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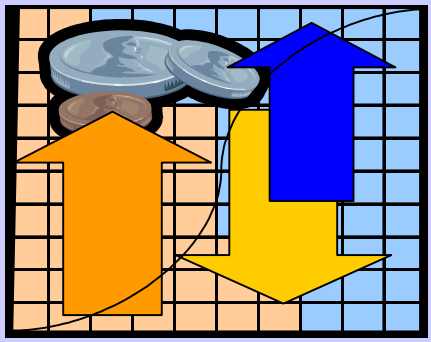

Medical Savings Accounts:
Lessons Learned
from
Limited International Experience

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Acronyms

CHP	Catastrophic Health Insurance Plan
CPF	Central Provident Fund
GAO	General Accounting Office (United States)
GDP	Gross Domestic Product
GIS	Government Insurance Scheme
HDHP	High Deductible Health Insurance Plan
IMF	International Monetary Fund
LIS	Labor Insurance Scheme
MSAs	Medical Savings Accounts
M+C MSAs	Medicare+Choice MSAs
NHP	National Health Plan
OECD	Organization for Economic Cooperation and Development
PHE	Public Health Expenditure
SIA	Social Insurance Account
THE	Total Health Expenditure
UNDP	United Nations Development Program
VWOs	Voluntary Welfare Organizations
WHO	World Health Organization

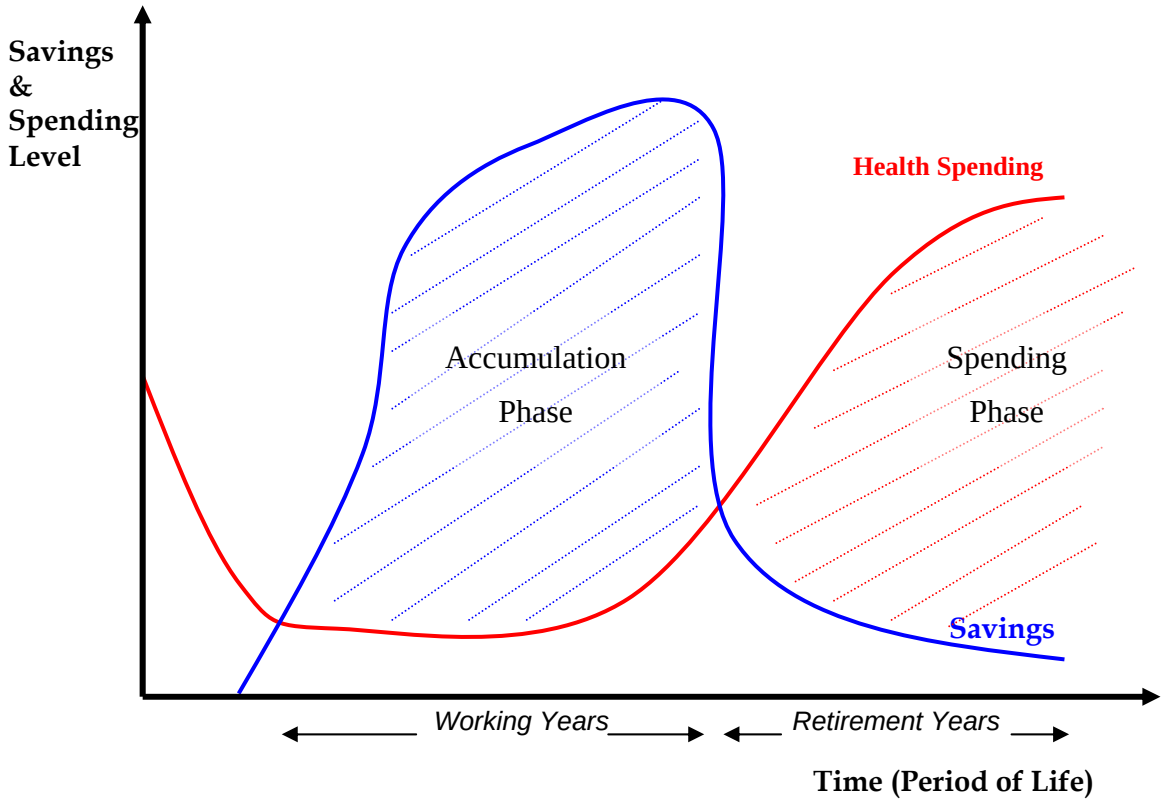
I. INTRODUCTION

Medical Savings Accounts (MSAs) have been discussed within health sector reform debates as an appealing health financing alternative. They are frequently labeled as 'an innovation' in the design of health financing instruments (Prescott 1998;Schieber 1997). Many countries show interest in incorporating MSAs into their national health financing systems and the proposals to adopt MSAs have found support in many places (Buttler 1999;Goodman & Musgrave 1992;Pauly & Goodman 1995;Porter 1999;Ramsay 1998;Sharma 1998;Yu-Tzu 1999). On the other hand, there are criticisms and debates about the possible negative impacts from implementing MSAs (Hurley 2001;Manitoba Centre for Health Policy 2000;Moon, Nichols, & Walls 1997).

MSAs are individual savings accounts that are restricted to spending on health or medical care. The mechanics of MSAs will vary according to their design, including the specific criteria for savings and withdrawals (to be discussed in details in Section IV-D). Similarly, the underlying objectives for implementing MSAs vary. They have generally been introduced for one of three reasons: (1) to encourage savings for the expected high costs of medical care in the future; (2) to enlist health care consumers in controlling costs; and/or (3) to mobilize additional funds for health systems.

The first of these objectives, pooling over time, emerges from the general observation of a person's life-cycle saving capacity and health spending pattern. As shown in Figure I-1, average income and capability to save for an average person are usually high through working years compared to retirement. In contrast, the average level of health spending is usually low at younger ages and becomes higher in later years of life. Encouraging individual savings during economically active years for later health spending is therefore viewed as an attractive way to assure sufficient funds for health care in the future.

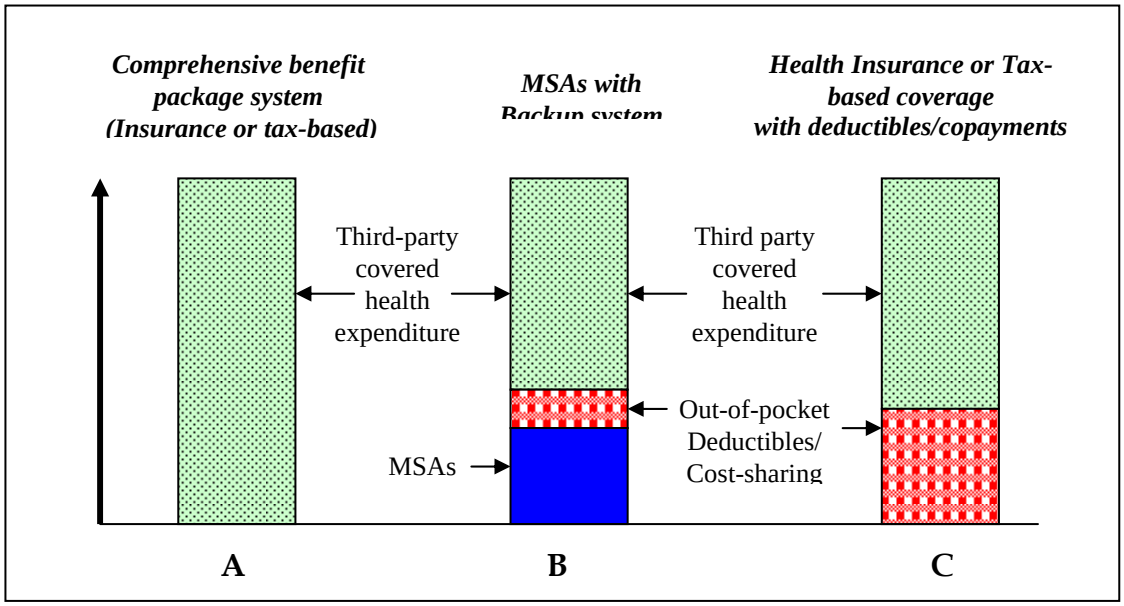
Figure I-1 Saving Capacity and Health Spending Pattern



Along this line of reasoning, the MSA system of savings for future health spending reduces the intergenerational burden that exists in pay-as-you-go systems[1]. In the shorter term, such individual savings can also allow a person to accumulate resources during good times that can be drawn upon during subsequent bad times (e.g. economic downturn, becoming redundancies).

Although MSAs may serve to smooth the burden of health spending over time for a given person, individual savings alone are generally not high enough to protect a person from unexpectedly high cost diseases such as HIV/AIDS or chronic conditions such as renal failure. Frequently, MSAs are therefore offered together with a catastrophic health insurance plan (CHP) to cover rare but high cost events. Alternatively, the risk-pooling necessary to cover catastrophic costs can be done through other public insurance/tax based program or through direct provision of subsidized care[2] (Nichols, Phua, & Prescott 1997).

Figure I-2 Illustration of MSAs compared to other systems of health financing.



The use of MSAs to slow the rise in health care costs through modifying consumer incentives generally introduces this consumer cost sharing within existing comprehensive health insurance or tax based comprehensive coverage systems. Figure I-2 illustrates how a system with MSAs would differ in the composition of funding sources from other systems. A comprehensive benefit system provides full insurance coverage (A), while MSAs can fund a portion of health costs along with a "backup system" (B). A third model that is commonly found in many countries relies on catastrophic health insurance or other high consumer cost sharing system with copayments, but no MSAs (C).

[1] A "pay-as-you-go" system is one in which workers pay during their active years for the medical costs (or pensions) of retirees or their dependents. Their benefits, in turn, will depend on later generations of workers.

[2] In their typology, Nichols et al. propose three alternatives of MSAs model: (1) MSAs with a public sector backup; (2) MSAs with a mixed backup; (3) MSAs with a private backup.

Proponents claim that MSAs with a backup system (such as CHP or publicly subsidized services) have several advantages and can be much more efficient than those with comprehensive health insurance coverage. These proponents argue that comprehensive health insurance is the major cause of cost inflation because neither doctors nor patients have incentives to consider the cost-effectiveness of proposed treatments. Full health insurance benefits can induce the enrollees to increase unnecessary service utilization, so called 'consumer moral hazard', because the insurance provides the beneficiaries with very low or no marginal costs. MSAs, on the contrary, promote individual responsibility in health spending by creating an incentive for consumers to purchase wisely since money left in the account can be used for future health care needs, retirement, or bequests. With MSAs, the backup insurance component can have much higher deductibles and, consequently, much lower insurance premiums, so that the money saved can be accumulated in beneficiaries' accounts. In some countries, lower premiums may also make it possible to extend insurance coverage to those who are currently uninsured. Finally, it is claimed that MSAs, if properly designed, incur lower administrative costs than existing third-party reimbursement models found in comprehensive health insurance plans.

MSAs also have their critics. First, it is argued that the main problem of moral hazard comes from providers rather than consumers and, therefore, MSAs may not contain costs after all. Many studies have shown that provider behavior has a larger impact on rising costs than consumers. This problem of supplier-induced demand arises as a consequence of the information asymmetry between service providers and patients. In this event, the existence of money in a person's MSA acts on providers much like the existence of third-party insurance. Individuals themselves may be more willing to spend the MSA funds on more expensive care since they are restricted to spending the funds on health care anyway. As we shall see below, there is no evidence available to either confirm or reject this claim.

The second, and perhaps more important, concern regarding the MSA model is the claim that it is less equitable than comprehensive benefit systems. The MSA model limits risk pooling between the healthy and the sick, and between the rich and the poor. For example, those who are persistently unemployed or suffer from chronic illnesses will be very unlikely to accumulate enough savings. High deductibles can also deter those who need care, especially the poor, from health services access.

Table I-1 Claims made about MSAs

Advantage	Disadvantage
MSAs prevent consumer moral hazard and create proper incentives for wise health care purchasing decisions.	MSAs with a high deductible system can deter necessary health care especially for those with limited or no savings.
Long term savings provide resources for individual health spending in later years of life. It lowers the burden on the young & employed, especially in a rapidly aging society.	Patients may be weak bargainers relative to providers who may see MSAs as "freely" available funds. With the money in his/her account, MSAs can encourage immediate consumer spending on unnecessary services.
Introducing MSAs into the health financing system can free public funding to focus more on the poor or the underprivileged.	MSAs provide no risk pooling between individuals. Those with chronic diseases or those persistently unemployed may not accumulate enough savings for necessary health care.
Consumers' freedom to choose where they want to spend their money can make providers more responsive to their demands and promote price competition.	If implemented voluntarily with comprehensive insurance schemes in a non-universal setting, MSAs will selectively attract those who are healthy (the cream skimming problem).
MSAs provide intertemporal risk pooling which limits the impact of economic cycles on health spending.	If cream skimming occurs, those who do not have MSAs are likely to face higher premiums because the remaining risk pool is smaller and has higher health risks.

Table I-1 summarizes some of the main claims regarding the MSAs/CHP model. Note that these arguments may refer to different MSA models (e.g. voluntary or mandatory) and be judged relative to different contexts. For example, the advantages and disadvantages of introducing an MSA model will be very different in countries with universal health care access than in those with a large uncovered population.

Despite these unsettled debates, many countries have experimented with MSAs in their health financing systems. Singapore is the leader in this, since MSAs were first implemented in that country almost 2 decades ago and are still functioning. A few other countries such as the United States and South Africa have recently experimented with

MSAs, albeit with voluntary schemes on a small scale. China, after piloting the idea in a few areas, is now starting to implement it in urban areas nation-wide.

The rest of this paper reviews the existing evidence from the experience of MSAs in Singapore and other countries in terms of their effects on health services and health financing[3]. It starts by describing the components of the Singapore health financing system and how it functions. The third section evaluates Singapore's MSA model in terms of its benefits and risks. Experience from other countries and alternative designs for MSA systems are presented in the fourth section. The paper concludes with policy lessons for countries considering the implementation of MSAs.

II. SINGAPORE'S HEALTH FINANCING SYSTEM

Singapore is a country in Southeast-Asia with a population of about 4 million. Despite a period of economic slowdown in 1997-1998, Singapore enjoys a GDP per capita of 20,767 international dollars in 1999, thanks to high GDP growth since the late 1980's[4]. The life expectancy and education enrolment ratios of Singaporeans are comparable to most OECD countries[5]. Singapore health care delivery relies on both public and private provision of health care services. Currently, the public sector provides about 80% of hospital care and 20% of primary health care (Singapore Ministry of Health 2001a).

What brings Singapore's health system to international attention is its way of financing health care. Until 1984, Singaporeans relied on free hospital care and subsidized government clinics (Barr 2001), the system that was inherited from the British colonial years. Two major changes were envisioned in "The National Health Plan (NHP)" that was announced in 1983. The financial burden of health care was to be shifted from the government to individuals and employers, through a system of individual MSAs called Medisave, and government hospitals were to be corporatized (Liu & Yue 1999). Since then, Singapore's health financing system has been based on two key principles: (1) health care costs are primarily the responsibility of the individual, but with community and government support for those in need, and (2) patient co-payments are needed to discourage over-consumption (Singapore Ministry of Health 2000).

The government's corporatization of government hospitals was implemented with the introduction of hospital fees. A corporatized hospital is autonomous with fully independent management in all of its functions, such as the recruitment of staff, remuneration policies, and decisions on resource deployment (Phua 1997). The government still wholly owns the hospitals and provides general policy guidelines and annual subsidies for the provision of medical services (Liu & Yue 1999). The degree of public subsidy differs among the types of hospital wards which can be classified into 4 categories according to the quality of non-clinical aspects of the care provided (see Table II-1). This explicit policy of price discrimination, it is claimed, makes government subsidies available mostly to those who need it. Apart from the differential subsidy to

[3] MSAs can be evaluated in several aspects apart from health financing objectives. One example is to assess the effects of MSAs on national saving level as in the study on how Medisave and other CPF savings affect national aggregate savings in Singapore (Wickramanayake 1998).

[4] Singapore's average annual GDP growth between 1988 and 1997 was almost 10% (World Bank 2001)

[5] Singapore ranks number 26 in UNDP Human Development Rankings with an adult literacy rate of 92.1%, School enrolment ratio of 75%, and Life Expectancy at birth of 77.4 years (UNDP 2001)

hospital inpatient care, the government provides limited public outpatient services with a nominal copayment.

Table II-1 Public Hospital Wards and Rates of Government Subsidies

Class	Characteristics	Rate of subsidy
A	1 - 2 bedded rooms, air conditioned	0
B1	3 - 4 bedded rooms, air conditioned	20%
B2	5 - 6 bedded rooms	50-65%
C	Open dormitories	80%

Source: (Singapore Ministry of Health 2002)

At the moment, health care systems in Singapore have three major sources of financing in addition to the government budget and out-of-pocket household spending. The first of these, Medisave, is Singapore's version of individual MSAs and is mandatory for all Singaporeans. The second is MediShield and MediShield Plus, which play the role of voluntary backup catastrophic health insurance, with high deductibles and coinsurance characteristics. The third source is an endowment fund called Medifund, which was established by the government to provide charity-style assistance to the poor, the elderly and indigent (which is financed from Medifund's interest income).

Medisave, MediShield, MediShield Plus, and Medifund did not start at the same time. They evolved as part of the continuous development of Singapore's health financing system in response to changes in public policy and emerging challenges. The implementation dates of these health financing schemes are shown in Table II-2. Apart from these sources, there is a private-for-profit insurance sector and employer medical benefits for formal sector employees. More details of each health-financing scheme and the Government's roles in health financing are described below.

Table II-2 Implementation Date of Singapore's Health Financing Schemes

Program	Key Characteristics	Starting Date
Medisave	Individual saving accounts	1 April 1984
MediShield	Catastrophic health insurance	1 July 1990
Medisave (Self-employed)	Expansion of Medisave to self-employed	1 July 1992
Medifund	Endowment fund for the poor	1 April 1993
MediShield plus	Medishield with extended benefits	1 July 1994

Source: Modified from (NERA 1997)

A. Medisave

In 1981, the development of Medisave started from the Ministry of Health's concern over the aging population and the need to mobilize non-budgetary resources to help pay for the resulting anticipated increase in health expenditures. Several activities were initiated to gather ideas, especially from academics and key players in the health system. In March 1982 proposals were announced with the main commitment being that a good health service would be provided for the whole population. It was argued that this could be done on the basis of compulsory savings in the form of Medical Saving Accounts that are intended to help the system cope with the expected increases in future health care costs. Parliamentary approval for the Medisave was given in August 1983 and the system was first enacted in April 1984 (Phua 1987).

Medisave is managed by the Central Provident Fund (CPF), a national agency established in 1955 before Singapore attained independence (Asher & Karunarathne 2001). Apart from Medisave, CPF offers two other types of personal accounts: (1) the Ordinary Account whose savings can be used for housing, education, insurance, and other approved investments; and (2) the Special Account whose aims are for old age, contingency purposes and investment in retirement-related financial products. (Central Provident Fund Board 2002). The current contribution rates to these three accounts vary between 8.5 to 36% of the employee's wage of which 6 to 8.5% of the wage are allocated to the individual's Medisave account (Table B-1). The rates vary according to the employee's age. Employers and employees each share half of this contribution. The self-employed are required to enroll only in the Medisave accounts, for which they are wholly responsible[6]. There is a ceiling for Medisave contributions when the accumulation reaches S$26,000 beyond which incremental savings are rolled over into a member's Ordinary Account, from which funds can be withdrawn after age 55[7]. Contributions are tax-deductible and earn interest at the rate set by CPF[8].

Medisave was designed to be used by Singaporeans to pay for their personal and immediate family's medical care expenses[9]. In order to mobilize enough resources before reaching old age, rules on spending from Medisave are set to protect the accounts from being used unnecessarily. At first, Medisave could only be used to pay for public hospital inpatient services and was subjected to a cap of S$300 per hospital day along with a certain limit of expenses per surgical operation per day. After 1986, Medisave could be used to pay for private hospitals inpatient services (NERA1997). The payment for selected expensive outpatient care, such as renal dialysis and cancer treatment, are now reimbursable as well. Moreover, MediShield, MediShield Plus or some private health insurance premium payment can be made out of each individual account. Withdrawal for other purposes is not allowed except in the case of death of the enrollee for which the remaining amounts will be paid out in cash to the designated nominee(s). (see Appendix B for more details about Medisave contributions and benefits).

B. MediShield and MediShield Plus

MediShield is a voluntary catastrophic insurance scheme with high deductible and coinsurance characteristics. After Medisave was implemented in 1984, the government considered the need for additional coverage of major or chronic illnesses that require expensive or prolonged treatment and are too costly for Medisave to cope with. MediShield was therefore developed by the Ministry of Health and the CPF board with inputs from the private insurance industry. The government strongly encouraged Medishield participation by enrolling all Medisave account holders up to the age of 75

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[6] At the beginning, Medisave covered only formal sector employees but it has been extended to the self-employed in 1992.

[7] Between 1998-2001, official exchange rates for one US dollar varied around 1.6 – 1.8 Singapore dollars (Monetary Authority of Singapore 2002 – http://www.mas.gov.sg).

[8] As of Dec 12th, 2001, the interest rate for Medisave accounts was 4% (Central Provident Fund Board 2002). The inflation rate in Singapore from 1982 has never been higher than 4% (Statistics Singapore 2002). The interbank interest rate is at the level of almost 1% per annum as of March 2002(Statistics Singapore 2002). Commercial interest rates for a fixed 24-month deposit are 1.5% in April 2002 (DBS 2002).

[9] Family members include spouse, children, parents, and grand-parents.

unless they voluntarily opted out. Premiums are set based on risk pooling within each specific age group, which results in higher premiums for the elderly. Medishield premiums can be paid from Medisave funds.

MediShield was designed cautiously with a strong focus on its sustainability and avoiding the long-term implications that could arise from rising costs (Asher & Karunarathne 2001). Claims are therefore limited to specific services and ward classes in public or restructured hospitals (B2 and C wards only). There are additional rules on the upper limit of reimbursement per service, per policy per year and per lifetime. The individual is still responsible for the non-reimbursable amount of the actual expenses, which comprises a deductible (S$500 or S$1000) component and 20% of all costs after that.

MediShield Plus is an extended version of MediShield that was first released in 1994. It expands the coverage to higher ward classes and provides higher yearly and lifetime claim limits. However, it also imposes higher deductibles and higher yearly premiums with the same 20% copayment. Enrolment to and exit from Medishield Plus is on a voluntary basis. More details about MediShield and MediShield Plus premiums and benefits are shown in Appendix C.

C. Medifund

Medifund is an endowment fund established in 1993 from government budget surpluses with a starting capital of S$200 million. Its interest income has been spent on charity-style financial assistance for those who cannot afford to pay medical care fees from their current income or Medisave Account. This fund acts as a safety net for the poor and indigent. One important principle is that Medifund is not an entitlement; needy patients must apply and their cases are reviewed by the Hospital Medifund Committees.

Only Singaporean citizens are eligible to apply for help from this fund and their services are limited to Class C or B2 wards of approved public hospitals and outpatient clinics. At the end of 1999, the fund stood at S$ 700 million. Within that year, there were 67,000 applicants of whom 99.6% were approved - representing a total of S$12.3 million disbursed (Singapore Ministry of Health 2000).

D. Private health insurance and Managed care

Private health insurance plays quite a limited role in Singapore. The private insurance companies are free to offer medical insurance schemes to the public in competition with CPF's MediShield or MediShield Plus plan. However, approval from the Ministry of Health is needed if they wish their enrollees to use their Medisave accounts to pay for premiums. In this case, the proposed scheme must include features that support the national objectives for health care financing such as requiring copayments and guaranteeing renewal of policies upon payment of the premium (Liu & Yue 1999).

Employers' medical benefits for their staff and dependents are another source of health financing in Singapore. The medical benefits provided by employers are considered to be business expenses and are fully exempt from corporate taxes (with a cap at 2% of overall remuneration) (Chew 1997). Common benefit packages for these plans include provisi

on of medical attention from appointed company doctors or private doctors. In the event of hospitalization, the employers will bear some of the expenses involved. The level of support varies in terms of ward types and length of hospitalization entitlement. Some also

provide medical coverage for dependents. The government, however, encourages employers to convert medical benefits to additional Medisave contributions in their employees' accounts (Liu & Yue 1999).

The private sector has tried to introduce Managed Care (Health Maintenance Organization style) since 1992. However, it has not grown much despite the government's indirect support by allowing Medisave enrollees to pay Managed Care premiums from their Medisave accounts. Limited choice of providers is claimed to be a major reason for the limited popularity of Managed Care in Singapore. In 2000, there were about 10 Managed Care Organizations with the biggest firm having only about 22,000 members (Phua 2000).

E. Government roles in health financing

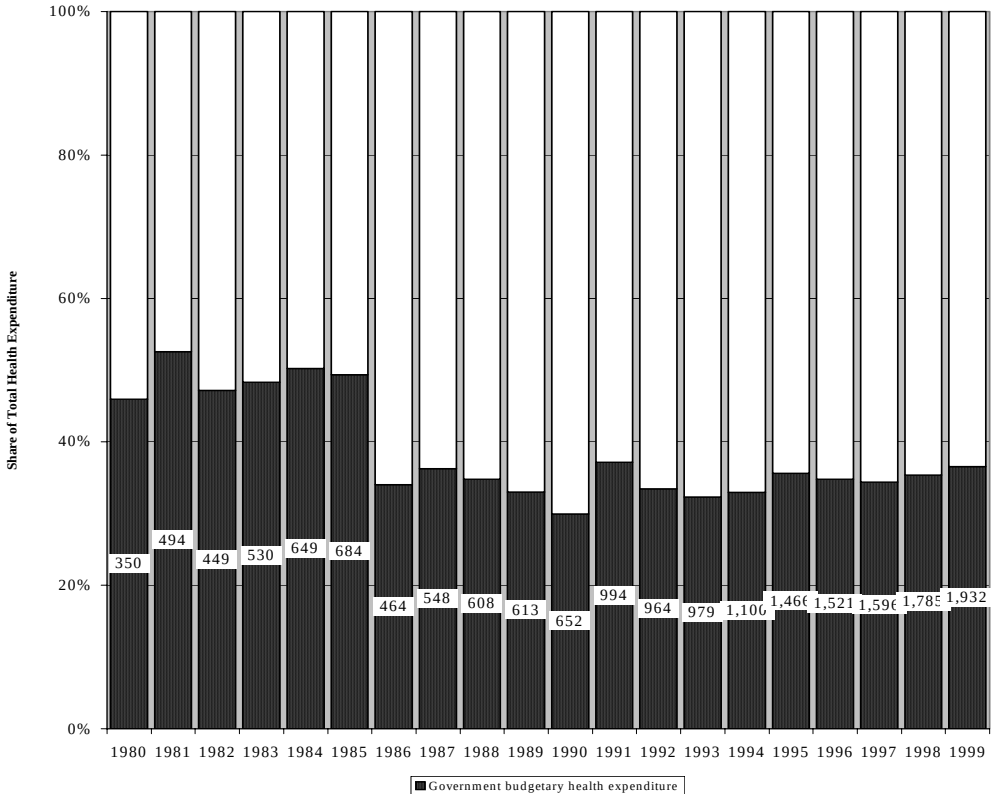
Apart from establishing Medisave, MediShield and Medifund, the Singapore government also plays a significant role as a major health spender in many ways. As mentioned earlier, the government provides differential subsidies for hospitalization fees depending upon the class of ward that patients choose. Apart from 14% spent on development, in 1999, almost 70% of total government health expenditure was spent on services provided by public hospitals and institutions. Additionally, Singaporeans can choose to receive outpatient services at public facilities that are highly subsidized. For primary health care, the services provided at the government clinics are subsidized at about half of cost with the other half paid by patients (out-of-pocket) (Singapore Ministry of Health 2002). Moreover, the Singapore government provides subsidies to Voluntary Welfare Organizations (VWOs), the non-profit private entities who provide long-term institutionalized care for the poor[10] (Barr 2001). Recently, the government developed a plan to subsidize long-term health care for those suffering from three specific chronic conditions - diabetes, high blood pressure, and high cholesterol[11]. Subject to economic conditions and the condition of government finances, occasional government contributions were paid into Medisave accounts of the elderly who retired before or soon after the introduction of Medisave to help top off their accounts (Singapore Ministry of Finance 1997).

Figure II-1 shows the amount of government budgetary health spending from 1980 to 1999. In nominal terms, the government health budget increased continuously from S$ 350 million in 1980 to S$1,932 million in 1999. But when we look at the share of budgetary health spending in national health spending, there was a discernible reduction in its share between 1985 - 1986, not long after the introduction of Medisave. This is due to the reduction in the absolute value of government spending and the continuous increase in out-of-pocket spending coupled with supplementary spending from Medisave. After 1986, the government share of total health spending remained within the range of 30 to 40% of total health spending.

[10] In 1999, S$36 million were spent on subsidies to VWOs (50% of their operating costs and 90% of their capital costs).

[11] The Comprehensive Chronic Care Programs and the Primary Care Partnership Scheme.

Figure II-1 Changes in the share of public spending on health in Singapore



Source: WHO, Geneva (National Health Accounts Team)

Apart from its role in health spending, there has been strong government control in health care management. As stated in the white paper "Affordable Health Care", the government states that it must play an active role in many ways to keep basic health care affordable and accessible to Singaporeans (Singapore Ministry of Health 1993). Despite the key financing principles of individual responsibility and the use of copayment to discourage consumption, the Singapore government accepts that market mechanisms, even when coupled with demand side strategies such as patient cost sharing, are not sufficient to chieve these goals. This white paper clearly states that *"In health care, supply tends to create its own demand, thus raising health care expenditure. The Government therefore needs to intervene to prevent an oversupply of services, to dampen unnecessary demand and ultimately, to control costs"*. Government actions in this regard include regulations on the introduction of technology and specialist disciplines in government hospitals. The number of doctors and hospital beds including their distribution in the country are also under tight control. Furthermore, the Ministry of Health regulates prices of health services in public hospitals that are the major providers of inpatient care.

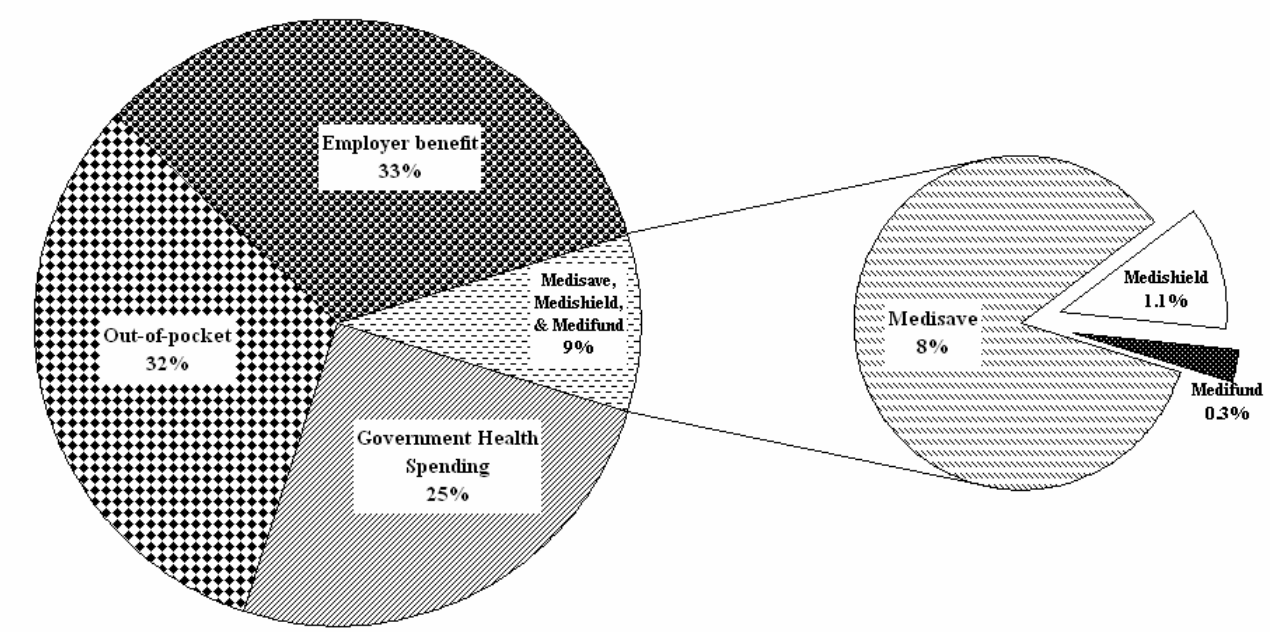
III. EVALUATION OF MSAS IN SINGAPORE

Despite over a decade of experience with MSAs, there are ongoing debates over the benefits from MSAs in Singapore (Barr 2001;Hsiao 2001;Pauly 2001). Specific evaluation of MSAs is not at all simple for two main reasons. First, several policy initiatives were implemented at the same time and the Singapore health financing system evolved over time. It is therefore very difficult to distinguish the effect of Medisave separately from other components of the system. Second, limited access to data has hindered the efforts of health policy researchers to do proper evaluations (Asher & Karunarathne 2001;Barr 2001;Hsiao 1995). It appears that information in Singapore is regarded as a strategic resource to be used by the policymakers and the authorities. The government is therefore not forthcoming about the detailed operation of its system (Asher & Karunarathne 2001). These two reasons make analysis and evaluation of Medisave and Singapore's health financing systems very difficult. Nonetheless, this section tries to answer the major questions on MSAs using the evidence available from several studies and data released by the Singaporean government, the CPF, and other international organizations.

A. Relative Importance in Overall Health Financing

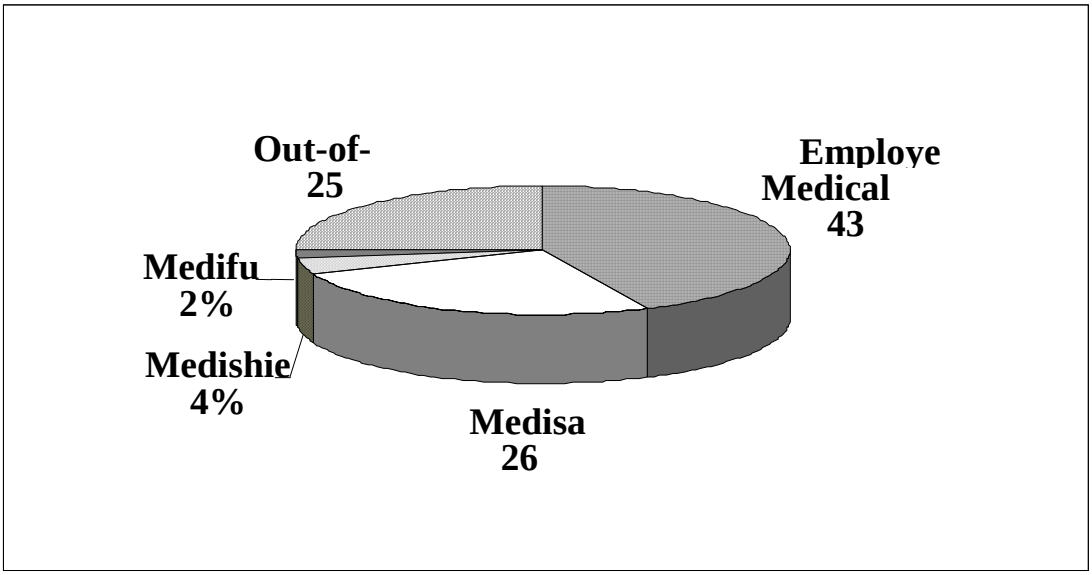
Barr (2001) claims that MSAs have been a minor element in the Singaporean system. CPF statistics show that in 1999 Medisave disbursements totaled S$ 346 million, or only 8% of national health expenditure. Figure III-1 demonstrates the small share provided by Medisave, MediShield, and Medifund in health financing when compared to private or government spending. As shown in the graph, around one-quarter of Singaporean health expenditure came directly from the government budget. Out-of-pocket spending represents about one-third of total health spending, while employer medical benefits accounts for another one-third. Medisave, MediShield and Medifund together contribute less than 10% of total spending (with MediShield and Medifund financing only 1.1% and 0.3%, respectively).

Figure III-1 Composition of Singaporean Health Spending by Source, 1999



Source: Author's estimates based on information from Singapore Ministry of Health

Figure III-2 Share of Tan Tock Seng Hospital Bills by Source of Payment, 2001



Source: (Tan Tock Seng Hospital 2002)

One reason that Medisave has a very limited role in health financing may be the strict criteria applied to withdrawing funds. Medisave can be used mainly for inpatient services and there is an upper limit on the amount to be spent per day. When viewed in relation to the inpatient expenditures at which it is targeted, the Medisave share is more noticeable. As shown in the case of Tan Tock Seng Hospital, the second largest hospital in the country, around one quarter (26%) of total billing was paid by withdrawals from Medisave accounts in 2001 (Figure III-2). Employer medical benefit accounts and out-of-

pocket payment accounted for 43% and 25%, respectively, while Medishield and Medifund covered another 4% and 2%, respectively[12].

B. Resource Mobilization and Differential Accounts Accumulation

One of the government's key objectives for Medisave is to mobilize resources for sustainable health spending over the long term. Therefore, it is important to find out whether these restrictions have any effect on long term saving for health services. Is Medisave an effective financing tool to influence Singaporeans to save the money they will spend on health when they are old?

The total sum of the accounts can give a rough picture of how effective Medisave is in resource mobilization. At the end of 1999, there were more than 2.68 million Medisave accounts and the total Medisave balance stood at S$20.8 billion - an amount equivalent to over 4 times total national health expenditure in that same year (Singapore Ministry of Health 2000). In other words, Singaporeans have an average of about S$7,760 in each their Medisave accounts. This is a significant increase when compared to the net assets in Medisave in 1995 which were worth only S$12.7 billion (Prescott & Nichols 1998). The fact that the ratio of contribution to withdrawal remains fairly steady at 100 to 17 leads to a continuing increase in the cumulative Medisave balance. Thus, Medisave has the potential to play an increasingly important role in Singapore's health financing system in the future[13].

However, the aggregate number of Medisave balances cannot provide a clear answer of the long term implications for sustainability. To analyze the system correctly, it is important to have more detailed information such as specific figures by age group, income group, or those with chronic health problems. Since Medisave savings rely on the level of wage income, the chronically unemployed or those with chronic diseases in their family may have very low or almost no money in their Medisave accounts. Unfortunately, this information is not available and answers to these questions can only be approached indirectly.

The 1995 national survey of senior citizens provides limited but interesting information on the distribution of Medisave accumulations (Choong 1998;Phua & Teng 1998). Table III-1 displays the sources of financing for acute care for the elderly over 55 years of age. Medisave is shown to be the most important mechanism for financing health care among this group. However, a large share of the elderly have not accumulated sufficient Medisave funds on their own, and must depend on other sources, including their children's Medisave. This cannot be solely attributed to a failure of Medisave to mobilize sufficient funds since it was only implemented in 1984, only ten years earlier. As shown in the same table, a higher proportion of the 55-64 year-olds who spent more time in the workforce can finance health care from their own accounts compared to those from older

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[12] Note that these figures are the payment source of total hospital bills not total cost. It is estimated that government subsidy accounts around one-third of total inpatient costs in 1995 (Prescott & Nichols 1998).

[13] Prescott and Nichols (1998) assert that there are four main factors that can explain this impressive mobilization of financial resources in Medisave: (1) initial assets transferred from CPF special accounts (S$ 2,180 million) in 1984; (2) extensive payroll contributions from a highly expansive formal sector and the well-established social security operations of the CPF; (3) interest earnings which are generally more than annual withdrawals, thanks to rapid economic growth; and (4) strict rules for withdrawals that limit the annual payout rate.

age groups. However, from this data, it is not possible to tell whether the same proportion will be able to finance their care from their own accounts when they reach those higher age groups.

Table III-1 Sources of acute care financing for senior citizens, by age group

Source of Financing	55-64 yrs	65-74 yrs	75+ yrs	Total
Own Medisave	26.9%	10.6%	2.8%	18%
Spouse's Medisave	3.2%	0.6%	0.4%	2%
Children's Medisave	45.3%	65.6%	66.1%	55%
Own savings	12.2%	11%	13.4%	17%
Other provisions	4.5%	4.6%	8.6%	
No provisions	7.9%	7.5%	8.7%	8%
Total	*100%*	*100%*	*100%*	*100%*

Source: adapted from (Choong 1998) and (Phua & Teng 1998)

Results from the same survey also show Medisave's limited ability to protect the poor or the unemployed. Among those 8% of senior citizens who had no financial protection for health care, either from Medisave or their own savings, nearly 42% were unable to accumulate Medisave or personal savings because of unemployment or low income. Another comparable portion indicated that they did not do so because they felt, if required, they could rely on their children to pay for their medical bills.

One point of concern that arises from this survey is the issue of gender disparity. There were more women (65%) than men (44%) who reported their financial provision was from their children's Medisave. With men likely to have accumulated more Medisave funds over their working life, the proportion of men depending on their own Medisave to finance their health care (30%) was substantially higher than that of women (7%).

In polls, Singaporeans do not seem to view Medisave as being satisfactory for long term financial protection. A study by Ng Bee Har et al. in 1994 showed that a majority of Singaporeans do not consider Medisave to be adequate protection in the event of a major illness: 48% were in 'disagreement', and 28% in 'strong disagreement' to the notion that Medisave is adequate (NERA 1997). Half of the respondents in the same survey also considered MediShield inadequate with another 10% strongly disagreeing with the notion of MediShield's adequacy. Even the adequacy of Medisave for the purpose of saving for old age was rejected by the majority of the survey's respondents.

Since these studies date from the mid-1990s, they can only suggest the kinds of limitations to Medisave as a financial instrument. If more recent data were available, it might be possible to evaluate whether the Medisave system has strengthened over time in terms of its financial distribution and perception among the population.

C. Moral Hazard

As discussed earlier, one important argument for MSAs and Singapore Medisave implementation is to reduce moral hazard problems that commonly occur in countries with comprehensive health plans. The RAND health insurance experiment showed that higher cost sharing among fee-for-service patients resulted in lower use of medical services in the US (Newhouse & the Insurance Experiment Group 1993). In the case of MSAs or Medisave in Singapore, consumers' responses to cost sharing may have been similar. High deductibles and high cost-sharing may prevent consumer moral hazard. But at the same time, they may constitute financial barriers for the poor to have access to

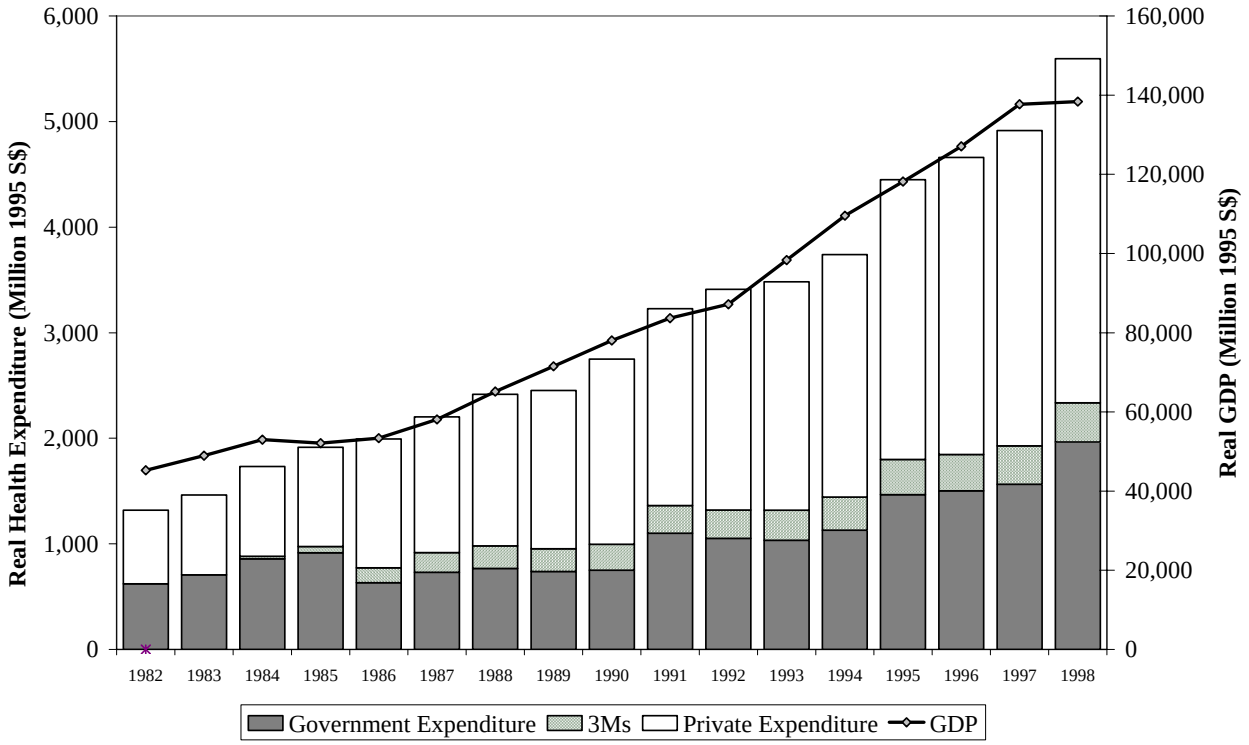
necessary health care. It has also been suggested that the existence of assets that are restricted to use for health spending may give Medisave owners false sense of security and encourage them to spend more than they would usually be able to afford out of current income. Likewise, providers might also respond to the existence of Medisave balances by inducing unnecessary demand for health care services.

The primary way to answer questions regarding the effectiveness of Medisave in addressing moral hazard is to look at changes in health service utilization and health spending. In order to be rigorous, this type of study ought to be comprehensive and very well-planned to capture not only household responses but also responses by providers and other players in the markets, while, at the same time, controlling for any confounding effects. So far, no such study has been conducted in Singapore.

Some suggestive evidence can be gleaned from a few studies. Phua (1997) reported a dramatic shift in demand from government hospitals to the restructured and private hospitals, and a discernible upgrading from the lower- to higher-priced beds. Lim found that in a number of cases Medisave encouraged people to spend beyond their means by choosing higher-class wards than they could reasonably afford (Lim 1997). While neither study is conclusive, they both suggest that MSAs may not prevent consumer moral hazard as had been hoped. No studies using disaggregated data could be found to suggest otherwise.

The Singapore government, as discussed earlier, recognizes the limits of demand-side interventions in controlling costs. Hence, after the introduction of the Medisave, the government continues to controls health care markets in many other ways, including price controls, supply controls, and consumer protection. The government also requires Singaporean hospitals to have pre-admission financial counseling to encourage individuals to make appropriate choices regarding the type of inpatient ward (Choong 1998).

Figure III-3 Real GDP and Total Health Spending in Singapore (in 1995 S$)



Source: GDP from IMF, Total health expenditure from WHO National Health Account

D. Aggregate Health Care Cost Containment

One claimed advantage of MSAs system that draws interest from many countries is its potential for tackling the problem of rising health care costs. To evaluate this claim, Figure III-3 illustrates the level of national health expenditure and the trends of Singapore's GDP from 1982 to 1998 using data sets from the WHO National Health Account Unit[14].

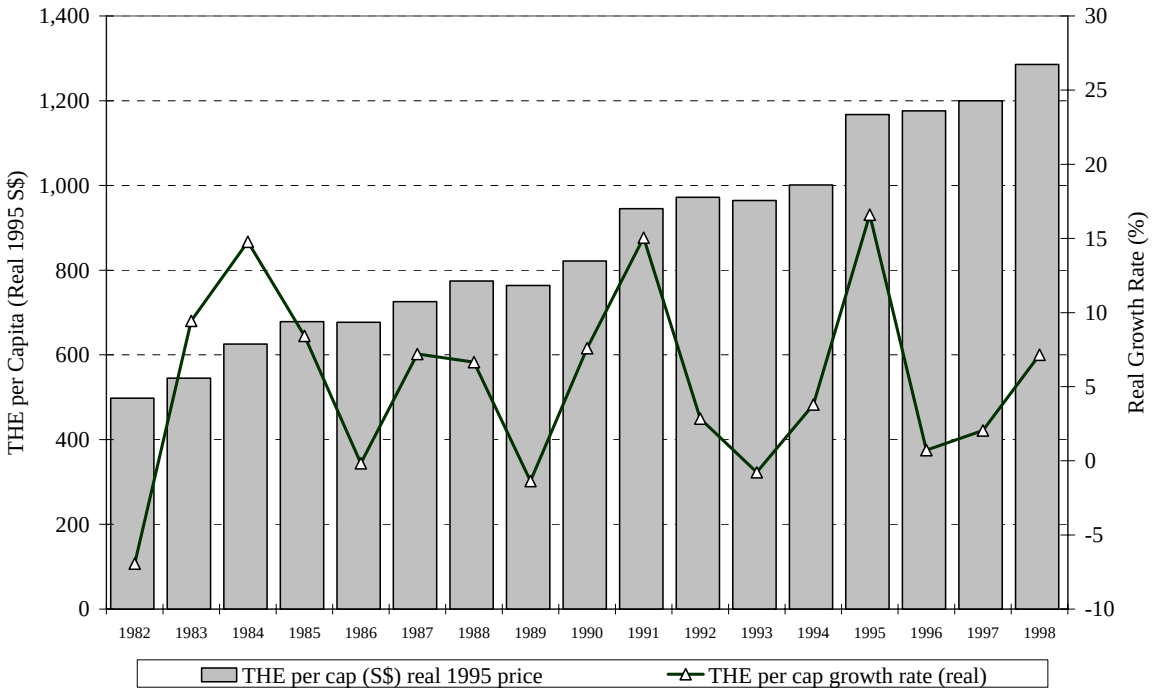
Singapore's total health expenditure in real 1995 Singapore Dollar was approximately S$1,300 million in 1982 and increased steadily to about S$1,700 million in 1984. Singapore health expenditures still grew after the implementation of Medisave in April 1984 to around S$1,900 million and S$2,000 million in 1985 and 1986 respectively. This slow down in the rate of health spending growth in 1986 was due largely to a decline in the share of public spending (see also

Figure II-1) which may have resulted from the correspondingly low growth of GDP that year and the year earlier. Nonetheless, the level of Singaporean health expenditures continued to grow after 1986. Figure III-4 shows the level of total health spending per capita in real terms (in 1995 S$) and the real per capita growth rate of health spending between 1982 to 1998. The pattern of growth and the rate of growth do not show a

[14] Methods used by WHO National Health Accounts team are presented in the GPE Discussion Paper No. 27, Estimates of National Health Accounts (NHA) for 1997, by Jean-Pierre Poullier and Patricia Hernandez (http://www.who.int/whosis/discussion_papers/)

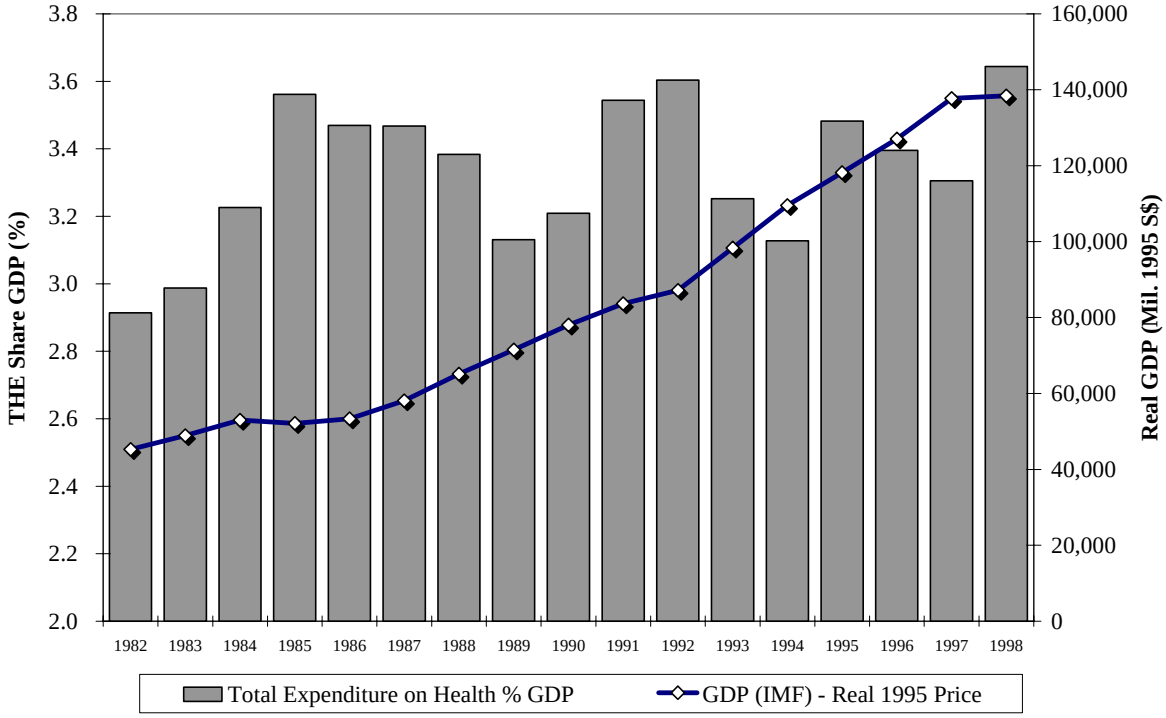
significant impact on health spending from the implementation of Medisave in 1984. Income growth seems to be the factor that better explains Singapore's pattern of health spending as we can see roughly from Figure III-4. When looking at the share of GDP consumed by health over time (Figure III-5) we can see that it is narrowly fluctuating between the level of 3.1 to 3.7%.

Figure III-4 Real per capita health expenditure and growth in Singapore



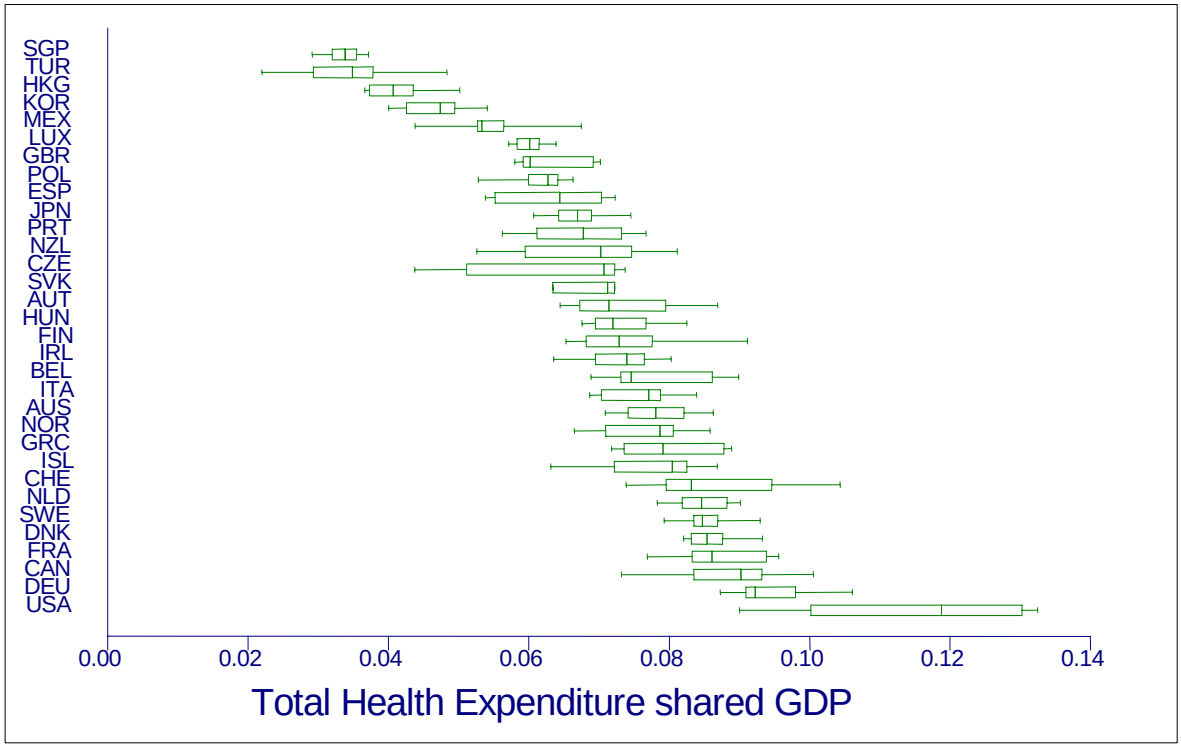
Source: WHO National Health Account

Figure III-5 Real GDP and the share of GDP spent on health in Singapore



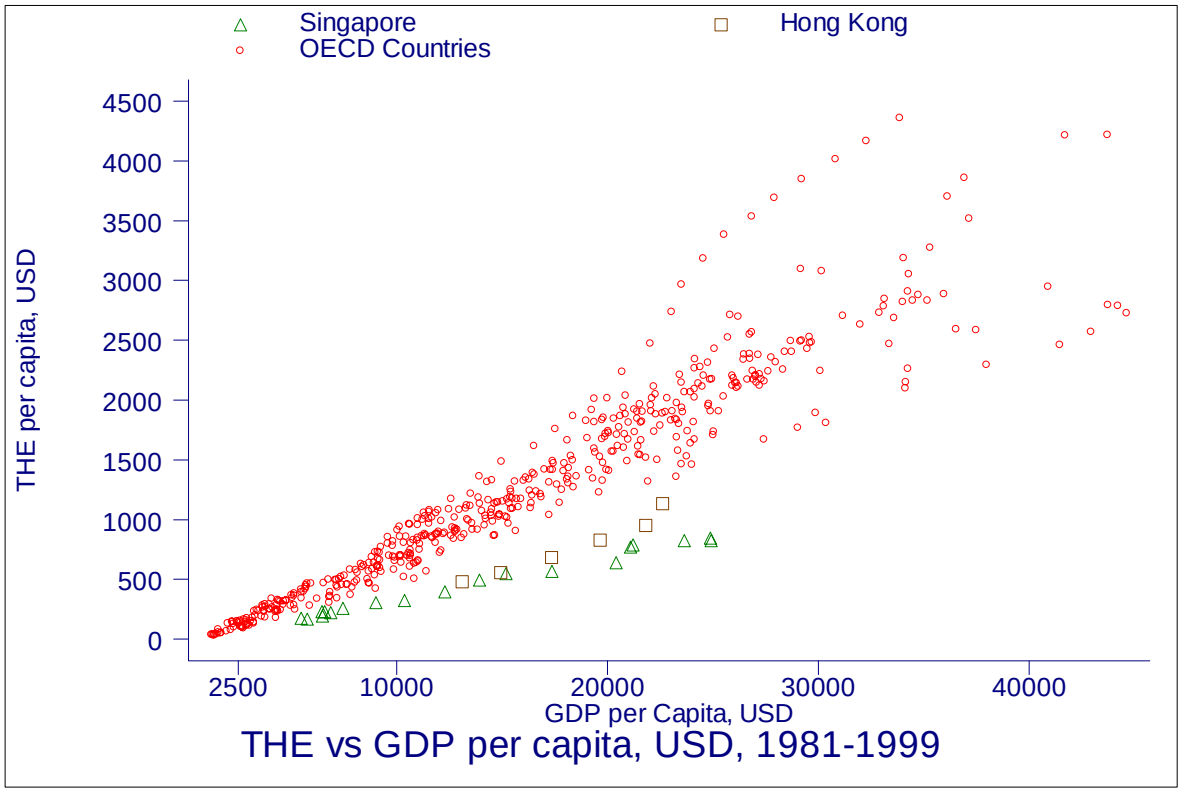
Source: GDP from IMF, Total health expenditure from WHO National Health Account

Figure III-6 Health Spending as a Share of GDP in OECD and Selected Countries



Source: OECD Health Data 2001, WDI 2001, and WHO NHA Database

Figure III-7 Health Spending versus GDP per Capita in OECD and Selected Countries



Source: OECD Health Data 2001, WDI 2001, and WHO NHA Database

Comparing Singapore's level of spending with OECD countries shows quite a different picture. Singapore's share of GDP spent on health is between 3 and 4% of GDP. It has comparable health outcomes to OECD countries, but spends a very low share of GDP on health in contrast to the OECD average of nearly 9 per cent in 1999 (OECD 2001). Figure III-6 shows that health spending as a share of GDP in Singapore (SGP) , between 1981 to 1999, is one of the lowest compared to the 30 OECD countries and Hong Kong (HKG). The relationship between total health spending per capita and GDP per capita in Figure III-7 confirms that Singapore has a considerably lower share of health spending after differences in income levels are taken into account. Statistical analysis (See Appendix D) also demonstrates that Singapore's level of health spending is significantly lower than all OECD countries except Luxembourg when adjusted for by the level of GDP [15].

Barr (2001) argues that one reason for Singapore's relatively low level of health spending is that Singapore has a relatively young population. In 1991, 6.2% of Singapore's population was sixty-five or older, as compared to proportions of between 10.9 and 15.4% for the US, Canada, UK, Australia, New Zealand, and West Germany. However, our analysis, statistically controlling for both income and the proportion of elderly people in the population (65 years old and over), still shows that Singapore's level of health spending per capita is significantly lower than other OECD countries (except, in this case, Luxembourg and the UK).

Singapore's relatively low level of spending compared to OECD countries seems to be matched by other similar Asian countries such as Hong Kong (China). Hong Kong, which has had no system of MSAs, also enjoys a relatively low level of health spending with comparably good health outcomes. For example, the share of GDP spent on health in Hong Kong was only around 5% in 1995. After statistically controlling for the level of income and the elderly share of the population, adjusted health spending in Hong Kong is even lower than in Singapore (Figure III-7 and Appendix D).

Several authors have criticized how Singapore reports its level of health spending, arguing that it may be understated. Barr (2001) and Hsiao (1995) noted that the Singapore government does not follow OECD standards in national health account measurement, and therefore, Singapore's reports may be based on incomplete and inaccurate accounting of its health expenditures. Choon and Low (1997) stressed that the modest levels of expenditure have to be interpreted with care because what enters health care expenditure may not be as transparent (Choon & Low 1997). For example, around 12% of daily outpatient users also visit traditional Chinese medicine practitioners but this type of spending was not included in Singapore's health accounts (Hsiao 1995). Another big question is whether the current figures include the health care spending of foreign workers who constitute nearly a quarter of Singapore’s workforce (Asher & Karunarathne 2001).

In sum, the aggregate data does not demonstrate a significant slowing of the growth of health spending by Singapore after the introduction of MSAs. It could be that the effect of MSAs will only be felt in the future, when the country faces greater costs or has accumulated larger amounts of funds. It could also be the case that concurrent events, such as rising incomes, new medical technologies, and other government health policies,

[15] Luxembourg may be an exception because its GDP may understate the country's true income level due to the high volume of income transferred out of the country.

have confounded the effects of MSAs. Therefore, the available evidence on aggregate health spending does not support the argument that MSAs control costs, but the existing evidence is by no means conclusive. Studies based on better and more recent data are needed to come to a final answer on this question.

E. Rationing and equity Problem

The most important critique of MSAs is that they may create barriers to accessing health services among the poor and other underprivileged groups. As the MSA system provides no risk pooling between individuals and exposes them more fully to the costs of health services, it can be said that demand for health care in Singapore is rationed implicitly through consumer purchasing power in the market (Phua 1997). Those who have higher wages and are able to accumulate more in their medical saving accounts and other savings will be able to afford the care they need. By contrast, those permanently unemployed or patients with chronic conditions are unlikely to have accumulated enough resources to pay for their health care needs.

Although Singapore's health financing system is based on the principle of individual responsibility, it still contains provisions against this problem. The most important tool is the government's commitment to heavily subsidize public provision, especially inpatient care. The differentiation of prices across wards by non-medical amenities acts as self-screening means test for those who need public subsidies the most (i.e. users of type B2 or C wards). Additionally, MediShield provides a backup of catastrophic insurance for extremely costly events, while Medifund acts as the ultimate safety net in the system.

While this mix of public subsidies, Medisave, Medishield, and Medifund appear to create a seamless safety net, there are nevertheless several limitations to the MediShield and Medifund systems. For MediShield, beneficiaries can only enroll until the age of 80, after which they will have no insurance coverage. Furthermore, Medishield has a high level of coinsurance for almost all health benefits. Because the items listed in its catastrophic insurance package are mainly very expensive clinical interventions, 20% co-payments can still be financially catastrophic to many households.

As for Medifund, it is very helpful to those who cannot pay for medical care. However, the requirement that applicants have to go through an approval system may discourage people from seeking health care when necessary, especially if they are not sure they will qualify. Likewise, the specific arrangement that allows Medifund to act as a charity may denote its limited responsibility in the long run.

In terms of monetary value, Medifund assistance has increased slowly from S$8 million in 1994 to S$12.7 million in 2000. The 67,000 applications for Medifund in 1999 are a significant increase compared to 58,000 applications in 1997 (Liu & Yue 1999). This number rose to 91,000 in 2000 (Singapore Ministry of Health 2001b) when 11,800 inpatients and 90,800 subsidized outpatients received help from Medifund (Tan 2002). On the one hand, these figures show the important role Medifund plays as a recourse of last resort. But, on the other hand, it may reflect the inadequacy of the existing combination of Medisave, Medishield, with the public subsidy system.

There is limited evidence on the impact that implementation of Medisave and other health financing schemes has had on the poor and other underprivileged groups. As shown earlier, there is some evidence that MSAs systematically fail to serve the poor, the unemployed, and women as well as they serve wealthier and more privileged social

groups. The tax deductibility feature of Medisave and other CPF contributions also diminishes the progressivity of the income tax (Asher & Karunarathne 2001).

In sum, the evidence regarding the impact of MSAs on equity are quite sparse. It appears that the mix of safety nets continues to assure adequate access to health care in Singapore, as indicated by continuing improvements in the population's health status. Some evidence suggests that the poor, the unemployed, and women are not served as well by the MSA system as those who are more privileged. However, the magnitude of these problems and their significance are unclear relative to the entire picture.

IV. USE OF MSAS OUTSIDE SINGAPORE

Experience with Medical Savings Accounts outside Singapore is limited to very few countries, and mainly in the form of demonstration or pilot projects. In the US, a voluntary MSA program has not attracted many clients, thus limiting what can be learned from the experience. China has piloted MSAs in particular regions, providing some evidence. In South Africa, as well, private sector experiences can yield some information, while in Hong Kong, proposals for MSAs have been discussed, but none yet adopted.

A. The U.S. Experience with MSAs

There are two projects of MSAs in the U.S. The first one, established by the Health Insurance Portability and Accountability Act of 1996, is the MSA model for the self-employed or those in small firms - currently called Archer MSAs. The Balanced Budget Act in 1997 set up a second type of MSA called Medicare+Choice MSAs (hereafter referred to as "Medicare MSAs"). These latter ones provided an additional option for Medicare enrollees. Both Archer MSAs and Medicare MSAs are "demonstration projects" scheduled to end December 31, 2002[16] (United States 1996;US Internal Revenue Service 2001).

1. Archer MSAs

An Archer MSA is a tax-exempt individual account offered by a financial institution or insurance company in which money can be saved for future medical expenses. This account must be used in conjunction with a high deductible health insurance plan (HDHP). This health insurance plan must qualify according to a number of rules including minimum and maximum annual deductible levels and maximum annual out-of-pocket expenses (Table IV-1). The Archer MSAs program is limited to the enrollment of employees of small firms of less than 50 employees or self-employed persons. Archer MSA enrollees are not allowed to have other health insurance or Medicare coverage apart from the qualified HDHP. Lower deductibles or first-dollar coverage are allowed only for state-mandated preventive care[17].

Table IV-1 Characteristics of Approved HDHP for Archer MSAs for 2001

Type of coverage	Minimum annual deductible	Maximum annual deductible	Maximum out-of-pocket expenses
Self-only	$1,600	$2,400	$3,200
Family	$3,200	$4,800	$5,850

Source: (US Internal Revenue Service 2001)

There is no rule on the required amount of contributions, which can come from either employers or employees. But there is a maximum limit to the amounts paid into the

[16] The Archer MSAs demonstration was previously scheduled to end on 31st December 2000 but was extended. (US Department of Health and Human Services 2002).

[17] Other additional insurance plans allowed are those that cover only accidents, disability, dental care, vision care, long-term care, or specific disease or illness.

account[18]. Interest earnings from this account are tax-free and contributions are eligible for a tax deduction. Archer MSAs can be spent on qualified medical expenses but the amount spent on non-medical expenses is subjected to a tax and penalty.

The Archer MSA project capped the number of participants to 750,000 and was planned to end in December 2000 with an evaluation by the Treasury Department and the GAO. However, there were very few Americans eligible to participate in this scheme, and only around 50,000 accounts were set up by the end of 1998 (i.e. less than 10% of the preestablished limit) (US GAO 1998). The scheme was later extended to December 2002 (US Internal Revenue Service 2001). Latest developments include a proposal from the Bush administration to make the MSA project permanent with fewer restrictions, including making it available to all employers (US Department of Health and Human Services 2002).

2. Medicare+Choice MSAs

The Balanced Budget Act of 1997 established a new part of the U.S. Medicare program known as the "Medicare+Choice Program." Medicare beneficiaries can choose a Medicare Medical Savings Account plan over other alternatives. The Medicare MSA plan is described as a combination of a high deductible health insurance plan (HDHP) and a contribution to a Medicare MSA. By law, Medicare MSA plans were limited to no more than 390,000 individual enrollees (or around 1% of all Medicare beneficiaries) and no individual may enroll on or after January 1, 2003 unless the enrollment is a continuation of enrollment that was already in effect on that date[19] (US Department of Health and Human Services 1998).

Each year, Medicare pays an amount equal to the difference between the annual Medicare+Choice capitation rate and the HDHP premium into a beneficiary's MSA. To get health care services, enrollees pay up to the annual deductible level from their MSAs or out-of-pocket after which their insurance begins to come into play. The deductible varies according to the choice of HDHP, but cannot exceed US$6,300 (the upper limit for the year 2000). Insurance companies offering these plans must reimburse, at a minimum, all Medicare-covered services once the enrollee's expenses reach the plan's annual deductible.

The Medicare+Choice MSA was intended to start in 1999. However, as of April 2001, no HDHP had been approved by Medicare. Therefore, no Medicare MSA plans have been established (US Internal Revenue Service 2001). Cumbersome regulations and legislative obstacles are claimed by the insurance business to be the major obstacles (Craig Bunce 2001). Low attraction to risk-averse Medicare beneficiaries together with high expenses and the difficulty of marketing a new product to very few interested consumers are additional reasons that discourage insurers from offering them (Landers 2001).

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[18] There are two criteria on the amount of contributions to Archer MSA. One is based on the annual deductible of the HDHP. The other is based on employee's wage or self-employment income. Contributions cannot exceed 65-75% of the amount of the annual health plan deductible and cannot be more than the annual earnings of that year (income minus expenses for the self-employed).

[19] A house bill (H.R. 2802) is being proposed in the 107th US Congress session to remove this limitation on Medicare M+C MSA plans.

3. Evaluation of MSAs in the U.S.A.

Since before the implementation of MSAs, there have been a number of studies trying to predict the effects of such programs using simulation data and various assumptions (Bond & Knapp 2001;Eichner, McClellan, & Wise 1996;Keeler et al. 1996;Nichols, Moon, & Wall 1996;Ozanne 1996;Zabinski et al. 1999). The results are mixed. These studies showed that positive impacts might include: reduced administrative costs, reduced moral hazard, potential cost savings with up to 2 - 8% decrease in U.S. medical spending if all adults except the elderly switch to MSAs. They also demonstrated the possibility of undesirable effects such as failure to contain costs and adverse selection, which would lead to increasing premiums or even abolition of comprehensive health plans. Problems with equity were also predicted.

Due to the limited expansion of the MSAs programs, there has been little to study. The U.S. GAO was assigned to evaluate the overall impact of the demonstration program but they finally decided to reduce the scope of their study only to the effect on local insurance markets. Thus, there is little guidance available regarding the impact of the programs on employers and employees, equity, moral hazard, or cost containment (US GAO 1997;US GAO 1998).

The GAO Insurer Survey found that the insurance industry responded rapidly to the creation of Archer MSAs, with almost 60 companies offering qualified products by the summer of 1997 (demonstration began on Jan 1, 1997). The majority of companies sell qualified plans bundled with the Medical Savings Accounts. However, according to the insurers, the supply of qualifying plans available and the enthusiasm with which they were marketed have been limited by features of the program's design. Also, consumer demand has been lower than anticipated which reflects, in part, the complexity of the qualified plan.

Apart from the GAO survey, there are a few studies on the employer side. Ramsay, in her report, presents the results from two studies (Ramsay 1998).[20] First, seven case studies were conducted by the Evergreen Freedom Foundation on companies offering MSAs to their employees. All of the companies surveyed claimed to enjoy significant decreases in costs and showed high levels of employee satisfaction. Another study by Bond et al. (1996) gathered data from 27 Ohio firms that offer MSAs to their employees. They found that the average cost to the employer of coverage for families is 23% lower than the cost under traditional family plans. However, the average cost of coverage for individuals is 26% higher for employers than the cost under traditional individual plans. Despite higher employer costs for the individual plans, the total average cost of such plans (i.e. including the *employees'* deductibles and copayments) was 12% less than that of the traditional plan. In addition, they surveyed 17 companies who offer MSAs and found that, on average, the funds remaining in the MSA at the end of the coverage year equals roughly US$600 for individual coverage and US$900 for family coverage.

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[20] Bond, Michael T, Brian P. Hershizer, and Mary W. Hrivnak (1996). Reducing Employee Health Expenses with Medical Savings Accounts. Compensation & Benefits Review September/October: 51-56. And Barchet, Stephen (1995). Medical Savings Accounts -A Building Block for Sound Health Care. Washington Medical Savings Account Project, Evergreen Freedom Foundation.

Table IV-2 Average cost of Traditional Plans and MSAs Plans in 27 Ohio firms

Plan	Individual coverage		Family coverage	
	Average	Range	Average	Range
Traditional Plan premium	1,375	650 - 2,059	4,235	2,480 - 7,220
Total cost of MSAs to employer of plan	1,734	686 - 2,556	3,248	1,716 - 4,583
• *Catastrophic insurance premiums*	877	386 - 1,431	2,081	1,184 - 2,934
• *Contribution to MSAs*	857	144 - 1,500	1,167	200 - 2,000

Source: Bond *et al.* 1996 presented in (Ramsay 1998)

The results from these employer surveys must be interpreted with care. The scope of the study is limited; the sample selection process is not identified; and the study design is not strong. Moreover, due to the limited number of participants in the MSAs plan, it is impossible to evaluate the impacts on the enrollees of other insurance schemes.

The U.S. experience with MSAs has not generated sufficient evidence on this policy option. There are limited numbers of eligible people interested in Archer MSAs that results in very few meaningful studies on its effectiveness and the impacts on overall systems. Numerous restrictions in the program are probably responsible for the program's lack of popularity (Craig Bunce 2001). The other experiment, the Medicare MSAs program has not even started due to limited interest by insurers and beneficiaries. The story is not over, since there are new legislative proposals, including the Bush administration's 2003 budget plan that aims to extend MSAs and increase their availability (The Robert Wood Johnson Foundation 2002). Supporters of extending MSAs include professional groups such as the American Medical Association (Landa 2002) while consumer groups for the most part are opposed (Consumer Union 2002;Families USA 2002).

In sum, the US experience with MSAs is quite limited. The US interest in MSAs is largely aimed at containing the high cost of health spending in that country by giving consumers an incentive to choose appropriate and cost-effective care. A few studies based on limited surveys and cases suggest that the Archer MSA design may contain costs as has been claimed, but further evidence on expanded programs will need to be collected in order to reach firmer conclusions.

B. MSAs System in China

China began a pilot study of MSAs in the cities of Zhenjian and Jiujiang in December 1994 as part of the health financing reform project (Liu et al. 1999). Until then, there were two main insurers that provided comprehensive health benefits with minimal cost-sharing for formal sector employees, namely the Labour Insurance Scheme (LIS) and the Government Insurance Scheme (GIS) (Yip & Hsiao 1997). GIS is government-financed insurance for government employees, university teachers and students. LIS covers the employees of public enterprises (only those with more than 100 staff) and their dependents. Each enterprise set up its own fund with contributions from both employer and employees as a percentage of wages to finance the health expenditure of their workers. Both LIS and GIS have suffered from rapid cost escalation. Some enterprises faced a series of negative balances due to the lack of risk pooling across enterprises or local governments.

As part of the reform started in 1994, there were two important changes in these two cities: provider payment reform and the use of MSAs. The way health care facilities are paid changed from retrospective fee-for-service reimbursement to prospective fee-setting for broad categories of services. In this prospective payment system, fees vary according to the types and levels of providers. The MSAs program was mandatory for all industrial workers and government employees. The LIS and GIS were replaced by the MSA model comprised of two main components: an individual MSA for each subscriber and a Social Insurance Account (SIA). The SIA pools insurance funds across all subscribers. The contributions to MSAs and SIA come from the employers and employees. The contribution rate is 1% of the salary for the employee while employers pay an additional 4% into each individual account and another 6% to the SIA (Yip & Hsiao 1997).

The health financing system functions in three tiers: MSAs, out-of-pocket deductibles, and SIA. The beneficiaries pay for health care from their MSAs until all money in the accounts has been spent. Then a further deductible of 5% of their annual wage has to be paid out-of-pocket before the social risk-pool fund (SIA) comes in. Even with SIA, the patients are still responsible for a copayment that declines as a share of the medical costs as they increase. There is also an upper limit on the total annual out-of-pocket payment depending on the individual's annual income, above which social insurance covers all expenses. Nevertheless, a fixed 20% copayment, regardless of the expenditure level, is compulsory for spending on expensive diagnostic services in order to constrain their use. SIA also reimburses only the drugs registered in the program's Essential Drugs List.

Evidence from the two cities shows that the reform was successful in containing health care cost (Liu, Cai, Zhao, Yuen, Xiong, Chao, & Wang 1999;Yip & Hsiao 1997). For example, in Zhenjian there was a 27% decrease in real health spending per beneficiary and 24.6% decline in total health spending from 1994 to 1995. The rate of outpatient visits and the length of inpatient stays were the same but there was a slight decrease in the admission rate. Much of the savings are claimed to be derived from reducing the use of expensive diagnostic services and drugs.

However, the success of the reform does not mean MSAs are effective in cost-containment for the whole system. There is some evidence of cost shifting to the uninsured population because at the same time that spending under the MSA program declined, the health expenditure for non-enrollees rose substantially (Yip & Hsiao 1997). It is also difficult to separate the effect of MSAs against other concurrent policy interventions. The declining costs may be the result of the change in provider payment methods and/or the introduction of the Essential Drug List. In addition, a more equitable distribution of the financial burden across families may have had more to do with the increase in risk pooling between employers, rather than from implementation of the MSAs.

There is an argument that the MSA model, compared to the previous comprehensive health insurance systems, transfers income from the frail to the healthy workers who can keep unspent money in their accounts. A health financing reform that incorporates broad risk pooling and changes in provider payment mechanisms may result in similar or lower levels of spending without the introduction of MSAs. Also, the implementation of this health financing reform is confined to formal sector employees in urban settings. Therefore, it may not be possible to extrapolate the experience from this pilot study to

other population groups. The expansion of MSAs to other sectors such as the self-employed or agricultural community will probably be much more difficult[21].

Nevertheless, in December of 1998 the Chinese government decided to implement health financing reform nation-wide for all urban worker, based on the MSA model used in the two pilot cities (Liu 2002). This new program aims to enroll 80 million urban workers by the end of 2001. It incorporates the use of individual MSAs, out-of-pocket deductibles, and limited benefit catastrophic health insurance. The level of contribution differs from the experiment and the program provides more room for local authorities to set additional rules on enrollment of the self-employed, voluntary supplementary insurance, co-payment level, and other management issues[22].

China experimented with MSAs because it was interested in containing costs and also limiting the government's fiscal responsibility for health care. The MSA design was compulsory and contained substantial individual responsibility for medical expenses, backed by an overall cap that was financed through a catastrophic insurance program. The experience in two urban cities suggested that there might be cost savings from this MSA scheme. However, it is not clear whether the cost savings were actually due to other policies that introduced prospective provider payments and an essential drugs list. Furthermore, the cost savings may have come at the expense of other patients in the urban areas who were not covered by the health plan. As China extends this MSA program to millions of additional workers, it may be possible to accurately address these questions.

C. MSAs in other countries

In South Africa, an MSA plan is one option of voluntary health insurance that was offered by private insurance companies after markets were deregulated in 1994 (Matisonn 2000). Health insurance regulations are rather flexible, so there are multiple choices of MSA plans with varying levels of contribution and deductibles in competition with indemnity- and HMO-type insurance. Employer contributions to their workers' MSAs receive the same tax treatment as employer payments for indemnity insurance premiums. Matisonn (2000, 2002) claims that MSA plans are popular among private health insurance consumers and create cost-saving(Matisonn 2000;Matisonn 2002). However, the information he presents is limited and the methodology used is unclear. Thus, nothing conclusive can be said about the South African experience at this time.

Hong Kong has developed a plan to use MSAs under the name of 'Health Protection Accounts' (Hong Kong Health and Welfare Bureau 2001). Currently, the plan is under public consultation and a detailed study to examine the merits of the scheme in detail is ongoing. Hong Kong Health Protection Accounts would be individual accounts to which contributions of around 1-2% of earnings from individuals aged 40 to 64 would be mandatory. Withdrawals would be allowed only when individuals reach 65 years of age (or earlier in case of disability). Unspent money could be passed on to family members.

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[21] There are several foreseeable limitations on implementing MSAs among the self-employed and those in agriculture such as variable household income and no preexisting system for collecting premiums.

[22] The central government sets the premium rate at 8% and makes the enrolment of urban workers compulsory. However, local governments can decide upon the expansion of the scheme to the self-employed and rural industry workers, the rates of co-payment, provider payment methods, and the level of risk-pooling. See (Liu 2002) for more details about the scheme.

A full report of this proposed system is expected to be out in 2003. Within the plan, the Government will also provide some kind of safety net for those who have exhausted their savings.

D. Possible Designs of MSAs

One thing that we can learn from the experiences of Singapore, U.S.A., China, South Africa, and Hong Kong with MSAs is the wide range of options for designing MSAs. Each country has its own set of objectives and pre-existing financing systems. Therefore, the characteristics of MSAs vary in ways that reflect the aims and the concerns of policy makers. Key control knobs of MSA design can be classified in four main areas – coverage, fund management, contributions, and regulation on MSA withdrawals. Some key characteristics of the MSA models in three of the countries where MSA programs have been implemented are summarized in Table IV-3.

The three countries demonstrate that coverage of MSAs can be voluntary or mandatory, and restricted to employees and their dependents or be universally applicable. Singapore requires all their citizens to join, while the U.S. MSA program is voluntary and restricted to the self-employed or employees of small firms. China's pilot program was limited to 2 cities but enrolment was compulsory for all public enterprises and government employees in those cities, and will be expanded further when the program is extended to other urban areas.

These choices are not irrelevant. Voluntary enrolment may result in healthier people choosing MSAs program while leaving traditional comprehensive health insurance plans to face higher average risk and subsequently higher average premiums. Also, when catastrophic health insurance protection is voluntary instead of mandatory, as in the case of voluntary MediShield enrolment in Singapore, enrollees are exposed to greater risk of catastrophic spending. In this case, adverse selection in the voluntary catastrophic insurance program can also emerge. None of the studies provide strong evidence whether or not such adverse selection has occurred.

The countries reviewed here showed that MSA administration can be done either by public organizations (China, Singapore) or by private financial firms (U.S.A., South Africa). Singapore took advantage of an already well-established pension system when it used CPF to administer the new program. This avoided the costs of setting up a new organization and lowered operating expenses on key administration of such activities as beneficiary registration, contribution collection, and withdrawal payments. The Chinese experience demonstrated that setting up a new MSA system for the whole population can be a big task that is prone to many operational problems (Liu 2002).

Transparency in the management of funds is also very important. If the main objective is long term mobilization of resources, it is necessary to achieve returns over and above the rate of inflation[23]. For example, the Singapore government was accused of having no transparency and public accountability in terms of the investment criteria and performance of CPF funds (Asher & Karunarathne 2001). Private sector administration of MSAs, including by insurance companies, may benefit from the resulting competition

[23] MSAs share similar administrative problems to provident funds. Sherraden discusses about the possible dangers of provident fund systems including the prevalence of depreciating currencies experienced in many developing countries, as well as poor management and/or corruption in overseeing the funds and their administration (Sherraden 1997).

but may also incur some risks. In such a case, the government has to think seriously about how to regulate the market, including the number of firms in the market, the incentives to participate in the program, and their capability and long-term sustainability.

A third crucial element of MSA design is the amount and character of contributions. As noted above, contributions can be mandatory or voluntary - with maximum or minimum limits - depending on the objective of the MSAs use. In case of voluntary contributions, other measures or benefits such as tax exemption may be included so as to create incentives for participation. In this case, maximum contribution levels may be required to prevent the program from being used purely as a tax shelter. For example, the U.S. MSA experiment has no lower contribution limit but sets upper limits related to the level of premiums. By contrast, Singapore has a compulsory minimum level of contribution with the aim of making individuals accumulate enough for their elderly years.

The question on who should pay, either employer or employee, may not be significant. It is well known in the economic literature that the incidence of payroll taxes depends on labor supply and demand conditions and not on the specific share nominally assigned to employers or employees. Nevertheless, the rates may be important in implementing a reform depending on the positions of different political groups. One alternative to employer, employee, or beneficiary contributions is to have Savings Accounts funded by a third party such as government. For example, a Canadian model has been proposed in which local health authorities would pay equal amounts into each individual's medical savings account instead of purchasing health care services for their population as is currently done (Owens & Holle 2000). They argue that this system would increase consumer responsibility and could be more equitable than individually-funded MSAs since the funding source would be from progressive general taxation.

The fourth aspect of MSA design is conditions on withdrawals. MSAs are deliberately designed for spending on medical services and health care. But beyond this broad restriction, additional rules are possible. The withdrawals can be limited for services needed by the individual, or account holders can be allowed to use the funds for family members. The types of medical interventions that MSAs withdrawals can be used for may also be restricted. Withdrawals for medical goods or services outside an approved list may be disallowed or subject to penalties. For example, Singapore has established many criteria for MSA withdrawals to contain costs, promote an accumulation of savings, and assure that savings are not used for relatively common health expenditures.

Another important feature of any system that includes MSAs is the design of any accompanying catastrophic health coverage and safety nets. In this regard, the level of deductibles and copayments set for the catastrophic health insurance will have a large impact on costs and spending. Low deductibles will offset the cost-sharing effects on consumers that are expected from the MSA/CHP model; while high deductible may restrict health care access among the sick and the poor.

Table IV-3 MSAs Designs in Singapore, China, and U.S.A.

	Singapore	U.S.A.	China
Main Objective	Resource mobilization and increase individual responsibility	Insurance expansion to self-employed and small firms; Cost containment	Cost containment and increase risk pooling
Coverage / Target group	All Singaporeans	Self-employed or employees in small firms	Urban Formal Sector Employees in public enterprises
Enrolment	Compulsory	Voluntary	Compulsory
MSA Funds Holder(s)	Government (CPF)	Private Insurance Firms	Social Insurance
Contributions	Fixed proportion of income with Minimum and Maximum Limits	Maximum Limits	Fixed percentage of wages
Contributor(s)	Employer and employee*	Either Employer or employee	Employer and employee
Tax exemptions	Yes for contributions to and interests from MSAs	Yes for contributions to and interests from MSAs (up to a limit)	Yes for contributions to and interests from MSAs
MSAs spending	Eligible for enrollee and family but restricted to mainly inpatient services	Only for enrollee's health care and limited to qualified health care services	Only for enrollee's health care
Withdrawals other than health expenses	Not allowed	Yes, but subjected to tax and penalty	Not allowed
Accompanying CHP	Voluntary, Government or privately provided	Compulsory, Privately provided	Compulsory, Social Insurance
Health financing tiers	1) Out-of-pocket 2) Medisave 3) MediShield or Medishield plus 4) Medifund	1) MSAs 2) Out-of-pocket deductibles 3) CHP	1) MSAs 2) Out-of-pocket deductibles 3) Social Insurance Account

E. MSAs implementations

It is very difficult to conclude whether MSAs are a good or bad option for health financing reform as there is still limited evidence on the advantages and disadvantages of MSA systems. The available information is highly specific to each country and conditional upon the existing health systems, the underlying philosophy and expectations of the society, and the particular design of MSAs. However, there are some components that may contribute to better performance by MSA systems[24]. Some of these factors may not be specific to MSA systems but will also be applicable to other forms of health financing.

The first characteristic that may determine whether a system will be able to incur some benefit from using MSAs is the existence of a culture of savings in the society. Individual savings accounts must be regarded by their holders as a resource for long term spending not just extra money for superfluous services or upgraded facilities. Without this, the accumulation in the accounts will not only be ineffective in reducing moral hazard but may inadvertently increase overall costs of the system.

Second, MSAs require regular and predictable savings. Habitual savings are easier for regular income earners, so MSA systems, similar to social insurance or tax based health financing system, function better in a society with extensive formal sector and high employment. In Singapore, despite being highly urbanized, the self-employed were only included in the Medisave program 8 years after it started. Applying an MSA system to the informal or rural sectors can be difficult when appropriate institutions are not present. For example, in many developing countries it may be difficult to establish individual savings accounts for dispersed rural populations who have little access to banking or even to cash transactions.

Third, there needs to be enough capacity to run the system, its implementation, administration and management. An MSA system requires serious planning and implementation in its initial start-up. Routine MSA activities involve enrolling beneficiaries, collecting contributions, managing and disseminating information, processing claims and verifying the eligibility of withdrawals, and perhaps overseeing claims or payments to providers under a complementary catastrophic health insurance plan. All these activities require administrative competence and resources. Likewise, the investment of funds has to be done intelligently and in a transparent manner. It may be useful for a country to start with a pilot project or demonstration program before subsequently expanding to the whole target group. This will not only serve as a learning process but will also provide time for the consumers and providers to understand the new system better.

Last, government stewardship is crucial for MSAs to function effectively. While systems with MSAs can benefit from an increase in individual responsibility for the use of funds, the public interest in assuring that the poor and disadvantaged also have ready access to

[24] Similar to our discussion here, Nichols et al. propose 5 practical lessons for developing countries on MSAs implementation (Nichols, Phua, & Prescott 1997). First, MSAs should not be used alone. Second, resource mobilization effects of MSAs will take a long time. Third, MSAs should be designed to enhance efficiency. Fourth, equity risks from MSAs should be carefully considered in overall system designs. Lastly, implementing MSAs require several major institutional prerequisites.

necessary medical care requires some kind of safety net. Singapore demonstrates many of these important complementary functions, including controls on the supply of medical services, restrictions on the use of MSA withdrawals, public education and consumer protection activities, and provision of a safety-net for the underprivileged.

V. CONCLUSION

The analysis of the experience with MSAs in a few countries shows that the effects on health financing and health systems functions are at best inconclusive. This is primarily due to the lack of data and rigorous analysis. However, a review of the existing information does suggest several tentative conclusions.

First, it is important to emphasize that Medisave is not the major financing source for Singapore's health system. The government budget and out-of-pocket payments still play a predominant role in health spending. Medisave spending is a relatively small share of health spending at present, even though it may become more important in the future. The accumulation of savings in the Medisave accounts shows that they can bring additional resources for long term health financing, but generally only for individuals who are employed and have no chronic health conditions that require regular medical spending. The unemployed and those with lower incomes are unlikely to accumulate sufficient funds in their Medisave accounts for future expected health care needs. Additionally, given the existing structure of employment and cultural roles, the evidence shows a marked difference between women and men in their ability to accumulate funds.

There is no clear evidence that Medisave has significantly reduced consumer moral hazard and thereby contributed to containing costs. Singapore's health spending continued to grow after the adoption of the MSA system. If anything, one study showed that Medisave might encourage immediate spending on unnecessary care by creating an account that can only be used for health spending (and whose benefits for retirement and bequests are far off in the future). The effect of Medisave on overall health spending is therefore unclear. Singapore's low share of GDP spent on health is probably the result of many different factors, many of which it may share with similar Asian countries that have no MSAs such as Malaysia and Hong Kong.

The evidence does not support the critics' contentions that the MSA system has created problems of access to care for those who cannot afford to pay. While it is true that the amount of funds accumulated and available to the poor and disadvantaged are significantly less than more privileged groups, Singapore has implemented an almost-mandatory catastrophic insurance program and safety net program that appears to be very effective at catching almost everyone before they fall.

One important feature of the Singapore system is not the creation of MSAs but strong government stewardship. The health financing system in Singapore has evolved over time with new schemes and initiatives periodically implemented by the government to address emerging flaws. Implementation of Medisave was subsequently followed by several government interventions and introduction of financial instruments such as supply side controls, consumer financial counseling, Medishield, Medifund, etc[25]. Additionally, the government's role in financially subsidizing health service is significant and will continue to play a major part in the future as reiterated explicitly by the Singapore Prime Minister[26] (Goh 2001). There is also a plan to expand the role of health

[25] Latest health financing initiatives include Elderfund, an endowment fund to subsidize nursing home services, and Eldershield, a severe disability insurance scheme for the elderly.

[26] In his speech, the Prime Minister stated that health care will continue to be heavily subsidized and that no Singaporean will be deprived of necessary health care no matter how poor..

insurance by introducing additional MediShield features such as lifetime coverage and prefunding (Lim 2002).

Despite the lack of evidence regarding the impact of Singapore's MSAs on costs and access to care, a few countries have decided to follow Singapore in experimenting with MSAs. However, these experiments differ in their designs, target groups, and objectives. The U.S. experiment with MSAs is still very limited since it was implemented with numerous restrictions that limited its appeal to insurers and potential beneficiaries. China's experiment with health financing reform in two cities appears to have contained costs and increased fairness in the distribution of the financial burden for health care. But the evidence cannot show whether these outcomes were due to the implementation of MSAs or the introduction of prospective provider payments and risk pooling across employers. South Africa has allowed private health insurers to offer voluntary MSA plans, but there is no systematic evidence on the outcome. Hong Kong's interest in MSAs as a tool for resource mobilization for old-age health financing has yet to emerge from the planning and discussion phase.

There is a clear need for detailed and comprehensive studies to explain the overall impact of MSAs in health systems. Such studies would focus on the effectiveness of MSAs in preventing moral hazard and containing costs. At the same time, the net social impact of implementing MSAs must be carefully explored, especially with regard to the impact on access to health care by women and underprivileged groups. As the country with the longest experience, Singapore would be the best candidate for such studies, if the appropriate surveys could be conducted and analyzed. China's current experiment provides a unique opportunity to collect baseline data and monitor the impact of the reforms, if the opportunity is taken.

To conclude, MSAs are neither panacea nor catastrophe for health care systems. Every experiment has recognized, in practice, that MSAs must be complemented by some form of insurance and/or safety net, and there is contradictory evidence whether MSAs contain costs or not. Therefore, countries evaluating whether or not to introduce MSAs should be sure to consider the potential advantages and disadvantages in light of this limited evidence.

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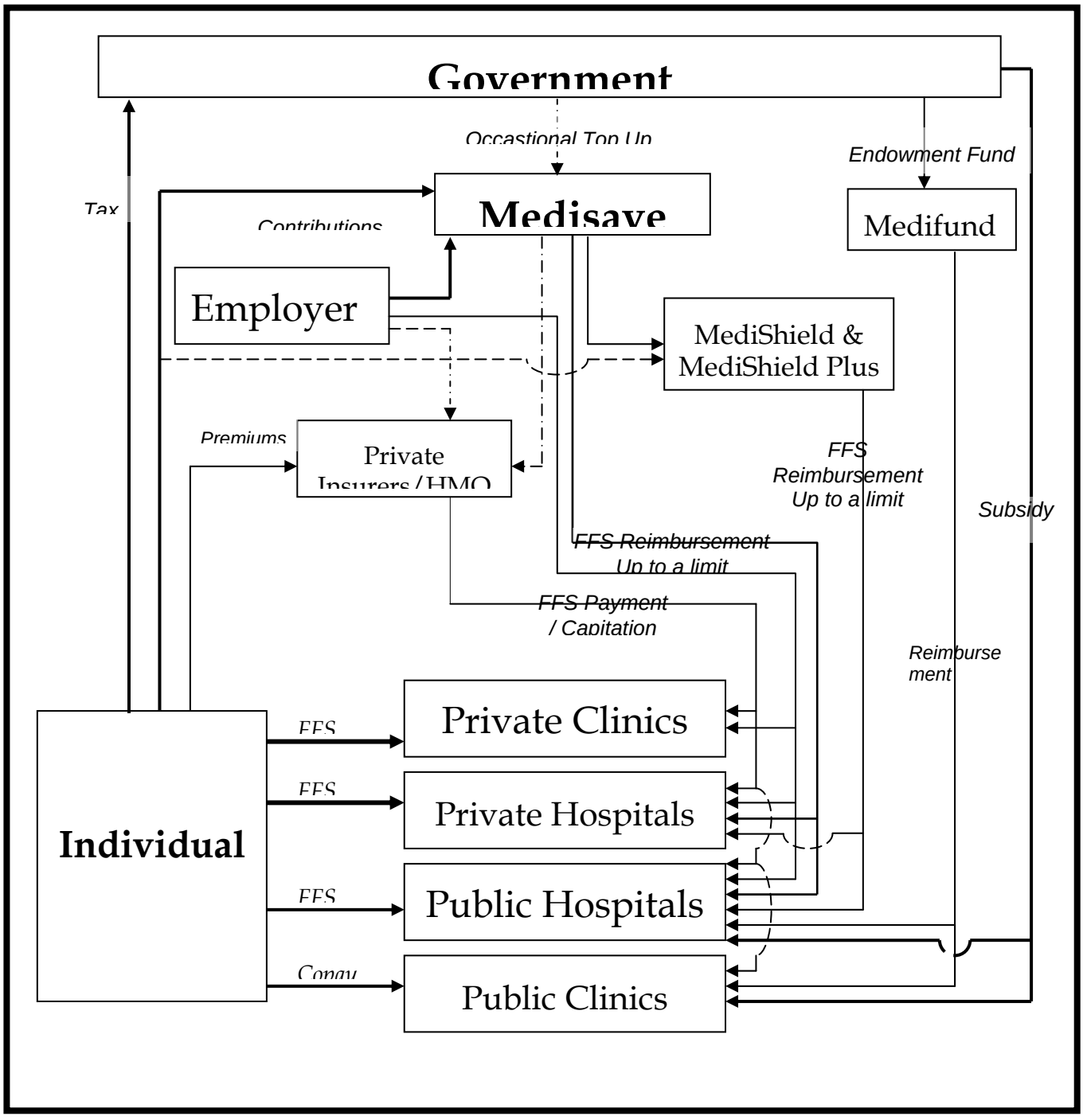
Appendix A. SINGAPORE HEALTH FINANCING SYSTEMS

Figure A-1 Flow of funds in Singapore health care financing systems



Appendix B. MEDISAVE CONTRIBUTIONS AND BENEFITS

Table B-1 CPF Contribution and Allocation Rates for Public and Private Employees

Employee Age (years)	Contribution By Employer (% of wage)	Contribution By Employee (% of wage)	Total Contribution (% of wage)	Credited into (%)		
				Ordinary Account	Special Account	Medisave Account
35 & below	16	20	36	26	4	6
35 - 45	16	20	36	23	6	7
45 - 55	16	20	36	22	6	8
55 - 60	6	12.5	18.5	10.5	0	8
60 - 65	3.5	7.5	11	2.5	0	8.5
Above 65	3.5	5	8.5	0	0	8.5

Note:

- The self-employed are required to pay yearly contributions for Medisave as a fixed amount per year or percentage of their net trade income depending on their age.
- There is a maximum Medisave contribution ceiling for each age group.
- Medisave contributions are transferred to the individual's CPF ordinary account once the account reaches $26,000 (2001).

Source: (Central Provident Fund Board 2002)

Table B-2 Medisave Inpatient Benefits

Items	Conditions/Limits
Hospital Charges [+]	S$300 per day for hospital charges (including a maximum of S$50 for doctor's daily attendance fees)
Surgical Operation	Depending on the type of operation performed (see Table B-4)
Psychiatric treatment, approved community hospitals, approved convalescent hospitals, and approved hospice	Up to S$ 50-S$150 per day for the daily charges, including a maximum of S$30-S$50 for the doctor's daily attendance fees subject to a maximum amount per year.
Senior Citizens Healthcare Centers	Up to S$20 per day for Day Care charges, subject to a maximum of S$1,500 a year.
Delivery of the first three children[*]	Up to S$300 per day for daily hospital charges, including a maximum of $50 for doctor's daily attendance fees, and a certain limit for delivery charges depending on the type of delivery as shown in Table B-5.

[+] Patients in the Class B2 and Class C wards may pay their outstanding hospital bills from their future Medisave contributions if there is not enough money in the accounts.
[*] Medisave cannot be used to cover ante- and post-natal consultation fees.
Source: (Central Provident Fund Board 2002)

Table B-3 Medisave Outpatient Benefits

Items	Conditions/Limits
Outpatient treatments	Medisave can be spent on Hepatitis B vaccination, Radiotherapy, Assisted conception procedures, Chemotherapy, Renal dialysis treatment, AZT treatment
Day surgery cases	Up to S$150 of the ward charges, including a maximum of S$30 for the doctor's daily attendance fees with a fixed limit for operation ranging from S$150 to S$5,000
Gamma Knife treatment	Medisave can be used at Singapore Gamma Knife Center subject to a maximum of S$7,500 per treatment and S$150 for daily hospital charge.
Health insurance premiums	Purchase of MediShield or premium payment for approved private insurance or Managed Care plans can be spent out of Medisave accounts

Source: (Central Provident Fund Board 2002)

Table B-4 Medisave Limits per Type of Surgical Operation

Table of 0perations+	Medisave Limits Per Surgical Operation (S$)*
1A-1C	150-250
2A-2C	350-600
3A-3C	800-1,200
4A-4C	1,400-1,800
5A-5C	2,000-2,400
6A-6C	2,800-3,600
7A-7C	4,000-5,000

+ Classification indicates the complexity of the operation
* Includes surgeon, anesthetist and facility fees
Source: (Central Provident Fund Board 2002)

Table B-5 Medisave Limits per Type of Delivery

Type of Operation	Table of Operation	Medisave Limits (S$)
Normal delivery	2B	450
Forceps delivery	3A	800
Cesarean Section	4A	1,400

Source: (Central Provident Fund Board 2002)

Appendix C. MEDISHIELD PREMIUMS AND BENEFITS

Table C-1 MediShield Annual Premium

Attained Age Next Birthday	MediShield (S$)	MediShield Plus	
		Plan B (S$)	Plan A (S$)
30 and under	12	36	60
31 - 40	18	54	90
41 - 50	36	108	180
51 - 60	60	180	300
61 - 65	96	288	480
66 - 70	132	396	660
71 - 73	204	612	1,020
74 - 75	240	720	1,200
76 - 78#	320	960	1,600
79 - 80#	390	1,170	1,950

Note:
For renewal of cover only, as the last entry age for MediShield and MediShield Plus is 75 years.
Source: (Central Provident Fund Board 2002)

Table C-2 MediShield Deductibles & Co-Insurance

	MediShield	MediShield Plus	
		Plan B	Plan A
Deductible * (per policy year)	S$1,000 (B2 class ward & above) S$500 (C class ward)	S$2,500	S$4,000
Co-insurance	20%	20%	20%

Note: * the claims for outpatient treatment and Stereotactic Radiotherapy treatment for cancer require no deductible.
Source: (Central Provident Fund Board 2002)

Table C-3 MediShield/MediShield Plus Benefits & Assured Amount

Benefits	MediShield	MediShield Plus	
		Plan B	Plan A
Room & Board*	S$150/day	S$375/day	S$625/day
Intensive Care Unit (ICU)*	S$300/day	S$625/day	S$1,000/day
Surgical Operations#			
Table 1	S$120	S$ 360	S$ 480
Table 2	S$240	S$ 720	S$ 960
Table 3	S$480	S$1,200	S$1,560
Table 4	S$600	S$1,800	S$2,400
Table 5	S$700	S$2,800	S$4,000
Table 6	S$800	S$4,000	S$5,600
Table 7	S$900	S$6,400	S$7,200
Implants/approved medical consumables	S$1,500/treatment	S$2,500/treatment	S$3,500/treatment
Gamma Knife	S$4,800/procedure	S$9,600/procedure	S$12,600/procedure
Stereotactic Radiotherapy	S$1,000/treatment	S$2,000/treatment	S$2,500/treatment
Treatment for cancer +			
Outpatient Treatment +			
Radiotherapy for cancer:			
- External	S$80/treatment day	S$120/treatment day	S$140/treatment day
- Superficial	S$80/treatment day	S$120/treatment day	S$140/treatment day
- Brachytherapy with external	S$160/treatment day	S$240/treatment day	S$280/treatment day
- Brachytherapy without external	S$160/treatment day	S$240/treatment day	S$280/treatment day
Chemotherapy for cancer	S$150/7day treatment cycle S$700/21-28 day treatment cycle (max. of 8 treatment cycles)	S$200/7day treatment cycle S$800/21-28 day treatment cycle (max. of 8 treatment cycles)	S$300/7day treatment cycle S$1,000/21-28 day treatment cycle (max. of 8 treatment cycles)
Renal Dialysis	S$1,000/month	S$2,000/month	S$2,500/month
Erythropoietin drug for chronic renal failure	S$200/month	S$400/month	S$500/month
Cyclosporin/Tacrolimus drug for organ transplant	S$200/month	S$400/month	S$500/month
Maximum Claim Limits:			
-per policy year	S$ 30,000	S$ 75,000	S$100,000
-life-time	S$120,000	S$225,000	S$300,000
Last Entry Age	75 years	75 years	75 years
Max. Coverage Age	80 years	80 years	80 years

Note:

* Inclusive of meal charges, prescriptions and professional charges, investigations and other miscellaneous charges.

Surgical operations are classified according to their level of complexity

+ Deductibles are not applicable for Stereotactic Radiotherapy Treatment and Outpatient Treatment.

Source: (Central Provident Fund Board 2002)

Appendix D. INCOME ADJUSTED HEALTH SPENDING IN SINGAPORE, HONG KONG AND THE OECD COUNTRIES

As part of the work on Singapore health financing systems evaluation, statistical analysis was done to compare the Singaporean level of health spending with those from OECD countries and Hong Kong (China). This aimed to find out the level of health spending in each country when adjusted by its income level. Information on the level of national health expenditure and GDP in OECD countries between 1985 and 1998 came from OECD Health Data 2001. Data sets on Singapore's health spending are from WHO National Health Accounts while those for Hong Kong (China) are from the WB World Development Indicators 2001.

The analysis was done based on the following equation:

$$THE_i = \alpha + \beta GDP_i + \sum_i \gamma_i D_i$$

where:

- THE_i is Total Health Expenditure per capita in US Dollars for country *i*

- GDP_i is GDP per capita in US Dollars for country *i*

- D_i is dummy variable for country *i*

The coefficient (γ_i) of each country's dummy variable shows the part of total health expenditure that cannot be explained by the level of income. The relationship between total health expenditure and GDP per capita in OECD countries, Singapore, and Hong Kong between 1985 to 1998 is shown in Table D-1. Table D-2 reveals the results from the analysis using Singapore as the base case ($\gamma = 0$). In summary, Singapore has a significantly lower level of health spending when adjusted by the GDP level compared to other OECD countries (except Luxembourg). Hong Kong, however, has lower income adjusted national health spending than Singapore.

Table D-1 Relationship between THE per Capita and GDP per Capita

Source	SS	df	MS
Model	284,185,745	1	284,185,745
Residual	46,667,151	405	115,228
Total	330,852,896	406	814,909

Number of obs	=	407
F(1, 405)	=	2,466.30
Prob > F	=	0.00
R-squared	=	0.86
Adj R-squared	=	0.86
Root MSE	=	339.45

THE per Cap (USD)	*Coef.*	*Std. Err.*	*T*	*P>t*	*[95% Conf.*	*Interval]*
GDP per Cap (USD)	*0.09*	*0.00*	*49.66*	*0.00*	*0.08*	*0.09*
Constant	*-148.81*	*34.97*	*-4.26*	*0.00*	*-217.55*	*-80.07*

Table D-2 Results from the Analysis of total health expenditure and GDP per capita in USD in 30 OECD countries, Singapore and Hong Kong.

Source	SS	df	MS
Model	322,132,054	32	10,066,627
Residual	8,720,842	374	23,318
Total	330,852,896	406	814,909

Number of obs	=	407
F(32, 374)	=	431.72
Prob > F	=	0.00
R-squared	=	0.97
Adj R-squared	=	0.97
Root MSE	=	152.70

THE per Cap (USD)	*Coef.*	*Std. Err.*	*T*	*P>t*	*[95% Conf.*	*Interval]*
GDP per Cap (USD)	***0.08***	***0.00***	***55.59***	***0.00***	***0.08***	***0.09***
Hong Kong	1.50	74.65	0.02	0.98	-145.28	148.29
Luxembourg	45.94	62.31	0.74	0.46	-76.58	168.47
Japan	*301.19*	*60.77*	*4.96*	*0.00*	*181.70*	*420.69*
United Kingdom	*455.17*	*57.75*	*7.88*	*0.00*	*341.61*	*568.73*
Korea	*523.14*	*59.17*	*8.84*	*0.00*	*406.79*	*639.49*
Spain	*565.93*	*57.95*	*9.77*	*0.00*	*451.99*	*679.87*
Ireland	*585.65*	*57.74*	*10.14*	*0.00*	*472.12*	*699.18*
New Zealand	*589.20*	*57.83*	*10.19*	*0.00*	*475.49*	*702.91*
Austria	*612.52*	*58.39*	*10.49*	*0.00*	*497.70*	*727.34*
Finland	*614.44*	*58.44*	*10.51*	*0.00*	*499.53*	*729.35*
Norway	*629.10*	*60.46*	*10.40*	*0.00*	*510.21*	*747.99*
Italy	*655.93*	*57.79*	*11.35*	*0.00*	*542.30*	*769.56*
Mexico	*657.25*	*67.45*	*9.74*	*0.00*	*524.61*	*789.88*
Turkey	*660.86*	*60.97*	*10.84*	*0.00*	*540.98*	*780.75*
Portugal	*672.49*	*58.85*	*11.43*	*0.00*	*556.77*	*788.21*
Iceland	*681.34*	*59.11*	*11.53*	*0.00*	*565.10*	*797.57*
Belgium	*696.89*	*58.10*	*11.99*	*0.00*	*582.64*	*811.14*
Australia	*698.30*	*57.84*	*12.07*	*0.00*	*584.58*	*812.02*
Czech Republic	*698.46*	*65.51*	*10.66*	*0.00*	*569.63*	*827.28*
Poland	*711.38*	*67.94*	*10.47*	*0.00*	*577.80*	*844.97*
Slovakia	*714.40*	*98.70*	*7.24*	*0.00*	*520.32*	*908.49*
Hungary	*730.43*	*69.78*	*10.47*	*0.00*	*593.21*	*867.65*
Greece	*743.67*	*60.77*	*12.24*	*0.00*	*624.17*	*863.17*
Sweden	*747.55*	*59.26*	*12.62*	*0.00*	*631.03*	*864.07*
Denmark	*768.76*	*59.93*	*12.83*	*0.00*	*650.92*	*886.60*
Netherlands	*802.92*	*58.14*	*13.81*	*0.00*	*688.60*	*917.24*
France	*896.20*	*58.29*	*15.38*	*0.00*	*781.59*	*1,010.81*
Canada	*899.75*	*57.95*	*15.53*	*0.00*	*785.79*	*1,013.71*
Switzerland	*1,005.97*	*63.19*	*15.92*	*0.00*	*881.72*	*1,130.22*
Germany	*1,049.05*	*58.73*	*17.86*	*0.00*	*933.57*	*1,164.52*
United States	*1,697.46*	*59.38*	*28.59*	*0.00*	*1,580.71*	*1,814.21*
Constant	***-774.67***	***46.97***	***-16.49***	***0.00***	***-867.03***	***-682.32***

Note: Singapore is the base case

In order to see the level of spending adjusted by income level and population share of the elderly, additional analysis was done with the share of elderly population included in the equation:

$$THE_i = \alpha + \beta_1 GDP_i + \beta_2 Elderly_i \quad + \sum_i \gamma_i D_i$$

where:

- THE_i is Total Health Expenditure per capita in US Dollars for country *i*
- GDP_i is GDP per capita in US Dollars for country *i*
- $Elderly_i$ is Proportion of Population aged 65 years and over for country *i*
- D_i is dummy variable for country *i*

As shown in Table D-3, apart from the level of GDP per capita, the level of THE per capita is significantly related to the proportion of elderly. Table D-4 reveals the country results using Singapore as the base case ($\gamma = 0$). When adjusted by the GDP level and elderly proportion, Singapore still has a significantly lower level of health spending compared to other OECD countries except Luxembourg, Japan, and UK. Luxembourg and Hong Kong have lower income and proportion of elderly adjusted national health spending than Singapore (but these differences are not statistically significant).

Table D-3 Relationship between THE per Capita and GDP per Capita and Proportion of Elderly Population

Source	SS	df	MS
Model	285,523,666	2	142,761,833
Residual	44,025,416	403	109,244
Total	329,549,081	405	813,701

Number of obs	=	406
F(2, 403)	=	1,307
Prob > F	=	0.00
R-squared	=	0.87
Adj R-squared	=	0.87
Root MSE	=	330.52

THE per Cap (USD)	*Coef.*	*Std. Err.*	*T*	*P>t*	*[95% Conf.*	*Interval]*
GDP per Cap (USD)	*0.08*	*0.00*	*41.36*	*0.00*	*0.08*	*0.09*
Elderly proportion	*26.93*	*5.49*	*4.91*	*0.00*	*16.14*	*37.71*
Constant	*-401.25*	*61.60*	*-6.51*	*0.00*	*-522.35*	*-280.15*

Table D-4 Results from the Analysis of total health expenditure and GDP per capita in USD with Elderly Population in 30 OECD countries, Singapore and Hong Kong.

Source	SS	df	MS
Model	320,907,171	33	9,724,460
Residual	8,641,911	372	23,231
Total	329,549,081	405	813,701

Number of obs	=	406
F(33, 372)	=	418.60
Prob > F	=	0.00
R-squared	=	0.97
Adj R-squared	=	0.97
Root MSE	=	152.42

THE per Cap (USD)	*Coef.*	*Std. Err.*	*T*	*P>t*	*[95% Conf.*	*Interval]*
GDP per Cap (USD)	*0.08*	*0.00*	*43.83*	*0.00*	*0.08*	*0.09*
Elderly Proportion	*24.22*	*13.14*	*1.84*	*0.07*	*-1.62*	*50.06*
Luxembourg	*-129.12*	*113.53*	*-1.14*	*0.26*	*-352.36*	*94.11*
Hong Kong	*-86.80*	*88.58*	*-0.98*	*0.33*	*-260.98*	*87.39*
Japan	*137.58*	*107.51*	*1.28*	*0.20*	*-73.82*	*348.98*
United Kingdom	*204.16*	*147.87*	*1.38*	*0.17*	*-86.61*	*494.94*
Spain	*342.04*	*134.53*	*2.54*	*0.01*	*77.49*	*606.58*
Austria	*385.74*	*136.14*	*2.83*	*0.01*	*118.05*	*653.44*
Norway	*390.26*	*142.94*	*2.73*	*0.01*	*109.19*	*671.33*
Italy	*411.77*	*144.47*	*2.85*	*0.01*	*127.69*	*695.86*
Finland	*421.61*	*119.78*	*3.52*	*0.00*	*186.08*	*657.13*
Ireland	*435.38*	*99.83*	*4.36*	*0.00*	*239.07*	*631.70*
New Zealand	*439.35*	*99.70*	*4.41*	*0.00*	*243.30*	*635.40*
Portugal	*451.27*	*133.62*	*3.38*	*0.00*	*188.53*	*714.02*
Belgium	*462.16*	*139.93*	*3.30*	*0.00*	*187.00*	*737.31*
Sweden	*464.65*	*164.48*	*2.82*	*0.01*	*141.21*	*788.08*
Czech Republic	*486.15*	*132.45*	*3.67*	*0.00*	*225.70*	*746.59*
Hungary	*490.79*	*148.79*	*3.30*	*0.00*	*198.21*	*783.37*
Greece	*496.93*	*146.96*	*3.38*	*0.00*	*207.95*	*785.92*
Korea	*501.40*	*60.23*	*8.33*	*0.00*	*382.97*	*619.83*
Denmark	*543.81*	*135.91*	*4.00*	*0.00*	*276.57*	*811.06*
Slovakia	*546.77*	*134.08*	*4.08*	*0.00*	*283.11*	*810.42*
Poland	*547.10*	*111.99*	*4.89*	*0.00*	*326.90*	*767.31*
Australia	*553.32*	*97.56*	*5.67*	*0.00*	*361.48*	*745.17*
Iceland	*560.84*	*88.06*	*6.37*	*0.00*	*387.68*	*734.00*
Netherlands	*625.00*	*112.62*	*5.55*	*0.00*	*403.55*	*846.46*
Mexico	*643.15*	*67.76*	*9.49*	*0.00*	*509.91*	*776.40*
Turkey	*652.86*	*61.01*	*10.70*	*0.00*	*532.90*	*772.83*
France	*683.49*	*129.24*	*5.29*	*0.00*	*429.36*	*937.61*
Canada	*754.76*	*97.64*	*7.73*	*0.00*	*562.76*	*946.75*
Switzerland	*809.35*	*123.92*	*6.53*	*0.00*	*565.68*	*1,053.02*
Germany	*810.93*	*141.86*	*5.72*	*0.00*	*531.98*	*1,089.88*
United States	*1,542.91*	*102.68*	*15.03*	*0.00*	*1,341.02*	*1,744.81*
Constant	*-868.05*	*69.02*	*-12.58*	*0.00*	*-1,003.76*	*-732.33*

Note: Singapore is the base case

Appendix E. COMPARATIVE HEALTH OUTCOME IN SINGAPORE AND SELECTED COUNTRIES

Table E-1 Comparative assessment of Singapore Health Financing Systems

	Singapore	Hong Kong	Rep. of Korea	Switzerland	Germany	Canada
Total Population, million	3.95	6.72	47.28	7.19	82.14	30.75
HUMAN DEVELOPMENT 1999*						
HDI Index 1999 (Rank)	0.876(26)	0.880(24)	0.875(27)	0.924(11)	0.921(17)	0.936(3)
Adult Literacy Rate	92.1%	93.3%	97.6%	99%	99%	99%
School Enrolment ratio	75%	63%	90%	84%	94%	97%
Life Expectancy at birth, Year	77.4	79.4	74.7	78.8	77.6	78.7
GDP per Capita, International Dollars	20,767	22,090	15,712	27,171	23,742	26,251
HEALTH PROVISION						
Bed per 1000 population (Public %)	2.9 (81%)	4.7 (88%)#	5.1(7.2%)	5.2	7.1 (55%)	4.1
Doctor per 1000 population (Public %)	1.4 (48%)	1.3 (45%)#	1.3	3.4	3.5	2.1
Admission rate per year per 1000 population	94.5	N.A.	N.A.	169.8	226.8	100.6
HEALTH ACCOUNTS**						
Share of THE in GDP	3.6%	4.8%	5.1%	10.6%	10.3%	9.3%
Share of PHE in THE	35.4%	42%	46.23%	54.9%	75.8%	70.1%
THE per Capita, US Dollars	769	1,134	351	3,857	2,697	1,850
Mean real THE Growth rate, 1991-1999	8.9%	12.2%	7.4%	3.4%	5.4%	2.9%
HEALTH SYSTEMS PERFORMANCE***						
HALE (Rank)	69.3 (30)	N.A.	65.0 (51)	72.5 (8)	70.4 (22)	72.0 (12)
Responsiveness (Rank)	6.70 (20)	N.A.	6.12 (35)	7.44 (2)	7.10 (5)	6.98 (7)
Health distribution (Rank)	0.971 (29)	N.A.	0.947 (37)	0.978 (10)	0.977 (20)	0.977 (18)
Responsiveness distribution (Rank)	0.995 (3)	N.A.	0.992 (43)	0.995 (3)	0.995 (3)	0.995 (3)
FFC Score (Rank)	0.929 (101)	N.A.	0.955 (53)	0.964 (38)	0.978 (6)	0.974 (17)
Health Level Performance (Rank)	0.929(14)	N.A.	0.694(107)	0.879(26)	0.836(41)	0.849(35)
Overall Performance (Rank)	0.973 (6)	N.A.	0.759 (58)	0.916(20)	0.902(25)	0.881(30)

Note: * from UNDP Human Development Report 2001 ** from World Health Report 2001 except Hong Kong from (Liu & Yue 1999)
*** From World Health Report 2000 # from Harvard Hong Kong Report