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*“Public hospitals: their efficiency and funding policy in
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Public hospitals; their efficiency and funding policy in Victoria

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Abstract

This paper examines the impact of the introduction of casemix funding (together with budget cuts) to public hospitals in Victoria over the period 1992/93 to 1995/96. One of the aims of introducing casemix funding at the time was to increase efficiency, which is defined as reducing the amount of inputs required for a given output produced. However, the evidence shows that since this period in Victoria the rate of growth of overall health expenditures has increased, suggesting inefficiencies. During the implementation phase of casemix funding, there were many hospitals that either amalgamated or closed. This paper shows that this activity occurred in rural Victoria. It will be shown that, although the new funding policy alters the way in which scarce resources (government funding) are distributed to acute hospitals, it is not evident that this alteration has resulted in improved efficiency. Evidence also indicates that standards of care, as measured by the number of patients on the non-emergency waiting list, have since fallen.

JEL Codes: I11, I18

1. Introduction

Since 1 July 1993 public hospitals in Victoria have been compared for efficiency in the delivery of their services. Casemix funding arrangements were implemented, among other reasons, to improve efficiency in the delivery of hospital services. Duckett (1999), p 107 states that under casemix funding ‘The hospital therefore becomes more clearly accountable for variation in the efficiency of the services it provides’. Also, ‘Generally, case-mix funding is seen as being able to yield efficiency improvements more rapidly than negotiated funding...’. Hospital casemix comparisons provide State bodies with information on how to allocate funding among hospitals by means of annual capped budgets. Budgets are capped because funding is restricted to a given number of patients that can be treated in any given year. Thus, casemix funding relies heavily on cost comparisons between hospitals; with hospital output measured using diagnosis related groups (DRGs).

DRGs identify groups of diagnoses that require a similar level of resources to treat a patient. This makes it possible for the cost of treating a particular diagnosis to be compared across hospitals. Historically this comparison was not possible since hospitals could claim that their casemix contained diagnoses that required more intensive use of resources, justifying higher costs and increased budgets. The DRG

weights take these differences into account, since diagnoses that have a higher resource utilisation are attributed a higher DRG weighting. DRGs are used, therefore, to standardise for differences in the casemix of hospitals and allow comparisons of hospital costs.

The aim of this paper is to analyse hospital statistics and the institutional framework in Victoria to show what effect the new funding regime has had, and whether policymakers' original objectives in implementing casemix funding were in fact realised.

2. Background

There are several reasons why health reforms were undertaken in Victoria at this time. As far back as the mid 1980s Victoria's hospital system was being scrutinised in efficiency terms, with a view to introducing global funding. In early 1982 the Victorian Health Department had already gathered comparative data on cost per patient treated, adjusted for casemix using DRGs. Various reports published in the late 1980s concluded that hospital services in Victoria were inefficient. As a consequence, a Commission of Audit was appointed shortly following the 1992 State election. The Commission of Audit was charged with the task of reporting on State finances generally and, among its findings, concluded that Victorian acute hospitals were 18 per cent more expensive than hospitals in other States (Lin and Duckett, 1997). Findings from data published by the Commonwealth Grants Commission corroborated this finding by noting that Victorian hospitals were relatively inefficient.

A further reason why reforms were undertaken in Victoria was that, at the time, hospitals were funded annually on an historical cost basis. This was a perverse system that provided hospitals with increased budgets each year regardless of activity or productivity levels. Under this system there was an in-built incentive for hospitals to spend their full allocation of funds in order to secure a subsequent funding increase. This funding arrangement needed to be addressed, since it was held partly responsible for Victoria's \$30 billion debt (Victorian Budget Papers, 1999/2000).

Government debt characterised the period 1992-93 to 1994-95. The newly elected Liberal coalition was committed to its reduction and so undertook expenditure cuts across many sectors. According to Duckett (1994), in its first year, 30 per cent of

the total State budget reduction¹ was achieved solely by funding cuts to Acute Health. This was a considerably disproportionate reduction, given that Acute Health absorbs approximately 17 per cent of the State budget. Budget cuts were thus implemented alongside the new funding regime, making it difficult to distinguish between the two effects and, subsequently, casemix funding received a considerable amount of negative press.

Scotton and Owens (1990) provide a clarification of the issues and sentiment behind the rationale for introducing casemix funding using DRGs in the first instance.

The central idea behind the use of case payment for hospital reimbursement is that payment geared to **output** will result in more efficient performance than other formulae. The key concepts involved are the **treated case** as the payment unit and a **casemix model** which enables cases with different treatment requirements to be categorised and costed.
(Scotton and Owens, 1990, p 1)²

3. Literature

This paper draws on relevant work that describes the funding arrangements in place during this period. Donato and Scotton (1999), Duckett (1994), (1995) and (1999), Fetter (1991), Hall (1999), Lin and Duckett (1997), Magarry (1999) and Scotton and Owens (1990) provide evidence on the Australian and/or Victorian health care systems. Antioch et al. (1999), Southon (1994), Braithwaite and Hindle (1998), Phelan (1998), Walsh (1996), and Hanson (1998) all contribute to the debate over whether or not DRGs and casemix funding will benefit the Australian health market.

The Australian healthcare system is complex in the way it is funded and structured. Donato and Scotton (1999) provide an overview of health care arrangements in Australia, and the problems and issues in the system. The authors provide detail on the mixed private/public nature of funding and health provision. They also provide expenditure comparisons with OECD countries for the years 1975 to 1995 (Donato and Scotton, 1999, Table 2.2). These figures show that Australia's health expenditure trend (on average between 8 and 8.5 percent of GDP over this period) is consistent with most other OECD countries.

Donato and Scotton distinguish between expenditure on medical services (via Medicare) and expenditure on health care. They note that '[b]etween 1988/89 and

¹ By 1999/2000 State debt was reduced by over 80 per cent to \$6.1 billion (Victorian Budget Papers, 1999/2000, p 5)

² Words in bold are as per original cited.

1994/95 expenditure on medical services grew at an average real rate of 5.4 per cent per annum, compared with 3.5 per cent for health care expenditure as a whole' (Donato and Scotton, 1999, p 28). The authors note that the reason this occurred relates to the fact that medical services provided by private practitioners are uncapped.

Donato and Scotton (1999) acknowledge that many problems associated with Australia's health system are common among OECD countries. However, they also identify some problems that are unique to Australia. These problems, according to the authors, exist due to the peculiar nature of the institutional and structural characteristics of the Australian health system. Firstly, is the problem of vertical fiscal imbalance, which is exacerbated by the dual funding of healthcare services by both the Commonwealth and the States. Secondly, is the issue of declining private health insurance cover. The authors note that in 1983, the year prior to the introduction of Medicare, 63.7 per cent of the population was privately insured. One year later, following the introduction of Medicare, this figure fell to 50 per cent (Donato and Scotton, 1999)³. The authors posit that structural instability in financing originates from the fact that private cover is voluntary, and the universal system, funded through compulsory taxation, is available to all.

For an historical description of the evolution of casemix funding in Victoria see Duckett (1994) and Duckett (1995). The author presents descriptive evidence on the reasons why casemix funding was designed (to improve overall efficiency and to reduce waiting lists) as well as providing a useful history of the development of DRGs in the US and Australia. Duckett (1995) discusses the effect of combining budget cuts with the introduction of casemix funding in Victoria. Budget cuts to healthcare were brought in over a three-year period (July 1992 to June 1995) in support of the Government's aggressive industrial stance. New industrial relations laws, together with once-off funds, provided hospitals with the ability to make forced redundancies and offer early retirement, thereby reducing staffing costs. This combination resulted in a restructuring in hospitals '...changing the fixed/variable ratio – rather than simply cost reduction' (Duckett, 1995, p 118).

³ At 30 June 2007 the figure stands at 43.5 percent. (www.phiac.gov.au)

The possibility of teaching hospitals being unfairly disadvantaged by the new funding regime was identified. These hospitals undertake training and development activities, the additional costs for which would appear as greater inefficiency when compared with non-teaching hospitals. This problem was addressed by dividing hospital activities into four categories of outputs, namely inpatient services, outpatient services, training and development, and other specified programs (Duckett, 1995). This separation into sub-programs meant that each sub-program could be funded differently.

Separate funding arrangements were developed for each of these sub-programs with the inpatient sub-program being funded on a casemix basis and the other sub-programs being funded on a mixture of casemix, historic and output bases. (Duckett, 1995, p 119).

Duckett (1995) details the process by which resource weights for inpatient services were developed in Victoria, namely by utilising patient level costing systems. The basic unit for payment became the weighted inlier equivalent separation (WIES). This is a measure that firstly deals with exceptional cases or outliers, which are ‘...folded into the inlier payment to create an inlier equivalent separation...’ (Duckett, 1995).

An additional throughput pool was implemented to provide an incentive for hospitals to increase throughput and reduce waiting lists. This new tool potentially provided increased payments to hospitals. Total payments from the pool were capped, however, such that the amount available in the pool was fixed, and the price per additional patient treated was allowed to fluctuate. This was necessary because Government set the total amount available in the pool, and the increased throughput was determined by hospital activity on a quarterly basis. Thus, changing the price for additional patients treated ensured that the pool did not expire (Duckett, 1995).

The issue of quality maintenance in hospitals was also of concern to those responsible for implementing casemix funding in Victoria. Many considered that the move to casemix funding in pursuit of improved efficiency would endanger health outcomes. This concern led to the requirement that all hospitals produce a quality assurance plan annually (Duckett, 1995). Hospitals were also encouraged to participate in the Australian Council of Healthcare Standards accreditation process. Accreditation by hospitals to this organisation was rewarded with an annual specified

grant. Data also began to be collected from hospitals on unplanned re-admission rates as this was considered to be ‘...the best indicator of potential quality problems’ (Duckett, 1995, p 127). Furthermore, consumer experience of hospitals was measured with a consumer satisfaction survey that provided data on patients’ perception of care received (Duckett, 1995).

Duckett (1995) concludes by elaborating on the perverse incentives which are inherent in casemix funding, and which may work to counter ethical practice. These are identified as increased unnecessary admissions, hospitals providing only activities for which they are paid, the neglect of altruism in health provision, and ethical/medical risks of medical practitioners’ early discharge decisions.

Duckett (1999) deals with hospitals in Australia; their capacity and utilisation, funding arrangements, and how hospital services are categorised. The author provides an overall picture of the Australian healthcare landscape, including statistics showing State and Territory comparisons for 1995/96 of the number of hospitals, beds, beds per 1000 population and beds per hospital for both the public and private sectors (Duckett, 1999, p 94, Table 5.1). Further data are provided on the provision and use of acute hospitals in Australia between 1985/86 and 1993/94. These data show a declining trend in the number of public acute hospital beds per 1000 population (22 per cent) and private acute beds (7.7 per cent) over the period. Separate data are provided for metropolitan and non-metropolitan regions. In rural areas the decline in public acute hospital beds has been more marked at almost 30 per cent. The author attributes this decline to ‘...specific government policies to reduce bed provision...’ (Duckett, 1999, p 96). Conversely, the rural trend for private acute beds per 1000 population shows an increase of over 42 per cent over the period. The author attributes this trend partly to a reduction in population in those areas, and partly to new private hospitals being constructed in rural areas (Duckett, 1999).

Duckett (1999) also identifies productivity changes with the use of data on admissions, average length of stay (LOS) and occupancy data. For both public and private sectors over the period there is an increase of admissions per 1000 population of 21.6 percent and 27 per cent respectively. These data, coupled with reduced LOS (by 30 and 25 percent) and increased occupancy rates (by 11 and 8 percent), show significant productivity improvements overall. The author notes that LOS reduction is due to the increase in day-only patients and reduction in stays of long duration. He

attributes this trend to the effect of improvements in medical technology over the period (Duckett, 1999).

Duckett (1999) notes that casemix funding places incentives on hospitals to provide appropriate care in an efficient manner. This is because casemix funding is paid to hospitals per patient treated and as a reimbursement. Although the author acknowledges that hospitals cannot determine how many people present themselves for treatment, they do have control over the length of stay, the number of tests ordered, and other costs associated with hospital stays. The incentive for hospitals to be more efficient with their allocated funds lies in the way that the ‘...funder or purchaser assumes the risk for cost variations caused by variations in the number and type of patient treated, by setting differential prices for different types of patients and allowing budgets to vary with volume’ (Duckett, 1999, p 107). The prices noted here are determined by grouping diagnoses by their characteristics.

The literature on hospitals and government expenditure shows that there is some relationship between the type of government funding and overall expenditure. Antioch et al. (1999) compare Victoria and New South Wales using the benchmark funding rates for WIES. They use data on per capita health spending in different States, and per capita hospital spending, after adjusting for dispersion and scale. From this analysis, Antioch et al. (1999) show the change in per capita public hospital costs in Victoria from 1991-92 to 1995-96.

These comparisons showed that Victoria’s per capita public hospital costs, which were some \$65 above New South Wales in 1991-92, were about \$20 lower in 1995-96. (Antioch et al., 1999, p 135).

Antioch et al. (1999) produce multiple regressions that identify independent variables impacting on Victoria’s per capita expenditure (adjusted by the CPI) on recognised public hospitals. These variables include Victorian Gross State Product per capita, the unemployment rate in Victoria, the proportion of public beds to total public and private beds in Victoria, a dummy variable for the introduction of casemix funding and funding cuts, and the ratio of non-same-day separations to same-day separations in Victorian public hospitals. The authors take results from the OECD’s 1993 cross-country econometric work that explores factors affecting health spending, and use them to estimate their model. The OECD results indicate that countries that pay physicians by capitation, countries where patients pay the provider and then seek

reimbursement and countries with more doctors per capita all have lower overall expenditure. Among the key findings for their research Antioch et al. (1999) note that, as expected, funding cuts and the introduction of casemix funding led to falls in expenditure on recognised public hospitals. They stress, however, that the introduction of casemix funding did not cause funding cuts.

Clearly, casemix funding did not cause funding cuts; it was introduced at the same time as the funding cuts. Casemix funding simply provided the incentives to change the method allocating the funds that were available.

(Antioch et al., 1999, p 148).

Phelan (1998) provides an explanation as to why DRG-based funding was necessarily implemented in Victoria. He notes the overall cost savings generated since its implementation and provides both the benefits and possible problems associated with DRG-based funding. The author acknowledges that budget cuts were necessary in Victoria, and that DRGs assisted the process by making budget cuts more equitable across hospitals. The author also notes that DRG-based funding improved work practices, and altered the management mix in hospitals.

Many hospitals realised that, if they were to manage the changes successfully, they had to involve clinicians in senior management, as their decisions are responsible for about 80% of healthcare costs. (Phelan, 1998, p 560).

Phelan (1998) notes other successes in Victoria stemming from the introduction of DRG-based funding. Among these were less (expensive) investigations, better managed length of stay, and the deliberate move to day-only surgery. Also, discharges were no longer delayed pending the twice-weekly consultant ward round (Phelan, 1998).

Hanson (1998) provides evidence on the limitations to using Australian National DRGs (AN-DRGs). These limitations include inadequate measures of severity of illness being incorporated into DRGs, and the poor quality of patient data available to form the groups. The author also suggests that DRG-based funding was developed too quickly and resulted in perverse incentives as healthcare providers struggle for survival.

A DRG-based payment system is meant to be about allocative efficiency, and not about increased throughput and profiteering. In an underfunded healthcare environment it should have come as no surprise that perverse incentives would be difficult to control, and

that the focus would not be on quality and outcomes, but rather on the survival of healthcare services.
(Hanson, 1998, p 561).

Another contrary view to using DRGs in the casemix funding process is provided by Braithwaite (1994) and Braithwaite and Hindle (1998). The authors argue that DRGs take a simplistic view of variations in patients' needs (including severity of illness and comorbidity). They state that DRGs fail to respond with sufficient speed to developments in technology and science and are out of date by the time they are used. They also argue that there are data problems involved in the clinical process such as coding errors, misdiagnoses and medical uncertainties. The use of DRGs, however, suggests that classifying patients can be scientific and precise. Braithwaite and Hindle (1998), although generally in agreement with Hanson (1998), consider that DRG-based funding attempts to promote *technical* efficiency, rather than *allocative* efficiency.

DRG funding attempts to promote technical efficiency in only one part of the healthcare sector – the acute care of inpatients.
(Braithwaite and Hindle, 1998, p 558).

Braithwaite and Hindle (1998) also point to some ethical considerations in applying economics to healthcare. The authors note that neoclassical economists espouse that productivity and efficiency are driven by incentives, whereas healthcare workers are motivated 'from within' to provide quality care to patients (Braithwaite and Hindle, 1998, p 559)⁴.

Walsh (1996) contends that casemix funding is a major advance over the historical budgeting procedure that existed in Victoria prior to July, 1993. He also argues that under casemix funding there is a focus on efficiency and much greater accountability for the use of funds and hospital management performance. Among the achievements under casemix funding, the author notes an increase in productivity in Victorian hospitals with '...15% more work with 10% less money since 1992-93'

⁴ Whilst it is true that paid nursing staff and allied workers do exceptional work with regard to improving health outcomes of patients, the issue of efficiency deals with the way that resources are managed in the production process. That is, DRG-based funding should be viewed as impacting on managerial decisions, rather than altering individual staff job descriptions or diminishing an individual's desire to provide quality care. Ethical arguments against DRG-based payments are emotionally charged and unhelpful in finding better ways to apply increasingly scarce resources to the growing market for healthcare.

(Walsh, 1996, p 133)⁵. The list of achievements includes a 30% increase in day-only cases (spanning over 2 years), increased throughput, declining waiting lists, and improved emergency access. Among the disadvantages of casemix funding, the author notes that '[t]here is still too much emphasis on inpatients and too much emphasis on throughput' (Walsh, 1996, p 133). The issue of 'averaging' is also considered a disadvantage since hospitals that specialise have only a limited number of patient categories and many of these may require intensive care treatment, which is costly and requires longer stays.

Southon (1994) offers a perspective on Victoria's health reforms in light of long-term effects. He argues that hospitals do not operate like traditional markets since a third party is involved in payment for patient services. The author also outlines the existence of perverse incentives in health markets⁶. Southon (1994) notes that the move to a 'managed market' for healthcare in Victoria may in fact result in significantly increased administrative costs. That is, costs may rise due to increased workloads associated with maintaining the fee schedule, responding to hospital appeals for special treatment, and ongoing alteration of hospital strategies to ensure that they remain competitive (Southon, 1994). Furthermore, the author identifies institutional effects of hospitals that, together with change in management style required under reforms, could impact detrimentally on hospital performance in the longer term (Southon, 1994). In conclusion, the author states that the Victorian experiment is a brave initiative that has been met with some early successes. He also states that inherent management costs in health reforms could detract from service provision, degrading long-term clinical capabilities. These are valid points and should be considered in more depth when examining the effect of casemix funding.

Lin and Duckett (1997) provide a summary of the health reform process in Victoria. The authors express concerns over the effect of DRGs on quality outcomes where hospital activity could be misinterpreted as efficiency without regard to outcomes. Further descriptions of the Victorian health reform agenda can be found in Fox (1996), and Tonti-Fillippini (1996).

Clearly, the issue of whether the intention is to improve allocative efficiency or technical efficiency is important in whether or not the funding method is accepted

⁵ It is not clear how these percentages are calculated.

⁶ For a discussion of market failure and asymmetric information in health markets, see Evans (1984) and Donato and Scotton (1999).

by clinicians and commentators. Those authors who are in favour of the use of casemix funding based on DRGs⁷ present arguments based on improvements in *productivity*. Productivity is defined as increased output for a given input, and forms part of *technical* efficiency. Those authors who present arguments against the use of a DRG-based payment system do so arguing reduced quality and reduced services provided by hospitals. These are issues of *allocative* efficiency because they deal with the combination of products/services being produced; changing the way that resources are allocated in the production process in order to produce the greatest gains. The new funding arrangements alter the incentives to produce and, therefore, may impact negatively on allocative efficiency. The disentangling of the above arguments for and against DRG-based funding results in a quandary. It is possible, after all, for both arguments to coexist. Hence, assuming that both camps have a justifiable position, the question appears to be whether the negative effects (by not producing what society wants) on allocative efficiency grounds, counteract the positive impact (improved productivity) that casemix funding has achieved on technical efficiency grounds. This tradeoff is evidenced by the subsequent result that in order to improve technical efficiency overall, there has been a reduction in hospital services in more remote locations.

This literature highlights the key issues that are significant in the development of this paper. Whether hospitals manage their inputs (resources) efficiently relies to a great extent on policymakers putting in place the correct incentives to bring about desired behaviour. Policymakers have many issues to consider when determining the structure of incentives, since the operations of public hospitals are complex and exhibit relationships and processes that do not exist in the competitive market. The cost-increasing effect of new technology, for example, is an area requiring particular attention. It is widely recognised that innovations stemming from research and development are a desirable outcome in the pursuit of improving living standards generally. In medicine, technological advances improve medical capabilities, thereby reducing patient recovery time, and/or improving procedural success rates. These benefits accrue directly to patients and also indirectly to the wider community when consideration is made of reducing the amount of work time lost to hospitalisation

⁷ See for example Walsh (1996), Phelan (1998) and Duckett (1999).

and/or illness. The increased costs, however, accrue to the healthcare sector and are subject to the funding arrangements in place.

One point that arises in the literature is predicated upon whether DRG weights used in casemix funding should be related to the performance of procedures (retrospective), or whether they should be related to actual diagnoses (prospective). Payments based on retrospective DRGs are associated with increased reimbursement since these DRGs are treatment-related and, depending on severity of illness, carry relatively higher weights. More intensive treatment is further enabled by the existence and use of new technology which, in turn, provides patients with surgical options that increase treatment costs. DRGs that capture actual diagnoses, and that are prospective, are a better tool for ensuring that resources will be used efficiently in treatment. Uncertainty arises, however, due to the fact that initial clinical diagnoses are not always correct and, concomitantly, retrospective DRGs better reflect the imprecise nature of clinical practice decisions.

For all the objections raised to casemix funding being implemented, it is apparent that on balance the Victorian experience has successfully aided our ability to at least influence the allocation of scarce resources, even if not to improve overall efficiency. This paper will show that it was, in fact, hospital merger activity following Victoria's move to casemix funding that secured the gains that Victorian policymakers were seeking, and not improved efficiencies within individual hospitals.

4. Acute Health Division

For the purpose of this study, the division within Human Services that is of particular interest is the Acute Health Division. This division accounts for approximately 50 per cent of the Department of Human Services' budget and, therefore, approximately 17 per cent of the State Government's overall financial commitment. Acute Health is responsible for funding the delivery of acute and sub-acute services, the provision of ambulance services, and ensuring the provision of adequate and safe supplies of blood and blood products (DHS, 99/00, p10). Within these parameters Acute Health delivers strategies to promote efficiency and accountability in public hospitals, and ensures the continued development of the casemix funding system. It is also charged with improving ambulance responsiveness, inpatient and rehabilitation services, maternity care and the general delivery of healthcare in Victoria.

Prior to the introduction of casemix funding, historical cost funding was based on inputs such as salaries and pharmaceuticals. Any budget reductions made during this period usually resulted in reduced services. This was followed by the period in the mid-1980s when detailed input controls over hospitals began to be relaxed and hospitals moved to 'global budgeting'. Under this system hospitals were able to shift funds between the various classes of inputs, and between salary and non-salary expenditure. Although this change was accompanied by an increasing emphasis on measuring a hospital's total activity levels, the link between inputs and outputs remained weak. This funding system (and varying political strengths within the hospital) rewarded advocacy skills rather than promoting efficiency of input use (Lin and Duckett, 1997, p 48).

5. Health Reforms

In the period 1992-93 to 1994-95, Victorian State debt exceeded \$30 Billion (Victorian Budget Papers, 1999/2000, p 5). The newly elected Liberal coalition was committed to reducing this debt and so undertook expenditure cuts. At the same time there was evidence that Victorian hospitals were less efficient than hospitals in the other Australian states. Shortly after the 1992 state election the Liberal coalition government appointed a Commission of Audit whose purpose was to assess and report on state finances. The Report presented to the Premier in 1993 'claimed that Victorian acute hospitals were 18 per cent more expensive than hospitals in other states' (Lin and Duckett, 1997, p 49). The Report further claims that 'with the introduction of output-based funding using casemix data, annual efficiency gains could be as much as 14 per cent (\$373m) of the current hospitals (sic) budget if a new hospital funding base is set based on comparable NSW benchmarks' (Victorian Commission of Audit, 1993, p 81). The Report also found that a significant determinant of cost inefficiencies in Victorian hospitals, relative to those in New South Wales, was excessive staffing levels. The Government also had evidence from the Commonwealth Grants Commission to the effect that Victorian hospitals were relatively inefficient. In view of these findings and in view of the necessary expenditure cuts, it was considered that an across-the-board funding reduction would not be equitable to those hospitals operating efficiently. The funding cuts were thus targeted at hospitals found to be operating inefficiently.

A further reason put forward for reform of the health sector was the existence of growing hospital waiting lists. Of the 30,000 people on waiting lists in Victoria, 5 per cent were in need of Category 1 urgent care. Since the Government had made pre-election promises to reduce these waiting lists, it had to also ensure that funding cuts would not have the opposite effect. Thus, the objectives of reform were:

- To introduce a fair basis for funding hospitals in the context of an overall budget reduction;
- To improve the efficiency of public hospitals, and;
- To provide for an expansion in the number of patients treated and thus to allow a reduction in waiting lists.

(Duckett, 1994, p 20)

According to Duckett (1994) it was the Government's intention to introduce casemix funding as the means of restructuring hospital funding arrangements so that the right financial incentives could be put in place to achieve these objectives. It could be argued, however, that casemix funding was the means of achieving considerable reductions in government expenditure at a time when the newly elected government was at the height of its popularity. Health reforms were also necessary due to the Federal Government's broader concerns for microeconomic reform. That is, the provision of health care was not immune to the legislative amendments to anti-trust legislation that focused on increased competition and efficiency in Australia generally.

With respect to complying with the principles of the National Competition Policy, the DHS proposed that increased competition between private and public hospitals could be addressed by developing a more equitable funding system. The various funding systems put forward for comment at the time were all designed so that both types of hospital could compete for private patients on an equal footing, eliminating the 'unfair advantage' exercised by public hospitals (DHS, 1996).

The first version of DRGs adopted by the Victorian Government in 1993 was Australian National Diagnosis Related Groups (AN-DRGs). Using this particular measure the Minister for Health was able to implement casemix funding so that hospital services followed patients, rather than hospitals receiving funding as institutions in control of their own budgets. As casemix funding was espoused by the Minister, it was a matter of putting the patients' needs ahead of all else (Stoelwinder and Viney, 2000, p214).

The newly elected government needed to overcome the problem of budget cuts resulting in longer waiting lists. It was decided that the best way to overcome this problem was to provide an incentive to hospitals to increase throughput. Extra revenue from an additional throughput pool could be gained by hospitals that were able to meet their waiting list performance criteria. However, this incentive proved to be too effective by the second year of operation, when the increase in throughput was double the amount previously anticipated by the Department. This extra throughput resulted in additional pressure on funds in the pool, and meant that there was difficulty keeping within the pool's budget. In response to this situation the Government decided to limit any hospital's call on the pool to 5 per cent of its base throughput target. The result of this decision, however, was to reduce patient throughput as a consequence of budget cuts; something that the additional throughput pool was designed to overcome (Stoelwinder and Viney, 2000, p215).

Reductions in throughput led eventually to bed closures, staff sackings and the sudden increase of people on hospital waiting lists. Casemix funding received significant negative media attention that held the Government responsible for its implementation. That is, although budget cuts were responsible for bed closures, it was the fact that budget cuts were undertaken within the new casemix funding regime that drew criticism from the media and political opponents. Commentators took the view that casemix funding led to budget cuts and, therefore, casemix funding was responsible for bed closures and increased waiting lists. The additional throughput pool was subsequently abolished in 1995/96 (Duckett, 2000).

As the purchasing arrangements currently operate in Victoria, hospitals receive a capped annual budget from which to provide inpatient services. That is, hospitals know in advance the total number of WIES annually that will be funded. It is therefore necessary that hospitals plan ahead to ensure that funding will be available for the full year. There is '...no capacity for additional funding in the event of budget overrun' (Brook, 2006, p4). According to the Victorian Department of Human Services, budget caps dictate planning measures by hospitals which ensure efficiency in resource utilisation.

...the system utilises capital and recurrent resource restrictions to ensure that duplication, particularly of highly expensive high technology care, is minimised...[and]...It [casemix funding] emphasises technical (cost) efficiency and...has been instrumental

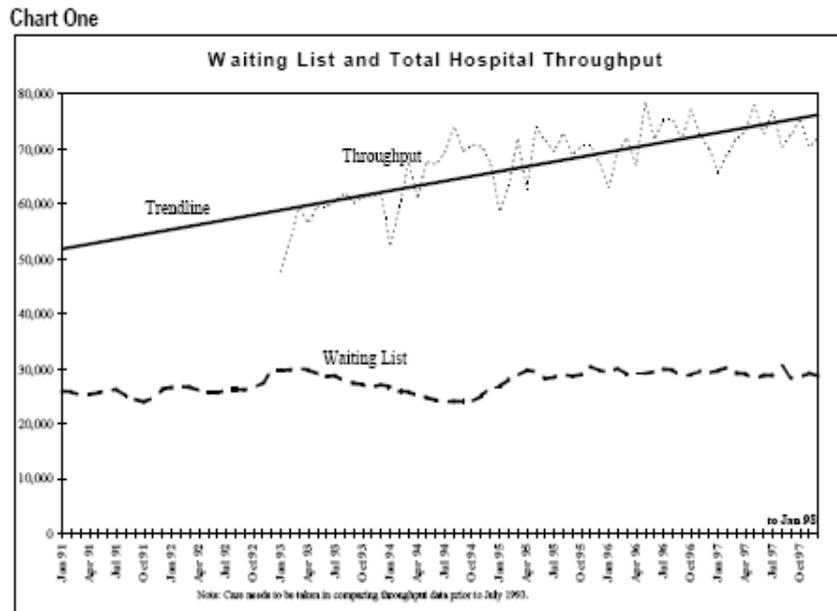
in transforming Victoria's hospital system from arguably Australia's least efficient, to a highest level of efficiency. (Brook, 2006, p4)

In tandem with budget caps, the author states that there are in place price signals, through bonus and penalty arrangements, '...which encourage desired policy outcomes – such as meeting emergency and elective surgical waiting time targets' (Brook, 2006, p4). Thus, on the one hand budgets are capped to fund a given number of WIES annually and, on the other hand, hospitals are required to maintain waiting list targets which, if they are successful, may lead to budget overruns. Under these circumstances it is probable that hospitals will allow waiting lists for non-emergency elective surgery to grow rather than risk receiving insufficient funding for a given year.

Patients are categorised into clinical categories when they are placed on the waiting list. The three categories were established to identify the relative clinical priority of patients needing hospital admission. The categories range from Category One (condition can potentially deteriorate quickly – admit within 30 days), Category Two (condition causing some pain, dysfunction or disability but is not likely to deteriorate quickly – admit within 90 days), and Category Three (minimal or no pain, dysfunction or disability, not likely to deteriorate quickly and non-emergency – admit some time in the future).

The Review of Elective Surgery Waiting Lists was set up in 1998 to determine whether there was any evidence to support allegations made by the Australian Medical Association (AMA) of widespread manipulation of hospital waiting lists throughout Victoria (Clarke and Bennett, 1998). The Review's findings, that this was not the case, were presented to the Victorian Minister for Health in September 1998. The findings show that 'There has been a steady increase in both the total number of patients treated in Victoria's public hospitals and in elective surgery patients since 1991' (Clarke and Bennett, 1998, p24). This is represented by two charts which show a comparison of waiting lists and throughput trends (reproduced below).

**Chart 1 – Victorian Waiting List and Total Hospital Throughput
Jan. 91 – Oct. 97**



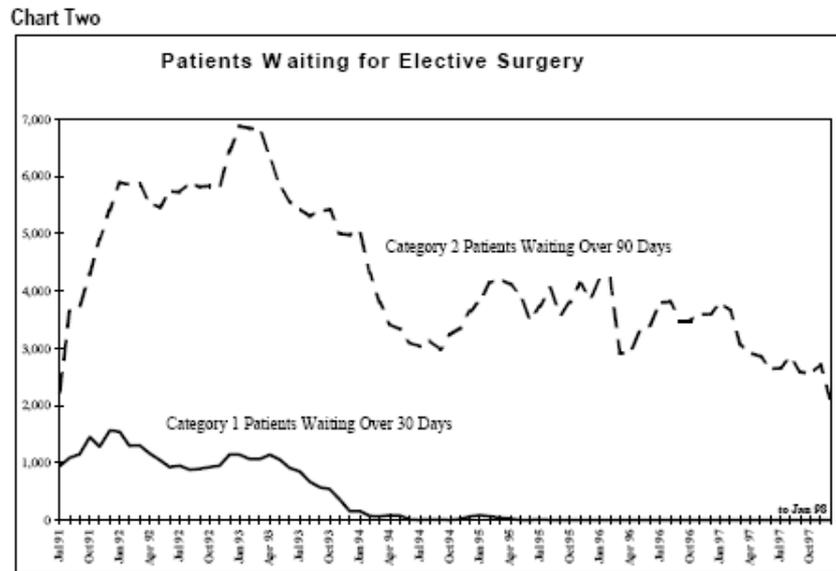
Source: Clarke and Bennett, 1998, p24

According to Chart 1 throughput fluctuates widely over a rising trend over the period to meet the increased demand for hospital services. It is also apparent from Chart 1 that there was an initial reduction in the waiting list over 1993-1994, but then the waiting list rose again to slightly more than pre-existing levels in 1995 onwards. Chart 2 shows the separation of Category One and Category Two patients on the waiting list.

It is clear from Chart 2 that the number of Category One and Category Two patients on the waiting list fell following the implementation of casemix funding in July 1993. Taking Charts 1 and 2 together it is apparent that, because the total waiting list rose to above pre-existing levels, it must be the case that Category Three patients on the waiting list rose over the period. These are not reported separately in the Review's findings. Also the two charts show different scale on the vertical axis. Chart 2 appears to show relatively large fluctuations, however for Category Two data the change from peak in 1993 to trough in 1997 is less than 5,000 patients. These data confirm that the number of Category Three patients on the waiting list did in fact rise over the period. The incentives in place to reduce Category One and Two patients on the waiting list appear to be working, however at the expense of Category

Three patients. The result, therefore, is that there was a redistribution of patients between categories, with a zero net effect.

**Chart 2 – Victorian Patients Waiting for Elective Surgery
Jul. 91 – Oct. 97**



Source: Clarke and Bennett, 1998, p24

In the first two years of operation, casemix funding was comprised of a number of component grants. Table 1 shows the change in component grants between the years 1993-94 and 1994-95. The compensation component was only intended for the first year of operation of casemix funding, as a transitional grant from the old funding system to the new. It was calculated on the difference between funding received by hospitals pre-casemix funding (1992-93) and that received post-casemix funding (1993-94) (McLean, 1994). This component resulted in the removal of the effect of casemix funding in the first year of operation. Clearly, without this compensating grant, funding would have decreased by approximately 8 per cent between 92-93 and 93-94.

**Table 1: Victorian Casemix Funding Components
1993-94 to 1994-95**

Component Grants	Proportion of Funding 1993/94	Proportion of Funding 1994/95
Non-admitted patients	18	17
Overhead	27.1	26
Specified/training grants	13.4	16
Compensation	8.1	0
Variable Payments	33.4	41
Total	100	100

Source: McLean, 1994, p 34.

According to Table 1, with the exception of the overhead and non-admitted patient components, the remaining two components increased proportionally in the second year of casemix funding. The largest increase occurred for variable payments. These include payments for public hospital medical officers, unit DRG reimbursements to hospitals, rural/isolated patient transfer costs and nursing home type patients. With regard to Group E⁸ hospitals, located in rural Victoria, an additional \$50 per patient treatment episode was paid by DHS 'to reflect higher staffing costs in smaller institutions' (McClean, 1994, p 34).

The specific period that this paper investigates is 1992/93 to 1995/96. Over this period there was some change in expenditure trends. Duckett (2000) shows, by constructing an index, how budgeted expenditure for acute health services in Victoria fell by 9 per cent initially between 1991/92 and 1993/94, and rose by 9 per cent above 1991/92 levels in 1996/97 (Duckett, 2000, Table 8.1, p155). The same table shows an index of separations which rises steadily from 100 to 131. However, the author states that separations rose over the period by 75 per cent, as a response to the introduction of casemix funding. He notes, nevertheless that some of the increase in activity may be due to the reclassification of some outpatients to inpatient status. Duckett (2000) also notes that the WIES figure, which was introduced in 1993/94, rose at a much slower rate over the period. The index for WIES rises from 100 to 109.

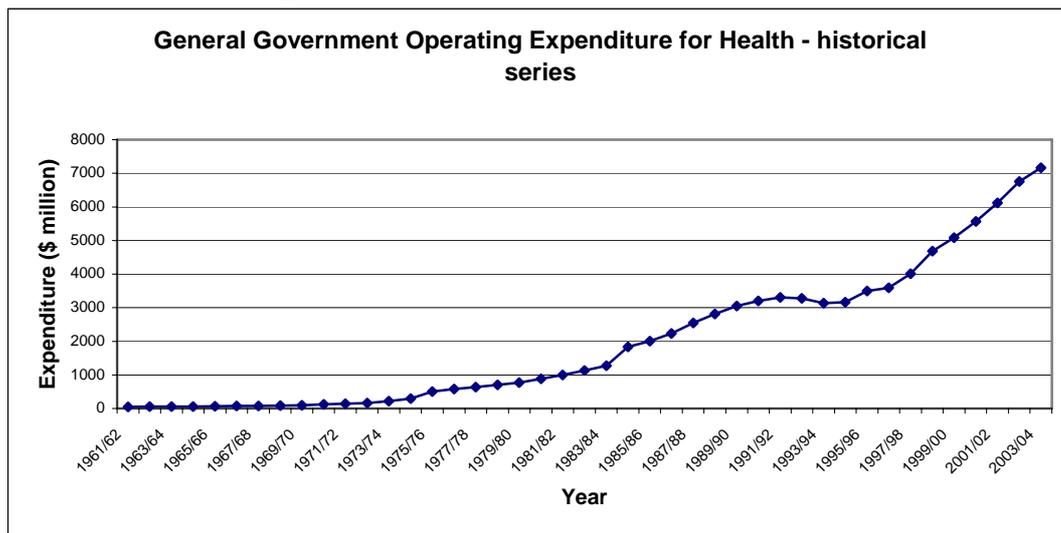
The extent of actual versus nominal growth is difficult to estimate. Assuming that all the activity increase is real, the costs per

⁸ These are small hospitals with less than 500 separations per annum.

separation have declined by 25 per cent over the period 1991/92 to 1996/97.
 (Duckett, 2000, p156).

Graph 1 is constructed using historical data⁹ from the Victorian Government's Statement of Finances 2005-06, Budget Paper No. 4 (State of Victoria, 2005-06). Over the period 1992/93 to 1995/96 Graph 1 shows an initial significant slowing down of expenditure, followed by a period of reduced health expenditure in Victoria. Visually it is apparent that during the period prior to budget cuts and the implementation of casemix funding, expenditure increased steadily. It is also apparent that from 1996/97 the rate of growth of expenditure surpasses earlier growth (that is, the gradient becomes steeper).

Graph 1: Victorian General Government Operating Expenditure for (Total Health Expenditure) 1961/62 to 2003/04 – historical series



Source: Victorian Budget Papers (2005-06)

Graph 1 shows the existence of budget cuts over the period 1992-1995; however it is not apparent to what extent acute health hospitals were affected because the graph plots the total figure for health expenditure in Victoria. Nevertheless, these expenditure data show clearly the existence of budget cuts and health reforms that were directed at acute care.

⁹ One of the difficulties with obtaining a dependable data series for Victoria over this period has been the lack of uniform data collection by the relevant authorities. The data that forms the content for Graph 1 is reproduced from Victorian Budget Papers. Its original source is the Australian Bureau of Statistics, Catalogue 5512.0. No mention is made as to whether the expenditure is in current or constant dollars.

6. Rural Victoria

The implementation of casemix funding for acute health services in Victoria was anticipated to impact on small rural communities. In 1993 the Victorian Small Rural Hospitals Task Force was established 'to review the progress and difficulties of small rural hospitals in Victoria following the introduction of casemix funding' (DHS, 2002, p3). There were 57 small rural hospitals each with 30 or fewer beds in 1994. These hospitals are classified as Group D and Group E hospitals and include Multi-Purpose Service and Healthstreams agencies (DHS, 2002). The Taskforce acknowledged the diverse nature of rural Victoria in terms of topography, geography and socio-economic factors. It also acknowledged that small rural hospitals should provide services based on identified community needs. The Taskforce noted that communities should be made aware of the benefits associated with the redistribution of resources away from 'high cost underused bed-based services to more cost effective and accessible community based services' (DHS, 2002, p 3). As outlined in Table 1 variable payments to hospitals included a payment for rural/isolated patient transfer costs. This payment was targeted specifically toward the cost of ambulance transfers between hospitals, which are more prevalent in remote rural communities. The amount in both years in Table 1 represents approximately 0.1 per cent of funding (McLean, 1994).

7. Metropolitan Victoria

It is interesting to note that hospitals located in the four Melbourne metropolitan regions serviced a population of 3,321,666 residents in 1997, whilst hospitals located in the balance of Victoria together serviced over 1.2 million residents (28 per cent of the resident population) (ABS Cat. 3234, 1997). Table 2 shows a breakdown of the resident population located in Melbourne and the ten statistical divisions outside of Melbourne in 1997.

Table 2: Estimated Resident Population in Melbourne and Non-metropolitan Victoria, 1997

Statistical Division	Estimated Resident Population
Melbourne	3 321 666
Non-Metropolitan Regions	
Barwon	240 906
Western District	100 125
Central Highlands	135 443
Wimmera	52 027
Mallee	87 590
Loddon	158 656
Goulburn	184 141
Ovens-Murray	89 698
East Gippsland	81 002
Gippsland	153 894
Total	4 605 148

Source: ABS Cat. No. 3234.2, 1997

These figures are best viewed along with hospital closures and amalgamations over the period.

8. Hospital Movements

Table 3 shows the number of hospitals operating in Victoria over the period 1992/93 to 1995/96. The hospitals are grouped by size in descending order.

Table 3: Number of Victorian Hospitals by size 1992/93 – 1995-96

Group	1992/93	1993/94	1994/95	1995/96
'A' Teaching Hospitals	16	16	16	16
'B' Large Regional Base and Suburban Hospitals	22	22	21 ^a	21 ^a
'C' Regional General Hospitals	24	24	23 ^a	23 ^a
'D' Area Hospitals	22	22	20 ^a	20 ^a
'E' Local Hospitals	33	31 ^a	22 ^b	21 ^c
Total	117	115	102	101

Source: Victorian Hospitals' Association, 1992/93 – 1995/96

a = reduction from initial year due to closures, b = 5 closures, 6 amalgamations, c = 5 closures, 7 amalgamations.

With one exception all large teaching hospitals are located in the metropolitan area. Groups C, D and E are located in non-metropolitan regions, and Group B hospitals are located in both areas.

It is clear from Table 3 that the total number of hospitals decreased over the period from 117 to 101. The reduction in the number of hospitals shown is due to both hospital closures and amalgamations. Local hospitals (Group 'E') experienced the greatest number of closures, namely 5 hospitals over the period, and also the greatest number of amalgamations of 7 hospitals. Thus, in the final year this group contains 12 hospitals less than it contained in the first year.

Table 4 sets out totals for two outputs and two inputs by group over the period. The two outputs are WIES and inpatients treated, and the two inputs are equivalent full-time staff (non-medical) and average available beds. Table 4 shows that total WIES declined in the second year of observation and then increased to 750,528. The total number of inpatients treated, however, rose steadily over the period from 690,461 to 871,725. This was at the same time that EFT staff fell dramatically in the second year from 37,962 to 33,725 and then rose again to 36,095. The figures for total average available beds are similar in that they fell dramatically in the second year from 11,094 to 10,849, but rose again to 11,026 in the final year.

Table 4: Summary of Victorian Hospital Data 1992/93 – 1995/96

Group	Characteristic	1992/93	1993/94	1994/95	1995/96	% Change
A	WIES	460226	456012	504845	502109	+9
	Inpatients Treated	430655	461581	522099	557691	+29.5
	EFT Staff (non-medical)	23594	21367	21975	23306	-1.2
	Average Available Beds	6207	6289	6400	6652	+7.2
B	WIES	173568	169473	178045	184989	+6.6
	Inpatients Treated	183860	195231	208134	227297	+23.6
	EFT Staff (non-medical)	9672	8190	7997	8848	-8.5
	Average Available Beds	3084	2892	2732	2860	-7.2
C	WIES	45019	40751	42401	42167	-6.3
	Inpatients Treated	49361	51294	54234	59664	+21
	EFT Staff (non-medical)	2526	2266	2282	2311	-8.5
	Average Available Beds	974	879	907	883	-9.3
D	WIES	23396	15594	15097	14983	-36
	Inpatients Treated	17457	18940	18259	19603	+12.3
	EFT Staff (non-medical)	1081	963	896	917	-15.2
	Average Available Beds	481	428	428	416	-13.5
E	WIES	14333	8768	7528	6280	-56
	Inpatients Treated	9128	9123	8242	7470	-18.2
	EFT Staff (non-medical)	1089	939	736	713	-34.5
	Average Available Beds	348	361	272	215	-38.2
Total	WIES	716542	690553	747916	750528	+4.7
	Inpatients Treated	690461	736169	810968	871725	+26.2
	EFT Staff (non-medical)	37962	33725	33886	36095	-5
	Average Available Beds	11094	10849	10739	11026	-0.6

Source: Victorian Hospitals' Association, 1992/93 – 1995/96

Table 4 also shows the differences in characteristics experienced by each of the groups. It is apparent that EFT staff numbers have fallen in each of the groups, with the largest reduction being experienced by Group E hospitals (-34.5%). This figure represents 376 EFT staff or 20% of the total EFT reduction. Group A hospitals' reduction of 1.2% represents 288 EFT staff or 15.4% of the total. The largest relative reduction was experienced by Group B hospitals with 8.5% or 44.1% of the total reduction. This group consists of large regional base and suburban hospitals (Table 3), and experienced one closure during the period. It is therefore to be expected that this group would have the largest reduction as a proportion of the total. The closures in Group E hospitals impact more on the communities they serve than they do on EFT staff, although a reduction in EFT would have the effect of reducing and/or re-assigning workers in those communities.

The figures for average available beds show a reduction in their number for all groups, with the exception of Group A hospitals. Although there was no change in the number of hospitals in this group, beds increased by 445 or 7.2%. It is possible

that more beds were made available in these hospitals to meet demand not met by other hospitals. Indeed, the net effect is a small reduction of 0.6% or 68 beds overall. Once again the largest reduction was achieved by Group E hospitals with a 38% fall representing 133 beds. Group B hospitals experienced the largest relative reduction of 224 beds, or 7.2% of this group's starting figure.

In terms of outputs, it is clear from Table 4 that Group E is the only group to have experienced reductions for both outputs, namely 56% for WIES and 18.2% for inpatients treated. Groups A and B experienced an increase for both outputs, and Groups C and D experienced a reduction in WIES and an increase in inpatients treated. The totals for Table 4 indicate that overall, although the number of inpatients rose by over 26%, the inputs fell only marginally (5% and 0.6% respectively). This indicates that overall, despite the amount¹⁰ of hospital closures and amalgamations, input savings were not realised in the same proportion. Indeed, the WIES output figure rose by less than 5% over the period. Table 5 shows the same inputs and outputs as ratios of the number of hospitals¹¹ in each group for each year of observation.

Given that the number of Group A teaching hospitals did not alter over the period, the percentage changes for this group in Table 5 are identical to those in Table 4. Group B hospitals experienced one closure during the period, making the overall increase in WIES (6.6%) and Inpatients Treated (23.6%) even more prominent at 11.66% and 29.5% respectively per hospital. The quantity of the two inputs used fell for this group with the expected result that per hospital both inputs fell by a smaller percentage. Group C hospitals also experienced one closure, and Group D hospitals experienced 2 closures. For both these groups the WIES figure fell and the Inpatients rose over the period, with both inputs falling. When viewed as ratios of hospital numbers, variables that increased are larger and those that fell are smaller because in Groups B, C, D and E the number of hospitals decreased.

¹⁰ 16 hospitals represent a 13.67% reduction in the number of hospitals.

¹¹ (From Table 3)

Table 5: Average Inputs and Outputs per Hospital 1992/93 – 1995/96

Group	Characteristic	1992/93	1993/94	1994/95	1995/96	% Change
A	WIES	28764.13	28500.75	31552.81	31381.81	9.10
	Inpatients Treated	26915.94	28848.81	32631.19	34855.69	29.50
	EFT Staff (non-medical)	1474.63	1335.44	1373.44	1456.63	-1.22
	Average Available Beds	387.94	393.06	400.00	415.75	7.17
B	WIES	7889.45	7703.32	8478.33	8809.00	11.66
	Inpatients Treated	8357.27	8874.14	9911.14	10823.67	29.51
	EFT Staff (non-medical)	439.64	372.27	380.81	421.33	-4.16
	Average Available Beds	140.18	131.45	130.10	136.19	-2.85
C	WIES	1875.79	1697.96	1843.52	1833.35	-2.26
	Inpatients Treated	2056.71	2137.25	2358.00	2594.09	26.13
	EFT Staff (non-medical)	105.25	94.42	99.22	100.48	-4.53
	Average Available Beds	40.58	36.63	39.43	38.39	-5.40
D	WIES	1063.45	708.82	754.85	749.15	-29.56
	Inpatients Treated	793.50	860.91	912.95	980.15	23.52
	EFT Staff (non-medical)	49.14	43.77	44.80	45.85	-6.69
	Average Available Beds	21.86	19.45	21.40	20.80	-4.86
E	WIES	434.33	282.84	342.18	299.05	-31.15
	Inpatients Treated	276.61	294.29	374.64	355.71	28.60
	EFT Staff (non-medical)	33.00	30.29	33.45	33.95	2.89
	Average Available Beds	10.55	11.65	12.36	10.24	-2.91
TOTAL	WIES	6124.29	6005.20	7332.51	7430.97	21.34
	Inpatients Treated	5901.38	6401.47	7950.67	8630.94	46.25
	EFT Staff (non-medical)	324.46	293.26	332.22	357.38	10.14
	Average Available Beds	94.82	94.34	105.28	109.17	15.13

Source: Victorian Hospitals' Association, 1992/93 – 1995/96

The figures for small Group E hospitals show a somewhat different pattern. This group experienced 5 closures and 7 amalgamations over the period. Although Table 4 results show reductions in both inputs and outputs, when taken as a ratio of the number of hospitals at the beginning and at the end of the period, the number of inpatients treated and the number of EFT staff both increased per hospital. This indicates that, although the WIES figure shows a marked reduction (31.15%), these remaining small hospitals are actually treating significantly more patients and using marginally more staff (2.89%). The large difference between inpatients treated and the WIES figure indicate that, either the weights or the WIES calculation as a whole, tends to discriminate against hospitals in groups D and E, and favour those in A, B and, to a lesser extent, C. The total variation for WIES from highest (11.66%) to lowest (-31.15%) equals 42.8%. Inpatients treated increase for all groups with only 6% variation from highest (29.51%) to lowest (23.52). In terms of the inputs used, despite no alteration to the number of hospitals, Group A beds increase by 7.2%,

whilst all other groups experience a reduction in average available beds per hospital. This is combined with a minor fall in EFT staff per hospital of 1.22% for Group A.

9. Conclusion

This paper has provided an examination of the health reform process, including the implementation of casemix funding in Victoria, within the context of the Australian healthcare system. The pressures for reform of Victoria's acute hospitals stemmed from excessive State debt as well as an identified need to improve hospital funding efficiency, together with the issue of conforming to the new competition policy legislation. Given the obvious increase in the rate of growth of health expenditure in Victoria since 1995/96 (Graph 1) it is difficult to reconcile this with the initial objectives for adopting casemix funding. In arriving at the conclusion that there does not appear to have been an improvement in individual hospitals' technical efficiency over time, it is still evident that casemix funding has altered the way that scarce resources (that is, government funding) are distributed to acute hospitals.

Also, the existence of budget caps directly opposes the incentives in place for hospitals to meet waiting list targets. This may blunt hospitals' inclination to increase throughput indefinitely since a reduction in waiting lists would entail overrunning their annual budget. As no budget overruns will be funded under the current system, it becomes necessary for hospitals to allow waiting lists to grow; another contradiction of the initial objectives for adopting casemix funding. The growing number of Category Three patients provides evidence that this is occurring. On the face of it, this combination of incentives appears to be directed at hospitals to better manage their limited resources. However, the budget cap applies to a given number of WIES annually which have already been weighted for resource utilisation. Although casemix funding was originally designed, among other things, to improve efficiency in response to various reports on Victoria's acute health system, the evidence produced here shows that this objective has not been realised. If, in fact, overall cost savings were achieved in Victoria, they were due to closures and amalgamations of small regional hospitals during the period.

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