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## **The Demand for Private Health Insurance in Alberta in the Presence of a Public Alternative**

Herb Emery and Kevin Gerrits,  
Dept. of Economics, University of Calgary

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### **Abstract:**

The Alberta government has proposed a greater role for private insurers and health care service providers to increase non-government revenues for health care services to alleviate financial pressures on the public health care system. For any private health care system to bring significant relief to the public system a large enough number of individuals must opt to consume the private good instead of the public good. Based on Australian health insurance data, we estimate that 28.5% of the Alberta population would purchase private insurance and that the increased revenue from private health care would represent at most 11% of the 2003-04 budgeted health care expenditures. While the amount of fiscal relief may be small, the movement of individuals whose preferences do not match the public system of health care to the private health system may diffuse political pressures on public health care budgets. This could make it easier for the public system to offer an average quality level of care in the face of a superior quality private health system and it would allow increases in health care costs to be absorbed by private, rather than public, revenue sources.

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To address the growing financial pressures in its public health care system, the Alberta government has made several ambitious proposals to change how health services are provided and financed in Alberta. The use of service deductibles, insurance co-payments, the delisting of health services and a greater role for private insurers and private health services providers will increase non-government revenues for health care services to alleviate financial pressures on the public health care system. The ability of the Alberta Government to introduce such reforms to public health insurance and public health service delivery is constrained by consideration of what was allowable under the 1984 Canada Health Act, but a recent Supreme Court of Canada decision concerning a patient's right to purchase health care has opened the door to for a greater role for private health service delivery and private health insurance. In September 2005, Alberta Health Minister Iris Evans suggested that the Province of Alberta was considering the development of a parallel private health insurance market that would compete with the public health care system for all medical treatments. Evans suggested that such a development could generate enough financial relief to the public system that the Alberta government could allow for the elimination of public health insurance premiums in Alberta.<sup>1</sup>

Would expanding the private health insurance system to compete with the existing public system deliver such a large dividend to Albertans? Intuitively, a large portion of the Alberta population would have to choose private health care to significantly alleviate pressure on the public health care system.<sup>2</sup> The number of purchasers of private health

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<sup>1</sup> "Alberta considers health care competition," Calgary Herald, September 14, 2005, page A4. Alberta Premier Ralph Klein quickly countered that private health insurance would be limited to "secondary coverage" for a limited number of non-emergency health services such as orthopedic surgery, long-term care and pharmaceuticals. "Evans 'confused' on insurance, Klein maintains: Premier insists private coverage will be limited," Calgary Herald, September 15, 2005, page A8. When challenged by the Provincial College of Physicians and Surgeons to explain how an expanded use of private health insurance would benefit all Albertans, Evans indicated that the Alberta government would retreat from the plan to expand the role of private health care and health insurance if there were to be evidence that the change hurt the public system. "Private insurance must prove worth: Evans," Calgary Herald, September 17, 2005, Page A10.

<sup>2</sup> There remains considerable debate as to the likely magnitudes of the expected problems and benefits of expanding the role of private health care and health insurance, which in turn depends on the size of demand for private health insurance and services. There has been discussion of this topic on the potential negative consequences for the public health care system that would result from the emergence of a private system; on the desire of Canadians to not see a "two-tier" American style of health care; on the gains to the public system from efficiency gains from service delivery from private providers and from providing proper incentives to patients, and on the potential improvements in access to health by allowing for greater resources to enter the health care system. These studies do not address how large the private health care system is expected to be. The existence of private health care seems to be viewed as sufficient to generate the expected effects.

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insurance will likely depend on the cost of private insurance. The cost of insurance and the number of purchasers will determine how much fiscal relief that private insurance can provide for the public system. The purpose of this paper is estimate the size of demand for private health insurance in Alberta. To that end, we estimate the level of demand for Private Health Insurance (PHI) in the presence of a universally provided public health care system based on the demand for private health insurance in Australia. We investigate whether a mixed public/private health care system, modeled after the Australian system of care, will support the financial sustainability of publicly insured and provided health care in Alberta.

Given the suggestions of the 2001 Premier's Advisory Council on Health, and the passage of the 2003 Health Care Protection Act, Australia provides a useful model for assessing the proposed changes to health care service delivery and finance in Alberta.<sup>3</sup> Unlike the wholly public Canadian health care system, the Australian system has both public and private provision of health services and health insurance. Private health care in Australia reduces financial and political pressures on the public health care system by covering the gap between publicly paid costs and most/all costs associated with treatment, and by providing an opportunity for Australians to access higher quantity and quality of care if they are willing to pay for it.

Based on Australian health insurance data, we estimate that 28.5% of the Alberta population would purchase PHI. We also find the demand for PHI in Australia is price and income inelastic. This implies price and income PHI policy levers will only have limited ability to influence the level of PHI demand in Alberta. It is important to note that

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<sup>3</sup> Given the historical similarities and the nature of the Australian health care system, it is reasonable to assume that the underlying preferences that motivate consumer behaviour in Australia and Canada are similar. Australia and Canada are both former British colonies, have predominantly English speaking populations and face challenges with respect to their Aboriginal populations' health. In addition, both countries had similar evolutions of their health care systems until the 1960s when Canada moved towards its public, single payer system. Other international examples may provide insight for Alberta's proposed health care reforms but they may also include fundamentally different underlying preferences amongst study groups, which may complicate any inferences for Alberta. For example, the Rand Experiment carried out in the United States of America to ascertain individuals' factors of demand for PHI is based on a market accustomed to PHI. Much has been published on the Rand Experiment (Cave, 1984; Manning and Marquis, 1989; Manning et al., 1987; M. Susan Marquis and Phelps, 1985) but the context of the data differs and much of the Rand Experiment's focus is on the effect private health insurance has on the level of consumption of health goods (Buchanan, Keeler, Rolph, and Holmer, 1991). There are additional discussions relating to the interaction of existing public and private health insurance systems (Cutler and Gruber 1996(a); Cutler and Gruber 1996(b); Blomqvist and Johansson 1997; Finkelstein 2004, Tuohy, Flood and Stabile 2004). However, there does not appear to be a specific discussion relating to the viability of introducing private health insurance to markets which are presently served by public health insurance.

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Australian levels for the annual private health insurance premium of \$826, applicable to the 28.5 percent demand estimate, would not fully cover private health insurance costs and the increased revenue from private health care would represent at most 11% of the 2003-04 budgeted health care expenditures.

We assess that even if we ignore the set-up costs for the private system, the increased costs of insurance administration, and the costs of regulating private insurers, there is little fiscal relief that can come from the emergence of parallel private health care system. Our pessimistic conclusion concerning the fiscal benefits of developing parallel private insurance in Alberta lends further to support to the arguments already made by Hurley et. al. (2002) and Tuohy, Flood and Stabile (2004). These studies make the case that increasing the private share of health expenditures will not solve the challenges facing publicly funded health care systems and may do more harm than good to publicly funded systems. While the amount of fiscal relief may be small, the movement of individuals whose preferences do not match the public system of health care to the private health system may diffuse political pressures on public health care budgets. This could make it easier for the public system to offer an average quality level of care in the face of a superior quality private health system and it would allow increases in health care costs to be absorbed by private, rather than public, revenue sources.

### **Ralph Klein's "Third Way"**

In December of 2001 the Premier's Advisory Council on Health (The Council) reported on the state of Alberta's Health Care system to Alberta Premier Ralph Klein. According to the Council, the public health care system in Alberta is not financially sustainable with its current structures. From the 1991-92 to the 2001-01 provincial budget health care spending increased by over \$3 billion. Health care spending as a share of the provincial budget increased from 24% in 1990 to 35 % in 2003 and has been forecast to reach 50% as early as 2008.<sup>4</sup> The viability of the of the public health care system in

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<sup>4</sup> (Alberta Government 2004, Mazankowski et al. 2001)The Council identified several factors viewed as driving cost increases including population growth; population aging; rising capital and labour costs in the health care sector; new medical technologies and drug treatments; increased incidences of chronic and new diseases, and increasing demands of patients for better and faster treatment. The Council also identified physicians as important cost drivers due to fee for service payment arrangements and due to their role in influencing the cost of care based on the treatment decisions they make for patients. The Council found that friction surrounding budget and wage negotiations across doctors, health regions and government contribute to rising health care costs. Patient-centered concerns arose over the growth in waiting lists for key health

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Alberta is drawn into question by the Council's pessimism that publicly generated revenues for the health care system from taxes and health care premiums will increase at the rate needed to meet increasing health costs.<sup>5</sup> At the heart of the Council's recommendations is an "opening up" of health care service delivery and finance in Alberta to reduce the reliance on public revenue sources. In the words of the Council

"Albertans want timely access to a full range of health services and they're increasingly willing to consider other opinions in order to get the kind of access they want (p. 31)...People who can afford to pay more would be able to use the private system and open up more space for services in the public system. This option would provide the most choice to consumers (p. 58)." (Mazankowski et al., 2001).

Presently in Canada, Medicare services covered under the Canada Health Act (CHA) account for 42 percent of health costs. Non-Medicare services, prescription drug plans and home care services account for 25 percent of costs and are paid for by the Provinces and Territories. Five percent of health costs are directly related to Aboriginal health and are paid for by the federal government. The remaining 27 percent of total health costs are covered by private sources (Marchildon 2004). The component which the Council proposes to "open up" is the 42 percent related to CHA covered services

Increased health care premiums, user fees, service co-payments, insurance deductibles, taxable benefits and/or supplementary health insurance, all proposed in the Council's report, suggest it is new sources of revenue that are needed to ensure the financial sustainability of the Alberta Health Care system.<sup>6</sup> By placing limits on the quantity of care

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services such as hip replacements, open heart surgery, cancer treatments and the difficulty individuals face gaining access to doctors in both emergency departments and family practices.

<sup>5</sup> This in part reflects that volatile energy sector royalty revenues are an important source of government revenues. Should royalty revenues fall, the required increase in taxes to meet spending needs could be large. The Council recommended that Alberta Health Insurance premiums be indexed to the overall increases in the cost of health care in Alberta.

<sup>6</sup> The Council has also suggested the province institute new models of care and reduce the role of doctors in the provision of care to get more from current health care budgets. By giving other health professionals a larger role in treatment options the Council feels that savings would be realized by substituting lower cost professionals for higher priced physician manpower. Increased private contracting, public awareness of the cost of health care and more treatment alternatives are all suggested as tools to reduce the present cost of public health care. Suggestions not directly targeted at increasing private funding include the de-standardization of health regions. For example, health regions could specialize in a given body of services in order to realize potential economies of scale. To reduce the administrative costs associated with the public Alberta health care system, the number of health regions was reduced from 17 to 9 as of June 2004.

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provided to patients in the public system such as by introducing Medical savings accounts<sup>7</sup>, publicly insured patients will be required to cover additional or remaining costs on their own from private sources of revenue. This would create demand for “gap coverage” from private insurers. Opponents of this proposed direction of change for the Alberta health care system argue that Alberta will be in violation of the 1984 Canada Health Act (CHA) and represent the first steps to a two-tiered health care system in Alberta. A two-tiered system will result if Albertans with a high willingness/ability to pay were able to access a “premium” private health care system. Any segregation of those that are able and unable to pay for services could lead to a difference in the quality and/or quantity of health services available to said parties, resulting in a two-tiered system.<sup>8</sup>

The Alberta Government has not introduced any of the more controversial suggestion made by the Council but it has passed the Health Care Protection Act (2003) (HCP Act). Under the HCP Act the Alberta government can authorize private facilities to provide Medicare covered services when it recognizes a current and ongoing need for services and finds constraints in the public system that preclude a public solution. The HCP Act forbids private ownership of hospitals and relegates private facilities to a secondary role in relation to public hospitals. In addition, approved surgical facilities are not allowed to perform high-risk procedures and must adhere to standards set by government and professional medical bodies.<sup>9</sup>

The HCP Act forbids “queue jumping” of public waiting lists for medical tests and procedures by receiving those services in private facilities. The Act also forbids charges for extra amenities or quality enhancements provided by private facilities to patients who are receiving treatment in the private facility due to capacity constraints in the public system, and for service “enhancements” tied to necessary health goods and services. In

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<sup>7</sup> Medical Savings Accounts (MSAs) allocate a set amount of money to individuals for health care services, effectively capping public coverage of medical care. The Council views MSAs as providing individuals with greater control and choice over how their health care dollars are spent while increasing individual accountability for health service consumption. If MSAs were introduced, it is possible that in the event of a chronic or serious illness an MSA would be quickly depleted. The council suggests that in the event of catastrophic illness all costs would be publicly paid. This system could result in a “cost corridor” between MSAs and full coverage. Any costs incurred in such a “corridor” would have to be paid by another party, possibly by individuals or by PHI.

<sup>8</sup> This issue has been long-recognized in Canada and was discussed in the 1961-64 Crown Commission investigating the incidence of extra-billing in Canada (Taylor, 1986).

<sup>9</sup> Procedures may be high-risk given the nature of the procedure or based on a patient’s health.

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addition, private facilities are unable to charge for private and semi-private accommodation when a patient's condition necessitates it. The HCP Act does allow private facilities to charge for extra amenities in the event the patient chooses to purchase any service enhancements that are above and beyond generally accepted medical standards. The HCP Act also requires that all charges for services be approved by government and are not allowed to exceed the cost of service provision plus a reasonable amount for administration costs. While the HCP Act limits how and what private facilities are able to charge patients for services, it opens the door for an installed private health care sector would be able to offer more services with greater billing freedom in the event that procedures currently specified as medically necessary, and under the public domain, are "de-listed".

The 2003 HCP Act and the recommendations from the Council define the development of a mixed private/public health care system that is akin to the Australian system. Thus, the Australian arrangements for health services provision and for health insurance provide a useful model for understanding what the Alberta health care system may look like in future.

### **The Australian System**

The current Australian health care system has private and public systems of health funding and service provision. Prior to the 1980s, Australia's health care system was for the most part, voluntary, privately financed and subsidized. In 1950 and 1953 Australian Commonwealth governments introduced a system of voluntary health insurance in response to the practice of fee-for-service billing by physicians which was perceived to have made medical care very expensive. Direct health insurance subsidies were introduced in 1960. To combat increasing medical services and hospitalization costs, Medibank was introduced in 1972 but dismantled after only ten-weeks.<sup>10</sup> A 2.5 percent income tax surcharge was then introduced to support the existing private, voluntary health insurance system (Deeble 1982). The 1975 National Health Insurance implemented equal cost sharing between the State and Commonwealth governments. Universal and comprehensive public health insurance was introduced in 1984, and subsidies for the private health insurance system were phased out.

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<sup>10</sup> Medibank health insurance was designed as a compulsory public system. No user fees were permitted for hospital care.

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The sustainability of private health insurance in Australia since the introduction of the universal public system has been an important policy issue. The percentage of the Australian population opting to purchase private coverage fell from a peak of 70 percent in 1982 to a low of 31 percent in 1999 (Shiell and Seymour 2002). Coincident with that decline, public hospital expenditures showed rapid increase (Harper 2003). To stem the decline in private coverage and the rise in public hospital expenditures, the Australian government responded with several policy interventions. In 1997 the Commonwealth government introduced the Private Health Insurance Incentives Scheme (PHIIS) that imposed a one percent income tax penalty to high income households that did not purchase PHI and provided a block subsidy to low income households that did purchase PHI. In 1998, the PHIIS became the Private Health Insurance Incentives Act (PHIIA) which took effect in 1999. PHIIA resulted in the subsidy component of PHIIS becoming a 30 percent subsidy to all holders of PHI, while the income tax surcharge remained unchanged.<sup>11</sup> In 2000, the Commonwealth government introduced age dependent pricing with Lifetime Health Cover (LHC). Under LHC anyone that does not have PHI coverage by the age of 30 faces a two percent per year premium increase from the base premium to a maximum of 70 percent for people aged 65 or more.<sup>12</sup>

In Australia, the private health care system is seen as complementary to, rather than competitive with, the public system.<sup>13</sup> Public facilities can treat private patients and public tax revenues can pay for private services. The Australian public health care system covers essential health services received by patients in public facilities. Presently, the Australian

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<sup>11</sup> Under PHIIA individuals receive the 30 percent subsidy from a price reduction from the insurer, who in turn collects it from the government as a transfer or as an income tax credit.

<sup>12</sup> The Australian 30 percent PHI subsidy is estimated to have cost the Commonwealth government approximately \$2 billion a year (Butler, 2001; Harper, 2003; Hurley et al., 2002; Wilcox, 2001), whereas the 1 percent tax penalty and Lifetime Cover represent a form of foregone revenue. The tax surcharge changed the cost of not holding insurance via a tax penalty, ergo making PHI more appealing to high income earners. The subsidy potentially reduced the out of pocket cost of PHI, while Lifetime Cover altered the net present cost of insurance over an individual's lifetime and created a penalty for Australians that delayed in purchasing PHI. The different incentives presented to consumers of PHI by the respective policies has led to debate regarding each policy's relative efficacy. Butler (2001) concludes that the policies will not be effective for stabilizing the demand for private insurance under present market conditions. Hurley, Vaithianathan, Crossley, and Cobb-Clark (2002) conclude that the policies are expensive and may have redistributed wealth to high-income individuals while not appearing to have greatly improved the quality of care in the public system.

<sup>13</sup> This view is supported by the (Australian) Department of Health and Family Services, the Australian Private Hospitals Association, the Australian Medical Association and the Australian Catholic Health Care Association all view Industry Commission, 1997.

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public health insurance covers all scheduled practitioner fees and costs associated with being treated as a public patient in a public hospital, 85 percent of scheduled practitioner fees associated with being treated as a public patient in a Doctor's office and 75 percent of scheduled practitioner fees when an individual declares themselves as a private patient in a public or private facility. In the case of private patients the remaining balance, 25 percent of practitioner costs and all other related costs, can be paid out of pocket by the patient or by PHI. Outside of hospitals, patients, both private and public, automatically have 85 percent of scheduled practitioner fees covered by the public fund. Doctors can recover 100 percent of the scheduled fees associated with treating public patients but in doing so must bill each patient separately and leave reimbursement up to the patient. By accepting 85 percent of the scheduled fees doctors receive bulk payments directly from the government.<sup>14</sup> PHI is not allowed to pay for any practitioner costs above and beyond the scheduled amount unless the practitioner has entered into a service agreement with a private insurance fund (Donato and Scotton, 1998).

Australian PHI operates in large part as gap insurance or as a means to pay for quality enhancements not covered by public health insurance. By declaring oneself as a private patient in a public facility an individual is not allowed to "queue jump" public patients; they must also bide their time on the same waiting lists as public patients. Private facilities, however, may not have the same wait lists as public facilities, therefore, seeking treatment in a private facility may result in a reduced wait time for care for treatments that can be provided in private hospitals. In addition, private patients in public hospitals can choose the doctor who will treat them. Accommodation costs, ambulance costs, prostheses, podiatry and other ancillary costs are not covered by public health insurance but private insurance covers most or all of these costs as well as offering extra "frills" such as private rooms, cable TV and meal upgrades (Donato and Scotton 1998, Shiell and Seymour 2002).

Under the present Australian health care system, where individuals choose to be treated as private or public patients, the public system shoulders most of the cost burden.

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<sup>14</sup> Scheduled fees, governing billing rates for health services, are agreed upon by government and the Australian Medical Association. As of September 2004, 69.1 percent of services under Medicare were bulk billed and 74.4 percent of services were billed at, or below, the scheduled fee rates (Health and Ageing, 2004). Other costs associated with medical care include lab costs, surgical theatre time and/or drugs administered on an inpatient basis. Bulk billing results in patients avoiding transaction costs associated with cost claims and doctors avoid transaction costs associated with separately billing individuals.

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Based on 1993-94 health industry costs totalling \$3.65 billion, reported by the Industry Commission (1997), the Commonwealth government funded 45 percent of total costs, State and local governments funded 22.6 percent of total health costs, individuals funded 16.5 percent of total health costs while private health funds paid for 11.2 percent of total health costs. The remaining 4.7 percent of costs were paid by other bodies.<sup>15</sup> PHI paid for 80 percent of total private hospital costs, 5.2 percent of total public hospital costs and 3 percent of total medical services costs. In 1993-94, the number of bed days in public hospitals totalled 16,289,000 while bed days in private hospitals totalled 5,355,000. With total public hospital costs for 1993-94 totalling \$9,512 million, the per bed day cost was \$593.95. Private hospitals costs totalled \$2,333 million giving a per day bed cost was \$435.67 (McLennan 1997, Industry Commission 1997). The lower per bed day cost in private facilities is likely due to the nature of the care provided relative to the public hospitals. High-cost procedures, such as organ transplants, are carried out only in public facilities.

Finally, PHI in Australia is a regulated industry that maintains the goals of non-discriminatory access to care and health insurance, exemplified by Australia's Community Rating policy.<sup>16</sup> In Australia health insurance funds are required to maintain a minimum one million dollar, or two break-even contribution months of reserves, making the Australian PHI market essentially a "pay-as-you go" system. Most private health funds in Australia are non-profit organizations, with six of the largest funds accounting for nearly 80 percent of the market and the two largest funds comprising nearly half of the PHI market in most States, of which the largest is a Commonwealth body (Industry Commission 1997). As non-profit organizations most of Australia's private funds are largely tax exempt. Private health insurers are not allowed to vary premiums by on age, health status, race, claim history or any other factors which might reflect levels of risk.<sup>17</sup> The policy of

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<sup>15</sup> Shiell and Seymour (2002). Examples of other bodies include Workers Compensation and third party automobile insurance companies.

<sup>16</sup> The Klein government's plans to restrict the number of insurers who can offer private coverage in Alberta which will likely result in the need for regulation.

<sup>17</sup> To mitigate the effects of the aforementioned market failure and the chance that a given private fund might face a higher risk group in a given location, registered health funds participate in a system known as 'reinsurance'. Reinsurance results in all insurance funds sharing the burden of chronically ill patients. Costs incurred by patients over the age of 65 and/or patients that require more than 35 days of hospitalization in one calendar year are shared by all funds, in the form of contributions to and withdrawals from a pool administered by the Private Health Insurance Administration Council (PHIAC).

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Community Rating introduces the potential problem of adverse selection in the private system as high-risk individuals do not pay premiums commensurate with their expected health costs. It may also result in individuals remaining in the public system until their demand for health goods increases, or their risk-type changes, at which point they move to the private system.<sup>18</sup>

### **The Demand for Private Insurance in the Presence of a Public Alternative:**

In the presence of a universally provided compulsory public health insurance, private health insurance demand will only emerge if the parallel systems are two-tier systems. In the absence of a quality difference between private and public care individuals would not see any benefit in paying for a good provided at a lower cost in the public system (Besley and Gouveia 1994, Cyrenne 1998, Costa and Garcia 2003, Manners 2003). Vera-Hernandez and Marcos (1999) conclude that a PHI market can exist if high-risk and high-income individuals are offered coverage and quality differences that exploit their respective preferences.<sup>19</sup> Cyrenne (1998) shows that the degree of substitutability between the public and private health sectors influences the viability of the private health sector. Cyrenne proposes that if the public health sector offers public health services at medium-quality and zero-price the private health sector will not be able to provide health services at low- or medium-quality. In addition the income threshold at which high-quality health services are purchased will increase.

In examining the demand for PHI in the context of a quality difference between private and public health care Costa and Garcia (2003) found income to exert a strong and significant effect on the probability of purchasing PHI. Glied and Jack (2003) use macroeconomic data to examine the determinants of PHI coverage and also find average income to be positively correlated with average levels of PHI coverage. Sanhueza and Ruiz-Tagle (2002) examine the impact of personal characteristics on the demand for PHI in the presence of a public health system using cross-sectional data. The authors find income

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<sup>18</sup> Private funds can require mandatory wait times before PHI is effective. Without mandatory wait times private funds are susceptible to 'hit and run' tactics by patients, where a patient purchases PHI prior to a known increase in health service consumption. After the patient receives care, he/she then drops coverage once they are healthy. In addition to mandatory wait times pre-existing conditions are often exempted from coverage.

<sup>19</sup> Vera-Hernandez (1999) examines the Catalonian health care system. In Catalonia a private health market exists alongside a public health system and serves close to twenty percent of the overall market. The private market predominantly caters to high quality demanders (usually high-income individuals) with service enhancements.

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to be positively correlated with the PHI purchase decision, albeit at a decreasing rate. In fact, they find “income is a major determinant on the decision to buy a private health plan”. Several factors are highlighted as contributing to the relationship, including high-income individuals’ preference for greater health service choice, higher education levels associated with higher-income and the ability of the rich to bear the added financial burden of PHI premiums.

Assessing the efficiency of parallel private and public health systems relative to a pure public alternative is complicated. Besley and Gouveia (1994) argue that the demand for a private model of health care would require heterogeneous preferences across society and society placing importance on recognizing said diverse preferences as opposed to placing a priority on access to care without barriers. Cyrenne’s (1998) analysis shows that if a private health sector were to exist for a high-price, high-quality system a one-size, “average” quality public health sector will over-provide health services for lower income individuals and under-provide health services for higher income individuals. On the other hand, Harper’s (2003) examination of the Australian health system finds that the existence of an optional private health system in the presence of a mandatory public health system results in a form of cross-subsidization between privately insured individuals and users of the public system. Specifically, high income users of the private health system subsidize users of the public health system as they pay twice for treatment since they contribute to the public health system with general taxes and they pay PHI premiums.

#### **Estimating the Demand for PHI in Australia:**

We investigate the annual changes in the proportion of the population with PHI in Australia for six States for the period 1990 to 2003 to infer the long run equilibrium proportion of the population with PHI coverage.<sup>20</sup> The PHI contribution and coverage data are from the Australian Government’s Private Health Insurance Administration Council’s Annual Reports (*Financial and Statistical Tables of Past Annual Reports and Operations Of The Registered Health Benefits Organisations Annual Report 2002-03*, 2004). Figure 1 presents the proportions of state populations with PHI.

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<sup>20</sup> The States analyzed are New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania. The Northern Territory is excluded.

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We estimate fixed effects specifications of the proportion of state population with PHI in first differences<sup>21</sup>

$$\Delta phi = \alpha_{ij} + \beta_1 \Delta price + \beta_2 \Delta income + \beta_3 time + \gamma_1 \Delta 97 + \gamma_2 \Delta 99 + \gamma_3 \Delta 2000 + u_{ij},$$

$$t = 1990 \text{ to } 2003$$

and

$$\Delta phi = \alpha_{ij} + \beta_1 \Delta price + \beta_2 \Delta income + \beta_4 \Delta rich + \beta_3 time + \gamma_1 \Delta 97 + \gamma_2 \Delta 99 + \gamma_3 \Delta 2000 + u_{ij},$$

$$t = 1996 \text{ to } 2001$$

We use average per capita PHI contributions as a proxy measure for the price of insurance. The price variable was calculated as the ratio of the aggregate contributions paid into PHI funds by Australians (by State) and the privately insured portion of the State population.<sup>22</sup> Aggregate State PHI contributions were taken from the PHIAC Annual Reports. The proxy for price is first differenced and denoted by  $\Delta price$  in the model specifications. To control for the influence of income on the demand for private health insurance (PHI), the change in per capita gross State product in constant 1990 Australia

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<sup>21</sup> By using pooled (across States) estimates for  $\alpha$  and  $\beta$  the OLS estimators do not usually benefit a great deal from new observations, as any new observations only affect the average of the pool. The State effects may be combined with the error term of the pooled OLS estimate; this is known as a cluster effect. Given a generic functional form,  $y_{gm} = \alpha + x_g \beta + z_{gm} \gamma + v_{gm}$ ,  $m$  indexes observations within groups (States) and  $g$  indexes the groups. Assuming the error term,  $v$ , is of the form  $v_{gm} = c_g + u_{gm}$ , where  $c_g$  refers to idiosyncratic group effects and  $u_{gm}$  is the idiosyncratic error term, combining the two makes for a hierarchical linear model (Wooldridge, 2003). If the error term,  $v_{gm}$ , exhibits heteroscedasticity a hierarchical linear model's standard error terms and estimation can be misleading. By first differencing the model the error term

$v_{gm} = c_g + u_{gm}$  becomes  $\Delta v_{gm} = \Delta c_g + \Delta u_{gm}$ . By assumption the State effects are constant across time, therefore,  $\Delta v_{gm} = \Delta u_{gm}$ . In order to alleviate cluster effect an estimation procedure following Wooldridge (2003) was used which assumes homoscedastic errors within States and heteroscedastic errors across States. To properly estimate the equation a robust variance estimator is employed. The robust variance estimator does not make any assumptions about the second moments of the errors, except they are well defined. The estimator takes the form  $\hat{v} = \left( \sum_{i=1}^N X_i' X_i \right)^{-1} \left( \sum_{i=1}^N X_i' \hat{u}_i \hat{u}_i' X_i \right) \left( \sum_{i=1}^N X_i' X_i \right)^{-1}$ . The OLS results reported in Table 2 correct for

this cluster effect.

<sup>22</sup> Contribution amounts are in constant 1990 Australian dollars. Values were calculated using consumer price index (CPI) values by capital region, as calculated by the Australian Bureau of Statistics (2004). CPI values are for each State's capital region as weighted CPI values for entire States were not available and national CPI values represent a weighting of capital region CPI values. Population data was also retrieved from the Australian Bureau of Statistics.

dollars is included in the set of explanatory variables.<sup>23</sup> We also use the change in the proportion of individuals in the State population earning more than \$75,000 constant 1990 Australian dollars to infer whether private health cover appeals to “rich” individuals.<sup>24</sup> Summary statistics for these variables are in Table 1.

The variables,  $\Delta 97$ ,  $\Delta 99$  and  $\Delta 2000$ , represent the implementation of the one percent income tax surcharge, block subsidy, 30 percent subsidy and LHC, respectively. 1997 is the year the income tax surcharge and income-related subsidies were introduced. 1999 the year the 30 percent subsidy was introduced and 2000 the year LHC was implemented. Since we are estimating our model in first differences and we specify that the policies would have had a permanent effect on the level of PHI coverage, these variables equal zero in all years but for 1997 for  $\Delta 97$ , 1999 for  $\Delta 99$  and 2000 for  $\Delta 2000$  where the respective variables are equal to one. Given the period of decreasing enrolment and the flattening of enrolment in 1998 and 1999 was private health insurance (PHI) enrolment trending towards zero or had it reached an equilibrium level? Finally, to account for this possibility, the time trend variable, *time*, in the first differenced specification captures acceleration or deceleration in the time trend.

The estimated coefficients for our models are reported in Table 2. The estimated coefficients for  $\Delta price$  are negative and statistically significant at the five percent level. The estimated coefficient for  $\Delta income$  is positive but not statistically significant. The estimated coefficient for the change in the proportion of “rich” individuals in the population is positive and statistically significant. We calculate elasticities for PHI to infer the effectiveness of government policy levers, whose goal might be to modify PHI purchase behaviour.<sup>25</sup> Table 3 reports these elasticities and suggests that demand for private health

<sup>23</sup>GSP and Price Index Data from the Australian Bureau of Statistics.

<sup>24</sup> These data are reported by the Australian Tax Office (ATO) but only for the years 1996-2001. \$75,000 in constant 1990 dollars is approximately \$100,000 in current 2004 dollars.

<sup>25</sup> Elasticities are the percentage change in the dependent variable for a one percent change in the explanatory variable, ceteris paribus. The calculation for price elasticity using the estimates from the first differenced

model is  $\varepsilon^p = \frac{\% \Delta phi}{\% \Delta price} = \frac{\Delta phi}{\Delta price} \square \frac{\bar{phi}}{\bar{price}} = \hat{\beta}_2 \square \frac{\bar{phi}}{\bar{price}}$ . The calculation for income elasticity, using

*rpcgsp* as a measure of income and the estimated coefficient from the first differenced model

is  $\varepsilon^y = \frac{\% \Delta rpcgsp}{\% \Delta price} = \frac{\Delta rpcgsp}{\Delta price} \square \frac{rpcgsp}{\bar{price}} = \hat{\beta}_3 \square \frac{rpcgsp}{\bar{price}}$ . The calculation of income elasticity using the

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insurance in presence of a public alternative is price and income inelastic. The PHI own-price elasticity estimate is -0.13. PHI income elasticity estimates (based on real per capita gross state product as a measure of income) is 0.32, indicating PHI is also income inelastic. Butler (1999) estimates “hospital only” and “hospital and ancillary” own-price elasticities of -0.66 and -0.13 and income elasticities of 0.13 and 0.25, respectively. It is of some interest that the range of the calculated PHI income elasticity estimates, with the percentage of Australians earning over \$75,000 (AUD) as a measure of income is 1.6, indicating PHI enrolment is sensitive to changes in the proportion of high-income individuals in the population.

If the estimated elasticities of demand for PHI are a good indication of the demand for PHI, then government policies that affect the price of PHI or provide tax incentives to purchasers of PHI are likely to have little impact. This conclusion is in keeping with the common belief that the 1997 and 1999 Commonwealth policies had little to do with the sharp increase in PHI enrolment observed after 2000.<sup>26</sup> If the demand for PHI is income and price inelastic then the question is what happened to the Australian government policies aimed at reducing the price of PHI? Assuming insurers are profit maximizing, a fair proposition is insurers recognized the opportunity to capture the subsidies through PHI premium increases. Table 4 shows the percentage change in Australian PHI contribution amounts by State for 1997 to 2003. The large decrease in average PHI contribution amounts in 2000 was followed by a large increase in PHI contribution amounts in 2001, indicating that private health insurers may have captured a large portion of the subsidy a year following the implementation of PHIA.

The estimated coefficients for  $\Delta 1997$ ,  $\Delta 1999$  and  $\Delta 2000$  in Table 2 indicate that if one of the Commonwealth policies was responsible for the changes in the PHI enrolment trend, it was LHC. However, even upon accounting for LHC in the regression the time-

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proportion of high-income individuals in the population and the estimated coefficient from the small sample first difference model is  $\varepsilon^r = \frac{\% \Delta rrich}{\% \Delta price} = \frac{\Delta rrich}{\Delta price} \frac{r\bar{rich}}{p\bar{rice}} = \hat{\beta}_4 \frac{r\bar{rich}}{p\bar{rice}}$ .

<sup>26</sup> Butler 2001, Hall, de Abreu Lourenco and Viney 1999, Harper 2003, Vaithianathan 2002.

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trend appears to be downward sloping.<sup>27</sup> This might explain why PHI enrolment began to decline after the initial surge in PHI enrolment following the implementation of LHC.

In the differenced model the time effects collapse down to the constant term, which is negative and statistically significant, implying a downward trend in PHI enrolment. The estimated coefficient for the variable *time* is positive and statistically significant which suggests that the trend decline in PHI coverage is slowing. According to the results, the decline in the extent of PHI coverage in Australia would have stopped in 2005 in the absence of the 1997, 1999 and 2000 Commonwealth policies. Similar to Quinn's (2002) forecast, this implies that 28.5 percent of Australia's population would have purchased PHI in equilibrium. Assuming that the effects of Commonwealth policies on the decision to purchase PHI were temporary, and the population is once again trending towards the equilibrium level of PHI coverage, forecasts indicate that the *change* in the percentage of population with PHI coverage will reach zero in 2016. The 2016 forecast equilibrium percentage of population with PHI coverage is estimated at 28.1 percent. Stabile (2001) and Frech et al. (2002) predicted a 30 percent level of coverage after 2010 for PHI in the Australian population.

### **Implications for Alberta:**

The preceding estimates suggest that, in the steady state, private health insurance coverage in Australia will be approximately 28.5 percent of the population. Assuming that this level of coverage is a reasonable approximation of the level of PHI participation that could be expected for Alberta if the government develops an Australian style health care

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<sup>27</sup> To entice consumers to purchase PHI in the post-policy world insurers offered policies with a large front end deductibles and low premiums that resulted in net premiums lower than the 1 percent tax surcharge, after the 30 percent subsidy was accounted for (Butler, 2001). The 1 percent tax surcharge was modified by the Commonwealth government to exempt individuals with high-deductible policies from the incentive schemes, but the change was not retroactive. It would appear that after paying premiums under LHC, for a short time, individuals began to realize the two percent a year penalty for purchasing PHI after the age of 30 was not a

strong incentive. Using a net present value calculation,  $NPV_t = P_t + \frac{P_{t+1}}{1+r} + \frac{P_{t+2}}{(1+r)^2} + \dots + \frac{P_n}{(1+r)^{n-1}}$ , an insurance price,  $P$ , of \$650, an interest rate,  $r$ , of five percent and a two percent penalty per year to a maximum 70 percent increase, at the age of 65, for delayed PHI enrolment two cases are compared. The first case is a 30 year old individual who purchases PHI at the age of thirty and pays \$650 each year. The second case is of the same 30 year old individual but he/she does not purchase private insurance until the age of 55 at subsequently higher premium of \$975. In both cases the individual is assumed to live until the age 70. The net present value of PHI for the former is \$11,241.34, while the latter is \$3,120.41. The rational choice is to use the "free" public health care system for a number of years and sign-up for private health insurance when one is older, *ceteris paribus*

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system then 907,244 of Alberta's 3,183,312 2004 population would choose to purchase PHI (Alberta Finance, 2004b). It is possible the 28.5 percent estimate of Alberta's population choosing to purchase PHI is optimistic. Assuming that "high-income" households are likely to be the primary market for PHI, a substantial number of PHI purchasers would be from middle- and low-income households. Data from the Survey of Household Spending (2000) show that 15 percent of Alberta households (representing 477,497 individuals) have annual incomes of at least \$75,000 in constant 1990 Canadian dollars. According to the same survey approximately 6 percent of Albertans annually earn over \$75,000, in 1990 constant Canadian dollars.<sup>28</sup> If Albertans earning over \$75,000 (1990 constant Canadian dollars) opt for PHI coverage for their families, high income household demand would account for only 130,000 Albertans.<sup>29</sup>

How affordable would PHI coverage be for Albertans? Purchasing PHI for all household members, under community rated premiums based on Australian PHI premiums, an estimated individual premium of \$836 represents less than 2 percent of gross income for a two individual household earning \$100,000 (current Canadian dollars) and 4 percent of gross income for the same household with four members. Consider that for a household with an income of \$100,000, with two dependents and two adults, annual federal and provincial taxes are \$21,014 for a two earner household and \$25,185 for a single earner household (Alberta Finance, 2004a). Therefore, for households with an income of \$100,000, the health care premium would represent four to five percent of net income.

How much fiscal relief could a greater role for PHI provide for the public health care system in Alberta? Assuming that Australian PHI contributions and PHI coverage are reasonable estimates of potential Alberta PHI premiums and coverage, and that all Albertans would continue to pay public health care premiums even if they purchase PHI, then a PHI premium for an individual of \$836 Canadian dollars would generate \$759 million dollars in revenue for the combined public and private health care systems over and beyond what is generated by the current pure public system. Current annual Alberta Health Insurance (AHI) premiums are \$528 per individual and \$1056 per family and they are

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<sup>28</sup> At time of writing \$1 AUD = \$0.914 CAD (Canoe.ca, 2004)

<sup>29</sup> Based on reported household size and individual incomes 1.26 percent of three person households have at least one individual earning over \$75,000 constant 1990 Canadian dollars, 1.26 percent of households with the same income are composed of four individuals, 1.13 percent are composed of five individuals and 0.33 percent are composed of six individuals or more.

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expected to generate \$940 million nominal Canadian dollars over the 2003-04 budget year. Total budgeted health spending in Alberta for the 2004-2005 budget year is \$7.99 billion dollars.<sup>30</sup> Thus, \$759 million nominal Canadian dollars in PHI premiums would only account for approximately 10.5 percent of health care spending in Alberta, which is less than the amount generated by current Alberta Health Insurance premiums. In essence, a PHI market with the estimated level of demand and the proposed premium would double current health care premium revenue via voluntary PHI payments. Considering that from the 2003-2004 budget year to the 2004-2005 budget year health spending in Alberta increased by over eight percent, if Alberta were to match Australian PHI premiums and enrolment levels the contribution of Alberta's PHI market would only just exceed one year's increase in public sector health costs.

If we assume that individuals who purchase PHI use the same proportion of health services and incur the same health costs as public patients, but choose to seek care in the private market, then expenditures in the public system would fall by 28.5 percent. Therefore, \$2.28 billion nominal Canadian dollars in health costs would be shifted to the private health care system. Clearly, the \$759 million annual revenue in PHI premiums would not fully fund private health care services. \$1.5 billion would need to be transferred to the private health care system to meet the (assumed) \$2.28 billion in costs. Thus, given the estimates as presented the gain to the public system would be a gain of \$759 million if PHI premiums are \$836. If the system were self-financing PHI revenues would have to equal \$2.28 billion and the required PHI premium to fully fund the privately insured segment of the population would be \$2509, or over \$10,000 annually for a family of four. Presumably at this much higher cost, fewer Albertans would opt to purchase PHI.

The gains to the public system as presented may be optimistic. Unless the private patients were to make full use of public facilities, which are already under strain, any private system might face significant start-up costs, which would further diminish any cost savings. \$2.28 billion dollars represents an upper-bound on the fiscal relief offered by the introduction of a PHI market, or a lower bound on the cost of treating 28.5 percent of the Alberta population in a private health system. It is important not to overstate the fiscal

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<sup>30</sup> Alberta Health and Wellness (2004b) As of October 1<sup>st</sup>, 2004 all Alberta seniors were exempted from paying AHI premiums.

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relief PHI can provide as some portion of PHI premium revenues will be consumed by the increased costs associated with the higher level of health care quality and “frills” that the private sector will have to provide if the private health sector is to attract any consumers. Given the necessity of higher quality health services in the private health sector it is likely the private health sector will exhibit higher average costs than the public health system. It should also be the case that the cost of any health service quality enhancements will have to be borne by users of the private system, resulting in even higher PHI premiums. In addition we should not forget that the introduction of a private health system is likely to result in significant capital costs, which would also have to be borne by users of the private system. Even if the goal of a PHI market is to reduce the costs associated with a health care system, increased public health costs may result as PHI alters the price of consuming health goods. Stabile (2001) concludes that PHI can lead to increases in health care consumption as health insurance reduces the out of pocket cost born by patients. Similarly, Vaithianathan (2002) demonstrates that PHI may not reduce usage of public health services.

The two-tier features of the Australian Health care system are apparent in Table 5. Under the current system patients can opt to be treated as private patients in public facilities, in which case the government covers a large portion of treatment costs and bears all of the capital costs associated with facilities, training of public health professionals and/or community health initiatives. That said, with \$936.00 as the 2003 average PHI contribution paid in Australia by holders of PHI, total health spending for the privately insured portion of the Australian population is close to per capita health spending in Alberta, which is approximately \$2500 annually. For Australians opting for only publicly provided health insurance, they have only 2/3 of the health care resources allocated of a privately insured patient. This may be a function of the higher quality services in the private system at higher average costs or it may represent that fewer services offered in the Australian public system. It could be that the difference between per capita spending on Australian public patients and Alberta patients can be accounted for with different billing structures and usage. It is more likely, however, that public Australian patients receive fewer resources allocated to their care and a subsequently lower quality good than Alberta patients in the pure public system and Australian patients with PHI.

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The gap between quantity and quality of health care in the private and public systems can be expected to grow over time. The public sector might see a reduction in costs as high-demanders of care move to the private system. If the pressure for newer and more expensive treatments is greater in the private system than the public system, the public system may be able to delay or forego the implementation of cost/quality increasing health services. This construct would enable consumers to subscribe to the system that better matches their preferences. However, it is fair to question whether the bulk of the population remaining in the public system would allow their system to remain at the status quo or whether remaining demand in the public system would fill the gap left by departing high demanders, eroding the cost savings associated with the PHI market. If public patients are to receive a lower-quality good so that a private health system can exist and offer quality enhancing frills to high-income individuals then definite equity issues will be raised as this would constitute an implicit welfare transfer from public patients to private patients (Hurley et al. 2002).

Political pressures to increase public health care expenditures could also weaken with the private insurance alternative for consumers. Hirschman (1970) proposed individuals can attempt to bring about change in a good by voice, political action, or by exit. With no private health insurance or service provision, individuals dissatisfied with the monopoly public system will pressure the government to fix the problem. With the introduction of a private health insurance and services alternative, high demand individuals dissatisfied with the public system can exit the public system to obtain the quantity and quality of health services that they demand. With lower demand individuals remaining in the public system, demands on the government to enrich or change the public system will weaken. By removing the political pressures on the government, the growth of the private system can lead to the degradation in the relative quality of the public system.<sup>31</sup>

### **Conclusions**

In September 2005, Alberta Health Minister Iris Evans suggested that the development of a parallel private health care system in Alberta could generate enough

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<sup>31</sup> If individuals are loyal to the public system, then they may opt to not exit the public system for the private system. Similarly, Shiell and Seymore (2002) argue that people may be motivated to support their public health care systems based on altruism making it difficult to sustain a private health care system in the presence of a public alternative.

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financial relief to the public system that the Alberta government could eliminate public health insurance premiums in Alberta. Our estimate that private health care premium revenue would equal public health care premium revenues suggests that the government could eliminate the public premiums, but not without reducing per capita health care expenditures on the public system.

For any private system to bring significant relief to the public system a large enough number of individuals must opt to consume the private good instead of the public good. The introduction of a private system would require the political will to institute a tiered health market and to maintain the current average level of service in the public health system. We estimate that less than 30% of Albertans would purchase PHI coverage and at most, the increase revenues from private health care premiums would amount to 10% of current health care expenditures in Alberta. Some of these additional revenues would be covering the added costs of “frills” which reduces the real resource gains for the public system. In addition, our analysis has ignored start-up costs of private insurance and private facilities, and the regulatory costs that would be associated with introducing a private health system. We have also ignored the inflationary effects on health care costs of the competition for scarce health care inputs that may arise with the development of a private health sector. All of these considerations would probably increase costs in both the public and private systems of care, reducing the magnitude of any cost savings which might result with the introduction of a private health insurance market.

While the increased revenue from private health care would likely be small and the fiscal relief to the public system transitory, allowing a for the development of a private health market to better match health services with individuals’ preferences is an efficient outcome. A private system will allow high demand, high income Albertans to better receive a level/quality of care which better matches their preferences and abilities to pay. This is likely to be to the detriment of quality in the public system, which may raise equity concerns. The movement of individuals whose preferences do not match the public system of health care to the private health system may reduce political pressures to improve service levels in the public health system. This could make it easier for the public system to offer an average quality level of care in the face of a superior quality private health system.

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Table 1: Summary Statistics

VARIABLES	DEFINITION	Mean	Standard Deviation	Min	Max
$\Delta\phi$	The change from year to year in the percentage of the population with private hospital insurance (dependent variable)	-0.00144	0.0379	-0.596	0.146
$\Delta\text{price}$	The change from year to year in the real average private health insurance contribution amount in Constant 1990 dollars	20.480	66.623	-214.59	118.088
$\Delta\text{income}$	The change from year to year in the real per capita state gross product in Constant 1990 dollars	24.65064	62.11127	-199.225	165.4063
$\Delta\text{rich}$	The change from year to year in the percentage of the population annually earning more than \$75,000 in constant 1990 dollars	0.00074	0.00104	-0.00151	0.002434

Table 1A: Summary Statistics for New South Wales

VARIABLES	DEFINITION	Mean	Standard Deviation	Min	Max
$\Delta\phi$	The change from year to year in the percentage of the population with private hospital insurance (dependent variable)	-0.00198	0.046006	-0.032	0.146
$\Delta\text{price}$	The change from year to year in the real average private health insurance contribution amount in Constant 1990 dollars	16.52008	73.64185	-189.108	118.0884
$\Delta\text{income}$	The change from year to year in the real per capita state gross product in Constant 1990 dollars	35.32426	50.00778	-40.0574	126.4587
$\Delta\text{rich}$	The change from year to year in the percentage of the population annually earning more than \$75,000 in constant 1990 dollars	0.00114	0.001408	-0.00098	0.002434

Table 1B Summary Statistics for Victoria

VARIABLES	DEFINITION	Mean	Standard Deviation	Min	Max
$\Delta\text{phi}$	The change from year to year in the percentage of the population with private hospital insurance (dependent variable)	-0.00596	0.043077	-0.0477	0.1245
$\Delta\text{price}$	The change from year to year in the real average private health insurance contribution amount in Constant 1990 dollars	21.89315	72.25147	-189.97	99.75119
$\Delta\text{income}$	The change from year to year in the real per capita state gross product in Constant 1990 dollars	27.62954	65.75313	-111.914	95.33716
$\Delta\text{rrich}$	The change from year to year in the percentage of the population annually earning more than \$75,000 in Constant 1990 dollars	0.001023	0.000986	-0.00055	0.002051

Table 1C Summary Statistics Queensland

VARIABLES	DEFINITION	Mean	Standard Deviation	Min	Max
$\Delta\text{phi}$	The change from year to year in the percentage of the population with private hospital insurance (dependent variable)	0.006639	0.034046	-0.0135	0.1156
$\Delta\text{price}$	The change from year to year in the real average private health insurance contribution amount in Constant 1990 dollars	16.67147	72.98216	-177.92	110.1021
$\Delta\text{income}$	The change from year to year in the real per capita state gross product in Constant 1990 dollars	23.71905	57.06758	-101.533	102.5999
$\Delta\text{rrich}$	The change from year to year in the percentage of the population annually earning more than \$75,000 in Constant 1990 dollars	0.00048	0.001022	-0.00129	0.001287

Table 1D: Summary Statistics for South Australia

VARIABLES	DEFINITION	Mean	Standard Deviation	Min	Max
$\Delta\phi$	The change from year to year in the percentage of the population with private hospital insurance (dependent variable)	-0.00398	0.041658	-0.0425	0.123
$\Delta\text{price}$	The change from year to year in the real average private health insurance contribution amount in Constant 1990 dollars	22.43583	78.50743	-214.59	94.04541
$\Delta\text{income}$	The change from year to year in the real per capita state gross product in Constant 1990 dollars	15.29602	63.79203	-89.9205	148.6293
$\Delta\text{rrich}$	The change from year to year in the percentage of the population annually earning more than \$75,000 in Constant 1990 dollars	0.000679	0.000888	-0.00083	0.001262

Table 1E: Summary Statistics for Western Australia

VARIABLES	DEFINITION	Mean	Standard Deviation	Min	Max
$\Delta\phi$	The change from year to year in the percentage of the population with private hospital insurance (dependent variable)	0.003162	0.029765	-0.02	0.0917
$\Delta\text{price}$	The change from year to year in the real average private health insurance contribution amount in Constant 1990 dollars	21.22948	47.47306	-111.683	87.24408
$\Delta\text{income}$	The change from year to year in the real per capita state gross product in Constant 1990 dollars	47.81201	62.36322	-65.6257	165.4063
$\Delta\text{rrich}$	The change from year to year in the percentage of the population annually earning more than \$75,000 in Constant 1990 dollars	0.000799	0.001329	-0.00151	0.001913

Table 1F: Summary Statistics for Tasmania

VARIABLES	DEFINITION	Mean	Standard Deviation	Min	Max
$\Delta\text{phi}$	The change from year to year in the percentage of the population with private hospital insurance (dependent variable)	-0.00651	0.036269	-0.0596	0.1002
$\Delta\text{price}$	The change from year to year in the real average private health insurance contribution amount in Constant 1990 dollars	24.13128	61.1002	-140.31	90.27417
$\Delta\text{income}$	The change from year to year in the real per capita state gross product in Constant 1990 dollars	-1.87703	71.71081	-199.225	52.8363
$\Delta\text{rrich}$	The change from year to year in the percentage of the population annually earning more than \$75,000 in Constant 1990 dollars	0.000322	0.000827	-0.00111	0.000967

Table 2: Regression Results

Explanatory Variable	Models	
	(1) N=78 R <sup>2</sup> =0.8743	(2) N=30 R <sup>2</sup> =0.9860
	Coefficient (t-stat)	Coefficient (t-stat)
constant	-0.024197* (-3.51)	-0.134439* (-19.34)
Δprice	-0.000090* (-3.86)	-0.000227* (-2.92)
Δincome	0.000055 (1.61)	0.000005 (0.16)
Δrich	n/a	9.463047* (2.65)
time	0.001595* (3.78)	0.012726* (13.55)
97	-0.004928* (-4.01)	-0.001964 (-0.31)
99	0.011495* (6.98)	0.015732* (2.80)
2000	0.108978* (9.64)	0.045783 (1.92)
<i>Notes: t-statistic in parentheses * significant at 5%-level</i>		

Table 3 Elasticities of Demand

State	Price Elasticity	Income Elasticity (rpcgsp)	Income Elasticity (rrich)
New South Wales	-0.1100	0.3252	1.8650
Victoria	-0.1240	0.3452	1.7435
Queensland	-0.1366	0.3420	1.6009
South Australia	-0.1448	0.2790	1.3148
Western Australia	-0.1221	0.3648	1.7572
Tasmania	-0.1173	0.2452	1.1044
National	-0.1253	0.3161	1.5644

Table 4 Percent Change in Real Average Contribution Amount

Year	NSW	Vic.	Qld.	S.A.	W.A.	Taz.
1997	14.1-percent	7.4-percent	5.2-percent	3.7-percent	8.3-percent	9.0-percent
1998	8.4-percent	11.1-percent	12.2-percent	6.5-percent	7.9-percent	12.2-percent
1999	6.9-percent	4.4-percent	16.2-percent	4.5-percent	0.3-percent	9.7-percent
<b>2000</b>	<b>-39.6-percent</b>	<b>-38.4-percent</b>	<b>-35.3-percent</b>	<b>-36.1-percent</b>	<b>-20.7-percent</b>	<b>-26.0-percent</b>
<b>2001</b>	<b>19.8-percent</b>	<b>16.2-percent</b>	<b>17.3-percent</b>	<b>12.1-percent</b>	<b>8.8-percent</b>	<b>14.3-percent</b>
2002	-0.7-percent	-0.6-percent	-2.8-percent	-1.5-percent	0.0-percent	-4.2-percent
2003	5.5-percent	7.1-percent	8.5-percent	6.4-percent	12.9-percent	9.1-percent

Table 5 Comparison of Health Spending in Alberta and Australia

2004 Per Capita Budgeted State Health Spending (nominal dollars)		Average 2003 PHI contribution amounts (nominal Australian dollars)	Total Resource Allocation to Privately Insured Individuals (nominal Australian dollars)
New South Wales	\$1,295.80	\$892.04	\$2,187.84
Victoria	\$1,480.32	\$892.68	\$2,372.99
Queensland	\$1,434.43	\$922.90	\$2,357.33
South Australia	\$1,736.32	\$1,030.67	\$2,766.99
Western Australia	\$1,625.11	\$938.00	\$2,563.11
Tasmania	\$1,716.16	\$937.60	\$2,653.76

Figure 1 Percent of Australian State Populations with PHE Coverage 1990-2003

