Peer Review

In the Spring 1995 issue of Health Affairs Mark Pauly and John Goodman outlined their proposal for medical savings accounts (MSAs) supplemented with tax credits to purchase insurance and encourage cost-effective consumer behavior. This proposal has been widely debuted, both in Washington and across the nation. To further enlighten the debate, Health Affairs presents two accounts of the experience with MSAs in Singapore, which differ over how successful Singapore has been at controlling health spending using MSAs. In part, this difference reflects a divide in the broader debate over the outcomes by which MSAs should be evaluated. It is clear that there is ample room here to sustain a debate between honest, serious parties. The result of the exchange is an enriched discussion that will prepare the reader to reach an informed judgment.

Medical Savings Accounts: Lessons From Singapore

by William C. Hsiao

Legislation was introduced in the 104th Congress to prescribe a new "magic pill"-medical savings accounts-to curb health care cost inflation.[1] The proponents of medical savings accounts (MSAs) argue that health insurance is the primary cause of high health cost inflation rates. Most Americans have health insurance that pays the costs of most health services. This full benefit coverage creates serious "moral hazard"-neither patients nor providers are concerned about costs because of third-party insurance payments. Hence, competition occurs not on price but only on quality and access.[2]

An MSA scheme would take the money now being spent by employers for expensive, low-deductible policies and buy high-deductible policies for employees. Because the high-deductible policy would cost less, the employer would take the amount saved and put it into the employee's tax-free MSA. The employee would draw on this account to pay for his or her family's health care until the amount of the deductible was reached.[3]

The simple theory underlying MSAs overlooks the market power of physicians and hospitals. Empirical studies have long documented that patients often lack sufficient medical knowledge, time to shop, or presence of mind to make rational choices. They rely heavily on physicians' advice and decisions, which grants significant market power to providers. This market power enables physicians to set prices and induce demand for their services.[4] Whether reducing health insurance coverage can contain health care cost inflation at a reasonable level is an empirical question.

Fortunately for us, Singapore also believed in the theory that underlies the MSA scheme, and it adopted an MSA scheme that resembles those proposed in the United States. Singapore's decade-long experience shows that its MSAs neither reduced nor controlled health care cost inflation. Instead, cost inflation rates increased.

William Hsiao is K. T. Li Professor of Economics at the Harvard School of Public Health.

Singapore's Health Care System

Singapore is a well-developed, modem city-state with 3.3 million people. Since achieving independence in 1965 Singapore has enjoyed rapid economic growth through successful development of industries and tourism. Per capita income, based on purchasing power parity, reached $20,250 in 1993.[5] Unemployment remains low at 1-2 percent, and the literacy rate is 91 percent.

Singapore's health status indicators rival those of Organization for Economic Coop eration and Development (OECD) countries. Life expectancy has increased from sixty years in 1950 to seventy-six years today. Infant mortality has dropped from eighty-two per 1,000 live births in 1950 to five per 1,000 in 1992, and maternal mortality has fallen from eighty-six per 100,000 births in 1950 to two per 100,000 in 1992. Singapore has a relatively young population, with only 9 percent above age sixty.[6]

Singapore inherited its health care system from the British. Prior to its 1984 reform, medical services were provided mainly by the public sector and financed through general taxes. Medical services generally were provided free or at a nominal charge. Most serious illnesses were treated in public hospitals, which were well equipped and offered technically sophisticated services. The private sector played only a modest role.

Singapore, like other industrialized nations, experienced rapid health care cost inflation in the 1970s. The government was pressed to address how to finance the increasing cost of its public hospitals. At the same time, the government recognized that the public hospitals had efficiency problems. Low labor productivity had arisen from poor management, physician dominance, and excessive bureaucratic rules. Also, although technically sound, medical services were not user-friendly. Often, clinical hours were scheduled for the convenience of hospital personnel rather than patients.

In the early 1980s the government considered various options to reform its health care system. Political leaders set forth certain basic principles to be used in designing a new system: (1) Consumers should have free choice; (2) self-accountability and self-reliance should be stressed; (3) free market competition should be deployed wherever possible; and (4) government should be the provider of last resort and offer affordable minimal standards of health care to those who could not afford to pay.[7]

Using these basic principles, Singapore reformed its health care financing and organization in 1984 by implementing a new, well-designed, consistent, and comprehensive health care system. The system offered consumer choice, increased patients' direct payment at point of service, and employed market forces and competition to bring about greater efficiency and induce hospitals and clinics to offer patients better value for their money. It also assured everyone access to adequate medical care. The new financing scheme, known as Medisave, employed an ingenious new mechanism to finance health services while reducing moral hazard.

Financing

Medisave. Designed under the principle of self-reliance and self-accountability, Medisave required patients to save and pay directly for health services. Every working person, including the self-employed, is compelled to deposit a portion of his or her earnings into an individual Medisave account from which savings can only be withdrawn to pay for hospital services and a few selected expensive outpatient services.[8] Contributions to Medisave are not pooled. Individuals may use Medisave to pay for their own hospitalization and a few costly outpatient expenses or for those of their immediate family members (spouse, children, or parents). Medisave also has a lifetime savings feature by which persons save for medical expenses in old age. Upon death, any balance left in a Medisave account becomes part of a person's estate and goes in bequest to family, friends, or charity. The contribution rate for Medisave ranges from 6 to 8 percent of earnings, depending on the age group, and is shared equally between employer and employee.[9] Contributions and earnings on Medisave funds are exempted

from income tax.

Under Medisave, patients have free choice of providers but pay directly for the services they demand at the point of delivery. They pay more when they demand higher-level services. This minimizes the moral hazard that arises from insurance. To further reduce moral hazard, Medisave restricts the use of Medisave funds to pay only inpatient and a few costly outpatient expenses. Medisave views most outpatient services as generally low cost, so most people can afford them with their current income or regular savings. Those who cannot afford them can obtain subsidized care at gorernment clinics or apply for a waiver of charges.

By 1992,95 percent of the total working population above age fifteen had Medisave accounts. About 100,000 accounts belonged to the self-employed. The total Medisave account balance increased from $3 billion to about $9 billion between 1984 and 1992.[10] More than 80 percent of patients admitted to hospitals used their Medisave accounts to pay their hospital bills in 1993. The remaining 20 percent paid their bills out of pocket, or their employers paid them.[11]

Medishield. Later, Singapore recognized that Medisave accounts may be insufficient for those who suffer from an expensive major illness. To protect people from possible catastrophic medical expenses, the government introduced the Medishield plan in 1990. Unlike Medisave, Medishield is a risk-pooling insurance plan. Every Medisave member is automatically enrolled unless the member requests otherwise. The premium is deducted from each member's Medisave account. Medishield has a high deductible and only covers hospital expenses and certain expensive outpatient treatments, such as kidney dialysis and outpatient cancer treatments. A complicated scheme of deductibles, coinsurance, and lifetime limits reduces moral hazard.

Medifund. Singapore created an endowment fund, known as Medifund, in 1993 to assist persons who are in poverty and cannot pay their hospital bills. The interest income from this endowment fund is used to cover patients who are hospitalized in the open wards (Class C and B2) of hospitals and cannot afford to pay for their care. These patients must apply and prove their need for public assistance. Three percent of patients who used the open wards applied for assistance in 1993.[12]

Assuring Universal Access

Outpatient services. Singapore assumes that most people can afford most outpatient services in the private sector, since the amount charged is small relative to personal income. Government maintains a presence in the primary care market to provide subsidized services for those who cannot afford private-sector charges, as well as to force the private sector to reduce its charges to compete with the public sector.

To provide consumer choice and promote competition, Singapore relies on 800 private clinics to deliver outpatient services. These clinics can charge whatever they wish for their services with minimal government regulation. To serve the low-income population, the government operates sixteen polyclinics (similar to community health centers in the United States), located in the more populated areas of Singapore, which provide curative outpatient medical treatments, immunizations, health education and screening, laboratory and x-ray facilities, and pharmacy services. All services are subsidized; patients generally pay about 50 percent of the cost. Children and the elderly (over age sixty) pay only 25 percent of the cost. Immunization, school health, and dental services are free. Patients pay a nominal fee for family planning services.[13]

Hospital services. Singapore has three hospital beds per 1,000 population, which is lower than the ratio in the United States. Eighty percent of the beds are in the ten public hospitals, which have between 200 and 2,500 beds. The remaining ten hospitals are privately owned and tend to be smaller (60-500 beds). The hospitals have an average occupancy rate of about 80 percent.[14]

Within public hospitals, patients have a choice of classes of accommodation upon admission. The Class A ward has one to two beds per room and is air-conditioned, Class

B1 has three to four beds per room and is air-conditioned, Class B2 has six beds per room without air conditioning, and Class C is an open ward of ten to twenty beds and is not air-conditioned. The standard of medical care is similar across classes. Patients are cared for by the same hospital staff and receive the same medical attention, treatments, and medication; only the physical amenities differ in the various classes. In the higher classes patients can choose their own physicians and pay more for better physical amenities such as privacy, air conditioning, attached bathrooms, televisions and telephones, and so on.

Equity and equal access to basic medical services are assured in Singapore by the subsidies and classes of hospital beds (Exhibit 1). Class C beds are heavily subsidized by the government: Patients pay only 20 percent of the hospital costs, and the government subsidizes the remaining 80 percent. For Class B2 beds, patients pay 35 percent of the cost, and for Class Bl, 80 percent. Patients in Class A pay 100 percent of the costs, with no government subsidy.[15] Over the past ten years demand has increased for admission to higher classes of hospital accommodation. In 1982, 16 percent of patients were admitted to private hospitals and 2 percent to Class A accommodations; in 1992 those numbers had increased to 24 percent and 8 percent, respectively.[16]

Over the years, the private sector has gradually increased its role in the provision of health services. Private clinics provide 75 percent of primary care services. Today, the private sector provides 20 percent of the total number of acute hospital beds, all of which are Class A beds.

Singapore has 4,000 doctors, yielding a ratio of one doctor per 800 persons, 40 percent of whom are specialists. Singapore has 11,000 nurses, or one nurse per 290 persons.[17] Professional medical personnel are relatively well paid in the public hospitals.[18] In recent years the government has had to increase the compensation of physicians employed by the public hospitals to retain them in the public sector.

To promote the efficiency of hospitals, Singapore adopted a two-prong strategy. First, it encouraged the development of private hospitals and clinics to compete with those in the public sector. To exert market pressure on the private sector to both compete and minimize costs, the government subsidizes public outpatient clinics and public hospitals (Class B1, B2, and C beds). Theoretically, private-sector providers would have to compete with these subsidized services by minimizing costs and offering better-quality services.

Meanwhile, the government adopted another strategy to force public hospitals to improve quality and raise efficiency: the restructuring of public hospitals. The government separated financing from provision of hospital services by making public hospitals autonomous and financially independent. The government has a fixed formula to subsidize hospital beds and does not take responsibility for the overall profit or loss of hospitals. Under the restructuring program

Exhibit 1
Government Subsidies To Assure Access For All In Singapore

Description	Patient pays	Government pays
Public hospitals		
Class C (open ward)	20%	80%
Class B2 (6 beds)	35	65
Class B1(3-4 beds)	80	20
Class A (1-2 beds)	100	0
Public outpatient clinics		
Adults	50	50
Children/elderly	25	75

Source: Singapore Ministry of Health.

that began in 1985, government hospitals were incorporated as private nonprofit companies and operated autonomously under their own boards of directors. However, the government still indirectly owns these hospitals through a nonprofit holding company managed by the government, and it controls the boards of directors.[19]

Each restructured hospital is fully autonomous and has the power to recruit its own staff, set its own terms of remuneration, and decide on the deployment of resources. Management is accountable to the hospital's board of directors. Hospitals can attract, reward, and retain good staff to achieve efficiency and quality of services. Staff in restructured hospitals are rewarded according to work performance. In addition, restructured hospitals must establish generally accepted accounting principles, uniform accounting systems, and auditing procedures. To initiate modem hospital management in the restructured public hospitals, Singapore engaged the Hospital Corporation of America to take over the total management of its flagship hospital, Singapore General HospitaL[20] The modernization of the management of this hospital served as a model for other public hospitals that were restructured later.

Results Of The MSA Scheme

Equity. Singapore successfully designed an ingenious financing mechanism combined with a well-crafted system of publicly subsidized primary care and hospital services to assure that everyone has reasonable access to basic medical services. The government enhanced everyone's ability to pay by establishing Medisave, Medishield, and Medifund and by subsidizing clinics and Class C, B1, and B2 hospital beds.

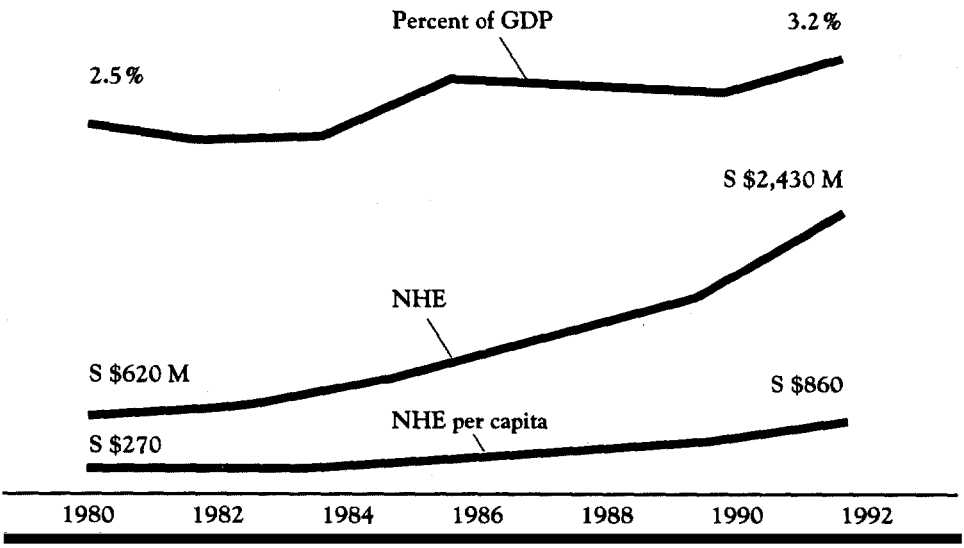
Efficiency. Restructuring the public hospitals improved their efficiency. Productivity, as measured by the number of adjusted patient days per staffer, increased about 20 percent. More importantly, in 1992 the restructured hospitals commissioned a survey to gauge patients' opinions on the service of these hospitals. The survey showed that 90 percent of patients rated the services provided by the public hospitals as either good or excellent. Eighty-eight percent of the surveyed patients stated that they were satisfied with the services and would recommend the hospitals to their relatives and friends.[21]

Failure to contain costs. Singapore compels people to save and pay with their own money when they demand services. Has this approach in fact reduced the demand for medical services, or has provider-induced demand offset any increased consumer cost-consciousness in demanding medical services? Unfortunately, Singapore never collected the data to answer these questions directly, nor are comprehensive and detailed data on the Singapore hospitals and clinics available publicly. Comparing the percentage of Singapore's gross domestic product (GDP) on health care with those of other nations leads to misleading conclusions because Singapore does not have a complete and accurate accounting of its health expenditures[22] However, there are some broad indicators to show whether consumers' direct payment successfully controls cost escalation in Singapore.

The per capita cost of health care in Singapore, in fact, rose faster after the introduction of the Medisave program in 1984 (Exhibit 2). Health expenditures per capita rose at an average rate of 13 percent per year-2 percent faster than the average before the introduction of Medisave.[23] Part of this accelerated rate of increase was attributable to the upgrading of public hospital facilities but mostly caused by other factors.[24]

Singapore found that hospitals largely did not compete on price. For example, the average charge of private hospitals for an appendectomy was twice that of the prestigious Singapore General Hospital.[25] Hospitals competed instead by offering the latest technology and expensive equipment, which appeared to be demanded by physicians and accepted by the public as an indicator of quality. Once the new technology was put to use, it produced a higher cost inflation rate in medical services. Ten years after the reform, Singapore is saddled with widespread duplication of expensive medical equipment and high-technology services. For example, five hospitals in Singapore now have mag-

Exhibit 2
National Health Expenditures In Singapore, 1980-1992



Source: Singapore Ministry of Health.
Notes: National health expenditures (NHE) are expressed in milliona of Singapore dollars. GDP is gross domestic product.

netic resonance imaging (MRI) equipment; seven hospitals have in vitro fertilization programs.[26]

In addition, hospitals compete for physicians who can bring a large number of patients to their facilities. Under a free market the fees and incomes of private-sector phy sicians rose at a phenomenal rate, which caused experienced physicians to migrate from the public to the private sector. The public sector had to raise compensation for its physicians and other health care workers to retain well-qualified professionals in the public sector. Today, the top surgeons employed by the public hospitals receive close to $400,000 per year.[27] Top private-sector surgeons earn at least twice that amount. Rapidly rising compensation was another cause of health care cost inflation.

Faced with a rising rate of cost inflation in health care, the government had to appoint a ministerial committee to investigate the causes and find remedies. This Ministerial Committee on Health Policy published a White Paper in late 1993. In spite of Singapore's strong belief in and commitment to a free market, the White Paper concludes:

> Market forces alone will not suffice to hold down medical costs to the minimum. The health care system is an example of market failure. The government has to intervene directly to structure and regulate the health system.[28]

The White Paper sets a new direction for Singapore's health policy. It states that the government must regulate the supply of hospital beds and physicians to reduce provider-induced demand. Moreover, the gorernment has to gradually restore fee regulation for hospital and physician services to curb the market power of private providers to set excessively high fees.

Implications For U.S. Policy

Like U.S. proponents of MSAs, Singapore believed that full health insurance benefits cause rapid cost inflation because patients and providers are less concerned about the cost of services. Singapore implemented an MSA scheme to ameliorate the

moral hazard arising from insurance. A decade after implementing its consistent and well-designed Medisave system, Singapore has found that the theory has not been supported by the evidence.

As the United States searches for a "magic pill" to curb its health care cost inflation, theoretically attractive schemes are often proposed. Fortunately, in some cases, other nations have tried them and learned some valuable empirical lessons. Singapore's Medisave is one example. Because of the differences in culture, patients' preferences, and market conditions, we cannot extrapolate from Singapore's experience to draw exact implications of the MSA schemes proposed in the United States. However, the well-executed Medisave scheme in Singapore could not contain costs, so it is unlikely that such a scheme could do so here. In the current ideologically driven health policy debate, we can avoid costly mistakes by examining the experiences of other nations.

The views expressed in this paper are those of the author and do nor necessarily represent those of the Ministry of Health, Republic of Singapore, which provided much of the data.

NOTES

1. *Health Care Savings Plan Act* of 1995, H.R. 354, 104th Cong., 4 January 1995.
2. See, for example, M.V. Pauly and J.C. Goodman, "Tax Credits for Health Insurance and Medical Savings Accounts," *Health Affairs* (Spring 1995): 126-139; J.C. Goodman and G.L. Musgrave, "The Economic Case for Medical Savings Accounts" (Paper presented to the American Enterprise Institute, 18 April 1994); and P. Gramm, "Sounding Board-Why We Need Medical Savings Accounts," *The New EnglandJoumal of Medicine* 330, no. 24 (1994): 1752-1753.
3. Gramm, "Sounding Board-Why We Need Medical Savings Accounts."
4. That physicians have monopolistic power to set prices in a free marketplace has long been documented. For example, see R. Kessel, "Price Discrimination in Medicine," *Journal of Law and Economics* 1, no. 2 (1958): 20-53. A number of papers have been published on supplier-induced demand. The theoretical work began with R.G. Evans, "Supplier-Induced Demand: Some Empirical Evidence and Implications," in *The Economics of Health and Medical Care,* ed. M. Perlman (New York: John Wiley and Sons, 1974). More recently an advance was made by T.G. McGuire and M. Pauly "Physician Response to Fee Changes with Multiple Payers," *Journal of Health Economics* 10, no. 4 (1991): 385-410. The most recent rigorous study that found empirical support for the induced-demand theory is W. Yip, *Physician Responses to Medicare Fee Reduction: Changes in the Volume and Supply of Coronary Artery Bypass Graft* (Cambridge: Massachusetts Institute of Technology, 1994).
5. The World Bank, *World Development* Report, 1994 (New York: Oxford University Press, 1994).
6. B.S. Kwa, "Health Care Financing-The Singapore Experience," in *Proceedings of China's Medical Reform Conference* (Beijing: Ministry of Health, 30-31 March 1994).
7. Ibid.; Ministry of Health, *Blue Paper on the National Health Plan* (Republic of Singapore, 1983); and K.H. Phua, "Saving for Health," *World Health Forum* 8 (1987): 36-41.
8. Kwa, "Health Care Financing."
9. M.G. Asher, Social Security *in Malaysia and Singapore*: Practice Issues and *Reform* Directions (Kuala Lumpur, Malaysia: Institute of Strategic Interna, tional Studies, 1994).
10. Ibid.
11. Kwa, "Health Care Financing."
12. Ibid.
13. Ibid.
14. Ibid.
15. Ibid.
16. Singapore Ministry of Health data.
17. Kwa, "Health Care Financing."
18. Singapore Ministry of Health data.
19. Kwa, "Health Care Financing."
20. L. Lim, "Health Care Restructuring: A Case Study on the Singapore General Hospital," in *Proceedings of the Pan-Asia Hospital Development Summit* (Kuala Lumpur, Malaysia, 28-29 October 1993).
21. Kwa, "Health Care Financing."
22. Singapore's total health expenditures seem to be understated. They exclude spending for Chinese medicine and drugs and underreport patients' out-of-pocket payments. An accurate national health account for Singapore remains to be compiled.
23. Kwa, "Health Care Financing;" and M.K. Lim, *Singapore's Medisave Scheme-Its Rationale, Merits, and Its Impact on Rising Health Care Costs* (Boston: Harvard School of Public Health, 1991).
24. In spite of the high average rate of growth in GDP of 10 percent, Singapore's health expenditures grew faster, rising from 2.5 percent to 3.2 percent of GDP between 1980 and 1993. These figures cannot be compared with those of other nations.
25. K.H. Phua, *Privatization and Restructuring of Health Services in Singapore,* Institute of Policy Studies Occasional Paper no. 5 (Singapore: Time Academic Press, 1991).
26. Ibid.
27. Top surgeons receive S$500,000-S$600,000 per year. Converting to U.S. dollars using purchasing power parity yields an equivalent of $400,000-$480,000.
28. Republic of Singapore Ministerial Committee on Health Policy, *Affordable Health Care, A White Paper* (Singapore: Ministry of Health, 1993).