



INTERNATIONAL

## FINAL REPORT

**Prepared For:**

Department of Finance and Administration

# The impact of privatisation of Medibank Private on private health insurance premiums

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## TABLE OF CONTENTS

EXECUTIVE SUMMARY .....	1
1. INTRODUCTION.....	2
2. WHAT WILL HAPPEN TO PHI PREMIUMS ABSENT PRIVATISATION OF MEDIBANK PRIVATE? .....	3
3. ANALYSIS OF MEDIBANK PRIVATE'S PRODUCTIVITY PERFORMANCE .....	4
3.1.    METHODOLOGY.....	4
3.2.    RESULTS WITHOUT ADJUSTMENT FOR DIFFERENCES IN OPERATING ENVIRONMENT.....	6
3.3.    ADJUSTMENT FOR DIFFERENCES IN OPERATING ENVIRONMENT .....	8
3.4.    CONCLUSION .....	11
4. IMPLICATIONS FOR FUTURE PHI PREMIUMS .....	11

## EXECUTIVE SUMMARY

- 1 Over the next 20 years demographic change and health market developments are likely to increase the cost of providing private health insurance (PHI) in Australia. It is therefore likely that PHI premiums will rise in real terms, other factors constant.
- 2 Without any change in ownership we would expect that even if Medibank Private were to continue to make efficiency improvements of the order that it has achieved in recent years these would be insufficient to offset the effects of population growth and ageing, rising cost per day of hospital care and rising frequency and size of ancillary claims. Thus, Medibank Private's premiums will need to rise irrespective of who owns Medibank Private. Medibank Private is not alone in this regard – all other firms in the industry face similar cost pressures.
- 3 CRA has investigated the scope for further productivity improvements by Medibank Private and analysed the implications for PHI premiums post-privatisation. After adjusting for differences in operating environment across health funds, we find that:
  - Medibank Private performed about 2.6 per cent better than the “average health fund” would have in 2004-05, had the “average health fund” had the same operating characteristics as Medibank Private.
  - But some funds performed more than 10 per cent better than the “average health fund” would have if it had their operating characteristics. On this basis we estimate that Medibank Private has scope to increase efficiency by a further 5 to 7 per cent to match the efficiency of the better performing open health funds.
- 4 A privatised Medibank Private would be able to actively and flexibly pursue all opportunities to achieve available efficiency improvements. On the basis of our modelling results we suggest that privatisation has the potential to allow Medibank Private to achieve additional efficiency improvements equal to 5 to 7 per cent of its existing costs. Approximately 1 percentage point of this efficiency gain would be required post-privatisation to allow Medibank Private to earn a pre-tax market rate of return on assets. The 4 to 6 percentage point residual could be applied to lowering real PHI premiums.

31 October 2006

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## 1. INTRODUCTION

5 Medibank Private is Australia's largest private health insurer, with around 30 per cent market share measured in terms of number of persons covered. It is also government owned.

6 According to the Department of Health and Ageing, Medibank Private was established in 1976 to help the Commonwealth Government reduce rising health expenditure by competing with the private health insurance funds to drive costs and premiums down.<sup>1</sup> The business operated as the commercial arm of the Commonwealth Government Health Insurance Commission.

7 In the late 1990s the Commonwealth Government separated the Commonwealth Government Health Insurance Commission's commercial and non-commercial activities and Medibank Private was made a standalone business. Medibank Private remained wholly owned by the Commonwealth Government and retained its not-for-profit and income tax exempt status.

8 On 12 September 2006 the Minister for Finance and Administration announced the Federal Government's intention to privatise Medibank Private via a share float in 2008.<sup>2</sup> Legislation authorising and facilitating the sale of Medibank Private was subsequently referred by the Senate to the Senate Finance and Public Administration Committee on 19 October 2006. The Committee is now conducting an Inquiry into the effect of the sale on:

- current Medibank members;
- competition and efficiency in the private health insurance sector particularly premiums;
- health and insurance markets across the states and territories; and
- the overall access and equity implications for healthcare.

9 It is against this background that DOFA has engaged CRA International (CRA) to investigate the scope for further productivity improvements by Medibank Private and to analyse the implications for private health insurance (PHI) premiums post-privatisation.

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1 Department of Health and Ageing 2002, Fact Sheet: 2001 – 80 Years of a Commonwealth Department of Health and 100 Years of Federation, 1970–79 Focus on Community, at <http://www.health.gov.au/fact7.pdf>.

2 Senator, The Honourable Nick Minchin 2006, Medibank private to be floated in 2008, Media Release, 12 September.

31 October 2006

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- 10 This paper presents the results of CRA's analysis. It is presented in four sections:
- Section 2 explains the key drivers of PHI premiums and provides an overview of what is likely to happen to PHI premiums absent the privatisation of Medibank Private. This defines the relevant counterfactual for an assessment of the impact of privatisation of Medibank Private on PHI premiums;
  - Section 3 provides an overview of the methodology CRA has used to empirically analyse the productivity performance of Medibank Private. It also presents the results of CRA's empirical analysis; and
  - Section 4 explains the implications of these empirical results for future PHI premiums should Medibank Private be privatised.

## 2. WHAT WILL HAPPEN TO PHI PREMIUMS ABSENT PRIVATISATION OF MEDIBANK PRIVATE?

- 11 Demographic change and health market developments over the next 20 years are likely to create significant cost pressures in the PHI industry. It is inevitable that PHI premiums will rise in real terms (i.e. even after adjusting for the effect of inflation) others factors constant.
- 12 Factors that are likely to place an upward pressure on average premiums include population growth and ageing, falling PHI hospital coverage per capita, an increase in the number and value of ancillary claims and increases in the cost per day of hospital care.
- 13 This upward pressure on premiums is likely to be alleviated somewhat by an expected overall reduction in the average number of days a person spends in hospital. Factors contributing to such a reduction include improvements in population health, technological advances in health care including a wider range of medicines, and increased reliance on non-hospital health services relative to hospital services.
- 14 On balance, the impact of population growth and ageing, combined with falling PHI coverage, increasing costs associated with ancillary claims, and increasing cost per day of hospital care are expected to dominate the downward pressure on costs due to better population health and increased utilisation of non-hospital health services. This suggests that total PHI benefits paid per person will increase and this increase will be reflected in increased PHI premiums, absent taxpayer subsidies.
- 15 Preliminary analysis by CRA of the cost increasing effects of the factors outlined in paragraphs 11 to 13 suggests a substantial increase in real PHI premiums over the next 20 years.
- 16 Medibank Private is exposed to the same cost pressures that are faced by the private health insurance industry as a whole.

31 October 2006

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- 17 Without any change in ownership we would expect that even if Medibank Private were to continue to make efficiency improvements of the order that it has achieved in recent years these would be insufficient to offset the effects of population growth and ageing, rising cost per day of hospital care, and rising frequency and size of ancillary claims. In short, Medibank Private's premiums will need to rise irrespective of who owns Medibank Private.

### 3. ANALYSIS OF MEDIBANK PRIVATE'S PRODUCTIVITY PERFORMANCE

- 18 To estimate the scope for further cost savings by Medibank Private, CRA analysed the technical efficiency of Medibank Private using a technique called Data Envelopment Analysis (see Box 1). The analysis was undertaken using 2004–05 data (latest available) and included 40 Health Funds.<sup>3</sup>

#### 3.1. METHODOLOGY

- 19 In the DEA model, the output of each health fund is represented by two variables:
- the number of persons covered by the health fund; and
  - real investment and other income calculated as actual investment and other income all divided by the respective consumer price index for the year under consideration.
- 20 Inputs included in the analysis are:
- real gross benefits paid calculated as gross benefits paid divided by the Medical and Hospital component of the Consumer Price Index for the year under consideration;
  - real management expenses calculated as actual management expenses divided by the respective Consumer Price Index for the year in question; and
  - real assets employed by each fund calculated as the value of assets employed by each fund divided by the respective consumer price index for the year in question.
- 21 Benefits paid is included as an input to account for differences across funds in the containment of growth in benefits through the implementation of service provider arrangements and demand-side management initiatives

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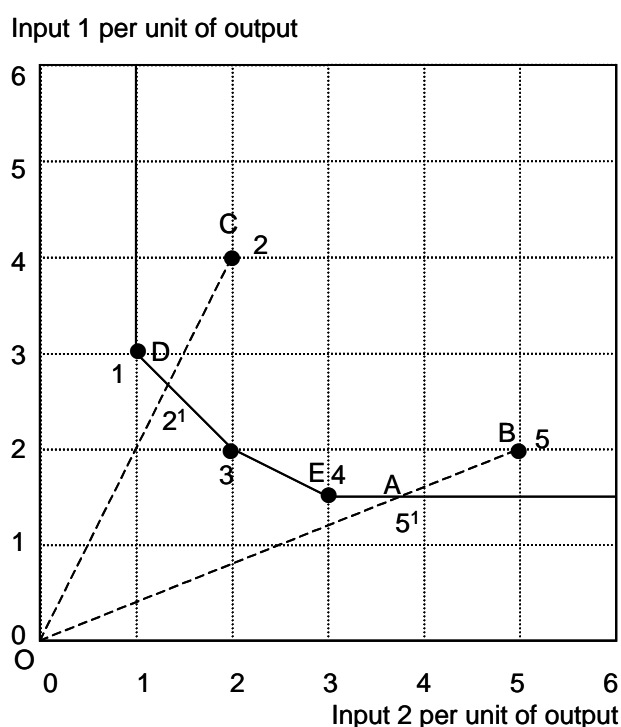
<sup>3</sup> The data for the analysis were collected from PHIAC 2005, *Operations of the Registered Health Benefits Organisations, Annual Report 2004–05*.

31 October 2006

**Box 1: Diagrammatic exposition of DEA technical efficiency**

22 Data Envelopment Analysis is the term used by Charnes and Cooper (1985)<sup>4</sup> to describe a non-parametric approach to measuring efficiency. In most cases, linear programming techniques are used to derive a piece-wise linear frontier, which envelops all data points.

23 The concepts involved in DEA can be seen from the diagram below in which a one output two input constant returns to scale technology is depicted. Five firms produce the good in question and data on input use normalised by dividing by output levels, is plotted on the diagram. In this simple example the DEA piece-wise linear frontier is found by joining together the data points for firms 1, 3 and 4 as these points envelop the data for all firms. The frontier is then completed by extending the piece-wise frontier from points D and E, parallel to the input 1 and input 2 axis, respectively.



24 Using the location of firms relative to the piece-wise linear frontier we conclude:

- firms 1, 3 and 4 are technically efficient as they lie on the frontier;
- firms 2 and 5 are technically inefficient as they lie beyond the frontier; and
- the Farrell technical efficiency scores for firm 2 and 5 are  $OD/OC$  and  $OA/OB$  respectively.

<sup>4</sup> Charnes, A. and W. W. Cooper 1985, 'Preface to topics in data envelopment analysis', Ann. Opns Res. 2, pp. 59–94.

31 October 2006

- 25 The DEA model can be implemented assuming either constant returns to scale or variable returns to scale. As a general rule where there is a limited number of organisations included in the analysis, a greater number of organisations will appear as technically efficient if variable returns to scale is specified. This is because DEA will be unable to find a peer with similar characteristics to the observation being benchmarked. Consequently, atypical organisations end up being benchmarked against themselves. We observe this in the current study—of the 40 organisations analysed, 24 are found to be technically efficient under variable returns to scale compared to 13 when constant returns to scale is assumed.
- 26 The measured technical efficiency of a health fund is influenced by the composition of the health insurance task (that is, whether a fund provides hospital only, ancillary only, or ambulance only cover or a combination of hospital, ancillary and ambulance cover). It may also be influenced by differences in governance structure. These ‘operating environment’ differences need to be accounted for to obtain reliable estimates of the technical efficiency of health funds.
- 27 Coelli, Rao and Battese (2002)<sup>5</sup> review alternate approaches that can be used to adjust DEA efficiency scores for differences in operating environments. They recommend the use of a two-stage approach in most cases. In the first stage of the analysis efficiency scores are derived without explicit recognition of differences in operating environments. In the second stage the efficiency scores from the first stage are regressed upon relevant operating environmental variables.
- 28 CRA has adopted this two stage procedure in this study. This approach has two important advantages. First, it avoids the possibility that the variable returns to scale DEA results are influenced by the outliers in the data. It allows technical efficiency scores to be adjusted for scale effects in the second stage of the analysis. The second advantage of the two stage analysis is that it also allows us to adjust measured technical efficiency scores for differences in the health insurance task and for other operating environment factors which may affect the technical efficiency of a health fund.

### 3.2. RESULTS WITHOUT ADJUSTMENT FOR DIFFERENCES IN OPERATING ENVIRONMENT

- 29 The results of the DEA constant returns to scale technical efficiency analysis indicate that Medibank Private has a technical efficiency score of 0.99 in the constant returns to scale case and 1.00 in the variable returns to scale case (see Table 1).
- 30 These results indicate that Medibank Private is relatively technically efficient when compared to other Australian health funds. That is, relative to other Australian PHI insurers, Medibank Private maximises the PHI services it provides to its customers given the level of resources it employs in providing these services.

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<sup>5</sup> Tim Coelli, D.S Prasada Rao and George Battese 2002, *An Introduction to Efficiency and Productivity Analysis*, Kluwer Academic Publishers, pp. 166–171.



31 October 2006

**Table 1: Estimated technical efficiency scores (2003–04, maximum technical efficiency =1.00)**

Health Fund	Registered Name of Fund	Technical efficiency score (constant returns to scale)	Technical Efficiency Score (variable returns to scale)
ACA	A.C.A. Health Benefits Fund	0.77	0.89
AHMG	Australian Health Management Group Limited	0.80	0.80
AMA	A.M.A. Health Fund Limited	1.00	1.00
Aust. Unity	Australian Unity Health Limited	0.85	0.86
BUPA	BUPA Australia Health Pty Ltd	0.95	1.00
CBHS	CBHS Friendly Society Limited	1.00	1.00
CDH	Cessnock District Health Benefits Fund Limited	0.75	1.00
Credicare	Credicare Health Fund Limited	1.00	1.00
Defence Health	Defence Health Benefits Society	1.00	1.00
Druids NSW	United Ancient Order of Druids Registered Friendly Society Grande Lodge of New South Wales	0.57	1.00
Druids Vic	United Ancient Order of Druids Registered Friendly Society Limited	0.82	0.94
Fed Health	Federation Health	0.95	1.00
GMHBA	GMHBA Limited	1.00	1.00
GU	Grand United Health Fund Pty Limited	0.93	0.96
GU Corporate	Grand United Corporate Health Limited	0.82	0.83
HBF	HBF Health Funds Inc	1.00	1.00
HCF	Hospitals Contribution Fund of Australia Limited, The	0.96	1.00
HCI	Health Care Insurance Ltd.	0.90	1.00
Health Guard	Healthguard Health Benefits Fund Limited	0.91	0.91
Health Partners	Health-Partners Limited	0.89	0.89
HIF	Health Insurance Fund of W.A.	1.00	1.00
Latrobe	Latrobe Health Services Limited	0.96	0.98
Lysaght	Lysaght Hospital and Medical Club, The	1.00	1.00
MBF	Medical Benefits Fund of Australia Ltd	1.00	1.00
MBF Health	MBF Health Pty Ltd	0.99	1.00
Medibank	Medibank Private Limited	0.99	1.00
Mildura	Mildura District Hospital Fund Limited	1.00	1.00
MU	Manchester Unity Australia Ltd	0.99	1.00
Navy Health	Navy Health Limited	0.96	0.98
NIB	N.I.B. Health Funds Limited	0.99	1.00
Phoenix	Phoenix Welfare Association Limited, The	0.80	0.89
Police Health	South Australian Police Employees' Health Fund Inc	1.00	1.00
QCH	Queensland Country Health Limited	0.90	0.93
Qld Teachers	Queensland Teachers' Union Health Fund Ltd	0.68	0.70
R&T Health	Railway & Transport Employees' Friendly Society Health Fund Ltd	0.75	0.76
Reserve Bank	Reserve Bank Health Society Ltd	1.00	1.00
St Luke's	St Luke's Medical & Hospital Benefits Association Limited	0.83	0.84
Teachers Fed	Teachers Federation Health Ltd	0.90	0.97
Transport	Transport Friendly Society Ltd	0.82	1.00
Westfund	Western District Health Fund Ltd	1.00	1.00

31 October 2006

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- 31 Medibank Private's relatively high technical efficiency in 2004–05 may reflect the fact that some of the efficiency benefits from privatisation were captured by management in the anticipation that Medibank Private would be privatised. If the sale does not go ahead there is the real prospect of significant management loss, which has the potential to decrease efficiency in the future.
- 32 Medibank Private may also have achieved a relatively high technical efficiency score because of the characteristics of the market it serves. For example, it is the largest health fund in the database. If there are scale economies in the provision of PHI services this would advantage Medibank Private relative to other funds.
- 33 Against these effects Medibank Private serves a client base that on average is older and less healthy than the "average" health fund. This is indicated by the fact that Medibank Private received funds from the Health Benefits Reinsurance Trust Fund (HBRTF) in 2004–05. The HBRTF transfers money from funds with policyholders that are demographically younger and healthier and hence have lower benefit payments, to those with an older and less healthy demographic distribution and higher benefit payments.<sup>6</sup>
- 34 We examine the influence of operating environments on measured efficiency of the funds in the following section.

### 3.3. ADJUSTMENT FOR DIFFERENCES IN OPERATING ENVIRONMENT

- 35 To adjust the measured technical efficiency of health funds for the scale of their operations, composition of health insurance task and governance structure we performed a Tobit regression analysis of the constant returns to scale technical efficiency scores reported above. In this model we allowed the technical efficiency of a health fund to be influenced by the following variables:
- The size of the health insurance task as measured by the number of policies a health fund administers and the number of persons covered by these policies;
  - The 'health' of the insured population as measured by a variable which takes the value 1 if a health fund received payments from the HBRTF greater than 5 per cent of premium income, zero otherwise;
  - The composition of health insurance task measured by two variables;
    - the proportion of policies that provided only ancillary cover as opposed to ambulance cover, hospital cover and ancillary cover; and
    - the value of claims per insured person; and
  - The governance structure of the health fund. This was measured by two variables:

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<sup>6</sup> The operations of the HBRTF are described in Private Health Insurance Administration Council 2004, *Operations of the Registered Health Benefits Organisations, Annual Report 2003–04*, pp 36–40.

31 October 2006

- a variable which took the value 1 if the health fund were an open health fund, zero otherwise; and
- a variable which took the value 1 if a health fund is 'for profit', zero otherwise.

- 36 The model was estimated with measured technical efficiency expressed in natural logarithms. The independent (left hand side) variables that were continuous were also expressed in natural logarithms. One advantage of this specification is that the estimated coefficients on the continuous variables can be interpreted as elasticities.<sup>7</sup>
- 37 The estimated model is presented in Table 2. This model explains about 75 per cent of the variation in the logarithm of technical efficiency across the 38 health funds. This is a very satisfactory level of explanatory power for these sorts of models.

**Table 2: Estimated coefficients of the Tobit model of health fund technical efficiency<sup>a</sup>**

Variable	Coefficient	Std. Error	z-Statistic	Prob <sup>b</sup>
Constant	-0.6769	0.1460	-4.6350	0.0000
Number of policies	-0.2710	0.1278	-2.1203	0.0340
Number of persons covered	0.2971	0.1296	2.2932	0.0218
Benefits per person covered	-0.7704	0.1301	-5.9222	0.0000
Funds that are "for profit"	0.0594	0.0389	1.5251	0.1272
Funds that are "open" to membership	-0.0676	0.0375	-1.8057	0.0710

Source: CRA estimates.

a All independent variables, other than the dummy variables, are logged as is the dependent variable.

b Probability of accepting that the estimated coefficient is significantly different from zero when in fact it is not.

- 38 The output variables 'Number of policies' and 'Number of persons covered' are highly significant variables in the model. The sign on these variables indicate that as the number of policies rise, other factors constant, efficiency falls. In contrast, as the number of persons covered rises, other factors constant, efficiency rises. These results were expected and reflect the fact that:
- for a given number of persons covered, extra policies impose additional administrative expenses thereby increasing total costs and reducing measured efficiency; whereas

<sup>7</sup> The estimated coefficients in the Tobit model need to be adjusted to derive marginal effects. The marginal effects are approximately equal to the estimated coefficients times the proportion of funds that were not technically efficient. See William Greene, Marginal Effects in the Censored Regression Model, Department of Economics, Stern School of Business, New York University, p. 3, accessed at [www.stern.nyu.edu/~wgreene/censored.doc](http://www.stern.nyu.edu/~wgreene/censored.doc)

31 October 2006

- for a given number of policies, an additional person covered by a policy enables the administrative costs associated with that policy to be spread over a greater number of individuals, which increases measured efficiency.
- 39 The model results also indicate that as benefits per person covered rise, other factors equal, health fund efficiency falls. This result is also expected.
- 40 Finally, the two governance variables are included in the preferred model even though the calculated governance effects are not significantly different from zero at conventional (5 per cent) significance levels. Funds that are “for profit” are found to have higher technical efficiency than other funds, other factors equal. In contrast, open funds are found to have lower technical efficiency than “closed funds”, other factors equal.
- 41 Following the methodology of McCarty and Yaisawarng (1993)<sup>8</sup> we treat residuals from the estimated Tobit model as a measure of the “true” technical efficiency of each health fund. The true technical efficiency scores are presented in Table 3.

**Table 3: Adjusted technical efficiency scores for funds that achieved better than average performance**

Fund	"True" Technical efficiency	True technical efficiency relative to original technical efficiency (proportion)
Credicare	0.1215	0.1215
AMA	0.1165	0.1165
GU	0.1044	0.1118
Police Health	0.1014	0.1014
HIF	0.0874	0.0874
MBF	0.0607	0.0607
Lysaght	0.0542	0.0543
MU	0.0350	0.0355
MBF Health	0.0291	0.0294
Medibank	0.0260	0.0264
CBHS	0.0254	0.0254
ACA	0.0167	0.0216
GMHBA	0.0131	0.0131
HBF	0.0112	0.0112
Navy Health	0.0096	0.0100
Mildura	0.0081	0.0081
Defence Health	0.0071	0.0071
Westfund	0.0031	0.0031
BUPA Aus	0.0012	0.0013
NIB	0.0009	0.0009

Source: CRA estimates.

<sup>8</sup> McCarty, T.A. and S. Yaisawarng 1993, 'Technical Efficiency in New Jersey School Districts', in Fried, H., C.A.K. Lovell and S. Schmidt, eds, *The Measurement of Productive Efficiency: Techniques and Applications*, Oxford University Press, Oxford, pp. 271–287.

31 October 2006

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42 A negative efficiency score indicates that the health fund is performing below the level of the average health fund, given the characteristics of the health fund under consideration. In contrast, a positive “true” efficiency score indicates that the health fund is performing better than the average health fund would, given the characteristics of the health fund being considered.

### 3.4. CONCLUSION

43 After adjusting for differences in operating environments we find that Medibank Private performed about 2.6 per cent better than the average health fund would have, had the “average” health fund had the same operating characteristics as Medibank Private. However, several open health funds achieved superior performance to Medibank Private. For example, MBF performed about 6 per cent better than the average health fund would have, had it had the same characteristics as MBF had. One “Open” small fund, Grand United, achieved a technical efficiency level almost 10 per cent higher than the average fund would have had the “average” health fund had the characteristics of Grand United.

44 Thus, while Medibank Private has performed better than the average health fund, there appears to be scope to improve performance to match the higher relative levels of technical efficiency of the best performing open funds in 2004–05.

45 Overall, on the basis of the adjusted efficiency score analysis we believe that Medibank Private has scope to increase efficiency by a further 5 to 7 per cent, which would bring its adjusted efficiency scores to levels achieved by the better performing open funds.

## 4. IMPLICATIONS FOR FUTURE PHI PREMIUMS

46 Irrespective of any change in ownership, Medibank Private’s premiums will need to rise to cover a substantial increase in benefits necessitated by such factors as the ageing of the Australian population, increased cost per day of hospital care and increases in the number and value of ancillary claims.

47 Future PHI premiums will be lower if Medibank Private is privatised. Privatisation would allow Medibank Private to actively and flexibly pursue all opportunities open to it to achieve available efficiency improvements, including through:

- a reduction in management costs as a proportion of premium income, for example through rationalisation of management, call centres and customer service delivery mechanisms, while maintaining or even increasing customer service standards;
- development of industry best practice service provider arrangements and demand-side management initiatives;
- economies of scope through product diversification; and/or
- improved investment performance through flexibility to adopt practices that other ‘for profit’ PHI funds are already taking advantage of.

31 October 2006

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- 48 On the basis of the model results it is suggested that privatisation has the potential to allow Medibank Private to achieve additional efficiency improvements equivalent to between 5 to 7 per cent of existing costs.
- 49 Approximately 1 percentage point of this efficiency gain would be required post privatisation to allow Medibank Private to earn a rate of return on assets equivalent to the weighted average pre tax return achieved by 'for profit' funds in 2004–05. The 4 to 6 percentage point residual could be applied to lowering real PHI premiums.
- 50 These results imply that, even after allowing for the fact that a privatised Medibank Private would need to earn a market rate of return on assets employed and would need to pay tax on any taxable profits generated, Medibank Private's premiums could fall by around 5 per cent if the business were privatised and fully achieved the efficiency gains available to it compared to the situation where the business were to remain government-owned.