THE UNIVERSITY OF MELBOURNE

Melbourne Institute Working Paper Series

Working Paper No. 2/06

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MELBOURNE INSTITUTE
of Applied Economic and Social Research

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Melbourne Institute Working Paper No. 2/06

ISSN 1328-4991 (Print)
ISSN 1447-5863 (Online)
ISBN 0 7340 3201 3

February 2006

* This paper arises out of a consultancy project funded by the Victorian Department of Premier and the Cabinet. Peter Dawkins now works at the Victorian Department of Treasury and Finance. The views expressed in this paper are those of the authors and do not represent the views of the Victorian Government. Jongsay Yong is the corresponding author.

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Abstract

The Australian government implemented a series of new private health insurance policies between 1997 and 2000. As a result, the proportion of the population with private health insurance coverage increased by more than 35%. However, this paper finds significant evidence that the policy reform disproportionately favours high income earners. In particular, the 30 per cent premium subsidy represents a windfall gain for households which would have purchased private health insurance even without the rebate. The amount of the gain is approximately $900 million per year, a large proportion of which would go to higher income households.

1. Introduction

Despite the availability of Medicare, a publicly funded universal health insurance, private health insurance (PHI) remains a prominent component of the Australian health system. For much of the 1990s, around 30-40 per cent of the population was covered by PHI. Until recent years, however, the coverage was on a declining trend and put the viability of the PHI industry into question. Much of public discussion in that period, for example, centered on the operation of public hospitals thought to be under undue pressure due to the rising demand resulting from the diminishing demand for private hospital services.

With a purported goal of reducing the burden on public hospitals, the Australian government introduced three major PHI policy initiatives aiming at reforming the private health sector during 1997-2000. These are, in chronological order, (i) the Private Health Insurance Incentives Scheme (PHIIS), which imposes a tax levy on high-income earners who do not have PHI, and provides a means-tested subsidy schedule for low-income earners who purchase PHI; (ii) a 30 percent premium rebate for all PHI policies to replace the means-tested component under PHIIS; and (iii) Lifetime Health Cover, which permits a limited form of age-related risk rating by insurance funds. Together, these policy initiatives turned out to be effective in encouraging the uptake of PHI. The percentage of the population covered by PHI rose from 31 per cent in June 1997 to 45 per cent in the same month in 2001.

However, the fiscal costs of the policy reform are substantial. In particular, the 30 percent premium rebate accounts for more than $2 billion of government health expenditure each year. More importantly, it has been argued that the non-means tested subsidy is regressive, disproportionately benefiting high income earners. Low income households are at best unaffected and at worst may even experience reduced access to the health system.

In this paper, we attempt to assess the income distributive consequence of the recent PHI policy reform. Such issue has begun to attract public interests with the increasing concerns on

the efficacy and the costs of the subsidy. Unfortunately, to our knowledge, there is no existing study which analyse the distributive effects of the policies with sufficient empirical rigours to result in any conclusive evidence other than the high income groups benefit the most. Even if they are the major beneficiary, subsidizing the high income groups may still be acceptable if their participation in any PHI scheme depends on such subsidy. In that case, the subsidy can still be considered effective in attracting people to PHI. Unfortunately, it is still not clear if that is the case and this papers attempt to provide an answer.

To assess whether or not subsidising everyone is a sound policy, we estimate PHI demand models using micro-level data based on the 1995 and 2001 National Health Surveys. The estimated demand equations allow us to conduct counterfactual analyses of what would have happened if there were no policy reform. The results confirm that the $2 billion a year premium subsidy on PHI benefit mostly high-income households. More importantly, however, there is significant evidence that such households would have purchased PHI even without the 30% premium rebate and/or other policy initiatives. For the first time in this debate, we attempt to provide an estimate of the amount of such "unnecessary" subsidy.

The remainder of this paper is organised as follows. Section 2 gives an overview of the background to the recent PHI policy reform. Section 3 outlines the empirical methodology and describes the data. Section 4 discusses the estimation results. Finally, some concluding remarks are given in Section 5.

2. Background to recent PHI policy reform

Health insurance has had a long history in Australia. Its origin can be traced back to Federation time, when friendly societies developed a form of privately funded health insurance to provide funding for medical services for lower paid workers. As the range of specialised and intensive hospital-based services widened in response to increasing incomes,

state governments became more involved in both the running and provision of medical care services. In the years up to 1970, voluntary insurance subsidised by Commonwealth benefits became the cornerstone of health service provision in Australia. Means tests were applied to government contributions and pensioners were supported to the extent that generally they bore no co-payments for care or purchase of pharmaceuticals or diagnostic services. Over time the inequity of these arrangements led to considerable pressure for change.

A watershed year for the Australian health care system occurred in 1972, when Medibank, a publicly funded universal health insurance system, was announced, and the system was fully in place in 1975. There were several major modifications to Medibank in the ensuing years, and following a change of government in 1984, the name was changed to Medicare. Yet, in all these changes, the universal nature of the health insurance remained. Thus, under Medicare, all Australians have access to free medical treatment as a public patient in a public hospital, and free or subsidised treatment outside of hospitals by health care providers such as general practitioners, optometrists, and others.

The appeals of Medicare to the masses, coupled with real and perceived problems associated with PHI (Cormack, 2002), caused the proportion of population covered under PHI to decline steadily in the 1990s. According to figures from Private Health Insurance Administration Council (PHIAC), PHI coverage fell from 41 per cent in 1992 to an all-time low of 30 percent in 1998.

Concerned that the fall in PHI take-up rate might impose undue burden on the public hospital system, the government introduced a series of PHI policy initiatives in the late 1990s. First was the Private Health Insurance Incentives Scheme (PHIIS), introduced in July 1997. Under this initiative, high-income earners were “encouraged” to purchase PHI via the introduction of a tax levy which penalized those who did not purchase PHI. At the same time, a means-tested partial refund on health insurance premiums was made available to low-

income households. The response to these changes was not convincing. The percentage of the population with PHI actually fell from 31.9 in June 1997 to 30.1 at the end of 1998 (see Figure 1).

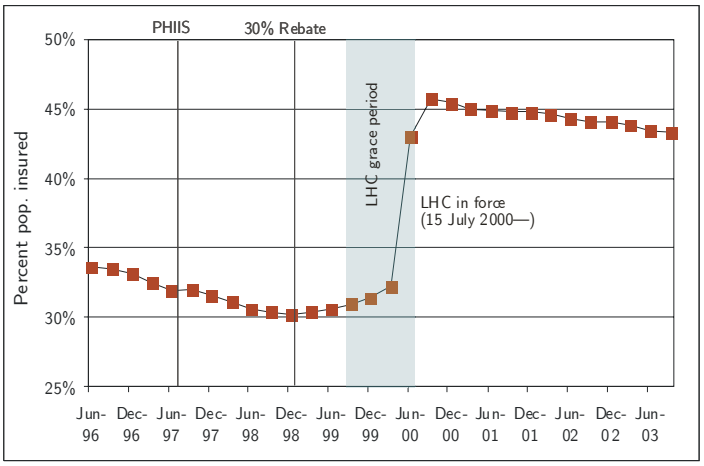

Figure 1

Proportion of Population with Private Health Insurance, 1996-2003

In early 1999, the PHIIS was amended by a second policy initiative. The means-tested subsidy component was replaced by a 30% premium rebate regardless of income and applicable to both new and existing policies.[1] The response to the rebate was slow, but it did lead to a small increase in the percentage of the population with PHI. By the end of 1999, the take-up rate increased to 31.1 per cent from 30.1 percent at the end of 1998.

Finally, the third major policy initiative was introduced in July 2000.[2] A limited form of risk-rating known as the Lifetime Health Cover (LHC) was introduced into the pricing of PHI. Prior to the new policy, under the community rating regulation, health insurance funds were required to charge a uniform premium for any given policy regardless of health risks. The LHC allows a certain degree of risk rating by allowing health insurance funds to vary

[1] This policy was initially estimated to cost the government $1.09 billion. However, with a substantial increase in the PHI take-up rate by 2001, the cost has exceeded $2 billions a year in the subsequent years.
[2] This policy was announced in September 1999, but took effect in July 2000 to allow for a nine-month "grace period".

premiums according to age of the new PHI member. In particular, anyone who joins a health insurance fund for the first time at an age higher than 30 years will be required to pay a higher premium.[3]

As depicted in Figure 1 and analysed in other studies, these policy initiatives have been effective in encouraging the uptake of PHI (Butler, 2002; Frech et al., 2003; Palangkaraya and Yong, 2005). The percentage of population with PHI increased from approximately 31 per cent in 1999 to around 45 per cent at the end of 2001.

3. Empirical Methodology and Data

The methodology is similar to the one we used in a separate study (Palangkaraya and Yong, 2005) following Barrett and Conlon (2003). The goal is to identify households which took up PHI because of the new policies and to link their decisions to their economic backgrounds, in particular their income, while controlling for all other factors which may also affect their decisions. Given the lack of longitudinal data, it is not possible to directly identify such households. Instead, the identification is done indirectly via the construction of counterfactuals. In particular, we ask ourselves the following question: of those households with PHI coverage in 2001, which ones would not have purchased PHI had there been no PHI policy reform?

We perform the counterfactual analysis utilizing our estimates of PHI demands in two periods. The first one is PHI demand in 1995, a period before the introduction of the policy reform. The second one is PHI demand in 2001, which is just after the significant jump in the PHI take-up rate. The demand models are specified as a standard binary choice probit model. The probability of having PHI is modeled as:

$$\Pr[\text{PHI} = 1] = f(x, \beta) + e, \qquad (1)$$

[3] Specifically, an additional 2% loading is charged for every additional year above 30.

where f represents the normal cumulative distribution function, x is a vector of observable household characteristics, β is the corresponding vector of parameters to be estimated, and e represents a random term of unobservables.

In estimating (1), we control for the influence of a multitude of factors affecting households' insurance decision by including demographic, social and economic, and health characteristics of the households.[4] In the counterfactual analysis, we "force" households in 2001 to make decision as if they lived in 1995. We do this by applying the estimated 1995 PHI demand model on the characteristics of the 2001 households.

We estimate the PHI demand models using cross-section data from the two most recent health surveys, the 1995 and 2001 National Health Surveys (NHS). Both surveys were conducted by the Australian Bureau of Statistics. Table 1 summarizes the samples of

Table 1

Private Health Insurance Coverage in the sample data

	1995		2001	
	No PHI	PHI	No PHI	PHI
SINGLE				
Number in the sample	3,534	1,201	2,997	1,808
Proportion with PHI (%)	–	25.4	–	37.6
FAMILY				
Number in the sample	3,928	3,058	4,614	4,952
Proportion with PHI (%)	–	43.8	–	51.8

households according to their insurance status.[5] Two points are worth noting. First, the percentage of households with PHI increased noticeably between 1995 and 2001, by 12.2 and

[4] Table A.1 in lists the variables used in the estimation of equation (1). The explanatory variables fall into seven categories, namely person descriptions, States/Territories, age, education, income and employment, health status, and health habits. Care has been taken to ensure that the variables are defined consistently across the 1995 and 2001 surveys.

[5] The original 1995 and 2001 NHS data contain 53,828 and 26,862 records of individuals. Our sample sizes are considerably smaller due to the elimination of records with incomplete and non-useable observations.

8.0 percentage points, for singles and families, respectively. Second, when compared to singles, families have a higher tendency to have PHI.[6]

Table 2 summarises the data further with a number of descriptive statistics.[7] In terms of income, there is a large difference between households with PHI and those without. For example, in 1995, the average gross annual income of single individuals with PHI is approximately 37% higher than those without PHI. Furthermore, the income gap increases to 63% in 2001. Similarly for families, those with PHI have, on average, higher levels of household income as compared to those without PHI. It is also apparent that the general income level increased significantly between 1995 and 2001. Since the comparison does not control for other relevant factors such as age and education, it is premature to draw any conclusion regarding the distributive effects of the policy reform.

Table 2

Select characteristics of PHI and Non-PHI members

	SINGLE				FAMILY			
	1995		2001		1995		2001	
	No PHI	PHI	No PHI	PHI	No PHI	PHI	No PHI	PHI
Income ($10,000)*	1.871	2.567	2.159	3.514	3.140	4.514	4.048	6.987
Smoker**	0.337	0.164	0.323	0.183	0.328	0.164	0.295	0.143
No exercise**	0.350	0.265	0.327	0.244	0.405	0.312	0.360	0.261
Family size*					2.946	2.907	3.050	3.118
No. of children ≤18 years*					1.075	0.885	0.960	0.888
No. of children <5 years*					0.329	0.221	0.275	0.224
No. of chronic conditions of children*					0.161	0.100	0.056	0.054

*population weighted average
**population weighted proportion

The figures in Table 2 also suggest that households with higher health risks are no more likely to purchase PHI. In fact, there is a strong tendency for smokers, who are often

[6] We distinguish between two types of households, single and family, for two reasons. First, as will be shown later, these two types of households behave differently in their decisions to purchase PHI. In addition, families have important characteristics that are not applicable to singles, e.g., family size and number of children.
[7] The complete list of characteristics is provided in Table A.2 in the appendix.

considered as a high-risk group, to *not* purchase PHI. Furthermore, a high proportion of those without PHI, singles or families, do not exercise.[8] Perhaps, this reflects different risk preferences of individuals towards health, in the sense that smokers and people who exercise less are likely to be risk takers and thus less likely to be privately insured.

Furthermore from Table 2, the figures also suggest that families with PHI appeared to have fewer children below the age of 18 years, and also have fewer average chronic conditions per child. Thus it seems that families with lower health-risks tend to have more insurance! However, it is possible that this may simply reflect differences in income between large and small families and their ability to afford PHI.

4. Results

PHI Demand

The estimated probit PHI demand models are summarized in Table 3.[9] The estimated coefficients generally have the expected signs and are reasonably consistent across the two periods. For examples, income, education, and occupation have positive effects which are statistically significant in most cases. The exceptions are variables related to health-risks. Although PHI status is positively related to the number of chronic conditions, it is negatively related to indicators of poor health. For examples, smokers and ex-smokers, who generally have higher health risks, are less likely to have PHI. This could possibly reflect the risk preference of smokers rather than their health-risks. That is, it is quite likely that smokers reveal themselves to be less risk-averse and, therefore, less inclined to have PHI on top of the universally available Medicare.

[8] For families, the personal characteristics summarized in Table 2 refer to those of head of the household (husband/wife/partner/lone parent).
[9] In the estimation, we applied the sampling weights provided in the NHS data.

Table 3

PHI Demand Coefficient Estimates, 1995 and 2001.

HOUSEHOLD CHARACTERISTICS	SINGLE		FAMILY	
	1995	2001	1995	2001
DEMOGRAPHICS				
female	0.1845 **	0.2009 **		
married	-0.3313 **	0.0143		
immigrant	-0.2370 **	0.6650	-0.5423 **	-0.4576 **
concession	-0.5728 **	-0.3377 **	-0.4486 **	-0.0534
famsize			0.3256 **	0.0545 #
children			0.0646	0.1229 **
children18			-0.3148 **	-0.0528
Age (years)				
18–19	-0.5369 **	-0.0238	-0.3506	-1.3487 **
20–24	-0.6220 **	-0.3560 **	-0.4834 **	-1.0056 **
25–29	-0.6659 **	-0.6126 **	-0.3666 **	-0.6071 **
25–29	-0.6659 **	-0.6126 **	-0.3666 **	-0.6071 **
30–34	-0.4857 **	-0.1309	-0.2188 *	-0.2405 **
35–39	-0.2606	0.0265	-0.1791 *	-0.1222 *
45–49	-0.1457	0.1686	0.1347 #	0.1965 **
50–54	0.1500	0.2983 *	0.3267 **	0.3480 **
55–59	0.2436	0.2913 *	0.5441 **	0.4890 **
60–64	0.6505 **	0.3371 **	0.8394 **	0.6289 **
65–69	0.5673 **	0.3920 **	1.1455 **	0.8235 **
70–74	0.8213 **	0.4351 **	1.2990 **	1.0061 **
75–79	0.7832 **	0.3021 *	1.1446 **	0.5899 **
80+	0.7697 **	0.3773 **	1.1832 **	0.7299 **
ECONOMIC				
income	0.2204 **	0.1242 **	0.0287 **	0.1366 **
income^2	-0.0226 *	-0.0006	0.0086 **	-0.0020 *
Education				
degree	0.1400	0.2479 **	0.2098 **	0.1741 **
postsecondary	0.0184	0.1011 *	0.0746 #	0.0538 #
left15	-0.3276 **	-0.2229 **	-0.2172 **	-0.2393 **
Source of income				
selfemploy	-0.1045	0.1149	-0.0098	0.0113
pension	-0.1047	- 0.3797 **	-0.4944 **	-0.1860 **
otherinc	0.3046 *	0.4116 **	0.0873	0.3303 **
Occupation				
admin	0.0580	0.4175 **	0.4072 **	0.3710 **

continued on the next page …

Table 3

PHI Demand Coefficient Estimates, 1995 and 2001 (continued)

HOUSEHOLD CHARACTERISTICS	SINGLE		FAMILY	
	1995	2001	1995	2001
prof	0.0050	0.1322	0.2570 **	0.2102 **
paraprof	-0.1133	0.0942	0.4360 **	0.2531 **
clerical	0.1392	0.1110	0.2336 **	0.1998 **
plantopr	-0.0826	-0.1829	-0.0337	-0.2403 **
laborer	-0.1916	-0.1165	-0.1255	-0.2455 **
HEALTH RISK				
diabetic	0.0585	-0.0831	0.0343	-0.2014 **
hiblood	0.1824 *	0.1478 *	0.0501	-0.0067
hicholes	0.0343	-0.1227	0.0163	-0.0169
poorhealth	-0.1217	-0.1393	-0.3822 **	-0.4073 **
fairhealth	-0.1270	-0.1208 *	-0.2589 **	-0.0896 *
underweight	0.0852	0.0863	-0.0119	-0.1730 *
overweight	0.0180	0.0210	0.1137 **	0.0330
lowalcohol	0.0628	0.1000	0.1691 #	-0.0204
hialcohol	0.2352	-0.1999 #	-0.0665	-0.0391
exsmoker	-0.2204 *	-0.1688 **	-0.1206 *	-0.1327 **
smoker	-0.4859 *	-0.4181 **	-0.3378 **	-0.4336 **
noexercise	-0.0879	-0.0470	-0.1770 **	-0.0899 *
loexercise	0.1244	0.1426 **	-0.0806	0.0001
hiexercise	-0.0672	0.1224	-0.0097	0.0679
numchronic	0.0431 **	0.0386 *	0.0346 **	0.0458 **
chldnumchronic			0.0191	0.2177 **
STATE OF RESIDENCE				
VIC	0.1993 **	0.1004 #	0.0134	0.0239
QLD	0.1208	0.0719	0.0139	0.0926 *
SA	0.4171 **	0.1782 *	0.1103 #	0.1863 **
WA	0.2848 **	0.3448 **	0.0835	0.2234 **
TAS	0.2684 *	0.1105	0.1253	0.2825 **
NT	0.0818	-0.0409	-0.0951	-0.0485
ACT	0.0375	0.1509	-0.1275 #	-0.1059
CONSTANT	-0.3828 *	-1.1392 *	-0.7378 **	-0.0474

**, *, #: statistically significant at 1%, 5%, and 10% level, respectively.

Counterfactual predicted probabilities if there were no policy reform

Using the estimated probit models, we compute predicted probabilities of households for having PHI given their characteristics. We argue that a straightforward comparison of the two sets of predicted probabilities fails to account for relevant changes that took place during the

two survey years. For example, during the five-year period, household income has increased, health insurance products have become more diverse, and macroeconomic conditions have changed, all of which may be important enough to have influenced households' PHI choices even if there were no policy reform.

To avoid mixing the effects of these changes with the effects of the policy reform, we construct a hypothetical situation by "transporting" households in 2001 to 1995. This is done by using households' 2001 characteristics on the estimated 1995 PHI demand to predict their PHI decision as if they were faced with the 1995 conditions, i.e. under the old PHI regime. We call the resulting probability estimates "counterfactual predicted probabilities." The effects of the policy reform are thus obtained by comparing the counterfactual predicted probabilities of having PHI with the actual predicted probabilities.

We conduct the comparison across income groups using the ABS index of socio-economic standing, SEIFA.[10] The results are summarized in Table 4, which shows that the effects of the policy reform are increasing in SEIFA index for both household types. The reform is estimated to have increased the probability of having PHI for singles in the highest quintile by 16.6 percentage points, while an increase of only 8.65 percentage points were

Table 4

Average predicted probabilities of PHI membership in 2001, by SEIFA.

SEIFA Index Quintiles	Single			Family		
	No policy reform*	Actual	Policy effects =(3)-(2)	No policy reform*	Actual	Policy effects =(6)-(5)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1st (low)	0.1904	0.2769	0.0865	0.2774	0.3697	0.0923
2nd	0.2087	0.3213	0.1126	0.3439	0.4644	0.1205
3rd	0.2308	0.3540	0.1232	0.3810	0.5077	0.1267
4th	0.2466	0.3830	0.1364	0.4240	0.5679	0.1439
5th (high)	0.2994	0.4654	0.1660	0.5429	0.6874	0.1445

*Counterfactual probabilities if there were no policy reform introduced between 1995 and 2001.

[10] The details of how SEIFA index is constructed can be found in Australian Bureau of Statistics (1998).

registered for those in the lowest quintile. Thus, the policy effects on the highest SEIFA group are almost twice as strong. Figure 2 depicts the relationship between income and the policy effects directly using the equivalent income deciles.

Figure 2

Probability of having PHI in 2001, by equivalent income deciles

Table 4 also reveals another important finding. Under the counterfactual situation, households in the higher SEIFA quintiles are more likely to have PHI. This means more households from the high SEIFA groups would have purchased PHI even in the absence of

the recent policy reform, which suggests that such households enjoy "windfall gains" under the 30% premium rebate.

Counterfactual PHI status and income

To further evaluate the impact of the recent PHI policy reform, we classify households into those which are "unlikely," "somewhat likely," or "very likely" to purchase PHI if there were no PHI policy reform. Such classification is based on the distribution of the counterfactual predicted probabilities. The classes consist of the following groups: bottom 30%, middle 40%, and top 30% based on the counterfactual probability distribution.[11] For each class, we compare the counterfactual PHI status with the actual status in 2001. Table 5 summarises the results.

Table 5

PHI membership status in 2001

Counterfactual*	Actual					
	Single			Family		
	No PHI (%)	PHI (%)	Total	No PHI (%)	PHI (%)	Total
Unlikely	81.1	18.9	0.360	77.5	22.5	0.261
Somewhat likely	67.8	32.2	0.397	49.6	50.4	0.408
Very likely	35.5	64.5	0.244	20.0	80.0	0.332

*Counterfactual status: the likelihood to have PHI in 2001 if there were no new policies introduced between 1995 and 2001.

It can be seen from Table 5 that most households which were unlikely to purchase PHI under the counterfactual no policy reform regime actually did not purchase PHI in 2001. For example, 81.1% of singles which were unlikely to purchase PHI turned out to be without PHI in 2001. On the other hand, a significant proportion of those which were classified as very likely to purchase PHI were actually privately insured after the policy reform took place. For

[11] Weighted by population-weights.

example, 80.0% of families classified to be very likely to purchased PHI actually purchased it in 2001.

One may argue that the bulk of the effects would be concentrated on those at the margin, i.e., those which were somewhat likely to purchase PHI. In fact, the last column of Table 5 shows that 39.7% of singles and 40.8% of families fall into this category. However, even among such group, only 32.2% of singles and 50.4% of families within the group ended up purchasing PHI. Thus, seen in the context of the large amount of public subsidy involved, the estimated effects of the recent PHI policy reform on those which were not likely to purchase PHI appear to be rather weak.

To further explore the distributive consequences of the policy reform, we repeat the previous analysis on two separate groups of households: those in the lowest (first) SEIFA quintile and those in the highest (fifth) quintile. The results are presented in Table 6.

Table 6

PHI membership status in low and high income areas in 2001.

Counterfactual*	Actual					
	No PHI (%)	Single PHI (%)	Total	No PHI (%)	Family PHI (%)	Total
Low income area (SEIFA 1st quintile)						
Unlikely	91.8	8.2	0.437	87.3	12.7	0.444
Somewhat likely	75.7	24.3	0.395	61.7	38.3	0.405
Very likely	47.6	52.4	0.168	33.4	66.6	0.152
High income area (SEIFA 5th quintile)						
Unlikely	57.2	42.8	0.257	61.6	38.4	0.109
Somewhat likely	56.4	43.6	0.365	38.3	61.7	0.338
Very likely	24.1	75.9	0.379	12.9	87.1	0.553

*Counterfactual status: the likelihood to have PHI in 2001 if there were no new policies introduced between 1995 and 2001.

It is apparent from Table 6 that the policy effects were minimal for households in the first SEIFA quintile. Most of those which were unlikely to purchase PHI in the hypothetical

situation remained without PHI coverage in 2001. Only 8.2% of singles and 12.7% of families in the "unlikely" category took up PHI after the policy reform. In contrast, the figures for households in the fifth quintile are much higher. Almost half (42.8%) of high income singles unlikely to purchase PHI under the hypothetical situation turned out to be privately insured in 2001. This is approximately five times the corresponding figure from the low income singles. In short, there is strong evidence that households most affected by the policy reform are those having high socio-economic standing and high income.

Quantifying the amount of "wasted" subsidy

Tables 5 and Table 6 reveal a significant proportion of singles and families which are very likely to purchase PHI even in the absence of the policy reform. Table 5 shows that close to 25% of singles and 33% of families are predicted to be very likely to purchase PHI under the counterfactual situation. Thus, one may argue that the 30% PHI premium rebate spent for such households is unnecessary. Table 6 further shows that the extent of such unnecessary subsidy is even higher among the high income households. For example, as many as 87% of high income families were predicted most likely to have purchased PHI even without the policy reform, they thus enjoy the windfall gains from the 30 per cent premium rebate. However, it is not clear from either table how much money has been wasted each year.

To assess the amount of unnecessary subsidy provided via the non-means tested 30 per cent rebate to singles and families, we combine the estimates provided in Table 5 with the estimates of total number of singles and families from the Australian Bureau of Statistics (ABS) and average premiums from the Private Health Insurance Administration Council. The results, summarized in Table 7, show that no less than $887 millions per year may have been spent for subsidizing households which would have purchased PHI anyway. That is, more

than 40 per cents of the annual $2 billions PHI subsidy money could have been better spent for other purposes.

Table 7

Estimate of the amount of unnecessary subsidy provided to households.

Description	Single	Family
Total number of households in 2001	1.62 millions	4.86 millions
Proportion very likely to purchase PHI in 2001 even without any new policy	24.4%	33.2%
Proportion actually purchased PHI in 2001	64.5%	80.0%
Number of households with PHI in 2001 which would have had PHI in the absence of the new policies	1.62M x 0.244 x 0.645 =0.25 millions	4.86M x 0.332 x 0.800 = 1.29 millions
Average contribution for hospital (and ancillary) insurance in 2001	$1047.8	$2095.6
Total amount of unnecessary subsidy	0.30 x $1047.8 x 0.25 millions **=$78.6 millions**	0.30 x $2095.6 x 1.29 millions **= $811.0 millions**

Notes: Estimates for the number of families and singles are obtained from ABS (2001). Estimates for the likelihood to purchase PHI and the actual proportion of households actually purchased PHI are from Table 5 discussed earlier. Since PHIAC (2002) only reports the overall average contribution per member, we obtain the separate estimates of single and family average contribution by assuming a 2:1 ratio between family and single contribution. More specifically, denote the number of single and family (including single parents and couples) hospital memberships as N^s and N^f, the average amount of contribution for each of the two types of memberships as P^s and P^f, and the average amount of contribution per member as C. Then, $P^s \cong C\left(N^s+N^f \middle/ 2N^f+N^s\right)$ and, by assumption, $P^f = 2P^s$. From PHIAC (2002), Figure 45, we have $N^s = 1.93M$ and $N^f = 2.15M$. From the same report, in Figure 5, $C \approx \$1600.0$. Thus, $P^s \cong \$1047.8$ and $P^f \cong \$2095.6$. Finally, we note that the number of singles reported in Figure 45 (PHIAC, 2002) may include couples which purchased PHI separately as a single member. As a result, the reported total number of single memberships can exceed the ABS population estimate shown in the second row of this table. For family, we note the reversed possibility.

5. Conclusion

Proponents of private health insurance emphasize two aspects of having higher private health insurance coverage among the population. First, it helps to shift utilisation of hospital care from public hospitals to private hospitals. Secondly, private health insurance also enhances choice, in that privately insured households have greater choice over hospitals, doctors, and the timeliness of care (e.g., Harper, 2003).

However, there is considerable doubt whether public hospital utilization would be reduced as more households take up private health insurance. Given that households with private health insurance are more inclined to make use of health care services, more resources will have to be expended on treating privately insured patients. To the extent that some health resources, e.g., specialist surgeons, are in limited supply, it is inevitable that fewer resources will be available for patients in public hospitals. Furthermore, the advantage of PHI in enhancing choice is limited by the universal principle guiding the Australian health system, which intends that equity of access be provided to all citizens.

This paper shows that even if the stated objectives of the recent policy reform could be attained, the price to pay in terms of income distribution is high. The adverse income distributive impact is unequivocal—it disproportionately favours high income earners. In fact, at a closer inspection, the 30 per cent premium rebate has scant effects on low-income households' health insurance choices and represents a windfall gain of close to $900 millions for the high income households. Ironically, most of these windfall gainers would have purchased private health insurance in any case.

Table A.1: Variable definition

Variable	Definition
DEPENDENT	
PHI	1= private health insurance (at least hospital), 0=otherwise (for family, at least one member has)
EXPLANATORY	
married*	1=married/divorced/widowed/separated, 0=never married
immigrant*	1=not-born in Australia, 0=otherwise
concession*	1=government concession/entitlement card holder
income	=standardised gross annual income
income^2	=devinc*devinc
female**	1=female, 0=male
children‡	=number of children less than five years old
famsize‡	=number of persons in the household
Age*	
age1819	1=18-19 years old, 0=otherwise
age2024	1=20-24 years old, 0=otherwise
age2529	1=25-29 years old, 0=otherwise
age3034	1=30-34 years old, 0=otherwise
age3539	1=35-39 years old, 0=otherwise
age4044†	1=40-44 years old, 0=otherwise
age4549	1=45-49 years old, 0=otherwise
age5054	1=50-54 years old, 0=otherwise
age5559	1=55-59 years old, 0=otherwise
age6064	1=60-64 years old, 0=otherwise
age6569	1=65-69 years old, 0=otherwise
age7074	1=70-74 years old, 0=otherwise
age7579	1=75-79 years old, 0=otherwise
age80p	1=80+ years old, 0=otherwise
State of residence*	
NSW†	1=New South Wales, 0=otherwise
VIC	1=Victoria, 0=otherwise
QLD	1=Queensland, 0=otherwise
SA	1=South Australia, 0=otherwise
WA	1=Western Australia, 0=otherwise
TAS	1=Tasmania, 0=otherwise
NT	1=Northern Territory, 0=otherwise
ACT	1=ACT, 0=otherwise
Highest education attainment*	
degree	1=bachelor degree or higher, 0=otherwise
postsecondary	1= post-secondary (highest attainment), 0=otherwise
highschool†	1= high school (highest attainment), 0=otherwise
left15	1=left school at age below 15

Table A.1: Variable definition (continued)

Variable	Definition
Main source of income*	
wages†	1=wages and salary, 0=otherwise
selfemploy	1=self-employment, 0=otherwise
pension	1=pension, 0=otherwise
otherinc	1=other, 0=otherwise
Occupation of main job*	
admin	1=managers and administrators, 0=otherwise
prof	1=professionals, 0=otherwise
paraprof	1=associate-professionals, 0=otherwise
trade†	1=trades persons and related workers, 0=otherwise
clerical	1=clerical, sales, and service workers, 0=otherwise
plantopr	1=production and transport, 0=otherwise
laborer	1=labourers and related workers, 0=otherwise
Health condition*	
diabetic	1=currently has diabetic condition of any type, 0=otherwise
hiblood	1=currently has high blood pressure condition, 0=otherwise
hicholes	1=currently has high cholesterol condition, 0=otherwise
chronicnum	=number of long-term chronic conditions
childchronicnum***	=number of children's (0-6 years) chronic conditions
poorhealth	1=poor (self-assessed health), 0=otherwise
fairhealth	1=fair (self-assessed health), 0=otherwise
goodhealth†	1=good (self-assessed health), 0=otherwise
underweight	1=underweight (self-assessed body mass), 0=otherwise
overweight	1=overweight (self-assessed body mass), 0=otherwise
acceptweight†	1=acceptable weight (self-assessed body mass), 0=otherwise
Health habit*	
lowalcohol†	1=daily intake $\leq$ 50ml (male) or 25ml (female), 0=otherwise
medalcohol	1=daily intake 50-75ml (male) or 25-50ml (female), 0=otherwise
hialcohol	1=daily intake >75ml (male) or 50ml (female), 0=otherwise
exsmoker	1=ex-regular smoker, 0=otherwise
smoker	1=current regular smoker, 0=otherwise
nvrsmoke†	1=never smoke regularly, 0=otherwise
noexercise	1=did no exercise, 0=otherwise
lowexercise	1=low level of exercise, 0=otherwise
modexercise†	1=moderate exercise level, 0=otherwise
vigexercise	1=high exercise level, 0=otherwise

*for family, the characteristic of husband, wife, partner or lone parent is used.
**not applicable for the family model.
‡not applicable for the single model
†the base comparison group in the probit model.

Table A.2

Additional characteristics of PHI members

	Singles				Families			
	1995		2001		1995		2001	
	No PHI	PHI	No PHI	PHI	No PHI	PHI	No PHI	PHI
Female*	0.471	0.569	0.478	0.545				
Concession card holder*	0.459	0.283	0.533	0.300	0.471	0.209	0.481	0.185
Annual income	-0.194	0.502	-0.553	0.802	-0.628	0.746	-1.436	1.503
Education								
Degree holder*	0.095	0.188	0.102	0.241	0.085	0.205	0.086	0.237
Left school by age 15*	0.204	0.157	0.217	0.125	0.217	0.160	0.188	0.097
Health status								
# chronic conditions	2.565	2.983	2.798	2.859	2.510	2.815	2.673	2.748
Poor health*	0.060	0.043	0.080	0.044	0.054	0.024	0.069	0.022
Fair health*	0.143	0.105	0.176	0.128	0.149	0.092	0.159	0.110
Good health*	0.797	0.853	0.744	0.828	0.798	0.884	0.772	0.869
Over-weight*	0.279	0.311	0.295	0.342	0.319	0.385	0.355	0.384
Health habits								
High alcohol intake*	0.043	0.042	0.050	0.033	0.043	0.035	0.036	0.036
Vigorous exercise*	0.098	0.096	0.080	0.095	0.060	0.077	0.043	0.070
Age groups**								
18–19	0.074	0.041	0.067	0.055	0.004	0.006	0.005	0.001
20–24	0.242	0.182	0.168	0.122	0.052	0.015	0.056	0.012
25–29	0.141	0.108	0.122	0.080	0.105	0.052	0.109	0.057
30–34	0.082	0.071	0.063	0.085	0.143	0.101	0.127	0.115
35–39	0.055	0.072	0.049	0.068	0.152	0.114	0.133	0.133
40–44	0.037	0.061	0.048	0.060	0.129	0.141	0.122	0.140
45–49	0.049	0.054	0.045	0.073	0.104	0.142	0.086	0.141
50–54	0.035	0.049	0.058	0.097	0.072	0.116	0.071	0.127
55–59	0.034	0.044	0.054	0.074	0.057	0.088	0.064	0.089
60–64	0.042	0.059	0.055	0.064	0.048	0.069	0.059	0.061
65–69	0.049	0.056	0.055	0.049	0.051	0.060	0.056	0.046
70–74	0.054	0.068	0.065	0.060	0.039	0.055	0.045	0.043
75–79	0.050	0.064	0.068	0.048	0.027	0.030	0.046	0.023
80+	0.056	0.072	0.081	0.066	0.017	0.018	0.021	0.013

*population weighted proportion

References

Australian Bureau of Statistics (ABS) (1998), *1996 Census of Population and Housing: Socio-Economic Indexes for Areas*, Information Paper, ABS #2039.0, Canberra: ABS.

Australian Bureau of Statistics (ABS) (2001), *Census of Population and Housing, selected social and housing characteristics,* 2015.0, Canberra: ABS.

Barrett, G. F. and R. Conlon (2003), "Adverse selection and the decline in private health insurance coverage in Australia: 1989-95," *The Economic Record*, 79 (246), 279–296.

Butler, J.R.G. (2002), "Policy Change and Private Health Insurance: Did the Cheapest Policy Do the Trick?" *Australian Health Review*, 25(6), 33–41.

Cormack, M. (2002), "Private Health Insurance: The Problem Child Faces Adulthood," *Australian Health Review*, 25(2), 38–51.

Dawkins, P. E. Webster, S. Hopkins and J. Yong (2004), *Recent Private Health Insurance Policies in Australia: Health Resource Utilization, Distributive Implications and Policy Options*, A Report Prepared for the Victorian Department of Premier and Cabinet.

Frech, H.E. III, S. Hopkins, and G. MacDonald (2003), "The Australian Private Health Insurance Boom: Was it Subsidies or Liberalised Regulation?" *Economic Papers*, 22(1), 58–64.

Harper, I. (2003), "Preserving Choice: A Defence of Public Support for Private Health Care Funding in Australia," *mimeo*, a report prepared for Medibank Private Limited.

Newhouse et al., (1993), *Free For All? Lessons from the RAND Health Insurance Experiment*, Camb. Mass.: Harvard University Press.

Palangkaraya, A. and J. Yong (2005), Effects of Recent Carrot-and-Stick Policy Initiatives on Private Health Insurance Coverage in Australia, *The Economic Record,* forthcoming.

Private Health Insurance Administration Council (PHIAC) (2002), *Operations of the Registered Health Benefits Organisations Annual Report 2001–0*2, PHIAC, Canberra.

Scotton, R.B and C.R. McDonald (1993), "The Making of Medibank," *Australian Studies in Health Service Administration*, No. 76, Sydney: The University of New South Wales.