The impact of copayments and safety nets on PBS expenditure

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Abstract

This article discusses the impact on patients of changes in copayments and safety net thresholds (SNT) within the Pharmaceutical Benefits Scheme (PBS). Trends in the nominal and real values of copayments and SNTs are examined, as are changes in the numbers of types of patients. The relationship between the number of safety net cardholders and copayments and SNTs is estimated. Increases in the number of copayments necessary to reach the safety net threshold restrict the number of patients able to benefit from this provision. Policy for determining the levels of copayments and safety net thresholds needs to be put on a rationale basis in a way similar to the determination of prices for PBS medicines.

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IN A CHANGE THAT ATTRACTED virtually no comment, the Department of Health and Ageing (DoHA) announced in December 2005 that the safety net thresholds (SNTs) for the Pharmaceutical Benefits Scheme (PBS) would be increased by an amount equal to two additional copayments for each of the years from 2006 to 2009. The then Coalition government claimed that this would "...help to rebalance the way costs for the PBS as a taxpayer-funded scheme are shared between the government and individuals".[1] Although denounced by the then opposition as "ripping a hole in the PBS safety net", the Labor Government has retained this policy change which was expected to save the government about $140

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million over 4 years.[2] Perhaps the muted response to these changes is because patients, particular those that are chronically ill, are not organised politically to respond to policy changes that affect them adversely. In addition the significance of these changes may not have been apparent at the time they were made.

When buying medicines available under the PBS, patients pay a fixed copayment (plus any price premium added by suppliers). Under the safety net provisions, patients pay a lesser (or no) copayment once their expenditure on PBS medicines has reached the SNT. Changes to copayments and SNTs therefore are the chief policy mechanisms that influence the cost of PBS medicines to patients and might be expected to affect the willingness and ability of patients to purchase them. This therefore raises questions about how well the Commonwealth Government can meet the objectives of its National Medicines Policy to ensure "timely access to the medicines that Australians need, at a cost individuals and the community can afford".[3]

A number of aspects of copayments and SNTs are covered in this paper. Firstly, how demographic and eligibility changes have determined the numbers of patients within the two basic categories — general and concessional — is examined. It is then shown how that while copayments and SNTs have both increased in real terms over time, this has been more pronounced for SNTs, leading to big swings in the number of people able to access the safety net provisions. The relationship between the number of safety net cardholders and changes to copayments and SNTs is quantified econometrically. The overall impact of changes to copayments and SNTs on the shares of PBS expenditure incurred by patients and the government are illustrated.

Changes in the copayments and safety net levels not only determine how much patients pay for their medicines, they also influence whether they will buy them in the first place. Several studies have examined the impact of copayments on the demand for PBS medicines,[4-7] and more recent research has confirmed this relationship.[8-10] Some new estimates of the elasticity of demand for PBS medicines with respect to patient prices are presented. Finally some comments are made on ensuring that patients are able to access all the medicines they need.

Categories of patients

The PBS is an insurance scheme administered by the Department of Health and Ageing that provides pharmaceutical benefits to all Australians. It is financed from general revenue rather than from premiums paid by patients. PBS benefits are available to all Australian residents and eligible foreign visitors, ie, people from countries which have Reciprocal Health Care Agreements with Australia, namely Finland, Ireland, Italy, Malta, the Netherlands, New Zealand, Norway, Sweden, and the United Kingdom. Since 1 July 2001, all Australian citizens must produce a Medicare card when benefits are dispensed, as proof of eligibility.

The PBS has two types of patients — general and concessional. When buying PBS medicines in most circumstances, patients contribute a fixed copayment. The difference between the dispensed price and the copayment is refunded to the pharmacist by the Commonwealth Government. As of 2008 the copayments for general and concessional patients were $31.30 and $5.00 respectively.

To be eligible for concessional status, patients must have one of the following cards from Centrelink or the Department of Veterans' Affairs (DVA):

- a Pensioner Concession Card;
- a Health Care Card ;
- a Commonwealth Seniors Health Card; or
- a Repatriation Health Card or Repatriation Pharmaceutical Benefits Card.

Pensioner Concession Cards were introduced in 1975 as Pensioner Health Benefit Cards. They are available to a range of social security beneficiaries, including aged and disability pensioners, unemployment and sickness beneficiaries, and single parents. The Health Care Card provides a range of health benefits to other payment recipients including foster carers and low income earners.

The Seniors Health Card was introduced on 1 July 1994 to provide benefits to low income older people ineligible for the pension, for instance because they failed the assets test. The income limits used for the income test for the card were lifted substantially in January 1999 and again in September 2001 enabling more people to receive the card. Currently, to qualify for the Seniors Health Card, a person must:

- be an Australian resident, living in Australia, and
- have reached age pension age but not qualify for the age pension, and
- have an annual income of less than
  - ➤ $50 000 (singles)
  - ➤ $80 000 (couples combined), or
  - ➤ $100 000 (couples combined who are separated due to ill health)

These latter limits are increased by $639.60 for each dependent child.[11]

In addition to subsidising the cost of medicines for both general and concessional patients, the PBS also provides for safety nets which allow for a lesser copayment once the accumulated cost of PBS medicines incurred by a patient exceeds the amount specified as the SNT. For general patients, once the SNT is reached the copayment is the same as the concessional copayment, while for concessional patients, there is no copayment once the SNT has been reached. At the beginning of a new year, safety net patients revert to their previous patient category until the threshold is reached again.

To estimate the number of patients in each of these categories, information was obtained from the Information Management Branch of Centrelink on the number of concessional cardholders by card type for the period January 2001 to June 2007. Information before 2001 was not readily available.

1 Pharmaceutical Benefits Scheme patient categories, 2001 and 2007

	June 2001	June 2007	AAGR*
Population	19 413 240	20 997 519	1.3
General	14 088 125	15 737 777	1.9
Safety net	36 075	31 823	−2.1
Non-safety net	14 052 050	15 705 954	1.9
Concessional	5 325 115	5 259 742	−0.2
Seniors Health Card	226 140	318 278	5.9
Health Care Card	1 747 094	1 465 444	−2.9
Pensioner Concession Card	2 984 750	3 167 436	1.0
Repatriation Card	367 131	308 584	−2.9
Safety net	210 330	223 184	1.0
Non-safety net	5 114 785	5 036 558	−0.3

* Average annual growth rate.

Box 1 shows that there were some 5 259 742 concessional patients in June 2007 made up of 318 278 Seniors Health Card holders (6.1%), 1 465 444 Health Care Card holders (27.9%) and 3 167 436 Pensioner Concessional Card holders (60.2%). At the same time there were 308 584 Repatriation (Gold, White and Orange) Benefits Card holders (5.9%).[12]

This implies that of a total Australian population of 20 997 519 in June 2007, there were 15 737 777 people who would be classified as general patients, or 75.0% of the total population. Of these general patients, 31 823 (0.2%) were safety net cardholders. This figure would rise to 383 183 (2.5%) by December 2007, when the number is at its maximum for the year. In contrast, of the 5 259 742 (25.1%) concessional patients in June 2007 there were 223 184 (1.1%) safety net cardholders. In December the number was 1 373 069 (6.5%).

Over the period from June 2001 to June 2007, while the overall Australian population grew at an average annual rate of 1.3%, the number of general patients increased by 1.9% and the number of concessional patients fell by 0.2%. During this time, however, there was a significant shift within the concessional category — the number of Seniors Health Card cardholders grew by 5.9%, the number of Health Care Card cardholders fell by 2.9% and the number of Pensioner Card cardholders increased by 1.0%.

These are somewhat surprising results because the number of older people, measured by the population aged 60 and over, grew by about 2.7% over the same time. The decline in the number of Health Care Card cardholders and the relatively slow growth in the number of Pensioner Card cardholders could be explained in part by the strong economic growth, rising incomes and declining unemployment experienced over the period. Even the large increase in the number of Seniors Health Card cardholders is principally due to a significant relaxing of the income test in the second half of 2001. Growth since then has been around 2.3% per annum. Repatriation Benefit Card cardholders have been declining by about 2.9% per annum.

Copayments and SNTs

Although the PBS commenced in 1948, copayments were only introduced in 1960 and SNTs in 1986. Box 2 sets out the history of copayments and SNTs based on data compiled from a number of sources.[13-16]

After the introduction of a $0.50 copayment for general patients on 1 March 1960, it remained at this level until November 1971 when it was increased to $1.00. From 1960 to 1982 there were two categories of patients — "General" and "Pensioner".

A "Concessional" category for other concessional patients besides pensioners was introduced on 1 January 1983 with an associated copayment of $2.00 (or half the General copayment). The distinction between these other concessional patients and pensioners continued until 1 January 1992 when the current classification of patients into "Concessional" and "General" began. Pensioners began contributing a copayment of $2.50 in November 1990. As

2 History of Pharmaceutical Benefits Scheme copayments and safety net thresholds, $

Change date	Copay pensioners	Copay concessional	Copay general	Safety net concessional	Safety net general
01.03.1960			0.50		
01.11.1971			1.00		
01.09.1975			1.50		
01.03.1976			2.00		
01.07.1978			2.50		
01.09.1979			2.75		
01.12.1981			3.20		
01.01.1983		2.00	4.00		
01.07.1985		2.00	5.00		
01.11.1986		2.50	10.00	25 scripts	25 scripts
01.07.1988		2.50	11.00	25 scripts	25 scripts
01.11.1990	2.50	2.50	15.00	130.00	25 scripts
01.01.1991	2.50	2.50	15.00	130.00	300.00
01.08.1991	2.50	2.50	15.70	130.00	300.00
01.10.1991	2.60	2.60	15.70	130.00	300.00
01.01.1992		2.60	15.70	135.20	309.90
01.01.1993		2.60	15.70	135.20	312.30
01.08.1993		2.60	16.00	135.20	312.30
01.01.1994		2.60	16.00	135.20	400.00
01.08.1994		2.60	16.20	135.20	400.00
01.01.1995		2.60	16.20	135.20	407.60
01.08.1995		2.60	16.80	135.20	407.60
01.01.1996		2.70	16.80	140.40	600.00
01.08.1996		2.70	17.40	140.40	600.00
01.01.1997		3.20	20.00	166.40	612.60
01.01.1999		3.20	20.30	166.40	620.30
01.01.2000		3.30	20.60	171.60	631.20
01.01.2001		3.50	21.90	182.00	669.70
01.01.2002		3.60	22.40	187.20	686.40
01.01.2003		3.70	23.10	192.40	708.40
01.01.2004		3.80	23.70	197.60	726.80
01.01.2005		4.60	28.60	239.20	874.90
01.01.2006		4.70	29.50	253.80	960.10
01.01.2007		4.90	30.70	274.40	1059.00
01.01.2008		5.00	31.30	290.00	1141.80

Sources: Department of Health and Ageing;[13-15] Sloan.[16]

compensation for the introduction of this copayment, a Pharmaceutical Allowance of $2.50 was added to the pension, and made subject to automatic indexation in accordance with increases in the Consumer Price Index over the previous 12 months.

Safety net categories began in November 1986 when a numerical threshold of 25 prescriptions

## 3 Number of copayments to reach safety net threshold

Date	Concessional	General
Nov 1986–Oct 1990	25	25.0
1991	52	20.0
1992	52	19.7
1993	52	19.9
1994	52	25.0
1995	52	25.2
1996	52	35.7
1997	52	30.6
1998	52	30.6
1999	52	30.6
2000	52	30.6
2001	52	30.6
2002	52	30.6
2003	52	30.7
2004	52	30.7
2005	52	30.6
2006	54	32.5
2007	56	34.5
2008	58	36.5
2009	60	38.5

was introduced. This was replaced by a monetary threshold of $130.00 for pensioners/concessional patients in November 1990 and by $300.00 for general patients in January 1992. From 1 January 1992 until 31 December 1993, there was an additional safety net category for general patients. Once the additional expenditure threshold for this category had been reached, further benefits were free.

From November 1990 the concessional SNT was set as the cost of 52 prescriptions times the concessional copayment, and this formula continued to operate until the end of 2005. From 2006 to 2009 the SNT increases by two copayments per year so that in 2009 it will be equivalent to 60 copayments. The general SNT was never set in the same way, but at the end of 2005 was equivalent to about 31 copayments. From 2006 to 2009 it also increased by an additional two copayments per year (Box 3).

Since their introduction, the nominal and real values of both copayments and SNTs have risen, and while these increases have generally been modest, large changes have occurred from time to time as the government has sought to limit its exposure to the growth in the cost of the PBS by shifting more of the cost to patients. Usually changes in copayments and SNTs have taken effect from 1 January

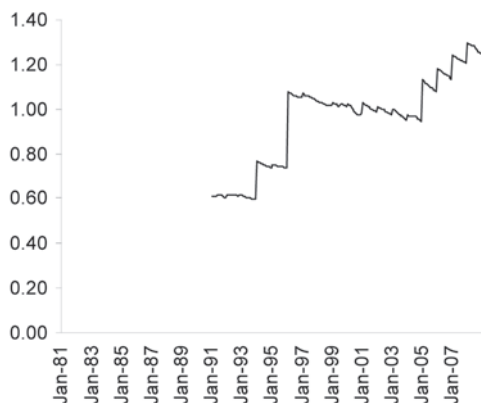## 4 Ratio of general copayment to AWE,* January 1981 to December 2008
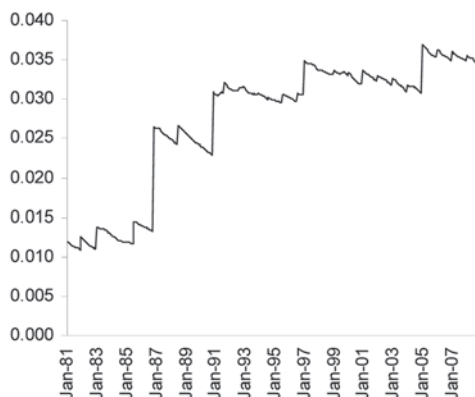
*Average weekly earnings. Sources: Table 2 and Reserve Bank of Australia[17]

## 5 Ratio of concessional copayment to AWE,* January 1981 to December 2008
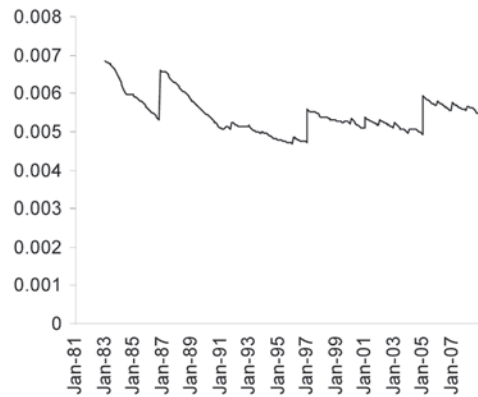
*Average weekly earnings. Sources: Table 2 and Reserve Bank of Australia[17]

6 Ratio of general safety net threshold to AWE,* January 1981 to December 2008

*Average weekly earnings. Sources: Table 2 and Reserve Bank of Australia[17]

7 Ratio of concessional safety net threshold to AWE,* January 1981 to December 2008
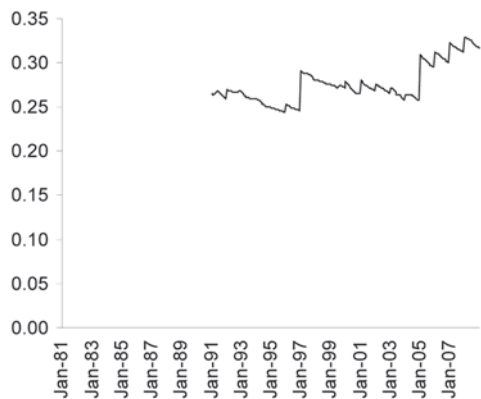
*Average weekly earnings. Sources: Table 2 and Reserve Bank of Australia[17]

by an amount in line with inflation. However, as Box 2 shows, much larger increases occurred in November 1986, November 1990, January 1997, and January 2005 and these are reflected in Box 4 and Box 5 which graph the ratios of the general and concessional copayments to average weekly earnings (AWE) since January 1981. This ratio was selected to reflect the relative importance of the copayment within the budget of a typical consumer. Monthly values for AWE were calculated by interpolating the quarterly data for the ABS series *Average weekly earnings, all employees.*[17]

While the general copayment has increased in nominal terms over the past 35 years, the effect of the intermittent large rises has been to increase it substantially in real terms as well, although the usual pattern has been one of a sharp rise followed by a steady decline until the next rise. The most recent large increase occurred in January 2005 with the general copayment rising from 3.1% to 3.7% of average weekly earnings. In contrast, the concessional copayment fell or remained steady in real terms over longer periods of time since its introduction in 1983, except for significant increases in November 1986, January 1997 and January 2005.

From January 1991 to December 2008, the ratio of the general copayment to AWE rose from 3.06% to 3.40% while the concessional copayment increased from 0.51% to 0.55%. While there have been some real increases in the copayments, there have been larger rises in the real SNTs. Between January 1991 and December 2008 the general SNT rose from 61.2% of AWE to 124.8% while the concessional SNT increased from 26.5% to 31.7% (Box 6 and Box 7).

The timings for the large increases in SNTs were somewhat different for the two patient categories — being January 1994, 1996 and 2005 for general patients and January 1997 and 2005 for concessional patients.

The picture that emerges from this analysis is a progressive increase in real terms for the copayment and especially the SNT for general patients, and a lesser real increase for concessional patients. This reflects a deliberate policy over an extended period of time by the Commonwealth Government to shift an increasing proportion of the cost of the PBS from itself to patients.

Safety net cardholders

Patients that have reached the SNT are naturally sicker than those whose expenditure on PBS

8 General safety net cardholders in June, 1992–2008
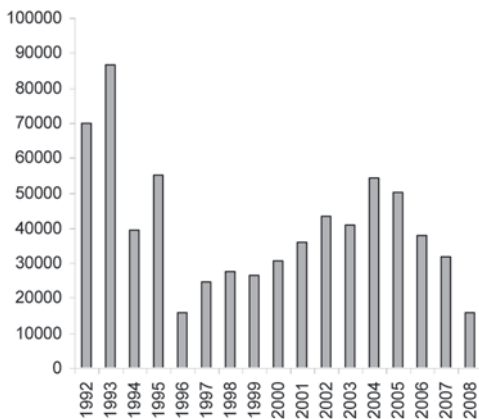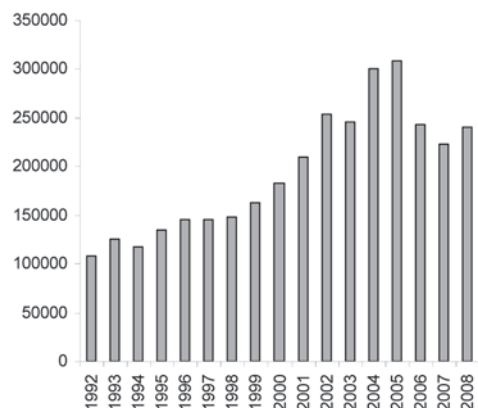

Source: Department of Health and Ageing[18]

medicines is more moderate, and changes in policy that put such patients at a disadvantage should be examined closely. Box 8 and Box 9 show the number of general and concessional safety net cardholders, respectively, in June for the years 1992 to 2008. As noted earlier, the number of cardholders increases rapidly throughout the year as more people reach the expenditure threshold. In 2007, for instance, there were 25 cardholders in January, 307 211 in June and 1 836 227 in December.[18]

Box 8 shows clearly the impact of the increased thresholds for general patients as the number of cardholders fell substantially in 1994 and 1996 and again in 2006, 2007 and 2008. The number of concessional cardholders rose strongly throughout the period to 2005 but fell strongly in 2006, to a lesser extent in 2007 and stabilised in 2008 (Box 9). A comparison with Box 3 indicates that these falls coincided with an increase in the number of copayments necessary to make the SNT. An increase of two copayments to reach the general SNT in 2008 represented about a 5.8% increase in the threshold, while for concessional patients this represented a 3.6% increase. This may explain why this policy change prevented proportionally more general patients than concessional patients being able to access the safety net provisions.

To influence the number of safety net cardholders, the government has two instruments — the value of the SNT and the value of the copayment. As described above and shown in Box 3, until recently the government's policy for concessional cardholders has been to set these together to ensure that the number of copayments to reach the SNT has been constant. From 1997 to 2004 this was also the case for general patients, but at other times the SNT and the copayment have been set somewhat independently of each other.

The relationship between the number of safety net cardholders and the levels of the copayment and SNT can be explored econometrically for both general and concessional patients. The dependent variable is the number of safety net cardholders while the explanatory variables are either the levels of the copayment and SNT as separate explanatory variables or these two combined as the number of copayments necessary to reach the SNT. In addition, a time trend is used to account for any general increase in the number of general or concessional patients over time, while monthly dummy variables are used to control for the large differentials in monthly values across the year.

9 Concessional safety net cardholders in June, 1992–2008

Source: Department of Health and Ageing[18]

The estimation period is from January 1992 to June 2008 with a total of 186 monthly observations. The variables are defined as follows

$constant$ Constant

$year_t$ Time trend = t for year t, 1992 = 1

d_i Dummy variable for month i, January = 1

$gcard_{it}$ Number of general safety net cardholders in month i of year t

$ccard_{it}$ Number of concessional safety net cardholders in month i of year t

$gcop_{it}$ The value of the general copayment in month i of year t, $

$ccop_{it}$ The value of the concessional copayment in month i of year t, $

$gsnt_t$ The general SNT in year t, $

$csnt_t$ The concessional SNT in year t, $

$gcno_{it}$ The number of general copayments to reach the SNT = $gsnt_t / gcop_{it}$

$ccno_{it}$ The number of concessional copayments to reach the SNT = $csnt_t / ccop_{it}$

An 'l' before the variable name in the results reported below indicates the natural logarithm of the variable.

Box 10 and Box 11 show results for alternative specifications of the equation for the number of safety net cardholders estimated using the Eviews software package.[19]

The first two results in each table are for equations using untransformed variables while the second two results have variables expressed

10 Regression results — general safety net cardholders, $n = 198$

Equation	1		2		3		4	
Dependent variable	gcard		gcard		lgcard		lgcard	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
constant	1836455	0.4	−10360333	−6.1	−183.372	−3.6	−59.310	−4.1
year	−988	−0.4	5332	6.2	0.100	3.8	0.036	4.7
m2	139	0.0	139	0.0	2.663	23.5	2.663	23.2
m3	1092	0.1	1092	0.1	4.685	41.4	4.685	40.7
m4	5028	0.4	5028	0.4	6.286	55.5	6.286	54.7
m5	17559	1.3	17559	1.3	7.587	67.0	7.587	66.0
m6	40797	3.0	40797	3.1	8.445	74.5	8.445	73.4
m7	77432	5.6	78680	5.9	9.129	79.3	9.131	78.2
m8	125597	9.1	127416	9.6	9.614	83.5	9.609	82.3
m9	182457	13.2	184276	13.9	9.982	86.7	9.976	85.4
m10	243173	17.6	244993	18.5	10.269	89.2	10.263	87.9
m11	304909	22.0	306728	23.1	10.495	91.2	10.489	89.8
m12	379885	27.4	381704	28.8	10.717	93.1	10.711	91.7
gsnt	−521	−9.6						
gcop	22248	8.6						
gcno			−10211	−11.4				
lgsnt					−3.104	−14.6		
lgcop					1.765	3.5		
lgcno							−2.965	−14.2
Adjusted R^2	0.918		0.924		0.990		0.990	
Durbin–Watson	0.501		0.535		0.951		0.916	

as natural logarithms except for the time trend and monthly seasonal dummy variables which are untransformed. The logarithmic specification has the advantage that the coefficients on the explanatory variables can be interpreted as the elasticities of the dependent variable with respect to the explanatory variable. Replacing the time trend with either the number of concessional cardholders or the number of general patients as relevant and re-estimating over the shorter time period from January 2001 to June 2007 for which the concessional cardholder data is available gives somewhat poorer results, with the coefficients on these variables generally insignificant.

All the variables listed above are non-stationary in levels but stationary in first differences, according to the Augmented Dickey–Fuller test for unit roots using the Schwartz Information Criterion. The presence of non-stationarity may produce spurious regression results unless the variables in the equation are cointegrated. All equations were tested for cointegration using the Johanssen Cointegration Test and all equations for which results are given are cointegrated.

In Box 10 for the number of general safety net cardholders, all equations have coefficients for explanatory variables that have the expected sign and are generally significant at the 5% level except for some of the monthly dummy variables.

11 Regression results — concessional safety net cardholders, $n = 198$

Equation	1		2		3		4	
Dependent variable	**ccard**		**ccard**		**lccard**		**lccard**	
	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic	Coefficient	t-statistic
constant	−31448396	−2.9	−44449260	−12.8	−104.953	−3.1	−70.367	−9.0
year	15643	2.9	22896	12.6	0.064	3.8	0.047	10.0
m2	648	0.0	648	0.0	3.250	37.7	3.250	37.7
m3	6272	0.2	6272	0.2	5.496	63.7	5.496	63.7
m4	29521	0.9	29521	0.9	7.029	81.4	7.029	81.4
m5	95353	2.8	95353	2.8	8.181	94.8	8.181	94.8
m6	195691	5.8	195691	5.8	8.895	103.1	8.895	103.0
m7	326981	9.6	327813	9.6	9.396	107.1	9.395	107.0
m8	476642	13.9	477474	13.9	9.781	111.5	9.780	111.4
m9	626050	18.3	626882	18.3	10.062	114.7	10.061	114.6
m10	776746	22.7	777578	22.7	10.283	117.2	10.282	117.1
m11	919196	26.9	920028	26.8	10.456	119.2	10.455	119.1
m12	1088136	31.8	1088968	31.7	10.631	121.2	10.630	121.1
csnt	−6329	−4.2						
ccop	381563	3.7						
ccno			−25465	−4.1				
lcsnt					−4.675	−5.0		
lccop					4.270	3.8		
lccno							−5.049	−5.9
Adjusted R^2	0.939		0.938		0.994		0.994	
Durbin-Watson	0.556		0.546		0.928		0.926	

The logarithmic specification performs better than the one using variables that are untransformed, with all variables having very significant coefficients, and the fit statistics being better. In general there is no difference in fit between the equation that contains both the SNT and the value of the copayment as explanatory variables (*gsnt* and *gcop*) and the equation which only has the number of copayments to reach the SNT (*gcno* = *gsnt/gcop*).

The logarithmic specification equation 3 in Box 10 suggests that a 10% increase in the general SNT will reduce the number of general safety net cardholders by around 31.0%, all other things being equal, while a 10% increase in the general copayment will increase the number of cardholders by 17.7%. In equation 4, an increase of 10% in the number of copayments necessary to reach the SNT will reduce the number of cardholders by 29.7%.

The equations for concessional safety net cardholders in Box 11 produce similar results with coefficients for explanatory variables having the expected sign and generally being significant at the 5% level. Again the logarithmic specification is superior in terms of overall fit and significance of the coefficients, and there is little to choose between the version that contains both the SNT and the value of the copayment as explanatory variables (*csnt* and *ccop*) and the equation which only has the number of copayments to reach the SNT (*ccno*). Equation 3 in Box 11 suggests that a 10% increase in the concessional SNT will reduce the number of concessional safety net cardholders by around 46.8% all other things being equal, while a 10% increase in the concessional copayment will increase the number of cardholders by 42.7%. From equation 4 in Box 11, an increase of 10% in the number of copayments necessary to reach

12 Expenditure by government on Pharmaceutical Benefits Scheme, by patient category, $m

	General		Concessional			
	Non-SN	**SN***	**Non-SN**	**SN**	**Other****	**Total**
1991–92	160.8	55.3	708.4	195.0	100.9	1 220.4
1992–93	188.3	118.9	845.0	251.2	101.6	1 505.0
1993–94	224.7	142.7	1 019.7	297.6	116.7	1 801.3
1994–95	290.8	93.4	1 195.0	302.5	109.6	1 991.3
1995–96	343.0	118.7	1 369.4	360.1	135.5	2 326.7
1996–97	392.2	72.8	1 465.7	401.8	205.5	2 538.1
1997–98	411.9	98.6	1 576.1	440.0	259.0	2 785.5
1998–99	469.0	106.6	1 739.5	467.1	287.5	3 069.7
1999–00	521.0	107.0	2 000.6	547.8	311.7	3 488.2
2000–01	662.1	128.2	2 359.7	660.3	347.9	4 158.1
2001–02	691.2	148.5	2 569.6	778.4	396.4	4 584.1
2002–03	750.5	169.8	2 747.3	907.5	477.4	5 052.6
2003–04	824.1	190.7	2 972.3	1 004.5	570.5	5 562.2
2004–05	850.7	222.7	3 077.0	1 145.5	660.0	5 955.9
2005–06	850.1	216.2	3 145.5	1 172.5	764.7	6 149.0
2006–07	890.3	174.1	3 333.9	1 067.5	850.9	6 316.7
AAGR %	11.3	7.4	10.1	11.2	14.3	10.8

Source: Department of Health and Ageing.[18] * From 1991–92 to 1995–96 includes General Free Safety Net. ** Includes Doctor's Bag, HSD and miscellaneous. SN = safety net. AAGR = average annual growth rate.

the SNT will reduce the number of cardholders by 50.1%.

In interpreting these results, however, it should be remembered that there were only three increases in the number of concessional copayments necessary to reach the SNT (in January 2006, 2007 and 2008) so the effect of this change may not be fully reflected in the regression results.

The policy of increasing the SNT by the value of two copayments per year has had a very significant impact on the numbers of patients eligible to obtain PBS medicines at reduced cost and represents a major shift in the proportion of PBS cost borne by patients rather than the government.

Government and patient shares in the cost of the PBS

The impact of these changes is shown in Boxes 12, 13, 14 and 15 which show how much of the cost of PBS medicines incurred by each patient category is paid for by the government and the patient. Compound average annual growth rates from 1991–92 to 2006–07 are given in the last row of each table. It should be remembered when considering these tables that the values reported for general non-safety net (GNSN) patients are just for medicines with a dispensed price higher than the value of the general copayment. Data on PBS expenditure is based on claims made by pharmacists for remuneration and purchases by GNSN patients of medicines with a dispensed price less than the copayment are paid in full by the patient. The values for expenditure in this category therefore understate the true amount paid by these patients for the medicines they consume (the patient cost) and the overall cost of these medicines (the total cost), but not the amount paid by the government (the government cost). The extent of this under-reporting has grown over time as the government has simulta-

13 Expenditure by patients on Pharmaceutical Benefits Scheme, by patient category, $m

	General		Concessional			
	Non-SN	SN*	Non-SN	SN	Other**	Total
1991–92	129.0	6.0	173.2	0.0	0.0	308.2
1992–93	163.0	10.2	186.7	0.0	0.0	359.9
1993–94	183.0	11.1	201.6	0.0	0.0	395.7
1994–95	218.1	12.2	214.2	0.0	0.0	444.5
1995–96	237.2	14.3	226.6	0.0	0.0	478.1
1996–97	269.7	8.4	252.1	0.0	0.0	530.2
1997–98	281.7	12.6	276.4	0.0	0.0	570.8
1998–99	305.1	13.2	283.1	0.0	0.0	601.3
1999–00	333.0	12.6	306.2	0.0	0.0	651.8
2000–01	392.4	14.4	337.4	0.0	0.0	744.2
2001–02	427.0	16.9	362.2	0.0	0.0	806.1
2002–03	470.6	18.7	370.5	0.0	0.0	859.7
2003–04	524.8	20.5	392.5	0.0	0.0	937.8
2004–05	573.0	23.7	443.9	0.0	0.0	1 040.6
2005–06	606.9	27.2	489.2	0.0	0.0	1 123.3
2006–07	596.5	22.2	532.7	0.0	0.0	1 151.3
AAGR, %	10.0	8.5	7.3			8.6

Source: Department of Health and Ageing.[18] * From 1991–92 to 1995–96 includes General Free Safety Net. ** Includes Doctor's Bag, HSD and miscellaneous. SN = safety net. AAGR = average annual growth rate.

neously introduced policies to reduce the dispensed price and to increase the copayment.

The "Other" category in these tables includes medicines consumed in public hospitals under the Section 100 provisions and other PBS programs not provided through community pharmacies. The expenditure in this category is for medicines that involve no charge to the patient.

While general patients made up about three quarters of the population, they accounted for only 22.5% of the total cost of the PBS in 2006–07. On the other hand, concessional patients were responsible for 66.1% of PBS expenditure with "Other" at 11.4%. Concessional and general safety net patients represented 14.3% and 2.6%, respectively.

The major increases in the general SNT in 1994, 1996, 2006 and 2007 are reflected in the declines in expenditure by both government and patients within this category in 1994–95, 1996–97, 2005–06 and 2006–07. As it became harder to reach the SNT, expenditure within the non-safety net category was correspondingly higher. The outcome over time was a faster growth within the non-safety net category.

By contrast, the growth in expenditure by concessional safety net patients has been the largest of all categories, except for the "Other" category. The only increase in the concessional SNT occurred in 2006 and this had a moderating effect on growth in 2005–06 and reduced expenditure in 2006–07. As noted earlier, the number of concessional patients has fallen over recent years and this has meant that growth in the concessional category overall has been lower than for general patients.

General patients meet well over half of the costs of the PBS medicines they consume because of the higher copayments, meaning that concessional patients figure more prominently in the costs paid by the government, being 69.7% of the total.

14 Total expenditure on Pharmaceutical Benefits Scheme, by patient category, $m

	General		Concessional			
	Non-SN	SN*	Non-SN	SN	Other**	Total
1991–92	289.8	61.4	881.6	195.0	100.9	1,528.6
1992–93	351.2	129.1	1,031.7	251.2	101.6	1,864.9
1993–94	407.7	153.8	1,221.2	297.6	116.7	2,197.0
1994–95	508.9	105.7	1,409.2	302.5	109.6	2,435.9
1995–96	580.3	132.9	1,596.0	360.1	135.5	2,804.8
1996–97	662.0	81.2	1,717.8	401.8	205.5	3,068.3
1997–98	693.6	111.2	1,852.5	440.0	259.0	3,356.3
1998–99	774.1	119.8	2,022.7	467.1	287.5	3,671.1
1999–00	854.0	119.6	2,306.8	547.8	311.7	4,140.0
2000–01	1,054.5	142.5	2,697.0	660.3	347.9	4,902.3
2001–02	1,118.2	165.4	2,931.8	778.4	396.4	5,390.1
2002-03	1,221.1	188.5	3,117.8	907.5	477.4	5,912.3
2003-04	1,348.9	211.2	3,364.8	1,004.5	570.5	6,500.0
2004-05	1,423.7	246.4	3,521.0	1,145.5	660.0	6,996.5
2005-06	1,457.0	243.4	3,634.7	1,172.5	764.7	7,272.3
2006-07	1,486.8	196.3	3,866.6	1,067.5	850.9	7,468.0
AAGR, %	10.7	7.5	9.7	11.2	14.3	10.4

Source: Department of Health and Ageing.[18] * From 1991–92 to 1995–96 includes General Free Safety Net. ** Includes Doctor's Bag, HSD and miscellaneous. SN = safety net. AAGR = average annual growth rate.

The government paid for 59.9%, 88.7%, and 86.2% of the costs of medicines for GNSN patients, general safety net (GSN) patients and concessional non-safety net (CNSN) patients in 2006–07. As Box 15 demonstrates, for GNSN patients the share paid by government reached an historical high in 2000–01 and fell consistently thereafter before rising somewhat in 2006–07. The government share for general safety net patients in recent years was highest in 2004–05 but fell substantially in 2005–06 before plateauing in 2006–07. For concessional non-safety net patients the percentage was highest in 2003–04 but fell consistently thereafter.

The demand for PBS medicines

Aside from influencing the distribution of expenditure between patients and government, changes in copayments and SNTs can directly affect the demand for PBS medicines by patients. Estimates of the impact of changes in copayments

and other factors on the demand for PBS medicines have been undertaken by other researchers.[4-10] Typically, these studies concentrate on periods when there have been significant changes in the copayments.

These studies provide mixed evidence of the impact of copayments on consumption of medicines although all find some effect at least within certain categories of medicines. Studies by Harvey,[4] the Bureau of Industry Economics (BIE)[5] and Johnston[6] are necessarily restricted to estimating copayment elasticities for general patients and report values from −0.1 to −0.47 with most estimates being in the range −0.2 to −0.25. McManus et al[7] do not report elasticities and do not distinguish between general and concessional patients, but find a differential response for categories of medicines. Only Harvey and BIE attempt to estimate an income elasticity, and the values for this range between 1.5 and 3. None of the studies includes restriction levels or other influences except for the

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15 Proportion of Pharmaceutical Benefits Scheme expenditure paid by government, %

	General		Concessional			
	Non-SN	**SN***	**Non-SN**	**SN**	**Other****	**Total**
1991–92	55.5	90.2	80.4	100.0	100.0	79.8
1992–93	53.6	92.1	81.9	100.0	100.0	80.7
1993–94	55.1	92.8	83.5	100.0	100.0	82.0
1994–95	57.1	88.4	84.8	100.0	100.0	81.8
1995–96	59.1	89.3	85.8	100.0	100.0	83.0
1996–97	59.3	89.7	85.3	100.0	100.0	82.7
1997–98	59.4	88.7	85.1	100.0	100.0	83.0
1998–99	60.6	89.0	86.0	100.0	100.0	83.6
1999–00	61.0	89.5	86.7	100.0	100.0	84.3
2000–01	62.8	89.9	87.5	100.0	100.0	84.8
2001–02	61.8	89.8	87.6	100.0	100.0	85.0
2002–03	61.5	90.1	88.1	100.0	100.0	85.5
2003–04	61.1	90.3	88.3	100.0	100.0	85.6
2004–05	59.8	90.4	87.4	100.0	100.0	85.1
2005–06	58.3	88.8	86.5	100.0	100.0	84.6
2006–07	59.9	88.7	86.2	100.0	100.0	84.5

Source: Department of Health and Ageing.[18] * From 1991–92 to 1995–96 includes General Free Safety Net. ** Includes Doctor's Bag, HSD and miscellaneous. SN = safety net.

number of doctors, which proves to be irrelevant.

A more recent analysis by Sweeny[20] of the demand for PBS medicines discusses these other studies in more detail. The analysis specifies a demand equation for PBS medicines for each of the four categories of PBS patient — general non-safety net, general safety net, concessional non-safety net and concessional safety net (CSN). Annual data from 1991–92 to 2005–06 is used to estimate equations with the quantity of PBS medicines consumed as the dependent variable and a number of explanatory variables including, real household disposable income, the number of PBS medicines available, the number of copayments necessary to reach the SNT, the proportion of medicines with an "Authority required" restriction, and a price variable. Two versions of this latter variable were tested — the relevant copayment and a patient price index which was a weighted index of the copayment plus any price premium. In addition, two versions of the equation were estimated — a version using aggregated total expenditure and a pseudo-panel version where the variables are defined at the anatomical therapeutic chemical (ATC) subgroup level. The ATC is a classification scheme maintained by the WHO Collaborating Centre for Drug Statistics Methodology in Oslo, under which medicines are "divided into different groups according to the organ or system on which they act and their chemical, pharmacological and therapeutic properties".[21]

The results of this analysis show that the demand for PBS medicines is significantly influenced by two of the policy instruments controlled by the government. On the one hand, demand increases more than proportionately to the steadily increasing number of medicines made available through the operation of the PBS listing procedures. As the PBAC makes available more choice among medicines to treat particular diseases and introduces medicines for diseases previously untreated or poorly treated, doctors prescribe these for their patients, reducing the burden of disease. On the other hand, demand is reduced when governments increase the amount patients are required to pay for these medicines and to a lesser extent when manufacturers change the premium they add to the base dispensed price.

For GNSN patients the patient price elasticity is in the range −1.1 to −1.4, while for CNSN patients it is significantly lower, in the range −0.5 to −0.9. The situation is less clear with GSN patients although analysis using detailed data suggests an elasticity of −1.4. The demand elasticities with respect to either the patient price or the copayment are significantly higher than those found in previous studies of the demand for PBS medicines. They are however similar to recent estimates made by Berndt, Danzon and Kruse[22] who report own-price elasticities in the range −0.75 to −1.1 based on an analysis using IMS Health data from 1992 to 2003 across 15 countries, not including Australia.

For most of the regression analyses the elasticities with respect to income and the number of molecules is significantly higher than one. The estimates show significant contributions to the demand for PBS medicines from rising incomes and as the number of medicines available on the PBS increases. There is also evidence that when the government imposes an "Authority required" restriction level on a PBS item this restricts demand for that item. Other restriction levels seem not to have this effect.

The level of the copayment set by the government has the dual effect of both reducing demand because of its price effect and of shifting the share of the cost to the patient and away from the government. Changes to the SNT however shift demand within a patient category between those covered by the safety net and those not covered. Increases in the SNT reduce demand within the safety net category and again lead to shifts in the shares of cost borne by patients and the government.

While these effects are generally true for all PBS patients, there are significant differences among the patient categories. General patients display a greater reaction to changes in the patient price than do concessional patients. One explanation for this may lie in the types of medicines con-

sumed by both groups. If concessional patients have a higher proportion of chronic conditions or conditions displaying symptoms then changes in prices may have less influence on their purchasing decisions. If general patients have more acute conditions or asymptotic conditions they may be more influenced by changes in prices. It should be remembered however that the concessional copayment is less than a sixth the value of the general copayment and this may not be fully accounted for in the regression results. The difference in conditions experienced by general and concessional patients may also explain their differential responses to the number of molecules and income.

The demand by general patients also seems to be more sensitive to changes in the SNT than is the demand by concessional patients. This may simply reflect the fact that the SNT for concessional patients changed very little for most of the period.

Conclusions

Most of the policy changes made to the PBS over the past 5 years or so have been aimed at cutting the cost of the Scheme to the government. The introduction of mandatory 12.5% price cuts on the introduction of the first new brand after August 2005 and the complex package of formulary changes and price cuts which began in August 2008 have mainly been aimed at reducing the prices paid by the government to pharmacists, wholesalers and manufacturers. In consequence the prices of most popular PBS medicines have been reduced, although at the cost of compromising the cost-effectiveness principles underlying the pricing of these medicines.[23] A rationale for the latest round of price cuts was that they would create headroom for more innovative medicines to be listed on the PBS and there is some evidence that this has begun to occur with new listings rising significantly over the past 2 years.

The changes to copayments and SNTs have also been driven by the pressure on the PBS to reduce costs by shifting more of the expense to patients either through increased copayments or by mak-

ing it harder to benefit from the safety net provisions. Increasing the cost to patients, however, not only increases the amount they must pay for PBS medicines but acts as a deterrent to some in actually having a prescription filled.[10,24] To the extent that patients are discouraged from buying medicines or abandon existing treatments because of price increases, this represents a real reduction in patient welfare and raises fundamental issues about how copayments should be regarded.

Most of the time, the real values of copayments and SNTs are kept constant through regular adjustments for inflation. Because incomes usually rise faster than inflation, the effect of these regular changes in the copayments and SNTs might be regarded with equanimity. However, ad hoc increases as seen in the recent changes and which have punctuated the history of copayments are more serious because of their effects on patient welfare.

The government has a well articulated policy for pricing PBS medicines which has been developed and tested over a considerable period of time and has a theoretical basis in cost-effectiveness economics. To protect patient welfare and to meet the objectives of the National Medicines Policy, the government could articulate a similar policy for setting the levels of copayments and SNTs. This might start by maintaining the real value of both as a constant proportion of either inflation or of average household incomes. This could be applied to the purchase of all PBS medicines or to those medicines which are necessary to treat life-threatening or incapacitating disease.

Competing interests

The author declares that he has no competing interests.

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