenges, however, related to the multiple financing sources of providers, quality measurement, and so on. As a result, most of the rigorous evidence on the impact of reforms comes from the OECD. Studies in the United States have found substantial cost savings from reductions in length-of-stay and the use of inputs (Chalkley and Malcomson 2000). The available evidence does not suggest that these cost-savings have been achieved at the expense of quality. Similarly, following the introduction of an all-inclusive per diem reimbursement rate that bundled services, drugs, and lab tests for geriatric hospitals in Japan, costs of medications fell by one-third, and costs of lab tests fell to one-tenth of their previous level (Ikegami and Campbell 1999; Imai 2002). Korea has also introduced a diagnosis-related group payment system for inpatient care, covering nine disease categories (25 codes), which together accounted for 25 percent of inpatient cases (Kwon 2003b). The pilot, which was voluntary, led to a 14 percent reduction in cost, a 6 percent reduction in average length of stay, and movement toward substitution of inpatient with outpatient care. No adverse effects on quality were found.

However, reforms toward case-based payment also have created incentives to expand volume. Indeed, in Sweden (Gerdtham, Rehnberg, and Tambour 1999) and many of the countries in Central and Eastern Europe and the Commonwealth of Independent States (Langenbrunner and Wiley 2002; Velasco-Garrido, Borowitz et al. 2005), the introduction of case-based or per diem payment has been associated with rapid volume growth. Taiwan, China, which recently phased in a DRG system for the 50 most common diseases, has had similar problems. Studies of two of the covered procedures found that DRGs reduced both cost per case and length of stay, but increased volume—so much so that total payments for the two procedures rose (Eggleston and Hsieh 2004). Another problem with diagnosis-related groups is that they provide an incentive to providers to “game” the system. This can take many forms, including dumping of patients that are likely to be unprofitable for the provider (Newhouse and Byrne 1988; Rodrigues 1989), “upcoding” of cases (DRG creep) to more-profitable categories (Coulam and Gaumer 1991), and cost shifting to patients or services that are reimbursed through other methods (Eldenburg and Kallapur 1997).

(continued)

Box 6.2 *(Continued)*

For outpatient care, governments and insurers in most OECD countries pay primary care providers using a combination of either capitation or salary payments with FFS for preventive care and specialist services. This is also increasingly the pattern in Central and Eastern Europe and the Commonwealth of Independent States, where many countries have seen a shift to private primary care, combined with the introduction of capitation payment and FFS for priority preventive services (in some countries) (Velasco-Garrido, Borowitz et al. 2005). There is little systematic evidence on how different forms of provider payment impact quality, costs, and efficiency in the provision of outpatient care. However, a review of several studies of primary care physicians in OECD countries found that, relative to capitation and salary, FFS was associated with higher volume of care, at least in part reflecting the provision of unnecessary care (Gosden et al. 2003). In some countries, such as Thailand, capitation, complemented with separate payments for high-cost cases, has been used to pay for inpatient care (Mills et al. 2000).

reimbursement.⁵⁷ In the simplest application, a fixed payment per inpatient day is set, treating all cases the same. The attraction of payment per case or inpatient day is that the method transfers some financial risk to the provider, thus creating incentives for efficiency and cost-consciousness. A growing body of international evidence indicates that moving from cost-reimbursement to case-based payment indeed can contribute to cost control (see box 6.2). However, case-based payment reforms have not been problem-free—they introduce incentives to increase volume, skimp on quality, and potentially to “game” the payment system. Therefore, adequate systems and procedures to control volume, quality, and other potential problems must accompany introduction of the payment reforms. Many health systems also adopt a mixed payment approach to balance the competing incentives of each method. For example, in response to the increased volume of inpatient care after introduction of case-based payment, some countries have shifted to a mix of global budgets—in which providers are paid a fixed amount to cover aggregate expenditures and given flexibility in how the budget is spent—and case-based payment.

In outpatient care, the most commonly used alternatives to fee-for-service are for physicians to be salaried or for providers to be paid by the number of patients that they are expected to serve (capitation). Payment by salary has the merit of not creating adverse incentives to reduce quality,

deny access, or provide unnecessary care, but also carries the disadvantage of not stimulating effort and efficiency. Payment by capitation, in contrast, creates incentives to reduce costs per patient. While this can help constrain unnecessary care, it risks underprovision. Again, many countries opt for a mixed system, using salary or capitation to reduce provision of unnecessary care but using fee-for-service or bonus systems to create incentives for priority services.

International evidence provides a strong case for moving away from fee-for-service payment. But are these experiences relevant to China? In fact, as described in chapter 3, some experimentation with alternative forms of provider payment already has begun. These experiments began in urban areas. More recently, some local NRCMS schemes also have adopted alternative provider payment methods.⁵⁸ These experiences suggest that provider payment reforms are both feasible and relevant in the Chinese context. But reforms to date have had limitations. They typically have been introduced as local initiatives, and the design and implementation have suffered from lack of capacity. Moreover, their impact will inevitably be muted without the support of a broader set of complementary reforms. Expansion of the NRCMS and the current openness to broader health system reforms create opportunities to address these limitations. So what should be done differently?

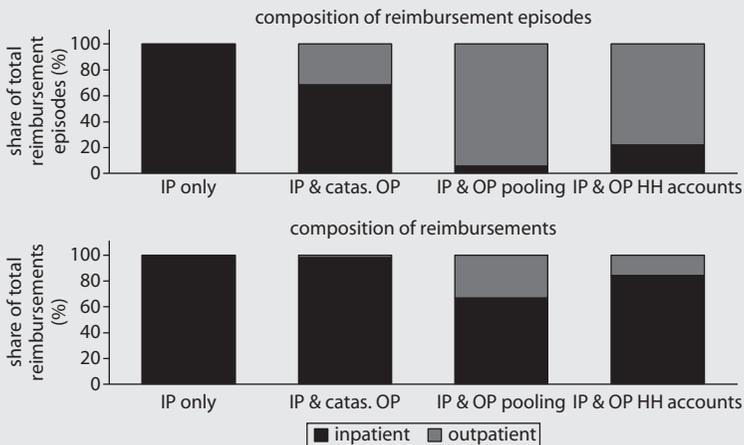
NRCMS Provider Payment Reforms

The preceding discussion has shown that no perfect way of paying providers exists—all methods have advantages and disadvantages. It also has suggested that the adverse incentives of most provider payment methods can be managed, but systems and capacity are required that take time to develop. Thus, provider payment reforms should not be seen as a discrete shift from one method to another, but rather as a continuous process of search, evaluation, refinement, and capacity-strengthening. It also means that the appropriate approach to and pace of reform will vary considerably across China. Nonetheless, there is a strong case for introducing prospective payment methods by the NRCMS for both inpatient and outpatient care.

For inpatient care, a new provider payment approach most likely should entail some form of case-based payment or global budgets based on volume and case-mix data. Some may argue that payment reform for inpatient services is an overly complex issue for the NRCMS to handle. While the technical and implementation challenges are undeniable, a large share of the NRCMS budget is absorbed by inpatient care at the county level and above (box 6.3) so action is needed. Even if the benefit

Box 6.3**The Importance of Inpatient Care for NRCMS**

In examining health challenges and reform in rural China, this report has identified the need for improved access to basic curative and public health interventions and the key role that NRCMS should play. Does this relegate the question of inpatient care to secondary importance? The 2005 NRCMS study undertaken in preparation for this report shows clearly that the answer is no. In fact, the bulk of NRCMS reimbursement (at least as of 2005) is for inpatient expenses (see chart below). In counties that implement the Inpatient Mode of the NRCMS, all funds are used for inpatient payment. But even in modes that cover outpatient expenses, most of the NRCMS reimbursement budget goes to inpatient care. Most inpatient reimbursement—ranging between 70 percent and 90 percent across the different modes—is for care delivered at county or provincial hospitals. Of course, these reimbursement patterns should not be taken as given. Chapter 3 argued for a benefit package that balances basic and catastrophic care. However, even if outpatient care receives greater emphasis, inpatient services will continue to absorb a large share of the NRCMS budget.

NRCMS Budgetary Impact of Inpatient Reimbursement

From institutional data from 27 counties (2005 NRCMS survey)

1 = inpatient (IP) only, 2 = inpatient and catastrophic outpatient,

3 = inpatient and outpatient (OP) pooling, 4 = inpatient and outpatient household (HH) acco

Source: Authors' tabulations from data collected through a Government of China–World Bank 2005 survey of NRCMS programs.

package is tweaked, inpatient care is likely to account for a large share of future costs, and the potential savings from greater efficiency and a reduction in unnecessary care can improve NRCMS finances significantly.

Better cost control at the level of primary care providers (village clinics/township health centers) calls for a shift from fee-for-service to capitation or salary payment (or a mix of the two), with explicit incentives—either through performance bonuses or fee-for-service payment—for key preventive services (see chapter 7).

Accepting this general direction raises a number of practical questions. Should all covered inpatient services be remunerated on a case basis? How should fee rates and capitation payments be set? What information and capacity will be needed at the local level to design and implement these payment schemes?

Some case-based payment systems are very complex, taking years to develop and covering hundreds or even thousands of different services. But far simpler approaches are possible. Indeed, many payment reforms start by introducing case-based payment for a few services only, while fee-for-service continues to be used for other services. The range of services covered by the case-based payment system can then be expanded over time.⁵⁹ If payment reform focuses on high-cost or high-volume cases, the impact on overall costs still can be substantial.

It is, however, important to design reforms to avoid undesirable side effects. For example, if the NRCMS introduces new case-based payment rates for some services while continuing to pay providers regulated, below-cost fees for other services, the providers will have a strong incentive to focus on the services paid by case. Conversely, if new case-based rates are set low to control costs, providers may try to avoid delivering those services, focusing instead on the few high-tech services for which profits can still be earned. Hence, even if case-based payment methods are confined only to some services, the prices or payment rates for *all* covered services need to be reviewed and revised.

Whether providers are paid by capitation, case basis, or global budget, reimbursement rates will need to be determined. Ideally, payment rates should be set using the estimated cost of providing good care—namely, care that is consistent with clinical practice guidelines and that is provided efficiently. This provides sufficient resources for quality care while also generating incentives for efficiency. In practice, however, it may be necessary to start with reimbursement rates that are closer to actual costs (budget neutral) to avoid resistance and service disruptions. Indeed, when DRGs were developed in Korea, reimbursement rates built in generous

margins over fee-for-service to overcome provider opposition. Outlier payment features were also built in to reduce skimping on quality. In the development of reimbursement rates, one must also consider what service inputs to cover. Many countries have excluded capital costs for reasons of practicality and the desire to retain control over capital investments in the health sector. Some countries also have excluded pharmaceuticals. This clearly simplifies the system and reduces the need for updating reimbursement rates over time, but at a high cost in terms of incentives to reduce costs. Following this route in China would probably be a mistake, given the unusually high share of drug outlays in overall health spending.

Recent reforms in both the BMI and NRCMS demonstrate that payment reforms are feasible in China, but the experience shows that cities and counties typically have limited technical and managerial capacity in relevant areas. Hence, beyond making decisions about payment methods and rates, investment is needed in capacity and systems to support reforms. For example, regardless of how comprehensive the payment rates are, fee-setting depends on more detailed and accurate cost data than are currently available. Filling the gap will require strengthening of both capacity for cost analysis and of systems for provider cost reporting. Similar challenges arise in other areas, such as developing case classification systems, contracting with providers, or monitoring costs and performance over time. Some of the capacity for these tasks needs to be present at the local level. However, local agencies cannot reasonably be expected to design and implement reforms on their own—provincial and central agencies have an important supporting role to play.

Beyond Payment Reform: The NRCMS Role in Defining and Enforcing Higher Service Delivery Standards

The introduction of performance-oriented provider payment methods often has gone hand-in-hand with clearer demarcation between “purchaser” and provider and with a more explicit use of contracts to govern the relationship between the two parties (Docteur and Oxley 2003). At the most basic level, contracts stipulate the range and volume of services that the provider is expected to provide and the purchaser’s payment terms—for example, a block payment, or payment by volume or case. Some contracts also set limits on overall reimbursements or volumes in an effort to control costs. However, purchasers also can use contracts to promote quality and other goals (Velasco-Garrido et al. 2005). This can be done by establishing minimum provider standards for eligibility, by

including quality targets and standards as performance criteria in the contract, by monitoring provider performance and using rewards or sanctions to promote quality, and by using information about quality and other aspects of performance in reviewing and renegotiating contracts.

Some use of contracts and “strategic purchasing” has, in fact, already occurred in China. Provider payment reforms often have employed contracts to define explicit performance criteria relating to quality or volume. Some BMI schemes have set up independent quality reviews by expert panels or mandated routine monitoring of high-tech services. Most NRCMS schemes also have established contracts with providers, specifying the package of services to be delivered, payment methods, quality standards, drug lists, and other criteria. Some contracts with providers have included provisions for terminating the contract if, for example, patients were not charged in accordance with the established price schedule.

As with payment reforms, however, these initiatives frequently have suffered from a lack of capacity and supporting structures. Yet they provide a starting point for strengthening the role and capacity of the NRCMS in holding providers accountable for performance. For example, as the NRCMS expands, it will be in a strong position to establish minimum standards for staff qualifications and infrastructure. NRCMS can define minimum standards or criteria for providers to be eligible for contracts. But the NRCMS also can establish service-specific standards whereby providers are reimbursed for a particular service only if it is performed by adequately qualified staff. At a minimum, such standards can protect patient safety. But they also can create incentives to reorganize service delivery arrangements to better match provision with capabilities. This has been the logic of purchasing reforms in many countries, which have tried to improve quality and efficiency by transferring services from one type of provider to another (Sibbald et al. 2006). For example, the United Kingdom has seen an increasing tendency for some specialist services, such as diabetes care and minor surgery, to be delivered in a primary care setting. In China, efficiency may be improved by locating more primary care at the township health center level. Conversely, township health centers may be playing too large a role in surgery and other specialist care. International experience suggests no hard-and-fast rules that can be applied in defining the “task profiles” of different types of providers—the cost-effectiveness of different approaches is likely to vary considerably across contexts. This means that local NRCMS agencies, drawing on experiences from other parts of the country, will have to develop their own standards.

The NRCMS can also promote cost control and quality improvement by requiring adherence to drug lists and clinical protocols.⁶⁰ As with payment reforms, effective purchasing requires considerable capacity and sophisticated monitoring and information systems. Technical support is also needed from higher-level government on issues such as clinical protocols and appropriate quality standards.

Raising Standards: The Role of Government Regulation

The NRCMS has an important role in defining and enforcing quality standards, but it cannot do the job alone. For example, the government may not want to leave the definition of standards to local schemes. Moreover, the influence of the NRCMS only extends to providers with which it contracts, and the safety of patients opting to go to other providers needs to be safeguarded.

This is where *accreditation* and *licensing* become important. Generally speaking, licensing of facilities is meant to ensure that minimum standards are in place before a facility opens for business. This safeguards patients against providers with inadequate qualifications or infrastructure. Similarly, licensure of individual health professionals is a key tool for ensuring that practitioners have the skills and qualifications needed to fulfill their tasks competently. Accreditation is different, at least in principle, in that it is typically voluntary, aims beyond minimum standards, and tries to provide information and incentives for continuous quality improvement.⁶¹ An effective accreditation process also provides valuable information for patients and insurers, putting them in a stronger position to make informed choices.

Hospital accreditation has a long history in China, dating back to the hospital grading system established by the MOH in 1989.⁶² Although ostensibly concerned with quality, the accreditation system at first focused primarily on hospital infrastructure and equipment. The accreditation system was not actively used and updated during the 1990s. In 2005, the hospital accreditation system was revived and overhauled. The structure of grades and levels is similar to the earlier process, but the new system moves away from a focus on infrastructure and equipment, with the local evaluation committee now rating hospitals according to a wide range of criteria that includes “scientific management,” patient safety, and service quality. At least in principle, the grading and evaluation system is combined with a system of rewards (such as government budgetary subsidies) and sanctions (such as fines or risk of closure). Some policies already are in place for licensure of individual health professionals. For

example, in 1999 the Law on Physicians raised the training requirements for licenses to practice medicine and for some professional categories. Similarly, the Village Doctor Practice Regulation that took effect in 2005 requires village doctors to be certified as physicians or assistant physicians before being licensed.

These developments hold much promise, but the current systems have important limitations. National accreditation guidelines give substantial discretion to local government in operationalizing and implementing the accreditation process. As a result, many provinces do not include the private sector. Similarly, with some exceptions, the accreditation system tends to exclude township health centers and village clinics. Local discretion also hampers comparability across localities, and is likely to undermine system credibility. At a minimum, increasing standardization in the accreditation system across the country would be desirable, along with ensuring that township health centers and village clinics are included in the process. A strong case also can be made for introducing and strengthening the implementation of a national accreditation system that references the numerous international accreditation standards that are available.

Dealing with Uncovered Services, Extra Billing, and Other Insurers

So far, the discussion has focused on how the NRCMS can help drive improvements in service delivery. But since providers will continue to receive revenues from other sources, the NRCMS cannot unilaterally determine the incentives for decision making by hospitals and other health care suppliers. Indeed, in implementing payment reforms in the NRCMS, the current fragmentation of financing sources in China creates considerable challenges. Some patients in hospitals and health centers are covered by the BMI; some may be covered by other forms of health insurance. Other patients may be paying for services themselves, either because the patients lack NRCMS or BMI coverage or because the drugs or services are not covered by insurance.

This fragmentation matters because providers, in deciding who to treat and how to treat them, will take into account the expected costs and revenues from a particular patient or service. Hence, if the NRCMS tries to control expenditures by setting fees for covered services based on standard costs while providers can continue to make a profit on uncovered high-tech services and drugs, the chances are that providers will emphasize the latter. Consequently, NRCMS expenditures may be kept under control, while patients end up paying for a lot of unnecessary care and drugs. Similarly, differences across insurers in reimbursement rates

for the same procedures are likely to lead providers to favor some patients over others.

To avoid cost shifting or adverse impact on access on uncovered patients or on access to uncovered services, the prices for uncovered services and for self-paying patients need to be aligned with costs. In part, this can be achieved by requiring that self-paying patients are charged using the same fee schedule as insured patients, but challenges will remain for services uncovered by insurance, and those that continue to be paid for on a fee-for-service basis. Two complementary approaches address these challenges. First, the system of price regulation will need to be overhauled, reducing or eliminating disparities between costs and prices and establishing a process for regular updating. This task is challenging, but experiences from other countries show it to be doable. Japan, for example, provides several important lessons: regularly reviewing each item rather than instituting across-the-board proportionate changes, selectively reducing fees for procedures that show “inappropriate” volume expansion, pricing high-tech care *below* cost and basic ambulatory care *above* cost (the exact opposite of China’s current practice), keeping tight control of fee increases, and increasingly bundling items together (box 6.4).

China also will need to take a stance on *extra billing*. Some countries permit—or have permitted—providers to charge patients for the difference between the provider’s “own” fees and those allowable under the fee schedule operated by the insurer or government (box 6.5). This extra billing might be because the patient has had a longer consultation with a

Box 6.4

Setting Health Sector Prices in Japan

Despite more than four decades of universal health insurance, Japan still relies largely on FFS to reimburse health care providers. The process and its outcomes are noteworthy, especially for China. Japan revises its fee schedule every two years, and alters each of the 3,000 items individually rather than raising all by the same proportion in line with general inflation (Ikegami and Campbell 1999). The authorities reduce the fees for procedures that show “inappropriately” large volume jumps, and raise the fees for procedures whose usage is considered to be too low or to be rising too slowly. The Japanese also have sought to dampen costs by increasingly bundling items together under one heading.

(continued)

Box 6.4 *(Continued)*

This process has produced some interesting results. Fees for many high-tech services have been set below cost, while fees for ordinary ambulatory consultations have been set above cost. Fees for lab tests and diagnostic imaging have fallen over time. Despite the fact that high-tech care in Japan—unlike in China—is unprofitable, hospitals nonetheless deliver it. This may be because a reputation for delivery of high-tech care helps attract all types of patients and because doctors find the delivery of high-tech care to be professionally rewarding. The Japanese fee system is also noteworthy in that all facilities are governed by the same schedule regardless of a hospital's size, however well it is equipped, and indeed whether the treatment setting is a physician's office and not a hospital at all.

The Japanese approach to fee setting—selectively reducing fees for procedures that show “inappropriate” volume expansion, underpricing high-tech care, and keeping a tight control on fee increases—is cited as a major reason for the country's quarter century of success in reining in the growth of health spending.

Box 6.5**Approaches to Extra Billing**

Canada took steps to reduce extra billing in 1984: the federal government now reduces its cash transfers to a province in proportion to the amount of extra billing going on there (Rocher and Smith 2002). In France, where extra billing is still common in ambulatory care, private insurance emerged in part to cover this practice as well as to cover copayments more generally. Unsurprisingly, this placed low-income households, who were less able to afford complementary private insurance coverage, at a disadvantage, and they ended up paying more out of pocket than the better off. In 2000, the French government sought to reduce this inequity. Complementary private insurance coverage was extended at the taxpayer's expense to low-income households, and providers delivering services to low-income households were banned from extra billing. Japan has taken the altogether cleaner and simpler approach of strictly prohibiting extra billing except for nine specific areas (such as having a hospital bed with better amenities), although this decision has recently been the subject of some controversy (Ikegami and Campbell 1995; Imai 2002).

doctor, even though the same medicines, tests, and other care are dispensed. Or it might be because the doctor is highly specialized. Where this extra billing is permitted, patients typically are supposed to have a free choice of provider, making these costs theoretically avoidable. But sometimes the costs are unavoidable. In Korea, for example, specialists in hospitals are entitled to extra-bill for being a specialist; but because most doctors in tertiary hospitals are classified as specialists, most tertiary hospital patients end up being extra-billed for specialist services (Kwon 2005). The main problem with extra billing is that it creates uncertainty about the eventual price of medical care and leaves people at risk for out-of-pocket expenses. In short, it seriously undermines the aims of health insurance. It also creates considerable scope for inequity. The Japanese approach to extra billing—outright prohibition with a very few well-defined exceptions—has much to commend it.

For BMI, the government will need to ensure that payment methods and reimbursement schedules are consistent with those of the NRCMS. Given the capacity and system needs required to design, operate, and monitor payment arrangements, collaboration and coordination between the BMI and NRCMS makes eminent sense. Depending on China's decisions about voluntary health insurance, coordinating payment rates of different insurers may become considerably more challenging.

Incentivizing Providers to Deliver Public Health Interventions

So far, this chapter has been concerned primarily with payment for clinical services. But health care providers also play an important role in public health. Hospitals and other providers arguably are best placed to deliver personal public health services such as immunizations and disease screening. And providers at the village and township level are well suited to delivering population-based public health interventions such as health education and promotion, school health and behavior change around water use and sanitation, among others. Yet, as we have seen, current financing and payment arrangements do little to stimulate health care providers to deliver immunizations and other public health services, or to engage in the broader determinants of health in the community. How can this be changed?

If providers are expected to deliver preventive services free of charge or at a nominal fee, they must be compensated, either by government or a third-party payer such as the NRCMS or BMI, and held accountable for actually delivering the services. The most direct way of doing so is to pay for preventive services on a fee-for-service basis. Although fee-for-service

payment generally risks overprovision of services, preventive services that are clearly defined by content and timing of care are less susceptible to that pitfall. Preventive services also can be included in the package of services that is delivered by salaried primary care workers or is remunerated on a capitation basis.

While moving toward fair payment for preventive care would be an important step, a case may be made for going even further. Increasingly many health systems are using financial incentives to stimulate provision of specific preventive services. Relatively generous fee rates can be set, as is the case in Japan (Campbell and Ikegami 1998); or bonuses can be used to reward providers that achieve coverage or improvement targets. For example, primary care physicians in the United Kingdom receive a gradational bonus payment on reaching immunization coverage rates of 70 and 90 percent. Similarly, various pay-for-performance schemes have been introduced in the U.S. health system, many of which focus on provision of preventive care such as cancer screening, prenatal care, and cholesterol screening (Rosenthal et al. 2005).

What of collective or population-based public health interventions delivered by township health centers and village clinics? Here, too, current arrangements do little to encourage providers to deliver at the appropriate scale and quality. One option is to make those responsible for public health programs at the township level and below into salaried staff of county public health institutions. This can have many benefits, but may not be feasible for the village level. An alternative, possibly complementary, approach is to make more effective use of contracts with township health centers and village clinics to perform defined public health activities. The health care providers would be compensated fairly, and their performance would be monitored. Some localities in China are already experimenting with this approach, and experiences from other countries suggest that contracting public health interventions—such as malaria control, nutrition, and reproductive health programs—is feasible (WHO 2000).

Who should be responsible for ensuring that public health services and interventions are financed and that providers are paid appropriately? Chapter 7 argues that a dedicated public health agency at the county level—most likely a reformed Center for Disease Control—working in close coordination with the Bureau of Health, should have the overarching responsibility. It would coordinate with providers and other organizations to deliver both collective and personal public health interventions, while also being directly involved in areas such as disease surveillance and enforcement of public health legislation. The Center for Disease Control

could contract with and monitor providers directly. Alternatively, this could be the responsibility of the NRCMS office or the Bureau of Health, which arguably have stronger capacity and systems to perform this function. There is, however, a strong case for keeping the budget for public health programs within dedicated public health institutions—both to shelter this budget from cuts and to put resources in the hands of agencies with the requisite technical capacity and mandate to promote public health.

While this model could be made to work, the problem is that public health responsibility today is fragmented across multiple institutions at the central and local levels. Moreover, local technical capacity is often limited, and the accountability and support systems at higher governmental levels are weak. These issues—discussed in detail in chapter 7—go a long way toward explaining why public health is currently low on the agenda of health care providers in China.

Enabling Providers to Respond to New Incentives

The set of reforms outlined above all aim at rewarding efficiency, cost-consciousness, and quality. But will they be enough to resolve the service delivery problems in China's health sector? The answer is most likely no, simply because providers currently lack the flexibility—and sometimes capacity—to respond effectively to new incentives.

Hospitals and Township Health Centers: Finding the Right Mix of Autonomy and Constraints

Consider what a hospital or health center might want to do if the NRCMS were to introduce new provider payment methods and stronger performance standards and monitoring, and if price regulation were reformed so that reimbursement for drugs and services is brought close to costs. Providers most likely would want to adjust the size and composition of their workforces. They also might want to adjust scale and capacity in other ways, particularly targeting bed numbers, equipment, and infrastructure. The hospital or health center director may want to enact new internal management systems and incentives that align staff motivation with those of the organization. For example, if the NRCMS pays for inpatient care on a case basis, it makes little sense for a hospital to reward its staff for prescribing more tests and drugs. The new payment regime calls for finding new ways of monitoring and rewarding staff performance.

At the moment, most health care providers at the township level and above lack the managerial autonomy to make many of these changes.

Most providers at these levels are government-owned public services units (PSUs).⁶³ As such, they fall under an administrative and regulatory regime that applies similarly across all sectors of government. Consequently, hospital and township health center managers have little control over hiring, firing, promotion, and compensation of staff. The quota for permanent or formal staff in public services units is based on administrative decisions by the local government, with involvement from the planning department (on the number of positions), the personnel bureau (on transfers and promotions), and the Bureau of Health (for sectoral management responsibilities), and often with little attention to need.⁶⁴ In contrast, the hiring institution has full autonomy over hiring and firing of contract staff, but also is responsible for paying their salaries and benefits. The rigid rules governing permanent staff prevent hospital managers from making key operational decisions about scale and skill-mix in the workforce, resulting in mismatches between staffing needs and patterns. Hospital and health center managers also have limited ability to reward or discipline part of the workforce. More generally, the duality in the personnel system creates inevitable frictions between “insiders” and “outsiders.”

Hospital and township health center managers also are constrained from adjusting scale and capacity in other areas as the need arises. The government still establishes bed standards for providers and finances (or partially finances) many investments in both infrastructure and equipment. Weaknesses in the planning process sometimes have resulted in excess capacity and bed numbers—a problem highlighted in chapter 2. At the same time, hospitals and health centers are able to retain operational surpluses, and have considerable discretion over their use.⁶⁵ In part, surpluses finance staff bonuses, but they can also be used to support investments in equipment or infrastructure.

In other areas, providers have more autonomy. For example, hospital and health center managers can determine their organizational structure and internal management processes, and local experimentation in hospital management has been widespread.⁶⁶

How Much Autonomy Should Hospitals and Township Health Centers Have?

This study has argued that providers, at least in some areas, have insufficient autonomy to respond to new incentives. There is a strong case for increasing their autonomy in human resources, at least over hiring and firing, promotion, and disciplinary action. Recent reforms have tried to shift

the system in this direction. For example, guidelines from MOH (2000) have given providers the right to fire workers, provided alternative employment could be found, and have encouraged providers to use open and competitive recruitment processes and expand the variety of contracts used for different types of workers.

These reforms have had limited impact in practice, presumably because of the inherent challenges in structural change. Ultimately, however, a compromise will need to be found that breaks current rigidities in the service delivery system while being acceptable to the health workforce. Reforms most likely will have to be accompanied by development of systems to safeguard the interests of current employees, as well as those of retirees who currently account for 15–20 percent of the payroll in many health institutions. This calls for a gradual approach—one that involves opportunities and possibly financial support for retraining and reemployment in other sectors, and unemployment insurance or pensions for those who are too old or are unable to find new work.

In other areas, it is less clear that management autonomy is always a force for good. Take the case of surpluses. Many countries restrict autonomy in the use of surpluses by requiring their investment in facility improvements rather than use for staff bonuses. This approach—normally a requirement for nonprofit status—softens the financial incentives of providers and reduces the risk of excessive “entrepreneurialism.” But this requirement is difficult to implement because it requires backup from strong accounting, financial management, and audit systems, as well as the imposition of appropriate penalties on transgressors. Restricting use of financial surpluses can be an aim for the medium to long term. In the meantime, fixing price regulation and payment methods along the lines previously suggested would mean that surpluses are increasingly the result of efficiency and cost control rather than simply being products of higher volume. Consequently, the retention of surpluses would be less problematic. Following this course would forestall the need for more extreme measures such as a complete separation of revenues and expenditures.

Similarly, management autonomy in capital investments and service mix can bring benefits, but also entails risks. At least in principle, autonomy can help align investment in capacity with demand. On the other hand, information asymmetry makes it difficult for both insurers and the public to judge the appropriateness and benefits of different health care interventions, and providers may overinvest in capacity to signify quality and attract patients. Investments also may be made in capacity to deliver services that are of little therapeutic benefit to patients but are profitable

for the provider. Although hard evidence is difficult to come by, both problems are likely present in China's health system.

As earlier chapters have suggested, some of these risks can be managed through better purchasing. Insurers are likely to be more knowledgeable than patients, thus mitigating information asymmetry. And with better payment methods and more careful monitoring of quality, the scope for unnecessary care—and hence the profitability of investments in some high-tech equipment—is reduced. Nonetheless, most health systems also feature more direct controls over capital investments—both through regulation that requires providers to seek government permission prior to expanding capacity (for example, via certificate-of-need regulation) and through direct budgetary financing of investments in the health sector.

Government intervention in capital spending through regulation and direct financing can improve matters. However, government shortcomings arguably have been as important as market failure in creating the problems of excess capacity in China highlighted in chapter 2. Hence, if government opts to retain control over capital investments and capacity in the health sector, action is needed to ensure that government intervention does indeed improve efficiency and equity.

As a first step, government can address some existing inefficiencies. An adjustment in capacity can be facilitated by reviewing bed and staffing standards, for instance. But efforts also will be required to consolidate existing service delivery capacity. Overlapping services by Maternal and Child Health Centers, county hospitals, Family Planning Centers, and the multiple hospitals and health centers run by different “sponsors” may contribute to excess capacity. The challenge of fragmentation and excess capacity is not new, of course. Many local governments have made progress in integrating hospitals and public health agencies, and attempts through strengthened regional health planning have been made to address the consequences of both horizontal and vertical fragmentation.⁶⁷ Yet much work remains to be done.

Looking forward, the government will need to put in place planning, financial, and regulatory tools that promote efficiency and equity in new investments. This is a challenging task. Patient preferences and choices need to be taken into account, and must be considered in conjunction with information about the cost, quality, and equity implications of various service delivery models. This raises questions not only about the number and location of different types of providers, but also about how the referral system works and what outreach service role higher-level providers might play in meeting specialist needs in rural areas.⁶⁸ Available information does not permit an assessment of whether investment planning and

financing in China are indeed improving efficiency and equity. This is certainly an issue that merits further attention as efforts to rationalize the delivery system are sustained and deepened.

Finding the Right Balance: Reforming Government Providers or Privatizing?

As in other health systems, China faces the challenge of finding an appropriate balance between the discipline, organizational autonomy, and productive efficiency associated with the market on the one hand, and the need to control the tendency toward unnecessary care and cost escalation on the other. This chapter has argued that the right balance currently is not being struck, and has suggested that hospitals and health centers should be given more autonomy over their human resources. At the same time, greater restrictions on their capital investments, service mix, and, at least in the longer term, on their use of operational surpluses are needed to manage the risks of excessive entrepreneurialism.

What does this mean for how service delivery should be organized? This question has received a lot of attention in China in recent years. Debates about public services unit reform have tried to determine the appropriate role for public and private provision with reference to the concept of “public benefit”⁶⁹ (Cheng 2000; Project Team on “Reform” 2004; Project Team of DRC 2005). For the health sector, the government has called for a mixed delivery system, albeit with at least one government-owned township health center in each area (Central Committee and State Council 1997; Central Committee 2002). A hospital classification scheme, accompanied by policies on government subsidies, taxation, and price setting, has been introduced that categorizes hospitals as either for-profit or nonprofit, with a distinction between government-owned and nongovernmental nonprofits (State Council 2000). Meanwhile experiments with privatization have been widespread. As in international experience, results have been mixed, reflecting the considerable diversity in reform design and the fact that ownership conversions often have made little difference to providers’ autonomy in key dimensions (box 6.6).

The problem with couching the debate about service delivery reform in terms of ownership and profit status is that these labels—often ideologically laden—tend to get in the way of thinking about changes in provider autonomy. Privatization and changes in profit status can be a means to achieve organizational change, but, as box 6.6 shows, these changes are by no means automatic. By the same token, substantial changes in autonomy can be achieved without changing either ownership or profit status.

Box 6.6**Impact of Ownership and Profit Status on Performance in China and Abroad**

The evidence on the effects of ownership and profit-status conversions in China is mixed.⁷⁰ A few studies have found that THC privatization has been associated with a reduction in cost (Li 2000; Wang, Xu, and Li 2002). However, other studies have suggested that these cost reductions may be the result of scaling back preventive and public health activities. There are cases, for example, in which public health functions were separated from the THC after it was transformed, thus severing the institutional link between primary curative care and public health, and undermining the financing of preventive services (Li 2001; Wang 2002; Wang, Liu, and Zhong 2002; and Xu 2003). Partly from these challenges and possibly in response to government policy, some localities have reconverted privatized THCs to public ownership. Evidence from ownership conversions in urban China also have found limited impact on quality and mixed evidence on efficiency (Wang, Liu, and Zhong 2002; Xiong and Zhu 2003). In part, the ambiguous evidence on privatization may reflect the fact that even where privatization has been pursued, real organizational reform and restructuring have proven elusive. For example, where THCs have been privatized, staffing and other management issues have remained largely under the control of the county or township government (Shang, Yuan, and Chen 2001; Jiang 2003). Even in the case of full privatizations (buy out), autonomy has been circumscribed in some areas, in particular human resources—for example, the new THC owners may be required to guarantee employment for most or all of the existing staff (Shang, Yuan, and Chen 2001; Wang, Liu, and Zhong 2002).

The issue of public- and private-sector performance has generated considerable debate and literature internationally. Much of the literature has focused on differences between the public and private sector on costs, efficiency, and quality; but specific aspects of provider behavior—for example, service mix, charging practices and pricing, activity shifting, and patient dumping—have also received attention.

Despite extensive efforts, the literature offers little in terms of general conclusions (Marsteller, Bovbjerg, and Nichols 1998; Donaldson and Currie 2000; Reinhardt 2000; and Sloan 2000). In part, this is due to the methodological problems with which the empirical literature on hospital cost and efficiency must contend. This includes controlling for the number of cases seen (economies of scale), and

(continued)

Box 6.6 *(Continued)*

the composition of cases seen (economies of scope), case mix, and severity mix or case complexity. This is a tall order, and many of the differences in results across studies can be accounted for by differences in assumptions and analytical approaches (Shen et al. 2005).

With these caveats in mind, reviews of the evidence (mainly from the United States) suggest that for-profit hospitals generate more revenue and greater profits than nonprofit hospitals, although differences are small, and that there is little difference in cost and efficiency across ownership and profit status (Sloan 2000; Shen et al. 2005). On balance, for-profit hospitals seem to have worse technical quality and higher mortality than nonprofits (Devereaux et al. 2002; Picone, Chou, and Sloan 2002), but the evidence is far from consistent across studies (Sloan 2000). While many studies have focused on differences between for-profit and nonprofit hospitals, there is less evidence on the differences related specifically to ownership. Some studies suggest that public hospitals perform worse than private ones, but this may simply reflect their status as “providers of last resort” whereby they are forced to handle more complex cases.

Some studies have focused on specific hospital behaviors. They suggest that private providers respond to incentives and tend to “game” the system if possible. This can be seen in many areas—for example, creative cost accounting and charging to increase profits (Chan et al. 1997; Maher and Marais 1998), systematic upcoding in response to DRG payment (Silverman and Skinner 2001), price responses to monopoly power (Duggan 2000), and activity shifting in response to outdated price schedules (Imai, Jacobzone, and Lenain 2000). Interestingly, the U.S. literature suggests that nonprofits and for-profit hospitals respond in very similar ways to changes in incentives, and game the system equally (Chan et al. 1997; Duggan 2000; Silverman and Skinner 2001). In other words, although institutional arrangements should ensure that nonprofits have “softer” incentives, the institutional constraints on their behavior seem to have little impact, at least in highly competitive environments.

Along these lines, China can achieve the changes in autonomy outlined above within both the public and private sectors. If hospitals and health centers are retained as government-owned public services units, the administrative and regulatory regime that governs what public services unit managers can and cannot do will have to be reformed. Alternatively, providers can be transformed into private entities—in principle either for-profit or nonprofit. Privatized providers would fall under private law and

regulations, and the government would need to ensure that the legal and regulatory framework and systems do indeed create an appropriate mix of autonomy and constraint. Many countries have found that—with the exceptions of primary care providers and niche markets—this is more difficult to achieve in the case of for-profit providers, which face stronger financial incentives. However, if adequate oversight arrangements are put in place—an issue addressed below—government and private nonprofit providers can be very similar in terms of managerial autonomy and financial incentives. In fact, within the OECD, the distinction between public and private provision is becoming increasingly blurred.

Of course, there are risks and practical concerns with both options. Retaining providers as government public services units has benefits. It gives the government a more direct role in monitoring and enforcing safeguards, making it responsible for reforming established administrative and regulatory systems, and putting in place adequate governance arrangements for autonomous providers (box 6.7). Yet this approach also has

Box 6.7

Governance of Autonomous Public Sector Providers

When government providers have independence and autonomy, the government does not exercise direct administrative control, and other mechanisms must be found to promote equity and quality, safeguard public health, and prevent malfeasance. In many countries, hospital or health boards are playing an increasingly important role as the “voice of ownership” in relation to hospital or health center managers. Generally speaking, boards are responsible for strategic leadership and direction, performance monitoring, clinical quality assurance, budgeting, and examination of finances, while the manager is responsible for implementation. The institutional arrangements and practice of board governance vary considerably across countries, however. While large hospitals can have a dedicated board, some health systems have used regional boards to oversee the activities of many smaller providers. Countries also vary in how the board is appointed, its size and composition, its specific responsibilities and procedures, its power in relation to the hospital manager, and other characteristics. Although clear principles of good board governance exist (Pointer and Orlikoff 1999; Taylor 2000), there is no obvious blueprint for how hospitals should be governed, and international experience shows that implementing a good system of board governance is far from easy (Ditzel, Strach, and Pirozek 2006).

downsides. Government may be torn in two directions—on the one hand, wanting to monitor and enforce safeguards geared toward better population health, and on the other, tempted to use its power as owner of health facilities to pursue nonhealth goals. Some of the goals may be well-intentioned (for example, keeping retired doctors on the payroll in the absence of a proper pension system), while others may not be (for example, an official appointing an inadequately qualified friend or relative to a permanent position in a hospital). In contrast, the second option involving nonprofit providers inevitably loosens government control. Government can impose oversight requirements through legislation and regulation, but direct control will be limited (for example, to representation on the provider's supervisory board). Since the institutional framework and regulatory capacity for nonprofits are both weak, a rapid expansion of nonprofit provision entails significant risks (box 6.8). Yet this still may be an attractive model if privatization is the only way for government to implement difficult and politically sensitive reforms.

Transforming Village Providers

The challenges in improving service delivery at the village level are different. As for hospitals and township health centers, the NRCMS can improve incentives by introducing better payment methods and more explicit contracting requirements at the village level, and by restricting the range of reimbursable services and drugs. County government can put in place mechanisms for ensuring that public health interventions are reimbursed adequately. This would create incentives to improve quality, increase the focus on primary care, and strengthen referrals. However, as with hospitals and township health centers, changing incentives is only part of the story.

Currently, most village clinics are operated as small businesses, although the actual facilities may be owned by the government or collective. Village providers are at least formally covered by licensing and certification requirements, and are bound by the regulated price schedule. But they are otherwise free of many of the administrative and regulatory constraints that higher-level providers face.

The main challenge at the village level is the weak technical capacity of providers. A recent study in the Beijing area found that only 65 percent of randomly selected village doctors had a secondary technical school degree or equivalent training, while the remainder had no medical training or qualifications beyond high school (You 2003). A similar study of 46 poor counties in the western provinces found that 70 percent of village doctors

Box 6.8**Issues in the Legislation and Regulation of Nonprofit Organizations**

Nonprofit organizations are essentially companies without shares. The principle of nondistribution of profits is the most important legal distinction between NPOs and for-profit organizations. In most countries, the regulatory framework for NPOs comprises not a single law but a series of laws and regulations, many of which are not specific to the health sector.

Most countries have defined procedures and criteria for establishment of NPOs. These include clear “public benefit” criteria for organizations that apply to be established as nonprofit service providers. For example, for a health care organization to qualify for nonprofit status in the United States, it must meet a “community benefit standard” that requires it to show that nonemergency care is provided to all who can pay and that emergency care is provided to anyone, regardless of ability to pay. Once established, an NPO tends to be treated as a “legal person,” with all the relevant rights (to rent, lease, buy, and form contracts) and subject to the same regulations as other legal persons.

NPOs also tend to be subject to laws concerning governing documents, such as charters, that establish the organization’s purpose, its governance structure, the powers of its governing bodies, and transparency and public-disclosure rules. When NPOs are involved in service provision, the government also might impose restrictions on dissolution and liquidation, to protect public interests. Other NPO legislation may concern outside economic activities, tax treatment, financial reporting, and fiduciary requirements, and so on.

Aside from establishing the legal and regulatory framework, the government also plays a role in monitoring and, if necessary, sanctioning organizations once they have been established. This means that careful consideration must be given to what level of government (local or central) and what part(s) of government (ministry, judiciary, or other state body) should have jurisdiction over the registration and oversight of NPOs.

had no more than a high school education and had received an average of only 20 months of medical training (Wang, Xu, and Jiang 2003). These statistics perhaps are unsurprising, given the continuing practice of many former barefoot doctors. Still, they pose a real challenge for reforms that aim to raise standards in health care.

Some local governments have shown that change is possible. For example, one county in Jiangsu required all village health workers to take and

pass a technical exam to continue to operate (Zheng 1998). Another county health bureau fired 80 village health workers who failed to pass a skills assessment, and temporarily reassigned township health center health workers to serve at the village level (Yang et al. 1998). But local reforms may need to be complemented by central and provincial systems to support structural change. Unqualified village doctors must be given opportunities and support to meet new demands. This will require not only financial input from government, but also a system for ensuring that training funds are well used. Retirement arrangements also must be devised for health workers that are either too old or are unable to be retrained. And the government will need to facilitate the entry of qualified health professionals into establishment of village-level practices. At a minimum, this will mean minimizing administrative barriers, but the government also can facilitate access to credit for initial investments.

Another challenge facing NRCMS is monitoring and managing its relationship with numerous and dispersed village clinics. Perhaps the best option is to vertically integrate village clinics with township health centers—that is, the township health centers become owners of the village clinics. Some counties already are doing this. The stated aim of the reforms has been to improve quality of care by controlling drug quality and staff competence, often in the hope that such improvements would increase township health center utilization and revenues. These reforms have taken different shapes, often including a consolidation and rehabilitation of village clinics, increased control by county authorities or township health centers over allocation and supervision of village health workers, and strengthened technical guidance from the township health centers (Wang, Feng, and Gong 1999; Liang and He 2003; Pan and Yan 2004; Qianyang Health Bureau 2004).⁷¹ The reforms have been expected to increase efficiency, improve quality and referrals, and strengthen the focus on prevention. While the evidence is currently thin, vertical integration of township health centers and village clinics may be an important way of strengthening quality control and improving performance of primary health services in some parts of the country.

Reform Priorities, Sequencing, and Capacity

The reform ideas set out in this chapter make for a challenging agenda. They call for organizational reforms, and for strengthened capacity in government, insurers, and providers. They most likely would result in substantial structural change in service delivery systems, with far-reaching implications for the health workforce. This agenda, then, has to be seen

as targeted for the medium and long term. That being the case, it is worth thinking about how a reform process might proceed, and what capacity needs and resistance are likely to arise along the way.

- NRCMS must become a strong “purchaser.” The proposed reforms are premised on a strong and capable NRCMS, acting in the interest of the population it services. As highlighted in chapter 5, NRCMS already has come a long way, yet there is still much work to do—not only in building systems and capacity, but also in creating organizational and institutional arrangements that make the NRCMS a responsive and accountable agent for the covered population.
- Local purchasing initiatives can be expanded. While efforts to strengthen the NRCMS will take time, some local schemes have already shown that payment reforms and simple steps toward “strategic purchasing” are possible. If local NRCMS agencies can be provided with increased technical support and guidance from the provincial and central levels, these local initiatives can be expanded.
- There is a need to evaluate and learn from early reformers. As there is not—and, given China’s diversity, probably never will be—a blueprint for reform, there is a strong case for testing and evaluating different reform options. This will allow NRCMS agencies at all levels of government to learn important lessons, and to improve the design of reforms over time. In some parts of the country where capacity is less of a constraint, more sophisticated purchasing reforms can be introduced without much delay. This could include comprehensive payment systems based on careful cost analysis, explicit quality and performance standards, computerized monitoring systems, and so forth. Again, evaluation will be important so that the experiences of early adopters can inform the expansion of reforms to other parts of China.
- Purchasing reforms need to go hand-in-hand with complementary service delivery reforms. A central tenet of the chapter is that these payment and purchasing reforms may well come to naught if they are not accompanied by a number of complementary reforms: overhauling the price regulation system, increasing provider autonomy over human resources, strengthening systems of government regulation and capital investment financing, and putting in place a public health

agency that has the resources and capacity to contract for key public health interventions.

- Reforming price regulation and increasing provider autonomy will be essential—these are difficult steps to take, but the government has made a start. Without price reform, even the best efforts by NRCMS to reform payment systems will not remove the distortions in provider incentives. And providers cannot reasonably be expected to improve performance if government regulations or planning systems block the way. Fortunately, the government has made a start in both areas. Regulated prices have been edging closer to costs in recent years, although there is still some way to go. And MOH guidelines have pushed for expanded flexibility in hiring and firing, and in contractual arrangements for staff. These efforts will need to be deepened, however. Both cases will involve technical challenges. For example, the cost analysis that underpins pricing needs to be strengthened; more transparent institutional arrangements for reviewing and updating price schedules will be needed; and detailed regulations and oversight arrangements for providers will need to be worked out.
- There will be a need to manage the interests of different stakeholders in the reform process. Perhaps the most important constraint to reforms lies in the resistance that they are likely to meet. Patient groups, providers, and the pharmaceutical industry are all likely to object to a new approach to price regulation, albeit for different reasons. And increased provider autonomy on hiring and firing inevitably will be resisted by “insiders,” who see job security and remuneration threatened. The interests of these parties cannot be ignored, but at the same time they cannot be allowed to stand in the way of reforms that have the potential of bringing widespread benefits. Progress will depend on building broad-based consensus on the need for reforms, and on finding ways of compensating “losers.” Fortunately, China has a long tradition of managing these kinds of difficult reforms.

CHAPTER 7

Enhancing Accountability and Incentives in Public Health

While some differences of opinion may exist over the precise meaning and boundaries of public health (box 7.1), for many years China was indisputably a world leader in the field. Even before the establishment of the People's Republic of China, the People's Liberation Army mounted effective disease prevention campaigns. In 1954, epidemic prevention stations (EPSs)—fully funded by government—began to be established, initially at the provincial level and eventually at the prefecture, city, and county levels (Sidel and Sidel 1982; Du and Tu 1991).⁷² In addition, a number of disease-specific institutes were set up, focusing, for example, on plague, leprosy, schistosomiasis, TB, malaria, and kala-azar. Below the county level, prevention was integrated in the activities of township health centers and village clinics, which were funded either by government or by the collective. Disease prevention was also the focus of mass campaigns, such as “elimination of four pests” and “two controls and five changes,”⁷³ and social mobilization initiatives (Horn 1971; Sidel and Sidel 1982; and Chen 1985). These public health initiatives—along with establishment of the cooperative medical scheme—are largely credited for the spectacular declines in child and maternal mortality that occurred, as well as the virtual elimination of some infectious diseases.

Box 7.1**What Is Public Health?**

One approach to defining public health is in terms of *interventions* and *activities*. At the minimum, public health includes collective or population-wide programs and interventions aimed at addressing risks facing an entire population. Collective public health interventions may include activities such as vector control, better sanitation and water quality, protection against environmental risks, health education and promotion, legislation and regulation, systematic monitoring of health and health risks, and so on. All these interventions can be considered public goods—that is, they generate benefits for the community as a whole rather than for specific individuals. This provides a rationale for making such interventions free of charge through government financing. Governments commonly provide as well as finance public goods because the quality of provision often is hard to monitor, making contracting with private providers problematic.

Public health also covers a variety of activities and interventions that are delivered to individuals but benefit the wider community. Perhaps the most prominent example is immunization, which, by preventing a person from contracting a disease, protects the community. In the language of economics, immunizations have an *external benefit* for the community as a whole. But there are also other personal, or individual, interventions that have community-wide benefits. For example, early detection and treatment of communicable diseases such as TB, HIV/AIDS, and sexually transmitted diseases not only has benefits for the infected person but may also, through various mechanisms, reduce the risks of others becoming infected. Increasingly, screening programs for noncommunicable diseases, such as cancer, are considered to be public health activities.⁷⁴ People will overlook the external benefit associated with personal public health interventions and will focus on their own returns when deciding how much of these services to demand. This calls for governments to subsidize such interventions, if not make them available free of charge. Contracting with private providers often is feasible for such interventions, so government financing of these services need not end up in government delivery.

Another approach to defining public health is in terms of *functions*. A variety of possible functions have been proposed, but common elements in “core” public health functions include prevention and control of disease and injuries, protection against environmental hazards and other health risks unrelated to disease, and public health disaster preparedness and response. Public health functions

(continued)

Box 7.1 *(Continued)*

sometimes are defined more expansively to include quality control and assurance, equity, and human resources, for example (Public Health Functions Steering Committee 1994; Bettcher, Sapirie, and Goon 1998; PAHO 2002; and World Bank 2002b). While a case can be made for government intervention, addressing these concerns is arguably a function of the health system as a whole and not specifically a public health function.

China has made important public health gains in recent times, too. For example, the reduction in TB since 1990 appears to stem from the adoption of DOTS in 1991 (Dye et al. 2000; China Tuberculosis Control Collaboration 2004). However, such successes have been accompanied by new challenges. The SARS epidemic of 2003 not only put a new disease on the map, it also exposed weaknesses in the rural public health system. Communicable disease mortality from some causes has been increasing. And where it has been falling, the rate has been slower than in several neighboring countries. China's rate of reduction of child mortality—while enough to put China on track to hit the MDG target—looks less impressive when set in the context of rapid national economic growth and the achievements of slower-growing economies in the region. Moreover, apparently large socioeconomic inequalities in child mortality and in maternal mortality show no sign of diminishing. And China is facing new public health challenges both from emerging and reemerging communicable diseases and a rapid epidemiological transition.

These challenges have not gone unnoticed. Chapter 3 described a number of important public health policy developments and institutional reforms pushed through by government in the 2000s. It also showed a decades-long, consistent government commitment to prevention and public health, reflected in steadily increasing budget allocations. Indeed, government spending on public health as a share of GDP is relatively high by international standards. Nonetheless, despite considerable progress on the policy and institutional fronts, and steadily rising spending, international experts point to continued weaknesses in China's public health system. These are summarized in table 7.1, grouped around core public health activities.

This chapter analyzes the causes of these weaknesses and outlines some reform options. The analysis draws on material prepared for this study,

Table 7.1 Key Weaknesses in the Public Health System

<i>Activities</i>	<i>Issues and weaknesses</i>
Monitor and analyze health status and health problems of population to guide policy and program development	<ul style="list-style-type: none"> • Poor data quality from administrative systems • Information gaps for important population groups (e.g., floating population) and health problems (e.g., NCDs) • Data inadequately analyzed, and findings and analysis not effectively communicated to policy makers and other stakeholders at different levels • Disconnect between priority health problems and investment in services that actually address those problems
Disease surveillance, case detection and investigation, and preparation for and management of disease outbreaks and other public health disasters	<ul style="list-style-type: none"> • Poor data quality: delays, under- and misreporting, limited coverage (effective coverage of surveillance often limited to urban centers and some township capitals) • Limited data sharing across institutions and levels of government, and persistent problems in reporting standards, communication systems, and cross-agency coordination • Limited and fragmented technical capacity in surveillance, field epidemiology, and laboratory testing, resulting in weak capacity in early recognition of suspect cases and notification of authorities • Weak cross-sector coordination for emergency planning • No system or mechanism for emergency projection or alert, and lack of simulations or drills
Health promotion and education	<ul style="list-style-type: none"> • Local health promotion and education activities not always closely linked with County Framework for Health Education and Promotion Plan developed by the MOH; very little focus on NCDs • Lack of local systematic assessment of needs and opportunities for health promotion and education
Preventive medical services	<ul style="list-style-type: none"> • Access to many preventive health care services restricted to urban areas, and poor coverage of many interventions in rural and remote areas • Preventive and screening services not always free of charge
Design and enforcement of public health legislation and regulations and other health protection measures	<ul style="list-style-type: none"> • Emphasis on administrative licensing rather than health inspections and law enforcement • Tendency to focus on larger and profitable firms/industries in public health inspection and licensing activities, rather than on high-risk ones • Limited work to protect communities against environmental health risks at township and village level; insufficient incentives for THCs and village clinics to contribute to health protection efforts

Sources: Claeson, Wang, and Hu 2004 and Koplan et al. 2005.

including two assessments (Claeson, Wang, and Hu. 2004; and Koplan et al. 2005), case studies of the organization and financing of public health in two counties (China Health Economics Institute 2006; Wang, Sun et al. 2006),⁷⁵ as well as other research. The weaknesses ultimately can be traced to problems with incentives and accountability relationships. Without reforming these, it is argued, the symptoms are likely to persist.

The Misalignment of Incentives and Accountability

Behind every item in table 7.1 lurks the question: Why? Why are the data from administrative systems of poor quality? Why is there a disconnect between priority health problems and investment in services that actually address those problems? Ultimately, the sources for these and the other identified weaknesses can be found in the incentives and accountability relationships arising from the systems for financing and delivering public health.

Local governments (counties) in China are largely left to their own devices to finance and deliver public health. The budgets for public health are set at the county level, largely from county government revenues, which means that local government in the poorest parts of the country spend the least on public health despite facing the toughest challenges. Resources from higher levels of government help, but the flow is small and typically comes with few strings attached (transfers for preventing and treating TB are currently an exception). As a result, local governments have considerable latitude to choose their own health priorities and, within these, their public health priorities. The risk is that inappropriate choices will be made. For example, some local officials may attach too little importance to “jurisdictional spillovers”—the fact that their county’s public health preparedness affects the chances of a neighboring county being hit by a public health outbreak.

Partly because of their limited resources, local governments have relied on a network of providers and institutions that are largely financially autonomous to deliver public health interventions. The network includes the Center for Disease Control, the maternal-child health center, the family planning agency, and other agencies with targeted mandates (referred to here as public health institutions, or PHIs), as well as regular health providers such as village doctors, township health centers, and county hospitals. The precise mix of public health activities in a given county thus depends largely on what these providers and agencies decide to deliver, which in turn depends at least in part on their incentives. Local

governments provide some of the actors with a budget to cover the costs of public health activities, and in the process may appoint staff to the institution. Typically, the budget and the appointments come with a letter of responsibility (LOR) that specifies priorities and performance targets. But in practice these are hard to enforce because of the difficulties of monitoring performance in many public health activities, particularly the population-based ones. For example, a local government cannot easily monitor the efforts and effectiveness of a public health institution's surveillance efforts.

Much of the revenue of public health institutions—except for the family planning agency, which is fully funded out of general revenues—comes from user charges. Such fees often are encouraged by local governments because they reduce the financial drag from public health institutions and health care providers—indeed, some local governments even set revenue targets for these institutions. These charges, which are used in part to pay staff bonuses, are sometimes for public health activities (for example, individuals being charged for out-of-plan immunization or institutions being charged for hygiene inspections) but are often for activities and interventions not related to public health (for example, liver function tests for TB patients). Perfectly rationally, at least from their perspective, public health institutions and health care providers tend to focus on the incentives at the margin, emphasizing public health activities that are more profitable and ignoring those that are not. The winnowing is further tightened by public health institutions' tendency to embrace profitable nonpublic health activities, provided that such delivery does not risk withdrawal of a future contract with the local government and that available staff (including those appointed by the local government) can deliver the interventions. The relatively general training of public health professionals in China makes the latter easier.

How is this mismatch of incentives with accountability related to the weaknesses summarized in table 7.1? Public health data from administrative systems are of poor quality because local governments do not prioritize data collection and data analysis. In fact, the incentives in some respects encourage poor quality data. For example, evidence (from a case reported more fully below) shows that data for the numerator and denominator of immunization rates are of low quality. In part, the shortcoming of the numerator likely reflects the incentive to providers to exaggerate their immunization activity to show they are taking their public health mandate seriously. Similar reasoning explains the disconnect between priority health problems and investment in services to solve

them. What is seen as a priority by an international expert or by someone looking at the larger picture may not seem so to a local government official whose job and promotion prospects may depend on more tangible factors than preventing an outbreak of, say, avian influenza. And even if the services that the international expert sees as a priority are listed as priorities by the government in the LOR, public health institutions are unlikely to focus on them if larger profits can be made by delivering other services. The next section looks in greater detail at the role decentralization plays in the mismatch of incentives and priorities, and explores possible improvements.

Geographic Disparities in Spending

In part, the weaknesses of China's public health system reflect its high degree of decentralization. As noted, local governments are left largely to their own devices to finance and deliver public health activities—the financial transfers from higher-level governments are small and seldom earmarked for public health. The result is substantial disparities in public health spending, with counties facing the toughest public health challenges spending the least. Of course, decentralization per se is not a villain to be universally resisted. When it comes to public health, however, there are good reasons—as the experiences of other countries have shown—to be wary of decentralizing too much (box 7.2).

Box 7.2

The Case for (and against) Decentralization

The division of fiscal, political, and administrative authority across levels of government is an issue that has received considerable attention in China and around the world (World Bank 2002; Shah 2004). A general principle associated with the literature on "fiscal federalism" argues for public services to be provided by the jurisdiction controlling the smallest geographic area that would internalize the benefits and costs of such provision (Musgrave 1959; Oates 1972). It is this theoretical principle that underpins the more practical notion of subsidiarity, which argues that taxing, spending, and regulatory functions should be exercised by lower levels of government unless a convincing case could be made for assigning them to a higher level.

(continued)

Box 7.2 (Continued)

The case for decentralization is based on a number of arguments: (a) local government has better information about local needs and preferences, (b) local provision allows for variation in service delivery to reflect differences in needs and preferences, (c) proximity of decision makers and service providers to the local population may strengthen transparency and accountability, and (d) competition among local governments can promote efficiency.

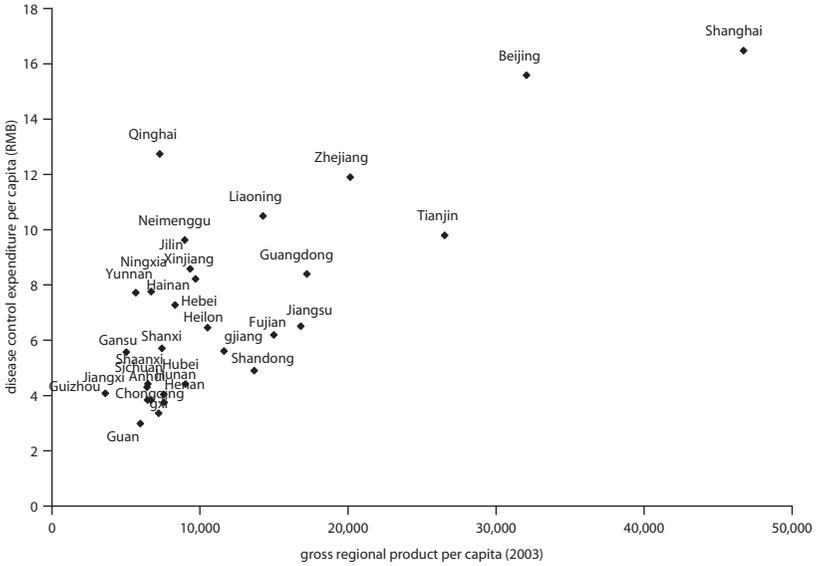
On the other hand, decentralization is widely recognized to have downsides (Prud'homme 1995). For example, local service provision may be inefficient due to insufficient economies of scale and scope in production or because local government lacks technical and management capacity. Local governments may under-spend on some activities due to spillover of benefits between jurisdictions. Local accountability mechanisms may be weak and there may be risk of capture by local elites. Without mechanisms to equalize fiscal resources across localities, outcomes are likely to be inequitable. These potential downsides are more than merely hypothetical. Some evidence shows that decentralization can lead to reprioritization by local government, reflecting failure to consider spillover effects, lack of information and/or technical capacity, and local political dynamics. Examples include a negative impact on immunization rates from decentralization in middle-income countries (Khaleghian 2004), a reallocation of resources from public health to personal health services in Uganda (Akin, J., P. Hutchinson, and K. Strumpf 2001), and a reallocation from primary to secondary care in Nicaragua (Birn, Zimmerman, and Garfied 2000).

Geographical Disparities in Public Health Spending and the Role of Fiscal Transfers

One risk of giving heavy financing responsibility to county governments is that spending across counties will vary considerably depending on the economic development and the fiscal capacity of each county. Results would not just be inequitable but also inefficient. After all, epidemics such as TB, SARS, and avian influenza do not respect county or provincial boundaries. Yet the data show a strong positive correlation between provincial disease control expenditure and provincial GDP per capita (figure 7.1). At the same time, at least some public health challenges, such as TB, are greater in the poorer provinces and counties (figure 7.2).

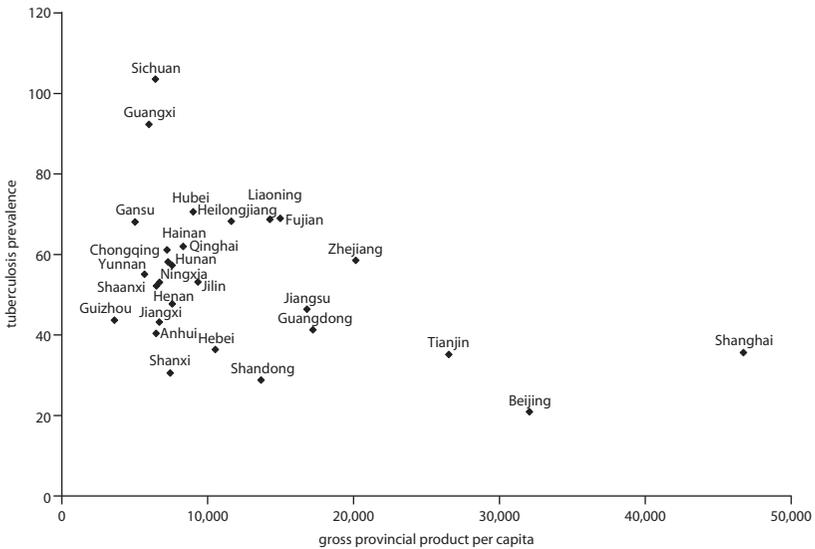
The disadvantages of having counties rely largely on their own resources to pay for public health programs are clear in a number of public health

Figure 7.1 Government Expenditure on Disease Control by Province



Sources: Data on disease control expenditure are from Gong (2003); gross regional product estimates are from the National Bureau of Statistics' *China Statistical Yearbook 2004*.

Figure 7.2 Incidence of TB by Provincial GDP



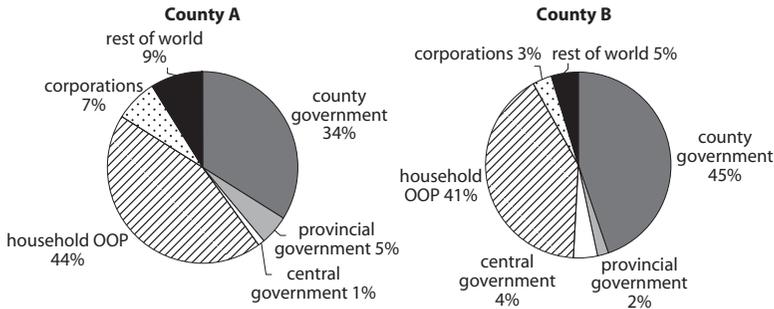
Sources: TB prevalence estimates are from MOH's *Chinese Health Statistical Digest* (2004); gross regional product estimates are from the National Bureau of Statistics' *China Statistical Yearbook 2004*.

areas. Consider the case of TB. Counties have relied largely on their own resources for TB programs (this is now changing), including the matching funds for the World Bank–financed DOTS program that spearheaded the treatment regimen in China. In Shangdong, where the implementation of TB programs has been studied, poorer counties—despite having a higher prevalence of tuberculosis—spent less per capita on TB control than richer ones (Meng et al. 2004). This meant a smaller sum from the World Bank project because of the matching requirement. Unsurprisingly, case detection rates were lower in these poorer counties (Zhan, Wang et al. 2004).

The geographic inequalities in public health spending are to some degree reduced by earmarked transfers for public health. But such transfers are limited. With the exception of periodic investment programs by central government, most earmarked transfers are “demand-driven”—higher levels of government determine the amounts transferred based on specific requests by local governments and their own fiscal capacity. These transactions typically require matching funds by local government. Earmarked transfers for capital investments in institutions with public health responsibilities are one example of transfers that require matching funds. There are also earmarked transfers related to specific epidemic diseases or public health programs such as EPI, which tend to be allocated according to the number of patients to be treated and quotas for preventive care providers, treatment costs, and administrative costs. Some of these transfers also require local matching funds.

Although recent public health investments have resulted in a large injection of funds from the central and provincial levels, very little evidence is available on the actual importance of earmarked fiscal transfers in that process. However, if the findings from the county case studies are indicative, the role of upper-level government in financing public health activities is very limited and confined to a few specific areas. For the two case-study counties, central and provincial government together account for only 6 percent of total spending on prevention and public health, compared to 34 and 35 percent, respectively, by county government (figure 7.3). In both counties, central and provincial funds are used to finance immunization programs, HIV/AIDS prevention and treatment, and other communicable disease programs (figure 7.4).

Earmarked transfers are not the only mechanism for reducing geographical disparities in government spending on public health. Central and provincial governments also use tax-sharing arrangements and general fiscal transfers to ensure that local government has adequate financial resources. General fiscal transfers have been growing in importance in

Figure 7.3 Financing of Public Health Activities at the County Level

Source: Public Health County Case Study.

Note: "Rest of world" refers to international development assistance and other financial flows from abroad.

OOP = out-of-pocket.

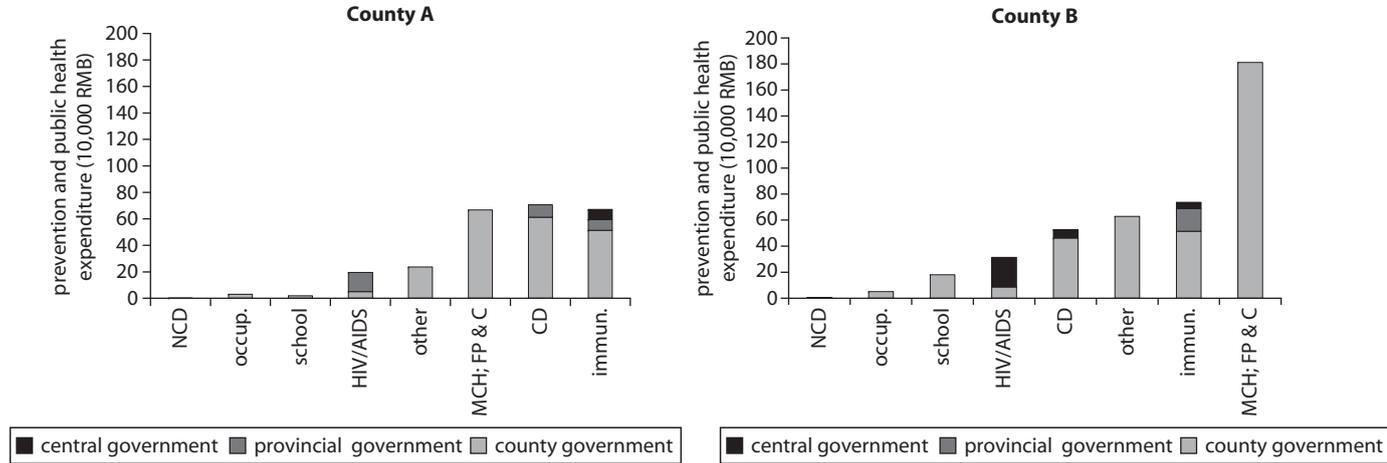
recent years, and are becoming more equalizing. However, they still leave large inequalities in fiscal capacity across counties (box 7.3).

Reducing Geographic Disparities in Public Health Spending

Looking forward, how should disparities in spending on public health across local governments be addressed? Several options are worth considering. One is to convert public health institutions into vertically integrated central or provincial organizations, fully funded by national or provincial government but with local offices. This is essentially how some public health agencies in China such as the Food and Drug Administration (FDA), the Administration of Quality Supervision, Inspection, and Quarantine (AQSIQ), and other government institutions such as the national tax authority operate. This may be a suitable model for some institutions. However, many public health challenges and needs are at least partially local in nature, and there is a strong case for some degree of local input and control. The vertical model is hence unlikely to be appropriate across the board.

The second option is to reduce disparities through the fiscal transfer system. This could involve strengthening ongoing efforts to target general transfers more tightly on poorer provinces and counties, or it could involve expanded and better-targeted earmarked transfers for public health programs. The targeting of general or earmarked fiscal transfers could be based not only on local GDP or income, but also on other factors such as mortality, as well as more general indicators of poverty and deprivation. A famous example of such an approach is the resource-allocation working

Figure 7.4 Central and Provincial Public Health Funds by County Activity



Source: Public Health County Case Study.

Note: NCD = prevention of noncommunicable disease; Occup. = occupational health care; School = school health services; HIV/AIDS = HIV-prevention-and-control-related activities such as surveillance, intervention among high-risk and vulnerable groups, VCT, etc.; Other = all other miscellaneous public health services; CD = prevention of communicable disease; Immun. = immunizations; and MCH, FP & C = maternal and child health, and family planning and counseling.

Box 7.3**Changing Patterns of Intergovernmental Relations in China**

The system of intergovernmental finance has undergone a series of far-reaching reforms in the past 25 years (Wong 1991; West and Wong 1995; Zhang 1999; Ahmad et al. 2002; World Bank 2002a; Wong 2004). Prior to the economic reforms of the late 1970s, all government revenues formally belonged to the central level, and local expenditures were financed through a flexible revenue-sharing arrangement that allowed for considerable equalization. Market reforms eroded this system; and beginning in 1980, a system of “sharing revenues by specific sources” was introduced—sometimes referred to as a shift from “unified revenue and unified expenditure” to “cooking in separate kitchens.” In the period leading up to the introduction of the Tax Sharing System (TSS) in 1994, central government budgetary revenue fell from around 47 percent to 39 percent, and this was mirrored by a fall in central budgetary expenditure from 51.1 percent to 28.3 percent in 1993 (Zhang 1999). By 1993, provinces collected and spent around two-thirds of budgetary resources.

Another trend during the 1980s was a steady decline in government budgetary revenue as a share of GDP—from approximately 28.7 percent of GDP in 1978, to 12.6 percent in mid-1990.⁷⁶ The “fiscal contracts” that were introduced in 1988 to stem this decline led to a system of lump-sum provincial remittances to central government, with remaining revenues being retained by the provinces, which were left to resolve subprovincial fiscal arrangements. As part of this arrangement, provinces accepted responsibility for meeting expenditure requirements, thus essentially unlinking revenue sharing from expenditure needs. The fiscal contracts also contributed to expanding geographical disparities in fiscal resources.

In 1994, the TSS was introduced to increase budgetary revenue as a share of GDP and central revenues as a share of total revenues through rationalized revenue-sharing arrangements, tax modernization, and improved tax administration. Expenditure assignments remained loosely defined, however, leading to duplication and shifting of responsibilities among levels of government. This limitation aside, the TSS succeeded in increasing the “two ratios”: total budgetary revenues increased as a share of GDP to over 18 percent in 2002, and the central government share of total budget revenue rose to around 50 percent. Local government expenditure continued to account for approximately 70 percent of total expenditure, and the resultant fiscal gap increased the need for central fiscal

(continued)

Box 7.3 *(Continued)*

transfers. However, both flat revenue-sharing arrangements and the predominance of compensatory transfers (fixed subsidies and tax rebates) have served to maintain or even exacerbate regional fiscal disparities, which are reproduced at the subprovincial level.

Although recent developments—the declining importance of tax rebates, the introduction of new equalizing transfers, and growing emphasis on equalization at the subprovincial level—are promising, the trends in the fiscal system have had profound implications for the health system. First, it has been widely argued that the transfer system has not adequately filled the vertical fiscal gap that was opened by centralization of revenues while expanding expenditure responsibilities at lower levels of government, thereby undermining the capacity of local governments to deliver services. Second, the growing geographical disparities between and within provinces are arguably highly inequitable and, insofar as they prevent local governments from performing functions with benefit spillover, inefficient (West and Wong 1995; World Bank 2002a).

party (RAWP) formula that has been used in England since 1976. The formula uses a number of indicators to determine allocations to local health authorities, including mortality rates, disability rates, the fraction of older people living alone, the number of children living in single-parent households, and the unemployment rate. The redistributive effect of the formula is significant, with the most disadvantaged health authority getting 40 percent more per capita than the average, and the most advantaged one getting 20 percent less per capita (Smith, Rice, and Carr-Hill 2001).

If public health remains largely a local responsibility, which is better—general or earmarked fiscal transfers? In contexts other than public health, there is a case for the former, since general equalization transfers allow the local government to allocate resources in accordance with local preferences and needs. But general fiscal transfers have limitations when it comes to public health. Indeed, as the next section shows, good reasons explain why resource allocation decisions should not be left entirely at the discretion of local government.

Roles and Responsibilities across Levels of Government

Reducing geographic disparities in public health spending is just one of the intergovernmental challenges faced by China's decentralized public

health system. As mentioned previously, not only are transfers from higher levels of government small, but the transfers have relatively few conditions attached, and the ones that are attached are not strongly enforced. This gives local governments considerable latitude to choose their own health priorities and, within these, their public health priorities.

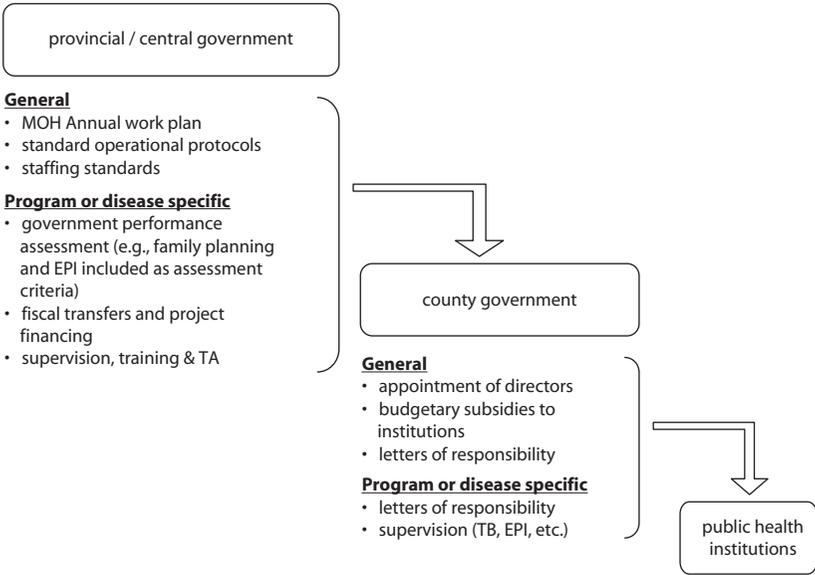
The risk is that local officials will choose priorities that reflect narrow rather than broader concerns. Local populations have limited influence on decision making by local government officials, who may be more attuned to special interests with vested concerns such as the pharmaceutical and tobacco industries, health providers, and so on. And local officials preoccupied with their own affairs may overlook how their decisions affect neighboring counties and the country as a whole. The recent experience with SARS was a powerful reminder that communicable diseases do not respect county, provincial, or national borders—failure to detect and control a disease outbreak in one locality has profound implications for China as a whole, as well as for other countries. But because county governments naturally will tend to prioritize local benefits in deciding how much to spend on disease control activities, even jurisdictions with less binding resource constraints will tend to “underspend” on public health.

This section reviews the relevant evidence. It discusses how higher-level governments influence lower-level governments. It then asks whether lower-level governments set the wrong priorities, and concludes they do. It goes on to suggest some reform options.

Higher-Level Government’s Limited Influence on Local Priority Setting

With limited financial leverage over lower-level governments, higher-level governments have resorted to other mechanisms to promote public health goals (figure 7.5). For policy and technical direction, MOH develops annual work plans that are disseminated to provinces and municipalities at an annual National Health Conference, and then further disseminated to local government through local work-planning meetings. This planning process is meant to provide overall direction for public health activities at the local level, although no formal mechanism exists for ensuring that plans actually are implemented. MOH also has issued standards for the organization and activities of CDC/EPs, including staffing guidelines, organizational structure, and operating protocols that specify the tasks, monitoring arrangements, division of labor, and so forth. Similar, albeit less detailed, standards have been issued for other institutions with public health responsibilities. These standards form the basis for performance assessment by local health bureaus. There are also a

Figure 7.5 Vertical Control and Accountability in China's Public Health System



number of program- or disease-specific performance management mechanisms. For example, the system of government official performance assessment, which determines the promotion prospects of local politicians and officials, includes indicators relating to family planning, EPI, HIV/AIDS, and preparedness for avian influenza. National priority programs also have program-specific monitoring, supervision, and training arrangements.

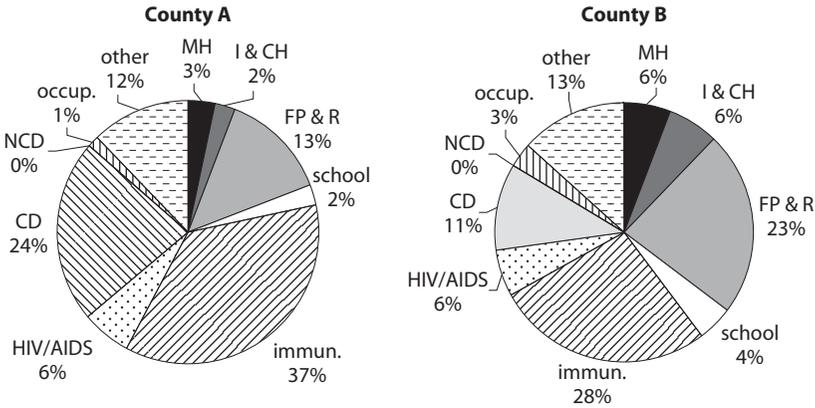
These vertical performance management arrangements in turn shape how county governments finance and organize public health activities. While the allocation of budgetary subsidies to public health institutions and health care providers with public health responsibilities essentially is historically and norm based,⁷⁷ most counties rely on letters of responsibility to set out priorities and performance targets. These are signed between the health bureau and institutions such as the Centers for Disease Control, maternal-child health centers, county hospitals, and township health centers. Performance is scored at the end of the year, with implications for the promotion prospects of directors and staff. Letters of responsibility also can extend to village clinics. For example, in one of the case-study counties, village clinics sign a LOR with the township health center, which sets out indicators for infectious disease reporting, MCH,

and clinical services. The township health center monitors clinic activities, and license renewals are conditional on a satisfactory performance review against the indicators in a clinic's LOR.

Although a number of mechanisms of vertical control and coordination are in place, the performance management system is undermined by important weaknesses. First, the roles and responsibilities of institutions at different levels of government remain unclear. In particular, higher-level public health institutions, such as the provincial or city Center for Disease Control, have little incentive to provide technical assistance and training to lower-level institutions (Wang and Cai 2003). Second, performance data from lower levels of government are weak, reflecting incentives and inadequate systems of quality control. For example, a recent report on immunization data (Deming 2002) found unclear and conflicting information on both the population of immunizable children (denominator) and the number of children actually vaccinated (numerator). This makes program assessment and improvement impossible, impedes planning and resource allocation, and reinforces a weak system with false perceptions of performance. Third, higher-level government has limited means to influence the incentives of lower-level government and to enforce established standards or targets. Financial leverage through transfer systems already has been shown to be limited. Moreover, institutions at a higher level exercise no direct administrative or legal control over institutions at lower levels. For example, the local health bureau rather than the city or provincial Center for Disease Control has the formal responsibility to appoint the director, make staffing decisions, oversee the budget process, and set performance targets for a county-level CDC.

These weaknesses are, indeed, reflected in seemingly inappropriate local priorities. The two-county case study for this report (China Health Economics Institute 2006; and Wang, Sun et al. 2006) suggests that despite national plans and policies, virtually nothing was spent on noncommunicable diseases—for example, on behavior change interventions or other prevention—in either of the two counties (figure 7.6). The study also found that in the epidemic and prevention stations in both counties, the number of staff for disease prevention and control is only half of the mandated number.⁷⁸ Among township health centers, only one out of eight investigated met MOH requirements that 30–50 percent of township health center staff work on disease prevention and control and MCH, and most of the public health staff had no formal training in public health. Similar problems have been found in other studies (Zhang 2005).

Figure 7.6 Where Is Money for Public Health Going?



Source: Public Health County Case Study.

Note: MH = maternal health; I & CH = infant and child health; FP & R = family planning and reproductive health; School = school health services; Immun. = immunizations; HIV/AIDS = HIV prevention and control related activities such as surveillance, intervention among high-risk and vulnerable groups, VCT, etc; CD = prevention of communicable disease; NCD = prevention of noncommunicable disease; Occup. = occupational health care; and Other = all other miscellaneous public health services. The estimates are based on both public and private financing.

Realigning Roles and Responsibilities Across Different Levels of Government

The outcomes above suggest the desirability of having higher-level governments exercise more responsibility in setting priorities and financing and delivering public health at the local level. Vertical integration is a possibility, permitting direct hierarchical control along the lines of the FDA and the AQSIQ. But for the reasons cited earlier, this model may be unsuitable for the public health system. An alternative would combine better-targeted fiscal transfer earmarks with stronger accountability in public health relations across different levels of government.

In part, the task ahead is to encourage lower levels of government—through carrot-and-stick incentives—to choose priorities that reflect wider provincial and national concerns while delivering services of appropriate quality. But the challenge is also to ensure that higher-level governments provide local governments not just the financial resources, but also the human and technical resources needed to perform high-priority public health functions. Public health requires highly specialized technical skills, some of which are inefficient to generate and maintain locally. Higher-level governments can provide these skills—whether through analysis of sur-

veillance data and other routine technical functions or by lending public health staff to county governments during disease outbreaks.

Higher-level institutions should be given more explicit responsibilities, incentives, and mandates to provide technical support and guidance to lower-level institutions. Coherent public health standards and targets that reflect national policies and priorities should be established for county governments. This process might usefully start with a reevaluation of how public health priorities are currently set—a difficult exercise for which there are no quick fixes and no right answers, but for which better data and clearer guidelines are increasingly available (box 7.4). Such standards and

Box 7.4

Cost-Effectiveness and the Challenge of Prioritization

Widely agreed-upon key goals for any public health system include prevention and control of injuries and disease, population protection against environmental hazards and other health risks, and preparation for and response to public health disasters. Meeting these goals involves a wide range of strategies and practices—monitoring of the population's health status; systems for disease surveillance, case detection, and outbreak control; health promotion and education; preventive medical services; design and enforcement of public health legislation; and so on.

With limited resources, the government faces difficult choices about allocating its money. Which preventive health services should be prioritized? Which health issues should be the focus of health promotion campaigns, and how should those campaigns be undertaken? How much money should go into the surveillance system? And perhaps the most fundamental question of all, what basis should be used in making these decisions?

An obvious way to meet the challenge of prioritization is to weigh and compare the costs and health benefits of different courses of action. This is essentially what generalized cost-effectiveness studies do—that is, they ask how many life-years (adjusting for disability or quality in more sophisticated analysis) would be saved by spending an extra dollar on different interventions. For example, the childhood vaccinations traditionally included in national immunizations programs (for TB, diphtheria, tetanus, pertussis, poliomyelitis, and measles) have been shown to be highly cost-effective in most contexts. Similarly, a number of other public health interventions—for example, promotion of breast-feeding and

(continued)

Box 7.4 *(Continued)*

other healthy behaviors, prevention of respiratory infections and diarrhea in children, and prevention and treatment of TB and possibly HIV/AIDS—are routinely considered essential public health services because of their relative cost-effectiveness (World Bank 1993; WHO 2000; and Jha and Mills 2002).

Notwithstanding the conceptual appeal of this approach, a recent study of OECD public health systems (Allin et al. 2004) found that “none of the eight countries has explicit, systematic procedures for making decisions affecting public health or setting priorities among different public health interventions.” Burden of disease and the scope for prevention certainly were considered in decision making, but the study found that political negotiations, interest group pressure, and other factors also played a role. Inherent methodological challenges also explain why cost-effectiveness analysis often has been downplayed in prioritization exercises (Kenkel 2000). For example, how should the nonmonetary costs of public health interventions—such as changing behaviors—be taken into account? Considering that the results of prevention often are seen only over the longer term, how should future costs and benefits be discounted? To what extent can evidence from one country or context be generalized to another? And what about equity considerations?

While many of these challenges remain, cost-effectiveness evidence has gained importance and acceptance in recent years. As seen in a recent study (Jamison et al. 2006), the evidence base is expanding rapidly. Many countries are investing in research programs and institutions to strengthen and consolidate the evidence on best practices in public health—for example, NICE in the United Kingdom, the CDC Guide to Community Preventive Services and the Preventive Services Task Force in the United States, and the Cochrane Collaboration Reviews.⁷⁹ In all of these efforts, economic evaluation plays an important role.

But even if governments now can access better and more comprehensive evidence on cost-effectiveness in public health, this evidence inevitably will continue to be a partial guide. Cost-effectiveness is, after all, only one of many relevant criteria for prioritization. And the data on cost-effectiveness is likely to remain elusive in some areas of public health. Consider, for example, what it would take to determine the number of life-years saved from investments in disease surveillance. Undoubtedly the human and economic costs of a disease outbreak can be enormous, but to determine the role of surveillance in preventing or reducing those costs clearly would be a Herculean task. Similar challenges arise in other areas of public health, such as disaster preparedness, monitoring and

(continued)

Box 7.4 (Continued)

analysis of health problems, and so on. The randomized controlled trials that would be needed are hard even to imagine.

So how do health systems deal with prioritization, given highly imperfect information and multiple criteria? As previously mentioned, countries are increasingly investing in systems to strengthen the evidence base for policy making, and many countries have put in place institutions and agencies that routinely scrutinize public health practice in light of available evidence. In some areas, cost-effectiveness cannot be a guide. Instead, decisions about the scope of activities such as surveillance will need to be based on an assessment of the relative importance of different risks and challenges, and the capacity to address them through specific activities or interventions. Striking the right balance is not easy, particularly considering how quickly challenges and opportunities can change. This has led Canada (Health Canada 2003) and the United Kingdom (Wanless 2004) to undertake in-depth reviews and consultations on public health goals and priorities. Similar exercises have been undertaken in other countries. This might be an opportune time for China to do the same.

targets must go hand-in-hand with systems of performance accountability. Those systems depend on reliable information and on effective incentives—through fiscal transfer operations, as well as rewards and sanctions for government officials and managers working in public health.

Instituting these changes will depend not only on reforming the mandate and incentives of institutions with public health responsibilities at the central, provincial, and city levels, but it also has implications for the governmentwide system of performance management. While the reforms would be far-reaching and difficult, China has experiences on which to build. For example, the new Centers for Health Inspection and Supervision (CHIS) receive full funding from government, and higher-level centers have a legally defined role to supervise law enforcement and review staff qualifications of the lower-level institutions. China can also learn from other countries. Many nations leave the responsibility for public health to local governments, but also maintain a variety of fiscal, legal, and organizational arrangements to exercise some degree of vertical control (see box 7.5). This toolkit of options includes earmarked fiscal transfers, legal provisions that mandate minimum standards by local government, performance targets and monitoring, technical guidance and support, and so on. These

Box 7.5

Public Health in a Decentralized Context: How Do Other Countries Do It?

Most countries make public health primarily a local responsibility. However, central and provincial/state governments often retain important roles. This reflects the importance of specialized technical expertise in some areas of public health, the need to safeguard equity goals and other national interests (for example, to conduct surveillance for and combat outbreaks of communicable disease), and the comparative advantage of national government to provide “public goods” such as research and public health evidence.

Focusing on the United Kingdom, Canada, and the United States, the table below provides an overview of the organization of public health at different levels of government, and of the financial and institutional mechanisms that higher levels of government employ to guide and strengthen local public health activities. Despite important differences across the three countries, there are also important similarities. First, local responsibility for public health tends to lie with a single agency or organization, facilitating coordination and prioritization. Second, financing of local public health programs and activities primarily comes from higher-level government. Third, higher-level institutions primarily play a technical, coordinating, and oversight role, and work in close collaboration with lower-level organizations. Fourth, higher-level governments employ a wide range of mechanisms to influence the resource allocation and activities of local government, including regulated minimum standards, performance targets, fiscal levers, deployment of higher-level staff, and training, among others.

	<i>United Kingdom</i>	<i>Canada</i>	<i>United States</i>
Local public health responsibility	Primary Care Trusts (PCTs) have the main responsibility for primary and community health (covering populations ranging from 60,000 to 380,000).	In most provinces/territories, Regional Health Authorities or Boards play the leading role in implementing public health programs (covering populations ranging from 600,000 to 2.4 million).	In most states, county or municipal health departments have primary responsibility for implementing public health programs (usually covering a population of less than 25,000).

(continued)

Box 7.5 (Continued)

	<i>United Kingdom</i>	<i>Canada</i>	<i>United States</i>
Higher-level agencies	<p>Twenty-eight Strategic Health Authorities are responsible for performance management; nine Public Health Observatories monitor and report on health and disease trends; the national Health Protection Agency (HPA) is responsible for surveillance and health protection; the National Institute of Clinical Excellence develops and maintains evidence base for public health; the Commission for Healthcare Audit and Inspection (CHAI) monitors performance and value for money.</p>	<p>Public health branch of provincial government is responsible for policy, priority setting, financing, and oversight. New Public Health Agency of Canada was established in 2004 to provide federal leadership on public health, and facilitate coordination with provinces/territories. Other federal agencies include federal laboratories and the Canadian Food Inspection Agency. New Pan-Canadian Public Health Network has been established to strengthen coordination and collaboration.</p>	<p>State public health departments, sometimes combined with Medicaid offices, are responsible for policy making, priority setting, data collection and analysis, financing, and oversight. Federal government, through the Department of Health and Human Services (DHHS), has regulatory authority and contributes financial resources. Other federal agencies include the Center for Disease Control, Food and Drug Administration, Administration of Children and Families, etc.</p>
Financing	<p>Overall funding to PCT is determined by a formula that takes into account health needs.</p>	<p>Limited use of conditional transfers by federal government. Provincial government partially funds local public health programs through conditional transfers.</p>	<p>Federal matching grants make up 50–85 percent of state public health budgets. State also contributes funds for public health. Local responsibility is primarily through a matching requirement.</p>

(continued)

Box 7.5 (Continued)

	<i>United Kingdom</i>	<i>Canada</i>	<i>United States</i>
Vertical performance management mechanisms	Annual Local Delivery Plans for PCTs set out 33 targets, 11 of which relate to public health; CHAI periodically assesses value for money and ensures that public health standards are met; surveillance is a national responsibility, but implemented by HPA in collaboration with PCTs.	Provinces define mandatory programs linked to funding, regulation, and monitoring mechanisms. Provincial Chief Medical Officer can intervene at local level. Local medical officers are sometimes provincial employees. Composition of local health boards is legally defined. Pan-Canadian Public Health Network coordinates on standards for information collection and reporting, dissemination of best practices in public health, and provides support in the event of emergencies.	The DHHS strategy Healthy People 2010 lays out quantifiable national public health objectives and monitoring strategies. The National Public Health Performance Standards Program, administered by CDC, defines and monitors performance standards for local public health agencies. Some CDC staff are posted to state health departments. CDC provides training in surveillance and field epidemiology, and provides financial and technical support to promote the standardization, coordination, and performance of surveillance systems at the local level.

Sources: Health Canada 2003, Wanless 2004, and Wall 1998.

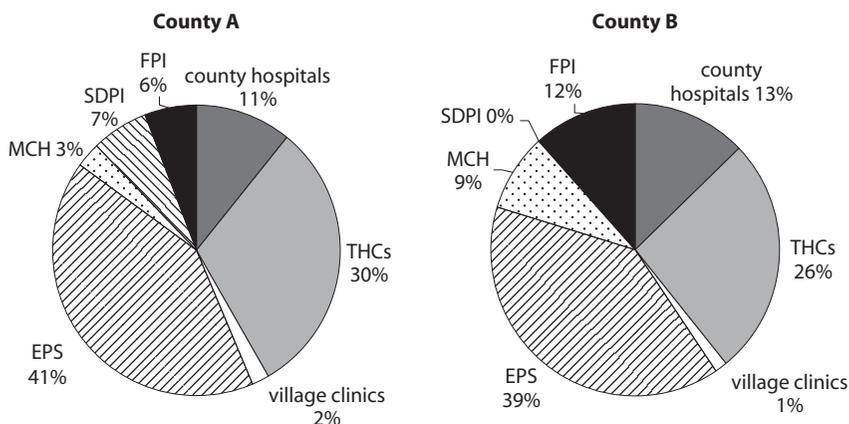
country examples feature a common theme: the relative roles and capacities of institutions at different levels with public health responsibilities always are defined clearly, and duplication across levels is limited. This, in turn, has implications for skill mixes and technical capabilities (of laboratories, for example) at different levels of the system.

Clarifying Responsibilities and Financial Incentives at the County Level

As noted earlier, it is not just the decentralized nature of China's public health system that is problematic. The incentives and accountability relations at each level of government are also an issue, especially at the local level, where services are delivered and providers paid. Local governments rely on a network of financially autonomous institutions with public health responsibilities, as well as health care providers, for the delivery of public health interventions. These institutions and providers receive some budgetary support for public health activities, but can earn additional revenues through charging patients and institutions for public health—and other—activities and interventions. The result is fragmentation and duplication, mission creep, underprovision of some public health interventions, and oversupply of others.

A Fragmented System

The public health actors in a typical county include the bureau of health, the Center for Disease Control, the family planning institute, the maternal-child health center, disease-specific public health institutes, the Center for Health Inspection and Supervision, the FDA, the Environmental Protection Bureau, county hospitals, township health centers, and village clinics. To date, there has been little information on the relative importance (in terms of expenditure) of these different institutions. The county case studies suggest that township health centers and the CDC epidemic prevention station account for most of the spending on prevention and public health (71 and 65 percent, respectively, in the two counties, as shown in figure 7.7). The case studies also clearly reveal considerable overlap in the types of public spending by different health institutions (figure 7.8). Matters are likely to be even more complicated in counties where the new Centers for Health Inspection and Supervision have been established and counties where there may be other disease-specific institutions. In recent years, some formal integration of different institutions has occurred in some localities—for example, MCH centers and family planning institutions at the county level or township health centers and family planning institutions at the township level. These experiences show that integration is possible when there is strong local government leadership; without it, fragmentation is likely to persist, and even with it, the process is likely to be slow.

Figure 7.7 Accounting for Public Health Spending by Institutional Type

Source: Public Health County Case Study.

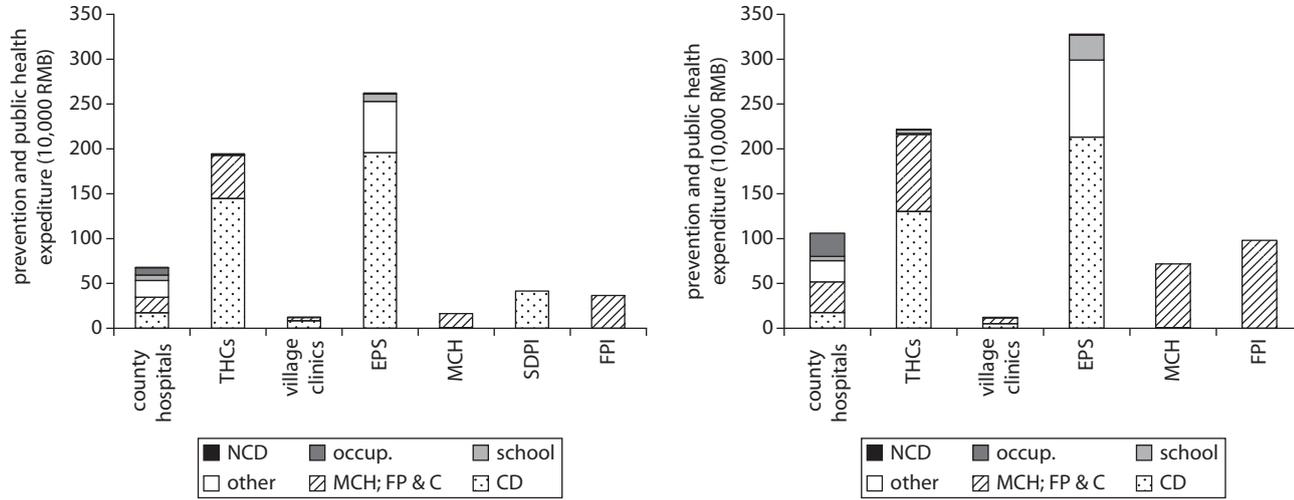
Note: THC = township health center; EPS = epidemic prevention station (CDC); MCH = maternal and child health centers; SDPI = skin disease prevention institute; and FPI = family planning institute.

The current fragmentation of the public health system is problematic for many reasons. It undermines the development of comprehensive and coherent public health strategies by restricting information sharing and coordination. It also results in inefficient and costly duplication and competition. For example, there are multiple laboratories in the two case-study counties—in the epidemic prevention stations, hospitals, and in other agencies such as FDA, EPA, and AQSIQ. All these laboratories operate independently, with little information exchange and coordination.⁸⁰ Similarly, considerable overlap occurs in the services provided by the MCH center, the county hospital, and the county family planning centers, with similar duplications frequently reproduced at the township level. The result is not only inefficiency and redundant capacity; by undermining integrated and coordinated care, it also has implications for quality of care.

Financing Woes: Mission Creep, Profit-Seeking, and Demand Inducement

The 1980s brought a series of reforms that gave institutions with public health responsibilities—including both public health institutions and health care providers—considerable latitude to generate business income.⁸¹ As with health care providers, the Centers for Disease Control and other institutions also have been given discretion over the use of business revenues. The result has been bonus schemes that link bonuses

Figure 7.8 Service Overlap across Institutions with Public Health Responsibilities



Source: Public Health County Case Study.

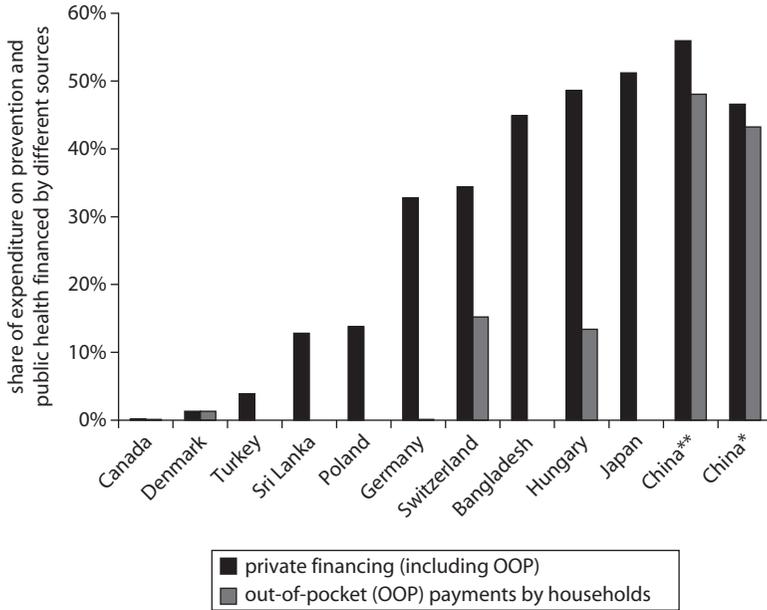
Note: NCD = prevention of noncommunicable disease; Occup. = occupational health care; School = school health services; Other = all other miscellaneous public health services; CD = prevention of communicable disease; MCH, FP & C = maternal and child health, and family planning and counseling; THC = township health center; EPS = epidemic prevention station; MCH = maternal and child health facility; SDPI = skin disease prevention institute; and FPI = family planning institute.

to the facility's financial performance. These changes have produced a steady expansion of business income, despite increasing government subsidies. They have also made China somewhat unusual in its heavy reliance on household out-of-pocket spending to finance public health programs. In most countries, public health spending is financed mainly by government or by social health insurance programs. Private financing sometimes plays an important role, reflecting high corporate spending on mandatory occupational health checks, screening, or workplace safety (such as in Germany, Hungary, Japan, and Poland), or an important role by nongovernmental organizations in prevention and public health activities (as in Switzerland and Bangladesh). In contrast, a large share of public health spending in China is financed by direct household expenditures. It is difficult to get comparable estimates for the financing mix for China, but evidence from the county case study suggest that government financing only accounts for 40–50 percent of expenditures for prevention and public health, with out-of-pocket payments accounting for much of the rest (figure 7.9).

What public health programs or activities is out-of-pocket financing actually paying for? In the two case study counties, out-of-plan immunization is the largest single item of household out-of-pocket expenditure on preventive public health services (figure 7.10). This includes vaccinations against encephalitis B, typhoid fever and hepatitis A, which are targeted at the better-off population as a way for providers to generate income. Even planned immunization, supposedly free of charge, accounts for 5–10 percent of household out-of-pocket spending. TB treatment, also supposedly free under DOTS, accounts for another 10 percent or so. Family planning also absorbs a fairly large share in both counties. Of course, there may be a legitimate case for charging for some of these services. For example, they may not be deemed cost-effective enough to be included in a core package of services, but the government may opt to make the services available on cost-sharing basis. However, the problems arise because current financing arrangements give public health institutions and health care providers an incentive at the margin to deliver these services, possibly at the expense of cost-effective services that should be provided free of charge to patients.

In part, the heavy reliance on business income rather than government budgetary subsidies to finance institutions with public health responsibilities reflects a steady mission creep, whereby these institutions have expanded their activities into areas other than public health that have revenue-generation potential. In both of the case-study counties, MCH

Figure 7.9 Financing Sources for Prevention and Public Health



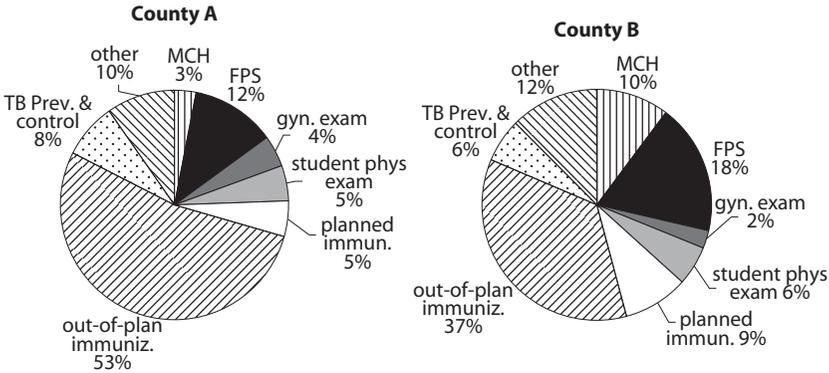
Sources: Orosz and Morgan (2004), *OECD Health Data*, Bangladesh National Health Accounts (2003), Sri Lanka National Health Accounts (2001), MOH (2005b), and *World Development Indicators*. Data for China is from NHA background study by CHEI (2006). Estimates are based on functional classification of expenditures, and exclude deliveries. For China, estimates for out-of-pocket financing of PPH are based on county case studies.

Note: China* refers to county A, and China** refers to county B. In both cases, data are for 2003 and, as for the other countries, exclude deliveries and capital formation.

centers increasingly were operating as small hospitals focused on maternity care and pediatrics, with less than 10 percent of staff was working on MCH services. The MCH center in one of the case-study counties was planning to open pediatric wards and a swimming pool for children, and to charge for services such as screening for gynecological conditions and reproductive tract infections, and early childhood development monitoring.⁸²

Another segment of revenue growth represents a shift in focus from public health interventions with low profit margins to ones with higher profit margins. For example, the Center for Disease Control, maternal-child health centers, and township health centers increasingly have focused on profitable public health services such as selling vaccinations outside the EPI plan,⁸³ licensing food producers and restaurants, and providing

Figure 7.10 Where Do Out-of-Pocket Expenditures on Prevention and Public Health Go?



Source: Public Health County Case Study.

Note: MCH = maternal and child health facility; FPS = family planning station.

“supplementary” services (for example, caesarian sections for childbirth or liver function tests for TB patients).

There is a third—and more worrying—source of revenue growth, namely demand inducement. Sometimes this simply involves delivering more of an intervention than is medically necessary. For example, in the border regions of Yunnan and the mountainous regions of Hainan where malaria remains endemic, overprescription of antimalarials is an acknowledged problem (Government of China 2006). The local, poorly educated minority population has limited knowledge of preventive health matters, and providers take advantage of this, the result being that some of China’s poorest citizens end up paying unnecessarily for and contribute to anti-malarial resistance, creating a vicious circle. In other cases, providers shift demand from public health interventions with low profit margins to ones with higher profit margins. For example, as discussed in chapter 2, the DOTS program has seen examples of providers exploiting their greater knowledge and the fact that they control access to free drugs to make money from patients by insisting that they have additional care to that in the free DOTS package.

Clarifying Public Health Responsibilities and Changing Financing Rules

The obvious way to strengthen coordination and improve local performance would be to consolidate the overarching responsibility for public

health in a single institution—or at least fewer institutions. This could be done, for example, by expanding the mandate of the Center for Disease Control to include MCH-related functions, family planning and reproductive health, and potentially other functions now performed by separate county-level institutions, and by strengthening the collaboration and coordination between the Center for Disease Control and the county health bureau. Integration at the local level does not necessarily imply that public health agencies at higher levels should be integrated. Indeed, as higher-level institutions focus more on providing technical support, guidance, and supervision to lower levels of government, institutional separation with clear mandates and responsibilities may be an advantage.

Another key step would be to ensure that the expanded Center for Disease Control or new public health agency is funded fully by government. Insofar as the Center for Disease Control is allowed to deliver services and undertake activities for which charges are levied, these fees should be considered general nontax revenue, not revenue of the CDC—that is, separation of revenue and expenditure within the agency needs to be strictly enforced. To combat the problem of underutilization of public health interventions because of cost recovery, all key public health interventions ought to be made available to individuals free of charge. To eliminate any tendency toward mission creep, it would make sense simply to bar the CDC from engaging in any activity involving a charge.

“Overarching responsibility” means that the reformed CDC would plan, support, and oversee all public health activities in the county. Its priorities would be dictated by the local government, but it would have responsibility for ensuring that local government has the information needed to make decisions, and that priorities are in fact met. The CDC would not be responsible for delivering personal public health interventions such as immunizations and screening—these are delivered most appropriately by health care providers such as county hospitals, township health centers, and village clinics. This not only avoids duplication, but also supports an integrated model of primary care. The reformed CDC would, however, perform or deliver many population-based public health functions and activities: the analysis of public health needs and identification of appropriate responses; the compilation, communication of, and response to surveillance data; the organization and implementation of population-based public health interventions such as media campaigns and vector control; and so forth.

The CDC also would support and oversee population-based interventions by other institutions or organizations in the county. In delivering

some population-based interventions and activities—for example, school health programs, general health education and promotion, feeding and breastfeeding counseling, vector control, improvement of water and sanitation—the CDC would look to regular health care providers (especially township health centers and village clinics). It may also look to nongovernmental organizations, charities, and other private organizations, especially to service hard-to-reach target groups. In both cases, the CDC would play a leading role in identifying needs, providing technical guidance and support, and monitoring performance.⁸⁴ Similarly, the CDC would collaborate and coordinate with other organizations or specialized agencies outside the health sector—on issues such as road safety, school programs, environmental risks, and food standards, among others. Such issues increasingly are recognized to be both extremely important as well as very difficult to resolve (see box 7.6).

As discussed in detail in chapter 6, methods for compensating health care providers and other organizations for delivering public health services need to be changed. Positive incentives must be given to deliver services in appropriate quantities with adequate quality. This includes preventive services such as immunization and TB screening. But at lower township and village levels, providers also need incentives to engage in collective public health activities such as health promotion and information dissemination, vector control, water and sanitation inspection and improvement, and environmental risk assessments. Chapter 6 argued that the most direct way of compensating providers for personal public health services is on a fee-for-service (FFS) basis. For population-based public health activities at the township and village level, other financing arrangements must be found, either by posting salaried public health staff to township health care providers or by contracting more effectively with township health centers and village clinics to carry out defined actions.

What would these proposals mean in practical terms for county health systems? For one thing, restructuring would be required, with responsibilities for disease prevention and control, maternal and child health, occupational health, disaster preparedness, enforcement of public health legislation and regulation, and perhaps family planning being brought under one roof. Given current arrangements, an expanded CDC that integrates the expertise and resources of other institutions, is an obvious candidate for this role. The institutional links and collaboration between the Center for Disease Control and the Bureau of Health would need to be strengthened so that the bureau's policy development, planning, resource allocation, management of health insurance programs, and other

Box 7.6**The Challenge of Intersectoral Public Health Coordination**

A central premise of public health practice is to focus on the wider determinants of health. As a result, public health interventions tend to span a broad range of actors and stakeholders. Consider, for example, the question of road safety. Injuries from traffic accidents are estimated to account for the loss of more than three million potentially productive life years in China, which amounts to an estimated US\$3 billion annual economic cost (Zhou et al. 2003). Effective measures are available, including better road construction, reduced high-risk behaviors, and stronger legislation and regulation. Clearly, many such measures lie beyond the mandate of the health sector and require collaboration with the transportation, law enforcement, and education sectors. Despite the heavy human and economic toll from road crashes, progress on official safety targets, monitoring, and regular analysis of road safety has been slow (Bliss 2003).

Effective action to reduce smoking-related morbidity and mortality also depends on multisectoral coordination. WHO estimates that China has 350 million smokers, nearly one-third of the estimated total worldwide. Research has shown that smoking caused nearly one million premature deaths in 2000 (Liu, Peto, and Chen 1998). In addition, smoking-related illness accounts for a sizable share of overall health care costs. One approach to reducing smoking is to increase the cost of cigarettes through taxation. But increased tobacco taxes would have substantial economic consequences—more than four million Chinese households are dependent on tobacco for their income; over 500,000 people are employed by the cigarette manufacturing industry; and the state-owned tobacco company generated nearly US\$2 billion in profits and taxes for the government in 2003 (Hu et al. 2006). So far, the requisite coordination among the MOH, institutions with public health responsibilities, and the ministries of Agriculture, Finance, and Economics and Trade has proved elusive (Kin, et al. 2002). Many other potentially effective interventions—such as workplace programs, health promotion and mass media campaigns, and advertising regulation—are also multisectoral.

The expanding HIV/AIDS epidemic also poses a multisectoral challenge. According to official estimates, China had 650,000 infected individuals in 2005, 70,000 of whom were infected in that year alone. When the first cases were discovered in 1989, HIV/AIDS was seen as a health problem affecting specific population groups. However, the broad socioeconomic ramifications of the epidemic now are recognized widely. The multisectoral dimensions of HIV/AIDS prevention

(continued)

Box 7.6 *(Continued)*

programs also have become apparent. Thus, programs targeted at intravenous drug users (for example, methadone replacement therapy) or at commercial sex workers and their clients have depended on close collaboration between health agencies and the Ministry of Public Security. Recognizing this fact, a State Council Working Group on HIV/AIDS was established in 2003 to better coordinate the national response to the disease.

Multisectoral action also is needed in other areas, such as environmental health risks, indoor air pollution, and water and sanitation. In areas like these, a failure to coordinate is likely to result in inefficient resource allocation, policy and program duplication and incoherency, and inadequate learning and information exchange. However, while the importance of coordination and collaboration between sectors and between governmental and nongovernmental actors is clear, effective coordination is difficult to achieve in practice. Strategies have varied across countries. A common approach is to develop multisectoral strategies and plans, sometimes linked to the formation of networks, coalitions, partnerships, or coordinating bodies. For example in the United Kingdom, primary care trusts at the local level have established partnerships with local government to address issues like teenage pregnancy, drugs and crime, promotion of physical conditioning, and so forth. Invariably, the challenge in these efforts is to ensure that funding streams and accountability frameworks both enable and reward coordination.

Another approach is to establish a single body with overarching responsibility for public health. For example, Canada recently created a federal Public Health Agency to facilitate coordination. Similarly, the United Kingdom has created the post of Minister of Public Health in the Department of Health. However, some observers, pointing to the profoundly intersectoral nature of public health, have questioned locating the position within the Department of Health, and argued for the appointment of a Commission for Public Health that reports to Parliament or even for establishment of a new Ministerial Department of Public Health.

responsibilities are effectively supported by and fully consistent with the work of CDC.

The proposals also would mean that the CDC (and all other public health institutions folded into it) would stop providing personal public health interventions such as immunizations, and concentrate on defining, supporting, monitoring, and financing a range of personal and

population-based public health interventions by county hospitals, township health centers, and village clinics.⁸⁵ In financing personal public health interventions, the CDC could delegate responsibility for contracting and monitoring of providers to the NRCMS or the Bureau of Health to exploit their existing systems for these tasks. At the same time, provided that the CDC retains some control over resource allocation for public health, some problems experienced by other countries that rely on health insurance schemes to finance public health services could be avoided.

Finally, some specific technical functions, laboratory testing in particular, are needed for both health care and public health. To avoid duplication and facilitate quality control and information sharing, options for establishing a single laboratory or a connected laboratory network at the county level should be explored. Of course, organizational changes would require new financing arrangements that create appropriate incentives for both the integrated public health agency and health care providers, and measures to ensure that the respective organizations have adequate staff with appropriate skills. These issues are discussed in more detail below.

The main challenges in implementing this model concern compensation and motivation. Currently, bonuses are an important source of staff remuneration in institutions with public health responsibilities. Bonus size depends not only on income generation by the institution as a whole, but on the revenue performance of specific divisions or even individuals. There is little hard data on bonus payments, but the county case study findings suggest that bonuses account for between 25 and 30 percent of the total annual income of a public health worker, with a difference within an institution between the highest and lowest bonus as large as Y 300 per month. The transformation of CDCs into fully funded government agencies will solve the problem of pay differentials and the difficulty of attracting staff to low-bonus positions. At the same time, however, without some compensatory measure, the switch will reduce remuneration across the board. Not only would this be unacceptable to current workers, it would make public health an increasingly unattractive career path. That would be a move in the wrong direction since the public health system currently has a shortage of staff with vital technical, management, and planning skills. The county case study found that many employees in institutions with public health responsibilities lacked formal training in epidemiology or other disciplines relevant to public health; and expertise in the behavioral sciences, health promotion, and statistics was almost completely absent.⁸⁶

One option would be to grandfather existing (average) bonuses by incorporating them into a more generous salary structure. This would have the benefit of attracting newcomers to the field, and would help create a sense of professionalism among public health workers. If increasing salaries is problematic because beneficiaries would be put on a higher salary scale than other public services unit employees, a new (higher) “clinical PSU” scale could be created for public health (and other health sector) workers. This practice is not uncommon in countries where health professionals end up being paid more than civil servants or university staff working in nonmedical disciplines. Most likely, some additional government spending will be required. It is unrealistic to expect local government to carry the burden, at least in the absence of an improved system of general fiscal transfers, thus implying a larger financing role for central or provincial government. Since this policy change implies a reduction of out-of-pocket spending on public health, households ought to be willing to see some increase in direct or indirect taxation to help fund it.

Priorities, Sequencing, Political Economy, and Skills

Implementing the reform ideas set out in this chapter will entail extensive organizational change.

- The creation of a single local public health agency—possibly around the existing CDC—with overarching responsibility for public health at the country level—will involve the merger of several existing institutions. The potential benefits from such rationalization and refocusing are huge, but the path to achieving these rewards will not be easy. Strong and determined leadership from all levels of government will be needed.
- Refocusing responsibility for delivery of personal public health interventions on regular service providers also will entail some organizational changes. They should be less complex than the creation of a single public health agency, however, because regular providers already are delivering such interventions. The challenge will lie in persuading the reconstituted public health agency to relinquish its role in the delivery of personal public health and other health services. This should not be insuperable, however: the prize for the public health agency is securing overarching responsibility for public

health, a more challenging workload requiring a highly professional and skilled staff, a larger budget, and the promise of unchanged—if not somewhat higher—levels of take-home pay. The issue of pay will need to be resolved in collaboration with other ministries—MOH cannot resolve the matter by itself.

- Organizational changes also will occur across levels of government. Local governments will lose some autonomy over priority setting but will gain additional resources; many will get additional financing through larger (earmarked) fiscal transfers, and all will secure access to enhanced technical support from higher levels of government. Higher-level governments will gain some control over priority setting in the field but will be required to provide additional and better-targeted resources—both financial and human.

In addition to preparing for the organizational changes involved, the reforms would require careful technical preparation, including careful study and effective use of international experience. Key areas of technical work include the following:

- Prioritizing between population and personal public health interventions, as well as within each category
- Selecting, by the CDC, service delivery providers for personal interventions, and designing a payment method and schedule for different interventions
- Designing a formula for allocating earmarked public health transfers to local governments
- Putting together partnership agreements between the CDC and service providers to cover the technical and organizational aspects of joint efforts to deliver population interventions—such as counseling of groups at risk of contracting HIV/AIDS.

Substantial upgrading of technical capacity is likely to be required at the local level, both in the reformed CDC and on the service delivery side. But a key theme of the chapter has been that local institutions like the Bureau of Health, the CDC, and service providers ought to be able to count on greater technical support from higher-level institutions. A rolling program of support around the province by provincial-level staff and around the country by national-level staff would be the obvious way for local institutions to get the initial assistance required. It would also imply a staged introduction of the reforms that would facilitate evaluation and

readjustment as implementation is rolled out, with later adopters learning from the experiences of the early adopters. This is in keeping with China's piloting tradition in reform.

How should various elements of the proposed reforms be sequenced? Two elements are obvious candidates for immediate action.

- *Realignment of responsibilities and roles across levels of government.* Higher-level governments will need to commit early to enhanced technical support of lower levels of government, but will also need to secure greater control over prioritization near the outset.
- *Setting up an integrated public health agency.* Establishing the agency—and the associated scaling back if not closing down of other agencies that the process involves—will entail costs. There is a case for covering these and other reform-related costs through a one-off expenditure allocation to counties to expedite matters. Without a fully financed professional public health agency in place, the other elements (such as contracting with providers for personal public health interventions or entering into partnerships for jointly delivered population interventions) cannot be introduced. While the technical work is being undertaken to finalize these other elements, the public health agency could make arrangements with service providers to cover the interim.

As with the financing reforms, a great deal of work is involved. But the result would be a sound incentive and accountability environment that enables China to reclaim its status in the world as a public health leader. Adding new equipment, upgrading facilities, training new staff, and other well-intentioned measures will have considerably more impact if they are introduced into a sound incentive and accountability environment; and insofar as these measures precede fundamental reform, they risk being undermined by the current environment and having little impact at all. In fact the result may simply be greater “rents” for public health providers, more mission creep, and more demand creation. As challenging as the process may be, ultimately there is no substitute for reforms that incentivize public health officials to focus on maintaining and improving population health, service providers to deliver appropriate preventive interventions, and local governments to prioritize public health activities in line with available evidence and in consideration of spillovers to neighboring jurisdictions.

Annex: Case Study of Public Health Financing and Organization in Two Counties

While a wealth of routine data and published research is available to shed light on the financing and operation of health care providers in China, much less information exists about how public health programs and institutions with public health responsibilities are financed and organized. To overcome this constraint, a case study was undertaken.

The background study was undertaken as a collaboration between the World Bank and the China Health Economics Institute. The study focused on two counties in Guangxi Province.⁸⁷ Its aim was to describe in detail: (a) the public health activities actually undertaken by institutions with public health responsibilities and by health care providers in the county, (b) the accountability and incentive arrangements for institutions with public health responsibilities, and (c) expenditures on public health. Information on (a) and (b) was collected through literature reviews, semistructured interviews with key informants, and institutional surveys.

Expenditure data were collected by source of financing (including both public and private sources), by function, and by type of provider or institution. Insofar as possible, the collection and compilation of expenditure data followed the methodology proposed in the OECD System of National Health Accounts, although in some areas the data collected were considerably more detailed. The collection involved review of administrative and survey data; in-depth interviews with key informants at the province and county level; and data from over 75 health institutions in the two counties, including epidemic prevention stations, maternal-child health centers, family planning institutes, centers for skin disease prevention, county hospitals, township health centers, township family planning institutes, and village doctors.

The public health study was implemented in March 2006. The field visit took about two weeks. Before the investigation in the two counties in Guangxi Zhuang Autonomous Region, a pilot study was implemented in Anding District in Gansu Province to test the feasibility of the methodology design. After the pilot in Gansu, the investigative tools—consisting of a master questionnaire for semi-instructed interviews with key informants and 37 data collection forms—were finalized. Further information and findings are provided in the study reports (CHEI 2006; Wang, Sun et al. 2006).

CHAPTER 8

The Longer-Term Reform Agenda

The further measures outlined in chapters 5–7 would do much to advance the reform process launched in the mid-2000s. Yet many of these steps extend beyond the rural system. The reforms proposed for service delivery and for public health would require changes in the urban health system as well. Many of the financing reforms are specific to the New Rural Cooperative Medical Scheme; others have implications for the urban schemes, too. Thus scaling back supply-side subsidies and redirecting them to the demand side would involve reallocations not just to NRCMS but also to Basic Medical Insurance (BMI) and the new urban scheme. Additional steps might even be taken toward joint management—if not integration—of the rural and urban insurance schemes. Even so, the health system will still face some unresolved issues, especially in the realm of financing and purchasing health care. This chapter outlines some unresolved issues and suggests how further reforms could address them. This is, it should be emphasized, a longer-term reform agenda, being less urgent and requiring more extensive institutional reform.

Limitations of the Emerging Health Insurance Model

The approach outlined in chapter 5 involved building on NRCMS to make it more effective. Some jurisdictions are likely to take steps toward

joint management and possibly even integration of NRCMS with the urban schemes. The overall picture is likely to remain a montage of separate contribution-based insurance schemes that cater to particular segments of the population. In principle, all of these schemes might become more effective—for example, by acting as purchasers or incentivizing groups of providers to deliver better care at lower costs. They might all become more successful in reducing evasion and undercontribution, possibly even becoming mandatory. Yet the fact remains that different schemes would still be catering to particular groups, and their financing would probably remain at least partially based on contributions. This is precisely where the system as a whole is likely to encounter problems.

The Problem with Payroll Contributions

Compliance among formal sector workers is likely to remain an issue. Individual workers and their employers may conspire to underreport the worker's earnings to the BMI office. Workers simply may not join the scheme despite being required to. Or they may informalize their job status by entering into a contract or self-employment arrangement with their employer, thereby reducing their benefit entitlements—but also their contributions (potentially by an even larger amount). Noncompliance and switching to informal working arrangements may be fueled by a sense of inequity. Formal sector workers might well argue that they are paying twice for health insurance—once through their contributions and once through their (other) taxes (albeit with a better benefit package than those in the basic health insurance scheme for urban residents). Problems of this sort are well documented in other social health insurance (SHI) countries (Wagstaff 2007b). Although evidence is limited, this issue appears likely in China as well.

There is also a risk that Chinese firms will lose international competitiveness and foreign direct investment to countries that finance relatively more of their health care through general revenues. Germany—the country that is the home of social health insurance—believes it has suffered precisely this fate, and consequently has decided to scale back the share of payroll taxes in health financing in favor of general revenues. It is true that payroll-based contribution rates in China's BMI are lower than in Germany's scheme (around 9.5 percent compared to 14 percent, respectively). But BMI rates are higher than those in some neighboring countries (Vietnam, for example, takes just 3 percent of earnings). Several foreign companies have reported decisions to locate investments elsewhere in Asia because of China's high labor costs, which depend in part on social security costs—especially in the accessible coastal region.

There is a case, then, for gradually reducing the reliance on payroll-based contributions in health insurance. A recent book by World Bank staff (Baeza and Packard 2006) urged Latin American countries to do just this. In Western Europe, the trend has been to reduce the reliance on payroll taxes in financing health care. In the 1970s and 1980s, several countries abandoned a contribution-based social health insurance system in favor of a universal tax-financed system: Denmark (1973), Iceland (1972),⁸⁸ Italy (1978),⁸⁹ Portugal (1979), Greece (1983), and Spain (1986). Some of the Western European countries that stuck with a social insurance system have reduced their reliance on contributions during the 1990s. In the Netherlands, social health insurance contributions as a share of total health spending fell from a high of 69 percent in 1993 to 58 percent in 2003 (the most recent year for which data are available), while Austria reduced its share from a high of 47 percent in 1995 to 41 percent in 2003.⁹⁰ In France, where 75 percent of health spending is financed by social health insurance, a 1998 reform all but eliminated the employee payroll contribution. It was replaced by a “general social contribution” based on total income and payable by everyone, not just wage earners. This now accounts for 35 percent of the revenues of the country’s social health insurance agency.⁹¹ There are plans in France to reform the employer contribution as well. In Germany, the negative effect of social health insurance contributions on employment is recognized widely by all political parties; and in 2006 the German health minister described the exclusive linking of health finance to earnings, rather than to income more generally, as the Achilles’ heel of the country’s social insurance system (Schmidt 2006). The Social Democrats favor households’ paying contributions linked to income from all sources, and the Christian Democrats favor a flat-rate contribution with subsidies for low-income households (Schmidt 2006).

One area of the world where social health insurance has advanced in recent years is central and eastern Europe and the former Soviet Union. Of the 28 countries that are part of the World Bank’s Europe and Central Asia region, 18 abandoned tax finance and adopted social health insurance at some stage between 1990 and 2004. Early adopters (in 1990–92) included Bosnia and Herzegovina, Estonia, Hungary, Lithuania, Macedonia, and Slovenia. Some countries did so years later—for example, Bulgaria in 1999. The experience to date has been mixed. In several countries, the move to social health insurance paved the way for provider payment and broader purchasing reforms that might not have happened otherwise; however, gaps in coverage, negative labor market consequences, and revenue shortfalls have been common throughout the region (Langenbrunner, Sheiman, and

Kehler forthcoming). Some countries, in fact, have expressed second thoughts about adopting social health insurance. In 1999, Hungary began to reduce its reliance on social health insurance contributions; and in 1998—only two years after adopting it—Kazakhstan abandoned social health insurance altogether. The governments of the Ukraine and Uzbekistan have both postponed plans to switch from tax finance to social health insurance. Latvia and Lithuania both adopted social health insurance but decided early on against a traditional payroll tax in favor of a broader income tax. In 2004, however, Latvia abandoned even this in favor of broader general revenue financing. Interestingly, though, Latvia kept its social health insurance agency intact.

The Problem of Fragmented Insurance Schemes

Strengthening China's existing government health insurance efforts entails the drawback of working within the framework of three completely separate health insurance schemes, with target groups partly defined by occupation and partly by place of residence. One problem is that the schematic dividing lines will become increasingly blurred. The categorization of areas as rural or urban changes over time, in part because of continuous rural-urban migration. Rural counties also have urban-designated areas within them. Moreover, the rural-urban distinction is not the only one that separates NRCMS and BMI. They also are divided by the occupations and industries to which they cater. NRCMS focuses specifically on farmers, not on all rural residents. Many teachers, civil servants, and state enterprise workers who live in areas currently designated as rural are enrolled in BMI. These same people could be enrolled with NRCMS through their households, too, if a spouse happened to be a farmer. The eligibility lines that separate the schemes inevitably will become less and less clear with the passage of time.

Differences in the schemes also are reflected by revenues per member. As of 2006–07, BMI received on average around Y 1,000 per person and the NRCMS less than Y 100. Unsurprisingly, coverage also differed dramatically, with BMI members receiving more expensive care though not necessarily paying smaller copayments. These inequalities breed resentment among the rural population, contradicting the ideal of a harmonious society.

Fragmentation creates inefficiencies as well as inequities. Opportunities to reap economies of scope and scale in the management of health insurance are lost through operation of separate schemes. Each scheme must create its own provider payment system, certify its providers, and set up its

own financial management and auditing systems. Substantial cost savings could be achieved through consolidated management, which would also help pave the way for eventual merger. Fragmentation also makes it difficult to establish provider payment systems that impart consistent and coherent incentives. Providers may discover that more money is to be made in treating patients insured with, say, BMI than patients covered by NRCMS. The idea that providers might skim off BMI patients at the expense of less-lucrative NRCMS patients could result in patients with greater needs being sent to the end of the treatment queue. Finally, fragmentation may make it harder for a person to move from one job to another, or from one area of the country to another. Cumulatively, this may inhibit the labor market mobility that has benefited the country economically.

Of course, the differences between the schemes could be narrowed. For example, a common benefit package could be adopted. Common provider payment methods and tariffs could eliminate the risk of providers favoring patients from one scheme over patients from others. Such steps would require that revenues be evened out among schemes. Similarly, tax-financed subsidies could be increased and then targeted at those with relatively lower revenues and higher risks. A solidarity fund could be set up (along the lines of the Colombian model) in which BMI enrollees would pay a solidarity tax to help finance coverage (albeit less comprehensive than BMI's) in NRCMS and the new urban scheme. Another option would be to pool the resources of the three schemes, with each receiving capitation payments per member weighted by age, gender, and factors such as location. Whichever option is chosen, consideration needs to be given to how fast the gaps would be closed. Would the narrowing be accomplished through a leveling-down of BMI benefits (perhaps with a complementary private scheme to restore decreased coverage), a leveling-up of NRCMS benefits, or a combination of the two?

The road toward harmonizing arrangements raises another question. Does it make sense to keep the schemes separate or to merge them? Some countries have multiple schemes that coexist without competition. They offer benefit packages that pay providers similarly and raise contributions according to similar rules, but they cater to different sections of the population as defined by occupation, geography, or some other factor. In general, the trend seems to be toward merger. In Korea, which achieved universal health insurance (UHI) in 1989, 350 separate insurance plans operated in the social health insurance system during 1989–2000. These were merged into a single scheme in 2000 (Kwon 2003a). In Japan, where

UHI was achieved in 1961, there are 5,000 plans in the social health insurance system; unsurprisingly, there has been a debate recently about the potential benefits of a merger (Ikegami and Campbell 2004). One reason to resist a merger is that separate schemes may provide demonstration effects to one another—a scheme that is consistently more expensive to operate or has consistently poorer treatment outcomes could be investigated by the authorities to remedy those defects, while consistently strong performers could be allowed to generate lessons for others.

Competition is another rationale for keeping multiple schemes. Examples where this actually happens can be found in Belgium, Germany, Israel, the Netherlands, and Switzerland. A potential benefit is that competition could help to drive down costs. A potential drawback is that costs could be reduced by selectively taking on clients who were “good” risks and shunning the “bad.” To minimize the cost disparity, governments have established risk-equalization mechanisms whereby schemes with high-risk profiles are compensated by those with lower-risk profiles. Such mechanisms also are used in setups whereby insurers cater to different sections of the population. In some countries, these devices are fairly sophisticated (for example, the Netherlands), while in others (such as Switzerland) they are much less so (van de Ven et al. 2007). A recent study concluded that although the risk-equalization schemes in Belgium, Germany, Israel, the Netherlands, and Switzerland have become more sophisticated, risk selection remains a major problem in all five countries. Indeed, risk selection has become more pronounced despite the increasing sophistication of the schemes (van de Ven et al. 2007). Because of the difficulty of devising a successful policy to minimize risk selection, the merits of competition among health insurers remains hotly debated.

A Dual Agenda for Financing Long-Term Reform

China faces a dual long-term challenge for health financing: to narrow the gaps between the various schemes (if not ultimately to unify them), and to shift from a contribution-based system through payroll deductions to a broader financing base involving general revenues. Any financing system should be consistent with the importance of local government in financing of social programs as well as the essential unifying role of central government. That said, China probably will want to allow some limited diversity in coverage, both between the poorer and richer parts of the country and, within each area, among people with differing willingness and ability to pay for health coverage. Full equality of coverage may be

neither feasible nor desirable. Less inequality, by contrast, is feasible and is something for which the government is striving.

Assembling the Elements of a Viable Future Financing System

The system sketched out below involves a combination of tax-financed cover and privately financed supplementary cover. There is some variation in generosity of the former by locality; however, a minimum floor is guaranteed by central government transfers to local governments. The key elements of the financing system are the following:

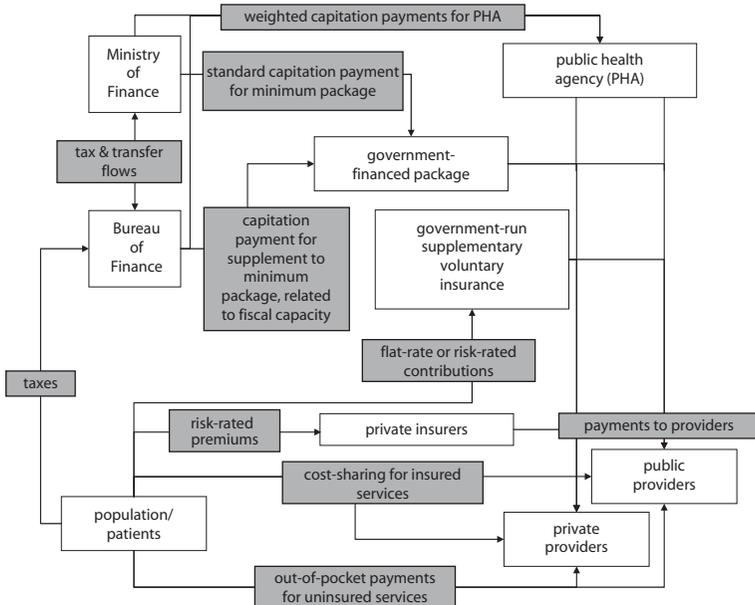
- All local governments would be required to offer a minimum benefit package that would be financed entirely by central government. This nationally financed core package could be funded out of existing central government revenue streams, or by reducing rebates and transfers in the fiscal transfer system (with richer counties losing proportionally more), or by a mixture of the two. The package would include not only relatively cheap ambulatory care (including key personal public health interventions) but also some more expensive inpatient care; it would therefore provide some coverage against the risk of financially catastrophic health events.
- Local governments would be encouraged to use their own resources to expand the package beyond the nationally guaranteed floor. This local-government-financed supplement to the minimum package would include some ambulatory care and inpatient care not covered in the minimum package. The exact amount would likely depend on the fiscal capacity of each local government (calculated after receipt of transfers from higher-level governments), with richer governments being encouraged to offer more generous supplements. Local governments might select interventions to be included in their supplement packages, but reasonable consideration should be given to central government priorities, expected demands for interventions, and the amount of resources that are available.
- Even with the supplement to the minimum package, some services would remain uncovered. Local governments might therefore be encouraged to operate a government-run voluntary top-up insurance scheme to cover a large fraction of what remains uncovered, with central and local government determining the exact services to be included. This top-up insurance scheme would be financed entirely

through contributions from those who choose to enroll. Enrollment fees would be flat-rate rather than linked to income. Participation is likely to be higher among the better off, especially among those currently enrolled with BMI who would rely on this scheme to maintain their coverage close to the level they currently enjoy. A merit of having the government run the top-up scheme is that interventions easily can be shifted from it to the local government-financed supplementary package as the economy grows. Furthermore, the government has a financial interest in limiting “demand inducement” by providers.

- Some services would not be covered even by a government-run voluntary top-up insurance scheme. These would be financed either in full through out-of-pocket payments or through supplementary private insurance. A reasonable target for the out-of-pocket share might be 15 percent rather than the 60 percent of spending seen during the 2000s. Private insurance might comprise around 10 percent of total spending. Some public providers would be allowed to deliver some of these “uncovered” services, but provider performance would be closely monitored, and its license to deliver uncovered services would be revoked if there were evidence of demand inducement or of uncovered services being delivered at the expense of covered services.
- The same health financing agency would administer both the government-funded schemes and the voluntary top-up insurance scheme. This ensures that first- and second-level providers are paid by the same organization and that the organization can achieve economies of scale by focusing on a large range of services and can develop consistent ways of paying providers across all services. The arrangement also ensures seamless transition when the scope of the government-financed package expands and the voluntary top-up scheme narrows.
- The health financing agency would contract with public and private providers to deliver care under the government-financed and voluntary top-up insurance schemes. Providers would be paid through methods that discourage demand inducement and inattention to cost, along the lines outlined in the medium-term reform section above. Providers would be governed and regulated as proposed in the short-term reform section above.

The financial flows in the proposed system are shown in figure 8.1. Tax finance would provide everyone with a basic level of coverage, and the voluntary contributions would provide deeper coverage for those paying the contributions. The basic level of coverage could be defined in terms of the interventions covered: it could exclude specific catastrophic interventions, or it could exclude certain predictable and relatively inexpensive interventions. The alternative (which is also more consistent with the proposal for the medium-term reforms) would be to define the basic coverage in terms of cost-sharing arrangements. The supplementary coverage would then either extend the range of interventions covered or reduce the amount of cost sharing for which the patient is liable. As China's per capita income increases, the size of the basic scheme could grow. It could also vary from one location to another. Central government could finance a core package for everyone, and local governments could contribute additional funds according to their fiscal capacity to finance the remainder of the basic package. The latter would be more generous in areas where local governments have greater fiscal capacity.

Figure 8.1 Financial Flows in the Proposed System



Source: Authors.

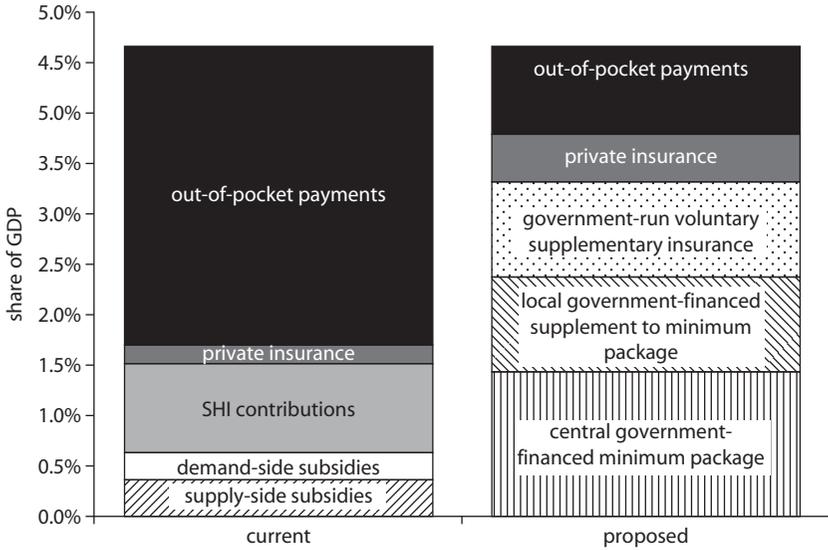
This system differs in three key ways from the one that would be produced by following the reforms outlined in chapters 5–7. First, there is no payroll financing, which would lessen concerns over health financing having negative impact on labor markets, international competitiveness, and foreign investment. Second, the three schemes are replaced by one. This would reduce inequities and administrative costs, and probably overall health care costs. The proposed scheme would allow citizens to “upgrade” the coverage offered by the regular government insurance schemes without resorting to out-of-pocket payments or private insurance. This would help China grapple with the inevitable tension between trying to cater to everyone and the reality that not everyone is equally willing or able to pay for health care. Dissatisfaction is likely to be stirred by a public insurance scheme that offers homogeneous coverage within geographic areas marked by significant income differences. This would further push better-off people toward private insurers and providers, thereby reducing overall political support for the public scheme. Finally, a voluntary top-up program within the public scheme would align far better with the government’s vision of a harmonious society. As a political idea, it is far more acceptable than a private market for the “haves” and a public program for the “have-nots.”

Moving to the System Envisioned for the Longer Term

The proposed financing mix is compared with the actual financing mix (albeit for 2004) in figure 8.2. The proposed mix is illustrative, not definitive. The existing mix is included to show how the mix would change. Total health spending is held constant at around 4.7 percent of GDP.⁹² In thinking about the transition between these two pictures, one should keep several things in mind:

Medium-term reforms already have changed the system. A number of key steps toward the long-term vision would have been taken previously through the medium-term reforms outlined in previous chapters:

- Supply-side subsidies would have been gradually scaled back, and the monies transferred to one of the health insurance schemes or to the public health programs (that is, to demand-side subsidies).
- Existing demand-side subsidies (notably to NRCMS and BMI) would have increased, and out-of-pocket payments would have fallen.
- Some social health insurance contributions (notably to NRCMS) also might have been scaled back, if not eliminated. To further prepare for the abolition of contributions, it would be possible within

Figure 8.2 Current (2004) and Possible Financing Mixes

Sources: See box 5.1; authors.

the short-term reform period to hold BMI contributions constant (or reduce them slightly each year) and use general revenues/voluntary contributions to plug the revenue gap.

- Steps toward integration of the insurance schemes also might have occurred during the short-term reform process. As suggested above, the schemes might have moved toward joint management, if not put under a single agency.
- Finally, if the proposals for a fairer financing scheme for NRCMS were adopted, gaps between the schemes also might have shrunk.

Moving beyond the medium-term reforms will result in further changes. Further alterations will ensue as the system evolves from the short-term reforms to the longer-term vision. These changes will be institutional as well as financial:

- *The three insurance schemes would become one.* The experiences of other countries—including industrialized economies in Asia as well as transition economies in Europe—might provide useful perspective as China thinks through an institutional transition from multiple insurance schemes run by different agencies to a single scheme. The technical and

management capacity built up in the current schemes and the proposed new urban scheme will, of course, prove invaluable in the new unitary health financing agency.

- *The new single scheme would be financed by general revenues, bringing together what were previously demand- and supply-side subsidies—including those financed by central and local governments. Contributions would disappear. As a consequence, wages would rise because employers would no longer be liable for the employer contribution. Other taxes would rise, but depending on the balance between direct and indirect taxation, after-tax wages might reasonably increase.*
- People wanting deeper cover would top up their coverage through *voluntary contributions to the government-run voluntary scheme*. Many BMI members would probably use much (if not all) of their increased take-home pay to purchase top-up coverage under the voluntary scheme. This would be more affordable for the better off because the top-up payments would be flat-rate and the rise in take-home pay would be higher for the better off. China would need to establish the voluntary scheme within the new unitary health financing agency.
- There clearly would be scope to devise transition arrangements for those who are adversely affected. For example, the top-up contributions of BMI enrollees could be subsidized at a rate that tapers gradually as the transition progresses. China has successfully engineered transitions in the past to reduce the costs of those who lose out from reforms.

Getting from Here to There

The reform ideas outlined above represent a challenging long-term agenda. Although they are consistent with China's decentralized system of government, they would undeniably entail major change. The unification of health insurance schemes under a single health financing agency and the switch from a contributions-based system to financing through taxes and voluntary top-up contributions are both major policy shifts. Yet neither policy goal need be accomplished overnight. The unification of schemes is likely to be gradual, beginning with measures that narrow gaps in benefit packages, contribution arrangements, and provider payment methods, and then move toward joint management. Bringing them together under

a single agency, establishing a single benefit package and a supplementary top-up scheme, and scaling back contributions in favor of tax finance can be implemented in stages. Some parts of the country could proceed more rapidly than others, providing lesson-learning opportunities for the provinces that are slower to adopt the new model. This step-by-step approach would allow progress toward a system that eventually encompasses the whole of China, allowing for necessary diversity and without the pitfalls of a health financing system dependent on a too-narrow tax base. It would facilitate improved equity and efficiency in health financing and delivery in a way that is consistent with China's approach to government, and consonant with its vision of a harmonious society.

CHAPTER 9

Conclusions

Historians will look back on the 2000s as the decade when China shifted gear from its earlier focus on economic development to its new balanced approach to development and emphasis on a harmonious society. In the health sector, the period will be remembered for the public acknowledgment of the many challenges government faced at the start of the new millennium and the numerous reforms and policy initiatives it began rolling out to address them.

The process of health reform is rarely swift and straightforward. In part this is because, as was once said: “The health care system is like a fabric woven from many different threads. One cannot work on the fabric one strand at a time; instead, one must work on the whole cloth.”⁹³ During the 2000s, China began working intensively and simultaneously on several key threads. It introduced a heavily subsidized health insurance scheme for rural residents, a second insurance scheme for urban residents not eligible for coverage under the program for formal-sector workers, and a complementary program to help very poor households cover the costs of enrollment and copayments in these two new insurance schemes. It took steps to improve the quality of medical care, and increased spending for and introduced a variety of programs and institutional reforms in public health. These measures were a major step forward, and where

impacts have been estimated, the results have been encouraging. The rural health insurance scheme, for example, is estimated to have increased health service utilization at a time when household surveys reported that the population was being deterred from service usage because of fear of large out-of-pocket expenses.

While the health reforms of the 2000s doubtless strengthened the “fabric” of the health system, it would be naïve to expect that they would be sufficient to address all the challenges acknowledged at the start of the millennium. Some threads were worked more vigorously than others, even though all of them will eventually be necessary to complete a coherent and effective health system. And even those threads that were woven most vigorously into the emerging fabric are likely to require adjustment to fit with other threads as a new overall design takes shape.

This book has outlined a number of further reform ideas for the medium term. In the case of rural health insurance, there are some solid foundations in place, and the challenge is to build on these to develop a system of protection that provides considerably deeper and broader insurance cover than at present. The foundation is less strong for service delivery and public health, areas where the reforms of the 2000s were more tentative and less generalized, making further reform more challenging. The complications are considerable, not least because they involve rewriting “software” rather than simply replacing “hardware.” The question in service delivery is less about upgrading facility infrastructure and equipping it with new technology than about designing and enacting an incentive system that encourages providers to deliver medically appropriate care at a cost that China can afford. The challenge in public health is less about increased spending and more about ensuring that an improved system of accountability and incentives allows existing resources to be used more wisely. Strengthening these threads will require care and commitment, but doing so will make it easier to weave together a superior health system. Changes in health delivery must be pursued in tandem to be mutually reinforcing (personal health care and public health programs should not be divorced from one another) so that benefits can be maximized through changes in the health insurance system (the health insurer is the obvious health system actor to hold providers accountable for the quality and cost of delivered care).

Implementing these changes will take time. China's economy and society will continue to evolve as they occur. Cities will grow while the rural population shrinks. The role of agriculture, and the rural economy in general, will likely diminish. New sources of employment will emerge, not

only in cities but also in the countryside. China's formal sector will grow, but many people will be employed informally outside agriculture. Pressure will grow to narrow the gaps between insurance schemes, partly from the public, who will see large gaps in coverage as inequitable, partly from employers, who will try to avoid insurance obligations by switching workers to informal employment arrangements, and partly from providers, who will be mired in administering a complex set of reimbursement arrangements for different population groups. A trend to a unified health financing scheme seems inevitable, and a gradual shift from linking contributions to entitlements seems highly probable. Both have much to commend them. Also desirable is integration of financing for curative and preventive health care and public health programs. The longer-term agenda, therefore, is to move away from the current patchwork of health financing arrangements toward a more seamless fabric—one in which citizens and providers alike have incentives that encourage prevention and the early detection of disease, at the lowest feasible cost consistent with quality care; one in which providers face incentives to refer upwards only when referral is merited; and one in which China gradually expands the range and sophistication of the care its people receive as per capita income grows.

As China travels the road of health reform, it will doubtless continue to do things in its own way, grounded in its own experience of what works well. The step-by-step approach of encouraging local governments to try out variations on the national approach will continue. China will likely continue to strive for balanced development and a harmonious society, while recognizing the inevitability of development and reform proceeding at different rates across different areas within its vast territory. And as it has done in other sectors, China will likely continue to learn from other countries that have useful lessons to be learned, and modify what is learned to suit China's special circumstances.

In searching for best practices, China will doubtless feel some frustration that after decades of reforming their health systems, the OECD countries—to whom China increasingly looks for ideas—are themselves seemingly in flux about the merits of alternative approaches. This vacillation may actually be more apparent than real, since some common threads are beginning to be woven into all OECD health systems that China might usefully learn from. These elements include the move away from overreliance on payroll taxes as the main financing source, the use of mixed provider payment systems rather than a single payment method, the use of private as well as public providers to deliver publicly

financed care, and the use of incentives to encourage primary and secondary prevention of noncommunicable diseases.

China's health sector challenges in the 2010s will, in short, be to consolidate, to build upon, and to add to the health reforms of the 2000s. It will likely find useful lessons from the OECD and other countries. But ultimately, as in other areas, China's reforms will reflect China's own circumstances. And if the last three decades are anything to go by, these are likely to continue to change rapidly for the better, bringing new health challenges and new expectations, but also a better resourced and stronger health system "cloth."

Notes

1. Data are GDP per capita, PPP (constant 2005 international \$) and are taken from the *World Development Indicators*.
2. This is the annual rate of growth of GDP per capita, PPP (constant 2005 international \$) calculated as the difference in the natural logs of the 2007 and 1980 values, divided by 27.
3. The next two countries are Bhutan (5.9 percent) and the Republic of Korea (5.6 percent).
4. Over the same period, television ownership in the OECD increased to 98 percent.
5. To put these figures in perspective, under-five mortality in the developing world in 2007 averaged 74 per 1,000; in South Asia, the figure was 78 per 1,000; and the figure for Sub-Saharan Africa was 148 per 1,000. China's income per capita in 1980 was less than one-quarter of South Asia's income per capita in 2007, and less than 30 percent of Sub-Saharan Africa's. Figures on under-five mortality are from UNICEF, <http://www.childinfo.org/mortality.html>. Income per capita figures are GDP per capita at constant 2005 prices. Data are from the World Bank's *World Development Indicators*.
6. The blow of IDA funds stopping has been softened in some sectors (including health) as a result of grants from countries such as the United Kingdom. Funds have been blended with IBRD money so that the final terms mimicked IDA terms.

7. These can be downloaded from www.worldbank.org/chinaruralhealth. One is also available as a journal article (Eggleston et al. 2008).
8. A journal article written by the entire team (Wagstaff et al. 2009) in English is also available.
9. These can also be downloaded from www.worldbank.org/chinaruralhealth.
10. One piece of work (Wagstaff and Yu 2007) which used modern impact evaluation methods to assess the benefits of a World Bank health sector project that had pioneered several ideas subsequently featured prominently in the government's national reform agenda, including health insurance reform and health expense safety-net schemes. Partly to see what lessons were useful for China, two other papers compared and contrasted two sets of health systems: those of Japan and the various Asian "Tiger" economies (Wagstaff 2007a), and those of Hong Kong, China, Taiwan, China, and "mainland" China (Leung et al. 2008). A further paper (Wagstaff and Lindelow 2008a) analyzed the impacts on financial risk of China's urban health insurance scheme, with a view to learning lessons for the design and rollout of the new rural scheme.
11. The public finance roundtable resulted in a book coedited by the then-current executive vice minister of finance, which included a chapter on health reform options written by two Bank economists (Wagstaff and Lindelow 2008b).
12. Data on actual annual average rates of change of child mortality are derived from UNICEF data at www.childinfo.org. These are the official data used by the UN agencies in monitoring progress toward the Millennium Development Goals. The "predicted" figures are based on a regression model, estimated on data across the entire world for 1960, 1970, 1980, 1990, and 2000. The model, which includes per capita income and lagged mortality as covariates, confirms the importance of rising per capita incomes in reducing infant and child mortality, and the fact that it becomes increasingly hard to reduce mortality further as mortality falls. Thus, China's low death rates in 1990 made it harder to further reduce infant mortality and under-five mortality rates. On the other hand, the rapid economic growth achieved during the 1990s worked the other way. The "predicted" rates take both factors into account.
13. Source: <http://millenniumindicators.un.org/unsd/mdg/Default.aspx>. According to some, this pattern recently has been reversed, though internationally comparable data were not available at the time of writing.
14. The table appears in various issues of MOH's *Chinese Health Statistical Digest*; and for some years, it is available online through the Chinese Center for Disease Control and Prevention at <http://www.chinaccdc.net.cn/n272562/n276794/n284075/index.html>.
15. These numbers underlie figure 2.3. See footnote to that chart for data sources and explanation of methods.
16. The data are from the MOH maternal and child health surveillance system. Deaths and births in each of the 110 counties where the surveillance system

- operates were adjusted to reflect the estimated rates of missing births and deaths in the county's region using region-specific adjustment factors supplied by the surveillance office. This procedure—while different from that used by the surveillance office, which aggregates to the region level before adjusting for missing deaths and births—gives a national mortality rate that is very close to the surveillance rate, which is also the MOH “official” rate. From these adjusted data, county rates were computed. Counties were ranked using GDP per capita from the National Bureau of Statistics. Our thanks go to officials at MOH's Department of Maternal and Child Health and staff at the maternal and child health surveillance system for their help.
17. In drawing the curves in figure 2.3, known as concentration curves, counties are ranked on the x -axis in ascending order of income. The cumulative share of births accounted for by the p percent of poorest counties is then indicated as each additional county is added, in increasing order of income. For each cumulative share of births, the corresponding cumulative share of deaths is graphed on the y -axis. When deaths are equally distributed across the income or wealth distribution, this curve will be a straight line, known as the line of equality. A concentration curve above the line of equality indicated inequalities to the disadvantage of the poor. The further the gap between the curve and the line of equality, the greater the degree of inequality.
 18. The World Bank publishes data comparing health inequalities across “wealth” or “asset” groups for many developing countries (Gwatkin, Rutstein, Johnson, Pande, and Wagstaff 2000). The China Health and Nutrition Survey (CHNS) contains similarly detailed information on assets and housing characteristics, as well as many of the same health outcome and utilization indicators. Applying the World Bank inequality study methods to the CHNS produces a distribution (by wealth) for underweight young children that is the fifth-most-unequal of the 72 surveys.
 19. Data for the OECD countries on both the cost of an inpatient episode (the numerator) and average per capita household consumption expenditure (the denominator) are from *OECD Health Data* and from a 13-country NHA study (Orosz and Morgan 2004). For other countries, and for Taiwan, China, and Hong Kong, China, data on household consumption expenditure are from the World Bank's *World Development Indicators* database. Data on the cost of an inpatient episode in China are from the 2003 National Health Survey, from the 2001 Health Interview Survey for Taiwan, China, and from the 2002 Thematic Household Survey for Hong Kong, China. Data for Cambodia and Vietnam are from *Growing Healthy: A Review of Vietnam's Health Sector* (World Bank 2001) and refer to 1997 and 1998, respectively. Data for Indonesia are from the 2001 SUSENAS. Our thanks go to Yoonjung Choi (Indonesia), Gabriel Leung for Hong Kong, China, and Jui-fen Rachel Lu and Irene Wong for Taiwan, China, for providing the relevant cost data.

20. The bed occupancy rate and case flow are linked by the bed occupancy constraint, which states that, at any time, inpatient days—the product of the number of cases (N) and the average length of stay (S)—must equal the number of beds (B) multiplied by 365 times the bed occupancy rate (R). Case flow (N/B) is thus equal to $(1/S) \times 365R$.
21. This estimate is based on regression models linking cost per case to beds, inpatients, outpatients, emergency cases, local GDP per capita, and other factors, which give elasticities of cost per case for the stock of beds equal to 0.543 for county hospitals, 0.450 for central THCs, and 0.379 for general THCs. These numbers mean that a 10 percent reduction in the stock of beds in a county hospital, keeping the number of patients unchanged, reduces cost per case by 5 percent. A 10 percent reduction in the stock of beds at county level would imply approximately a 10 percent increase in the bed occupancy rate, enough to take county hospitals from their current 68 percent bed occupancy rate to 75 percent, close to the average in figure 2.7. The models were specified using a flexible model (Grannemann, Brown, and Pauly 1986) that allows for economies of scale and scope in inpatient care, outpatient care, and emergency visits. The data come from the health ministry's provider database. We used data from 6,618 county hospitals, 16,089 central THCs, and 47,580 general THCs located in 15 of China's 23 provinces and two of its four municipalities. These provinces and municipalities were the first to implement the New Rural Cooperative Medical Scheme (NRCMS), the analysis in the chart being a byproduct of the analysis of the impacts of NRCMS on providers reported in chapter 3. The sample thus includes all THCs and county hospitals in the provinces that piloted NRCMS in the first wave. The dependent variable in the regression was the natural log of cost per case. The independent variables included numbers of inpatients; number of emergency cases; number of outpatients; their squares, cubes, and interactions; the log of the stock of beds; owner; sponsor; and local GDP per capita as well as two-year dummies. Separate regressions were run for each facility type. Our thanks go to Gao Jun, Xu Lin, and Qian Juncheng of MOH's Center for Health Statistics and Information for their help with these regressions.
22. Every 10 percent reduction in the stock of beds at the THC level would have reduced cost per case by around 4 percent. Moving THCs to a bed occupancy rate of 75 percent would require nearly doubling the rate at the time, equivalent to approximately halving the number of beds. This would have reduced the cost per case by around 40 percent.
23. The cost increase reflects changes between 2003 and 2005 in 6,618 county hospitals, 16,089 central THCs, and 47,580 general THCs located in 15 provinces and two municipalities. (China has 23 provinces, five autonomous regions, and four municipalities.) These provinces and municipalities were the first to implement the New Rural Cooperative Medical Scheme, the

analysis in the chart being a byproduct of the analysis of the impacts of NRCMS on providers reported in chapter 3. The sample thus includes all THC and county hospitals in the provinces that piloted NRCMS in the first wave. The dependent variable in the regression was the natural log of cost per case. The independent variables included numbers of inpatients; number of emergency cases; number of outpatients; their squares, cubes, and interactions; (occupied) bed days; the stock of beds; owner; sponsor; local GDP per capita; as well as two-year dummies (2004 and 2005). The numbers in the chart are the coefficients on these year dummies. Separate regressions were run for each facility type. Our thanks to Gao Jun, Xu Lin, and Qian Juncheng of MOH's Center for Health Statistics and Information for their help with these regressions.

24. A positive value on the concentration index indicates that public expenditure disproportionately benefits the better off; a negative value indicates it disproportionately benefits the poor.
25. Government health spending covers what is known in China as "government operating expenses on public health," which excludes most government outlays on social health insurance programs. Data on under-five mortality are taken from Data Compilation of Provincial Surveillance Network for Maternal and Child Health in 2002, Department of Primary Health Care and Maternal and Child Health, MOH, National Office of Maternal-Child Health Surveillance, December 2003.
26. The Ministry of Health calls the NRCMS a health security program rather than a health insurance program. Yet because it has the hallmarks of a health insurance program (pooling risks, with clearly defined benefits available only to those in the scheme), albeit an unusual one in being publicly run, voluntary, and heavily subsidized, this book uses the term *insurance* to describe NRCMS. The Medical Assistance scheme of the Ministry of Civil Affairs discussed later in box 3.2, more closely resembles a health-expense safety net (or security) program since it is financed out of general revenues and does not limit benefits only to its "members."
27. Each household's Y 10 contribution is placed in an account that can be used only by that household, and only for outpatient care; no coverage is available beyond the Y 10.
28. The figure of Y 890 million for 2006 was obtained from the Ministry of Civil Affairs.
29. The Te Kun (extreme poverty) program is a fairly new poverty-reduction effort for less-developed areas that aims to provide regular or temporary cash assistance to very poor households. Although Te Kun is similar to Di Bao, its beneficiaries are selected at the discretion of local officials rather than by a locally defined poverty line.

30. The Wu Bao program, also known as the Five Guarantees, targets the “three no” population—no ability to work, no savings or other income, and no relatives—i.e., the elderly and disabled. The five guarantees are provision of food, clothing, housing, medical care, and a proper burial.
31. The new Di Bao program is geared toward poor households, though not necessarily those defined as *pinkun*. Di Bao provides subsidies and in-kind transfers for people living below a locally determined poverty line. It operates in urban areas, and increasingly in rural ones, too. Di Bao also is referred to as the Minimum Living Standard Scheme.
32. The first center for disease control was created in Shanghai in the late 1990s when a number of public health institutions were merged into a single organization and given a new and expanded mandate (Peng et al. 2003). Subsequently, most local governments have followed suit, and in 2002, the Chinese Academy of Preventive Medicine was transformed into a national Center for Disease Control. Recently a National Center for Chronic and Noncommunicable Disease Control and Prevention was established within the CDC.
33. This includes food, cosmetics, water, and surgical and medical supplies. The NCHIS is also concerned with medical waste disposal, occupational health, and sanitation in public spaces.
34. Data on government subsidies to public health institutions are from *China National Health Accounts Digest* (2002) for 1990–94, and from an NHA background study for 1995–2000. The series are based on classification of expenditure by provider rather than function. Data on government operating expenses on public health and total government expenditure are from MOF’s *Fiscal Yearbook 2004*. The series were deflated using the consumer price index from the National Bureau of Statistics’ *China Statistical Yearbook 2004*.
35. The series are based on classification of expenditure by provider rather than function.
36. Data are from different years for different countries, ranging from 1998 to 2003. Data for China is from the NHA background study by CHEI and refer to 2002; similarly to other countries, deliveries are excluded. Note: Government health expenditure estimates include expenditures by social health insurance schemes and mandated corporate (private) spending on prevention and public health (PPH), which are important in some OECD countries. For China, the breakdown between public and private PPH expenditures is based on national data that includes deliveries. Given that deliveries are largely privately financed, applying this breakdown to PPH expenditures excluding deliveries likely overestimates the share of private financing. The level of government expenditure on public health indicated in the graph should hence be seen as a conservative estimate.
37. See previous note referring to figure 3.3.

38. A more detailed analysis is reported in Wagstaff et al. (2009). Both studies—including both data collection and analysis—were undertaken in close collaboration with the Ministry of Health’s Center for Health Statistics and Information (CHSI).
39. For excellent reviews of the recent impact evaluation literature, see Imbens (2004); Blundell, Dearden, and Sianesi (2005); and Ravallion (2005). For a useful practical guide to PSM, see Caliendo and Kopenig (2005).
40. Some add a third goal—responsiveness. The idea captures the importance of how well a health system responds to people’s nonmedical expectations concerning things like being treated with dignity.
41. Such organizations are named differently in different countries—nondepartmental public bodies, arm’s-length agencies, subsidiary organizations, foundations, crown entities, and so forth. The process is sometimes referred to as hospital “autonomization” and “corporatization” (Jakab et al. 2002; Preker and Harding 2003). Both autonomization and corporatization involve greater management autonomy and a greater reliance on “marketlike” incentives to improve provider performance. Corporatization is typically associated with the establishment of the hospital as a separate legal entity under private law, and full financial responsibility.
42. In many countries, effective competition is also hampered by political constraints that prevent “failing” providers from going bankrupt. These constraints, which may be perfectly legitimate in the health sector, ultimately limit the potential role for competition.
43. The Y 850 line is for rural areas in 2002; see Ravallion and Chen (2007) for details of the line’s construction and for the 2001 poverty rate, which uses the Y 850 line adjusted for CPI changes between 2001 and 2002. The dollar-a-day figure is halfway between the estimates for 1999 and 2002, and comes from the World Bank’s PovCalNet Web site <http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp>.
44. These inequalities could be reduced by increasing tax-financed subsidies, or by setting up a solidarity fund into which BMI would pay a solidarity tax that would help finance coverage in NRCMS and the new urban scheme. A more radical approach would pool the resources of the three schemes, with each receiving capitation payments for each member, weighted by age, gender, location, and other relevant factors. The formula might build in—at least initially—a more generous capitation payment for the high-revenue schemes so that convergence in benefit levels (and ultimately a merger of the schemes) would be achieved over the span of a few years.
45. The source of government figures in this box, unless otherwise stated, is a letter from then-Minister of Health Gao Qiang to World Bank Vice President for East Asia and the Pacific Region James W. Adams, dated April 3, 2007.

46. The figure of Y 890 million for 2006 was obtained from the Ministry of Civil Affairs.
47. Source: previously noted letter of April 3, 2007, from Minister Gao Qiang to VP James W. Adams.
48. See *Financial Times*, July 4, 2006.
49. Drawn from the case study on public health prepared for this study.
50. This often is argued to be a problem in France, although the evidence for the claim appears to be anecdotal.
51. See <http://www.state.gov/g/drl/rls/hrrpt/2004/41755.htm>.
52. Under this arrangement, the subsidy system became based on the principle of "total management, quota subsidy, and residual left for use."
53. Price ceilings are determined through local costing exercises. The approach to costing is determined by central government and is essentially historically based. As a result, pricing takes costs as given, and beyond relying on competition, there is no effort to use prices to promote efficiency (for example, by basing prices on low-cost providers).
54. A study based on cost-accounting methods found that cost-recovery rates of official fees is very low (16 percent for hospital registration, 25 percent for hospital bed and board, 30 percent for surgical operations, and 40 percent for general examinations and treatments), and fees exceeded costs for only 4 percent of assessed services (Liu, Liu, and Chen 2000).
55. FFS has been associated with rapid cost escalation in many health systems, with fears that increased expenses are driven at least partly by provision of unnecessary care (Labelle, Stoddart, and Rice 1994; Bickerdyke et al. 2002). For example, in the United States, reimbursement of office-based physicians using a system known as Usual and Customary Rates is estimated to have led to payment rates for some surgeries that were 60 percent higher than if physicians had been reimbursed at cost (Hsiao et al. 1988). In the Republic of Korea a similar problem has been noted (Kwon 2005). More generally, a number of studies have found provider responses to the level and relative value of fees that are consistent with supplier-induced demand. The payment method can also impact the evolution of the health system over time (Rice 2006). For example, Korea has seen a stronger demand for residency training in specialties with generous margins such as ophthalmology and dermatology (Kwon 2005). FFS can also contribute to socially wasteful investment in technology, either because the knowledge of assured service reimbursement creates incentives for development and technology that may be of limited clinical benefit or because fee schedules may be related to hospital equipment (Lu 2005).
56. In some countries, DRGs have been used not as a direct unit of reimbursement, but rather as a volume indicator for setting of global budgets.

57. Some systems have provisions for outlier payments, whereby providers receive extra payment to help offset some of the financial losses associated with treating extremely expensive cases. For example, the U.S. Medicare system pays 80 percent of any costs above a threshold established for each case category. These thresholds are set quite high to capture only extreme cases, and outlier payments account for only around 5 percent of total DRG payments under Medicare.
58. For details and references, see Meng (2005).
59. Much experience has accumulated worldwide in designing classifications for payment purposes, and many classification schemes exist that can be adapted to local circumstances. The fact that most Chinese hospitals use a variant of the International Classification of Diseases (ICD-9) for coding diagnoses and procedures facilitates adaptation. Indeed, small-scale studies indicate that international case-classification systems can be used effectively to describe Chinese hospital activity (Huang 1994; Gong et al. 2004).
60. Clinical protocols or practice guidelines are recommendations for the performance or exclusion of specific procedures or services for specific diseases or diagnoses, in which the recommendation is derived through a rigorous methodology that includes a systematic review of the evidence to outline a preferred practice. A related concept is the *integrated care pathway*, which is a task-oriented plan that details essential steps in the care of patients with a specific clinical problem and describes the patient's expected clinical course. These pathways can be encapsulated in a printed form that is used to control all the care an individual patient receives from the start to the end of a treatment episode.
61. Accreditation has its roots in medical associations in the United States, Canada, and Australia that wanted to promote standardization across hospitals. It was initially a voluntary process of periodic external assessment. There is now greater variation across countries in how accreditation works, with some systems relying on professional bodies or dedicated third-party organizations, such as JCAHO in the United States, while other systems rely on a government body to lead the accreditation process. In the first group, accreditation tends to be voluntary, although it has sometimes effectively substituted for licensure when accreditation is required for public or third-party funding. Government-led accreditation systems tend to be compulsory.
62. This system defines three hospital grades (3, 2, and 1) based on hospital infrastructure and administrative level, and three within-grade levels (A, B, and C) determined through a hospital evaluation by a committee established by the local health bureau. Some studies have reported a substantial impact from changes in the bonus system for evaluations. For example, a study of the shift

- to a multi-indicator performance bonus system in Bangpu Medical College Hospital found that unnecessary health care fell, and expenditure per inpatient day decreased from Y 345 to Y 298 after implementation of the new scheme in 2001.
63. A public services unit (PSU) has been defined by the State Council (State Council 1998) as a “social service organization established by the state for the purpose of social public benefit”; it is created “by a state organ or other organization with state-owned assets” and carries out activities in education, science and technology, culture, health, or other areas. For a detailed discussion, see studies by the World Bank (2005) and the OECD (2005a). No firm data specifies what percentage of health care providers are PSUs. In 2005, around 85 percent of hospitals and nearly all THCs were classified as nonprofits (MOH 2006). The majority of these providers are government-owned, although a sizable proportion of hospitals are owned and operated by SOEs. The nonprofit classification does not overlap perfectly with the PSU classification, however, as the former includes some private nonprofit providers.
 64. In many respects, permanent PSU staff have similar terms and conditions to civil servants. They have lifetime contracts, and a more generous salary and benefit package than “contract staff.”
 65. For a long time, managers were permitted to distribute operational surpluses through a “welfare fund” to staff in the form of bonuses based on individual or departmental contributions to activities or revenues. Then new regulations in November 1998 required that all expenditures associated with wages, allowances, and cash bonuses must be explicitly posted as costs (MOF and MOH 1998). Despite the constraint, in practice, providers continue to exercise considerable latitude in how surpluses are used.
 66. This has included making the selection of managers and staff more transparent and competitive, or relying more on outsourcing of support services such as facility management, cleaning, food services, security, and supply management (Jia 2003; Ye et al. 2003; Xiang and Yang 2004). Other initiatives to strengthen hospital organization and administration have focused on improving management information and financial control—for example, through the establishment of improved health management information systems. There are also examples of contract management, including by the local health bureaus in Wuxi City (Yang 2003). To date, very little is known about the impact of management reforms.
 67. These efforts were meant to promote rationalization of health-system resources and strengthen coordination. Although formally adopted as a health policy tool, regional health planning has had limited impact on the configuration and organization of health services.
 68. A number of studies have shown that outreach can be a cost-effective way of providing specialist services to rural and remote populations without adversely affecting quality.

69. A central feature of the legislation and regulation governing charities and non-profit organizations in many countries is the distinction that is made between “public benefit” organizations and “mutual benefit” organizations. The latter primarily serve the private interests of their members. In contrast, a number of criteria typically must be met for registration as a public-benefit organization and access to the tax privileges and other benefits associated with that status. Commonly, this includes an organizational mission for the advancement of education, religion, art, science, charity, and the relief of poverty, health and physical well-being, environmental protection, or another general social good. Some countries embed specific provisions defining public benefit status in the framework legislation for nonprofits, while other countries have adopted specific “public benefit” legislation. Considering the international usage of the term and the lack of a specific definition in China, it is unclear how the concept can be helpful in making operational decisions about service delivery arrangements there.
70. Available studies have important limitations. They focus on a relatively limited set of outcomes, and the measurement of both cost and quality is often rudimentary. It is also the case that both ownership status and conversions are endogenous—that is, they are likely to reflect the local conditions and policy environment. Therefore, it is difficult to attribute any impact to the conversion or to draw general conclusions about the impact of reforms. Most important, perhaps, the extent to which ownership conversions actually have changed financing arrangements, provider autonomy, and accountability has varied substantially across contexts.
71. There are, however, examples in which the county government or the THC bought the assets of the village clinics, and the village doctor was made a salaried staff member of the THC (Qianyang Health Bureau 2004). As part of vertical integration, some counties have introduced defined village-level service packages focusing on infectious disease and maternal and child health (Wang et al. 1997; Pan and Yan 2004).
72. This followed the model of Sanitary and Epidemiologic Stations in the Soviet Union.
73. The two controls target drinking water and human feces, while the five changes refer to sanitation improvements for wells, toilets, cattle sheds, cooking fires, and living environments.
74. In the absence of government intervention, individuals may underinvest in prevention—due to inadequate information about risks and preventive measures or because they do not carry the financial risk associated with illness.
75. A description of these case studies is provided in the appendix to this chapter.
76. However, while budgetary revenues declined steadily during the 1980s as a share of GDP, extra-budgetary funds (EBF) and extra-establishment funds (EEF) increased dramatically. These locally driven attempts to compensate for

- the decline in revenues has led some to question whether a fiscal decline really occurred in the 1980s (Zhang 1999).
77. The criteria for allocating budget subsidies to institutions with public health responsibilities vary across counties. For example, one of the case-study counties financed full salaries of staff on permanent contract, and also paid Y 20,000 for EPI and Y 1,000 per staff member for overhead. The other, and considerably poorer county paid only 80 percent of salaries for permanent staff. In some cases, supplementary funds may be available for specific purposes.
 78. Every county center for disease control should have a ratio of 1.5 disease prevention and disease control staff for every 10,000 people served, and 40–50 percent of staff should be capable of field epidemiological investigation.
 79. See <http://www.nice.org.uk/guidance/topic>, <http://www.thecommunityguide.org/>, <http://www.ahrq.gov/clinic/uspstfix.htm>, and <http://www.cochrane.org/reviews/>.
 80. Duplication of laboratory capacity is likely to become an even bigger problem with the establishment of the local CHIS. In principle, the CHIS is supposed to rely on the EPS/CDC for laboratory testing needed for inspections and law enforcement. The oversight centers, however, have been reluctant to rely on the CDC for testing, and have in some cases established their own laboratories (Chen 2002).
 81. In fact, health institutions, at least in some counties, are not just encouraged to generate revenues but are penalized if they fail to reach revenue growth targets. This was the case in both randomly selected case-study counties, where revenue generation (*Chuang shou*) was an assigned task in the LOR that the county government signed with health institutions. THC's were set targets of 20 and 10 percent revenue growth in the two counties, respectively, with financial implications if the target was not met. Similar targets were established with the epidemic prevention station and the MCH center.
 82. Revenue-driven decisions about service priorities also have implications for human resource management. Divisions in institutions with public health responsibilities that can generate revenue have an easier time attracting staff, and tend to have staff with higher qualifications. For example, in the two case-study counties, the Disease Prevention and Control Division of the EPS—charged with responsibilities for disease prevention and control, public health emergency response, and disease surveillance and reporting—has very few staff with formal academic training in public health.
 83. This includes, for example, immunizations for encephalitis B, typhoid fever, and HBV.
 84. One could conceive a model in which the center for disease control is also in charge of financing and contracting for public health interventions or activities by health care providers or other organizations. However, in most cases, it will probably be more natural for the county Bureau of Health to retain this role.

85. This division of labor between an integrated CDC and health care providers raises vexing questions about MCH centers, which currently focus primarily on personal health services. If responsibility for analysis, needs assessment, technical support, and monitoring of MCH-related issues were to be integrated into a single CDC, should MCH centers become health care providers operating in parallel with hospitals and clinics or should they be integrated with county hospitals? Usually integration will make sense, but actual resolution would have to be determined on a case-by-case basis.
86. Similarly, studies in Hubei and Jiangning city report that 40 percent of public health staff had no medical or public health-related training (He 2001; and Wang 2001).
87. Guangxi was selected because previous work on National Health Accounts had been undertaken in the province, and because the study wanted to shed light on public health financing and organization in a poor and “lagging” part of the country.
88. Iceland’s health insurance funds were tax-financed from 1972 onward, but were not abolished until 1989. See Halldorssen (2003) at <http://www.euro.who.int/document/e82881.pdf>.
89. The intention of Italy’s 1978 reform was to shift from payroll taxes toward general revenues, but even in 1999, 44 percent of the funding came from payroll taxes. However, everyone since 1978 has coverage in the National Health Service, irrespective of whether they paid any payroll taxes. See Donatini et al. (2001) at <http://www.euro.who.int/document/e73096.pdf>.
90. Numbers are from the OECD health database.
91. See Sandier, Paris, and Polton (2004) at <http://www.euro.who.int/document/e83126.pdf>.
92. Data are from the Chinese Health Economics Institute. This figure excludes government capital spending, and certain items of spending such as family planning, medical education, other sectors, FDA costs, “other social” spending, and so forth. It also excludes “other private” spending, which includes extra-budgetary revenues of facilities, spending by township and village enterprises, and so forth. If all these items are included, total health spending in China averages almost Y 600 per capita, or 5.5 percent of GDP. The financing labeled “supply-side subsidies” includes payments by government to providers in the form of budget support. Under “demand-side subsidies” are included government budgetary expenses (contributions) to BMI (that is, payments by government on behalf of civil servants), subsidies to BMI, budgetary expenses on GIS/LIS, spending on NRCMS, and the Medical Assistance scheme. Social health insurance (SHI) contributions include employee and employer contributions to BMI, Labor Insurance Scheme contributions (all by the employer), and contributions by households to NRCMS.
93. See The Reforming States Group (1998).

References

- AbouZahr, C. and T. Wardlaw. 2001. "Maternal Mortality at the End of a Decade: Signs of Progress?" *Bulletin of the World Health Organization* 79 (6): 561–68.
- Ahmad, E. 2006. "Taxation Reforms and Sequencing of Intergovernmental Reforms in China—Preconditions for a Xiaokang Society." Paper presented at the International Seminar on Public Finance for a Harmonious Society, Beijing, June 27–28, 2006.
- Ahmad, E., K. Li, T. Richardson, and R. Singh. 2002. "Recentralization in China?" IMF Working Paper No. WP/02/168, IMF Fiscal Affairs Department, Washington, DC (October).
- Akin, J., P. Hutchinson, and K. Strumpf. 2001. "Decentralization and Government Provision of Public Goods: The Public Health Sector in Uganda." Working Paper WP-01-35, MEASURE Evaluation, USAID and University of North Carolina Population Center, Chapel Hill.
- Allin, S., E. Mossialos, M. McKee, and W. Holland. 2004. *Making Decisions on Public Health: A Review of Eight Countries*. Copenhagen: European Observatory on Health Systems and Policies, <http://www.euro.who.int/Document/E84884.pdf>.
- Arbelaez, M. P., M. B. Gaviria, A. Franco, R. Restrepo, D. Hincapié, and E. Blas. 2004. "Tuberculosis Control and Managed Competition in Colombia." *International Journal of Health Planning and Management* 19 (S1): S25–S43.

- Armstrong Schellenberg, J., J. Bryce, D. de Savigny, T. Lambrechts, C. Mbuya, L. Mgalula, and K. Wilczynska. 2004. "The Effect of Integrated Management of Childhood Illness on Observed Quality of Care of Under-Fives in Rural Tanzania." *Health Policy Plan* 19 (1): 1–10.
- Baeza, C., and T. Packard. 2006. *Beyond Survival: Protecting Households from Health Shocks in Latin America*. Washington, DC: World Bank.
- Bai, Y. 2004. "About DRG Payment Reforms." *Modern Medicine* 8: 25.
- Bettcher, D. W., S. Sapirie, and E. H. Goon. 1998. "Essential Public Health Functions: Results of the International Delphi Study." *World Health Statistics Quarterly* 51 (1): 44–54.
- Bian, Y., N. Zhuang, Q. Meng, and S. Yu. 2002. "Cost and Efficiency of Use of PET." *Chinese Journal of Health Economics* 8: 15–17.
- Bickerdyke, I., R. Dolamore, I. Monday, and R. Preston. 2002. "Supplier-Induced Demand for Medical Services." Staff Working Paper, Productivity Commission, Canberra, Australia.
- Bing County NRCMS Office. 2004. *The NRCMS Implementation Plan*.
- Birn, A. E., S. Zimmerman, and R. Garfield. 2000. "To Decentralize or Not to Decentralize, Is That the Question? Nicaraguan Health Policy under Structural Adjustment in the 1990s." *International Journal of Health Services* 30 (1): 111–28.
- Bitran, R., and W. C. Yip. 1998. "A Review of Health Care Provider Payment Reform in Selected Countries in Asia and Latin America." Major Applied Research Working Paper 1, Abt Associates.
- Black, R. E., S. S. Morris, and J. Bryce. 2003. "Where and Why Are 10 Million Children Dying Every Year?" *Lancet* 361 (9376): 2226–234.
- Bliss, T. 2003. "Road Safety." Paper presented at World Bank–China highway transport seminar.
- Blundell, R., L. Dearden, and B. Sianesi. 2005. "Evaluating the Effect of Education on Earnings: Models, Methods, and Results from the National Child Development Survey." *Journal of the Royal Statistical Society: Series A (Statistics in Society)* 168 (3): 473–512.
- Cai, L., C. Wan, and J. Wang. 1999. "Analysis on Proportion of In-patient Expenses and the Influencing Factors." *Journal of Hospital Statistics* 6 (4): 206–9.
- Cai, W. W., J. S. Marks, C. H. Chen, Y. X. Zhuang, L. Morris, and J. R. Harris. 1998. "Increased Cesarean Section Rates and Emerging Patterns of Health Insurance in Shanghai, China." *American Journal of Public Health* 88 (5): 777–80.
- Cai, Y. 2000. "Between State and Peasant: Local Cadres and Statistical Reporting in Rural China." *China Quarterly* 163: 783–805.
- Caliendo, M., and S. Kopenig. 2005. "Some Practical Guidance for the Implementation of Propensity Score Matching." Discussion Paper No. 485, DIW German Institute for Economic Research, Berlin.

- Campbell, J. C., and N. Ikegami. 1998. *The Art of Balance in Health Policy: Maintaining Japan's Low-Cost, Egalitarian System*. Cambridge, U.K.; New York: Cambridge University Press.
- Carrin, G., A. Ron, H. Yang, H. Wang, T. Zhang, L. Zhaing, S. Zhang, Y. Ye, J. Chen, Q. Jiang, Z. Zhang, J. Yu, and X. Li. 1999. "The Reform of the Rural Cooperative Medical System in the People's Republic of China: Interim Experience in 14 Pilot Counties." *Social Science & Medicine* 48 (7): 961–72.
- Center for Health Statistics and Information of MOH. 2004. *An Analysis Report of the National Health Services Survey in 2003*. Beijing: China Xiehe Medical University Press.
- Central Committee of CPC. 2002. *Decisions of the Central Committee of the communist Party of China and the State Council on Further Strengthening Rural Health Work*. Beijing, China.
- Central Committee of the CPC and the State Council. 1997. *Decision on Development of Urban Health Care System*. Beijing, China.
- . 2002. *Decision about the Development of Rural Health Care*. Beijing, China.
- Chalkley, M., and J. M. Malcomson. 2000. "Government Purchasing of Health Services." In *Handbook of Health Economics*, Vol. 1A, ed. A. J. Culyer and J. P. Newhouse. Amsterdam and New York: Elsevier North-Holland.
- Chan, L., T. D. Koepsell, R. A. Deyo, P. C. Esselman, J. K. Haselkorn, J. K. Lowery, and W. C. Stolov. 1997. "The Effect of Medicare's Payment System for Rehabilitation Hospitals on Length of Stay, Charges, and Total Payments." *New England Journal of Medicine* 337 (14, October 2): 978–85.
- Chen, H. 1985. *Chinese Health Care*. Beijing: People's Health Publishing House.
- Chen, J. 2002. "The Relationship between Health Law Enforcement and Technical Services." *Chinese Journal of Public Health Management* 18 (1): 4–5.
- Chen, S. and M. Ravallion. 2008. "China Is Poorer than We Thought, but No Less Successful in the Fight against Poverty." Policy Research Working Paper Series No. 4621, World Bank, Washington, DC.
- Cheng, S., ed. 2000. *China's PSU Reform: Choice of Models and Guidelines Based on Classifications*. Beijing: Democracy and Construction Press.
- China Health Economics Institute (CHEI). 2005. "Assessing Government Health Expenditure in China." Background study for China Rural Health AAA.
- . 2006. "Expenditure on Rural Public Health: Case Study in Guangxi Province." Background report for China Rural Health AAA.
- China State Commission of Planning and Development. 2000. *Reforms of Drug Pricing Policy*. Document No. 961.
- China Tuberculosis Control Collaboration. 2004. "The Effect of Tuberculosis Control in China." *Lancet* 364 (9432): 417–22.

- Claeson, M., H. Wang, and S. Hu. 2004. "A Critical Review of Public Health in China." Background study for the World Bank–China Rural Health AAA.
- Cleary, P. D., and S. Edgman-Levitan. 1997. "Health Care Quality: Incorporating Consumer Perspectives." *Journal of the American Medical Association* 278 (19): 1608–12.
- Colombo, F., and N. Tapay. 2004. "The Slovak Health Insurance System and the Potential Role for Private Health Insurance: Policy Challenges." Health Working Paper No. 11, Organisation for Economic Co-operation and Development, Paris.
- Cook, I. G., and T. J. Dummer. 2004. "Changing Health in China: Re-evaluating the Epidemiological Transition Model." *Health Policy* 67 (3): 329–43.
- Cookson, R., and D. Dawson. 2006. "Hospital Competition and Patient Choice in Publicly Funded Health Care." In *The Elgar Companion to Health Economics*, ed. A. M. Jones. Cheltenham, U.K.; Northampton, Massachusetts: Edward Elgar.
- Coulam, R. F., and G. L. Gaumer. 1991. "Medicare's Prospective Payment System: A Critical Appraisal." *Health Care Financing Review (Annual Issue)*: 45–77.
- Cretin, S., N. Duan, J. Albert P. Williams, X. Gu, and Y. Shi. 1990. "Modeling the Effect of Insurance on Health Expenditures in the People's Republic of China." *Health Services Research* 25 (4): 667–85.
- Das, J., and J. Hammer. 2004. "Strained Mercy: The Quality of Medical Care in Delhi." Policy Research Working Paper 3228, World Bank, Washington, DC.
- Deming, M. 2002. "Mission Report Executive Summary." WHO Regional Office for the Western Pacific.
- Devereaux, P., P. Choi, C. Lacchetti, B. Weaver, H. Schunemann, T. Haines, J. Lavis, B. Grant, D. Haslam, M. Bhandari, T. Sullivan, D. Cook, S. Walter, M. Meade, H. Khan, N. Bhatnagar, and G. Guyatt. 2002. "A Systematic Review and Meta-Analysis of Studies Comparing Mortality Rates of Private For-Profit and Private Not-for-Profit Hospitals." *Canadian Medical Association Journal* 166 (11): 1399–406.
- Ditzel, E., P. Strach, and P. Pirozek. 2006. "An Inquiry into Good Hospital Governance: A New Zealand–Czech Comparison." *Health Research Policy and Systems* 4 (2, February 6): <http://www.health-policy-systems.com/content/4/1/2>.
- Docteur, E., and Organisation for Economic Co-operation and Development (OECD). 2004. *Towards High-Performing Health Systems*. Paris: OECD.
- Docteur, E., and H. Oxley. 2003. "Health-Care Systems: Lessons from the Reform Experience." Health Working Paper No. 9, Organisation for Economic Co-operation and Development, Paris (December): <http://www.oecd.org/dataoecd/5/53/22364122.pdf>.

- Donaldson, C., and G. Currie. 2000. "The Public Purchase of Private Surgical Services: A Systematic Review of the Evidence on Efficiency and Equity." Working Paper 00-09, Institute of Health Economics, Edmonton, Alberta.
- Donatini, A., A. Rico, M. G. d'Ambrosio, A. lo Scalzo, L. Orzella, A. Cicchetti, and S. Profili. 2001. *Health Care Systems in Transition: Italy*. Copenhagen: WHO Regional Office for Europe on behalf of the European Observatory on Health Systems and Policies, <http://www.euro.who.int/document/e73096.pdf>.
- Dranove, D., and M. Satttherthwaite. 2000. "The Industrial Organization of Health Care Markets." In *Handbook of Health Economics*, Vol. 1B, ed. A. J. Culyer and J. P. Newhouse, 1093–139. Amsterdam and New York: Elsevier North-Holland.
- Du, P., and Y. Tu. 1991. *The Management of Epidemic Prevention*. Chengdu, Sichuan: Sichuan Science and Technology Press.
- Du, X. W., and H. Y. Du. 1999. "Mechanisms for Adjusting Health Services Prices." *Chinese Journal of Health Economics* 18: 50–51.
- Duggan, M. G. 2000. "Hospital Ownership and Public Medical Spending." NBER Working Paper No. 7789, National Bureau of Economic Research, Cambridge, Massachusetts (July).
- Dye, C., Z. Fengzeng, S. Scheele, and B. Williams. 2000. "Evaluating the Impact of Tuberculosis Control: Number of Deaths Prevented by Short-Course Chemotherapy in China." *International Journal of Epidemiology* 29 (3): 558–64.
- Economist*. 2003. "Health Care in China: Physician, Heal Thyself" (February 6): 38.
- . 2004. "Where Are the Patients? Special Report: China's Health Care" (April 19): http://www.economist.com/world/asia/displaystory.cfm?story_id=3104423
- Edgman-Levitan, S., and P. D. Cleary. 1996. "What Information Do Consumers Want and Need?" *Health Affairs* 15 (4): 42–56.
- Eggleston, K., and C. R. Hsieh. 2004. "Healthcare Payment Incentives: A Comparative." Analysis of Reforms in Taiwan, South Korea, and China." *Applied Health Economics and Health Policy* 3 (1): 47–56.
- Eggleston, K., Ling Li, Q. Meng, M. Lindelow, and A. Wagstaff. 2008. "Health Service Delivery in China: A Literature Review." *Health Economics* 17 (2): 149–65.
- Eldenburger, L., and S. Kallapur. 1997. "Changes in Hospital Service Mix and Cost Allocations in Response to Changes in Medicare Reimbursement Schemes." *Journal of Accounting and Economics* 23 (1): 31–51.
- Escobar, M.-L. 2005. "Health Sector Reform in Colombia." *Development Outreach* (May): 6–9.

- Escobar, M.-L., and P. Panopoulou. 2003. "Health." In *Colombia: The Economic Foundation of Peace*, ed. M. Giugale, O. Lafourcade, and C. Luff, 653–707. Washington, D.C: World Bank.
- Filmer, D., J. Hammer, and L. Pritchett. 2000. "Weak Links in the Chain: A Diagnosis of Health Policy in Poor Countries." *World Bank Research Observer* 15 (2): 199.
- Gansu Provincial Department of Health. 2005. Professor Meng Qinqyue, personal communication.
- Gao, J., J. Qian, S. Tang, B. Eriksson, and E. Blas. 2002. "Health Equity in Transition from Planned to Market Economy in China." *Health Policy and Planning* 17 (Suppl.1): 20–29.
- Gerdtham, U. G., C. Rehnberg, and M. Tambour. 1999. "The Impact of Internal Markets on Health Care Efficiency: Evidence from Health Care Reforms in Sweden." *Applied Economics* 31 (8): 935–45.
- Glied, S. 2000. "Managed Care." In *Handbook of Health Economics*, Vol. 1A, ed. A. J. Culyer and J. P. Newhouse. Amsterdam and New York: Elsevier North-Holland.
- Gong, X. 2003. "Institutional Analysis of Chinese Public Health." *Chinese Health Economics* 11: 9–11.
- Gong, Z., S. J. Duckett, D. G. Legge, and L. Pei. 2004. "Describing Chinese Hospital Activity with Diagnosis Related Groups (DRGs): A Case Study in Chengdu." *Health Policy* 69 (1): 93–100.
- Gosden, T., B. Sibbald, J. Williams, R. Petchey, and B. Leese. 2003. "Paying Doctors by Salary: A Controlled Study of General Practitioner Behaviour in England." *Health Policy* 64 (3): 415–23.
- Government of China. 2006. *Malaria Control in High-Transmission Regions of China: Proposal to GFATM*. Beijing: Ministry of Health.
- Grannemann, T. W., R. S. Brown, and M. V. Pauly. 1986. "Estimating Hospital Costs: A Multiple-Output Analysis." *Journal of Health Economics* 5 (2): 107–27.
- Gwatkin, D., S. Rutstein, K. Johnson, R. Pande, and A. Wagstaff. 2000. "Socioeconomic Differences in Health, Nutrition, and Population." HNP Discussion Paper, World Bank, Washington, DC.
- Halldorsson, M. 2003. *Health Care Systems in Transition: Iceland*. Copenhagen: WHO Regional Office for Europe on behalf of the European Observatory on Health Systems and Policies, <http://www.euro.who.int/document/e82881.pdf>.
- He, J., D. Gu, X. Wu, K. Reynolds, X. Duan, C. Yao, J. Wang, C. S. Chen, J. Chen, R. P. Wildman, M. J. Klag, and P. K. Whelton. 2005. "Major Causes of Death among Men and Women in China." *New England Journal of Medicine* 353 (11): 1124–34.
- He, S. 2001. "Discussion on Reforming and Developing a Rural Medical and Preventive Network in Hubei Province." *Chinese Rural Health Management* 19 (4).

- Health Canada. 2003. *Learning from SARS: Renewal of Public Health in Canada*. Ottawa: Health Canada, <http://www.phac-aspc.gc.ca/publicat/sars-sras/pdf/sars-e.pdf>.
- Horn, J. S. 1971. *Away with All Pests: An English Surgeon in People's China, 1954–1969*. New York: Monthly Review Press.
- Hsiao, W. C. 1995. "Peer Review: Medical Savings Accounts: Lessons from Singapore." *Health Affairs* 14 (2): 260–66; discussion 277–79.
- Hsiao, W. C., P. Braun, N. L. Kelly, and E. R. Becker. 1988. "Results, Potential Effects, and Implementation Issues of the Resource-Based Relative Value Scale." *Journal of the American Medical Association* 260 (16): 2429–438.
- Hu, S. 2003. "Overview of CMS Models in China." *Chinese Journal of Primary Health Care* 9: 1–6.
- Hu, T., Z. Mao, M. Ong, E. Tong, M. Tao, H. Jiang, K. Hammond, K. R. Smith, J. de Beyer, and A. Yurekli. 2006. "China at the Crossroads: The Economics of Tobacco and Health." *Tobacco Control* 15 (Supplement 1): i37–i41.
- Huang, H. 1994. "Feasibility of Applying DRGs in Beijing Hospital Management." *Journal of Chinese Hospital Management* 10 (3): 131–36.
- Hutubessy, R. C., P. Hanvoravongchai, and T. T. Edejer. 2002. "Diffusion and Utilization of Magnetic Resonance Imaging in Asia." *International Journal of Technology Assessment in Health Care* 18 (3): 690–704.
- Ikegami, N., and J. C. Campbell. 1995. "Medical Care in Japan." *New England Journal of Medicine* 333 (19, November 9): 1295–299.
- . 1999. "Health Care Reform in Japan: The Virtues of Muddling Through." *Health Affairs* 18 (3): 56–75.
- . 2004. "Japan's Health Care System: Containing Costs and Attempting Reform." *Health Affairs* 23 (3): 26–36.
- Imai, Y. 2002. "Health Care Reform in Japan." Economics Department Working Paper No. 321, Organisation for Economic Co-operation and Development, Paris.
- Imai, Y., S. Jacobzone, and P. Lenain. 2000. "The Changing Health System in France." Economics Department Working Paper No. 269, Organisation for Economic Co-operation and Development, Paris (October): <http://www.oecd.org/dataoecd/15/26/1885750.pdf>.
- Imbens, G. W. 2004. "Nonparametric Estimation of Average Treatment Effects under Exogeneity: A Review." *Review of Economics and Statistics* 86 (1): 4–29.
- Institute for Health Science. 2003. "Yunnan, China 1980–1999." In *Reducing Maternal Mortality: Learning from Bolivia, China, Egypt, Honduras, Indonesia, Jamaica, and Zimbabwe*, ed. M. A. Koblinsky, xiv, 132. Washington, DC: World Bank.

- Jacobzone, S. 2000. "Pharmaceutical Policies in OECD Countries: Reconciling Social and Industrial Goals." Labour Market and Social Policy Occasional Paper No. 40, Organisation for Economic Co-operation and Development, Paris (April).
- Jakab, M., A. S. Preker, A. L. Harding, and L. Hawkins. 2002. "The Introduction of Market Forces in the Public Hospital Sector: From New Public Sector Management to Organizational Reforms." HNP Discussion Paper, World Bank, Washington, DC.
- Jamison, D. T., J. G. Breman, A. R. Measham, G. Alleyne, M. Claeson, D. B. Evans, P. Jha, A. Mills, and P. Musgrove, eds. 2006. *Disease Control Priorities in Developing Countries*. New York; Washington, DC: Oxford University Press and the World Bank.
- Jha, P., and A. Mills. 2002. "Improving Health Outcomes of the Poor: The Report of Working Group 5 of the Commission on Macroeconomics and Health." WHO, Geneva, <http://whqlibdoc.who.int/publications/9241590130.pdf>.
- Jia, T. 2003. "Experience in Contracting Out Hospital Supportive Services." *Chinese Health Care Management* 5: 274–75.
- Jiang, D. 2003. "Capping the User Charge for Surgical Operations." *Discussant* 61.
- Jin, C., L. Wang, and Y. Peng. 2002. "New Fee Schedule and the Inpatient Expenditures for Four Diseases." *Price and Market* 9: 37–39.
- Jiujiang Health Insurance Office. 2004. "The '413' Urban Health Insurance Arrangement." Project Report, Jiujiang, Jiangxi Province.
- Kanbur, R., and X. Zhang. 2005. "Fifty Years of Regional Inequality in China: A Journey through Central Planning, Reform, and Openness." *Review of Development Economics* 9 (1): 87–106.
- Kenkel, D. S. 2000. "Prevention." In *Handbook of Health Economics*, Vol. 1B, ed. A. J. Culyer and J. P. Newhouse. Amsterdam and New York: Elsevier North-Holland.
- Kessler, D. P., and M. McClellan. 2000. "Is Hospital Competition Socially Wasteful?" *Quarterly Journal of Economics* 115: 577–615.
- Khaleghian, P. 2004. "Decentralization and Public Services: The Case of Immunization." *Social Science & Medicine* 59 (1): 163–83.
- Kin, L. M., Y. Hui, Z. Tuohong, Z. Zijun, F. Wen, and C. Yude. 2002. *The Role and Scope of Private Medical Practice in China*. Commissioned by UNDP, WHO, and Chinese MOH.
- Knaul, F. M., and J. Frenk. 2005. "Health Insurance in Mexico: Achieving Universal Coverage through Structural Reform." *Health Affairs* 24 (6): 1467–76.
- Koplan, J. P., X. Liu, H. Lei, and C. Dusenbury. 2005. "China's Public Health System: Organization, Financing, and Delivery of Services." Background study for the World Bank–China Rural Health AAA.

- Kwon, S. 2003a. "Health Care Financing Reform and the New Single Payer System in the Republic of Korea: Social Solidarity or Efficiency?" *International Social Security Review* 56 (1): 75–94.
- . 2003b. "Payment System Reform for Health Care Providers in Korea." *Health Policy Plan* 18 (1): 84–92.
- . 2005. "Billing of Medical Services and the Financial Burden of Patients in Korea." School of Public Health, Seoul National University, Korea.
- Kwon, S., and M. R. Reich. 2005. "The Changing Process and Politics of Health Policy in Korea." *Journal of Health Politics Policy and Law* 30 (December): 1003–026.
- Labelle, R., G. Stoddart, and T. Rice. 1994. "A Re-examination of the Meaning and Importance of Supplier-Induced Demand." *Journal of Health Economics* 13 (3): 347–68.
- Langenbrunner, J. C., I. M. Sheiman, and J. C. Kehler. Forthcoming. "Sources of Health Financing and Revenue Collection: Reforms, Lessons, and Challenges." In *Lessons of Health Reforms in Eastern Europe and Central Asia*, ed. J. Kutzin et al. Brussels: European Observatory.
- Langenbrunner, J. C., and M. Wiley. 2002. "Hospital Payment Mechanisms: Theory and Practice in Transition Economies." In *Hospitals in a Changing Europe*, ed. M. McKee and J. Healy. Buckingham; Philadelphia: Open University Press.
- Le Grand, J. 1999. "Competition, Cooperation, or Control? Tales from the British National Health Service." *Health Affairs* 18 (3): 27–39.
- . 2002. "Further Tales from the British National Health Service." *Health Affairs* 21 (3): 116–28.
- Lee, L. M. 2004. "The Current State of Public Health in China." *Annual Review of Public Health* 25: 327–39.
- Leung, G. M., A. Wagstaff, M. Lindelow, and J. R. Lu. 2008. "The Health Systems of China, Hong Kong, and Taiwan." In the *International Encyclopedia of Public Health*, Vol. 1, ed. K. Heggenhougen and S. Quah. San Diego: Academic Press. 1: 656–71.
- Li, W. 2000. "Rethinking the Sale of Township Hospitals." *Chinese Health Economics* 4: 12–14.
- . 2001. "Preventive Care Provision after Ownership Reform." *Chinese Health Economics* 3: 3–5.
- Liang, R., and G. He. 2003. "Exploring the Integration of Township and Village Health Units." *Chinese Primary Health Care* 4: 49–50.
- Lindelow, M. 2006. "Sometimes More Equal Than Others: How Health Inequalities Depend on the Choice of Welfare Indicator." *Health Economics* 15 (3): 263–79.

- Lindelov, M., and A. Wagstaff. 2005. "Health Shocks in China: Are the Poor and Uninsured Less Protected?" Policy Research Working Paper No. 3740, World Bank, Washington, DC.
- Liu, B., R. Peto, Z. Chen, J. Boreham, Y. Wu, J. Li et al. 1998. "Emerging Tobacco Hazards in China: 1. Retrospective Proportional Mortality Study of One Million Deaths." *British Medical Journal* 317: 1411–422.
- Liu, G., R. Cai et al. 1999. "Urban Healthcare Reform Initiative in China: Findings from Its Pilot Experiment in Zhenjiang City." *International Journal of Economic Development* 1 (4): 504–25.
- Liu, G., R. Cai et al. 2002. "China's Urban Health Insurance Experiment in Zhenjiang: Cost and Utilization Analyses." In *The Economics of Health Care in Asia-Pacific Countries*, ed. T.-W. Hu and C.-R. Hsieh, 143–58. Cheltenham, U.K.: Edward Elgar.
- Liu, G., R. Cai, and X. Xiong. 2003. "Reform of Medical Insurance System in Chinese Cities: Discussion on Equity of Cost Allocation." *Journal of Economics (Quarterly)* 2 (2): 435–52.
- Liu, G., Z. Zhao et al. 2003. "China's Urban Health Insurance Reform: Equity in Cost Sharing." *China Economic Quarterly* 2 (2): 435–52.
- Liu, S., M. Zheng, S. Yang, and S. Wang. 1999. "Analysis of DRG-Based Charges." *Chinese Health Economics Research* 5: 39–40.
- Liu, X., and W. C. Hsiao. 1995. "The Cost Escalation of Social Health Insurance Plans in China: Its Implication for Public Policy." *Social Science & Medicine* 41 (8): 1095–101.
- Liu, X., Y. Liu, and N. Chen. 2000. "The Chinese Experience of Hospital Price Regulation." *Health Policy and Planning* 15 (2): 157–63.
- Liu, X., and A. Mills. 1999. "Evaluating Payment Mechanisms: How Can We Measure Unnecessary Care?" *Health Policy and Planning* 14 (4): 409–13.
- . 2002. "Financing Reforms of Public Health Services in China: Lessons for Other Nations." *Social Science & Medicine* 54 (11): 1691–698.
- Liu, X., L. Xu, and S. Wang. 1996. "Reforming China's 50,000 Township Hospitals: Effectiveness, Challenges, and Opportunities." *Health Policy* 38 (1): 13–29.
- Liu, Y. 2002. "Reforming China's Urban Health Insurance System." *Health Policy* 60 (2): 133–50.
- Lu, J. F. R. 2005. "Social Health Insurance Experience in Taiwan." Chang Gung University, Taiwan, China.
- Lu, J. R., and W. C. Hsiao. 2003. "Does Universal Insurance Make Health Care Unaffordable? Lessons from Taiwan." *Health Affairs* 22 (3): 77–88.
- Maher, M., and L. Marais. 1998. "A Field Study on the Limitations of Activity-Based Costing When Resources Are Provided on a Joint and Indivisible Basis." *Journal of Accounting Research* 36 (1): 129–42.

- Mao, Z. 2005. *Pilot Program of NRCMS in China: System Design and Progress*. Washington, DC: World Bank.
- Marsteller, J. A., R. B. Bovbjerg, and L. M. Nichols. 1998. "Nonprofit Conversion: Theory, Evidence, and State Policy Options." *Health Services Research* 33 (5): http://findarticles.com/p/articles/mi_m4149/is_5_33/ai_53643859.
- Melnick, G. A., J. Zwanziger, A. Bamezai, and R. Pattison. 1992. "The Effects of Market Structure and Bargaining Position on Hospital Prices." *Journal of Health Economics* 11 (3): 217–33.
- Meng, Q. 2002. "The Impact of Provider Payment Reforms on Cost Containment." *Chinese Health Economics Research* 9: 18–20.
- . 2005. "Review of Provider Payment Reforms in China." China Rural Health AAA Background Report, World Bank, Washington, DC.
- Meng, Q., Y. Bian, Q. Sun et al. 2002. "Improving the Pricing System for Health Care (I)." *Chinese Journal of Health Economics* 5: 31–34.
- Meng, Q., G. Cheng, L. Silver, X. Sun, C. Rehnberg, and G. Tomson. 2005. "The Impact of China's Retail Drug Price Control Policy on Hospital Expenditures: A Case Study in Two Shandong Hospitals." *Health Policy Plan* 20 (3): 185–96.
- Meng, Q., R. Li, G. Cheng, and E. Blas. 2004. "Provision and Financial Burden of TB Services in a Financially Decentralized System: A Case Study from Shandong, China." *International Journal of Health Planning and Management* 19 (S1): S45–S62.
- Meng, Q., Q. Sun, and N. Hearst. 2002. "Hospital Charge Exemptions for the Poor in Shandong, China." *Health Policy and Planning* 17 (1): 56–63.
- Meng, Q. Y., C. Rehnberg, N. Zhuang, Y. Bian, G. Tomson, and S. L. Tang. 2004. "The Impact of Urban Health Insurance Reform on Hospital Charges: A Case Study from Two Cities in China." *Health Policy* 68 (2): 197–209.
- Miller, R. H. and H. S. Luft. 1997. "Does Managed Care Lead to Better or Worse Quality of Care?" *Health Affairs* 16 (5): 7–25.
- . 2002. "HMO Plan Performance Update: An Analysis of the Literature, 1997–2001." *Health Affairs* 21 (4): 63–86.
- Mills, A., S. Bennett, P. Siriwanarangsun, and V. Tangcharoensathien. 2000. "The Response of Providers to Capitation Payment: A Case-Study from Thailand." *Health Policy* 51 (3): 163–80.
- Ministry of Finance (MOF) and Ministry of Health (MOH). 1998. *Regulation of Hospital Finance and Regulation of Hospital Accounting*.
- Ministry of Health (MOH). 2000. *Implementing Guidelines on Further Reform of Personnel in the Health Sector*.
- . 2004a. *Report on Adjustment of Fee Schedules*. Beijing: Department of Health Planning and Finance, MOH.
- . 2004b. *Research Report on China National Health Accounts*.

- . 2005a. Announcement at National Health Conference, Beijing.
- . 2005b. *Research Report on China National Health Accounts*. Beijing: MOH.
- Ministry of Health, Sri Lanka and Institute of Policy Studies of Sri Lanka. 2001. Sri Lanka National Health Expenditures 1990–1999. Colombo, Sri Lanka.
- Ministry of Health and Family Welfare, Bangladesh. 2003. Bangladesh National Health Accounts, 1999–2001. Dhaka, Bangladesh.
- Musgrave, R. A. 1959. *The Theory of Public Finance: A Study in Public Economy*. New York; London: McGraw-Hill.
- Newhouse, J. P. 2002. *Pricing the Priceless: A Health Care Conundrum*. Cambridge, Massachusetts: MIT Press.
- Newhouse, J. P., and D. J. Byrne. 1988. “Did Medicare’s Prospective Payment System Cause Length of Stay to Fall?” *Journal of Health Economics* 7 (4): 413–16.
- Nichols, L., N. Prescott, and K. Phua. 1997. “Medical Savings Accounts for Developing Countries.” In *Innovations in Health Care Financing: Proceedings of a World Bank Conference, March 10–11, 1997*, ed. G. Schieber. Washington, DC: World Bank.
- Nomura, H., and T. Nakayama. 2005. “The Japanese Healthcare System.” *BMJ* 331 (7518): 648–49.
- O’Donnell, O., E. van Doorslaer, R. P. Rannan-Eliya, A. Somanathan, S. R. Adhikari, B. Akkazieva, D. Harbianto, C. C. Garg, P. Hanvoravongchai, A. N. Herrin, M. N. Huq, S. Ibragimova, A. Karan, S. M. Kwon, G. M. Leung, J. F. Lu, Y. Ohkusa, B. R. Pande, R. Racelis, K. Tin, K. Tisayaticom, L. Trisnantoro, Q. Wan, B. M. Yang, and Y. Zhao. 2008. “Who Pays for Health Care in Asia?” *Journal of Health Economics* 27 (2): 460–75.
- O’Donnell, O., E. van Doorslaer, R. P. Rannan-Eliya, A. Somanathan, S. R. Adhikari, D. Harbianto, C. G. Garg, P. Hanvoravongchai, M. N. Huq, A. Karan, G. M. Leung, C. W. Ng, B. R. Pande, K. Tin, L. Trisnantoro, C. Vasavid, Y. Zhang, and Y. Zhao. 2007. “The Incidence of Public Spending on Healthcare: Comparative Evidence from Asia.” *World Bank Economic Review* 21 (1): 93–123.
- Oates, W. E. 1972. *Fiscal Federalism*. New York: Harcourt Brace Jovanovich.
- Organisation for Economic Co-operation and Development (OECD). 2000. “A System of Health Accounts.” Paris, OECD: <http://www.oecd.org/dataoecd/41/4/1841456.pdf>.
- . 2002. *Distributed Public Governance: Agencies, Authorities, and Other Government Bodies*. Paris: OECD.
- . 2005a. *Governance in China*. Paris: OECD.
- . 2005b. *OECD Reviews of Health Systems: Mexico*. Paris: OECD.

- Orosz, E., and D. Morgan. 2004. *SHA-Based National Health Accounts in Thirteen OECD Countries: A Comparative Analysis*. Health Working Paper No. 16, Organisation for Economic Co-operation and Development, Paris: <http://www.oecd.org/dataoecd/10/53/33661480.pdf>.
- Pabon Lasso, H. 1986. "Evaluating Hospital Performance through Simultaneous Application of Several Indicators." *Bulletin of the Pan American Health Organization* 20 (4): 341–57.
- Pan American Health Organization (PAHO). 2002. *Public Health in the Americas: Conceptual Renewal, Performance Assessment, and Bases for Action*. Washington, D.C.: PAHO.
- Pan, L., and Y. Yan. 2004. "Operation of Township and Village Integration in Health Care in Xingan County." *Chinese Maternal and Child Health* 3: 10–11.
- Peng, J., S. N. Zhang, W. Lu, and A. T. L. Chen. 2003. "Public health in China: The Shanghai CDC perspective." *American Journal of Public Health* 93 (12): 1991–93.
- Phua, K. 1997. "Medical Savings Accounts and Health Care Financing in Singapore." In *Innovations in Health Care Financing: Proceedings of a World Bank Conference, March 10–11, 1997*, ed. G. Schieber. Washington, DC: World Bank.
- Picone, G., S.-Y. Chou, and F. Sloan. 2002. "Are For-Profit Hospital Conversions Harmful to Patients and to Medicare?" *RAND Journal of Economics* 33 (3): 507–23.
- Pointer, D. D., and J. E. Orlikoff. 1999. *Board Work: Governing Health Care Organizations*. San Francisco: Jossey-Bass.
- Preker, A. S., and A. L. Harding. 2003. *Innovations in Health Service Delivery: The Corporatization of Public Hospitals*. Washington, DC: World Bank.
- Project Team of DRC. 2005. *An Evaluation of and Recommendations on the Reforms of the Health System in China*.
- Project Team of Guangdong Province Department of Science and Technology. 2003. "Investigation of Payment Methods in Guangdong." Project Report of Guangdong Provincial Department of Science and Technology.
- Project Team on "Reform of China's Public Institutions and Development of China's Non-profit Organizations," NRCSTD, Ministry of Science and Technology (MOST). 2004. "Reform of China's Public Institutions: Retrospect and Prospects." *International Journal of Civil Society Law* 2 (1): 7–26, http://www.iccs.org/pubs/04-01_IJCSL.pdf.
- Propper, C., S. Burgess, and K. Green. 2004. "Does Competition between Hospitals Improve the Quality of Care? Hospital Death Rates and the NHS Internal Market." *Journal of Public Economics* 88 (7): 1247–272.

- Propper, C., and N. Soderlund. 1998. "Competition in the NHS Internal Market: An Overview of Its Effects on Hospital Prices and Costs." *Health Economics* 7: 187–97.
- Propper, C., D. Wilson, and N. Soderlund. 1998. "The Effects of Regulation and Competition in the NHS Internal Market: The Case of General Practice Fundholder Prices." *Journal of Health Economics* 17 (6): 645–73.
- Prud'homme, R. 1995. "The Dangers of Decentralization." *World Bank Research Observer* 10 (2): 201–20.
- Public Health Functions Steering Committee. 1994. "Public Health in America Statement" at <http://www.health.gov/phfunctions/public.htm>.
- Qianyang Health Bureau. 2004. "Organization Reform of Township and Village Health Facilities in Qianyang County." *China Hospital Administration* 11: 693–99.
- Qingdao Municipal Department of Labor and Social Security. 2003. *Payment Arrangements for Contract Hospitals*. Policy Document No. 52.
- Ravallion, M. 2005. "Evaluating Anti-Poverty Programs." Policy Research Working Paper WPS3625, World Bank, Washington, DC.
- Ravallion, M., and S. Chen. 2007. "China's (Uneven) Progress against Poverty." *Journal of Development Economics* 82 (1): 1–42.
- Reinhardt, U. E. 2000. "The Economics of For-Profit and Not-For-Profit Hospitals." *Health Affairs* 19 (6): 178–86.
- Rice, T. 2006. "The Physician as the Patient's Agent." In *The Elgar Companion to Health Economics*, ed. A. M. Jones, 261–68. Cheltenham, U.K.; Northampton, Massachusetts: Edward Elgar.
- Rocher, F., and M. Smith. 2002. "Federalism and Health Care: The Impact of Political-Institutional Dynamics on the Canadian Health Care System." Discussion Paper No. 18, Commission on the Future of Health Care in Canada, Ottawa.
- Rodrigues, J. 1989. "Hospital Utilization and Reimbursement Method in Brazil." *International Journal of Health Planning and Management* 4 (1, January/March): 3–15.
- Rosenthal, M. B., R. G. Frank, Z. Li, and A. M. Epstein. 2005. "Early Experience with Pay-for-Performance: From Concept to Practice." *Journal of the American Medical Association* 294 (14): 1788–793.
- Sandier, S., V. Paris, and D. Polton. 2004. *Health Care Systems in Transition: France*. Copenhagen: WHO Regional Office for Europe, for the European Observatory on Health Systems and Policies, <http://www.euro.who.int/document/e83126.pdf>.
- Savedoff, W. D., and P. Gottret, eds. 2008. *Governing Mandatory Health Insurance: Learning from Experience*. Washington, DC: World Bank.

- Schmidt, U. 2006. "Health Policy and Health Economics in Germany." Speech at the conference, *The American Model: Past, Present, Future*, Friedrich Ebert Foundation, Washington, DC., January 27.
- Shah, A. 2004. "Fiscal Decentralization in Developing and Transition Economies: Progress, Problems, and the Promise." Policy Research Working Paper No. 3282, World Bank, Washington, DC.
- Shaller, D., S. Sofaer, S. D. Findlay, J. H. Hibbard, D. Lansky, and S. Delbanco. 2003. "Consumers and Quality-Driven Health Care: A Call to Action." *Health Affairs* 22 (2): 95–101.
- Shang, Y., Y. Yuan, and S. Chen. 2001. "Ownership Reform in Haihe Township Hospital of Sheyang." *Health Economics Research* (9): 32–33.
- Shen, T., J.-P. Habicht, and Y. Chang. 1996. "Effect of Economic Reforms on Child Growth in Urban and Rural Areas of China." *New England Journal of Medicine* 335 (6, August 8): 400–406.
- Shen, Y.-C., K. Eggleston, J. Lau, and C. Schmid. 2005. "Hospital Ownership and Financial Performance: A Quantitative Research Review." NBER Working Paper No. 11662, National Bureau of Economic Research, Cambridge, Massachusetts (October).
- Sibbald, B., M. Laurant, and A. Scott. 2006. "Changing Task Profiles." In *Primary Care in the Driver's Seat? Organizational Reform in European Primary Care*, ed. R. B. Saltman, A. Rico, and W. G. W. Boerma. Maidenhead, U.K.; New York: Open University Press.
- Sidel, R., and V. W. Sidel. 1982. *The Health of China*. Boston: Beacon Press.
- Sidel, V. 1993. "New Lessons from China: Equity and Economics in Rural Health Care." *American Journal of Public Health* 83: 1665–666.
- Silverman, E., and J. Skinner. 2001. "Are For-Profit Hospitals Really Different? Medicare Upcoding and Market Structure." NBER Working Paper No. 8133, National Bureau of Economic Research, Cambridge, Massachusetts (February).
- Sloan, F. A. 2000. "Not-for-Profit Ownership and Hospital Behaviour." In *The Handbook of Health Economics*, Vol. 1B, ed. A. J. Culyer and J. P. Newhouse, 1141–174. Amsterdam and New York: Elsevier North-Holland.
- Smith, P., N. Rice, and R. Carr-Hill. 2001. "Capitation Funding in the Public Sector." *Journal of the Royal Statistical Society Series A* 164 (2): 217–57.
- State Council. 1998. *Tentative Regulation on Registration and Administration of Minban Non-Enterprise Units*. Decree 251. Beijing, China.
- . *Implementing Guideline for Classified Administration on Urban Medical Institutions*. Beijing, China.
- . 2000b. *State Council General Office Notice to Issue Instructive Opinions on Urban Medical and Health System Reform*. Beijing, China.

- State Development and Planning Commission and Ministry of Health (MOH). 2000. *Opinions on Reforming Price Management in Medical Service*.
- Sun, Q., R. Ge, Q. Meng et al. 2005. "Cost and Efficiency of PET/CT." *Chinese Journal of Health Economics* 2: 37–41.
- Tang, L. 2000. "Progress in Malaria Control in China." *Chin Med J (Engl)* 113 (1): 89–92.
- Taylor, D. W. 2000. "Facts, Myths, and Monsters: Understanding the Principles of Good Governance." *International Journal of Public Sector Management* 13 (2): 108–24.
- Ter-Minassian, T., and A. Fedelino. 2006. "China's Fiscal Policy and Reforms: Toward Realizing a Harmonious Society." Paper presented at Roundtable on Public Finance for a Harmonious Society, Beijing, June 27–28.
- The Kaiser Family Foundation, the Agency for Healthcare Research and Quality, and the Harvard School of Public Health. 2004. *National Survey on Consumers' Experiences With Patient Safety and Quality Information*. The Kaiser Family Foundation. <http://www.kff.org/kaiserpolls/pomr111704pkg.cfm>.
- The Reforming States Group. 1998. "Balanced Federalism and Health System Reform: The Reforming States Group." *Health Affairs* 17 (3): 181–91.
- Tobin, J. 1970. "On Limiting the Domain of Inequality." *Journal of Law and Economics* 13: 263–78.
- Tulchinsky, T. H., and E. A. Varavikova. 1996. "Addressing the Epidemiologic Transition in the Former Soviet Union: Strategies for Health System and Public Health Reform in Russia." *American Journal of Public Health* 86 (3): 313–20.
- United Nations Development Programme (UNDP). 2008. *Millennium Development Goals Report 2008*. New York, NY, United Nations: http://www.undp.org/publications/MDG_Report_2008_En.pdf
- Van de Ven, W. P. M. M. 1996. "Market-Oriented Health Care Reforms: Trends and Future Options." *Social Science & Medicine* 43 (5): 655–66.
- Van de Ven, W. P. M. M., K. Beck, C. Van de Voorde, J. Wasem, and I. Zmora. 2007. "Risk Adjustment and Risk Selection in Europe: Six Years Later." *Health Policy* 83 (2–3): 162–79.
- Van de Ven, W. P. M. M., and R. Ellis. 2000. "Risk Adjustment in Competitive Health Plan Markets." In *Handbook of Health Economics*, Vol. 1A, ed. A. J. Culyer and J. P. Newhouse. Amsterdam and New York: Elsevier North-Holland.
- van Doorslaer, E., O. O'Donnell, R. P. Rannan-Eliya, A. Somanathan, S. R. Adhikari, C. C. Garg, D. Harbianto, A. N. Herrin, M. N. Huq, S. Ibragimova, A. Karan, T. J. Lee, G. M. Leung, J. F. Lu, C. W. Ng, B. R. Pande, R. Racelis, S. Tao, K. Tin, K. Tisayaticom, L. Trisnantoro, C. Vasavid and Y. Zhao. 2007. "Catastrophic Payments for Health Care in Asia." *Health Economics* 16 (11): 1159–184.

- Velasco-Garrido, M., M. Borowitz, J. Orevit, and R. Busse. 2005. Purchasing for Quality of Care. In *Purchasing to Improve Health Systems Performance*, ed. J. Figueras, R. Robinson, and E. Jakubowski. Maidenhead, U.K.: Open University Press.
- Wagstaff, A. 2005. "Inequality Decomposition and Geographic Targeting with Applications to China and Vietnam." *Health Economics* 14 (6): 649.
- . 2007a. "Health Systems in East Asia: What Can Developing Countries Learn from Japan and the Asian Tigers?" *Health Economics* 16 (5): 441–56.
- . 2007b. "Social Health Insurance Reexamined." Policy Research Working Paper WPS 4111, World Bank, Washington, DC.
- Wagstaff, A., and M. Lindelow. 2008a. "Can Insurance Increase Financial Risk? The Curious Case of Health Insurance in China." *Journal of Health Economics* 27 (4): 990–1005.
- . 2008b. "Health Reform in China: Where Next?" In *Public Finance in China: Reform and Growth for a Harmonious Society*, ed. J. Lou and S. Wang. Washington, DC: World Bank.
- Wagstaff, A., M. Lindelow, G. Jun, X. Ling, and Q. Juncheng. 2009. "Extending Health Insurance to the Rural Population: An Impact Evaluation of China's New Cooperative Medical Scheme." *Journal of Health Economics* 28 (1): 1–19.
- Wagstaff, A., E. van Doorslaer, H. van der Burg, S. Calonge, T. Christiansen, G. Citoni, U. G. Gerdtham, M. Gerfin, L. Gross, U. Hakinnen, P. Johnson, J. John, J. Klavus, C. Lachaud, J. Lauritsen, R. Leu, B. Nolan, E. Peran, J. Pereira, C. Propper, F. Puffer, L. Rochaix, M. Rodriguez, M. Schellhorn, and O. Winkelhake. 1999. "Equity in the Finance of Health Care: Some Further International Comparisons." *Journal of Health Economics* 18 (3): 263–90.
- Wagstaff, A., and N. Watanabe. 2003. "What Difference Does the Choice of SES Make in Health Inequality Measurement?" *Health Economics* 12 (10): 885–90.
- Wagstaff, A., and S. Yu. 2007. "Do Health Sector Reforms Have Their Intended Impacts? The World Bank's Health VIII Project in Gansu Province, China." *Journal of Health Economics* 26 (3): 505–35.
- Wall, S. 1998. "Transformations in Public Health Systems." *Health Affairs* 17 (3): 64–80.
- Wang, A., X. Feng, and Y. Gong. 1999. "Drug Management through Integrating Township and Village Health Units." *Chinese Rural Health Care Management* 10: 42.
- Wang, B., L. Wang, N. Li, and X. Liu. 2004. "CMS in Wuxue for 40 Years." *Chinese Rural Health Care Management* 1: 10–13.
- Wang, F. 2003. "Improve Rural NRCMS in Poor Areas." *Guizhou Finance and Economics Journal* 6: 62–64.
- Wang, G., H. Xu, and M. Jiang. 2003. "Evaluation on Comprehensive Quality of 456 Doctors in Township Hospitals." *Journal of Health Resources* 6 (3): 72–74.

- Wang, H., and X. Cai. 2003. "Public Health Systems and the Prevention of Communicable Diseases in China."
- Wang, J. 2001. "Township-Level Public Health System in Jiangning: Status Quo Analysis and Reform Strategy Discussion." *Chinese Rural Health Management* 10: 3–7.
- Wang, L., L. Kong, F. Wu, Y. Bai, and R. Burton. 2005. "Preventing Chronic Diseases in China." *Lancet* 366 (9499): 1821–24.
- Wang, L., H. Li, J. Wang, and R. Zhao. 1997. "Impact of Integration of Township and Village Health Units on Provision of Preventive Care Services." *Chinese Public Health Administration* 5: 333–35.
- Wang, S., A. Park, G. Datt, and S. Chaudhuri. 2006. "Poverty Targeting of China's Integrated Village Development Program."
- Wang, S., Q. Sun, Y. Zhao, et al. 2006. "Public Health: A Case Study of Two Chinese Counties." Background report for China Rural Health AAA.
- Wang, X. 2002. "Provision of Maternal and Child Health Care after Ownership Reform." *Chinese Rural Health Care Management* 8: 13–14.
- Wang, X., L. Liu, and D. Zhong. 2002. "Ownership Reform in Wenjiashi." *Health Economics Research* (4): 6–10.
- Wang, Y., C. Xu, and C. Li. 2002. "Adoption of a Joint Cooperative Stock System in Township Hospitals in Jurong, Zhengjiang." *Social Science* 5: 36–37.
- Wang, Z., S. He, and D. Zhou. 2003. "Why CMS in Wuxue Can Be Sustained and Developed." *Chinese Rural Health Care Management* 2: 25–26.
- Wanless, D. 2004. *Securing Good Health for the Whole Population*. London: HM Treasury.
- West, L. A., and C. P. W. Wong. 1995. "Fiscal Decentralization and Growing Regional Disparities in Rural China: Some Evidence in the Provision of Social Services." *Oxford Review of Economic Policy* 11 (4): 70–84.
- Wong, C. 1991. "Central-Local Relations in an Era of Fiscal Decline: The Paradox of Fiscal Decentralization in Post-Mao China." *China Quarterly* 128 (December).
- . 2004. "Can the 'Retreat from Inequality' Be Reversed? Assessing China's Fiscal Policies toward Redistribution from Deng Xiaoping to Wen Jiabao." Paper prepared for the conference, "Paying for Progress: Public Finance, Human Welfare and Inequality in China," Oxford University, May 21–23.
- World Bank. 1993. *World Development Report, 1993: Investing in Health*. Oxford; New York; Toronto; and Melbourne: Oxford University Press for the World Bank.
- . 2001. "Vietnam: Growing Healthy—A Review of Vietnam's Health Sector." Human Development Sector Report, World Bank, Washington, DC.

- . 2002a. "China: National Development and Sub-National Finance: A Review of Provincial Expenditures." Report No. 22951-CHA, World Bank, Washington, DC.
- . 2002b. "Public Health and World Bank Operations." Human Development Network HNP Series Report, World Bank, Washington, DC.
- . 2005a. *China: An Evaluation of World Bank Assistance*. Washington, DC: World Bank.
- . 2005b. "China: Deepening Public Service Unit Reform to Improve Service Delivery." Report No. 32341, Poverty Reduction and Economic Management Unit, East Asia and Pacific Region, World Bank, Washington, DC (12 June).
- . 2005c. "East Asia & Pacific Update" (November).
- . 2008. "Midterm Assessment of Government of China's 5-Year Plan." World Bank, Washington, DC.
- World Bank Mission Team. 2004. "Notes for BTOR: Shaanxi Field Visit."
- World Health Organization (WHO). 2000. *The World Health Report 2000: Health Systems—Improving Performance*. Geneva: WHO.
- Wu, A., Y. Li, Y. Zhang, and X. Cheng. 2004. "DRG-Based Payment Reform for Urban Health Insurance Scheme." *Chinese Journal of Health Economics* 9: 38–39.
- Xiang, H., and Y. Yang. 2004. "Design and Implementation of Contracting Out Hospital Supportive Services." *Chinese Health Care Management* 4: 214–15.
- Xiang, L., P. Fang, and Y. Hu. 2004. "Reimbursing Township Hospitals in Poor Rural Areas." *Chinese Journal of Health Care Management* 4: 235–37.
- Xiong, D., and X. Zhu. 2003. "The Analysis of Two Reformed Hospitals." *Health Economics Research* (1).
- Xu, Z. 2003. "Problems after Ownership Reform in Township Hospitals." *Jiangsu Health Care Management* 1: 35–38.
- Yan, R. Y. 1989. "Maternal Mortality in China." *World Health Forum* 10 (3–4): 327–30.
- Yang, J., Q. Meng, H. Dong, and J. Shi. 1998. "Advantages and Disadvantages of Integrating Township and Village Health Units." *Chinese Health Care Management* 6: 324–27.
- Yang, Y. 2003. "The Experience and Effect Analysis of Trusteeship in Hospitals." *Chinese Journal of Hospital Administration* 6.
- Yang, Z., Z. Zhao, and T. Liu. 2001. "The Impact of DRG-Based User Charge on Expenditure Control." *Chinese Journal of Health Economics* 4: 25–26.
- Ye, J., Y. Liu, X. Yun, and Q. Pan. 2003. "Evaluation of the Social Effectiveness of Socializing Logistic Services in Hospitals." *Chinese Hospital* 12.

- Yin, A. 2004. "The Impact of DRG User Charge on Hospital Length of Stay and Expenditures." Discussion paper, Shandong University.
- Yip, W., and K. Eggleston. 2001. "Provider Payment Reform in China: The Case of Hospital Reimbursement in Hainan Province." *Health Economics* 10 (4): 325–39.
- . 2004. "Addressing Government and Market Failures with Payment Incentives: Hospital Reimbursement Reform in Hainan, China." *Social Science & Medicine* 58: 267–77.
- You, C. 2003. "Investigations on Rural Health Workforce Qualification in the Beijing Area." *Chinese Health Statistics* 2 (5): 288–90.
- Zhan, S., L. Wang, A. Yin, and E. Blas. 2004. "Revenue-Driven in TB Control—Three Cases in China." *International Journal of Health Planning and Management* 19 (S1): S63–S78.
- Zhang, J. 2005. "Health Human Resources Status Quo Analysis for Township Health Centers in Hubei Province and Policy Suggestions." *Journal of Chinese Primary Health Care* 19 (3): 3–7.
- Zhang, L.-Y. 1999. "Chinese Central-Provincial Fiscal Relationships, Budgetary Decline, and the Impact of the 1994 Fiscal Reform: An Evaluation." *China Quarterly* 157: 115–41.
- Zhang, X., Z. Feng, and L. Zhang. 2003. "Analysis on Quality of Prescription of Township Hospitals in Poor Areas." *Journal of Rural Health Service Management* 23 (12): 33–35.
- Zhang, X., and R. Kanbur. 2005. "Spatial Inequality in Education and Health Care in China." *China Economic Review* 16: 189–204.
- Zheng, T. 1998. "Organization Reform and CMS in Rural Areas." *China Rural Medicine and Drugs* 1: 45–46.
- Zheng, X., and S. Hiller. 1995. "The Reforms of the Chinese Health Care System: County Level Changes: The Jiangxi Study." *Social Science & Medicine* 41 (8): 1057–64.
- Zhou, Y., T. Baker, K. Rao, and G. Li. 2003. "Productivity Losses from Injury in China." *Injury Prevention* 9 (2): 124–27.

Index

(Page numbers followed by *f* refer to figure captions.)

A

Accountability

- in public health system, 10, 48, 151–153, 171, 202
- incentive misalignment, 151–153
- NRCMS role in improving, 126
- significance of, in health care reform, 184
- vertical control and, 162*f*

Accreditation, 54, 127–128

Administration and management

- capacity for reimbursement reform, 125
- government oversight of health system, 63, 64, 71–72
- integration of rural and urban health care systems, 187–188
- intergovernmental roles and responsibilities in public health decisions, 160–170
- long-term insurance reform, 194, 197–198
- NRCMS, 74, 107–111
- provider capacity to respond to new incentives, 133–134

See also Autonomy of health care institutions and providers;
Governance, health facility;
Governance, health system

Adverse selection issues, 37, 69, 82, 85

Alcohol consumption, 17

Analytic and Advisory Activities program, 5–7

Austria, 189

Autonomy of health care institutions and providers

- current state, 133–134
- local decision-making in public health, 160–161
- ownership status and performance, 53, 137–141
- prereform, 3–4, 26
- rationale, 65
- recommendations for reform, 75
- reforms of 2000s, 53–54
- trends in OECD, 65–66

Average effect of treatment on the treated, 58

Avian flu, 14, 42

B

- Balanced development policy, 4, 33
- Barefoot doctors, 3, 54, 142
- Basic Medical Insurance
 - administration and staffing, 107
 - coverage, 107
 - fragmentation of current insurance system, 78–79, 190–192
 - NRCMS harmonization, 190–191
 - NRCMS merger, 107–108, 191–192, 197–198
 - payroll contribution problems, 78, 188
 - performance evaluation activities, 126
 - reimbursement system, 50, 131
 - revenues per member, 190
- Bureau of Health, 97, 107, 108–109, 133, 178–180

C

- Canada, 130, 168–170
- Capitated payment systems, 50, 51, 97, 121–122, 124
- Case-based reimbursement, 49, 119–121, 124
- Catastrophic health events, 20–21, 100–102, 193
- Center for Disease Control, 34, 42, 98–100, 132–133, 171, 172–174
 - reforming local public health service delivery, 177–182
- Centers for Health Inspection and Supervision, 167, 171
- Colombia, 70, 87–88, 94, 96, 99
- Communicable diseases
 - China's public health commitment, 147
 - mortality patterns and trends, 16, 17*f*
 - public health initiatives of 2000s, 42, 43
 - recent challenges, 149
 - See also* Avian flu; HIV/AIDS; Malaria; Severe acute respiratory syndrome; Tuberculosis
- Competition
 - among insurers, 70
 - for service delivery contracts, 66, 67
 - health care outcomes, 66–67
 - patient knowledge and, 66
 - rationale for multiple insurance schemes, 191–192
- Contracting for health services
 - capacity management, 75–76
 - competition in, 66, 67

- improving service delivery through, 97–98, 125–126
 - long-term insurance reform, 194
 - public health initiatives, 132
- Cooperative medical scheme, 3, 14, 28, 34
- Copayments, 102–105
- Cost of care
 - causes of prereform increases, 8, 22–27, 25–26
 - competition within social insurance system, 192
 - differences among treatment settings, 25*f*
 - excess capacity and, 24
 - high-tech treatments, 26, 49
 - long-term reform agenda, 196
 - medical technology and, 8, 24
 - NRCMS effects, 60, 115–116
 - ownership structure and, 52–53
 - payer-led competition and, 66–67
 - poverty and, 4, 7–8, 20–21
 - prereform, 19
 - price regulation, 4, 26, 49, 116–118, 144–145
 - prioritization of public health spending, 165–167
 - privatization outcomes, 52
 - provider reimbursement systems and, 50, 51, 97, 115–116
 - provider-induced demand, 26–27
 - reimbursement system reforms to reduce, 119–122
 - unwarranted expenditures, 24, 26–27
 - See also* Health care spending, individual; Health system spending, government; Out-of-pocket health care spending; Reimbursement system
 - Costa Rica, 110
 - County-level public health administration, 171–182, 185

D

- Data collection and management
 - for international comparison of health care spending, 46–47
 - for payer-led competition in service delivery, 67
 - individual and household income, 86–87
 - NRCMS impact evaluation, 57–60
 - poverty measurement, 87
 - prioritization of public health spending, 166–167

public health administration, 152
 public health initiatives of 2000s, 42
 Demand inducement, 26, 105–106, 176, 178, 194
 Diagnosis-related groups, 50, 51, 68, 119, 120, 124–125
 Directly Observed Therapy Shortcourse, 16, 26–27, 43, 149, 156, 176
 Drinking water, 42–43
 Drug pricing and spending
 international comparison, 24, 26, 40
 medical necessity, 24
 regulation and control, 49, 117, 118
 reimbursement system and, 49, 51

E

Earmarked funds, 156
 Economic growth
 balanced development goals, 4
 China's accomplishments, 1
 concessional lending to China and, 5–6
 improvements in living standards and, 1–2
 mortality patterns and, 13–14
 public health outcomes, 2, 3–4
 Education and training of health care providers, 54, 127–128, 141–143
 Environmental health risks, 17
 Equity issues
 emergence in health system, 4, 18
 future of public health programs, 56
 geographic disparities in public health spending, 153–160, 190
 government insurance spending, 29
 government public health spending, 29–30, 31*f*, 44–48
 health outcomes, 18–19
 in NRCMS, 82, 85
 income-adjusted fees in NRCMS, 86–88
 intergovernmental equity in NRCMS finance, 89–95
 intergovernmental public health spending, 157–160
 investment planning and financing decisions and, 136–137
 maternal mortality, 18
 Medical Assistance benefits distribution, 41
 political economy, 65
 prereform, 18, 81
 private health insurance, 69

social insurance schemes, 70
 supply-side subsidies, 95
 Estonia, 109–111

F

Fee-for-service reimbursement, 49, 51, 68, 97, 119, 121, 129–130, 131–132
 Five-year plan, eleventh, 4, 5–7
 France, 130, 189
 Future prospects
 challenges in maintaining reforms, 8, 12, 56–57, 202–204
 implementing public health reform, 182–184
 insurance system, 9, 79–80
 integration of rural and urban health care systems, 187–188
 medium-term reforms, 72–78
 NRCMS, 72–74, 82, 111–113
 prior (2003–2007) reforms and, 30–31
 progress toward long-term reform, 196–199
 provider payment system, 56–57
 reducing geographic disparities in public health spending, 157–160
 service delivery reforms, 74–77
 unification of financing system, 79–80, 198–199
 unification of insurance services and responsibilities, 107–111
See also Long-term reform agenda

G

Geographic disparities in public health spending, 153–157
 strategies for improving, 157–160
 Germany, 188, 189
 Governance, health facility
 autonomous public sector providers, 140–141
 Basic Medical Insurance, 110
 board governance, 140
 capital investment decisions, 135–136
 government regulation of private providers, 27
 recommendations for improving service delivery, 9–10, 75
 regulation of nonprofit organizations, 140–141, 142
 unification of insurance services and responsibilities, 108–111

- See also* Administration and management; Autonomy of health care institutions and providers
- Governance, health system
 distribution of roles and responsibilities in public health, 160–170
 long-term challenges, 11
 public health decentralization, 153–154
 public health service delivery, 151–152
 public health spending by level of government, 156
 quality improvement strategies, 127–128
 recommendations for reform, 10, 77, 144–145
See also Governance, health facility
- Government worker insurance, 28
- H**
- Health behavior
 cost of care and, 19
 mortality trends, 16–17
See also Utilization
- Health care providers
 autonomy of health care institution management, 53–54, 65–66, 133–137
 bonuses for public health activities, 181
 capacity to respond to new incentives, 133–134
 competition effects, 66–67
 demand-driven restructuring, 75–76
 health system functions and, 62, 63–64
 hospital staffing decisions, 134–135
 incentive structure of public health initiatives, 48, 49–52
 licensing and accreditation, 54, 127–128
 oversight role, 71
 prereform, 3
 recommendations for improving service delivery, 9–10, 75–76
 recommendations for public health system, 77–78
 village-level, 141–143
See also Reimbursement system
- Health care reforms (2000–2007)
 assessment for, 5–7
 future challenges and opportunities, 8, 12, 56–57, 202
 goals, 8
 historical significance, 201
 impetus for, 4
 implementation, 33
 institutional structures, 54
 outcomes to date, 8, 11–12, 43, 56, 201–202
 price regulation, 116–118
 private health care system, 53–54
 provider payment system, 49–52
 public health initiatives, 42–48
See also Long-term reform agenda; Medical Assistance; New Rural Cooperative Medical Scheme (NRCMS); Prereform health system (pre-2000)
- Health care spending, individual
 catastrophic, 20–21
 Health VIII outcomes, 55
 in social insurance systems, 70
 long-term reform, 193–194, 195, 196, 198
 NRCMS household contributions, 84–85
 problems of payroll contribution system, 188–190
See also Out-of-pocket health care spending
- Health outcomes
 average effect of treatment on the treated, 58
 effect of 200s reforms, 8
 inequitable distribution, 18–19
 insurance coverage and, 28
 national economic growth and, 2, 3–4
 prereform accomplishments, 2–3
See also Mortality
- Health system spending, government
 allocation by intervention type, 98–100
 catastrophic interventions, 100–102
 for public health system reform, 184
 future prospects, 9, 11
 improving performance through contracting, 97–98
 inequitable distribution, 29–30, 31f, 44–48
 intergovernmental equity, 89–95
 intergovernmental public health spending, 157–160
 international comparison, 43–44, 46–47, 48f
 long-term reform, 192–196, 198
 Medical Assistance, 39–41
 NRCMS funding, 34, 36, 37–38, 72–73, 81, 82–83, 88–95
 per rural resident, 81, 82–83

- prereform, 3–4, 14, 26–27
 - provider payment system, 49–52
 - public health initiatives of 2000s, 43–48
 - recommendations for institutional reform, 10, 11
 - recommendations for NRCMS funding, 72–73
 - recommendations for service delivery reform, 76–77
 - recommendations for technology purchase oversight, 9–10, 75
 - reform goals, 8
 - solidarity funds, 92–94
 - supply-side subsidies, 95–96
 - tax-financed, 69
 - trends in rural China, 83–84
 - unification of financing system, 79–80
 - Health systems, generally
 - actors, 62, 63–64
 - autonomy of providers and institutions, 65–66
 - competition effects, 66–67, 70
 - conceptual trends, 64–65
 - decentralization rationale, 153–154
 - financing, 62, 63–64, 68–70, 188–190
 - functions of, 14, 62–64
 - government functions in, 71–72
 - information asymmetries in, 64–65
 - long-term challenges and opportunities, 78–80
 - market-based approaches, 65
 - necessary resources, 62
 - oversight, 63, 64, 71–72
 - purchasing function, 62–63, 67–68
 - recommendations for medium-term reforms, 72–78
 - reform challenges, 201
 - reimbursement system trends, 67–68
 - risk management, 62
 - service delivery, 74–77, 98–100
 - Health VIII, 55
 - Heart disease, 16–17
 - Hepatitis B, 42, 43
 - HIV/AIDS, 14, 42, 43, 179–180
- I**
- Income, per capita
 - China's accomplishments, 1
 - copayment limits linked to, 104
 - cost of care and, 22
 - NRCMS fee adjustments, 86–88
 - prereform inequities in health outcomes, 18
 - India, 66
 - Indonesia, 15, 16
 - Infant and child mortality
 - causes, 3
 - China's accomplishments in reducing, 149
 - prereform patterns and trends, 3, 4, 15–16
 - public health goals of 2000s reforms, 42, 43
 - social inequities, 18, 19, 149
 - Information asymmetries, 64–65, 66, 67, 69, 135–136
 - Institutional structure and function
 - assignment by type of health intervention, 98–100
 - autonomy, 4, 26, 53–54, 65–66, 75, 133–137
 - changes for implementation of public health reform, 182–183
 - decentralization rationale, 153–154
 - fragmented insurance system, 78–79, 190–192
 - fragmented public health system, 171–172
 - integration of rural and urban health care systems, 187–188
 - integration of township and village health care, 54, 143
 - long-term challenges, 11, 79–80
 - performance of for-profit hospitals, 138–139
 - privatization, 27, 52–53
 - recommendations for reform, 9–10, 75–76, 77, 80, 143–145, 194
 - reforms of 2000s, 53–54
 - strategies for improving local public health delivery, 176–182
 - unification of insurance services and responsibilities, 107–111, 197–199
 - village-level providers, 141–143
 - See also* Administration and management; Governance, health facility; Public health institutions
 - Insurance, health
 - adverse selection risk, 69
 - assessment for reform, 6
 - challenges to continuing reform, 202–204
 - competition among providers and, 66

- conceptual trends, 69
- cost of care and, 25–26
- equity concerns, 69
- fragmentation in current system, 78–79, 190–192
- inequality in government spending, 29
- information asymmetry in, 64–65, 69
- long-term reform agenda, 193–196, 197–198
- minimum core package, 193, 195
- patterns and trends, 28
- provider reimbursement schemes, 49, 50
- recommendations for reform, 9, 75, 76–77, 202
- recommendations for technology
 - purchase oversight, 9–10, 75
- reform goals, 8
- uncovered services, 105–106, 128, 129
- See also* Basic Medical Insurance; Medical Assistance; New Rural Cooperative Medical Scheme (NRCMS)
- International Bank for Reconstruction and Development, 5
- International Development Association, 5–6
- J**
- Japan, 106, 120, 129–130, 132, 191–192
- K**
- Korea, Rep. of, 95, 101, 106, 108, 120, 124–125, 191
- L**
- Labor insurance scheme, 28
- Laboratory testing, 181
- Length of stay, 23–24
- Licensing of providers, 54, 127, 142–143
- Life expectancy outcomes of health care reforms on 2000s, 43
- Long-term reform agenda
 - emerging health insurance model and, 10–11, 78–79
 - financing, 79–80, 192–196
 - goals, 203
 - progression toward, 196–199
 - uncovered services, 193–194
- M**
- Malaria, 2, 16, 176
- Malaysia, 15, 16
- Malnutrition, 18
- Malpractice claims, 71–72
- Market-based economies
 - capital investment decisions, 135–136
 - demand-driven facility restructuring, 75–76
 - government role in, 65
 - health care delivery in, 66–67
 - medical procedures not covered by insurance, 106
 - performance of for-profit hospitals, 138–139
 - See also* Competition
- Maternal and Child Health services, 18, 42, 43, 174–175
- Maternal mortality, 2–3, 14–15, 18, 149
- Means testing, 87–88
- Medical Assistance
 - coverage, 40
 - effectiveness, 8, 41
 - equitable distribution of benefits, 41
 - financing, 39–40
 - future challenges and opportunities, 56
 - implementation to date, 38
 - mission, 8, 34, 38, 42
 - NRCMS and, 38, 41, 85–86
 - origins, 8
 - participation, 83
 - patient spending, 40, 41
 - performance evaluation, 38–39
 - shortcomings, 41–42
 - spending per person/per episode, 39–41
- Medical savings accounts, 50
- Medical technology
 - adoption rates, international comparison, 24, 25f
 - capital investment decisions, 135–136
 - cost of care and, 8, 24
 - government reimbursement for high-tech treatments, 25, 49
 - price regulation effects on utilization, 117, 118
 - recommendations for regulation, 9–10, 75
- Mexico, 102, 103
- Ministry of Civil Affairs, 6
- Ministry of Finance, 6
- Ministry of Health, 6, 107, 108–109, 161–162
- Ministry of Labor and Social Security, 107
- Mortality
 - economic growth and, 13–14
 - health behavior-related, 16–17

outcomes of health care reforms on
 2000s, 43
 prereform patterns and trends, 2–3, 4, 5f,
 13–16
 social distribution, 18–19

N

National Center for Health Inspection and
 Supervision, 42
 National Health Accounts, 46
 Netherlands, 94, 189
 New Rural Cooperative Medical Scheme
 (NRCMS)
 administration and management, 74,
 107–111
 adverse selection issues, 37, 82, 85
 Basic Medical Insurance scheme
 harmonization, 190–191
 Basic Medical Insurance scheme merger,
 107–108, 191–192, 197–198
 benefit design, 100
 catastrophic and noncatastrophic care
 spending, 100–102
 contracting for health services, 97–98
 copayments, 103–105
 cost of care and, 60, 115–116
 coverage, 36, 73–74, 82
 distinguishing features, 34
 effectiveness, 8
 enrollee characteristics, 34–35
 enrollment decision factors, 35
 equity issues, 82, 85
 exemptions and subsidies for poor,
 85–86
 fragmentation of current insurance
 system, 78–79, 190–192
 funding, 34, 36, 37–38, 72–73, 81,
 82–84, 88–95
 future challenges and opportunities, 56
 household contributions, 83, 84–85
 impact evaluation, 57–60
 implementation, 8
 income-adjusted contributions, 86–88
 inpatient care demand in, 81–82,
 122–124
 mandatory enrollment, 73, 78, 85
 Medical Assistance and, 38, 41, 85–86
 mission, 33–34, 81
 participation rate, 34, 35, 83
 patient spending outcomes, 35–37, 58
 public health program management, 133

purchase of health care services by, 73,
 82, 96–98, 144
 recent rule changes, 37–38
 recommendations for improvement, 9,
 72–74, 78, 82
 reimbursement system, 9, 36, 37, 52,
 82–83, 122–125
 research needs, 112–113
 responsibilities by intervention type,
 98–100
 revenues per enrollee, 190
 role in service delivery improvement,
 125–127
 sequencing of reforms, 111–112,
 143–145
 shortcomings in implementation to date,
 35–37, 81–82
 subsidy per rural resident, 83
 supply-side subsidies redirected to, 95–96
 uncovered services policy, 105–106
 urban health system and, 187–188, 190
 utilization outcomes, 35, 58–60
 village clinic oversight, 143
 Nonprofit organizations, 140–141, 142

O

Obesity, 17
 Out-of-pocket health care spending
 as cause of financial hardship, 20–21
 barriers to NRCMS enrollment, 35
 catastrophic illness or injury, 20–21, 101
 conceptual trends, 68–69
 copayments, 102–105
 extra billing and, 129–131
 for medical procedures not covered by
 insurance, 101, 105–106, 128, 129,
 193–194
 in public health system, 19–20
 insurance coverage and, 25–26
 international comparison, 19, 20f, 22
 long-term reform agenda, 194, 195
 Medical Assistance program, 40, 41
 NRCMS effects, 35–37, 38, 58
 NRCMS enrollment, 36, 37
 NRCMS trends, 83–84
 prereform, 7–8, 14, 19–20
 public health financing, 172–174
 reform goals and strategies, 8
 rural China, 83
 safety net programs, 21
 significance of, 7–8

P

- Patient rights, 72
- Payroll contributions to social health insurance, 69–70, 78, 86, 188–190, 196
- Poverty
 - cost of care and, 4, 7–8, 20–21
 - measurement, 87
 - national economic growth and, 1–2
- Prereform health system (pre-2000)
 - causes of increase in costs, 8, 22–24
 - government spending, 3–4, 14, 26–27, 29–30, 31f
 - health insurance coverage, 28
 - mortality patterns and trends, 3, 4, 13–16
 - out-of-pocket health care spending, 7–8, 14, 19–21
 - public health accomplishments in China, 2, 3–4
 - shortcomings and limitations, 14, 81
 - social distribution inequities, 18–19, 81
 - utilization patterns, 19
- Prevention
 - China's historical public health commitment, 3, 147, 149
 - government spending, 44
 - international comparison, 46, 47
 - prioritization of public health goals, 165–167
 - provider reimbursement, 131–132
- Price controls, 4, 26, 49, 116–118, 144–145
- Privatization
 - cost outcomes, 52–53
 - government policy, 53
 - in 1980s and 1990s, 27, 52
 - performance outcomes, 53, 137–139
 - provider autonomy and, 137
- Prospective payment systems, 50, 51, 52, 68, 122
- Providers. *See* Health care providers
- Public health initiatives
 - allocation of resources based on profitability, 151–152
 - contracting for, 132
 - distribution of benefits, 56
 - externalities, 64
 - financing, 43–48, 64
 - future challenges and opportunities, 56
 - incentive system in, 48, 49–52
 - international comparison, 46–47
 - local governance, 151–152
 - market failure rationale, 64–65
 - mismatch of incentives and accountability in, 152–153
 - oversight, 77
 - prioritization, 165–167
 - provider reimbursement, 118, 131–133
 - recommendations for reform, 77–78
 - reforms and outcomes in 2000s, 42–43
 - scope of government responsibility, 71
 - service delivery, 98–100
 - surveillance, 64, 98
 - See also* Health system spending, government; Prevention; Public health institutions; Public health system
- Public health institutions
 - accreditation, 127–128
 - autonomy, 4, 26, 53–54, 65–66, 133–137
 - capacity to respond to new incentives, 133–134
 - classification, 137
 - effects of ownership structure, 52–53
 - funding transfers to NRCMS, 95–96
 - government reimbursement system, 50
 - overprescription of medicines and services, 26–27
 - ownership status and performance, 137–141
 - privatizations, 27, 52–53
 - recommendations for governance and structural reform, 9–10, 77
 - revenue sources, 152
 - staffing decisions, 134–135
 - strategies to reduce geographic disparities in spending, 157–160
 - vertical integration, 10, 157
 - village-level providers, 141–143
- Public health system
 - bonus payments to providers, 181
 - capacity for reform, 183–184
 - case study of structure and operations, 185
 - causes of weakness in, 151–153
 - challenges to reform, 184
 - China's historical commitment, 147, 149
 - county-level administration, 171–182, 185
 - current weaknesses, 149–151
 - definition, 148
 - demand inducement in, 176

- distribution of governance roles and responsibilities, 160–170, 184
 - earmarked transfers to, 156
 - financing for reform, 184
 - fragmented governance, 171–172
 - functions, 148–149
 - geographic disparities in spending, 153–160
 - influence of financing on mission of, 174–176
 - international comparison, 168–170
 - intersectoral coordination, 179–180
 - organizational changes for reform implementation, 182–183
 - sequencing of reform, 184
 - sources of financing, 172–174
 - strategies for improving local performance, 176–182
 - technical preparation for implementing reforms, 183
 - See also* Health system spending, government; Public health initiatives; Public health institutions
 - Public perception and understanding
 - cost of care, 4
 - health system oversight role, 71–72
 - information asymmetries, 64–65, 66, 67, 69, 135–136
 - long-term insurance reform, 196
 - NRCMS enrollment decisions, 35
 - payroll contribution to health insurance, 188
 - rural–urban inequities, 190
- Q**
- Quality of care
 - competition in health care system and, 66
 - financing reform and, 75
 - government-regulated standards of care, 127–128
 - health system oversight, 64, 71–72
 - Health VIII project, 55
 - improving performance through contracting, 97–98
 - licensing and accreditation to improve, 127–128
 - NRCMS role in improving, 125–127
 - provider contracting and purchasing arrangements and, 125–126
 - provider payment systems and, 121–122
 - recommendations for improving, 9, 75
- R**
- Reforms of 2000s. *See* Health care reforms (2000–2007)
 - Reimbursement system
 - administrative capacity for reform of, 125, 144
 - case-based, 49, 119–121, 122, 124
 - cost of care and, 50, 51, 97, 115–116, 119–122
 - extra billing, 129–131
 - for public health activities of providers, 118, 131–133, 181–182
 - fragmentation of financing sources, 128–129
 - future challenges and opportunities, 56–57
 - improving provider performance through contracting, 97–98
 - inpatient care reimbursements, 122–124
 - international comparison, 120–121
 - long-term insurance reform, 194–195
 - NRCMS, 36, 37, 49, 73, 82–84, 97, 122–125, 144
 - provider capacity to respond to new incentives, 133–134
 - provider payment in public health system, 49–52
 - quality improvement strategies, 125–127
 - rate setting, 124–125
 - regulatory reform and, 144–145
 - shortcomings of current system, 116–119
 - trends, 67–68
 - Reproductive health and family planning, 42, 43, 174
 - Resistance to reform, 145
 - Resource-allocation working party formula, 157–160
 - Risk management
 - health system function, 62
 - in social insurance systems, 70, 192
- S**
- Savings accounts, medical, 104–105
 - Schistosomiasis, 42
 - Severe acute respiratory syndrome, 14, 42, 43, 149, 161
 - Singapore, 105
 - Slovakia, 94
 - Smoking, 16–17, 179

Solidarity funds, 92–94, 191
Surveillance, population health, 64, 98,
165–167

T

Taiwan, China, 108, 120
Tax system
 health system financing, 3–4, 69–70
 overreporting of income, 86
 payroll-based financing for health
 insurance, 78, 188–190
 real estate tax, 88
Top-up insurance, 193–194, 196, 198
Tuberculosis, 16, 20, 27, 42, 43, 147, 149,
156, 174

U

United Kingdom, 67, 68, 132, 168–170
United States, 66–67, 96, 120, 132,
168–170
Universal health insurance, 191–192
Utilization
 bed occupancy, 23
 case flow, 23
 cost of care as barrier to, 19–20

 excess capacity, cost of care and, 24
 international comparison, 23–24
 length of stay, 23–24
 NRCMS effects, 35, 58–60
 overprescription of medicines and
 services, 24, 26–27
 prereform patterns, 19
 price control effects, 117, 118

V

Vaccination and immunization
 as public good, 64
 costs, 20
 out-of-pocket spending, 174
 prereform, 3
 provider reimbursement, 131
 public health initiatives of 2000s,
 42, 43

W

Weighted poverty index, 87
World Bank
 Analytic and Advisory Activities
 program, 5–7
 Basic Health Service Project, 55

ECO-AUDIT
Environmental Benefits Statement

The World Bank is committed to preserving endangered forests and natural resources. The Office of the Publisher has chosen to print *Reforming China's Rural Health System* on recycled paper with 30 percent post-consumer waste, in accordance with the recommended standards for paper usage set by the Green Press Initiative, a nonprofit program supporting publishers in using fiber that is not sourced from endangered forests. For more information, visit www.greenpressinitiative.org.

Saved:

- 7 trees
- 5 million BTUs of total energy
- 552 lbs. of CO₂ equivalent of greenhouse gases
- 2,496 gallons of waste water
- 291 lbs. of solid waste



Reforming China's Rural Health System examines the performance and workings of China's rural health system leading up to the reforms of the 2000s, outlines the reforms, and presents some early evidence on their impacts. The authors outline ideas for building on these reforms to further strengthen China's rural health system, covering health financing and health insurance, service delivery, and public health. The authors conclude by using the experiences of the Organisation for Economic Co-operation and Development countries to gaze into China's future, asking not only what China's health system might look like, but also how China might get there from where it is today.

Reforming China's Rural Health System will be of interest to health care policy makers, public health officials, university researchers, and others working to improve rural health and health service delivery in China and in other countries, especially those in East and South Asia.



THE WORLD BANK

ISBN 978-0-8213-7982-0



SKU 17982