The empirical evidence

One of the main goals of medical savings accounts (MSAs) and other forms of cost sharing is to reduce the welfare loss of health insurance. If, however, the moral hazard of health insurance is not significant, then it may not be necessary to introduce cost sharing or MSAs. If it is significant, then MSAs have the potential to improve our health care system.

The effectiveness of MSAs and cost sharing in encouraging more appropriate health care consumption is directly related to the price elasticity[17] of demand for health care: the more reactive individuals are to changes in the price of health care, the more effective MSAs will be at reducing health care expenditures. Therefore, empirical studies that examine the effect of price on the demand for heath care are instrumental in the assessment of MSAs, and studies that have looked more specifically at the effect of catastrophic insurance and MSAs on health care expenditures are also important.

Even if people are price conscious, it does not necessarily follow that total health care expenditures will decrease if they are given incentives to use the health care system more prudently. Those at a lower income will have more resources with which to purchase health care services and may, therefore, increase their use of the system despite the incentives not to do so. Or, the existence of prices may lead to lower use of the health system, which may affect individuals' health status, which in turn may increase health care costs in the future. The poor are particularly at risk, and it has often been argued that the poor stand to lose if cost sharing or MSAs are introduced. There are several empirical studies that examine the effect of cost sharing on health outcomes and on the poor while others look at the significance of public health care spending on this segment of the population.

Estimates of the welfare loss of health insurance

One of the main goals of cost sharing is to reduce the welfare loss associated with health insurance. People purchase insurance to lessen the financial impact on themselves of an unforeseen event like an illness. As well, society benefits from the availability of insurance because the risks and costs of a catastrophic event occurring are shared by many people. However, there is moral hazard associated with insurance because those who are insured against an event, say, a car accident, will behave differently from those who, if in an accident, have to pay the full costs of reparation. They will perhaps drive a little less carefully, knowing that they are protected from the full cost of an accident.

Feldstein's study (1973) is the most widely cited study on the welfare loss of health insurance. Feldstein estimates the welfare loss of excess insurance by looking at the welfare effects of increases in co-insurance rates, and by using time series data for individual American states to estimate the demand for hospital insurance. The welfare effects are calculated by estimating the gross gain from reduced price distortion—with less insurance, prices more accurately reflect the true cost of the services—and the gross loss from increased risk bearing—with less insurance, individuals are at greater risk of paying more if an accident or illness occurs. Feldstein finds that reducing health insurance produces significant welfare gains. These results and the fact that public insurance and non-hospital care are excluded (which understates the welfare loss) lead Feldstein to conclude that United States could significantly benefit from a reduction in health insurance—by more than $4 billion (1969 US$).

Since there is a welfare loss associated with insurance, it follows that to maximize social welfare one must try to maximize the benefits of risk pooling of insurance while minimizing the welfare loss.[18] Manning and Marquis (1996) estimate the demand for health insurance and the demand for health services as a function of co-insurance rates, deductibles, and upper limits on out-of-pocket expenditures (or maximum dollar expenditure [MDE][19]) using experimental data from the RAND Health Insurance Experiment (HIE). They find a welfare loss of approximately $480 per family (1995 US$) associated with insurance.

The empirical evidence reaches a general consensus that there is a trade-off between risk pooling and moral hazard. The welfare loss of health insurance can be significant and, therefore, comprehensive coverage or "free care" is not

optimal. Deductibles, co-insurance and user fees can reduce the moral hazard of health insurance. To date, these cost sharing mechanisms have been rejected in Canada because they erect a barrier to care. MSAs, however, may provide individuals with a financial incentive to restrain their use of health care services without imposing such a barrier. MSAs will reduce the moral hazard of health insurance to the extent that they can curtail consumption, which depends on the effect of cost sharing on the use of health care services.

Cost sharing, MSAs and the use of medical services

The RAND Health Insurance Experiment

In the mid-1970s, the RAND Corporation[20] began what turned out to be the most significant medical care insurance study ever accomplished: the Health Insurance Experiment (HIE). The central focus of the HIE was to study the effect of cost sharing on medical service use and health status. More than 7,000 non-elderly families from six different regions of the United States participated in the experiment; no one above 65 years of age was included in the study. Participants were assigned to one of 14 fee-for-service insurance plans or to a prepaid group practice and were studied closely for a period ranging from three to five years. All of the insurance plans had a limit on out-of-pocket expenditure (maximum dollar expenditure [MDE]).[21] The plans were as follows:

(1) One plan with zero co-insurance (free care).

(2) Three plans with 25 percent co-insurance and MDEs of 5, 10, or 15 percent of family income, to a maximum of $1,000.

(3) Three plans with 50 percent co-insurance and MDEs of 5, 10, or 15 percent of family income, to a maximum of $1,000.

(4) Three plans with 95 percent co-insurance and MDEs of 5, 10, or 15 percent of family income, to a maximum of $1,000.

(5) Three plans with 25 percent co-insurance for all services except out-patient mental health and dental, which were subject to 50 percent co-insurance and MDEs of 5, 10, or 15 percent of family income, to a maximum of $1,000.

(6) One plan with 95 percent co-insurance for out-patient services and zero percent co-insurance (free) for in-patient services and an MDE of $150 per person, subject to a maximum of $450 per family. (This plan is known as the individual deductible plan.)

Four different dependent variables were used in the HIE's analysis of the effects of cost sharing on the use of medical services and on health:

(1) probability of using medical services;

(2) medical expenditures (includes all services except dental and out-patient mental health expenditures);

(3) annual number of physician visits;

(4) hospital admission rates.

The insurance plans were grouped into five categories:

(1) free care;

(2) 25 percent co-insurance rate including the plans with 50 percent co-insurance for dental care and mental health;

(3) 50 percent co-insurance rate;

(4) 95 percent co-insurance rate;

(5) individual deductible.

There was no differentiation made between the levels of MDEs because it was found that variations in the MDEs were not significant. Factors such as age, gender, race, family income, and family size were included in the analysis, as were four different measures of health used to account for differences in initial health status:

(1) a General Health Index;

(2) the presence of a physical limitation;

(3) chronic disease status;

(4) a Mental Health Index.

The demand for medical services was then estimated using two different econometric models, which yielded results that were quite similar. The results of estimates derived from the multi-equation model are summarized in table 3. When individuals have access to free medical care, there is an 86.7 percent chance that they will use the health care system in a given year (table 3, row 1, column 1). As cost sharing increases from 0 percent (free) to 95 percent, there is a significant decline both in the probability that medical services will be used and in the medical expenses incurred per person in the population. The column "*t* vs. free" lists the results of statistical significance tests on the differences in probabilities and expenses between the free plan and the three cost sharing plans. These "*t*-tests" show that the differences are all significant.[22]

Table 3: Predicted average annual use of medical services for a standard population

Plan	Probability of any medical use, excluding dental (%)		Medical expenses per person, excluding dental ($1991)		Total spending as percent of free plan
	mean	t vs. free	mean	t vs. free	
Free	86.7 (0.67)	–	1,019 (43)	–	100%
25 percent	78.8 (0.99)	–6.69	826 (38)	–4.05	81%
50 percent	74.3 (1.86)	–6.33	764 (43)	–4.91	75%
95 percent	68.0 (1.48)	–11.57	700 (35)	–6.74	67%
Individual deductible	72.6 (1.14)	–10.69	817 (45)	–3.78	80%

Source: Newhouse *et al*. 1993: 44.
Note: Standard errors in parentheses, ( ). Estimates are predicted from a four-equation model developed by Duan *et al*. 1982, 1984. The difference in expenses between the 25 percent and 50 percent plans is significant at the 5 percent level ($t = 1.97$) and between the 50 percent and 95 percent plans is significant at the 6 percent level ($t = 1.93$)

The last column in table 3 represents the total spending of each plan as a ratio of the free plan. On average, individuals on the 25 percent plan spend 19 percent less than individuals on the free plan; individuals on the 50 percent plan spend 25 percent less, while the ones on the 95 percent spend 33 percent less. Medical expenses per person fell from an average of US$1,019 (free plan) to as low as US$700 (95 percent co-insurance plan). The demand for all types of services falls with cost sharing although some services are more affected than others. For example, not shown in table 3 is the fact that children's hospital admissions are less responsive to changes in cost sharing while mental health services are more responsive.

The findings of the HIE challenge the claim that heavy cost sharing raises overall health care costs because of its incentive to delay seeking care. Total expenditures in the high co-insurance group (95 per cent) were well below those in the free-care plan. It appears that incentives to delay seeking care were outweighed by other incentives. In addition, the different sizes of MDE—5, 10, and 15 percent of income up to a maximum of US$1,000 per family ($500 to $600 per individual)—did not lead to significant changes in medical use (*i.e*. spending). As well, the HIE estimates indicate that the risk associated with a higher MDE is not significant. For these reasons, the HIE results seem to indicate that the MDE should be set at the high end of the different sizes examined (Newhouse *et al*. 1993).

As a result of having an MDE, the difference in the various co-insurance plans is much less than is suggested by the difference in the nominal co-insurance rates. For example, the average cost-sharing rate was 16 percent in the 25 percent plans, and 31 percent in the 95 percent co-insurance plans (table 4). The lower average co-insurance rates result from there being a diminishing number of people who are subject to the co-insurance rate for the whole period as the co-insurance rate increases. While the nominal co-insurance rate may be 95 percent, so many people reach the deductible (at which point care becomes "free") that, on average, the co-insurance rate is only 31 percent over a specified period.

Recall that increases in the co-insurance rate have two separate effects: individuals have to pay more, thus reducing use, and, as the co-insurance rate increases, the likelihood of exceeding the MDE increases. That is, when the co-insurance rate is high, people are contributing more out-of-pocket to the cost of their medical care, therefore, they will reach the MDE faster than those people with a lower co-insurance rate. Since health care is free once the MDE has been exceeded, more individuals will have access to free care when the co-insurance rate is high. Keeler *et al*. (1977) have stressed the importance of examining deductibles and co-insurance has part of a sequence and not in isolation, and the HIE results support such an argument.

Table 4: Percentage of families exceeding the maximum dollar expenditure (MDE) limit and the average co-insurance rate

Co-insurance rate (%)	Percent exceeding limit	Average co-insurance rate (%)
25	20.8	16
50	21.5	24
95	35.0	31

Source: Newhouse *et al*. 1993: 358-359.

Table 5: Arc elasticities for various types of care calculated from average co-insurance rates

Range of nominal co-insurance variation (%)	Range of average co-insurance variation (%)	Elasticity for all care	Elasticity for out-patient care
0 – 25	0 – 16	0.10	0.13
25 – 95	16 – 31	0.14	0.21

Source: Manning *et a*l. 1987: 268.
Note: An arc elasticity is a measure of the responsiveness of the quantity demanded to price over an interval (arc) on the curve representing the demand for a good or service, whereas a point elasticity measures the responsiveness of the quantity demanded to price at a specific point on the demand curve. The elasticities measure the negative relationship between the price and demand for health care. That is, as the price increases, demand diminishes.

Although the RAND HIE was performed almost 20 years ago and in the United States, it is not clear why Canadians should see the trade-off between health and money differently than their American counterparts. As well, the HIE has been used to study the effect of cost sharing in China and the results were similar to those of the American experiment (Sine 1994). It is important to note, however, that the HIE looks only at the non-elderly population and that, therefore, the results may not be readily applicable to the elderly.

Price elasticities

The results of the RAND HIE can be expressed in terms of elasticities, *i.e.* how individuals change the amount of medical care they use when the price of care changes. Table 5 produced by Manning *et al*. (1987) shows that as the co-insurance rate increases from the range 0 percent to 25 percent to the range 25 percent to 95 percent, the elasticity for all acute medical and out-patient care increases. That is, people at the higher co-insurance level will reduce their use of medical care services more than people at the lower level of co-insurance when the price of care increases.

Prior to the RAND HIE, several studies had attempted to estimate the price elasticity of demand for medical services using non-experimental data.[23] Phelps and Newhouse (1974) use data from various sources to calculate the elasticities of several services including hospitals, physicians, prescription drugs, and average stay in hospital. Table 6 summarizes these findings. Newhouse, Phelps and Marquis (1980) argue that inherent statistical problems make the interpretation of these results difficult. As Phelps points out; "Perhaps the only agreement in the literature by the mid-1970s was that 'price mattered' " (1992: 119). On the other hand, Feldstein and Gruber (1994) argue that RAND HIE elasticities most likely underestimate the true values.[24]

Table 6: Elasticity estimates for various medical services

Study	Services covered	Approximate elasticities	
Feldstein (1971b)	Hospital days		0.67
Davis-Russell (1972)	Hospital days	**point elasticities**	0.5
	Out-patient visits		1.0
Rosett-Huang (1973)	All physician and hospital expenses		0.35 to 1.5
Phelps-Newhouse (1974)	All hospital, physician and prescription drug	**arc elasticity over actual range**	0.07
	Office visit expense		0.14
	Hospital admissions		0.06

Source: Adapted from Phelps and Newhouse 1974: 341.
Note: An arc elasticity is a measure of the responsiveness of the quantity demanded to price over an interval (arc) on the curve representing the demand for a good or service, whereas a point elasticity measures the responsiveness of the quantity demanded to price at a specific point on the demand curve. The elasticities measure the negative relationship between the price and demand for health care. That is, as the price increases, demand diminishes.

While there is no consensus on the true price elasticity of demand for health care services, all of the studies reviewed conclude that the price elasticity of health care services is greater than zero—an increase in the price of health care services leads to a reduction in use. Most elasticity measures are between zero and one, where a price increase will reduce the demand for health care by less than the percent increase in the price. There are exceptions: the category of out-patient visits (Davies-Russell 1972), with an elasticity of one, shows a one-to-one relation between increase in price and decrease in demand, and the upper range of elasticities obtained in the Rosett-Huang study of all physician and hospital expenses reduce the demand for health care by more than the percent increase in the price.

Catastrophic insurance

The impact of catastrophic insurance on individuals' use of health care services is important because high-deductible catastrophic insurance is an integral part of the way in which medical savings accounts are organized. Catastrophic insurance and medical savings accounts differ in how they require individuals to pay for medical services before the insurance threshold is reached. With Feldstein's catastrophic insurance, for example, individuals face a deductible and possibly a co-insurance rate while MSAs make use of contributions from government, employers, or individuals to pay for health care.

Feldstein and Gruber (1994) study the potential effects of implementing major risk insurance (MRI) in the United States.[25] They examine the catastrophic insurance policy that Feldstein proposed in 1971—a 50 percent co-insurance rate with a maximum out-of-pocket limit of 10 percent of income (50/10 proposal; 1971a)—and attempt to answer four questions

(1) Would a major risk insurance (MRI) policy reduce excessive spending?

(2) How does MRI affect different income groups?

(3) What are the welfare effects of shifting to MRI?

(4) Could a publicly provided MRI be financed by eliminating the current favourable tax treatment of health insurance premiums paid by employers?

The first three questions have implications for the Canadian health care system.

Since the size of the effect on health spending depends heavily on the price elasticity of demand, Feldstein and Gruber examine the outcomes of elasticities ranging from zero to 0.5 (Feldstein and Gruber 1994: 7, n.10). Using data from the National Medical Expenditure Survey, Feldstein and Gruber determine that the proposed MRI would affect 89 percent of people with insurance, who collectively represent 36 percent of total health expenditures.

Table 7 shows the effects of MRI on health care spending at both the individual and national levels. The first plan, "Original," shows health care spending prior to the implementation of MRI. The average spending per insurance holder (family or individual) is $3,985 out of which $747 is out-of-pocket and $3,238 is insurance. The MRI plan is the 50/10 plan proposed by Feldstein (1971a). In a zero elasticity scenario, the split of costs between out-of-pocket and insurance is different but the total costs are the same as in the original plan. With a price elasticity of 0.33, total average spending decreases by $728 to $3,257; with a price elasticity of 0.50, spending decreases from $3,985 to $2,758 (for a savings of $1,227). At the aggregate level, reductions in consumption would produce savings of $60 billion to more than $100 billion depending on the elasticities. Even though higher cost sharing would apply to only 36 percent of spending and the price elasticity is a conservative 0.33, the MRI policy still reduces annual aggregate spending by an estimated 18 percent.

Table 7: Expenditures effects of alternative major risk insurance plans

Plan	Elasticity	Average (1995 $US)			Aggregate (1995 $US billions)			
		Out-of-pocket	Insurance	Total	Out-of-pocket	Insurance	Total	Savings
Original		747	3,238	3,985	61.6	267.2	328.7	—
Major risk insurance (MRI) Plan	0.00	1,127	2,857	3,985	93.0	235.7	328.7	—
	0.33	873	2,385	3,257	72.0	196.7	268.7	60.0
	0.50	768	1,990	2,758	63.3	164.2	227.5	101.2

Source: Adapted from Feldstein and Gruber 1994: table 3; spending for 1995 projected.

Since the insurance threshold is set at 10 percent of income, the MRI policy pays for more of the health care of lower income families than it does for higher income families. Table 8 illustrates the effects of Feldstein's 50/10 proposal on four different income groups.[26] The results show that average out-of-pocket spending under MRI increases with income irrespective of the elasticity, except for those people below the poverty line. Higher price elasticities diminish the strength of this effect but not the fact that it is greater than in the original plan. Higher income individuals reduce their total spending on health care significantly more than do lower income individuals as the elasticity increases. A 50/10 MRI policy reduces total spending by all income groups. Lower income groups spend more on insurance but much less on health care out-of-pocket so that their total spending decreases. Higher income groups spend more out-of-pocket but less on insurance so that their total spending also decreases.

Feldstein and Gruber estimate the welfare effects of introducing an MRI policy by calculating the effects of more prudent health care consumption and changes in the distribution of risk separately. Feldstein and Gruber's findings support the conclusion of the empirical literature reviewed earlier, that there is a trade-off between risk pooling and the moral hazard of insurance. Their results are extremely relevant to MSAs as they indicate that the combination of a catastrophic insurance with a co-insurance rate (0.33 to 0.50) can reduce health care spending and improve total welfare. Like a co-insurance scheme, MSAs combine a catastrophic insurance with financial incentives to restrain consumption

Table 8: Effects on spending of a major risk insurance (MRI) plan with a 50 percent co-insurance rate and a maximum dollar expenditure limit of 10 percent of income, by income group

Plan type	Elasticity	Average Spending (1995 $US)			Total Spending (1995 $US billions)		
		Out-of pocket	Insurance	Total	Out-of pocket	Insurance	Total
Income below the poverty line							
Original		1,304	4,089	5,392	10.8	33.7	44.5
50/10	0.00	421	4,971	5,392	3.5	41.0	44.5
	0.33	389	4,905	5,294	3.2	40.5	43.7
	0.50	370	4,624	4,995	3.1	38.2	41.2
Income between poverty and twice poverty							
Original		610	3,469	4,079	9.2	52.1	61.3
50/10	0.00	908	3,171	4,079	13.6	47.7	61.3
	0.33	768	2,798	3,567	11.5	42.1	53.6
	0.50	692	2,321	3,013	10.4	34.9	45.3
Income between twice poverty and $75,000							
Original		647	2,773	3,421	28.3	121.1	149.5
50/10	0.00	1,078	2,342	3,421	47.1	102.4	149.5
	0.33	844	1,883	2,726	36.9	82.3	119.2
	0.50	743	1,540	2,283	32.5	67.3	99.8
Income above $75,000							
Original		863	3,872	4,735	13.4	60.1	73.5
50/10	0.00	1,854	2,881	4,735	28.8	44.7	73.5
	0.33	1,312	2,058	3,371	20.4	31.9	52.3
	0.50	1,122	1,538	2,659	17.4	23.9	41.3

Source: Adapted from Feldstein and Gruber 1994: table 4; spending for 1995 projected.

of health care services. Feldstein and Gruber also show that by setting the catastrophic insurance threshold at 10 percent of income, a 50/10 MRI policy need not hurt less wealthy individuals.

Medical Savings Accounts

Keeler *et al*. (1996) explore the impact that implementing MSA legislation for all but the elderly could have on health care costs in the United States. Their study is based on the RAND HIE Simulation Model and examines 23,157 sampled households. The legislation that is tested allows all Americans who purchase catastrophic health insurance to set up a tax-exempt MSA, which could then be used to pay medical bills up to the point where the insurance threshold is reached and the catastrophic insurance begins. Four different health insurance plans are examined:

(1) an employee-funded MSA;

(2) an employer-funded MSA;

(3) a fee-for-service (FFS) policy;

(4) a health maintenance organization (HMO) plan.

In addition, high and low deductible MSA plans are examined. The insurance threshold at which the catastrophic insurance begins is set at $1,500 for an individual and $3,000 for a family in the low-deductible MSA and at $2,500 for an individual and $5,000 for a family in the high-deductible MSA.

To examine the impact of MSAs a behavioral simulation model is used to estimate the change in health spending if all Americans (except the elderly, *i.e*. those of age 65or older) abandoned their present health insurance plans and adopted an MSA plan. Then, a plan-selection model is used to estimate the change in health expenditures if only the individuals expected to benefit from an MSA plan switch to one. Keeler *et al*. provide a model of a market in which three plans are offered: a fee-for-service policy (FFS), an MSA-catastrophic insurance plan, and a health maintenance organization plan (HMO). Individuals in this model attempt to maximize the expected value of the health care they receive and minimize the amount of out-of-pocket expenditures, risk, and changes in income that occur. Table 9 summarizes the estimated effects of each plan on spending.

The design of MSAs affects the results. If all Americans switch from FFS and HMO plans to the low deductible, employee-funded MSAs, there is no significant change in health spending. In fact, average spending increases slightly, from US$5,414 to US$5,437. This should not be surprising, as it reflects the competing effects of the low deductible and the introduction of cost sharing. Cost sharing induces individuals to restrain their consumption of medical care services but once they exceed the deductible there is an incentive for individuals to spend more on health care. Conversely, if the same individuals switch to the high deductible employee-funded MSAs, health expenditures decrease by between 6 and 13 percent. In short, if all Americans except the elderly adopted MSAs, health care expenditures could decrease by up to 13 percent.

Since, however, these results may not be a good proxy of what would actually happen if MSA legislation were enacted because the legislation would not oblige all Americans to switch from their current health care plans to MSAs, Keeler *et al*. (1996) repeat the experiment simulating consumer

Table 9: Results of each Medical Savings Accounts plan when all Americans (except the elderly and those in institutions) adopt it (family averages)

Plan	Average spending per family (1996$US)	Percent change in spending (relative to FFS and HMO plans)	Percent of families spending more than the deductible
Fee-for-service (FFS)	5,414	–	10
Health maintenance organization (HMO)	5,414	–	0
Medical savings account (MSA)			
Employee-funded low deductible family plan ($3,000 deductible)	5,437	0	37
Employer-funded low deductible family plan ($3,000 deductible)	5,065	–6	33
Employee-funded high deductible plan ($5,000 deductible)	5,061	–7	23
Employer-funded high deductible family plan ($5,000 deductible)	4,729	–13	20

Source: Adapted from Keeler *et al*. 1996.

choice among plans. They find that health expenditures fluctuate by between –2 and 1 percent; *i.e*. health expenditures either decrease by 2 percent from what they are currently or they increase slightly. These results do not support the high expectations that are placed on MSAs by many of their American advocates. Keeler *et al*. (1996) contend that the discrepancy between the expected savings and their estimates is because MSAs cannot solve the problem of over-insurance caused by tax-subsidies of employer medical insurance. They show, however, that MSAs have the potential significantly to change the way in which health care systems operate and have the potential to generate some cost savings.

Ozanne (1996) also attempts to estimate the effect of MSAs on health care expenditures in the United States. He compares an MSA plan with a typical comprehensive insurance policy. From this comparison he constructs measures of the prices individuals pay for medical services. Ozanne combines these measures with the RAND HIE price elasticity estimates in order to predict changes in health care expenditures. He predicts that if all adults except the elderly switch to MSAs, medical spending in the United States would decrease by between 2 and 8 percent.

In addition to the many empirical studies of MSAs and their effects on health care spending, there are many case studies of successful employer-funded MSAs. Although these studies suffer from the absence of any control group,[27] it is still useful to assess the experience of employers and employees with MSAs. In an American employer-funded MSA, the employers purchase a catastrophic insurance policy for their employees and deposit some of the savings (because high deductible insurance is cheaper than low deductible insurance) into their employees' MSAs. The employees use the funds made available by the employer to purchase medical care services. Once these funds are exhausted, the employees are responsible for the payment of medical care up to the deductible at which the catastrophic insurance begins.

Bond *et al*. (1996) gather data from 27 Ohio firms that offer MSAs to their employees.[28] All of the firms studied offer MSAs with similar insurance threshold plans: $1,500 for individual coverage and $2,000 for family coverage. The average employee's out-of-pocket expenditures are $643 for individuals (a $1,500 deductible less an $857 MSA) and $833 for families (a $2,000 deductible less an $1,167 MSA). This is significantly lower than the out-of-pocket expenses of traditional plans. The average cost to the employer of coverage for families is 23 percent lower than the cost under traditional family plans while the average cost of coverage for individuals is 26 percent higher than the cost under a traditional plan (table 10).

The MSAs examined result in a decrease in the employees' actual out-of-pocket health expenditures. The employers' expenditures could have been made roughly equal under both plans if the employers had increased their employees' maximum out-of-pocket expenditures so that the employees were spending an amount under the MSA plan that was equal to the amount that they were spending under the traditional plan. However, the MSA plans of these firms allowed for a decrease in employees' out-of-pocket health expenditures from what they had been spending out-of-pocket under their traditional health plans. Despite higher employer costs for the individual plans, the total average cost of the MSA plans was 12 percent less than that of the traditional plan.

The data on the Ohio firms did not contain any information on the average amount of funds remaining in the MSA at year's end. This is unfortunate because it is an important aspect of an MSA plan that any funds unused at the year's end belong to the employee and can be used as the

Table 10: Average costs of traditional plans and Medical Savings Accounts in 27 Ohio firms

Plan	Coverage for single individuals		Coverage for families	
	average (US$)	range (US$)	average (US$)	range (US$)
Traditional 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	877	386 – 1,431	2,081	1,184 – 2,934
contribution	857	144 – 1,500	1,167	200 – 2,000
Plan cost under equal-cost MSA*	1,427		1,893	

Source: Bond *et al*. 1996: 53.
*where out-of-pocket maximum cost to employees under MSA plan equals the out-of-pocket maximum cost under traditional plan.

employee chooses. Bond *et al*. (1996) look at other MSA plans for information on unspent balances and other forms of savings. For example, employees of Golden Rule Insurance had, on average, $602 remaining in their account at the end of 1993 and $1,002 at the end of 1994, for a total $1,604 plus interest at the end of two years. Forbes Magazine introduced MSAs for their employees in 1992; as a result, Forbes' health care costs decreased by 23 percent ($400,000) and they paid $125,000 in bonuses to its employees. In total, Bond *et al*. surveys 17 firms who offer MSAs and found that, on average, the funds remaining at the end of the coverage year amounts to roughly $600 for individual coverage and $900 for family coverage.

The Evergreen Freedom Foundation performed seven extensive case studies of companies that offer employees health coverage through MSAs (Barchet 1995). All of the companies surveyed realized significant decreases in costs and showed high levels of employee satisfaction.[29]

While the successes of the employer-funded MSAs examined by Bond *et al*. and the Evergreen Freedom Foundation may not be enjoyed by all employers switching to an MSA plan from traditional insurance coverage, these companies have shown that MSAs can be conducive to more prudent health spending without compromising individuals' health. Where they have been adopted, MSAs have resulted in lower costs to employers and employees, accumulated savings, and high degrees of employer and employee satisfaction.

The empirical literature in the United States indicates that MSAs and similar arrangements have the potential to reduce health expenditures up to 20 percent. It is worth noting that Americans already face financial incentives with respect to their use of health care while Canadians, for the most part, do not. One would predict, therefore, that there would be an even larger decrease in health expenditures if costv simulations were performed using Canadian data.

Potential adverse effects of cost sharing and MSAs

Cost sharing and health outcomes

While the effects of cost sharing on the use of health care can be predicted, the effects on health are less clear. Even if cost sharing manages to decrease use of medical services, it does not necessarily follow that total expenditure for health care will decrease. Higher prices that lead to lower use may adversely affect individuals' health, which may, in turn, increase health care costs. The RAND HIE is one of a very few studies that examine the effects of cost sharing on health.

The Insurance Experiment Group uses 5 measures (see Newhouse *et al.* 1993: ch. 6) to examine participants' health: (1) general health (physical, mental and social); (2) physiological health; (3) health habits; (4) prevalence of symptoms and disability days; (5) the risk of dying. The predicted values of health are estimated using several variables, including age, gender, family income adjusted for family size and composition, and health at enrollment in the experiment. As well, various insurance plans are examined.

On the whole, reduced services due to cost sharing have little or no net adverse effect on health (table 11). In addition, no significant differences in the risk of dying (for the average person) or measures of pain and worry are found. Moreover, days of restricted activity dwindle with higher levels of cost sharing. The most important determinant of health at the end of the experiment is typically health at enrollment.

Table 11: Predicted health status at the end of the RAND HIE, by selected health measures and insurance plans

	Cost sharing plans				Free plan	Average differences in health between the free plan and the cost sharing plans[a]		Size of sample
	95%	25%/50%	Individual Deductible	Average		Predicted	Actual	
Physical health[b]	86.0	85.0	84.9	85.3	85.3	0.0 (–1.6, 1.5)	–0.3 (–2.3, 1.7)	3,862
Mental health[c]	75.6	75.5	75.8	75.6	75.5	–0.2 (–1.1, 0,8)	–0.1 (–1.1, 1.0)	3,862
General health[d]	68.1	68.0	67.9	68.0	67.4	–0.6 (–1.5, 0.3)	–0.9 (–2.1, 0.3)	3,943

Source: Newhouse *et al*. 1993: 209. Each measure of health is based on a scale of 100.

[a] 95 percent confidence interval in parentheses.

[b] A decrease of 10 points in physical health measure represents what it would be like to have chronic mild osteo-arthritis.

[c] A decrease of 3 points in mental health measure represents an effect equivalent to how you would feel if you were laid off or fired.

[d] A decrease of 5 points in general health represents an effect equivalent to that of being diagnosed as hypertensive.

The HIE also looks at the effect of cost sharing on the health of high risk individuals such as the poor and the sick-poor.[30] The health of this disadvantaged segment of the population is severely affected by cost sharing—both mortality rates and blood pressure worsen among high risk individuals. The results indicate that free care can benefit low income groups.

The HIE also examines the appropriateness of the services that were forgone. Lohr *et al*. (1996) conclude that cost sharing reduces both necessary and unnecessary care. However, the type of cost sharing plan was found to have no effect on most measures of health and a decrease in necessary care should result in lower health outcomes. Lohr *et al*. suggest that this phenomenon occurs because some of the harm done by inappropriate services is outweighed by the benefits of appropriate care.

Cost sharing and the poor

The RAND HIE examines the effects of income on the demand for medical services. Table 12 exhibits the differences in the responses of different income groups to cost sharing. Most of the differences between the income groups are statistically significant (as is shown by the "*t* vs. lower third" column). The probability of any use of medical services increases with income. The probability of any in-patient use, however, shows contrasting results; use of in-patient care decreases with income for the family plans. Overall, the percentage reduction in expenditure due to cost sharing did not show any major differences by income group. However, Newhouse *et al*. point out that the "ultimate test of a reduction in use, however, is its effect on [health] outcomes, and these did differ by income group" (1993: 340). For example, the estimated risk of dying was more than twice as high for those classified as poor than for those in the high income group.

Table 12: Predicted annual use of medical services by income group for a standard population

Insurance plan	Income group				
	Lower third	Middle third		Higher third	
	Average	Average	t vs. lower third	Average	t vs. lower third
Probability of any use of medical services (%)					
Free	82.8	87.4	4.91	90.1	5.90
25 percent	71.8	80.1	5.45	84.8	6.28
50 percent	64.7	76.2	4.35	82.3	4.86
95 percent	61.7	68.9	3.96	73.8	4.64
Individual deductible	65.3	73.9	6.09	79.1	7.09
Probability of any use of in-patient services (%)					
Free	10.63	10.14	–0.91	10.35	–0.35
25 percent	10.03	8.44	–2.95	7.97	–2.75
50 percent	9.08	8.06	–1.78	7.77	–1.66
95 percent	8.77	7.38	–2.79	7.07	–2.46
Individual deductible	9.26	9.44	+0.31	9.88	+0.68
Expenses ($US 1991)					
Free	1,033	965	–1.78	1,060	+0.53
25 percent	891	771	–3.17	817	–1.47
50 percent	800	721	–1.89	773	–0.49
95 percent	762	648	–3.09	691	–1.41
Individual deductible	798	778	–0.57	878	+1.38

Source: Newhouse *et al*. 1993: 46.
Note: Standard errors corrected for intertemporal and intrafamily correlation. In general if the absolute value of the a *t* statistic is greater than 2, the hypothesis that there is no difference between groups is rejected.

Beck (1974) studies the effect of user fees upon the poor. In 1968, the government of Saskatchewan introduced user charges for physician services; for each office or home visit and for each emergency or hospital out-patient visit. As well, hospitals introduced a per-day user fee (to a maximum of 90 consecutive days). These user charges were removed in 1971. Beck finds that the user fees resulted in a decline in the use of physician services by the average family of approximately 6 to 7 percent. However, the poor experienced a reduction in physician services of 18 percent.[31] He concludes that the imposition of user charges introduced a barrier to services to lower income groups.

In a later study, Beck and Horne (1980) examine the effects of the introduction and removal of these user charges. The data come from a database of about 40,000 Saskatchewan families and cover the period from 1963 to 1973 for ambulatory services and 1966 to 1973 for hospital services. Table 13 summarizes the effect of co-payments on physician services. On average, the use of physicians' services declined by 5.6 percent per year.

Table 13: Estimated number of physician services used per family in Saskatchewan with and without co-payments

Year	Estimated number of services used per year		Effect of co-payment on the amount of services used (%)
	Without co-payment	With co-payment	
1968	14.39	13.66	–5.07
1969	15.08	14.03	–6.96
1970	15.80	15.21	–3.73
1971	16.56	15.43	–6.82
Average: 1968-1971			–5.66

Source: Beck and Horne 1980: 792.

Despite the decrease in the use of physicians' services, however, gross payments for medical services increased each year from 1969 to 1971. Two increases in the service fee schedules during the period when user fees were also being charged can partially explain this increase in overall costs. It has been argued that a change in physicians' behavior contributed to the increase in cost but Beck and Horne find no evidence to support or refute the hypothesis of supply-induced demand (SID). As well, they find no significant differences in the probability that patients would be admitted to a hospital, or that their average length of stay would change with the introduction or removal of user fees.

In 1972, the California State Department of Health Care Services introduced a user charge on certain Medicaid beneficiaries for the first two physician visits and the first two drug prescriptions per month. The user charges were imposed only on Medicaid beneficiaries who had some "additional financial resources" (see Roemer *et al*. 1975 for more details). Roemer's group was asked by the department of health to study the effect of these new financial incentives. The Medicaid beneficiaries were divided into two groups: the ones who faced a user charge (co-pay) and the ones who did not (no-pay). Due to the design of the experiment, the co-pay group, by definition, had more financial resources than the no-pay group. As well, the authors could not control for differences in socio-economic characteristics nor for the effect of the many administrative changes that were introduced during the experimental period. It is because of these peculiarities that it was necessary to follow the demand for services before the user charges came into effect—data on service use were collected from 6 months before the user charges were imposed until 12 months after their introduction.

Roemer *et al*. find a significant difference between the co-pay and no-pay groups in visits to physicians at their offices. Members of the co-pay group, when compared to the members of the no-pay group, significantly reduced their use of physicians' services. Moreover, there was a significant reduction in diagnostic tests (*e.g*. urinalyses), preventive procedures (*e.g*. Pap smears) and drug prescriptions when the user fee was introduced. As well, the hospitalization rate (*i.e*. the number of hospital admissions) amongst the co-pay group increased to higher levels than it did amongst those on the no-pay scheme. In light of these results, Roemer *et al*. conclude

> A clear cut reduction in diagnostic tests as well as ambulatory treatment . . . could hardly be expected to benefit health status. This is quite aside from the pain and suffering involved for the low-income patient, who postpones seeking medical care at early stages of his illness . . . In a word, it would appear that this study of the California Copayment Experiment with Medicaid beneficiaries that the State government's strategy was penny-wise and pound foolish. (Roemer *et al*. 1975: 465–66)

In 1982, the State of California ended its assistance program for its "medically indigent" adults. It no longer provided financial assistance for medical services for people between the ages of 21 and 65 who were poor and medically

needy and did not receive financial assistance from any federal program. Lurie *et al*. (1984, 1986) studied the effects of terminating this program on the health of the poor. The results were revealing. After only 6 months, a deterioration in patients' access to care and health was observed. There was a noticeable and significant increase in uncontrolled hypertension. Hypertensive patients, with no access to free care, experienced higher blood pressure and general health decreased. A follow-up study was performed to control for the possibility that this was only a temporary phenomenon. It found that the deterioration in health due to the termination of the California benefit program was not temporary. General health had declined further and blood pressure was still high. It was even found that lack of access to care played a part in at least four deaths. This evidence supports the findings of the HIE that those both sick and poor need to be treated differently from the rest of the population. In an MSA plan, this would entail fully subsidizing the deductible of those both sick and poor.

Income and the demand for health care

It is often assumed that the poor consume a disproportionate share of health care and thus benefit more than the wealthy from a health system such as that in Canada. Phelps (1992) uses the RAND HIE data to calculate income elasticities for different types of illnesses (table 14). These estimates suggest that income elasticity of demand for medical services is positive and ranges from 0.12 to 0.23. That is, people tend to demand more health care services as their income increases.

Table 14: Income elasticities for episodes of illness by type of care

Type of care	Income elasticity
Acute	0.22
Chronic	0.23
Well care	0.12
Dental	0.15
Hospital	not significant

Source: Phelps 1992; calculated from Keeler *et al*. 1988.
Note the unlike price elasticities, income elasticities measure the positive (rather than the negative) relationship between income and the demand for health care. That is, for positive elasticities, as income increases so does demand.

In cross-sectional studies such as the HIE, medical technology is held constant but increases in income can stimulate the demand for new medical services. Since time-series data and cross-country studies do not take the level of technology as fixed, they usually generate higher estimates of income elasticity, sometimes significantly greater than 1.0 (Phelps 1992)—that is, the amount of health care demanded increases by more than the percent increase in income. However, these estimates may not apply to Canada because "both common sense and full use of economic theory suggest that pure income effects should be small, if not zero, with full-coverage insurance" (Phelps 1992: 129).

Several studies (Forster 1976; Alderson 1970; Le Grand 1978, 1982) examine the distribution of public spending in Britain. Le Grand finds that the wealthiest one-fifth of the population receives 40 percent more public money for their health care than the poorest one-fifth:

> In fact it is difficult to resist the conclusion that there is little the Health Service can do reduce inequality in its use or in the private cost of that use. The principal determinants are largely beyond its control. Rather, they stem from the basic social and economic inequalities in income. (Le Grand 1982: 51)

MSAs and preventive care

The RAND HIE studies the effect of cost sharing on preventive care. Preventive care is defined for children as visits associated with the diagnosis or procedure codes for well-care examinations, immunizations, or tuberculosis tests. For adults, it is defined as visits associated with immunizations, annual physical examinations, administrative examinations, routine gynecological examinations, and office visits listed as well-care visits (for more details, see Newhouse 1993: 176–80). Although cost sharing reduces the consumption of preventive services, the differences in use between the free plan and the three cost sharing plans are only marginal.

It is often argued that MSAs can make individuals more responsible with respect to their own health because of the financial incentives they provide. The finding that there is a slight decrease in the consumption of preventive care when cost sharing increases, means that MSAs may not result in higher consumption of preventive medicine. However, if the introduction of MSAs results in less use of medically desirable preventive medicine, these preventive programs can be exempted from cost sharing. Such a policy would create an incentive to consume more preventive medicine simply because its relative price in comparison to other health care services would be lower.

MSAs and the poor

The RAND HIE (Newhouse *et al*. 1993) finds that the reduction in medical services used as a result of cost sharing has little or no net adverse effect on health. Although studies on the effect of cost sharing on health status indicate that the health status of the poor and the sick may worsen if cost sharing is introduced or augmented, they do not show that the rest of the population will necessarily experience a decrease in health status if cost sharing is introduced. Therefore, if high risk individuals are excluded from any cost sharing programs, there is little evidence to support the argument that an increase in cost sharing will lead to a general decline in health.

The results of the Saskatchewan Experiment and the California Copayment Experiment may lead one to reject user charges. As well, Beck and Horne (1980) and Roemer *et al*. (1975) conclude that user charges may not lead to lower health care expenditures. However, MSAs need not impose a financial barrier to care. MSAs allow policy makers to exempt a certain segment of the population (the sick, the poor, and the sick/poor) while providing financial incentives to wealthier individuals to either contribute resources to the health care system, or refrain from using it excessively.

MSAs and supplier-induced demand

When physicians and other health care professionals see the number of their patients and, thus, their revenue decrease because of the introduction of cost sharing (or MSAs), they have an incentive to encourage the use of medical services in order to restore their income to its previous level. In other words, the positive effects of MSAs could be offset by supplier-induced demand (SID).

The size of the literature about SID renders a complete and detailed review impossible in this publication. Ferguson (1994), however, provides a basic review of different interpretations of SID. He divides models of inducement into four categories:

(1) market-level models;

(2) individual-level model;

(3) physician response to price incentives;

(4) small area variation (SAV).

Market-level models

Ferguson analyses three types of market-level models. First, he examines models that are built on the idea that an increase in the number of physicians will increase the use of health care and thus costs. Essential to this hypothesis is the notion that this increase in use is not medically necessary (*i.e*. it will not improve a patient's health). Studies that examine the relationship between use and the supply of physicians usually use a basic model that assumes that the number of medical services demanded is determined by the number of physicians and other variables such as price, waiting time and income. Studies that use this method (Fuchs and Kramer 1972; Fuchs 1978; Richardson 1981) are seen as the backbone of SID theory. Fuchs' results (1978) show that a 10 percent increase in the number of physicians leads to a 3 percent increase in demand for health care. However, this type of study has been heavily criticized by both sides of the SID debate.

Second, Ferguson examines disequilibrium models. It is often argued that because of its complexities (*e.g*. public insurance and subsidies) health care markets will always be in a state of disequilibrium; that is, the supply of health care will never equal the demand for it. Cromwell and Mitchell (1986) and Ferguson and Crawford (1989) use disequilibrium models to test the SID hypothesis. Cromwell and Mitchell find that a 10 percent increase in surgeons per capita leads to a 0.9 percent rise in all surgery per capita and a 1.3 percent increase in elective procedures per capita.[32] Ferguson and Crawford find evidence of persistent disequilibrium but no support for the SID hypothesis.

Third, Ferguson (1994) examines models of imperfect competition. Stano (1987) finds that SID is more important when the local medical market is closer to a monopoly (*i.e*. when there are very few physicians providing services). As the supply of physicians increases, the importance of SID diminishes. Ferguson concludes his review of market-level models by stating: "neither the equilibrium nor disequilibrium market-level models ... give much support to the SID model" (1994: 73).

Individual-level model

As opposed to the market-level models which use market-wide data, individual-level models use micro-level data. Stoddart and Barer (1981) use data from 1,300 British Columbia families who received ambulatory care during 1973/1974. Their results support the inducement hypothesis. However, there are several serious econometric problems with the study (Ferguson 1994). For example, Stoddart and Barer use a test that compares the R^2 values of equations with different variables. (R^2 values represent the proportion of the change in the studied variables that is explained by the other variables in the model of equations.) Comparing R^2 values between equations—let alone those of equations with different variables—is not considered proper econometric analysis.

Ferguson (1994) also examines the work of Wilensky and Rossister (1981, 1983), which uses data from the 1977 US National Medical Care Expenditure Survey. They test supplier-induced demand by estimating the effect of the availability of physicians on several variables such as the probability of physician-initiated visits, the number of visits to the physician, expenditures on services, and the likelihood of services being used. Wilensky and Rossister's results indicate that the availability of physicians has a positive but small effect on the dependent variables:

> What should be clear for even the most casual observer is that the idea is now dead that a large component of physician self-interested, self-created demand exists in response to changes in the supply of physicians. It can happen and does happen; but its policy relevance is small. (Wilensky and Rossister 1987: 626)

Tussing (1983) and Tussing and Wojtowycz (1986) use a method similar to that of Wilensky and Rossister. Using 1981 data from a survey of health care use in the Republic of Ireland, they find support for the SID hypothesis: the supply of physicians increases the number of physician-initiated doctor visits.

Physician response to price incentives

The SID literature has recently devoted particular attention to physician responses to price incentives (*e.g*. fees). Ferguson (1994) points out that there is no consensus in the literature on how to formulate this hypothesis. For example, some argue that a decrease in fees followed by an increase in the quantity of services supports the SID hypothesis because physicians are trying to maintain their level of income. Others argue that an increase in services that follows an increase in fees is also evidence of SID because physicians now make more money per visit and, therefore, they induce unneeded visits. Ferguson writes:

> Rice (1984: 156) claims that his results show that physicians induce extra demand in the face of lower fees, while Krasnik *et al*. (1990: 1701) argue that their results show that physicians induce demand in response to higher fees. If we accept both results, then we are back in the situation of having an untestable hypothesis, since any response to changes in fees could be taken as evidence of inducement. (1994: 109–10)

Hickson, Altemeier, and Perrin (1987) examine the response of medical service providers to price changes. They constructed an experiment: 18 paediatric resident physicians in a paediatric clinic were assigned randomly to two group practices (fee-for-service and salary). The results show that fee-for-service physicians scheduled more visits, provided better continuity of care, and were responsible for fewer visits to the emergency room. Salaried physicians missed more visits recommended by the American Academy of Pediatrics than fee-for-service physicians. The effect on total costs was not clear because fee-for-service physicians had increased costs due to more office visits but also reduced costs from less use of emergency room care.

Small area variation (SAV)

The literature about small area variation (SAV) examines the reasons why geographic regions with similar populations and similar incidences of illness use physicians' services at different rates. Most studies of SAV have found a significant relationship between the availability of resources and their use. (For a review of the literature, see Mclaughlin *et al*. 1989; Paul-Shaheen, Clarke, and Williams 1987; Joseph and Phillips 1984.) Intuitively, it makes sense that, if more resources are available to patients, they will take advantage of them. If a previously unavailable eye laser surgery that can help patients with glaucoma see better becomes available, it is not surprising that such patients will opt to have the procedure performed. This positive relationship between resources and use, however, is often used as evidence of SID. (See, for example, Folland and Stano 1989; Wennberg, Barnes and Zubkoff 1982; Park *et al*. 1986; Vayda 1973; McPherson *et al*. 1981.)

Ferguson (1994: 124–27), despite reviewing numerous articles, finds no support for the theory of SID. He also stresses the weak quality of the methodology:

> The methodology of the literature has been surprisingly poor, considering the importance of the policy implications that have been derived from it . . . There is virtually no testing for [model] misspecification . . . Of the literature we reviewed, the only paper to include a set of misspecification tests is that by Rochaix (1993) . . . In fact, the SID model is virtually never tested . . . the few times this has been done . . . SID fails.

Feldman and Sloan (1988) also perform a review of the SID literature and reject the SID hypothesis:

> This literature suggests that demand inducement may occur in the market for surgical services but its extent is less than previously estimated. Little evidence for demand inducement is found in the primary care physician market. (Feldman and Sloan 1988: 258.)

Rice and Labelle (1989) are critical of the conclusion reached by Feldman and Sloan, arguing that they omitted several important studies that contradict their conclusions. Rice and Labelle state "there is a great deal of evidence to indicate that physicians do induce demand for economic gain" (1989: 588).[33] The Saskatchewan Experiment discussed above is often presented as evidence that physicians do, in fact, induce demand. However, Beck and Horne, the authors of the Saskatchewan study, do not conclude that their findings are necessarily the result of SID.

Despite the increasing number of papers dealing with SID, it does not seem that a consensus is likely. Feldman and Sloan note that "few participants in the debate show any sign of changing their positions" (1988: 239). This lack of consensus offers little comfort to policy makers who must attempt to estimate physicians' response to the introduction of financial incentives in the Canadian health care system. One thing that is certain is that there is a great deal of uncertainty surrounding the SID hypothesis. As well, Newhouse (1993) suggests that there is strong evidence that even if physicians induce demand, they will not be able to fully offset the decrease in demand arising from increased cost sharing. Finally, Tussing touches a very interesting point: "Patients are more likely to resist demand stimulation when their out-of-pocket costs are high" (1983: 229). In other words, providing individuals with financial incentives may make it harder for physicians to induce demand.

Policy recommendation: a Canadian MSA experiment

Canadian health care is often described as "free care"—*i.e.* free for the patient at the point of service. In reality, patients do pay for much of their health care. If health care services are covered by provincial health plans, there is no cost sharing for the patient: provincial governments pay the entire bill for insured services. However, the Canada Health Act's guarantee of free access to medical care only applies to insured services and, therefore, many services are not covered or only partially covered by government plans. Physiotherapy, chiropractic and optometry, for example, are not insured in some provincial health plans. Moreover, many drugs are not covered.

Medical services are financed by almost all Canadians through general taxes, insurance premiums, and out-of-pocket expenditures. On average, every Canadian contributes almost $2,500 to the health care system each year. In 1994, total health expenditure (public and private) per capita amounted to $2,478. Close to $700 of this amount was paid by private individuals. Almost one third of all health expenditures come from the private sector—this translates into more than 22 billion dollars of health costs not covered by public insurance (all figures for spending on health are from Health Canada 1997).

Add to this the fact that governments' health reform to date has consisted mainly of cost cutting measures such as the closing of hospitals, the capping of physician fees, and other measures that reduce patients' access to the health care system, it is not surprising that almost 60 percent of Canadians are supportive of "more medical services being provided by private suppliers alongside the public health system."[34]

Both the theory and the empirical evidence indicate that MSAs have the potential to curb health expenditures, improve efficiency in the Canadian health care system, and increase the health care options available to Canadians. And surveys have shown that a majority of Canadians are willing to consider the idea of a medical savings account as

a way to encourage responsible use of the system (72 percent), allow patients to choose services more suited to their needs (67 percent), and increase physicians' accountability (55 percent).[35]

As the magnitude of the many effects brought about by MSAs is uncertain, it would be beneficial to conduct a pilot experiment in one region of Canada. This sort of experiment would shed light on various issues of concern, including:

- How will MSAs influence the consumption of health care services?
- Will the use of necessary services decrease by more (or less) than unnecessary services?
- Will the change, if there is a change, in health care consumption differ across income groups?
- Will MSAs affect individuals' use of preventive medicine?
- Will MSAs affect individuals' health status?
- Will physicians induce demand if MSAs decrease consumption?

It should be noted that the technology is now available to facilitate the transition from the present health insurance system to MSAs. Nothing more is required than a computer system using a debit card or a credit card to keep track of MSA balances. Such a computer system could easily transfer funds from MSAs to the providers' accounts. In 1995, British Columbia introduced PharmaNet, a computer network that connects community pharmacies. PharmaNet allows pharmacists to review complete information about a patient's use of prescription drugs, and calculates patients' eligibility for provincial insurance benefits at the prescription counter. Such a system could be adapted and used in the proposed MSA pilot study.[36]

The cost of such an experiment may seem substantial, especially since the Canadian health care system is recognized for its low administrative costs and the increased choice in health insurance markets that results from an MSA plan will result in duplication and overlap of services. However, economics is a paradoxical science that has proven time and time again that competition between providers ensures products of the lowest cost and the highest quality for consumers. Although it may seem intuitive that a single provider would be more streamlined and efficient, this is rarely the case. Monopolies tend to be inefficient, more costly, less technologically advanced and, in general, worse at delivering services to consumers than a multiplicity of providers.

For all of these reasons, the introduction of MSAs holds great potential. MSAs allow for increased competition in the health care sector while offering Canadians universal, portable, accessible, and more comprehensive health care than they currently enjoy. MSAs offer incentives for government, providers, institutions, and patients to use the health care system more prudently. Most important, however, an MSA places the spending power squarely in the hands of the person who cares most about your health and that of your family—you.