

Medical Savings Accounts: Lessons From China

China's medical savings accounts coupled with catastrophic insurance have yielded mixed results, so far.

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DURING THIS ERA of the triumph of free enterprise and the demise of big government, medical savings accounts (MSAs) have gained rapid popularity as a means for financing health care. The U.S. Congress recently passed a law to experiment with MSAs, and the United Kingdom is heatedly debating this approach.¹ China has been a laboratory for testing health care financing models for many years. Confronted with rapid health cost inflation and a growing uninsured population, China experimented with an ingenious scheme patterned after the Singapore MSA, but with major modifications. These pilot experiments were designed in 1993 and implemented in December 1994. In this Update we describe these urban health care financing experiments and their early impacts and draw lessons for other countries contemplating implementation of an MSA scheme.

China's Urban Health Care System

About half of the 350 million urban population of the People's Republic of China are covered by either the Government Insurance Scheme (GIS) or the Labor Insurance Scheme (LIS). The GIS covers government employees, retirees, disabled veterans, and university teachers and students and is financed by government budgets. The LIS covers employees and retirees, and their dependents, of state enterprises with more than 100 employees. Each year, enterprises set aside 11-14 percent

of the total wage bill as welfare funds to finance health expenditures incurred under the LIS. In 1993 the GIS and LIS covered approximately 9 percent and 40 percent, respectively, of China's urban population, or 2.5 percent and 11.7 percent, respectively, of the total population.²

The GIS and LIS are third-party insurance that provides comprehensive benefits with minimal cost sharing. Beneficiaries can receive largely free outpatient and inpatient medical services, except for dependent beneficiaries, who are reimbursed for half of their expenses.³ Except for employees in large enterprises with their own hospitals and/or clinics, both GIS and LIS beneficiaries seek medical services from public hospitals, which are reimbursed on a fee-for-service basis according to the government's set fee schedule. Little cost sharing on the demand side coupled with a fee-for-service payment method on the supply side have created inefficient incentives for the use of medical services and cost inflation.

These inefficient incentives are further exacerbated by the distorted price schedule.⁴ During the Cultural Revolution in the 1960s, the Chinese government tried to improve access by charging prices of visits and hospital stays below costs to make services affordable even for poor farmers. This tradition continued even after China's move to a market economy in 1987. However, as a result of economic reform, the government subsidy was gradually reduced from a full subsidy to one that

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covered only basic personnel wages and new capital investment, which totaled approximately 10–20 percent of hospital expenditures. To allow hospitals to generate the remaining revenues from user fees, prices for new services—especially medical diagnostics and pharmaceuticals—are allowed to rise enough to cross-subsidize traditional services that are priced below cost.⁵ Drug prices are allowed markups of 15 percent at both the wholesale and retail levels.⁶ The resulting distorted relative prices give providers incentives to overprescribe expensive diagnostic tests and drugs and to prescribe expensive imported drugs, rather than domestically produced drugs with similar efficacy.⁷ Seeing high-technology diagnostic equipment as their financial salvation, hospitals often require their staff to lend them money to buy such equipment, which turns all staff members into bondholders. The bonds are backed by the equipment, and the repayment of the bonds depends on revenue generated from using the equipment. This adds to providers' incentives to prescribe diagnostic procedures.

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Problems In Urban Health Care

Between 1978 and 1986 LIS spending grew at an annual rate of 11 percent in real terms and accelerated to 13 percent between 1986 and 1993, when GDP was growing at 9.8 percent (1978–1993). GIS spending grew even faster—from 14 percent in 1978–1986 to 16 percent in 1986–1993. By 1993, although these two programs covered only 14 percent of the total population, they accounted for 36 percent of total health spending and almost three-quarters of public spending for health care.⁸ While the national per capita health care expenditure was 110 RMB yuan (\$1 U.S. equals approximately 8 RMB yuan) in 1993, the per capita health care expenditure for GIS and LIS beneficiaries was 400 RMB yuan and 250 RMB yuan, respectively.⁹

The rapid escalation of health care costs in urban China led in part to a fiscal crisis in both the GIS and the LIS. GIS spending as a share of the government's health care budget

increased from 14 percent in 1978 to 16 percent in 1983 and rose to 30 percent in 1993. The 11 percent enterprise set-aside for medical expenses often proved to be insufficient, and enterprises' profits had to be used to supplement the shortfall. This imposed large financial burdens on the enterprises and limited the resources that were available for other welfare services, such as pensions, and for reinvestment in capital equipment.

Compounding the problem further is the lack of risk pooling across enterprises or local governments. Each organization is self-insured. Many deficit-running state enterprises could not reimburse their employees' health care bills; as a result, workers were in effect uninsured. Surveys in 1992 and 1993 show that one-third of state enterprise employees covered in principle were receiving no insurance-paid care.¹⁰

The Reform

China had two main objectives in reforming the health care financing scheme for its urban population: containing costs and ensuring that employees of bankrupt enterprises would be reimbursed for their medical expenses. Under a mandate from the State Council, pilot experiments in urban health care finance reform were initiated in December 1994 in Zhenjiang and Jiujiang (each with a population of 2.5 million).

■ **Benefit design.** Both the Zhenjiang and Jiujiang experiments finance health care through three tiers: MSAs, out-of-pocket spending in the form of deductibles, and social risk pooling. MSAs provide incentives for consumers to be more cost-sensitive in their demand for health services. Deductibles act to further increase cost sharing by patients. Social risk pooling aims to protect persons against catastrophic expenses. Employees and employers contribute 1 percent and 10 percent, respectively, of their total wage bill each year.¹¹ This 11 percent is divided between two accounts: 5 percent to the social risk-pool fund, and 6 percent to the individual account, which employees can only use for health care

expenses.¹²

Persons pay for all of their health care expenses until the funds in their individual accounts (first tier) have been spent. Whatever is not spent is carried to the next year, and funds unspent at the end of a person's life are inheritable. When funds in the individual accounts are exhausted, persons must pay up to 5 percent of their annual wage out of pocket as a deductible (second tier). The health care expenses that exceed the fund accumulated in the individual account plus 5 percent of the worker's current annual wage are considered catastrophic expenses. These catastrophic expenses are paid from the social risk-pool fund (third tier), with patients paying a decreasing rate of coinsurance as their medical expenses increase. The risk-pool fund limits workers' financial loss. For example, for a full-time worker in Zhenjiang incurring medical expenses equivalent to two-and-a-half times her annual salary, the out-of-pocket expense is limited to a quarter of her annual salary.

To constrain the use of expensive high-technology procedures, a 20 percent copayment is imposed on diagnostic services exceeding 200 RMB yuan, regardless of the catastrophic medical expenditures incurred.¹³ To control the use of drugs, the insurance funds introduced an Essential Drugs List initially consisting of 1,100 Western and 500 Chinese medicines, and they reimburse only medicines on the list.¹⁴

■ **Payment to providers.** To contain health care cost inflation, China coupled the use of MSAs with supply-side payment controls. Zhenjiang set fixed rates for the payment of outpatient and inpatient services, regardless of type or severity of illness. However, the rates differ for facilities of different levels. For example, at tertiary hospitals, the rate for an outpatient visit is 47 RMB yuan, and the rate for an inpatient stay is 2,420 RMB yuan.¹⁵ If the cost per visit (or admission) is less than the fixed payment rate, the provider keeps the difference; if it exceeds the fixed rate, the insurance pays half of the excess, up to 20 percent above the fixed rate. In other words, the

hospitals have to absorb 50 percent of excess costs between 100 percent and 120 percent of the fixed rate and 100 percent of any excess costs thereafter.

This system of fixed payments is aimed at containing health care costs by offering hospitals incentives to reduce length-of-stay and use of expensive diagnostic procedures and drugs. Zhenjiang also planned to institute a global budget for hospitals by 1996, capping annual growth in hospital revenues at 22 percent (with general inflation running at 14.8 percent in the third quarter of 1995), with drugs' share of total revenues targeted at no more than 55 percent of outpatient revenues and 50 percent of inpatient revenues. Jiujiang paid providers on a fee-for-service basis until December 1995, when a fixed payment system was introduced.

■ **Quality assurance.** In principle, hospitals are paid only 95 percent of their fixed payment rates initially. A panel of experts reviews the hospitals every six months for quality assurance. If a hospital receives a grade of 85 or more on a scale of 100 points, the hospital receives the remaining 5 percent plus some rewards. Items under review include proper record keeping, appropriate outpatient prescriptions, correct diagnoses for hospitalization, length-of-stay, revisit and readmission rates, and refusal of admission to seriously ill patients. We do not know the extent to which this principle is put into practice.

■ **Scope of experiment.** All enterprises in Zhenjiang and Jiujiang that had insurance of the GIS or LIS type were required to join this pilot study. These experiments cover employees and retirees but not their dependents. Although enterprises are still required by law to cover half of the health expenses of dependents, "actual" coverage depends largely on the financial well-being of the enterprises. Workers in nonstate and informal sectors and migrant workers are also not included in these experiments. By December 1995, 99 percent of the eligible population in Zhenjiang had joined and 97 percent of the contributions had been collected. In Jiujiang 95 percent of the

government units in the GIS sector and enterprises in the LIS sector had paid.¹⁶

■ **Management.** Each city establishes its Bureau of Social Insurance, which can serve as the group purchaser of services, to contract prices and quality of services with health care providers.¹⁷ Employees may select two secondary facilities and one tertiary facility as their providers. A social insurance fund that pools risks and pays providers is also established. MSA funds are deposited into a low interest-earning account (4 percent) in the Industrial and Commercial Bank of China. The low-interest earnings on these accounts become an indirect tax on healthy workers.

Preliminary Experience

With one year's experience and data, it would be premature to judge the success or failure of the Chinese experiments. Nonetheless, this preliminary experience shows that the reform holds promise as a viable model of urban health care finance with potential for containing costs. However, it also indicates that undesirable side effects such as risk selection, cost shifting, and reduction in equity may be introduced into the system.

■ **Cost containment.** There is evidence that the finance reform reduces cost inflation. For example, in Zhenjiang real health spending per beneficiary decreased 27 percent, from 426 RMB yuan in 1994 to 311 RMB yuan in 1995.¹⁸ Total health spending declined by 24.6 percent from 1994 to 1995, compared with a

positive growth rate of 35–40 percent for two neighboring cities not under reform.

These reductions do not seem to be a result of changes in utilization rates or length-of-stay per admission. In Zhenjiang outpatient visit rates per beneficiary remained practically unchanged between 1994 and 1995. Hospital admission rates fell modestly, from 5.3 to 4.9 per thousand. Average length-of-stay per admission also remained at twenty-one to twenty-three days.¹⁹ These preliminary results seem to show that a high deductible only slightly reduced demand for visits and hospitalizations.²⁰

Much of the savings were derived from reduced use of expensive diagnostic services and drugs, as a result of the combined incentives built into the prospective fixed-payment system, high cost sharing, the Essential Drugs List, and the 20 percent copayment for expensive diagnostic services. Although the data do not allow us to decompose the cost savings into these various factors, to the extent that providers possess greater power in the prescription of diagnostic tests and types of drugs, the cost savings are probably largely due to the fixed-payment method. Between 1994 and 1995 beneficiaries' use of high-tech diagnostic procedures declined substantially in Zhenjiang (Exhibit 1).²¹ The reduction was achieved partly through internal reorganization of hospital management in response to the prospective fixed payment. Prior to the reform, physicians' bonus payments increased

EXHIBIT 1 Utilization Rate Of Diagnostic Procedures (Per 1,000 LIS/GIS Beneficiaries), 1994 And 1995

Procedure	1994	1995
CT	14.2	13.0
MRI	0.8	0.6
Color doppler	12.2	5.2
X-ray	158.0	77.2
Beta ultrasound	120.4	72.3

SOURCE: Zhenjiang Social Insurance Bureau, 1996.

NOTES: LIS is Labor Insurance Scheme. GIS is Government Insurance Scheme. CT is computed tomography. MRI is magnetic resonance imaging.

proportionally with the number of expensive diagnostic procedures prescribed. After the introduction of the fixed-fee payment, physicians were rewarded for keeping the cost of service within the fixed payment.

Primary data collected for a tertiary hospital in Zhenjiang show that the drug share of total revenues declined between 1994 and 1995, after an increasing trend from 1993 to 1994 for both outpatient and inpatient services (Exhibit 2). The impact on outpatient drug revenue is particularly dramatic, which may indicate that overuse of drugs for outpatient services was widespread before the reform. Although no systematic information was collected on the types of drugs used, there is anecdotal evidence that as a result of both the fixed-fee payment method and the Essential Drugs List, providers are more likely to prescribe domestically produced generic drugs. One secondary-level hospital in Zhenjiang reported that the share of drug revenue from import, joint venture, and domestic drugs was one-third each in 1994. After the reform, about 95 percent of the drug revenue was derived from domestic drugs.²²

■ **Risk pooling.** The Jiujiang/Zhenjiang experiments solve the problem of risk pooling by creating a citywide insurance pool for all workers covered by GIS/LIS in the city. Workers who were not previously able to get their health expenditures reimbursed are now able to do so. In Zhenjiang the proportion reporting being unable to get reimbursed for

their medical expenses in 1995 was 0.45 percent for workers and 0 percent for teachers, compared with 13.7 percent and 15.9 percent, respectively, in 1994.²³ Although these experiments do not include urban workers outside the government and state-enterprise sectors, they could be extended to include other formal-sector employment to increase social risk pooling and coverage of the population.

Whether the insurance funds will be solvent in the future depends on people's saving behavior and the rate at which medical expenditures grow. In Zhenjiang 84 percent of the funds collected were disbursed for payment of services by the end of 1995. While the social risk-pool account ran a deficit equivalent to about 4 percent of the risk-pool funds, 35 percent of the funds in the individual accounts remained unspent. As more funds accumulate in the individual accounts, the social risk-pool accounts will bear less burden. However, if medical spending grows at a rate faster than people's saving rate and the interest rate at which the funds in individual accounts grow, the insurance funds could face bankruptcy.

■ **Risk selection and quality of care.** The fixed-payment system gives providers incentives to contain costs by providing fewer services per visit (or admission). To the extent that the fixed payment is not adjusted by types or severity of illness, providers have incentives to avoid high-cost patients. Anecdotal evidence suggests that Chinese hospitals

EXHIBIT 2

Drug Utilization Pattern, January Through November, 1993–1995

Drug share of total revenue	A tertiary hospital in Zhenjiang		
	1993 ^a	1994 ^a	1995
Outpatient	64%	84%	69% (GIS/LIS) 63 (FFS)
Inpatient	50	56	48 (GIS/LIS) 46 (FFS)

SOURCE: Primary data collected by authors during visits to Zhenjiang, 1995.

NOTES: GIS is Government Insurance Scheme. LIS is Labor Insurance Scheme. FFS is fee-for-service.

^a Data for 1993 and 1994 are not decomposed into GIS/LIS and FFS, where FFS patients are those not covered by either the GIS or LIS.

refuse admission to those who are most seriously ill. For example, administrators of a primary hospital openly admitted that they refused admission to patients who were seriously ill and referred them to secondary or tertiary hospitals. For tertiary hospitals, referral of seriously ill patients to higher-level facilities was not a feasible strategy. However, there were reports of some refusals to admit seriously ill patients, as a result of incentives built into physicians' compensation. Before the reform, bonus payments for physicians increased with service volume. After the reform, bonuses increased with the ability to keep cost per admission within the fixed payment amount.²⁴ Neither city has been seriously concerned about changes in the quality of medical services under the new system, so there is little systematic information on them. To what extent patients' access is threatened and quality of care is compromised remains largely unknown.

■ **Cost shifting.** A mixed-payment system based on insurance status (that is, fixed payment for insured persons and fee-for-service payment for uninsured persons) creates incentives for providers to shift costs. Data collected by the two cities on use and costs of services have been primarily on the insured population, so there is not adequate information to analyze whether and to what extent costs were shifted to the uninsured population.

Data from several state enterprises, however, indicate that although expenditures for enrollees decreased, those for nonenrollees rose substantially. For example, the director of a state enterprise that employs 600 workers in Zhenjiang explained that his enterprise did not participate in the new system because his factory was running such a serious deficit that it would have had difficulty paying the 11 percent wage contribution regularly to the insurance fund. The enterprise continued to be self-insured, reimbursing its workers when

the factory had funds available. However, the enterprise discovered that for January–June 1995 the average cost per admission for its workers had increased by more than 50 percent from the previous year—the highest rate of increase ever experienced. The enterprise then decided to join the new social insurance plan in August to protect itself from hospital cost shifting.²⁵

■ **Equity.** The Jiujiang/Zhenjiang experiments increase equity by pooling the risk at the city level, thus allowing the profitable units to cross-subsidize those that are running deficits. However, the structure of benefit costs and personal health accounts transfers income from the frail to the healthy workers covered by the GIS and LIS. Previously, all GIS and LIS wage tax contributions were available for risk pooling within each enterprise. In these experiments

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more than half of that amount is deposited to individual accounts, and much of that will never be spent on health care because many people never use medical services. In the existing GIS and LIS, a person who uses no health services receives no benefits, whereas a worker with major medical costs pays nothing. Under the experiment, healthy workers retain unspent funds in their individual accounts, and very ill workers exhaust their individual accounts, paying another deductible equal to 5 percent of their wages before the risk pool will pay a portion of the excess expenditures. In Zhenjiang, by December 1995, about 31 percent of the enrollees in the experiments had not incurred any medical expenses; hence, they retained 6 percent of their wage contributions in their personal accounts. On the other hand, 17 percent had incurred catastrophic expenses and used funds from the social risk pool, after exhausting their personal accounts and paying 5 percent of their income as deductibles.²⁶

Lessons Learned

Although MSAs have become a widely proposed model for financing health care, there is little empirical evidence on their impact, except for the Singaporean case and some firm-level experience in the United States.²⁷ The urban health care finance experiments in China offer some general lessons for other nations considering the MSA scheme, despite some of their specific features such as low rates of return to savings in the personal accounts and compulsory enrollment, which may not be applicable to other nations.

First, for an MSA scheme to effectively control health cost inflation, a demand-side cost-sharing mechanism needs to be coupled with appropriate supply-side constraints. MSAs are built upon the premise that full health insurance benefits are the major cause of cost inflation; therefore, to control cost inflation, demand constraints are required. This theory ignores the market power of providers as agents for patients in choosing medical services. When Singapore implemented its MSA scheme, it incorporated high coinsurance rates and deductibles to constrain cost on the demand side. Nevertheless, Singapore's health spending per capita rose at an average rate of 13 percent per year after the introduction of Medisave in 1984, two percentage points faster than the average before the reform.²⁸ On the supply side, Singapore relied on competition between the private and the heavily subsidized public hospitals to keep costs down. However, the Singapore experience showed that rather than competing on prices, hospitals competed by offering the latest expensive technology, leading to widespread duplication of high-technology equipment, and by attracting physicians who could bring in a large number of patients with high compensation. Furthermore, providers in Singapore are reimbursed on a fee-for-service basis, which gives them incentives to overprescribe expensive high-tech services. Consequently, Singapore adopted a health policy that called for regulating the supply of hospital beds and physicians and restoring fee regulation for hospital and

physician services.²⁹

Learning from Singapore's experience, China introduced supply-side cost-control mechanisms into its MSA scheme, a prospective fixed-payment system. At least from experience in the first year, the Zhenjiang experiment shows that such a dual strategy has a significant impact on controlling health care cost inflation, in particular, through reductions in use of high-technology diagnostic services and expensive drugs.

Second, there is anecdotal evidence that Chinese hospitals kept out high-cost patients. This risk-selection behavior impairs access for high-risk patients. The hospitals also significantly altered the medical treatments and use of drugs. Thus, the quality of medical care needs careful and close monitoring, and the payment rates should be properly adjusted to account for case-mix, so that people's health status or access will not be compromised by cost controls.

Lastly, China's experience shows that the introduction of MSAs can have substantive redistribution effects. MSAs with catastrophic insurance increase equity by providing insurance to workers in deficit-running enterprises and by limiting out-of-pocket spending for persons with catastrophic health expenses. However, what may not be readily apparent is that to encourage medical service users to be more cost-conscious, MSAs with high deductibles transfer income from less healthy to healthy enrollees in the scheme. While healthy beneficiaries retain their 6 percent of wage contribution in their MSAs, less healthy beneficiaries have to pay deductibles equal to 5 percent of their wage income before they can use funds from the social risk pool. This arrangement essentially shifts the responsibility of caring for ill people from the government or employers to workers. To what extent such a system creates inequity of care and to what extent a nation trades off efficiency gain and equity loss need to be carefully considered in designing the benefit structure of any MSA scheme.

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NOTES

1. *Health Insurance Portability and Accountability Act of 1996*, Public Law 104-102.
2. People's Republic of China, *The National Health Survey* (Ministry of Health, 1993).
3. In recent years the GIS has begun to require employees to pay 10 percent coinsurance for outpatient services.
4. X. Liu and W.C. Hsiao, "The Cost Escalation of Social Health Insurance Plans in China: Its Implication for Public Policy," *Social Science and Medicine* (September 1995): 1095-1101.
5. W.C. Hsiao, "The Chinese Health Care System: Lessons for Other Nations," *Social Science and Medicine* (September 1995): 1047-1055.
6. This is pure profit above all costs, including transportation costs.
7. When hospitals have to generate profits to cross-subsidize services operating at a loss, the amount that can be generated depends on the margin of particular services. For example, if the margin for a procedure is 15 percent, to generate 100 RMB yuan of revenue above cost, a hospital has to increase the use of this procedure by 666 RMB yuan. This "leveraging effect" contributes to rapid inflation of health expenditures.
8. World Bank, *China: Issues and Options in Health Financing* (Washington: World Bank, 1996).
9. *Ibid.*
10. See, for example, T.W. Hu, E. Li, and Z.H. Lin, "Insurance Coverage and Out-of-Pocket Medical Expenditures among Chinese Urban Workers" (Mimeo, University of California, School of Public Health, Berkeley, Calif., 1995).
11. This high rate of contribution, relative to other countries—for example, Singapore, which requires a contribution equal to 4 percent of wages—is a result of the historically low wage level of Chinese workers. Cash wages typically make up only half of a worker's compensation; the rest consists of benefits such as health insurance, pension, education, and housing.
12. Unlike Singapore, the savings accounts in Zhenjiang and Jiujiang do not cover all members of a household.
13. If total medical expenditures incurred, including a diagnostic procedure that costs more than 200 RMB yuan, do not exceed 11 percent of a person's

wage, such persons face 100 percent of cost sharing for the procedure. If expenditures exceed 11 percent of a person's wage, such persons face a copayment rate of 20 percent for the diagnostic procedure and copayment rates of 10 percent, 8 percent, and 2 percent for the rest of the medical bills, depending on the total bill amount.

14. This drug list is revised each year to match the changing needs of the population.
15. This is calculated based on a per diem rate of 110 RMB yuan and an average length-of-stay of twenty-two days.
16. *East China News*, 8 April 1996.
17. While Jiujiang established separate insurance agencies for the GIS and LIS, Zhenjiang combines administration of both programs into one.
18. Zhenjiang Social Insurance Bureau, *Report on Evaluation of the Zhenjiang Health Insurance Experiments* (City of Zhenjiang, 1996).
19. *Ibid.*
20. Under the case-based prospective payment system, providers have incentives to increase the number of visits and hospital admissions.
21. Zhenjiang Social Insurance Bureau, *Report on Evaluation of the Zhenjiang Health Insurance Experiments*.
22. Based on interviews with hospital administrators, December 1995.
23. X. Song, *Reform of the Medical Insurance System of Urban Workers and Staff Members in China* (Beijing: State Commission for Economic Restructuring, 1997).
24. Based on interview with hospital administrators, December 1995.
25. Primary data collected during visit to Zhenjiang city, December 1995.
26. Thirty-eight percent had some medical expenses but had not exhausted their personal accounts; 14 percent had exhausted their personal accounts and paid deductibles from their own income but had not used the social risk-pool funds.
27. See W.C. Hsiao, "Medical Savings Accounts: Lessons from Singapore," *Health Affairs* (Summer 1995): 260-266; T. Massaro and Y.N. Wong, "Positive Experience with Medical Savings Accounts in Singapore," *Health Affairs* (Summer 1995): 267-272; and National Center for Policy Analysis, "Medical Savings Accounts: The Private Sector Already Has Them," NCPA Brief Analysis 105 (Washington: NCPA, 20 April 1994).
28. Hsiao, "Medical Savings Accounts."
29. Republic of Singapore Ministerial Committee on Health Policy, *Affordable Health Care, A White Paper* (Singapore: Ministry of Health, 1993).
30. H. Li, "A Study of Current Government Health Insurance System and Its Expenditures in China" (Unpublished manuscript, Chinese Medical Association, Beijing, 1993).