MSAs: Even Less Than Meets The Eye

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Medical Savings Accounts (MSAs), according to their supporters, are the quintessential cure-all. They have variously been advocated as a method to reduce government expenditure on the health care system, reduce the growth rate of health expenditures, reduce taxes, expand the range of services accessible to Canadians, help the poor, benefit the chronically ill, increase expenditure on preventive services and thereby save money in the long run while making Canadians healthier, change the nature of the physician-patient relationship, eliminate waiting lists and revitalise the health care system. This is a major set of claims for a financing arrangement.

We focus on one issue: the impact that substituting MSAs for the current methods of financing hospitals and physician services in Canada is likely to have on the level of government expenditure required to provide health care to Canadians. Our results suggest that, rather than fall, these expenditures will increase substantially unless coverage is cut to the extent that Canadians are forced to pay such large amounts for their healthcare out of pocket, that insurance coverage has effectively been eliminated. No feasible method of tailoring MSAs to individual needs on the basis of age, sex, income and health status can eliminate this cost increase. We further suggest that advocates of MSAs who have argued otherwise base their claims on a misreading of US evidence and a misapplication of hypothetical data. Because these claims have accelerated in the wake of the first study to use Canadian data to demonstrate the inevitability of these cost increases, it is important to base policy decisions upon data, rather than wishful thinking.

Subsequent sections of this paper accordingly examine, in turn:

1.   the several inconsistencies in the MSA plans proposed for Canada by various advocates;

2.   the tautologies and assumptions built into one widely-cited attempt to cost out one particular plan, referred to by advocates as the Milliman-Robertson study;

3.   the reasons why the RAND insurance experiment cannot be directly applied to the Canadian policy debate about MSAs; and,

4.   the practical difficulties and costs should MSAs for hospital and physician services prove viable - which our results suggest they are not as currently proposed - associated with creating a bureaucracy charged with the task of micro-managing Canadian healthcare by setting allowances based on age, sex, income and health status.

We should note at the outset that we are not opposed to a rethinking of what is publicly financed; it is difficult to defend omission of elements of home care, pharmaceutical coverage, rehabilitation, mental health, and other clearly "medically necessary" services merely because of where this care is delivered, or by whom. Canada, with about 70% of expenditures coming from public sources, is among the least publicly funded systems in the industrialized world.[1,2] Nonetheless, the question of what should be paid for is analytically separable from the question of how best to finance it.

1. VARIATIONS ON THE THEME OF MEDICAL SAVINGS ACCOUNTS

Proponents of medical savings accounts are convinced that their proposal can save the Canadian health care system. As one of the most vehement advocates has put it:

> In a sound publicly funded medical savings account system, Canadians would receive annual health allowances based on their age and sex as well as their medical condition. These allowances, which would exceed their expected medical needs, would in most years allow Canadians to save money, which they could then use to meet medical needs that they now often cannot afford, such as prescription drugs and home care. And the system would cost the government no more than the current Medicare system.[3]

The dream of a system in which everyone comes out ahead – being able to cover a wider array of services while spending less money – is a powerful one. Unfortunately, as has been often demonstrated, there is rarely a free lunch.

All MSA models rely heavily upon the assumption that there would be very large reductions in the use of the healthcare system if individual consumers were given control of the funds used to provide healthcare, and appropriate incentives to use less of it. In the absence of any data to support this assumption, advocates and critics have looked abroad for evidence of what might happen if MSAs were to be implemented in Canada. Consequently, the literature discussing MSAs has included several studies arguing about what does or does not happen in Singapore, South Africa, or China;[4-13] or attempts to anticipate what might happen should MSA models be applied in the US or to explain why they had not been received as enthusiastically as proponents wished. [14-24]

2

However, actual data on Canadian experience was largely lacking. In fact, many advocates argued that it was impossible, in principle, to gather Canadian data and therefore the only path open for responsible policy-makers is to encourage experimentation in different jurisdictions.[4]

Particularly upsetting to MSA advocates, then, was a recent study by Forget et al analyzing actual expenditures for physician and hospital services – the services required to be publicly insured under the terms of the *Canada Health* Act - in the province of Manitoba between 1997 and 1999.[25] This analysis undercut the fundamental premises underlying a MSA approach within a system retaining universal coverage. Whereas most analyses of MSAs focus only upon average spending, Forget et al examined how this expenditure was distributed. They found that health expenditures were not distributed evenly about the mean, but were heavily skewed; in every age group, at least 80% of all people incurred costs less than the average for that age, while a small proportion incurred very high expenditures. These results paralleled those found in an analysis of the U.S. National Medical Expenditure Studies.[26] The healthiest 50% of Manitobans used about 4% of resources, while the sickest 1% used 26%. This distribution in turn implied that most formulations of MSAs would involve sending money to a lot of relatively healthy people, without generating offsetting savings from the sickest, because most of their costs would continue to be paid by catastrophic insurance provisions. "Incentives" to economize on the use of care cannot generate meaningful saving from people who are not already spending much for insured health-care services. MSAs thus implied significant increases in what government would be paying for health care, with most of this increased spending going to the healthiest members of the population, rather than to increasing access or supply.

Several critiques from MSA advocates misinterpreted aspects of the paper,[3,27-29] and responses from Forget et al.[30-33] As an editorial by the Toronto *Globe and Mail* concluded, "like most magic bullets, [MSAs] tend to lose their magic on careful scrutiny," adding "it would be nice if advocates of MSAs spoke plainly."[34]

Regrettably, this has not yet occurred. Instead, to argue that MSAs can nonetheless make their postulated savings while allowing an expansion of the services covered, without increasing total costs, MSA advocates have been dramatically, if quietly, altering their model. In the recent advocacy papers attempting to dismiss the Forget et al results, a number of approaches have been used.

1.   Assume that prices paid for services will decline dramatically, as a result of bargaining between the user and the provider.

2.   Assume that utilization will decrease enough to compensate for the increased costs associated with transferring large sums to the healthy, and/or

3.   Reduce the amount being transferred from government to individuals.

The first approach incorporates a number of supply-side reforms logically unconnected with MSAs and argues that they are integral components of the model. For example, an e-letter to *CMAJ*[35] argues that MSAs cannot achieve their goals unless delivery is fully privatized, and health professionals lose their professional monopoly, writing "another necessary component of a Medical Savings Account system would be that all professional and labour services would operate in a free market. In other words, there would be no artificial limitation imposed on the training or licensing of any discipline, nor on the negotiation by an individual with his, or her, employer." One does not need to debate the merits of such a free market, or its ability to achieve the proposed cost savings, to recognize that an MSA proposal dependent upon eliminating professional licensure, fee schedules and all health care unions is unlikely to occur in the foreseeable future in any industrialized nation.

The second approach has long been inherent in the MSA literature. By a combination of wishful thinking and selective (and arguably inappropriate) use of the data from the RAND Health Insurance Experiment, large reductions in utilization are assumed. These are defined as being sufficient to offset the large increases in expenditures. We will return to lessons from the RAND study in a subsequent section.

The third approach assumes that government will not actually transfer any resources for the MSA allowance, or will claw back some or all of the unused portion. Clearly, eliminating any government role in financing health care will save the government money, although costs to society (and business) would probably be higher. However, MSAs are not being sold as a way of eliminating publicly-financed health insurance, but as a means of improving choice and efficiency.

The Incredible Mutating MSA

The net costs of MSA models – as well as who bears them – depend on a number of variables, including:

1. What values are set for the allowance (the amount given to each individual) and the threshold (beyond which costs are considered 'catastrophic' and become fully paid by a third-party insurer, usually government)? What, if any, factors are used to adjust these amounts? (Note that in all such models, individuals are responsible for paying the full costs within the "corridor" between the allowance and the threshold.)

2. Where does the money for the allowances come from? (Government? Employers? Individuals? Is participation voluntarily or mandatory? With or without tax deduction?)

3. What can the allowance be used for, and what happens to the surplus? Can it be kept? Used for non-insured services? Retained for future years? Transferred to retirement savings? How much would be clawed back by government?

Clearly, the attractiveness of models varies with these features. However, the more attractive a model is to potential consumers, the less attractive it is to potential funders. Consider the evolution of the proposals by the Consumer Policy Institute of Toronto, drawn from material posted on their web site. In February 28, 1997, they submitted the following proposal to Ontario's Health Services Restructuring Commission.[36]

> "Within our proposed system, each Canadian would have a Medical Savings Account, similar to an RRSP, into which the government would deposit an amount equal to its current health care contribution or on average, about $2,500 per year (the very young and the very old, who have greater medical expenses, would receive more, others less). Of this $2,500, about $1,600 would pay the premium on a catastrophic health insurance policy, to cover hospitalization and other major expenses; the balance -- about $900 per year-- would remain in each person's account, to be spent as necessary for routine purposes such as doctor's visits. If someone exhausts this balance, the catastrophic policy would kick in, ensuring that no one is ever left without medical care. But when Canadians don't spend it all-- and most of us won't--the money becomes available to be spent in future years for uninsured medical purposes, such as dentistry and drugs, as well as on preventative medicine. Government health care costs, meanwhile, become restrained. Under this system, there are no losers."

This brief went on to praise a plan negotiated by the United Mine Workers for 15,000 coal workers, which had a constant amount payable for each employee ($1,000) and allowed them to keep the balance.

Similar proposals which provided relatively large allowances and allowed individuals to keep, and even invest, the difference between it and their spending were inherent in writings by David Gratzer,[4,37] Cynthia Ramsay,[38] the Montreal Economic Institute,[39] the Frontier Centre,[40] the Atlantic Institute for Market Studies,[41] and the Fraser Institute,[42] and have received some attention by the Kirby Commission[43,44] and Alberta's Premier's Advisory Council on Health.[45] For example, Gratzer praised a US plan by a company, Golden Rule, which provided an MSA of $1,000 US ($2,000 for a family), with catastrophic insurance for all expenses above $2,000 per year ($3,000 for a family), and allowed those participating to keep the surplus. As Gratzer wrote "For the average employee, this translated into a US $1,000 bonus per year."[37] Ramsay suggested that "The most promising characteristic of MSAs in a Canadian context is that individuals will be able to purchase medical services with money they can otherwise keep because any funds remaining in the account at the end of the year are the property of the individual."[38]

More recently, however, advocates are less sure about these details; indeed, they have suggested that "no serious proponent of medical savings accounts would ever put forward"[3] plans which are conservative versions of what they had been advocating. The Forget et al paper used as one example an MSA plan that would allocate to each individual the mean spending of $730 per person attributable to hospital and physician spending over that period, an amount which is lower

than the $900 proposed by Gratzer or the $1800 proposed by Migué. Yet Solomon and Crowley both suggest that this preliminary example somehow represented an unrealistic model which Forget et al. had independently derived, rather than a conservative version of the existing proposals from MSA advocates. Solomon rightly recognizes that this variant of Medical Savings Account "doesn't give the sick enough health care to meet their needs; it gives a windfall to the healthy; and it makes no provision to protect the public purse," without noticing that the other MSA models in current circulation do the same. Indeed, Carey, recognizing the large cost increases likely to result from all the plans proposed to date, insists that the allowance would not be a cash payment, but instead a notional credit, which can be drawn down but not otherwise used.[35] This, of course, undermines the incentives attributed to MSAs; if anything, "use it or lose it" would seem to encourage additional utilization.

It should also be noted that the assumption that private insurers are willing to sell full catastrophic coverage for a portion of the MSA may be unrealistic within a universal system. Catastrophic insurance policies often exclude pre-existing conditions, cap coverage, and otherwise practice risk selection; if they do not, they will not remain a viable business. Few wise insurers would be willing to assume a risk that outweighs their premium earnings. For example, the Gratzer proposal to use $1600 for catastrophic coverage and $900 for medical savings accounts in effect amounts to giving these insurers 64% of resources; whether this is profitable would thus depend upon the proportion of costs which fall into the catastrophic zone. In the case of the Manitoba data, setting the catastrophic threshold at the mean, the 64% of revenues to these insurers (whether public or private) would have to cover 80.95% of attributable expenditures, making universal and comprehensive coverage of such risks an economically unattractive proposition.

Nonetheless, if coverage is not universal, there may indeed be an attractive market for catastrophic insurance for sub-sets of the population.[17,24] For example, in the Manitoba data, the lowest spending 50% of the population accounted for about 4% of expenditures, and hence would be an attractive market. Furthermore, since the sickest 1% accounted for 26% of spending, a wise insurer would not have to avoid many potential high users to make a profit. The consequence, however, is that the very sick will either find themselves uninsurable, or will be faced with such large premiums that they are effectively uninsurable. For that reason, caution must be exercised in translating analyses for sub-groups within countries which do not have universal coverage (such as the US) into systems which do. The fact that a healthy sub-population can indeed see their expected costs fall – which follows logically from the skewed distributions observed - tells us little about the overall cost implications to payers with responsibility for the entire population.

MSA proposals also differ in their assumptions about who would pay the allowance. The initial CPI proposal assumed a full government payment. Similarly, the Frontier Centre proposal for Universal Medical Savings Accounts assumes that all the money now being spent by government will be used for these accounts.[40] The Montreal Economic Institute proposes that "individuals would be allowed to opt out of the hospital, medical, laboratory, or drug coverage

and take the average annual per capita cost of these respective services in equivalent dollars with them," with MSAs being among their options; they would be able to top up these accounts with additional, after-tax payments.[39] However, later proposals from CPI allow government to claw back a proportion (usually, half) of the surplus remaining in the accounts. Ramsay suggested that "the size of the government's contribution could vary from the whole to a fraction of the catastrophic insurance policy's deductible, depending on a person's health, age, and income level."[38] Migué's proposal would be financed through a tax credit or deduction rather than by government payments.[42] This tax expenditure, needless to say, still imposes a significant cost on the government in terms of tax revenue foregone, similar to the cost of RRSP deductions, and is still a government transfer to the healthy, but one more attractive to those in higher tax brackets. Alberta's model diverts the premiums formerly paid to government into an MSA.[45] Once these allowances are "self-financing," of course, MSAs become a high deductible catastrophic insurance policy, with or without a tax break, rather than a novel approach to the use of public money in financing health care. Indeed, in a paper rarely cited by MSA advocates, Hsaio, a leading observer of Singapore's experiment, has noted that in 1995, only 8.5% of Singapore's total national health expenditures came from medical savings accounts, while 57.7% came from patients' direct out of pocket payments.[9]

2. THE MILLIMAN AND ROBERTSON STUDY

In their defence of MSAs, many of these authors point to an actuarial study that they claim demonstrates the feasibility of realizing cost savings on the order of $6 billion annually should MSAs be implemented.[46] We accordingly turn to a closer scrutiny of that analysis.

The "Milliman and Robertson study", written in 1998 by Mark Litow and Stacey Muller of that actuarial firm,[46] was commissioned by Mr. Solomon's Consumer Policy Institute. The report's authors explicitly state that "significant judgement was used to set some of the assumptions, therefore, other assumptions might also be reasonable." They also clearly state that "this report does not necessarily reflect an opinion of Milliman and Robertson Inc., as the firm does not allow taking a position on health care reform." They further caution that "the results and assumptions may be misinterpreted if taken out of context." Nevertheless, its purchasers appear to have done just that. Mr. Solomon claims that no one has been able to demonstrate a flaw in "four heated years in public policy circles."[3]

Analysis of this proprietary research is somewhat difficult because many of the details of the adjustments and computations are not made public. However, enough data is given to make it evident that the findings of cost neutrality or savings, rather than arising from the analysis, are tautological. Page 9 of the report states explicitly that the proposed health care allowance scenarios which they cost out begin with the *assumption* that the plan will be cost neutral, adding that "utilization reductions are assumed to match the expected aggregate Health Care Allowance Account balances accrued to consumers at the end of the year."[46] That is, either prices of health care services, or the quantity of health care services consumed, or both together are assumed to decline by an amount large enough to offset the large costs imposed upon the government funder

by the creation of health care accounts. No references are given; instead, these assumed reductions are based on the authors' "judgement." (page 8). As the authors themselves note, "if utilization reductions are less than anticipated, aggregate government costs will be greater and could exceed costs under the status quo." Furthermore, although the MSA proposal contains no economic incentives for individuals to constrain catastrophic expenditures (which are defined as being fully insured), the study assumes the same reductions will apply to all spending, not just to spending below the threshold. Without these very large reductions in demand, the report itself states that costs to the government increase by between $4.31 billion if only primary care is funded through MSAs, and $6.83 billion if all health care is funded through MSAs.

Although many advocates of MSAs now argue that the allowance should be based on some combination of age, sex, health status and/or income, the CPI study computations are based solely on average costs by age and gender, and our analysis will follow suit. The actuaries do suggest that "other variables could also be considered such as health status or presence of a chronic condition" (income is not mentioned), but note that "our report only considers age and gender in detail." Neither does their report indicate how one would operationalize a system of allowances based on health status; certainly, given current information systems (and privacy laws), it would not be feasible. We will also return to this point.

The design for MSAs which the CPI study analysed has the following features:

1. The federal and/or provincial government would provide catastrophic insurance and an annual allowance to each eligible individual;

2. The annual allowance, the corridor and the threshold would be based on age and gender to reflect differences in the average costs for these sub-populations;

3. Any money left in the allowance at the end of the calendar year would belong jointly to the government and to the individual. Half would revert to the government funder, and the other half would be retained by the individual for uninsured services, for future health care expenditure and, ultimately, for retirement savings. (It should be noted that if such plans are "self-financed," as has recently been proposed by Migué,[42] the government clawback of half the retained allowance not only becomes a new tax, but also undermines the incentives to be frugal with the allowance.)

As far as we can determine, the Milliman-Robertson Study took Canadian data on spending for age-sex categories, but did not use actual data on the distribution of health costs which would not have been available from the national sources they claim to have used. Instead, they appear to have used an unspecified "adjusted claim probability distribution" drawn from a proprietary US database used to construct premiums for group insurance policies rather than to predict individual spending, and adapted this to estimate Canadian average spending for each age-sex category. Note that claims data bases would have no reason to estimate the expenditures for those individuals who would not exceed the deductible; if the insurance company would pay

8

only for expenditures above $500, for example, it is unclear how one would distinguish individuals spending $450 from those spending nothing, since neither of them would have made a claim. Hence, although details are not provided, the database being used would not be likely to capture the distribution of expenditures in the population being served.

The economic rationale for the MSA models is that there will be significant reductions in utilization once individuals have "incentives" to spend less on health care. Clearly, any expenditure that falls into the corridor will be subject to these incentives. Individuals pay these costs directly, and have no allowance to cover them. On the other hand, there is no economic incentive to reduce utilization for those costs that exceed the catastrophic threshold. At the margin, the government pays all these costs, and therefore any savings will revert to the government rather than to the individuals receiving care. The nature of incentives for those expenditures that are less than the annual allowance depends, in part, on what happens to the surplus. If the surplus is entirely clawed back by the government, then the incentive is to spend the allowance before it disappears. If the individual may keep part or all of it, then the individual has an incentive to economize. It is important to recognize that the government (and ultimately the taxpayer) will not necessarily save money, even if individuals spend less on health care, if they are allowed to keep the surplus. Such savings accrue only to the individual; costs to the funder increase until the reduction in demand is large enough to offset whatever incentives the government is required to pay in order to induce the fall in demand. For example, in the case of a 50% clawback, as proposed in the CPI study, government costs will fall only if demand falls by at least twice the amount of the surplus consumers are allowed to retain at the end of the year.

Although the net cost implications depend upon plan details, these will thus depend crucially upon the distribution of costs within the population.

The CPI report gives as one illustration a 30 year-old male. Each age-gender category in the CPI report is assumed to be cost neutral, in the sense that no age or gender subsidizes anyone else. The report sets the threshold at $520, and the Health Care Allowance Account at $416. Another example is a 75 year old female, "who would receive an allowance of $3,330 for her routine needs, plus government insurance for hospital care and other extraordinary needs that Medicare now provides."[3] These numbers are based on average expenditure, rather than on actual claims attributable to individuals, and in fact are higher than the amounts attributable to physician and hospital services in the Manitoba database.

Our analysis has divided the Manitoba data for spending on hospital and physician services between 1997 and 1999 into age-sex groupings. In each group, we have arrayed individuals according to the amount of health care expenditures they incurred, divided into 13 categories (each containing between 1 and 10% of that age-sex grouping of the Manitoba population). Figure 1 shows this distribution for the sub-population of men age 25-35, and Figure 2 the distribution for the sub-population of women over the age of 75. These examples were chosen because they are frequently used by CPI; however, all other age-sex groupings in the Manitoba data base behave similarly. Two lines are superimposed on these figures to sub-divide

9

these expenditures into the expenditures falling between 0 and 80% of the mean for that age-sex group (which would correspond to the CPI's proposed allowance), the expenditures falling between 80% of the mean and the mean (which would correspond to the out-of-pocket corridor) and the expenditures exceeding the mean (which would correspond to the catastrophic zone).

As can be seen, most of the population in both age groups falls below the first line; their spending would not exceed the allowance, and they would expect a surplus in their account. A small proportion of the population, but a high proportion of expenditures, fall into the catastrophic zone. Very little expenditure falls into the corridor between the two lines.

Figure 1: Distribution of physician/hospital expenditures by "expenditure zone", Manitoba 1999, Men age 25-34
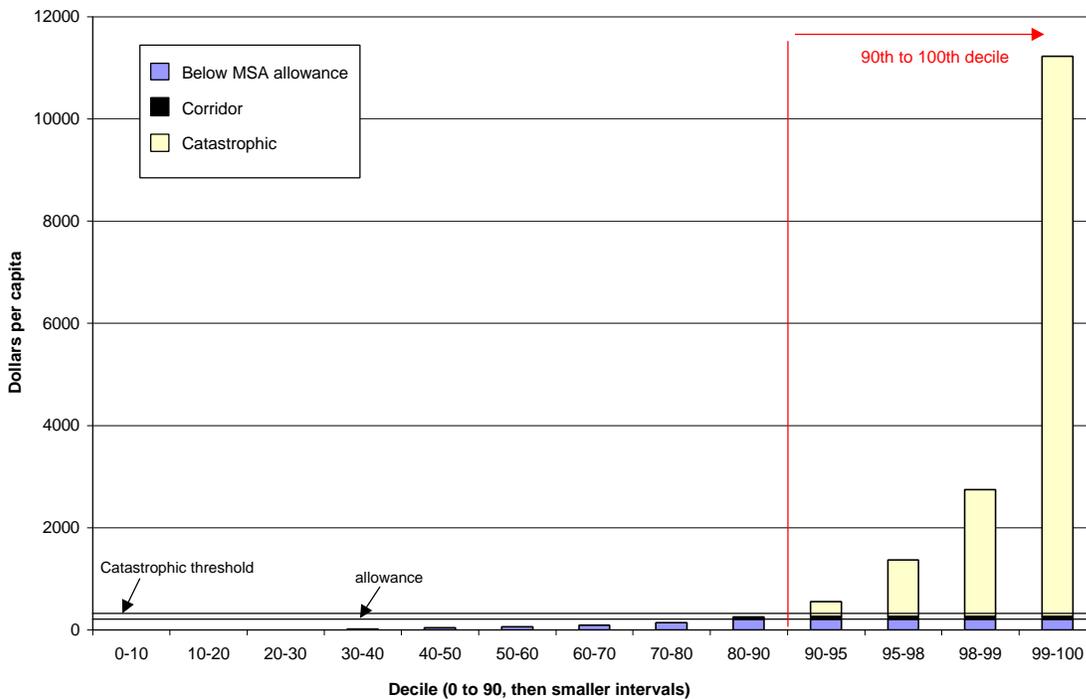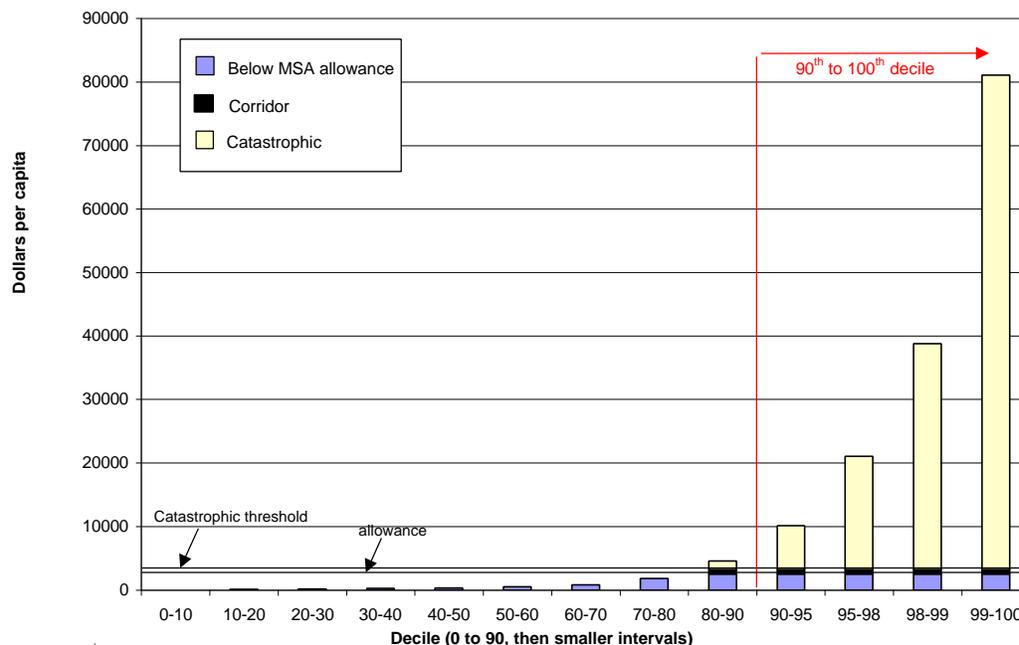
Figure 2: Distribution of physician/hospital expenditures by "expenditure zone", Manitoba 1999, Women age 75+

*Large change occurs because of assumption that utilization goes to zero

The mean expenditure for the young males (Figure 1) was $268.80; to avoid meaningless precision, we will round off expenditures to the nearest dollar for the remainder of this analysis. However, more than 90% used less than the mean; we will refer to this group as the "low spenders." Indeed, 20% of these individuals made no demands whatever on the health care system in that period, while over 70% spent less than $100. This healthiest 90%, with an average spending of $67, accounted for 22.5% of the costs incurred by this age group, with the sickest 10% accounting for the remaining 77.5%. Looking at the 75 year old women (Figure 2), their mean expenditure was $3,203. However, 80% spent less than the mean, with an average expenditure for that sub-group of $507. Because most 75 year old women receive at least some medical care, the distribution was slightly less skewed, with the sickest 20% accounting for 87.5% of the costs, and the healthiest 80% for 12.5%.

The importance of considering distributions rather than only central tendencies is clear when one applies a plan like that analysed by CPI. Suppose one follows the examples in their report and sets the catastrophic threshold at the level of mean spending for that age-sex group, and the allowance at 80% of the mean, or $215 for the 30 year old male, and $2,562 for the 75 year old female. Individuals would thus be responsible for paying, out of their pockets, the amount in the "corridor" between the allowance and the catastrophic threshold. Total costs to

11

government are also reduced by allowing the individual to retain only half of the balance in the MSA, while returning the other half to government. Because of the differences in average spending across age-sex groups, if there is to be no cross-subsidization, the 30 year old men would be responsible for a maximum out of pocket cost of $54 in their corridor, as opposed to the $641 which the sickest women over age 75 would be expected to pay for formerly insured services. (Probably for this reason, the Milliman and Robertson study appears to have made unspecified adjustments to some of their corridors, which reduces but does not eliminate such disparities.)

What are the net costs to government of this model? Applying this CPI model to the 1999 Manitoba data reveals that average costs per capita for the men increase by $59, while average costs for the older women increase by $695. All other things being equal, government will either have to pay these higher costs, or alter other aspects of the plan. If we do not change the allowance or the proportion of the surplus which individuals can retain, government must recoup this money from the only remaining population using care – the sickest 10-20% now falling above the catastrophic threshold. Should this occur, government would not break even until the threshold was raised considerably from that proposed in the plan, or to $1,171 for the younger men, and $8,768 for the elderly women. Subtracting the allowance, we are left with a maximum out of pocket payments which the sickest individuals would have to pay for formerly insured services of $956 (for the males) and $6,206 (for the elderly women), over and above other costs they would have for uninsured services.

Suppose, however, that we accept the assumption that health care utilization will fall because of the incentives created by MSAs. Indeed, suppose that the effect is so large that *everyone* below the threshold – in this case, the healthiest 90% of 30 year old males and the healthiest 80% of 75 year old females – reduces their use of the health care system to zero. For each of these individuals, then, the government will pay out the allowance and claw back half of it (since none has been used to purchase medical care). For the 90% of 30 year old males below the threshold, government pays out $215 and claws back $107.50, for a net cost of the $107.50 each receives as a reward for their frugality. Recall, however, that before the imposition of health care accounts, the government was only spending an average of $67 for each member of this group. Even in this extremely unrealistic scenario, then, government costs increase for each of the healthiest 90% of 30 year-old males by $40 (or 60%) each. For the 80% of low spenders among the elderly women, per capita costs increase from $507 to half of their $2,563 allowance, for a net increase of $774.50 (or 153%) each. These sums are somewhat offset by decreased expenditures for the sickest (who are now responsible for paying the amount in the corridor), with particularly large savings coming if the group whose spending had been in the corridor could reduce their utilization to zero (e.g., the 80-90th percentile in Figure 3). The net result is an average increase of $31 for each 25-35 year old male, and $492 for each elderly female. Recovering this would require an increase in the catastrophic threshold to $605 for the men, and $6741 for the women, or a maximum out of pocket payment of $390 and $4179 respectively, on top of whatever other uninsured services need to be paid for. Additional subsidies to these individuals, of course, would further increases the net costs of MSAs.

Figure 3: Distribution of change in expenditures by decile with an MSA, by assumed change in utilization. Manitoba 1999, Men age 25-34
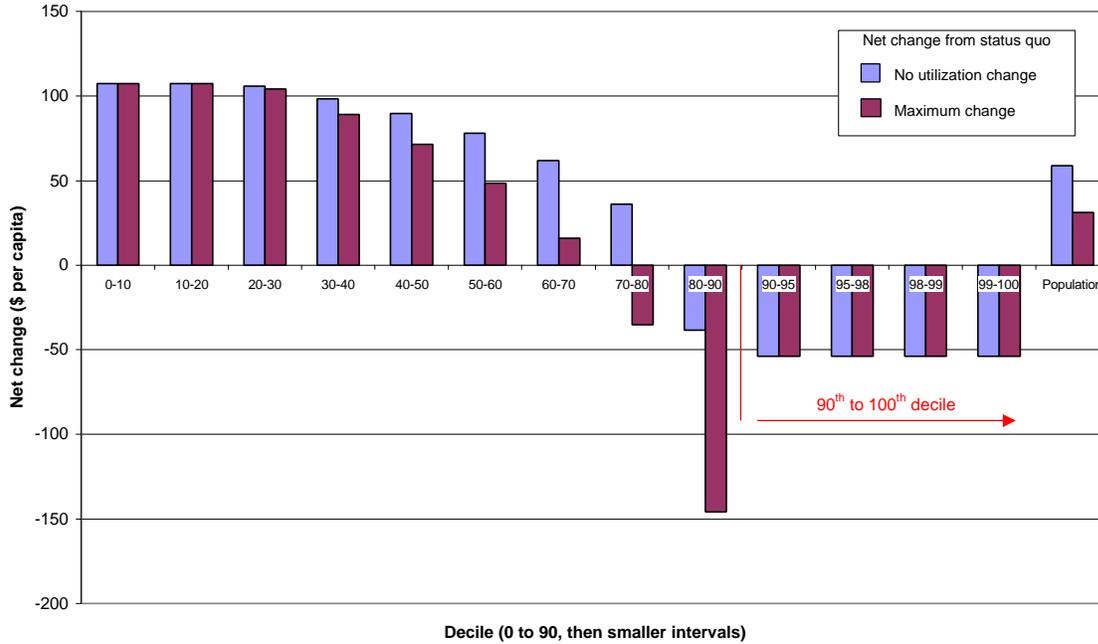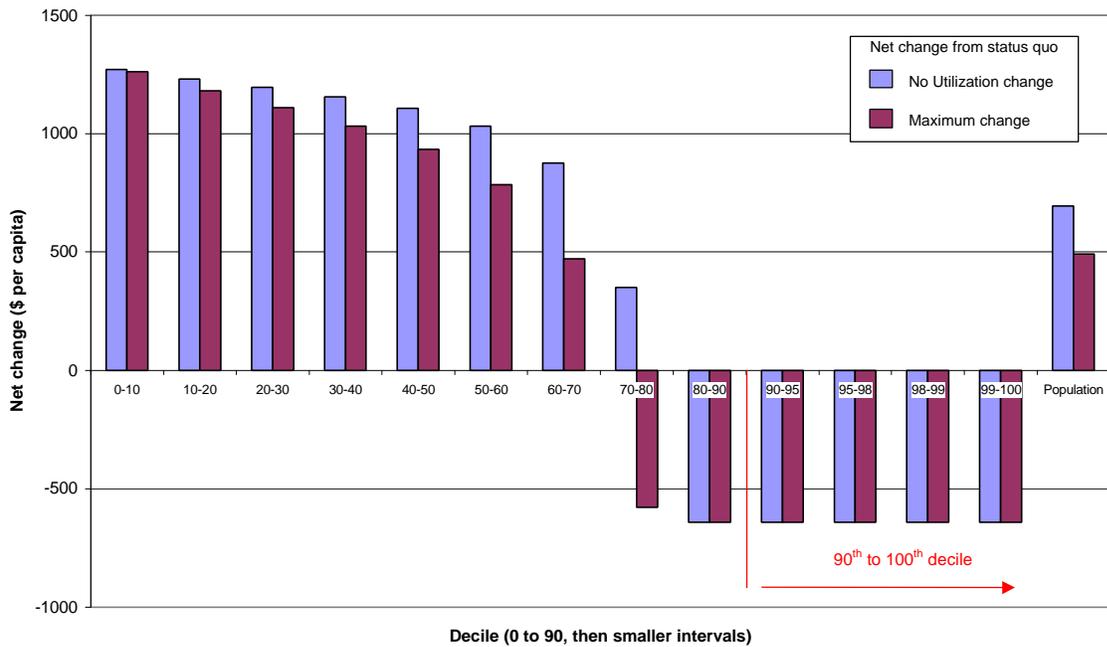

Figure 4: Distribution of change in expenditures by decile with an MSA, by assumed change in utilization. Manitoba 1999, Women 75+

Figures 3 and 4 summarize the change in expenditures for each category of these two age groups which would result if such allowances were implemented, with half of the balance in each account 'clawed back' by government. Note that we assign the mean expenditure within each category to all of those falling into that grouping, thereby understating the extent of variation. The first bar shows the change in expenditures which would result if there were no changes in utilization; the second shows the changes which would result if utilization were somehow reduced to zero for all those in the low spending group. The results are summarized in Table 1.

Why are these figures so high? The skewed distribution means that the population from which the additional resources can be recouped by modifying the catastrophic cut-off becomes smaller and smaller. For example, assume that government wishes to recoup the $492 increase in per capita spending for each woman over age 75 in the scenario where the low spenders reduce their spending to zero. Because only 20% of that sub-population is still using medical care, the target must be multiplied by 5, or $2,460 from each. But half of these women, those in the 80-90 percentile, had average costs of $1,381 above the cut-off, which sets a limit on the additional resources which can be obtained from them. The remaining $216 per capita must then be multiplied by 10, since it can be recouped only from the 10% still above the threshold. The net result, even in this optimistic assumption of no health expenditures for 80% of that sub-population, is a threshold of $6,741. Recognizing that ceteris is rarely paribus, and that other modifications to other combinations of the allowance, threshold, or clawback are also possible, all represent considerable modifications of the CPI model. Either costs to government will increase substantially, or the sick will be taxed to provide windfalls to the healthy, or both. The elimination of all health services for the low spending population, in turn, does cast some doubt on how long these individuals will *remain* healthy, but that is a point for another analysis.

Even more insidiously, many of these models assume that all government expenditures for health care can be moved into MSAs. The CPI report contains two scenarios. Scenario A considers the replacement of all current expenditure with MSAs; Scenario B considers replacing primary care costs with MSAs. Scenario A would thus allocate not only the funds now used for specialty programs (e.g., paediatric hospitals), but even the resources for public health, health services research, addictions services, and so on. Under Scenario A, for example, Toronto's Hospital for Sick Children would receive all of its resources from the accrued accounts of the families of the small number of sick children being treated there. One does not have to do the math to realize that the hospital would not be sustainable under that funding model. Neither could rural hospitals. Similarly, even under Scenario B, it is unlikely that experts in cystic fibrosis or other specialties could be maintained purely from the individual payments of their patients. One does not have to be a skilled politician to recognize that allowing these highly valued services to disappear would be neither wise, nor politic. Government would have to pay again to ensure that the needed infrastructure remained in place, further increasing the public cost of health care.

Table 1

Implications of distribution of physician/hospital expenditures for MSA models for specific age groups, Manitoba, 1999		
Group	men 25-35	women 75+
Model: Status quo (Manitoba data, 1999)		
Mean spending per capita	269	3203
% of group spending < mean (low spenders)	90	80
% of total expenditures by low spenders	22.5	12.5
Mean per capita expenditures of low spenders	67	507
Maximum out of pocket payment for insured services	0	0
Model: Medical Savings Accounts, defined by advocates as having:		
Catastrophic threshold (equal to mean expenditures for that group)	269	3203
Medical Savings Allowance (80% of mean)	215	2562
Corridor (difference between allowance and threshold, to be paid out of pocket)	54	641
Ratio: threshold / allowance	1.25	1.25
Impact of MSA model, applied to Manitoba data - if no change in utilization		
Mean spending per capita	328	3898
Per capita change in government expenditures (from status quo)	59	+695
Required value for catastrophic threshold for government to break even (other factors remaining unchanged)	1171	8768
Ratio: threshold / allowance	5.45	3.42
Maximum out of pocket payment by sickest individuals (for formerly insured services)	956	6206
Impact of MSA model, applied to Manitoba data - if utilization for low spenders drops to zero		
Mean spending per capita	300	3695
Per capita change in government expenditures (from status quo)	+31	+492
Required value for catastrophic threshold for government to break even (other factors remaining unchanged)	605	6741
Ratio: threshold/allowance	2.81	2.63
Maximum out of pocket payment by sickest individuals (for formerly insured services)	390	4179

The CPI study begins with the premise that Scenario A and Scenario B would cost the government the same as the current system of Medicare, and assumes reductions in utilization to make this equation work out. However, it is worth noting that the initial results of their analysis are consistent with the findings of the Forget et al study. The authors write that if individuals are given allowances based on the average expenditure for their age and sex category, costs will increase. Their report suggests that, in Scenario A, costs would increase by $6.83 billion, and in Scenario B by $4.31 billion. Returning to their initial premises, then, demand must fall enough that the half of the surplus that reverts to the government at the end of the year balances the increased cost of the incentives. Working with averages (rather than distributions), they then compute that there would have to be an average reduction of 31.4% of total costs in Scenario A, and 19.6% of total costs (but substantially higher reductions in primary care costs) in Scenario B, a level which most analysts would consider to be unrealistically optimistic. For example, a US simulation of MSAs allows for a reduction of utilization in the order of 4-6%, and even so suggests that this estimate might be too high.[47] Since no savings can be expected from the population already spending almost zero, in practice, these figures would almost certainly translate into much higher required reductions from the population actually using care. It appears that these numbers have been used as the basis for claiming that MSAs would *save* over $6 billion per year, rather than *cost* that amount[3,28,42,49]

3. THE RAND HEALTH INSURANCE EXPERIMENT

Where does the assumption about the decline in demand come from?

A basic concept in economics is what is referred to as "price sensitivity" or "elasticity of demand." When the price of any commodity increases, other things being equal, the quantity demanded will decrease. The key issue is the size of this effect. Certain decisions are highly price sensitive; others are far less so.

Clearly, health care is heterogeneous; a person brought into an emergency room after a traffic accident is likely to be less price conscious than an individual contemplating a marginal visit for the sniffles. The best available information about price sensitivity comes from a systematic randomised controlled trial of co-payments for health insurance conducted by the RAND Organization in between 1974 and 1982; the page numbers cited below come from the book by Newhouse, which synthesizes the results of the many publications from this study.[48] Experiment participants were assigned to one of 15 insurance plans; 14 were fee-for-service plans, which systematically varied the *coinsurance* rate (the fraction of billed charges which the individual had to pay out-of-pocket) and the maximum dollars which would have to be expended in a 12 months period. Coinsurance could be 0 (free care), 25%, 50%, or 95%; maximum charges (MDE) could be 5%, 10%, or 15% of family income, to a maximum of $1000. In that connection, MDE corresponds to what we have termed the corridor in this paper. There was also one prepaid group practice (the earlier form of managed care). Note that this experiment was not

designed to test medical savings accounts; design decisions which were appropriate for that study, therefore, may limit the ability to generalize from it to an entire population.

One problem in generalizing the results is sample size: the study enrolled approximately 2,000 families, which were in turn assigned to the multiple experimental conditions. This means that the study would not have many high users to begin with, and even fewer within each plan. Compounding this was the fact that those over the age of 62 were ineligible for the experiment, as were those who had end-stage renal disease, or had been out of the labour force for more than two years and had a medically certified disability. In addition, refusal rates were only 8% for the plan without copayments, but as high as 25% for the plan requiring a 95% copayment (which also had a higher attrition rate). If, as seems plausible, the highest need population would have been least likely to agree to enrol in a high co-payment plan, external validity would be further affected. The study thus probably undersampled the highest need population, a suspicion heightened by their observation that "attrition from death, institutionalisation for health reasons, and becoming eligible for Medicare by virtue of becoming disabled are at very low levels (1-2 percent) on all plans." (page 19). Indeed, only 11 people on the free care plan died, meaning that they could not even conduct statistical tests about that variable for that group (page 25).

The RAND of the experiment clearly showed that those receiving free care (no deductible) were more likely to use services. The main difference found was in the likelihood of receiving any care at all, rather than in the "intensity" of services received once a decision was made to seek care. This effect was strongest among the poorest participants for outpatient care; it was less pronounced for inpatient care, because most patients requiring hospitalisation had already exceeded their upper limit (removing economic incentives as a factor affecting utilization). Contrary to what might have been anticipated, the sickly were as (or more) responsive to price than the healthy (page 48-49).

Overall, per-person expenditure on the plan with the highest copayments (the 95 percent plan) was about 69% of that on the free-care plan; adjusting for the fact that some of those had incurred costs but failed to file the paperwork raised it to about 75%. (page 79). However, this varied considerably by type of care. Thus, the ratio of visits for those on cost sharing plans to those with free care ranged from 0.36 (for asthma) to 1.35 (for acute alcohol/drug related); the ratio for chest pain/acute heart disease was 1.04. (page 155). The authors divided diagnostic categories into those which were seen as "more urgent" or "less urgent" (based on the seriousness of the diagnosis and the need for immediate care). They noted that there was a difference - a 23% drop for the more urgent diagnoses, versus a 47% drop for the less urgent ones. However, increased cost sharing also had an effect – use for the more urgent diagnoses was 85% of the free plan rate if there was a 25% copayment, but only 65% if the copayment rose to 95%. (page 157). More disquietingly, there was a strong difference in the cost-sharing response between poor and nonpoor children. Nonpoor children showed no response to cost sharing; "for poor children, by contrast, there are significant differences for 14 diagnoses." (page 161). Neither was there a difference by the effectiveness of treatment; cost sharing "is just as likely to lower use when care is thought to be highly effective as when it is thought to be only rarely effective"

(page 162). They note that their findings that "cost sharing has a non-specific effect on the use of medical services…in particular, it reduces appropriate and inappropriate services-or highly efficacious and relatively inefficacious services-by the same proportions…this appears to be at odds with "the theory ...that cost sharing reduces the least-valued services" (page 162).

However, as we noted earlier, the study population tended to be healthy. Accordingly, eliminating medical visits was unlikely to have a significant impact on health status, at least in the short term. (The study did not examine longer term impacts.) Advocates of user fees have since used the RAND researchers' findings to argue that such charges will not have adverse effects on the health of the people being asked to pay them. However, in sub-populations with conditions likely to respond to medical treatment, significant differences in health outcomes *were* detected for those on cost sharing programs as compared to those receiving free care. The numbers were small, but the health outcomes were measurably worse. This applied, for example, to individuals with hypertension, which was never diagnosed or treated among a group of individuals who had been deterred by the fees from visiting a physician. It applied to those not seeking mental health services, vision, or dental services.

The RAND authors make a strong case that overtreatment can be as harmful as undertreatment, but explicitly argue that "the burden [from cost sharing] on the poor and on persons (particularly the poor) with chronic conditions is a separate issue and should be dealt with as such" (page 357). Indeed, they go on to argue that "a sufficiently high MDE effectively loses any resemblance to insurance, and the health consequences of no insurance relative to some insurance may be larger than any of the variations in health outcomes that we saw." (page 361). They particularly single out those under treatment for chronic problems, citing work by Nicole Lurie and colleagues that "for a subgroup of the population lack of insurance could have catastrophic consequences." They accordingly conclude that setting the MDE too high is "bad policy for two reasons: (1) they impose more risk than much of the population wishes to bear; and (2) at a level at which they effectively become no insurance, they can have serious health consequences."

We will not discuss other disputes about the RAND results, such as the extent to which physicians might react to widespread cost sharing by altering their practice patterns (the debate about "supplier induced demand"), or whether changes in the structure and nature of medical practice (e.g., dramatic declines in hospitalisation) in the ensuing decades might have changed their findings. The experiment is a careful study, which is explicit about its own limitations, and provides a model of how to conduct experiments in this extremely difficult area.

Nonetheless, MSA advocates are almost certainly over-estimating the extent to which the RAND results can be extrapolated to predict utilization in Canada. In particular, the Manitoba results suggest that utilization among most members of the population is already at a relatively low level, possibly because other non-price factors, including availability of providers and the style of medical practice, may already be functioning to limit marginal utilization. Indeed, some advocates of MSAs argue that this will increase the availability and utilization of services, which

is somewhat contradictory to the arguments about decreasing utilization and saving money. Again note that we are not arguing about the appropriate levels of service; it is certainly possible that cost constraint has been too stringent and that increased resources might be beneficial in certain areas. We are suggesting that one cannot simultaneously argue for MSAs on the grounds of increasing *and* reducing the costs and utilization of services. (A more intellectually coherent argument is the idea that consumer sovereignty should prevail in making these allocation decisions, allowing individuals to purchase the care they want, rather than the care which professionals think they need. This philosophical battle is beyond the scope of this paper.)

There are also fundamental economic reasons why this study is not simply applicable to the Canadian MSA policy issue. The RAND study found that when people were asked to pay user fees or a co-payment, they reduced their consumption of medical services. When insurance paid all costs, consumption was higher. From that, they argue the economic benefits of user fees. The subtle difference between this and the consequences of MSAs takes us to basic economic principles.

Substitution Effects and Income Effects

When the price of any commodity increases, two factors come into play. The first is the substitution effect. When the price of butter rises, one expects consumers to use less butter and more of those commodities like margarine that can be used as a substitute for butter in consumption. Therefore, a rise in the price of butter causes less butter to be consumed and more margarine to be consumed. Nonetheless, this effect should apply only to goods and services which can be substituted for one another; one would not expect, on the basis of the substitution effect alone, an increase in the price of butter to cause people to consume more snow tires. Similarly, an increase in the price of medical services ought to cause people to consume fewer of the medical services that were previously paid for fully by insurance, and more substitutes, such as over-the-counter drugs and alternative practitioner care. One would not expect people to substitute retirement savings for health care. One might expect a decline in visits to emergency rooms or family doctors, and an increase in self-medication. The substitution effect always works to reduce the quantity demanded of a product when its price rises, although the size of that reduction is an empirical question.

Secondly, the RAND experiment attempts to capture the income effect. When the price of a significant commodity increases, the real incomes of consumers decline, in the sense that now they have less money to spend on *all* commodities, including health care. As the price of health care increases, one would expect people to consume less of all normal commodities including health care. For both practical and ethical reasons, one feature of the RAND study was a guarantee that "no one would become financially worse off as a result of participation in the Experiment"[48] (page 12); participants were accordingly given side payments ("participation incentive") and the maximum out of pocket expenditures each year were capped. As Newhouse noted, this was in turn likely to affect the income effect (although they made considerable efforts to analyze its extent). Accordingly, with the exception of some of the participation incentives, the

RAND study at best left incomes unchanged (with "free" care) and at worst reduced the income of those wishing (or needing) health care services by requiring them to pay a portion of the costs.

In contrast, in the proposed MSA plans in which government provides money to individuals, the 80% of consumers in every age category currently spending less than their allowance would have their incomes increased rather than decreased. If health care is a normal commodity, economic theory says these consumers should then consume *more*, rather than less, health care. This tendency would be enhanced if models restricted how the money could be used, and/or clawed back a proportion of it.

Therefore, claims that the RAND study "proves" MSAs will reduce consumption of health care because of "incentives" are flawed on many levels. As the RAND scholars would be the first to say, their study is not naively applicable to the policy environment in a different country with a different history and a different arrangement of health care services in a different time period. Their study does not consider MSAs, but rather user fees and insurance. Neither does it deal with the sickest individuals.

Even if the RAND study were applicable to the Canadian policy experiment with MSAs, economic theory would predict that the income and substitution effects would be working in different directions, making it difficult to predict whether net consumption of health care would increase or decrease. There is little rationale for extrapolating the reductions found in the RAND study to hospital care not under the control of the individual (and even less to assuming that they would also apply within the catastrophic zone, where there are no economic incentives for the individual to "economize.") Moreover, as we have demonstrated, from an economic viewpoint, the distribution of health expenditures is sufficiently skewed that even massive reductions in utilization could not outweigh the increased costs. Furthermore, the adverse health effects found in the sickest sub-population suggests that at least some of these "savings" may also be penny wise and pound foolish.

4.   THE FEASIBILITY OF BASING ALLOWANCES ON AGE, SEX, INCOME AND HEALTH STATUS

A sensible system of allowances requires us to define, in advance, a number of sub-populations, each of which would be relatively homogeneous in their anticipated health expenditures. If that could be done, some of the issues associated with the highly skewed distributions might in theory be addressed. Low users would receive very low allowances, and high users would receive the resources they needed. Once again, this is easier said than done.

Basing allowances on age and sex would be relatively simple to operationalize. After all, insurance companies typically base premiums and payouts on age and sex. The *Canadian Institute for Health Information* or Statistics Canada also break down their analyses by age and sex. Assuming that complaints about "ageism" or "sexism" can be met, allowances could easily be so scaled.

Unfortunately, age and sex alone explain almost none of the variance in health expenditures – usually, less than 1%.[49] As the Forget analysis confirms, these categories are not homogeneous; within each age category, at least 80% are spending less than the mean. (It should also be noted that US data over the past 30 years has shown similar trends;[26,50] this fact has not entered the US debate largely because, in a non-universal system, analysis has not focused on those who would not be served by a particular insurance plan.) Adjustments for age and sex leaves us with the same problem of skewed distributions analyzed above.

In addition, the high out of pocket payments for sick people would be likely to reintroduce the access problems that Canadian Medicare was proud of having diminished (and which still persist in the US). In an attempt to mitigate this, some advocates suggest scaling allowances by income. Clearly, this moves us into the realm of tax policy as opposed to health policy. Certainly, health databases do not include information on income, and including such data may be contrary to privacy legislation. In that connection, it should be recognized that the Singapore allowances are indeed based on income, since they are financed by mandatory contribution based on wages (beginning at 6%, rising to 7% between ages 35 and 45, and 8% from ages 45 until retirement; the maximum monthly and total contributions are also capped). However, this model is the reverse of what advocates of income-based allowances usually suggest – the poor have less (rather than more) to spend for their health needs. Another proposal is to allocate allowances through a refundable tax credit. The usual incentive/moral hazard issues would have to be confronted, such as the linkages between means-tested benefits and incentives to work. Moreover, there is little reason to believe that income groups are any more homogeneous in their health expenditures than are age-sex groupings. Nonetheless, should MSAs be considered desirable on other grounds, linking allowances to income would certainly be feasible.

Finally, some advocates argue that MSA should be scaled by health status, so that a 50-year old diabetic would receive a larger allowance than a healthy 50-year old. The intention is to create groups whose health care needs are reasonably homogeneous. However, there is no guarantee that such groups can be created, and most international attempts to "risk adjust" payments have had only modest success. Certainly, experiments with attempting to introduce case mix or diagnostic related groups into hospital financing have proven expensive and difficult. In short, there is little reason to believe that we can define, in advance, groups that would not exhibit the same distributional effects as every other grouping. For example, even among individuals with hypertension, many individual make minimal to moderate demands on the health care system, and a very small number of sick individuals place a very heavy demand on health care resources.

In addition, attempts in other jurisdictions to operationalize this concept has made it clear that discerning and defining such health status groupings is not an inconsequential accomplishment. For example, policy makers would have to decide which conditions would qualify for the higher payments, leading to certain disputes by those populations not yet

designated. Certain chronic conditions, such as diabetes or hypertension, do not have clear cut-offs, providing incentives to 'over' or 'under' diagnose. Furthermore, if allowances are determined on the basis of past health care utilization, then people who economize on health care use are penalized, while profligate users are rewarded, undermining the incentives which MSAs are designed to encourage. Finally, public policy - as reflected in privacy legislation - almost certainly forbids collecting and using data about individual health status for the purpose of determining their health care allowances.

Nonetheless, suppose we could and wanted to set allowances on the basis of age, sex, health status and income. This would require a costly bureaucracy of enormous proportions, and an information problem that most economists would consider large enough to completely undermine such an intrusive attempt at micro-management. A far less intrusive system of trying to manage health care expenditure in the US seems to cost somewhere between 25% and 30% more than the Canadian system. Indeed, it is plausible that these information costs would wipe out even those savings which advocates optimistically assume would somehow materialize.

5. CONCLUSION

Litow and Mullen, the authors of the "Milliman-Robertson Study" are much more careful than are the consultants who make use of their study. They note that "the recommendations and estimates shown in [our] report reflect the opinions and analysis of the authors. Significant judgement was used to set some of the assumptions, therefore, other assumptions might also be reasonable."[46] (page 8). They acknowledge that very large reductions in demand are essential if costs are not to increase dramatically. There remains no evidence whatever that Medical Savings Accounts would save money, and considerable evidence that they would increase costs and/or erode coverage. On the basis of Mr. Solomon's "Milliman-Robertson Study", unless we accept the report's operational assumption that extreme reductions in demand will occur – an assumption that is not be supported by any evidence – their own analysis suggests that their model would raise health care costs by $6.83 billion, with almost all of that money going to healthy people rather than to improving services or access. Close scrutiny of MSA plans in other countries similarly reveals that the benefits are concentrated among the healthier members of those populations; indeed, most of the sickest are not members of such plans. In the one place attempting to use MSAs universally, it is important to note Hsaio's conclusion that not only has the Singapore Medisave scheme has not curbed health expenditure, it has "caused financial hardship for Singapore's citizens" and "adversely affected the cost-effectiveness of its health care system."[9]

We repeat - a plan which strips specialty services, escalates costs, adds bureaucracy, undermines privacy, and further erodes health care has little to recommend it. It is unfortunate that MSA proponents have neglected the evidence in favour of hypothetical data and tautological statements. It is even more unfortunate that, rather than discuss the actual findings, they have found it necessary to attack the messengers.

22

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