

# **COMMONWEALTH GRANTS COMMISSION**

**DISCUSSION PAPER CGC 2003/04**

**WAGES INPUT COSTS**

**MAY 2003**

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## INTRODUCTION

1. This paper reports on the work done by Commission staff on the wages input cost factor, as proposed in *Discussion Paper CGC 2002/20, Input Costs*. Professor Jeff Borland, Head of Economics at Melbourne University, provided guidance on the work. States' views on the proposed work as discussed at the 2002 conferences, their 2003 rejoinder submissions and bilateral discussions were taken into account.

### **Background**

2. **1999 Review method.** Since the 1999 Review, the wage costs disability factor has been based on:

- interstate differences in average non-State sector (that is, private sector and the Commonwealth public sector) wages, dissected by occupation; and
- the Australian average profile of State government employees, classified by occupation<sup>1</sup>.

3. The calculations used data on average weekly ordinary time earnings (AWOTE) for each State and each major occupation as obtained from the ABS<sup>2</sup>. The factors calculated from the data were discounted by 50 per cent<sup>3</sup>. This was to allow for possible policy influences, perceived data deficiencies and a degree of labour market segmentation between the State and non-State sectors.

4. Because there were more private sector head offices in New South Wales and Victoria, and a higher concentration of Commonwealth head offices in the ACT, the non-State sector data for the occupation 'Managers and Administrators' were considered to be not comparable. As a result, the interstate differences in wages data for this group were discounted by 50 per cent before the factor was calculated.

5. The assessed interstate differences in the unit cost of wages and salaries States must pay are small. However, the impact on relativities is large because wages and salaries are a large part of the costs of government services<sup>4</sup>. In the 2003 Update, the wages input cost factors redistributed \$300 million, from Victoria, Queensland, South Australia and Tasmania to the other States, especially New South Wales.

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<sup>1</sup> Refer to the Commonwealth Grants Commission, *1999 Review: Report on General Revenue Grant Relativities, Working Papers (1993-94 to 1997-98)*, Volume 3.

<sup>2</sup> The information is based on Employee Earnings and Hours, 6306.0, but customised for the Commission.

<sup>3</sup> An alternative interpretation of this discounting is that the relative influence of the State labour market and a national labour market (in which, for each occupation, wages become equal across States) is similar across States — that is, 50 per cent each.

<sup>4</sup> For example, a change of 0.001 point to the factor for New South Wales amounts to a redistribution of more than \$12 million.

6. **State views.** The States were concerned about the Commission's approach to this factor. The main issues they raised in their submissions were:

- (i) whether there were unavoidable differences in the unit cost of wages and salaries across State public sectors; and if there were
- (ii) whether the benchmark based on private or non-State sector wages should be retained; or
- (iii) whether changes to the method should be made to correct for:
  - 'composition' effects — which arise because the underlying characteristics that determine wage levels in the private and the public sector are different, both within and between States;
  - 'non-competitive' effects — which could arise because of imperfections in the labour and/or the product market; or
  - the 'dominant employer' effect — which may arise because some occupations — such as police, nurses and teachers — are concentrated in the public sector and the wage setting negotiations for those occupations are conducted in a way that is not as closely aligned to private sector markets as other areas of government employment.

7. **Staff proposals.** Commission staff proposed work designed to examine those issues. This included the following.

- (i) Using regression analysis to see whether variables that measure location, employer, employee and job characteristics explained interstate differences in usual weekly earnings in the private and public sectors. The analysis was done separately for each sector and for each year for which data were available (2001, 1997 and 1993). This work was intended to test whether:
  - locational influences resulted in unavoidable differences in the unit cost of wages and salaries across State public sectors, after removing influences due to 'composition' effects such as differences in labour quality and skills; and
  - similar locational influences could be observed for the private sector — if so, that would suggest that the private sector differentials could be used as a policy-neutral benchmark.
- (ii) Testing whether the method of calculating factors should be changed to ensure the factors were not affected by interstate differences in private sector industry structure, distribution of firms by size or union influence (the non-competitive influences on private sector wages). This was done by including three constructed measures of average

private sector industry, union membership and firm size effects in the public sector wages equation.

- (iii) Testing whether changes to the method of calculating factors should be made to correct for any ‘dominant employer’ effects. This was done in part by examining whether the spread of wage differences in the public sector across States for those occupations concentrated in the public sector (teachers, nurses and police) differed from that for other occupations after excluding other causes of wage differentials.

## **FURTHER STATE VIEWS**

8. State arguments in the rejoinder submissions were similar to those in the main submissions.<sup>5</sup>

### ***General points***

9. Queensland argued that since State sector wages were more homogeneous than non-State sector wages, the discount of the raw factors, based purely on judgement, to correct for heterogeneity of the non-State sector was not adequate.

10. Western Australia supported retention of the wages input cost factor and the Commission’s use of non-State sector wages as benchmarks, despite their shortcomings.

### ***Reactions to the proposed research***

11. The States generally supported the proposed work. New South Wales however cautioned against complications, while Tasmania and the Northern Territory were particularly interested in the existence of ‘dominant employer’ effects. There was little critical comment on the technical aspects of the proposals.

12. South Australia said that the validity of using non-State sector wages as the basis of the assessment<sup>6</sup> should be tested. It suggested that could be done by examining the interaction between private sector and State sector wages.

13. Tasmania said that the Commission should not use private sector wages as benchmarks. Instead, it should adjust public sector wages for policy differences. This was because differences in the actual levels of public sector wages better reflected the wage setting environment, especially for occupations where the State was the dominant employer. It also argued that the Commission should continue to discount the results of any analysis

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<sup>5</sup> For a summary, please see the Commission’s Discussion Paper 2002/20, Input Costs.

<sup>6</sup> Staff interpret the South Australia’s suggestion as implying that we should investigate how the sectors influence each other in wage determination.

by 50 per cent because of a lack of a conceptual basis for measuring interstate wages differences.

14. By contrast, the Northern Territory suggested that the Commission should not use public sector wages as benchmarks because it would be difficult to remove policy differences from the public sector wages data.

15. The ACT noted that the data<sup>7</sup> the staff proposed to use in the work could not differentiate between the Commonwealth, private and public sectors nor between Tasmania, the ACT and the Northern Territory. It concluded this made it unsuitable. The Northern Territory and South Australia suggested that the Commission use the ABS Wage Cost Index to measure relative wages.

### ***Cost of living influences***

16. Queensland argued that evidence on higher housing and land prices in some capital cities was not conclusive. It noted that non-wage inducements were often offered to attract employees to work in rural and remote areas where housing costs and travel times were generally lower.

### ***Composition effects***

17. New South Wales argued that the characteristics of State public sector employees (that is, labour quality, employee preferences and job characteristics) were similar across States. This implied that observed differences in interstate wages were solely attributable to location. The ACT also argued that use of non-State wages as in the 1999 Review would be adequate.

18. New South Wales provided data to demonstrate that distributions of employment by industry or occupation had shifted between the 1991 and 1996 Census and that high labour mobility between industries and occupations had occurred in the State. On the basis of that data, it concluded that adjustments for occupation and other composition effects were not necessary.

19. Queensland, South Australia, Tasmania and the Northern Territory argued that we should adjust State wages differentials for differences in industry structure, education attainment, labour demand and supply, and dominant employers.

20. Tasmania argued that broad adjustments for occupation similar to the current ones would not be adequate. It suggested that the adjustments should be made at a finer level within industry groups, if the necessary data were available.

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<sup>7</sup> ABS's Education and Training Survey data (2001, 1997 and 1993).

### ***Dominant employer effects***

21. New South Wales did not support the ‘dominant employer’ argument. It considered State governments were never free to negotiate wage outcomes independently from the market. Following the bilateral discussions, New South Wales provided a comparison of time series wages of teachers across the States to demonstrate that the proposition ‘that wages levels in major public service occupations may be converging towards uniform national levels’ was ‘inconsistent with NSW experience’<sup>8</sup>.

22. The ACT argued in a similar vein.

23. Western Australia argued that, in the long run, labour is mobile across employment sectors. Consequently, notwithstanding that the public sector is the dominant employer of police, nurses and teachers, the wage levels (or labour quality) in those occupations would, in the long run, have to respond to competitive market forces affecting private sector wage levels in the State.

24. Queensland argued that ‘dominant employer’ effects existed for nurses, teachers and police because the Australian Industrial Relations Commission (AIRC) used interstate salaries to assist its determinations. It also argued there was evidence that, for teachers and nurses, wages in the public sector set wages in the non-State sector.

25. The Northern Territory’s argument was similar.

26. South Australia and Tasmania argued that, if private sector wages continue to be used as the benchmark, the Commission should adjust them for dominant employer effects.

### ***Regional versus national labour market***

27. New South Wales argued that the State government competed for labour in its regional labour markets. It said that wages in each State reflected the characteristics of its regional labour market. Western Australia also argued that each State operated in a regional labour market and faced unique supply and demand factors.

28. South Australia argued that the Australian labour market had both a regional and a national character — observed average wage differentials between States were not evidence per se of a predominantly regional labour market.

29. Tasmania argued that unavoidable differences between States in wages should not exist because the national labour markets influenced the State sector labour markets. It said this was particularly so for ‘dominant occupations’ because they were characterised by a high degree of interstate mobility and interstate wages benchmarking.

30. The Northern Territory argued that its labour market was national and not regional in character.

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<sup>8</sup> New South Wales’ letter dated 30 April 2003 in response to bilateral discussions. We have reproduced the comparison in this paper (see Figure 3).

### ***Role of the Australian Industrial Relations Commission (AIRC)***

31. Queensland and the Northern Territory argued that although the AIRC did not use interstate benchmarks in wage determinations, it did take interstate wage differences into account. South Australia and Tasmania also argued the AIRC took interstate wages into account.

### ***Summary***

32. The recent submissions support staff views expressed in *Discussion Paper CGC 2002/20, Input Costs*, that the main issues were whether the Commission should:

- (i) acknowledge there were unavoidable differences in the unit cost of wages and salaries across State public sectors;
- (ii) continue to use private or non-State sector wages as the benchmarks; and
- (iii) correct for 'composition' and 'dominant employer' effects.

## **ANALYSIS**

### ***Conceptual basis***

33. Discussion Paper CGC 2002/20 outlined the conceptual basis for the econometric work staff proposed to undertake. That analysis was based on the concept of 'equalising differences'.

Differences in earnings between employees in a competitive economy<sup>9</sup> with perfect labour mobility represent compensating payments for differences in the opportunity cost of work.

34. ***Location effects.*** In competitive settings, equalising differences implies that if other things are equal, nominal wages would differ between locations in accordance with differences in the location-specific cost of living<sup>10</sup>. In the analysis, staff interpreted location-specific cost of living broadly to include the prices of goods and services, and the value of location-specific features (such as congestion) to a representative employee.

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<sup>9</sup> In which both product and labour markets are *competitive*.

<sup>10</sup> An alternative expression would be that real wages (nominal wages divided by a measure of the location-specific cost of living) would be equal across locations.

35. Employees move between jobs to maximise net benefits. As a result, in competitive settings, differences in the levels of wages would be due to differences in:

- (i) personal skills of prospective employees;
- (ii) job characteristics; and
- (iii) the location.

36. *Non-competitive effects.* In practice, the circumstances of perfect competition or perfect labour mobility are not always met. That can lead to additional effects on wage levels. For example, wages could differ because of imperfections in the labour and/or the product market, due either to:

- the market power of the employer — arising from the nature of competition in their industry, which may give them the ability to pay higher wages to their employees; or
- the bargaining position of some employees (or their union<sup>11</sup>), which may result in higher wages than would otherwise be available.

37. If the private sector in a region has those non-competitive features, its influence could spill over to the public sector in that State. However, this will usually only happen if the labour market is regional in character — for example, if labour is relatively immobile across the State public sectors. A regional labour market implies there could be differences between States in wages, in addition to those due to ‘location-specific cost of living’ effects.

38. Our analysis specifically examined the effects of the following influences which could cause the labour market to be non-competitive:

- (i) industry characteristics;
- (ii) the size of the business; and
- (iii) the effect of unions.

39. At a broad level, the concepts discussed above apply to both the public sector and the private sector. The profit constraint on wages in the private sector is replaced in the public sector with a budget constraint, and commercial market forces are replaced with political constraints.

40. At a finer level, however, there are important differences. For example, government services are often considered essential and are relatively labour intensive. This may give employees more bargaining ability. On the other hand, governments can alter the legal parameters in which bargaining occurs.

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<sup>11</sup> In this paper, ‘union’ includes all forms of organised effort of employees in bargaining processes.

41. ***‘Dominant employer’ effect.*** Arguments about the existence and strength of this effect have arisen in the context of the Commission’s work for many years. However, unlike the aspects of the labour market discussed above, the ‘dominant employer’ effect does not appear to be a mainstream concept in labour economics.

42. The ‘dominant employer’ effect relates to occupations (such as nurses, teachers and police officers) where governments are the main or ‘dominant’ employers. The key argument is that the wage setting negotiations between governments and unions are conducted in an environment and in a context that is not as closely aligned to private sector markets as other areas of government employment. That may increase the capacity of employees to adopt pattern bargaining whereby they seek to establish interstate wage parity.

43. There is some evidence in the literature that the proportion of public service employees in an occupation influences the earnings of all employees in that occupation<sup>12</sup>. However, any such effect may not necessarily remove interstate wage differentials.

44. The concept of ‘equalising differences’ suggests that this effect would arise only in a non-competitive setting. It would also require labour to be mobile. Therefore, staff examined plausible non-competitive causes, such as whether the enterprise bargaining environment could lead to such effects.

45. Ultimately, resolving this question was an empirical issue. The analysis staff undertook is outlined later in this paper.

46. ***Other issues.*** Staff responses to the other State arguments are listed below.

- (i) In response to the ACT arguments about the shortcomings of the ABS Education and Training Survey data used in the analysis, staff note that the data did include samples for Tasmania, ACT and the NT. They were not identified separately for confidentiality reasons. However, staff did estimate the location effects for these States using supplementary data from the ABS. That estimation process is described in Appendix 2, Attachment C.
- (ii) Staff considered it was not necessary to reflect non-wage labour costs incurred in remote areas (such as locality allowances and housing subsidies) in the analysis. Disabilities arising from those costs are captured in the dispersion disability.
- (iii) Staff considered that the ABS Wage Cost Index was not a suitable series for the analysis because it reflects only changes to wages over time, not the wage levels. Wage levels are the variable relevant to the analysis of interstate differences in wages. Staff have, however, considered using the index as the basis for updating the factor. This proposal is described later in this paper.

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<sup>12</sup> For example, see Jacobsen, ‘Spillover Effects from Government Employment’, *Economic Letters*, 39 (1992).

## **Results**

47. The conceptual issues outlined above were the basis of the econometric work staff undertook. The data used in that work were taken from the ABS Education and Training Experience (SET) Confidentialised Unit Record File (CURF) for the 1993, 1997 and 2001 surveys of all persons who had a wage or salary job in the 12 months prior to the survey. Attachment A provides details of the data.

48. More specifically, staff used the data to:

- (i) estimate the 'location effects' for the public and the private sectors, by isolating them from other effects such as those due to the characteristics of employers, employees, industries and jobs;
- (ii) construct measures of non-competitive effects and examine whether they affected public sector wages; and
- (iii) examine if, and how, location effects for occupations potentially subject to 'dominant employer' effects differed from other occupations.

49. The specifications of the model used in this work are in Attachment B. Professor Jeff Borland, who acted as a referee and adviser for the econometric work has indicated that the model was appropriately specified.

50. The results from the model were quite robust. They were also generally consistent with similar studies that used human capital theory to analyse of wages. We believe the work provides a firm basis for the construction of wages input cost factors.

51. **Location effects.** The work was intended to test whether:

- (i) locational influences resulted in unavoidable differences in the unit cost of wages and salaries across State public sectors once other causes of differences were accounted for; and
- (ii) the locational influences that affect the private sector could be used as a policy-neutral benchmark for public sector differentials.

52. The statistical analysis indicated there were locational differences in wages across the States and the sectors<sup>13</sup>. Those differences have grown in recent years. The full results are in Attachment C.

53. Table 1 shows the 'location' effects for the three years examined. The location effects are expressed as percentage differences from the Australian average wage in the private and public sectors after allowing for other influences such as quality of labour and industry structure. It shows, for example, that after allowing for 'non-locational'

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<sup>13</sup> The measure for New South Wales would be the main determinant of redistribution due to wages input cost.

influences, earnings of employees in the private sector of New South Wales were on average 4.5 per cent higher than the Australian average in 2001.

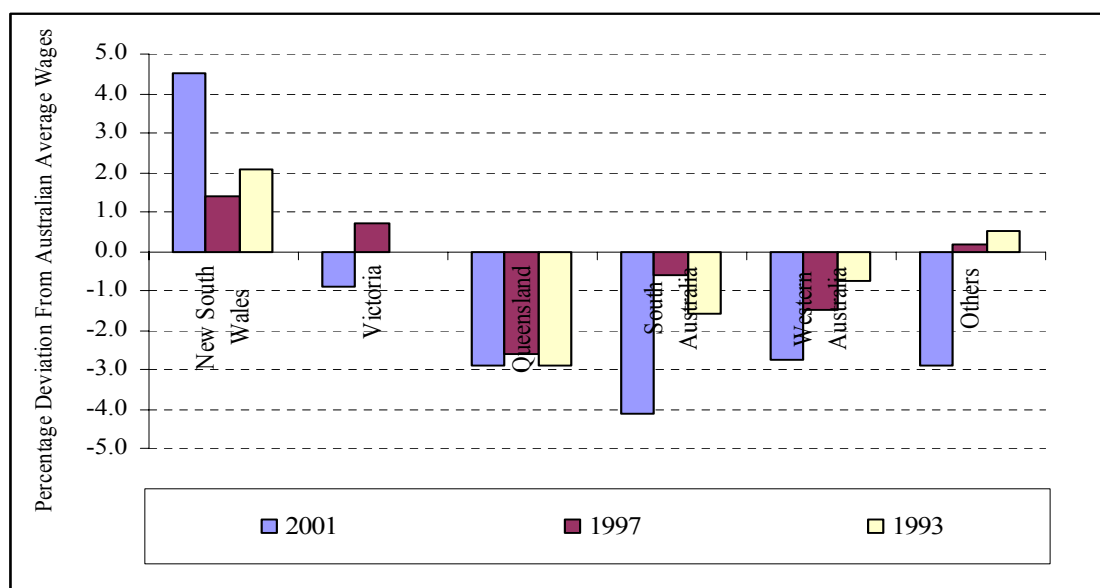
**Table 1** LOCATION EFFECTS AS PERCENTAGE OF AUSTRALIAN AVERAGE EARNINGS FOR THE PRIVATE AND PUBLIC SECTORS, BY YEAR

Location Effect	Private			Public		
	2001	1997	1993	2001	1997	1993
	%	%	%	%	%	%
New South Wales	4.5 <sup>(a)</sup>	1.4 <sup>(a)</sup>	2.1 <sup>(a)</sup>	4.3 <sup>(a)</sup>	3.0 <sup>(a)</sup>	1.3
Victoria	-0.9	0.7	0.0	-2.1 <sup>(a)</sup>	-1.9 <sup>(a)</sup>	0.0
Queensland	-2.9 <sup>(a)</sup>	-2.6 <sup>(a)</sup>	-2.9 <sup>(a)</sup>	-3.0 <sup>(a)</sup>	-1.2 <sup>(a)</sup>	-0.8
South Australia	-4.1 <sup>(a)</sup>	-0.6	-1.6	-3.6	-4.6 <sup>(a)</sup>	-1.9
Western Australia	-2.8 <sup>(a)</sup>	-1.5	-0.8	-1.5	-1.0 <sup>(a)</sup>	-2.2
Others	-2.9 <sup>(a)</sup>	0.2	0.5	1.6	4.1 <sup>(a)</sup>	1.6

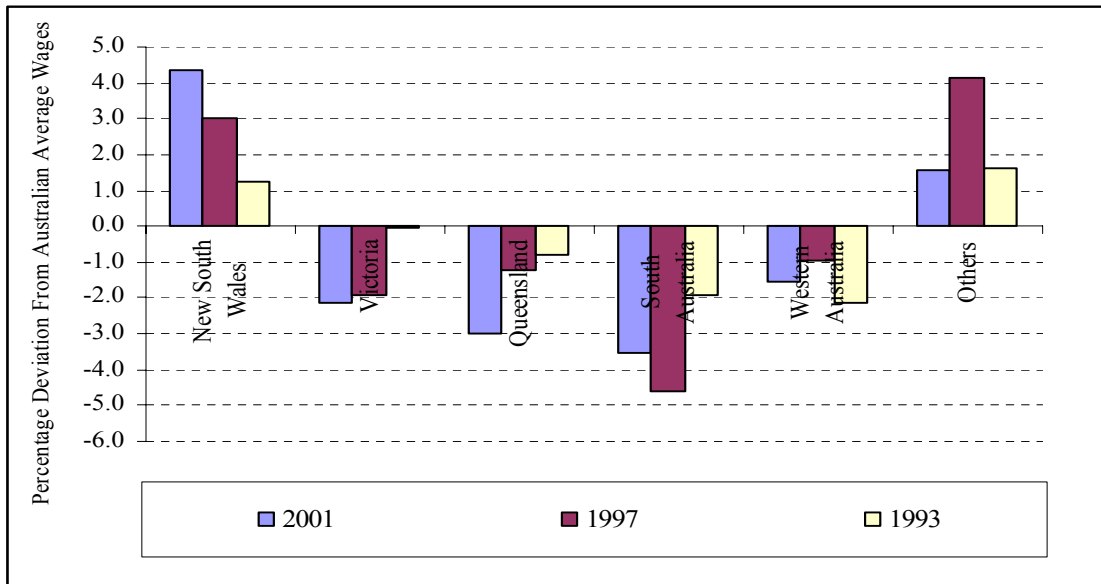
(a) Implies the figure is significant at the 10% or better confidence level.

54. Figures 1 and 2 graphically represent the same information for the private and public sectors respectively.

**Figure 1** LOCATION EFFECTS AS PERCENTAGE OF AUSTRALIAN AVERAGE EARNINGS BY YEAR — PRIVATE SECTOR



**Figure 2** LOCATION EFFECTS AS PERCENTAGE OF AUSTRALIAN AVERAGE EARNINGS BY YEAR — PUBLIC SECTOR



55. Staff make a few broad observations.

- (i) The spread and direction of the location effects (measured as the percentage difference between earnings in each State and the Australian average) in the two sectors were broadly similar. They compared very well for 2001 — the spread was 8.5% in the private sector and 7.9% in the public sector.
- (ii) The interstate differences in location effects have generally increased between 1993 and 2001 in both sectors and, in particular, between 1997 and 2001 in the private sector.
- (iii) The larger differences observed for ‘Others’ is because the data for public sector includes the Commonwealth sector. It is so because the Commonwealth has a relatively large presence in both the ACT and the NT and the level of wages for its employees is generally higher than that for the Territories’ government employees.

56. The observation in (i) indicates that the private sector results can be used as policy-neutral benchmarks in constructing factors.

57. Confirmation of the validity of the observation in (ii) was obtained by comparing the changes in location effects between 1997 and 2001 implied by the model with changes implied by other data sources. For example, Table 2 compares the model

results with changes in Average Weekly Ordinary Time Earnings (AWOTE) for the private sector<sup>14</sup> and the wage cost index.<sup>15</sup>

**Table 2** CHANGES IN LOCATION EFFECT (RELATIVE TO AUSTRALIAN AVERAGE) BETWEEN 1997 AND 2001 IN THE RESULTS OF THE MODEL, AWOTE AND THE WAGE COST INDEX, PRIVATE SECTOR

Location Effect	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Aus
Model <sup>(a)</sup>	17.6	12.8	14.2	10.9	13.2	11.9	12.2	14.8	14.5
AWOTE <sup>(b)</sup>	19.4	17.2	12.9	14.2	10.8	17.6	11.2	17.3	16.4
Wage Cost Index <sup>(c)(d)</sup>	14.2	13.6	12.1	12.2	13.4	11.0	13.6	11.3	13.4

Note: (a) Changes between 2001 and 1997. The indicated figures are percentage point differences between the two years in Table 1 plus an overall change between 2001 and 1997 in the Australian average, which was estimated as 14.5 (in the last column) using results from a model not reported here but can be given if requested  
 (b) Changes between 2000 and 1996 based on CGC sources used for current factor construction. Strictly speaking, the data relate to the non-State sector and as such include the Commonwealth sector.  
 (c) Changes between Sept, 2001 and Sept, 1997.  
 (d) Total Hourly Rates of Pay Excluding Bonuses, Private Sector, ABS 6345.0, Dec 2002.

58. Overall, staff concluded that large changes between 1997 and 2001 to the location effects as captured by the model related well with other data sources. This also indicates that the results of the model for the private sector can be used as policy neutral benchmarks for the construction of a wages cost input cost disability factor.

59. The detailed results and commentary on ‘location’ effects are in Attachment C.

60. *Non-competitive effects.* Staff used another econometric model to test whether there were any spillover effects on wages in a State’s public sector arising from non-competitive effects (such as the industry structure, firm size and union activity) in its private sector.

61. Specifically, we varied the model for public sector wages by adding three extra variables. Those variables were intended to reflect the effects on public sector wages that may arise from concentrations of large or small firms, of particular types of industries

<sup>14</sup> We currently use these data, obtained on request from the ABS, for construction of the factors.

<sup>15</sup> Care is required with these comparisons. Unlike the model results, changes in AWOTE data are based on aggregate measures, and not corrected for composition effects. Similarly, a strict comparison with wage cost index is not possible, although it is conceptually a measure of pure price changes and as such includes corrections for a range of quality measures. Please refer to ABS Information Paper 6346.0 Wage Cost Index, 2000 for details.

or abnormal levels of union activities in the private sector of each State<sup>16</sup>. In this work we used separate models for males and females<sup>17</sup>.

62. When staff ran the amended model and examined the implied influence of the extra variables, we found no firm evidence that non-competitive effects in the private sector spilt over to the public sector. Some small effects were observed for industrial structure and firm size and they were in the expected direction. The results imply that industrial structure and firm size in a State's private sector have no influence on public sector wages<sup>18</sup>.

63. This also implies that the Commonwealth sector, whose influences in the wage setting context, particularly for the ACT, are akin to those of the private sector in other States, ceases to be a direct context for wages input costs assessment.

64. The detailed results and commentary are given in Attachment D.

65. ***Dominant employer effect.*** The 'dominant employer' argument has been based on a belief that in certain occupations (especially nurses, teachers and police) wages have been converging nationally. For example, Tasmania said that the wages for its teachers are adjusted annually to reflect the average wages of teachers in other States. Other States also said that interstate wages are taken into account in setting wages for these occupations.

66. The arguments for a 'dominant employer' effect imply that any 'location effects' on wages for general occupations in the public sector would be lower (and in the extreme case zero) for 'dominant occupations'.

67. To test that implication, staff examined actual wages data for the dominant occupations at different points in time. Table 3, Table 4 and Table 5, compare wages for selected levels of nurses, teachers and police across the States<sup>19</sup>.

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<sup>16</sup> Staff defined three variables ('private', 'firm size' and 'union') which were measured separately for each State, occupation and year. Staff constructed measures for each of the three effects by weighting the distribution of occupations across industry and firm size, and by union membership by the premiums for each effect observed when we examined the 'location' effect in the private sector data. The measure of premium was the observed statistical differences in wages paid.

<sup>17</sup> We did so because the labour markets for males and females operate differently in many important aspects.

<sup>18</sup> Within the context of the econometric work, it is possible that the observed premiums used to measure non-competitive effects of the private sectors could be reflecting differences across industries in the skills of employees that are not measured by the other variables in the model.

<sup>19</sup> The data are not always strictly comparable, because they do not include non-wage conditions or always reflect comparable classification structures across States.

**Table 3** COMPARISON OF ACTUAL WAGES FOR NURSES, SELECTED LEVELS

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Per Cent Differences Between the Maximum and the Minimum
<b>Salary at selected levels for registered nurses (\$ per annum)</b>									
<b>Dec. 2002<sup>(a)</sup></b>									
Level 1 -1	33266	34167	32747	35735	34989	33515	35885	36400	
Level 1 -7	44869	44837 <sup>(d)</sup>	42547	45624	44844	43241	44988	46728	
Level 2 -4	nc <sup>(c)</sup>	nc <sup>(c)</sup>	49086	51386	50569	49724	51056	52173	
<b>Salary index relative to NSW unless indicated otherwise</b>									
Level 1 -1	100.0	102.7	98.4	107.4	105.2	100.8	107.9	109.4	11.0
Level 1 -7	100.0	99.9	94.8	101.7	99.9	96.4	100.3	104.1	9.3
Level 2 -4 <sup>(c)</sup>	nc <sup>(c)</sup>	nc <sup>(c)</sup>	100.0	104.7	103.0	101.3	104.0	106.3	6.3
<b>Aug. 2001<sup>(a)</sup></b>									
Level 1 -1	32297	33172	32747	34198	33969	32740	32204	32708	
Level 1 -7	43561	43530 <sup>(d)</sup>	42547	43660	43537	42240	40373	41993	
Level 2 -4			49086	48390	49096	48573	45818	46658	
<b>Salary index relative to NSW unless indicated otherwise</b>									
Level 1 -1	100.0	102.7	101.4	105.9	105.2	101.4	99.7	101.3	6.2
Level 1 -7	100.0	99.9	97.7	100.2	99.9	97.0	92.7	96.4	7.5
Level 2 -4			100.0	98.6	100.0	99.0	93.3	95.1	6.7
<b>May 1995<sup>(b)</sup></b>									
Level 1 -1	26245	25337	25683	24939	25017	25434	25840	25584	
Level 1 -7	34727	33251	33259	32292	32397	32814	33586	33259	
Level 2 -4	38014	36339	38313	37196	37317	37734	38750	38376	
<b>Salary index relative to NSW unless indicated otherwise</b>									
Level 1 -1	100.0	96.5	97.9	95.0	95.3	96.9	98.5	97.5	5.0
Level 1 -7	100.0	95.7	95.8	93.0	93.3	94.5	96.7	95.8	7.0
Level 2 -4	100.0	95.6	100.8	97.8	98.2	99.3	101.9	101.0	6.3
<b>July 1991<sup>(b)</sup></b>									
Level 1 -1	23826	24426	23556	na	24000	23502	na	24000	
Level 1 -7	31522	32312	29036	na	31200	30103	na	31200	
Level 2 -4	34512	35376	33415	na	35200	34066	na	35200	
<b>Salary index relative to NSW unless indicated otherwise</b>									
Level 1 -1	100.0	102.5	98.9	na	100.7	98.6	na	100.7	3.9
Level 1 -7	100.0	102.5	92.1	na	99.0	95.5	na	99.0	10.4
Level 2 -4	100.0	102.5	96.8	na	102.0	98.7	na	102.0	5.7

Source: (a) PAYCHECK, Dec 2002 and August 2001, published by Australian Nursing Federation.

(b) CGC Reports on Research in Progress, Volume 2, 1995.

(c) Comparable classification did not exist for NSW and Victoria. In this instance, the index was calculated relative to Queensland.

(d) The figures relate to RN Grade 2, Year 6.

68. For nurses, a sizeable gap in salary of up to around 11% has existed across the States and over time. It is also notable that the spread of wages from the highest to the lowest is similar to that for other occupations in the public sector in 2001 (7.9% as in Table 11).

**Table 4** COMPARISON OF ACTUAL WAGES FOR TEACHERS, SELECTED LEVELS

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Per Cent Differences Between the Maximum and the Minimum
Salary at selected levels for teachers (\$ per annum)									
Current <sup>(a)</sup>	1-Jan-03	1-Apr-02	10-Apr-02	1-Aug-02	1-Jul-02	27-Feb-03	1-Jul-02	28-Aug-02	
3Years Training, Min	37609	36702	34539	34914	35002	35678	35800	37037	
4Years Training, Min	41109	39789	39034	37173	40147	39040	38600	39629	
Salary index relative to NSW unless indicated									
3Years Training, Min	100.0	97.6	91.8	92.8	93.1	94.9	95.2	98.5	7.2
4Years Training, Min	100.0	96.8	95.0	90.4	97.7	95.0	93.9	96.4	9.6
Top of the Range	100.0	97.7	93.8	93.0	93.0	97.3	91.2	94.7	8.8
May 1995 <sup>(b)</sup>									
3Years Training + 4	28218	30161	27743	25224	27170	27407	31485	29642	
3Years Training + 7	32816	34596	31675	31502	32192	31194	35718	32768	
Salary index relative to NSW unless indicated otherwise									
3Years Training Min	100.0	106.9	98.3	89.4	96.3	97.1	111.6	105.0	22.2
4Years Training Min	100.0	105.4	96.5	96.0	98.1	95.1	108.8	99.9	13.8
June 1991 <sup>(b)</sup>									
3Years Training + 4	26159	26718	26902	24205	26753	27521	29714	29017	
3Years Training + 7	30422	30013	30744	29220	31775	31996	33122	33930	
Salary index relative to NSW unless indicated otherwise									
3Years Training Min	100.0	102.1	102.8	92.5	102.3	105.2	113.6	110.9	21.1
4Years Training Min	100.0	98.7	101.1	96.0	104.4	105.2	108.9	111.5	15.5

Source (a) Australian Education Union website <http://www.aeufederal.org.au>.

(b) CGC Reports on Research in Progress, Volume 2, 1995.

69. For teachers a gap in salary of up to around 10% exists across States, although it appears to have reduced over time. However, the gap is similar to that for other occupations in the public sector in 2001 (7.9% as in Table 1).

**Table 5** COMPARISON OF ACTUAL WAGES FOR POLICE, SELECTED LEVELS

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Per Cent Differences Between the Maximum and the Minimum
Salary at selected levels for police (\$ per annum)									
Current <sup>(a)</sup>	1-Jan-03	1-Aug-02	1-Jul-02	1-Jul-02	1-Jul-02	1-Sep-02	12-Nov-02	4-Jul-02	
Constable Entry	37416	34773	34890	38395	34850	31128	29250	37634	
Constable Max	42358	41331	42362	44831	44451	42543	45350	43286	
Sergeant Min	55066	49248	49247	53195	49670	45032	62000	50212	
Salary index relative to NSW unless indicated									
Constable Entry	100.0	92.9	93.2	102.6	93.1	83.2	78.2	100.6	21.8
Constable Max	100.0	97.6	100.0	105.8	104.9	100.4	107.1	102.2	9.5
Sergeant Min	100.0	89.4	89.4	96.6	90.2	81.8	112.6	91.2	30.8
May 1995 <sup>(b)</sup>									
Constable Entry	25280	29544	27470	29417	25774	25391	27553	26463	
Constable Max	32711	38765	35464	34417	30585	32168	37557	31553	
Sergeant Min	37083	42013	38607	40917	35828	36732	39123	36577	
Salary index relative to NSW unless indicated otherwise									
Constable Entry	100.0	116.9	108.7	116.4	102.0	100.4	109.0	104.7	16.9
Constable Max	100.0	118.5	108.4	105.2	93.5	98.3	114.8	96.5	25.0
Sergeant Min	100.0	113.3	104.1	110.3	96.6	99.1	105.5	98.6	16.7
June 1991 <sup>(b)</sup>									
Constable Entry	24657	26235	25880	28384	25357	22442	25728	25507	
Constable Max	26685	30731	30680	31163	29464	24721	35275	27294	
Sergeant Min	34200	37220	36900	39408	35411	31377	36779	34641	
Salary index relative to NSW unless indicated otherwise									
Constable Entry	100.0	106.4	105.0	115.1	102.8	91.0	104.3	103.4	24.1
Constable Max	100.0	115.2	115.0	116.8	110.4	92.6	132.2	102.3	39.6
Sergeant Min	100.0	108.8	107.9	115.2	103.5	91.7	107.5	101.3	23.5

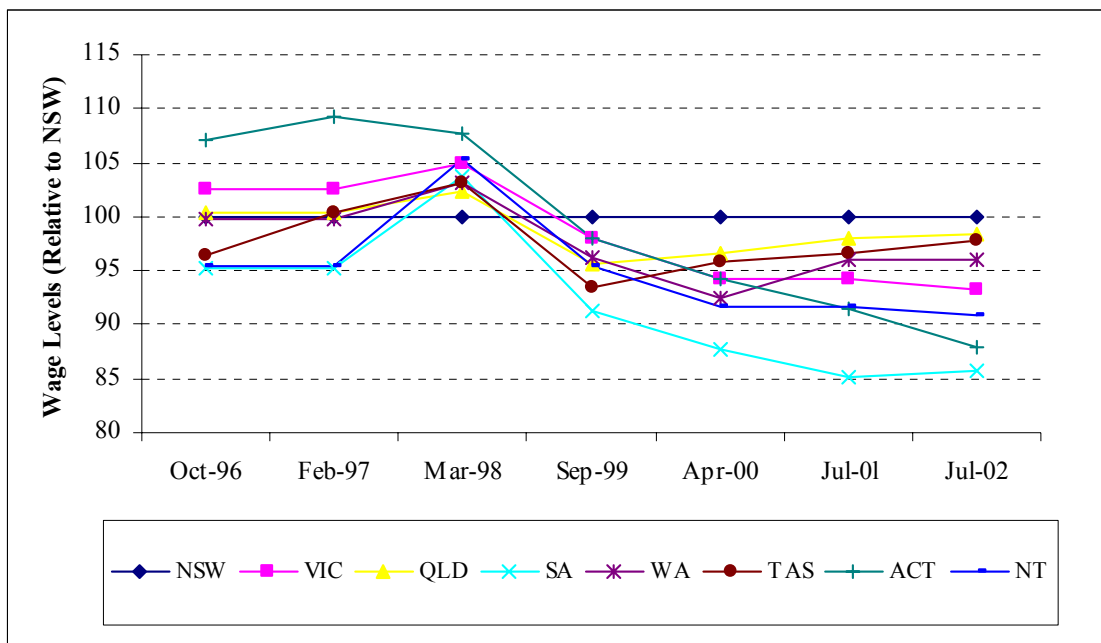
Source: (a) Police Federation of Australia, except for ACT (We referred to AFP Certified Agreement 1999-2002 which may not be wholly comparable).

(b) CGC Reports on Research in Progress, Volume 2, 1995.

70. A substantial wage differential for police has remained across States and over time. The gap is larger than that for other occupations in the public sector in 2001 (7.9% as in Table 1), including other dominant occupations.

71. Staff also examined data provided by New South Wales on the levels of maximum salary for 4-year trained teachers across States between 1996 and 2002. That comparison, in Figure 3, suggests that a dominant employer effect does not exist.

**Figure 3** COMPARISON ACROSS STATES OF MAXIMUM SALARY OF 4—YEAR TRAINED TEACHERS, 1996-2002



72. Figure 3 highlights two points.

- (i) Interstate wage differentials exist at any point in time — the differentials were about 12% in 1996 and about 15% in 2002).
- (ii) Over time, wage patterns across the States show a cyclical rather than a steady pattern of changes.

73. Staff also compared the location effects<sup>20</sup> for dominant occupations with those for other occupations using an econometric model. However, those statistical tests suffered two shortcomings.

- (i) The dominant occupations could be identified in the 1993 data only.

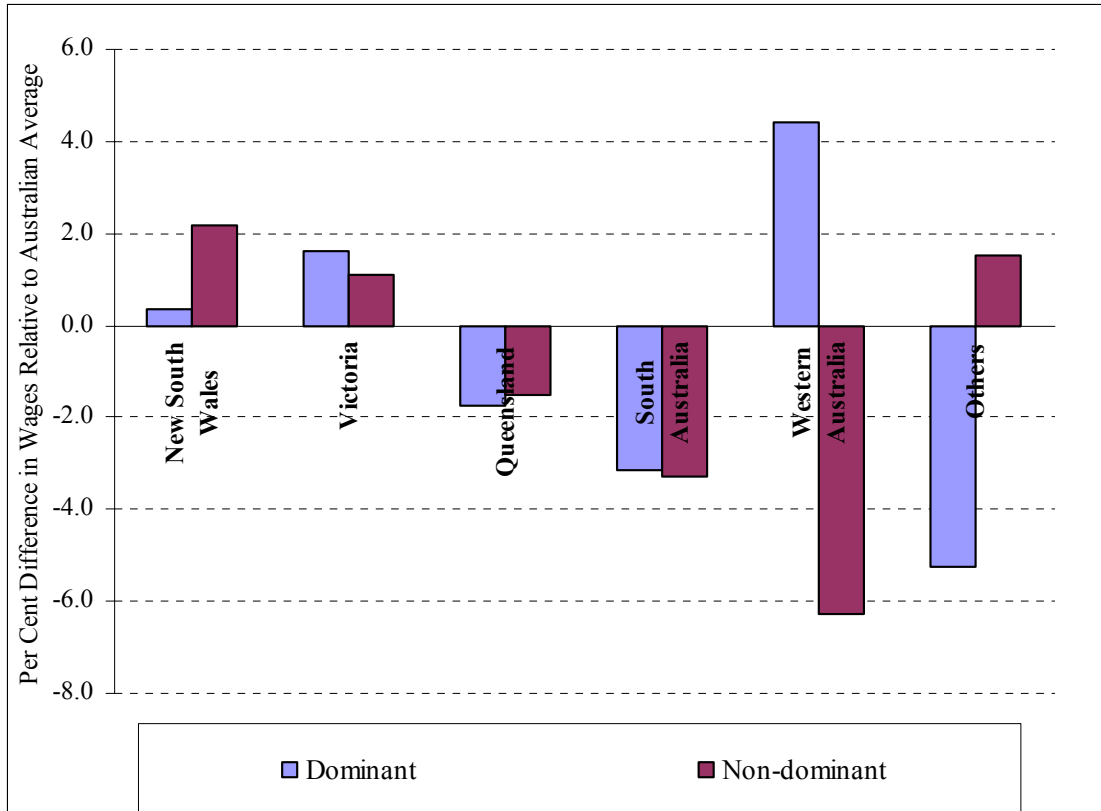
<sup>20</sup>

We did not test for non-competitive effects because they are not significant in general.

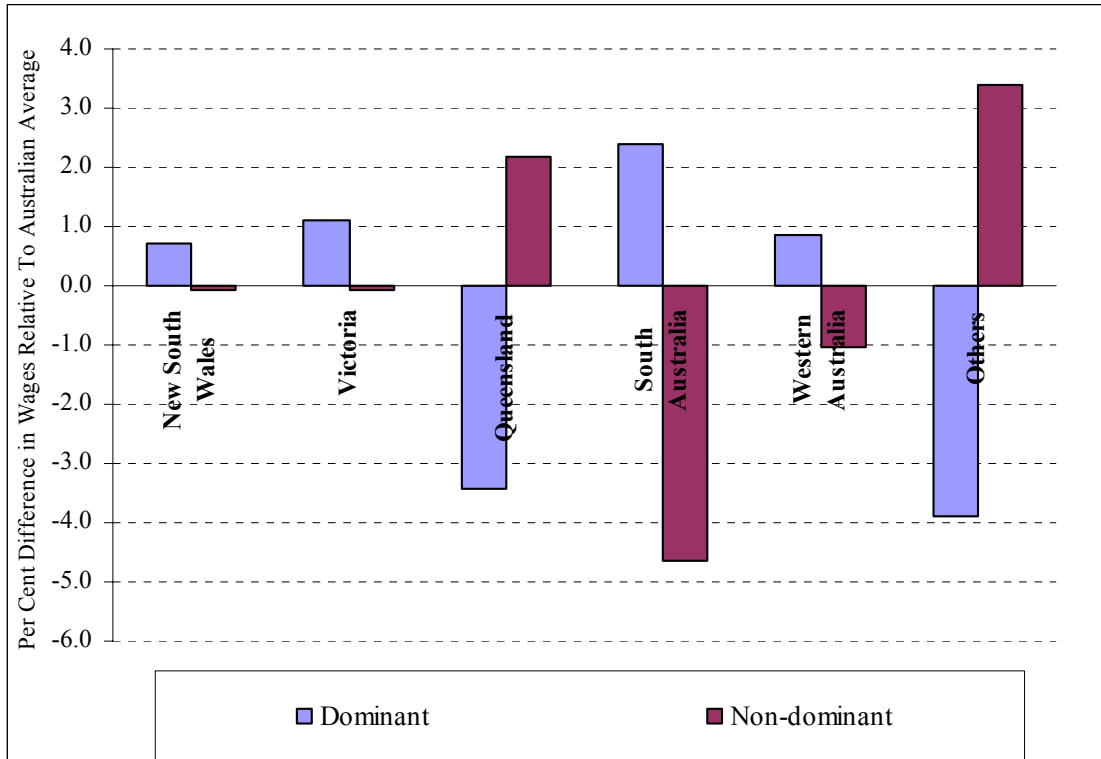
- (ii) Because the location effect for non-dominant occupations was small in 1993 (much smaller than in 2001), the ability of the tests to discriminate between small changes was considerably lower.

74. Within these constraints, staff compared the location effects, separately for males and females, for dominant and non-dominant occupations in Figure 4 and Figure 5.

**Figure 4** COMPARISON OF LOCATION EFFECTS BETWEEN DOMINANT AND NON-DOMINANT OCCUPATIONS, MALE, 1993



**Figure 5** COMPARISON OF LOCATION EFFECTS BETWEEN DOMINANT AND NON-DOMINANT OCCUPATIONS, FEMALE, 1993



75. If the dominant employer effect existed, the location effects for dominant occupations would have been smaller than those for non-dominant occupations. However, we found that the spread of the location effects appeared similar for the two types of occupations (spread for males was 9.7% for dominant occupations and 7.8% for non-dominant ones, while for females the spread was 7.1% for dominant occupations and 8.1% for non-dominant ones). Moreover, in many cases the location effects for the dominant occupations were opposite to those for non-dominant occupations.

76. Statistically, however, the differences between the States were not significant in 1993 for either the dominant or the other occupations.

77. The analysis of actual wages data and the statistical analysis together suggest that the dispersion of wages around the Australian average is similar for both dominant and other occupations. That is, there is no clear evidence of a dominant employer effect.

78. This conclusion is consistent with the theory of competitive labour markets, which predicts that, in the long term, once other influences are accounted for, differences in wages across States would be determined by location effects alone. In a competitive setting, the location effects for dominant occupations and for other public service

occupations would be similar. To postulate otherwise would imply that people in dominant occupations take a different attitude to locational influences than other employees.

79. Staff also considered briefly how the current workplace relations environment operated for the dominant occupations.

80. Subsequent to the enactment of the federal government's *Workplace Relations Act 1996*, agreements at an enterprise level, and not awards<sup>21</sup>, have been the main vehicle for negotiation of wages and conditions. This institutional approach to wage setting also applies to the dominant occupations.

81. The AIRC or its State counterparts certify the agreements in all cases, and do so conditional upon the minimum conditions stipulated in the relevant Act<sup>22</sup> being satisfied. The role of the AIRC is to facilitate, not directly determine, the outcome of agreements. For the dominant occupations those agreements are products of negotiation between the State government and the relevant employees (or their representatives) in the State.

82. The AIRC becomes directly involved when it is asked to settle disputes. Its Full Bench becomes involved in matters of national interest or principle.

83. Commission staff consider that the AIRC in principle rejects interstate wage benchmarking as a fundamental basis for arbitration. It appears to be reinforcing the policy of decentralised wage setting.

84. Accordingly, staff consider that agreement outcomes and actual wages cannot form the basis for the construction of policy neutral factors. Actual wages for dominant occupations are policy influenced. They reflect the outcome of negotiations and perceptions of working conditions, both of which are influenced by the State governments.

85. Based on available evidence, staff have concluded that a policy neutral measure of interstate wage differentials for the dominant occupations should be the same as that for other occupations. That outcome is conceptually sound, and consistent with the analysis of data and the current workplace relations environment.

86. It is likely that pressures on wages for nurses and teachers are real. But they appear to arise from demand generally outstripping supply, and affect all States.<sup>23</sup>

87. We invite the States to review our analysis and provide evidence of how lower interstate wage differentials for the dominant occupations would be consistent, in concept and in practice, with equalisation principles.

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<sup>21</sup> Paid rate awards are increasingly specifying only the minimum pay and working conditions. However, the AIRC or its State counterparts need to certify the agreements.

<sup>22</sup> The States may operate under their own workplace relations statutes.

<sup>23</sup> A recent Senate Inquiry Report *The Patient Profession: Time For Action*, into the nursing profession identifies a series of supply issues that go far beyond pay.

## CALCULATION OF FACTORS

88. Staff considered two ways of calculating wages input cost factors.
- (i) Alternative 1 uses the model results for the private sector for 2001 to scale the AWOTE data for the private sector to construct a factor. That approach would remove the composition effects in the AWOTE data. It would also allow the updating of factors every two years when new AWOTE data became available.
  - (ii) Alternative 2 uses the location effects from the model directly to build the factors, after adjusting them by reference to the wage cost indices to reflect the circumstances of the five assessment years (1998-99 to 2002-03). Since we were proposing to use the wage cost index<sup>24</sup> for annual updating of the factor, it appeared a natural choice, despite the approximations that are involved.

89. Use of AWOTE data, if adjusted by model results would generally be adequate for constructing and updating the factors, provided the relative skill bases across States do not change. If skill bases do change, ‘composition’ effects arising from those changes would not be corrected for. That would compromise the integrity of the factors. For example, this method would not correctly reflect wage changes if a State underwent rapid changes in its skill base due to, say, interstate migration.

90. By contrast, the wage cost index is a measure of pure price change and is relatively insensitive to changes to skill bases. As such, staff believe that Alternative 2 is a better choice and propose to recommend this method to the Commission. The steps are given below.

91. In Table 6, we provide the calculations for initial factors based on the model results alone. The location effects have been reproduced from Table 1.

**Table 6** FACTORS BASED ON LOCATION EFFECTS, 2001

	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Aus
Location effect (A)	0.045	-0.009	-0.029	-0.041	-0.028	-0.087	0.024	0.097	0.000
Raw factor <sup>25</sup> = exponential (A)	1.04626	0.99083	0.97152	0.95969	0.97287	0.91713	1.02403	1.10153	1.00172
<b>Final factors = State raw factors/Aus raw factor (B)</b>	<b>1.04447</b>	<b>0.98912</b>	<b>0.96985</b>	<b>0.95805</b>	<b>0.97120</b>	<b>0.91556</b>	<b>1.02227</b>	<b>1.09964</b>	<b>1.00000</b>

Source: For all States except Tasmania, ACT and the NT, Table C - 5, Attachment C. For Tasmania, ACT and the NT, Table C - 13, Appendix 2, Attachment C.

<sup>24</sup> See Paragraph 96.

<sup>25</sup> The figure for Australia has been calculated by weighting the State raw factors by proportion of mean resident populations in each State. It merely rescales the raw factors to Australian average =1.

### *Deriving the factors*

92. This section sets out the steps involved in calculating the factors for the five assessment years, 1998-99 to 2002-03.

93. **Step 1.** Use the Wage Cost Index, as reproduced in Table 9, for September 2001, and for each of the assessment years. The index for September 2001 is used to rescale the index for the financial years to make them comparable with the model results.

**Table 7** WAGE COST INDEX, 1998-99 TO 2002-2003

Wage cost index	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Aus
Sep 2001 (C)	114.2	113.6	112.1	112.2	113.4	111	113.6	111.3	113.4
<b>Annual index (D)</b>									
1998-1999	104.2	104.1	104.1	104.2	104.6	103.6	103.3	103.6	104.2
1999-2000	107.4	107.2	106.8	106.9	107.1	106.2	106.8	106.0	107.1
2000-2001	111.5	110.8	110.1	110.1	111.1	108.9	111.1	109.1	110.9
2001-2002	115.2	114.6	113.4	113.5	114.7	112.0	114.6	112.3	114.5
2002-2003 <sup>(a)</sup>	118.7	118.4	116.8	117.7	118.5	115.5	117.8	115.4	118.1

(a) The figure is for Dec 2002. It will be replaced with the figure for 2002 – 03 when available.

94. **Step 2.** The raw factors are calculated by dividing the wage cost indexes for 1998-99 to 2002-03 by the index for September 2001 in Table 9 and then multiplying by the location effects from the model (see Table 6). The final factors are calculated by rescaling the raw factors by mean resident population (MRP).

95. **Table 8** provides the raw and final factors.

**Table 8** ADJUSTED RAW AND FINAL FACTORS

Year	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Aus
<b>Adjusted Raw Factors = D (Table 9) / C (Table 9) X B (Location Effect in Table 8)</b>									
1998-1999	0.95301	0.90641	0.90063	0.88974	0.89583	0.85452	0.92958	1.02356	0.91908
1999-2000	0.98227	0.93340	0.92399	0.91279	0.91724	0.87597	0.96108	1.04728	0.94524
2000-2001	1.01977	0.96474	0.95254	0.94011	0.95150	0.89824	0.99977	1.07790	0.97804
2001-2002	1.05361	0.99783	0.98109	0.96915	0.98233	0.92381	1.03127	1.10952	1.00976
2002-2003	1.08562	1.03092	1.01051	1.00501	1.01488	0.95267	1.06006	1.14015	1.04176
<b>Mean resident population (MRP) proportions</b>									
1998	0.33919	0.24779	0.18446	0.07922	0.09758	0.02503	0.01654	0.01020	1.00000
1999	0.33917	0.24763	0.18524	0.07870	0.09778	0.02471	0.01651	0.01025	1.00000
2000	0.33925	0.24758	0.18612	0.07805	0.09783	0.02440	0.01650	0.01026	1.00000
2001	0.33884	0.24772	0.18728	0.07749	0.09787	0.02414	0.01646	0.01020	1.00000
2002	0.33884	0.24772	0.18728	0.07749	0.09787	0.02414	0.01646	0.01020	1.00000
<b>Final factors</b>									
1998-1999	1.03692	0.98622	0.97993	0.96808	0.97471	0.92976	1.01143	1.11369	1.00000
1999-2000	1.03918	0.98748	0.97753	0.96567	0.97039	0.92672	1.01676	1.10795	1.00000
2000-2001	1.04267	0.98641	0.97393	0.96122	0.97287	0.91841	1.02222	1.10211	1.00000
2001-2002	1.04343	0.98819	0.97161	0.95978	0.97284	0.91488	1.02130	1.09879	1.00000
2002-2003 <sup>(a)</sup>	1.04211	0.98959	0.97000	0.96472	0.97420	0.91449	1.01757	1.09444	1.00000

(a) The figure is the same as for 2001-02. It will be replaced with the figure for 2002 – 03 when available.

### *Updateability*

96. Staff considered using the ABS Wage Cost Index (WCI)<sup>26</sup> — in particular, annual changes to the Total Hourly Rates of Pay excluding Bonuses Indexes for the private sector — for updating the wages factors.

97. Ideally, an index that captures changes due to the location effects alone should be used because they are the basis of the recommended factors. The WCI provides only an approximation of this effect.

98. Nevertheless, staff propose to recommend to the Commission that the WCI for the private sector be used for updating the wages factors over the years 2005 to 2008 because it provides a practical, albeit approximate, way of updating the factors. This is consistent with our recommendation that Alternative 2 be adopted for calculating factors.

<sup>26</sup> The index provides a measure of pure price changes to wage and salary costs in the private sector unaffected by changes in the quality and quantity of work performed.

## SUMMARY AND CONCLUSIONS

99. The main issues were whether the Commission should:
- (i) acknowledge there were unavoidable differences in the unit cost of wages and salaries across State public sectors;
  - (ii) continue to use private or non-State sector wages as the benchmarks; and
  - (iii) correct for ‘composition’, ‘non-competitive’ and ‘dominant employer’ effects.

100. Our conclusions on those issues were as follows.

- (i) Statistical analysis suggests that there is consistent evidence of wage differentials across the States in both the private and the public sectors. The size of those differentials is similar in both sectors. Based on those results and other reality checks, staff concluded that ‘location effects’ estimated from the model for private sector wages provide a good policy-neutral benchmark for the assessment of the wages cost factor.

In concept, private sector wages was the main basis of assessment in the 1999 Review as well. In that Review, all differences in private sector wages provided the bases for the assessment. To bring in comparability for the ACT in particular, Commonwealth wages were included to create a non-sector sector.

By contrast, there is one important difference now.

The proposal is to use only the location effect in the private sector wages as the basis, removing other influences. As such, it is not necessary to consider non-state sector wages any longer.

- (ii) Staff found that there was no firm evidence that the State public sector labour market is, on balance, affected by interstate differences in industry structure (including due to the presence of the Commonwealth government), the size distribution of firms, or abnormal levels of union activity in the private sector. No special adjustments were considered.
- (iii) Analysis of a range of wages data and the principles of the industrial relations framework did not establish a case for the ‘dominant employer’ effect. This conclusion is consistent with the conceptual view that, in a competitive setting, there is no basis for presuming that wages for these occupations should behave differently from those for other occupations, over the longer term.

- (iv) Among available options, use of the wage cost index and the model results to both calculate the factor and to update it, are preferred.

## ATTACHMENT A

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### DATA DESCRIPTION AND SAMPLE STATISTICS

#### *Description of the data*

1. The sources of the cross-section data were the ABS Education and Training Experience (SET) Confidentialised Unit Record File (CURF) for the 1993, 1997 and 2001 surveys. These surveys provided data at the individual level and allowed examination of the variations in earnings due to a wide set of influences.

2. The surveys interviewed persons aged 15 to 64 years sampled from the population in both urban and rural areas throughout Australia and collected information on their education and training experience<sup>27</sup>. The surveys covered private dwellings only and dwellings were selected randomly using a multi-stage area sample of private dwellings. Information on members of the households within each selected dwelling were collected during interviews conducted by trained interviewers.

3. The population included in this analysis was those who had a wage or salary paying job in the twelve months preceding the surveys. Employee and job characteristics are those relating to the main employer<sup>28</sup>.

**Records with variables ‘usual weekly earnings’ and/or ‘trade union membership’ marked “not known or not stated” were excluded. For the 1997 and 2001 data, records with variable ‘age left school’ marked “currently attending school” were also excluded.**

4. Table A - 1 sets out the selected sample sizes by sex, period, States and sectors.

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<sup>27</sup> ABS, *Education and Training Experience*, Confidentialised Unit Record File, Information Paper, 1997 and 2001, ABS Catalogue No. 6274.0.

<sup>28</sup> Main period employer is defined in the SET data as “the employer for whom a person worked the most weeks for wages or salary in the 12 months prior to interview”.

**Table A - 1** SAMPLE SIZE<sup>(a)</sup> BY STATE, PERIOD AND SECTOR, MALES AND FEMALES

Sector State/period	Private				Public			
	1993	1997	2001	Total	1993	1997	2001	Total
<b>Males</b>								
NSW	1 085	1 274	1 341	3 700	442	409	305	1 156
Vic	1 025	1 298	1 290	3 613	345	257	240	842
Qld	843	1 123	1 062	3 028	317	371	277	965
SA	484	637	731	1 852	235	219	145	599
WA	554	848	836	2 238	276	198	165	639
Tas+ACT+NT <sup>(b)</sup>	536	673	639	1 848	384	426	343	1 153
Tasmania	320	335	372	1027	143	145	100	388
ACT	138	193	198	529	183	226	188	597
NT	78	145	69	292	58	55	55	168
Total	4 527	5 853	5 899	16 279	1 999	1 880	1 475	5 354
<b>Females</b>								
NSW	1 008	1 193	1 198	3 399	335	412	384	1 131
Vic	841	1093	1 114	3 048	353	388	359	1 100
Qld	682	1048	991	2 721	284	344	321	949
SA	428	547	658	1 633	280	245	201	726
WA	437	753	769	1 959	294	253	239	786
Tas+ACT+NT <sup>(b)</sup>	419	610	610	1 639	425	432	344	1 201
Tasmania	220	308	315	843	139	148	124	411
ACT	141	205	228	574	218	207	169	594
NT	58	97	67	222	68	77	51	196
Total	3 815	5 244	5 340	14 399	1 971	2 074	1 848	5 893

(a) Population were those who had a wage or salary job in the last 12 months. Records with variables usual weekly earnings and/or trade union membership marked "not known or not stated" were excluded. In addition for the 1997 and 2001 data, records with variable age left school marked "currently attending school" were also excluded.

(b) The SET unit record data used in statistical modelling did not differentiate between Tasmania, ACT and the Northern Territory. Record counts for these States reported were provided by ABS on request.

Source: 1993, 1997 and 2001 SET CURF data.

5. **Dependent variable.** For all analyses, the dependent variable was the natural logarithm of usual weekly earnings (\$) with the main employer. In the ABS data 'earnings' was a categorical variable, with an increment of \$40 per category. Commission staff converted that variable to a continuous variable by taking the mid-point of each category. For the upper, open range the median income of the highest 20 per cent of income distribution as estimated by the ABS was used. The median incomes used were \$1 215, \$1 367 and \$1 525 for the period 1993, 1997 and 2001 respectively<sup>29</sup>.) Table A - 2 shows the estimated average usual weekly earnings by period, State and sector for males and females.

**Table A - 2** AVERAGE USUAL WEEKLY EARNINGS<sup>(a)</sup> BY PERIOD, STATE AND SECTOR, MALES AND FEMALES

Sector State/period	Private			Public		
	1993	1997	2001	1993	1997	2001
	\$	\$	\$	\$	\$	\$
<b>Males</b>						
NSW	579	665	804	658	773	954
Vic	562	643	771	646	750	924
Qld	521	603	689	614	717	861
SA	521	600	713	665	711	881
WA	588	680	784	632	768	923
Tas/ACT/NT	525	590	729	693	827	1 041
<b>Females</b>						
NSW	379	414	525	482	579	682
Vic	369	414	507	472	537	656
Qld	320	375	425	453	521	628
SA	324	355	430	471	513	632
WA	323	385	447	471	521	575
Tas/ACT/NT	330	383	453	529	616	740

(a) Usual weekly earnings in the data were categorical with an increment of \$40 per category. This variable was converted to a continuous variable by taking the mid-point of each category and used the median income of the highest 20 per cent of income distribution estimated by the ABS for the upper open range. The median incomes used were \$1 215, \$1 367 and \$1 525 for the period 1993, 1997 and 2001 respectively.

Source: 1993, 1997 and 2001 SET CURF data.

6. **Independent variables.** Independent variables common to both sectors and males and females were:

- (i) state of residence;

<sup>29</sup> ABS, Income Distribution, Table 1: Gross (Weekly) Income Quintile, 1994-95, 1997-98 and 1999-2000, Catalogue No. 6523.0.

- (ii) marital status;
- (iii) whether had any children aged under 15 years;
- (iv) migrant status (whether from main English-speaking countries and duration in Australia);
- (v) level of highest educational attainment;
- (vi) main field of highest educational attainment;
- (vii) size of firm;
- (viii) employment status (whether permanent or casual);
- (ix) occupation;
- (x) industry;
- (xi) trade union membership;
- (xii) usual hours worked per week;
- (xiii) Cumulative duration of employment; and
- (xiv) work experience.

The sample proportions for each of the independent variables are set out in Table A - 3 and Table A - 4 for males and females respectively.

**Table A - 3** SAMPLE PROPORTION BY VARIABLE, PERIOD AND SECTOR, MALES

Sector Variable/period	Private			Public		
	1993	1997	2001	1993	1997	2001
<b>State of residence</b>						
NSW	0.24	0.22	0.23	0.22	0.22	0.21
Vic	0.23	0.22	0.22	0.17	0.14	0.16
Qld	0.19	0.19	0.18	0.16	0.20	0.19
SA	0.11	0.11	0.12	0.12	0.12	0.10
WA	0.12	0.14	0.14	0.14	0.11	0.11
Tas/ACT/NT	0.12	0.11	0.11	0.19	0.23	0.23
<b>Marital status</b>						
Married	0.61	0.61	0.60	0.74	0.74	0.75
Not married	0.39	0.39	0.40	0.26	0.26	0.25
<b>Whether had any young children</b>						
With children under 15 years old	0.34	0.34	0.32	0.40	0.39	0.37
Without children under 15 year old	0.66	0.66	0.68	0.60	0.61	0.63
<b>Migrant status <sup>(a)</sup></b>						
Born in Australia	0.74	0.75	0.75	0.75	0.77	0.78
Born in English-speaking countries, lived in Australia more than 20 years	0.02	0.05	0.06	0.04	0.08	0.07
Born in English-speaking countries, lived in Australia more between 10-20 years	0.06	0.03	0.03	0.06	0.02	0.01
Born in English-speaking countries, lived in Australia less than 10 years	0.05	0.04	0.03	0.03	0.02	0.01
Born in other countries, lived in Australia more than 20 years	0.03	0.06	0.05	0.04	0.05	0.06
Born in other countries lived in Australia between 10-20 years	0.05	0.03	0.04	0.05	0.02	0.03
Born in other countries, lived in Australia less than 10 years	0.06	0.05	0.04	0.03	0.03	0.02

**Table A - 3** SAMPLE PROPORTION BY VARIABLE, PERIOD AND SECTOR, MALES (continued)

Sector Variable/period	Private			Public		
	1993	1997	2001	1993	1997	2001
<b>Level of highest education attainment</b>						
Higher degree	0.01	0.01	0.02	0.05	0.08	0.09
Postgraduate diploma	0.01	0.01	0.03	0.07	0.05	0.10
Bachelor degree	0.07	0.08	0.10	0.15	0.19	0.19
Undergraduate diploma	0.01	0.03	0.05	0.04	0.05	0.08
Associate diploma	0.07	0.04	0.04	0.09	0.07	0.08
Skilled vocational qualifications	0.26	0.21	0.22	0.19	0.13	0.14
Basic vocational qualifications	0.03	0.10	0.07	0.03	0.08	0.05
With post-school qualifications but level not stated	0.01	0.02	0.01	0.00	0.02	0.01
Completed year 12 only	0.18	0.17	0.17	0.15	0.12	0.11
Did not complete year 12/never attended	0.34	0.32	0.29	0.23	0.21	0.15
<b>Main field of highest educational attainment <sup>(b)</sup></b>						
Business and administration	0.04	0.03	0.04	0.04	0.05	0.05
Health	0.01	0.01	0.01	0.02	0.03	0.04
Education	0.01	0.01	0.01	0.06	0.05	0.08
Society and culture	0.02	0.02	0.03	0.07	0.10	0.09
Natural and physical sciences	0.02	0.02	0.03	0.06	0.06	0.07
Engineering	0.18	0.17	0.17	0.13	0.13	0.13
Architecture and building	0.05	0.04	0.04	0.04	0.02	0.02
Agriculture and related fields	0.01	0.00	0.01	0.01	0.01	0.01
Field not stated/not applicable	0.68	0.70	0.66	0.57	0.56	0.50
<b>Size of firm (number of employees)</b>						
Less than 20	0.42	0.43	0.43	0.14	0.14	0.16
20-99	0.28	0.29	0.29	0.31	0.29	0.29
100 and over	0.30	0.26	0.26	0.55	0.55	0.53
Number unknown	0.01	0.02	0.02	0.01	0.02	0.03
<b>Whether permanent or casual <sup>(c)</sup></b>						
Permanent with main period employer	0.83	0.76	0.75	0.97	0.92	0.92
Casual with main period employer	0.17	0.24	0.25	0.03	0.08	0.08

**Table A - 3** SAMPLE PROPORTION BY VARIABLE, PERIOD AND SECTOR, MALES (continued)

Sector Variable/period	Private			Public		
	1993	1997	2001	1993	1997	2001
<b>Occupation <sup>(d)</sup></b>						
Managers and administrators	0.07	0.07	0.07	0.08	0.09	0.10
Professors	0.09	0.11	0.13	0.27	0.31	0.36
Associate professors	0.08	0.09	0.11	0.15	0.15	0.17
Tradespersons and related workers	0.25	0.23	0.22	0.12	0.12	0.11
Advanced clerical and service workers	0.02	0.01	0.01	0.05	0.01	0.01
Intermediate clerical, sales and service workers	0.09	0.10	0.10	0.09	0.13	0.11
Intermediate production and transport workers	0.13	0.18	0.17	0.10	0.08	0.06
Elementary clerical, sales and service workers	0.08	0.07	0.07	0.03	0.05	0.04
Labourers and related workers	0.18	0.14	0.13	0.11	0.06	0.05
<b>Industry <sup>(e)</sup></b>						
Agriculture, forestry, fishing and hunting	0.03	0.04	0.04			
Mining	0.04	0.03	0.02			
Manufacturing	0.29	0.26	0.23			
Electricity, gas and water supply	0.00	0.00	0.01			
Construction	0.09	0.09	0.10			
Wholesale trade	0.11	0.09	0.07			
Retail trade	0.14	0.15	0.14			
Accommodation, cafes and restaurants	0.05	0.05	0.05			
Transport and storage	0.06	0.06	0.07			
Communication services	0.00	0.01	0.02	0.08	0.08	0.07
Finance and insurance	0.04	0.03	0.04			
Property and business services	0.07	0.09	0.12			
Government administration and defence	0.00	0.00	0.00	0.26	0.30	0.35
Education	0.01	0.01	0.02	0.11	0.19	0.20
Health and community services	0.01	0.02	0.02	0.08	0.09	0.10
Cultural and recreational services	0.02	0.02	0.02	0.09	0.02	0.03
Personal and other services	0.04	0.02	0.02	0.39	0.32	0.25
<b>Trade union membership</b>						
Had trade union membership	0.35	0.28	0.23	0.73	0.62	0.53
Did not have trade union membership	0.65	0.72	0.77	0.27	0.38	0.47

Table A - 3 SAMPLE PROPORTION BY VARIABLE, PERIOD AND SECTOR, MALES (continued)

Sector Variable/period	Private			Public		
	1993	1997	2001	1993	1997	2001
<b>Hours usually worked per week</b>						
1-15 hours	0.04	0.06	0.07	0.01	0.04	0.04
16-34 hours	0.06	0.08	0.10	0.03	0.05	0.07
35-40 hours	0.47	0.45	0.44	0.65	0.60	0.57
41-48 hours	0.19	0.15	0.16	0.17	0.15	0.16
49 hours and over	0.24	0.25	0.23	0.13	0.15	0.16
<b>Cumulative duration of employment</b>						
Under 1 year	0.17	0.23	0.22	0.07	0.10	0.09
1-4 years	0.41	0.42	0.41	0.26	0.26	0.24
5-9 years	0.21	0.17	0.18	0.20	0.19	0.17
10-19 years	0.14	0.12	0.13	0.28	0.25	0.26
20 years and over	0.06	0.06	0.06	0.18	0.21	0.24
<b>Estimated average work experience (years) <sup>(a)</sup></b>	18.06	18.18	18.44	21.78	22.54	23.34

- (a) Main English-speaking countries include Canada, Ireland, New Zealand, South Africa, United Kingdom and the United States of America.
- (b) The reported main field of highest educational attainment would only be considered in the model for those who had a university degree or a skilled vocational qualification.
- (c) For the 2001 data, this variable was based on “whether employee has leave entitlements with main period employer”.
- (d) Occupation was classified to Australian Standard Classification of Occupations (ASCO), second edition, at the one-digit-level for the 1997 and 2001 data. The more detailed occupation classifications to ASCO, first edition, two-digit-level in 1993 data were regrouped into the ASCO, second edition. Numerical clerks in the 1993 data did not differentiate between advance and intermediate clerks, they all were regrouped as advance clerical service workers.
- (e) Industry was classified to the Australian and New Zealand Standard Industrial Classification (ANZSIC) for the 1997 and 2001 data. Industry was classified to the Australian Standard Industrial Classification (ASIC) two-digit-level in the 1993 data and was regrouped to the ANZSIC. In addition, all industries that were considered unimportant to the public sector, were combined to the reference category — Personal and Other Services — for modelling purpose.
- (f) Years of experience in employments were estimated as the differences between the recorded years of age and age left school adjusted for the period of obtaining post-school qualifications. For the 1993 data where information on age left school were not available for those had post-school qualifications, we assumed that they would leave school at age 18 years.

Source: 1993, 1997 and 2001 SET CURF data.

**Table A - 4** SAMPLE PROPORTION BY VARIABLE, PERIOD AND SECTOR, FEMALES

Sector Variable/period	Private			Public		
	1993	1997	2001	1993	1997	2001
<b>State of residence</b>						
NSW	0.26	0.23	0.22	0.17	0.20	0.21
Vic	0.22	0.21	0.21	0.18	0.19	0.19
Qld	0.18	0.20	0.19	0.14	0.17	0.17
SA	0.11	0.10	0.12	0.14	0.12	0.11
WA	0.11	0.14	0.14	0.15	0.12	0.13
Tas/ACT/NT	0.11	0.12	0.11	0.22	0.21	0.19
<b>Marital status</b>						
Married	0.59	0.59	0.60	0.66	0.66	0.67
Not married	0.41	0.41	0.40	0.34	0.34	0.33
<b>Whether had any young children</b>						
With children under 15 years old	0.31	0.34	0.32	0.36	0.38	0.37
Without children under 15 year old	0.69	0.66	0.68	0.64	0.62	0.63
<b>Migrant status <sup>(a)</sup></b>						
Born in Australia	0.77	0.77	0.77	0.74	0.76	0.80
Born in English-speaking countries, lived in Australia more than 20 years	0.02	0.05	0.05	0.03	0.08	0.08
Born in English-speaking countries, lived in Australia more between 10-20 years	0.05	0.02	0.03	0.08	0.03	0.02
Born in English-speaking countries, lived in Australia less than 10 years	0.04	0.03	0.02	0.04	0.02	0.01
Born in other countries, lived in Australia more than 20 years	0.02	0.05	0.05	0.02	0.05	0.05
Born in other countries lived in Australia between 10-20 years	0.05	0.03	0.04	0.05	0.03	0.03
Born in other countries, lived in Australia less than 10 years	0.05	0.05	0.03	0.04	0.03	0.02

**Table A - 4** SAMPLE PROPORTION BY VARIABLE, PERIOD AND SECTOR, FEMALES (continued)

Sector Variable/period	Private			Public		
	1993	1997	2001	1993	1997	2001
<b>Level of highest education attainment</b>						
Higher degree	0.01	0.01	0.01	0.02	0.04	0.07
Postgraduate diploma	0.02	0.02	0.03	0.07	0.08	0.13
Bachelor degree	0.07	0.10	0.11	0.20	0.24	0.24
Undergraduate diploma	0.04	0.07	0.08	0.12	0.13	0.11
Associate diploma	0.05	0.04	0.05	0.04	0.04	0.05
Skilled vocational qualifications	0.07	0.03	0.06	0.04	0.02	0.05
Basic vocational qualifications	0.11	0.17	0.14	0.11	0.13	0.10
With post-school qualifications but level not stated	0.01	0.02	0.01	0.01	0.01	0.01
Completed year 12 only	0.21	0.19	0.20	0.13	0.10	0.09
Did not complete year 12/never attended	0.42	0.35	0.31	0.26	0.20	0.16
<b>Main field of highest educational attainment <sup>(b)</sup></b>						
Business and administration	0.04	0.02	0.05	0.03	0.03	0.05
Health	0.03	0.03	0.03	0.07	0.08	0.11
Education	0.03	0.02	0.03	0.10	0.11	0.15
Society and culture	0.03	0.04	0.06	0.07	0.11	0.11
Natural and physical sciences	0.01	0.01	0.02	0.04	0.04	0.03
Engineering	0.01	0.00	0.01	0.00	0.00	0.01
Architecture and building	0.00	0.00	0.00	0.00	0.00	0.00
Agriculture and related fields	0.00	0.00	0.00	0.00	0.00	0.00
Field not stated/not applicable	0.86	0.86	0.81	0.68	0.63	0.54
<b>Size of firm (number of employees)</b>						
Less than 20	0.47	0.48	0.48	0.19	0.19	0.20
20-99	0.27	0.26	0.27	0.29	0.29	0.33
100 and over	0.25	0.22	0.22	0.51	0.49	0.43
Number unknown	0.01	0.03	0.03	0.01	0.03	0.04
<b>Whether permanent or casual <sup>(c)</sup></b>						
Permanent with main period employer	0.65	0.61	0.60	0.87	0.84	0.83
Casual with main period employer	0.35	0.39	0.40	0.13	0.16	0.17

**Table A - 4** SAMPLE PROPORTION BY VARIABLE, PERIOD AND SECTOR, FEMALES (continued)

Sector Variable/period	Private			Public		
	1993	1997	2001	1993	1997	2001
<b>Occupation <sup>(d)</sup></b>						
Managers and administrators	0.02	0.02	0.02	0.03	0.04	0.03
Professors	0.12	0.13	0.14	0.38	0.42	0.45
Associate professors	0.04	0.08	0.09	0.06	0.09	0.11
Tradespersons and related workers	0.04	0.03	0.03	0.01	0.01	0.01
Advanced clerical and service workers	0.09	0.08	0.07	0.10	0.04	0.04
Intermediate clerical, sales and service workers	0.25	0.31	0.30	0.26	0.29	0.27
Intermediate production and transport workers	0.03	0.05	0.04	0.01	0.00	0.00
Elementary clerical, sales and service workers	0.24	0.18	0.20	0.08	0.07	0.05
Labourers and related workers	0.16	0.12	0.11	0.09	0.04	0.03
<b>Industry <sup>(e)</sup></b>						
Agriculture, forestry, fishing and hunting	0.01	0.02	0.02			
Mining	0.00	0.01	0.01			
Manufacturing	0.14	0.11	0.09			
Electricity, gas and water supply	0.00	0.00	0.00			
Construction	0.01	0.02	0.01			
Wholesale trade	0.06	0.05	0.04			
Retail trade	0.22	0.22	0.23			
Accommodation, cafes and restaurants	0.09	0.09	0.09			
Transport and storage	0.03	0.03	0.03			
Communication services	0.00	0.01	0.01	0.03	0.05	0.04
Finance and insurance	0.06	0.06	0.06			
Property and business services	0.10	0.12	0.13			
Government administration and defence	0.00	0.00	0.00	0.22	0.24	0.24
Education	0.03	0.05	0.04	0.18	0.33	0.37
Health and community services	0.11	0.16	0.16	0.24	0.26	0.26
Cultural and recreational services	0.04	0.03	0.03	0.16	0.03	0.02
Personal and other services	0.08	0.05	0.05	0.17	0.10	0.08
<b>Trade union membership</b>						
Had trade union membership	0.28	0.22	0.18	0.60	0.53	0.41
Did not have trade union membership	0.72	0.78	0.82	0.40	0.47	0.59

**Table A - 4** SAMPLE PROPORTION BY VARIABLE, PERIOD AND SECTOR, FEMALES (continued)

Sector Variable/period	Private			Public		
	1993	1997	2001	1993	1997	2001
<b>Hours usually worked per week</b>						
1-15 hours	0.21	0.21	0.21	0.09	0.11	0.13
16-34 hours	0.26	0.30	0.33	0.24	0.25	0.27
35-40 hours	0.40	0.36	0.34	0.51	0.47	0.43
41-48 hours	0.09	0.07	0.07	0.09	0.08	0.08
49 hours and over	0.05	0.06	0.06	0.07	0.08	0.08
<b>Cumulative duration of employment</b>						
Under 1 year	0.19	0.23	0.24	0.09	0.14	0.15
1-4 years	0.47	0.47	0.44	0.39	0.32	0.31
5-9 years	0.22	0.18	0.17	0.26	0.24	0.22
10-19 years	0.11	0.10	0.12	0.20	0.23	0.23
20 years and over	0.02	0.02	0.02	0.05	0.07	0.09
<b>Estimated average work experience (years) <sup>(a)</sup></b>	17.74	17.48	18.29	19.56	20.64	21.49

- (a) Main English-speaking countries include Canada, Ireland, New Zealand, South Africa, United Kingdom and the United States of America.
- (b) The reported main field of highest educational attainment would only be considered in the model for those who had a university degree or a skilled vocational qualification.
- (c) For the 2001 data, this variable was based on “whether employee has leave entitlements with main period employer”.
- (d) Occupation was classified to Australian Standard Classification of Occupations (ASCO), second edition, at the one-digit-level for the 1997 and 2001 data. The more detailed occupation classifications to ASCO, first edition, two-digit-level in 1993 data were regrouped into the ASCO, second edition. Numerical clerks in the 1993 data did not differentiate between advance and intermediate clerks, they all were regrouped as advance clerical service workers.
- (e) Industry was classified to the Australian and New Zealand Standard Industrial Classification (ANZSIC) for the 1997 and 2001 data. Industry was classified to the Australian Standard Industrial Classification (ASIC) two-digit-level in the 1993 data and was regrouped to the ANZSIC. In addition, all industries that were considered unimportant to the public sector, were combined to the reference category — Personal and Other Services — for modelling purpose.
- (f) Years of experience in employments were estimated as the differences between the recorded years of age and age left school adjusted for the period of obtaining post-school qualifications. For the 1993 data where information on age left school were not available for those had post-school qualifications, we assumed that they would leave school at age 18 years.

Source: 1993, 1997 and 2001 SET CURF data.



+ $DCAP_{jt} * CAPITAL_{jt}$	(DCAP represents dummy variables for capital cities <sup>35</sup> with values: 0 = non-capital city and 1 = capital city; CAPITAL represents return to capital cities)
+ $\sum_x X_{xjt} \beta_{xjt}$	( $X_x$ : represents a set of measures of individuals' labour market characteristics such as type and level of education (EDU), field of education (FEDU), experience (EXP) and square of experience (EXPSQ), employment history etc.; $\beta_x$ represents returns to such characteristics)
+ $\sum_y X_{yjt} \beta_{yjt}$	( $X_y$ : represents a set of apparent productivity characteristics such as marital status (MAR), age of children (CHILD) that may be proxies for employment stability or interpersonal skills; $\beta_y$ represents returns to such characteristics)
+ $DF_{jt} F_{jt}$	(DF: represents gender (i.e. female employees = 1, male employees = 0); $F_{jst}$ : return to female gender, negative values could be interpreted as discrimination <sup>36</sup> or adverse productivity characteristics <sup>37</sup> )
+ $\sum_u DZ_{ujt} Z_{ujt}$	( $DZ_u$ : represents dummy variables for groups either born locally or migrants from English or non-English speaking background countries combined with years since migration; $Z_u$ : return to such characteristics, lower values for a group could be interpreted either as due to discrimination or adverse productivity characteristics)
+ $\sum_z DOCC_{zjt} OCC_{zjt}$	( $DOCC_z$ : represents occupations-specific skill sets; $OCC_z$ : returns to occupations)
+ $\sum_v DIND_{vjt} IND_{vjt}$	( $DIND_v$ : represents dummy variables for different industries; $IND_v$ : represents inter-industry returns which could be different because of differences in employee productivity, working conditions, or product or labour market competition, and hence employers' 'ability to pay')

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<sup>35</sup> This is available only for the 1993 dataset.

<sup>36</sup> The term 'discrimination' is used in this paper in a technical sense – it could be defined as 'the valuation in the market place of personal characteristics that are unrelated to productivity' in 'The Theory of Discrimination' (Arrow, K. J. (1973), as quoted in Robert F. Elliott 'Labour Economics: A Complete Text', 1991, McGraw-Hill.

<sup>37</sup> When a model is run separately for males and females, this variable is not included.

$$\begin{aligned}
& + \sum_w \text{DFSIZE}_{wjt} \text{FSIZE}_{wjt} \quad (\text{DFSIZE}_w: \text{represents dummy variables for} \\
& \quad \text{different categories of firm sizes; FSIZE}_w: \text{returns} \\
& \quad \text{to firm size which could be different because of} \\
& \quad \text{differences in productivity, product or labour} \\
& \quad \text{market competition, and hence employers' 'ability} \\
& \quad \text{to pay'}) \\
& + \text{DUNION}_{jt} \text{UNION}_{jt} \quad (\text{DUNION: represents union membership, member} \\
& \quad =1, \text{ and non-members} = 0); \text{UNION: represents} \\
& \quad \text{differences in returns to union members due to} \\
& \quad \text{differences in productivity, imperfect labour} \\
& \quad \text{market competition or unions' 'ability to bargain'}) \\
& + \varepsilon_{jt} \quad (\varepsilon: \text{represents stochastic error term})
\end{aligned}$$

### *Examining location and migrant effects*

4. Location effect relates to whether wages would be different across locations. It is estimated by removing all other measurable effects on wages.

5. To do so, we regressed the logarithm of usual weekly earnings, separately for the private and the public sectors, against location, employer, employee and job characteristics as explanatory variables.<sup>38</sup> We did that to test whether:

- Interstate differentials for the public sector compared well with those for the private sector (location effects); and
- we needed to adjust the private sector benchmarks because of specific 'composition' influences (migrant effects).

6. In concept, we were mainly interested in the coefficients that contributed to interstate differentials. Accordingly, we closely examined two sets of coefficients.

- (i)  $I_{ijt}$  was the main set of interest because these represented the 'location' effect for each State  $i$ , given that we controlled for other measurable effects.
- (i) Differences between  $Z_{ujt}$  represented different returns to persons by language spoken in countries of birth together with years since migration. This was relevant because the migrant groups from non-English speaking countries (who are distributed unevenly across the States) appeared to be paid less than others. If we interpreted the differences as due to discrimination, it would have represented an 'advantage' for States with higher proportion of such migrants. If we

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<sup>38</sup> Examples of employees' personal characteristics' are education, field of education, skills, experience, occupation, union membership, sex, marital status, migration; that of 'job characteristics' are industry of employment, hours of work, permanent/casual. We list the variables in Attachment E.

interpreted the differences as due to differences in labour market characteristics, and hence productivity, it would have had no effect on the factors.

7. To examine these effects, we modified the general model specification (A).
  - (i) To capture separate returns to characteristics for male and female, we set up the coefficients as  $(B_{ijt} + B_{f,ijt}F)$  where F was a dummy variable for females. The second coefficient  $B_{f,ijt}$  represented, for each characteristic in X, differences in return for females.
  - (ii) One exception to the above was the location coefficients ( $I_{ijt}$ ). By not adjusting for gender, they captured, for each State, the average location effects for the combined effects of males and females.
  - (iii) We also imposed a constraint  $\sum_i P_{it} * I_{ijt} = 0$  (where  $P_{it}$  were the proportion of population in State i) so that the  $I_{ijt}$  represented deviations from the Australian average. This simplified the process of translating the coefficients into factors. To do this, the term  $\sum_i DS_{ijt} * I_{ijt}$  was set up as  $\sum_i (DS_{ijt} - P_{it} DS_{6jt} / P_{6t}) * I_{ijt}$ , where  $DS_6$  was the omitted dummy variable for the reference states<sup>39</sup>.

8. We have reported all variables regardless of statistical significance to help assess the results better and because they had no material effects on the coefficients of interest. However, we retained coefficients representing structural changes for females ( $B_{f,ijt}$ ) only when they were either significant or marginally significant at 10%.

9. The regression results and commentary are in Attachment C.

10. We estimated the ‘location’ effect for Tasmania, the ACT and the NT outside the model using supplementary data from the ABS. This was because the datasets, while they included samples for these States, did not differentiate between them for reasons of confidentiality. The estimates are in Appendix 2, Attachment C.

### ***Examining ‘non-competitive’ effects***

11. These effects potentially arise from the concentration of larger or smaller firms, particular types of industries or level of activities of unions in certain locations.

- ***Industry effects.*** This effect could be interpreted as due either to differences in labour productivity across industries or employers’

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<sup>39</sup> The omitted state was Tasmania, ACT and the NT together representing the average location effects for the three States. This was done because the dataset include samples for does not Tasmania, ACT and the NT, but do not identify them. The location effects for these were estimated separately using the model results and using supplementary data as detailed in Appendix 2.

‘ability to pay’ (called rent sharing)<sup>40</sup>. Since the composition of industry varies across States and wages appear to vary by type of industry, its effect on wages in the private sectors might be expected to differ between States.

- **Firm size.** Like the industry effect, this could be interpreted as due either to labour productivity or employers’ ability to pay. Since the composition of firms by size varies across States and wages appear to vary by firm size, its effect on wages in the private sectors might be expected to differ between States.
- **Union effects.** Similarly, this could be interpreted as due either to labour productivity or employees’ ability to bargain.

12. We needed to examine if measures of differences in the private sector wages due to these effects caused, or explained some of the differences in public sector wages between States.

13. To do so, we constructed a set of variables, for each occupation, to capture the average effects of private sector industry structure, firm size or union influence by state and year, and added them to the public sector model for wages, to see if these effects had any material impact.

14. We were also interested in those variables included in the model that related to industry or firm size or union, which, as explained earlier, could represent market power. We examined them closely for any spillover impacts on public sector wages, after controlling for individual characteristics.

15. We modified the general regression model (A) as follows.

- (i) We pooled the data across time<sup>41</sup>.
- (ii) We ran the model separately for males and females because we believed that these effects could work differently by gender. Hence the variable F was not required.
- (iii) We constructed variables ‘private’, ‘firm size’ and ‘union’ — separately for each State (i), occupation (z) and year (t) — by weighting by distribution of occupations across industry and firm size, and by union membership by the premiums for each effect observed when we examined the location effect. The added variables

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<sup>40</sup> Inter-industry wages differentials are often substantial. For example, *Krueger Alan B and Summers Lawrence H, Efficiency Wages and the Inter-industry Wage Structure, Econometrica 56(2), March, 259-93, 1988* finds that, after controlling for labour quality, workers in high-wage industries receive non-competitive rents.

<sup>41</sup> For detailed results, you may contact Commission staff.

represented — by state, occupation and year — an average industry, union or firm sizes effects in the private sectors<sup>42</sup>.

16. To capture separate returns to characteristics across time, the coefficients were set up as  $(\mathbf{B}_{ijt} + \mathbf{B}'_{ijt} \mathbf{D1997} + \mathbf{B}''_{ijt} \mathbf{D1993})$  where  $\mathbf{D1997}$  and  $\mathbf{D1993}$  were dummy variables for the years 1997 and 1993. The coefficients  $\mathbf{B}'_{ijt}$  represented differences in return to characteristics in 1997, and  $\mathbf{B}''_{ijt}$  in 1993, relative to 2001. We retained them in the final model only if they were significant.

17. Accordingly, we modified the general model specification (A) as follows.

$$\begin{aligned} \ln(\mathbf{w}_{i,\text{pub},t}) &= \mathbf{X}_{i,\text{pub},t}(\mathbf{B}_{i,\text{pub},t} + \mathbf{B}'_{i,\text{pub},t} \mathbf{D1997} + \mathbf{B}''_{i,\text{pub},t} \mathbf{D1993}) \\ &+ \text{PRIVATE} * \text{private}_{zit} \\ &+ \text{PFSIZE} * \text{firm size}_{zit} \\ &+ \text{PUNION} * \text{union}_{zit} \\ &+ \varepsilon_{it} \end{aligned} \quad \text{..... (B)}$$

where

$$\begin{aligned} \text{private}_{zit} &= \Sigma_v(\text{EIND}_{v,zit} * \text{IND}_{v,it}); \\ \text{firm size}_{zit} &= \Sigma_w(\text{EFS}_{w,zit} * \text{FSIZE}_{w,it}); \\ \text{union}_{zit} &= (\text{EUNION}_{zit} * \text{UNION}_{it}); \\ \text{PRIVATE} &= \text{represented returns to private}; \\ \text{PFSIZE} &= \text{represented returns to firm size}; \text{ and} \\ \text{PUNION} &= \text{represented returns to union}. \end{aligned}$$

$\text{EIND}_{v,zit}$ ,  $\text{EFS}_{w,zit}$  and  $\text{EUNION}_{zit}$  represent proportions of occupation-specific distributions of employment across different industries and firm sizes respectively in the sample.  $\text{IND}_{v,it}$ ,  $\text{FSIZE}_{w,it}$  and  $\text{UNION}_{it}$  represented the premiums for each effect observed when we examined the location effect.

18. We evaluated the statistical strength of the coefficients — PRIVATE, PFSIZE and PUNION.

19. We report all variables regardless of statistical significance to help assess the results better and because they had no material effects on the results of interest. However, we retained for coefficients representing structural changes across time,  $\mathbf{B}'_{i,\text{pub},t}$  and  $\mathbf{B}''_{i,\text{pub},t}$ , only when they were either significant or marginally significant at 10%.

20. The regression results and commentary are in Attachment D.

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<sup>42</sup> The measures were constructed and entered into the model by averaging the measure for male and female.

**Examining ‘dominant employer’ effects**

21. For analytical purposes, it is possible to view the ‘dominant employer’ issue as a special case of wage setting in the State public sector labour market. This effect, if it existed, implies that wages differentials in the State public sector (which might otherwise arise from location or non-competitive effects) would be lower for these occupations than for others in the public sector.

22. To examine this, we statistically compared the spread of location effects across States for teachers, nurses and police with those for other occupations in the public sector, after controlling for other effects.

23. Generally, we looked for the existence of this effect as follows:

The spread of wage differences in the public sector across States for teachers, nurses and police would be materially different from that for other occupations, and be converging on zero, when other effects were controlled for.

24. To test if that was so, we defined a State neutral variable (NDOM) that took a value of 1 if the specified occupation of the sample was a non-dominant occupation — that is, if the sample was not that of a nurse, teacher or a police person.

25. We modified the general regression equation (A) for public sector wages by estimating two State specific location effects — one for the dominant occupations and one that measured, relative to them, the difference for others. Because the distribution across the dominant occupations were quite different for males and females, we ran the models separately for males and females.

$$\ln(w) = \sum_i DS_i (\alpha_i + \alpha'_i DNDOM) + DNDOM * NDOM + X_i B_i + \varepsilon \quad \dots \dots \dots \quad (E)$$

where DNDOM = a state-neutral dummy variable corresponding to non-dominant occupations; and

NDOM= return to DNDOM.

26. This meant that, for each State  $i$ ,  $\alpha_i$  represented interstate differentials between States corresponding to dominant, and  $\alpha_i + \alpha'_i$  for non-dominant, occupations. This simplified evaluation of the results.

27. Because the ‘dominant occupation’ effects are not generally supported by either conceptual or institutional type arguments, we thought that statistical support for its existence should pass most or all of a series of fairly rigorous tests — although they ultimately reflect an element of judgment. As such, we tested whether:

- (i) the sign of  $\alpha_i + \alpha'_i$  were the same as for  $\alpha_i$  for each State  $i$  and whether  $\alpha_i$  represented a diminished effect of  $\alpha_i + \alpha'_i$ ; and
- (ii)  $\alpha_i = \alpha_j$  for each pair of States  $i$  and  $j$ ,  $i \neq j$  (this included tests for  $\alpha_i = 0$  because the dummy for omitted states (others) represented 0).

28. There were two shortcomings in the statistical tests.
- (i) The identification of dominant occupations could be done only for the 1993 dataset. Therefore, the depth of the data is considerably less than for other analyses in this paper.
  - (ii) Because the wage dispersion even for non-dominant occupations was small (much smaller than in 2001), the powers of the tests to discriminate between small changes were considerably less. Therefore, we also evaluated actual wages data for the dominant occupations for a set of classification as reported later.
29. The regression results and commentary are in Attachment E.

## LIST OF VARIABLES AND CORRESPONDING ABBREVIATIONS

**Table B - 1** DESCRIPTION OF VARIABLES AND VARIABLE ABBREVIATIONS

Variable	Abbreviation
<b>State of residence</b>	
New South Wales	NSW
Victoria	VIC
Queensland	QLD
South Australia	SA
Western Australia	WA
*Tasmania, ACT and the North Territory	
<b>Marital status</b>	
Married	MAR
*Not married	
<b>Whether had any young children</b>	
With children under 15 years old	CHILD
*Without children under 15 year old	
<b>Migrant status</b>	
Born in Australia	MIG1
Born in English-speaking countries, lived in Australia more than 20 years	MIG2
Born in English-speaking countries, lived in Australia more between 10-20 years	MIG3
Born in English-speaking countries, lived in Australia less than 10 years	MIG4
Born in other countries, lived in Australia more than 20 years	MIG5
Born in other countries lived in Australia between 10-20 years	MIG6
*Born in other countries, lived in Australia less than 10 years	
<b>Occupation</b>	
Managers and administrators	OCC1
Professors	OCC2
Associate professors	OCC3
Tradespersons and related workers	OCC4
Advanced clerical and service workers	OCC5
Intermediate clerical, sales and service workers	OCC6
Intermediate production and transport workers	OCC7
Elementary clerical, sales and service workers	OCC8
*Labourers and related workers	

**Table B - 1** DESCRIPTION OF VARIABLES AND VARIABLE ABBREVIATIONS  
(continued)

Variable	Abbreviation
<b>Whether permanent or casual</b>	
Permanent with main period employer	PERM
*Casual with main period employer	
<b>Level of highest education attainment</b>	
Higher degree	EDU1
Postgraduate diploma	EDU2
Bachelor degree	EDU3
Undergraduate diploma	EDU4
Associate diploma	EDU5
Skilled vocational qualifications	EDU6
Basic vocational qualifications	EDU7
With post-school qualifications but level not stated	EDU8
Completed year 12 only	EDU9
*Did not complete year 12/never attended	
<b>Main field of highest educational attainment</b>	
Business and administration	FEDU1
Health	FEDU2
Education	FEDU3
Society and culture	FEDU4
Natural and physical sciences	FEDU5
Engineering	FEDU6
Architecture and building	FEDU7
Agriculture and related fields	FEDU8
*Field not stated/not applicable	
<b>Size of firm (number of employees)</b>	
Less than 20	FIRM1
20-99	FIRM2
100 and over	FIRM3
*Number unknown	

**Table B - 1** DESCRIPTION OF VARIABLES AND VARIABLE ABBREVIATIONS  
(continued)

Variable	Abbreviation
<b>Hours usually worked per week</b>	
1-15 hours	HOUR1
16-34 hours	HOUR2
35-40 hours	HOUR3
41-48 hours	HOUR4
*49 hours and over	
<b>Industry</b>	
Agriculture, forestry, fishing and hunting	INDU1
Mining	INDU2
Manufacturing	INDU3
Electricity, gas and water supply	INDU4
Construction	INDU5
Wholesale trade	INDU6
Retail trade	INDU7
Accommodation, cafes and restaurants	INDU8
Transport and storage	INDU9
Communication services	INDU10
Finance and insurance	INDU11
Property and business services	INDU12
Government administration and defence	INDU13
Education	INDU14
Health and community services	INDU15
Cultural and recreational services	INDU16
*Personal and other services	
<b>Cumulative duration of employment</b>	
Under 1 year	TMPE1
1-4 years	TMPE2
5-9 years	TMPE3
10-19 years	TMPE4
*20 years and over	

**Table B - 1** DESCRIPTION OF VARIABLES AND VARIABLE ABBREVIATIONS  
(continued)

Variable	Abbreviation
<b>Trade union membership</b>	
Had trade union membership	UNION
*Did not have trade union membership	
<b>Estimated work experience (years)</b>	
Experience	WEX
Experience square	WEXSQ

(a) In addition, dummy variables were introduced to capture the changes in intercept and slope coefficients. Changes in intercept coefficients were p1997p1 and p1993p2 with period 2001 as the reference category. Adding p1 or p2 to abbreviation of the variable (eg NWSp1, NSWp2) indicate the changes in slope coefficients in period 1997 or 1993 respectively.

Note: \* Denote reference category (omitted dummies) in the model.

## **ATTACHMENT C**

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### **ANALYSIS OF LOCATION EFFECT**

30. We used the steps set out in paragraph 4 to 8 in Attachment B. Table C - 1 and Table C - 2 show, by sector, the average usual weekly earnings by occupation and States for males for the year 2001 before any adjustments are made. Table C - 3 and Table C - 4 show the same for females.

**Table C - 1** AVERAGE USUAL WEEKLY EARNINGS<sup>(a)</sup> BY OCCUPATION, PRIVATE SECTOR, MALES, 2001

State/Sector	NSW	VIC	QLD	WA	SA	Other <sup>(b)</sup>	Average
	\$	\$	\$	\$	\$	\$	\$
<b>Average Usual Weekly Earnings</b>							
Managers & administrators	1 300	1 216	1 211	1 188	1 233	1 106	1 227
Professionals	1 124	1 073	965	1 094	1 066	977	1 061
Associate professionals	988	934	851	968	899	865	926
Tradespersons & related workers	742	708	677	796	637	713	715
Advanced clerical & service workers	1 088	735	833	723	928	942	889
Intermediate clerical, sales & service workers	657	661	559	640	613	533	617
Intermediate production & transport workers	698	657	672	776	614	732	688
Elementary clerical, sales & service workers	432	455	358	394	433	489	421
Labourers & related workers	489	543	505	503	485	452	499
Average	804	771	689	784	713	729	754
<b>Average Usual Weekly Earnings (Ratios relative to Australian Average)</b>							
Managers & administrators	1.05949	0.99104	0.98696	0.96822	1.00489	0.90139	1.00000
Professionals	1.05938	1.01131	0.90952	1.03110	1.00471	0.92083	1.00000
Associate professionals	1.06695	1.00864	0.91901	1.04536	0.97084	0.93413	1.00000
Tradespersons & related workers	1.03776	0.99021	0.94685	1.11329	0.89091	0.99720	1.00000
Advanced clerical & service workers	1.22385	0.82677	0.93701	0.81327	1.04387	1.05962	1.00000
Intermediate clerical, sales & service workers	1.06483	1.07131	0.90600	1.03728	0.99352	0.86386	1.00000
Intermediate production & transport workers	1.01453	0.95494	0.97674	1.12791	0.89244	1.06395	1.00000
Elementary clerical, sales & service workers	1.02613	1.08076	0.85036	0.93587	1.02850	1.16152	1.00000
Labourers & related workers	0.97996	1.08818	1.01202	1.00802	0.97194	0.90581	1.00000
Average	1.06631	1.02255	0.91379	1.03979	0.94562	0.96684	1.00000

(a) Usual weekly earnings in the data were categorical with an increment of \$40 per category. This variable was converted to a continuous variable by taking the mid-point of each category and used the median income of the highest 20 per cent of income distribution estimated by the ABS for the upper open range. The median income used was \$1 525 for 2001.

(b) Other refers to Tasmania, ACT and the Northern Territory.

Source: 2001 SET CURF data.

**Table C - 2** AVERAGE USUAL WEEKLY EARNINGS<sup>(a)</sup> BY OCCUPATION, PUBLIC SECTOR, MALES, 2001

State/sector	NSW	VIC	QLD	WA	SA	Other <sup>(b)</sup>	Average
	\$	\$	\$	\$	\$	\$	\$
<b>Average usual weekly earnings</b>							
Managers & administrators	1 342	1 385	1 315	1 306	1 421	1 361	1 352
Professionals	1 055	967	986	1025	998	1 103	1 032
Associate professionals	1 071	989	911	976	904	1051	996
Tradespersons & related workers	802	888	739	794	724	734	780
Advanced clerical & service workers	964	1060	460	820	580	900	875
Intermediate clerical, sales & service workers	754	677	746	942	706	806	770
Intermediate production & transport workers	762	687	673	573	417	793	681
Elementary clerical, sales & service workers	670	656	520	477	652	580	595
Labourers & related workers	597	504	513	716	587	482	562
Average	954	924	861	923	881	1 041	941
<b>Average usual weekly earnings (ratios relative to Australian average)</b>							
Managers & administrators	0.99260	1.02441	0.97263	0.96598	1.05104	1.00666	1.00000
Professionals	1.02229	0.93702	0.95543	0.99322	0.96705	1.06880	1.00000
Associate professionals	1.07530	0.99297	0.91466	0.97992	0.90763	1.05522	1.00000
Tradespersons & related workers	1.02821	1.13846	0.94744	1.01795	0.92821	0.94103	1.00000
Advanced clerical & service workers	1.10171	1.21143	0.52571	0.93714	0.66286	1.02857	1.00000
Intermediate clerical, sales & service workers	0.97922	0.87922	0.96883	1.22338	0.91688	1.04675	1.00000
Intermediate production & transport workers	1.11894	1.00881	0.98825	0.84141	0.61233	1.16446	1.00000
Elementary clerical, sales & service workers	1.12605	1.10252	0.87395	0.80168	1.09580	0.97479	1.00000
Labourers & related workers	1.06228	0.89680	0.91281	1.27402	1.04448	0.85765	1.00000
Average	1.01382	0.98193	0.91498	0.98087	0.93624	1.10627	1.00000

(a) Usual weekly earnings in the data were categorical with an increment of \$40 per category. This variable was converted to a continuous variable by taking the mid-point of each category and used the median income of the highest 20 per cent of income distribution estimated by the ABS for the upper open range. The median income used was \$1 525 for 2001.

(b) Other refers to Tasmania, ACT and the Northern Territory.

Source: 2001 SET CURF data.

**Table C - 3** AVERAGE USUAL WEEKLY EARNINGS<sup>(a)</sup> BY OCCUPATION, PRIVATE SECTOR, FEMALES, 2001

State/Sector	NSW	VIC	QLD	WA	SA	Other <sup>(b)</sup>	Average
	\$	\$	\$	\$	\$	\$	\$
<b>Average usual weekly earnings (\$)</b>							
Managers & administrators	1 199	1024	884	947	1 103	998	1 047
Professionals	864	741	697	770	633	728	752
Associate professionals	699	674	592	610	567	635	636
Tradespersons & related workers	448	432	352	408	537	403	421
Advanced clerical & service workers	581	592	516	532	493	427	539
Intermediate clerical, sales & service workers	459	451	406	411	388	419	427
Intermediate production & transport workers	464	460	351	362	439	376	419
Elementary clerical, sales & service workers	309	298	274	295	303	297	295
Labourers & related workers	336	336	324	266	331	329	322
Average	525	507	425	447	430	453	472
<b>Average usual weekly earnings (ratios relative to Australian average)</b>							
Managers & administrators	1.14518	0.97803	0.84432	0.90449	1.05349	0.95320	1.00000
Professionals	1.14894	0.98537	0.92686	1.02394	0.84176	0.96809	1.00000
Associate professionals	1.09906	1.05975	0.93082	0.95912	0.89151	0.99843	1.00000
Tradespersons & related workers	1.06413	1.02613	0.83610	0.96912	1.27553	0.95724	1.00000
Advanced clerical & service workers	1.07792	1.09833	0.95733	0.98701	0.91466	0.79221	1.00000
Intermediate clerical, sales & service workers	1.07494	1.05621	0.95082	0.96253	0.90867	0.98126	1.00000
Intermediate production & transport workers	1.10740	1.09785	0.83771	0.86396	1.04773	0.89737	1.00000
Elementary clerical, sales & service workers	1.04746	1.01017	0.92881	1.00000	1.02712	1.00678	1.00000
Labourers & related workers	1.04348	1.04348	1.00621	0.82609	1.02795	1.02174	1.00000
Average	1.11229	1.07415	0.90042	0.94703	0.91102	0.95975	1.00000

(a) Usual weekly earnings in the data were categorical with an increment of \$40 per category. This variable was converted to a continuous variable by taking the mid-point of each category and used the median income of the highest 20 per cent of income distribution estimated by the ABS for the upper open range. The median income used was \$1 525 for 2001.

(b) Other refers to Tasmania, ACT and the Northern Territory.

Source: 2001 SET CURF data.

**Table C - 4** AVERAGE USUAL WEEKLY EARNINGS<sup>(a)</sup> BY OCCUPATION, PUBLIC SECTOR, FEMALES, 2001

State/Sector	NSW	VIC	QLD	WA	SA	Other <sup>(b)</sup>	Average
	\$	\$	\$	\$	\$	\$	\$
<b>Average usual weekly earnings (\$)</b>							
Managers & administrators	1 354	1 213	945	1 150	1 082	1 114	1 160
Professionals	803	759	784	646	722	809	763
Associate professionals	677	725	783	578	665	822	721
Tradespersons & related workers	380	560	na	520	580	na	473
Advanced clerical & service workers	665	636	631	556	500	665	631
Intermediate clerical, sales & service workers	519	473	445	474	489	531	488
Intermediate production & transport workers	660	300	820	140	400	na	505
Elementary clerical, sales & service workers	478	426	362	435	420	416	423
Labourers & related workers	403	385	301	374	303	380	355
Average	682	656	628	575	632	740	659
<b>Average usual weekly earnings (ratios relative to Australian average)</b>							
Managers & administrators	1.16724	1.04569	0.81466	0.99138	0.93276	0.96034	1.00000
Professionals	1.05242	0.99476	1.02752	0.84666	0.94626	1.06029	1.00000
Associate professionals	0.93897	1.00555	1.08599	0.80166	0.92233	1.14008	1.00000
Tradespersons & related workers	0.80338	1.18393	na	1.09937	1.22622	na	1.00000
Advanced clerical & service workers	1.05388	1.00792	1.00000	0.88114	0.79239	1.05388	1.00000
Intermediate clerical, sales & service workers	1.06352	0.96926	0.91189	0.97131	1.00205	1.08811	1.00000
Intermediate production & transport workers	1.30693	0.59406	1.62376	0.27723	0.79208	na	1.00000
Elementary clerical, sales & service workers	1.13002	1.00709	0.85579	1.02837	0.99291	0.98345	1.00000
Labourers & related workers	1.13521	1.08451	0.84789	1.05352	0.85352	1.07042	1.00000
Average	1.03490	0.99545	0.95296	0.87253	0.95903	1.12291	1.00000

(a) Usual weekly earnings in the data were categorical with an increment of \$40 per category. This variable was converted to a continuous variable by taking the mid-point of each category and used the median income of the highest 20 per cent of income distribution estimated by the ABS for the upper open range. The median income used was \$1 525 for 2001.

(b) Other refers to Tasmania, ACT and the Northern Territory.

Source: 2001 SET CURF data.

31. Other summary sample statistics are given in Attachment A. The regression results are in Appendix 1 to this Attachment.

32. As stated earlier, there were two particularly relevant aspects of the regression results for the private sectors reported in Table C - 10 and for the public sectors in Table C - 11. The first related to the location effect and the second to the migrant effect.

33. Table C - 5 below shows 'location' effects as percentage deviations from the Australian average across time and by sector after other measurable influences were

removed. For example, earnings of employees on average in the private sector of NSW were 4.5 per cent higher than the Australian average in 2001.

**Table C - 5** LOCATION EFFECTS AS PERCENTAGE DIFFERENCE OF EARNINGS IN EACH STATE FROM AUSTRALIAN AVERAGE FOR THE PRIVATE AND PUBLIC SECTORS, BY YEAR

Location effect	Private			Public		
	2001	1997	1993	2001	1997	1993
	%	%	%	%	%	%
New South Wales	4.5*	1.4*	2.1*	4.3*	3.0*	1.3
Victoria	-0.9	0.7	0.0	-2.1*	-1.9*	0.0
Queensland	-2.9*	-2.6*	-2.9*	-3.0*	-1.2*	-0.8
South Australia	-4.1*	-0.6	-1.6	-3.6	-4.6*	-1.9
Western Australia	-2.8*	-1.5	-0.8	-1.5	-1.0*	-2.2
Others	-2.9*	0.2	0.5	1.6	4.1*	1.6

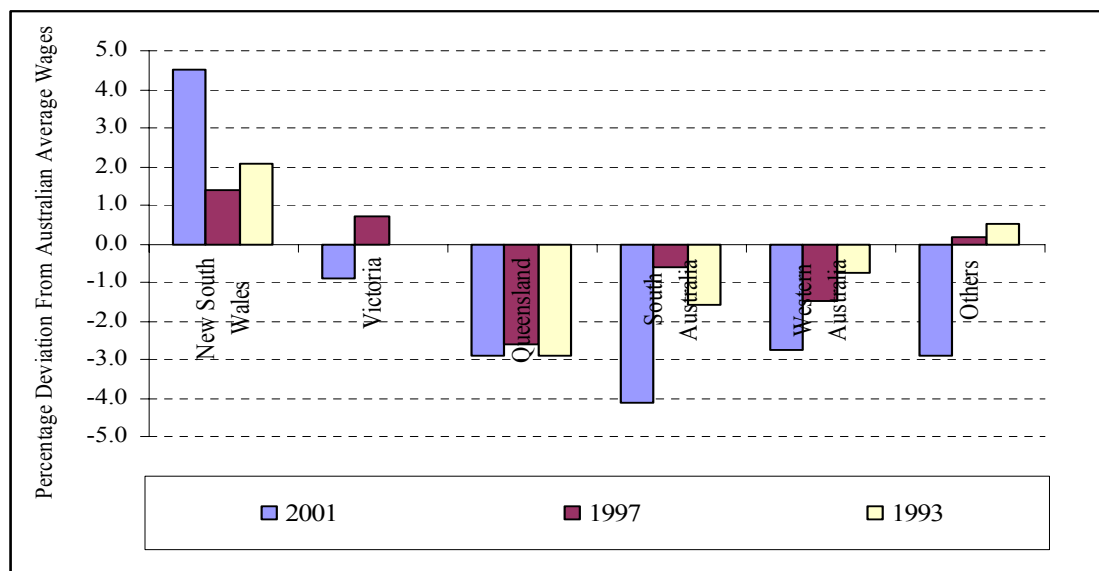
Note: \*means significant at 10% or better. Australian average = 0.

(b) Means Tasmania, ACT and the NT.

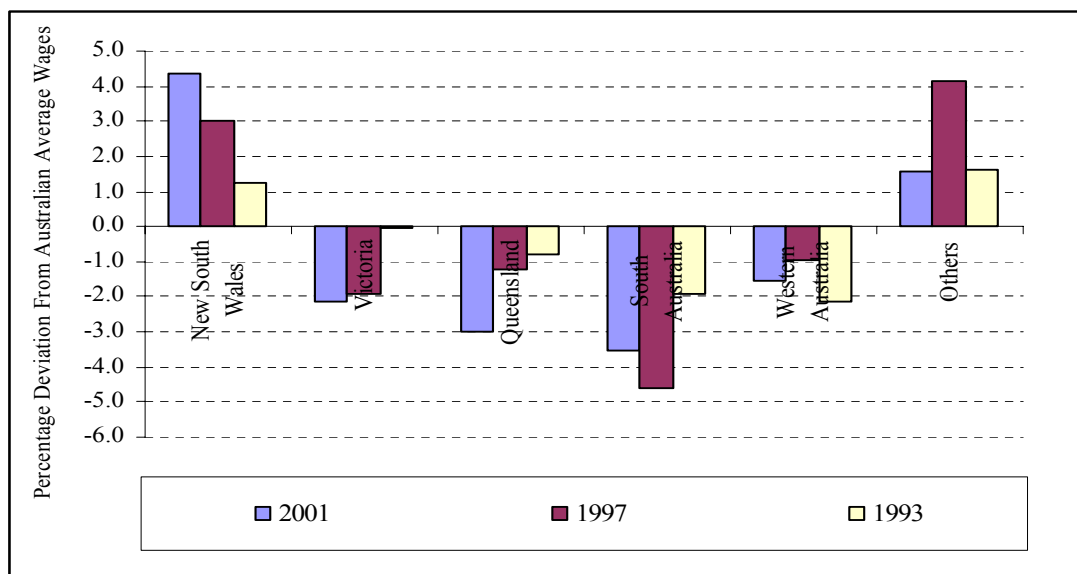
(c) This was calculated to make Australian average = 0 consistent with specification in paragraph 7 (iii).

34. Figure C - 1 and Figure C - 2 represent the same information graphically by sector.

**Figure C - 1** LOCATION EFFECTS AS PERCENTAGE DIFFERENCE OF EARNINGS IN EACH STATE FROM AUSTRALIAN AVERAGE BY YEAR — PRIVATE SECTOR



**Figure C - 2** LOCATION EFFECTS AS PERCENTAGE DIFFERENCE OF EARNINGS IN EACH STATE FROM AUSTRALIAN AVERAGE BY YEAR — PUBLIC SECTOR



35. We could make a few observations.

- (i) The location effects in the two sectors broadly mirrored each other.
- (ii) There was a general increase in the interstate location effect differentials between 1993 and 2001.
- (iii) For the private sector, this increase was particularly striking between 1997 and 2001. Compared with earlier years, all coefficients except for Victoria are in 2001 significantly different from the Australian average.
- (iv) The spread of location effects in the two sectors compare well for 2001. This is the one main result of interest (private sector: 8.5% (2001); public sector: 7.9% (2001)) for construction of factors.

36. Observations (i) and (iv) provided a degree of validation for using the private sector results as benchmarks to construct factors. To seek validation for (iii) — particularly because of its relevance to the calculation of factors — we compared changes to location effects between 1997 and 2001 as captured in the model with other data sources.

37. First, we constructed changes between 1997 and 2001 as measured through the model as in Table C - 6.

**Table C - 6** CHANGES BETWEEN 1997 AND 2001 IN LOCATION EFFECT (RELATIVE TO AUSTRALIAN AVERAGE) AS MEASURED BY THE MODEL RESULTS FOR THE PRIVATE SECTOR

Location Effect	NSW	Vic	Qld	SA	WA	Tas <sup>(b)</sup>	ACT <sup>(b)</sup>	NT <sup>(b)</sup>
Model <sup>(a)</sup>	3.1	-1.6	-0.3	-3.5	-1.3	-2.6	-2.3	0.3

Note: (a) The figures are percentage point changes in location effect between 1997 and 2001 (refer to Table 1).  
 (b) The calculations for Tasmania, ACT and the NT are based on estimates given in Appendix 2, Attachment C.

38. Table C - 7 compares changes captured in the model with those changes in AWOTE data for non-state sector. The comparison requires care because the AWOTE data are raw, and not corrected for composition effects. We expected large changes to be reflected in both series (correlation = 47%). This is particularly so for New South Wales, South Australia and the Australian Capital Territory.

**Table C - 7** COMPARISON OF LOCATION EFFECT (RELATIVE TO AUSTRALIAN AVERAGE BETWEEN THE MODEL AND AWOTE, PRIVATE SECTOR

Location effect	NSW	Vic	Qld	SA	WA	Tas <sup>(c)</sup>	ACT <sup>(c)</sup>	NT <sup>(c)</sup>	Aus
Model <sup>(a)</sup>	17.6	12.8	14.2	10.9	13.2	11.9	12.2	14.8	14.5
AWOTE <sup>(b)</sup>	19.4	17.2	12.9	14.2	10.8	17.6	11.2	17.3	16.4

- (a) The indicated figures are percentage point changes between 1997 and 2001. We add the changes in Table C - 6 plus an Australian average change between 1997 and 2001, which was estimated as 14.4 (in the last column) using results from a model not reported here but can be given if requested.
- (b) We used CGC sources for calculation of current factors. The change is between 1996 and 2000. The data relate to the non-State sector.
- (c) The calculations for Tasmania, ACT and the NT are based on estimates given in PART B, Attachment A, Appendix 2.

39. Similarly, Table C - 8 compares changes between the model to the changes in wage cost index for the private sector. Like for the AWOTE data, a strict comparison is not possible. However, wage cost index is conceptually a measure of pure price changes and as such provides corrections for a range of quality measures<sup>43</sup>. Again, the general direction of change is consistent for most States (correlation = 34%).

<sup>43</sup> Please refer to ABS Information Paper 6346.0 Wage Cost Index, 2000.

**Table C - 8** COMPARISON OF LOCATION EFFECT (RELATIVE TO AUSTRALIAN AVERAGE) BETWEEN THE MODEL RESULTS FOR THE PRIVATE SECTOR AND WAGE COST INDEX

Location effect	NSW	Vic	Qld	SA	WA	Tas <sup>(c)</sup>	ACT <sup>(c)</sup>	NT <sup>(c)</sup>	Aus
Model <sup>(a)</sup>	17.6	12.8	14.2	10.9	13.2	11.9	12.2	14.8	14.5
Wage cost index <sup>(b)(d)</sup>	14.2	13.6	12.1	12.2	13.4	11.0	13.6	11.3	13.4

(a) The indicated figures are the same as in Table C - 7.

(b) The figures indicate changes between Sep 1997 and Sep 2001.

(c) The calculations for Tasmania, ACT and the NT are based on estimates given in PART B, Attachment A, Appendix 2.

Source: (d) Total Hourly Rates of Pay Excluding Bonuses, Private Sector, ABS 6345.0, Dec 2002.

40. On balance, we concluded that the location effects as captured by the model agreed well with a range of other data sources.

41. The second statistical result of relevance was that migrants from non-English speaking background, other things being equal, apparently earned less than those born in Australia or in English speaking countries on an average. This was so for both public and private sector. Table C - 9 compares the results for the two sectors.

**Table C - 9** SUMMARY REGRESSION RESULT —EFFECTS OF STATUS OF MIGRATION ON WEEKLY EARNINGS OF EMPLOYEES, PRIVATE AND PUBLIC SECTOR

Migrant status	Private	Public
Born in Australia	0.077*	0.048
Born in English-speaking countries, lived in Australia more than 20 years	0.106*	0.039
Born in English-speaking countries, lived in Australia more between 10-20 years	0.094*	0.119*
Born in English-speaking countries, lived in Australia less than 10 years	0.104*	0.110*
Born in other countries, lived in Australia more than 20 years	0.063*	-0.026
Born in other countries lived in Australia between 10-20 years	0.004	-0.021
Born in other countries lived in Australia less than 10 years	0	0

42. This observation is consistent with many similar studies. The usual interpretation is that it is due either to discrimination or to some unknown but adverse labour market characteristic. If it is the former, it places States with higher proportion of such migrants at an advantage. If it is the latter, it would have no effect on the factors.

43. After some consideration, we decided to discount this effect. Some studies indicate that when fluency in English is added as a variable to similar models and interpreted as a skill variable, the differentials between migrants from non-English speaking countries, and those born in English speaking countries or born locally tends to be less.

44. We presented two alternatives — Alternative 1 and Alternative 2 — to the Commission on the use of the location effects to construct factors. The details, along with recommended factors are laid out in Attachment F.

45. Because the data did not identify samples taken from Tasmania, the ACT and the Northern Territory, supplementary data were sought from the ABS to estimate the 'location effect' for these States. The process is described in Appendix 2 to this attachment.

## REGRESSION RESULTS

Table C - 10 PRIVATE SECTOR, BY YEAR

Variables	2001		1997		1993	
	Co-efficients	Significance	Co-efficients	Significance	Co-efficients	Significance
(Constant)	5.882	0.000	5.638	0.000	5.318	0.000
NSW	0.045	0.000	0.014	0.017	0.021	0.002
VIC	-0.009	0.198	0.007	0.337	0.000	0.971
QLD	-0.029	0.000	-0.026	0.001	-0.029	0.002
SA	-0.041	0.000	-0.006	0.586	-0.016	0.225
WA	-0.028	0.008	-0.015	0.148	-0.008	0.553
MAR	0.087	0.000	0.069	0.000	0.087	0.000
CHILD	-0.002	0.861	-0.005	0.680	0.015	0.298
MIG1	0.077	0.000	0.142	0.000	0.081	0.000
MIG2	0.106	0.000	0.125	0.000	0.119	0.001
MIG3	0.094	0.002	0.175	0.000	0.082	0.003
MIG4	0.104	0.001	0.168	0.000	0.110	0.000
MIG5	0.063	0.021	0.094	0.000	0.058	0.089
MIG6	0.004	0.878	0.082	0.003	0.043	0.124
OCC1	0.425	0.000	0.380	0.000	0.414	0.000
OCC2	0.392	0.000	0.340	0.000	0.350	0.000
OCC3	0.283	0.000	0.259	0.000	0.302	0.000
OCC4	0.116	0.000	0.110	0.000	0.100	0.000
OCC5	0.244	0.000	0.151	0.006	0.198	0.000
OCC6	0.124	0.000	0.130	0.000	0.218	0.000
OCC7	0.089	0.000	0.071	0.000	0.105	0.000
OCC8	0.063	0.010	0.082	0.000	0.111	0.000
PERM	0.006	0.666	-0.008	0.590	0.098	0.000
EDU1	0.361	0.000	0.152	0.002	0.301	0.000
EDU2	0.227	0.000	0.088	0.066	0.312	0.000
EDU3	0.236	0.000	0.171	0.000	0.232	0.000
EDU4	0.134	0.000	0.097	0.000	0.069	0.179
EDU5	0.151	0.000	0.146	0.000	0.125	0.000
EDU6	0.081	0.001	0.075	0.005	0.097	0.001
EDU7	0.052	0.000	0.065	0.000	0.125	0.001
EDU8	0.136	0.000	0.069	0.020	0.145	0.002
EDU9	0.073	0.000	0.064	0.000	0.001	0.937

Variables	2001		1997		1993	
	Co-efficients	Significance	Co-efficients	Significance	Co-efficients	Significance
FEDU1	-0.026	0.496	0.064	0.098	0.045	0.299
FEDU2	0.071	0.079	0.278	0.000	-0.082	0.097
FEDU3	-0.013	0.759	0.029	0.547	-0.110	0.034
FEDU4	-0.048	0.152	-0.024	0.524	-0.076	0.084
FEDU5	-0.036	0.343	0.054	0.224	0.067	0.207
FEDU6	0.063	0.019	0.046	0.108	0.034	0.273
FEDU7	0.024	0.502	0.020	0.590	0.011	0.776
FEDU8	-0.056	0.328	0.045	0.559	-0.085	0.280
FIRM1	0.017	0.512	-0.018	0.468	-0.021	0.602
FIRM2	0.102	0.000	0.118	0.000	0.065	0.117
FIRM3	0.215	0.000	0.184	0.000	0.134	0.001
INDU1	0.106	0.002	0.146	0.000	0.086	0.041
INDU2	0.521	0.000	0.519	0.000	0.576	0.000
INDU3	0.162	0.000	0.193	0.000	0.353	0.000
INDU4	0.321	0.000	0.334	0.000	0.202	0.113
INDU5	0.316	0.000	0.317	0.000	0.459	0.000
INDU6	0.183	0.000	0.230	0.000	0.376	0.000
INDU7	0.071	0.002	0.126	0.000	0.314	0.000
INDU8	0.076	0.003	0.155	0.000	0.322	0.000
INDU9	0.228	0.000	0.250	0.000	0.387	0.000
INDU10	0.250	0.000	0.258	0.000	0.372	0.023
INDU11	0.261	0.000	0.338	0.000	0.450	0.000
INDU12	0.198	0.000	0.243	0.000	0.426	0.000
INDU13	0.305	0.018	0.240	0.086	0.362	0.001
INDU14	-0.010	0.752	0.072	0.024	0.217	0.003
INDU15	-0.124	0.003	0.003	0.941	0.383	0.000
INDU16	0.084	0.008	0.172	0.000	0.238	0.000
UNION	0.095	0.000	0.057	0.000	0.050	0.000
HOUR1	-1.616	0.000	-1.661	0.000	-1.551	0.000
HOUR2	-0.632	0.000	-0.671	0.000	-0.597	0.000
HOUR3	-0.228	0.000	-0.228	0.000	-0.181	0.000
HOUR4	-0.090	0.000	-0.093	0.000	-0.067	0.000
TMPE1	-0.108	0.000	-0.103	0.000	-0.122	0.000
TMPE2	-0.065	0.002	-0.066	0.001	-0.086	0.000

Variables	2001		1997		1993	
	Co-efficients	Significance	Co-efficients	Significance	Co-efficients	Significance
TMPE3	-0.041	0.054	-0.025	0.243	-0.042	0.084
TMPE4	-0.003	0.903	0.002	0.945	-0.046	0.067
UNION	0.095	0.000	0.057	0.000	0.050	0.000
WEX	0.027	0.000	0.031	0.000	0.028	0.000
WEXSQ	-0.001	0.000	-0.001	0.000	-0.001	0.000
<b>Structural effects for females</b>						
FEMALE	-0.266	0.000	-0.258	0.000		
MARF	-0.054	0.003				
CHILDF	-0.040	0.030	-0.041	0.012	-0.084	0.000
MIG1F			-0.044	0.013		
PERMF	0.096	0.000	0.146	0.000		
OCC1F	0.113	0.012	0.129	0.008		
OCC3F			0.053	0.040		
OCC5F			0.097	0.091	0.109	0.018
OCC6F	0.041	0.078				
OCC7F					-0.093	0.027
OCC8F	0.057	0.033				
EDU1F					0.221	0.033
EDU2F					0.125	0.098
EDU3F					0.152	0.001
EDU4F					0.120	0.052
EDU5F			-0.099	0.010		
EDU6F					0.119	0.004
EDU7F					-0.089	0.040
EDU9F			-0.043	0.046	0.050	0.042
FEDU1F	0.072	0.057			-0.193	0.001
FEDU2F			-0.226	0.003		
FEDU5F					-0.185	0.021
FEDU6F	-0.111	0.081			-0.182	0.019
FEDU7F	-0.184	0.111				
FEDU8F			-0.639	0.111		
FIRM1F			0.082	0.000		
FIRM3F	-0.073	0.000				
INDU1F	0.091	0.066			-0.180	0.009
INDU2F	-0.301	0.000			-0.250	0.019
INDU3F					-0.229	0.000

Variables	2001		1997		1993	
	Co-efficients	Significance	Co-efficients	Significance	Co-efficients	Significance
INDU5F	-0.133	0.011			-0.277	0.000
INDU6F					-0.160	0.000
INDU7F					-0.205	0.000
INDU8F					-0.172	0.000
INDU9F					-0.155	0.004
INDU10F					-0.469	0.095
INDU11F			-0.113	0.003	-0.217	0.000
INDU12F					-0.212	0.000
INDU14F					-0.214	0.009
INDU15F	0.199	0.000	0.132	0.001	-0.246	0.000
INDU16F					-0.241	0.000
UNIONF	0.069	0.001	0.033	0.083	0.041	0.006
HOUR1F	0.070	0.012	0.203	0.000	0.085	0.016
HOUR2F			0.122	0.000		
HOUR3F			0.059	0.038		
HOUR4F			0.068	0.054		
TMPE1F					-0.043	0.061
WEXPF			-0.005	0.000		
<b>Adjusted R-Square</b>	<b>74.5%</b>		<b>75.0%</b>		<b>72.8%</b>	

Table C - 11 PUBLIC SECTOR, BY YEAR

Variables	2001		1997		1993	
	Co-efficients	Significance	Co-efficients	Significance	Co-efficients	Significance
(Constant)	6.045	0.000	5.895	0.000	5.500	0.000
NSW	0.043	0.000	0.030	0.001	0.013	0.133
VIC	-0.021	0.073	-0.019	0.077	0.000	0.968
QLD	-0.030	0.019	-0.012	0.277	-0.008	0.495
SA	-0.036	0.041	-0.046	0.002	-0.019	0.163
WA	-0.015	0.360	-0.010	0.539	-0.022	0.105
MAR	0.058	0.009	0.056	0.008	0.061	0.003
CHILD	-0.026	0.072	0.012	0.523	0.029	0.095
MIG1	0.048	0.254	0.076	0.014	0.090	0.002
MIG2	0.039	0.400	0.089	0.012	0.127	0.001
MIG3	0.119	0.062	0.062	0.169	0.117	0.001
MIG4	0.110	0.095	0.035	0.450	0.125	0.001
MIG5	-0.026	0.592	0.051	0.172	0.086	0.028
MIG6	-0.021	0.698	0.004	0.926	0.082	0.055
OCC1	0.556	0.000	0.516	0.000	0.481	0.000
OCC2	0.399	0.000	0.426	0.000	0.395	0.000
OCC3	0.339	0.000	0.314	0.000	0.288	0.000
OCC4	0.154	0.000	0.148	0.000	0.100	0.000
OCC5	0.281	0.000	0.244	0.000	0.287	0.000
OCC6	0.175	0.000	0.191	0.000	0.198	0.000
OCC7	0.022	0.647	0.063	0.083	0.149	0.000
OCC8	-0.026	0.647	0.070	0.034	0.007	0.882
PERM	0.204	0.000	0.180	0.000	0.324	0.000
EDU1	0.245	0.000	0.272	0.000	0.308	0.000
EDU2	0.150	0.007	0.174	0.002	0.241	0.000
EDU3	0.138	0.010	0.183	0.001	0.280	0.000
EDU4	0.137	0.000	0.127	0.000	0.151	0.000
EDU5	0.065	0.030	0.116	0.000	0.152	0.000
EDU6	-0.043	0.387	-0.008	0.869	0.120	0.004
EDU7	0.006	0.810	0.085	0.005	0.004	0.872
EDU8	0.070	0.234	0.115	0.010	0.292	0.000
EDU9	0.066	0.009	0.100	0.000	.073	0.001

Variables	2001		1997		1993	
	Co-efficients	Significance	Co-efficients	Significance	Co-efficients	Significance
FEDU1	0.075	0.161	0.059	0.286	0.047	0.380
FEDU2	0.150	0.024	0.166	0.020	0.026	0.603
FEDU3	0.015	0.774	-0.004	0.945	0.082	0.133
FEDU4	0.041	0.418	0.013	0.802	-0.008	0.862
FEDU5	-0.004	0.938	-0.019	0.726	0.032	0.517
FEDU6	0.076	0.139	0.092	0.069	-0.026	0.550
FEDU7	0.065	0.386	0.025	0.708	-0.027	0.596
FEDU8	-0.060	0.454	-0.160	0.103	0.056	0.450
FIRM1	0.014	0.699	0.062	0.081	-0.010	0.847
FIRM2	0.023	0.499	0.074	0.032	0.017	0.740
FIRM3	0.081	0.017	0.126	0.000	0.064	0.210
INDU10	0.067	0.034	0.083	0.001	0.024	0.311
INDU13	-0.080	0.000	-0.081	0.000	-0.068	0.000
INDU14	-0.145	0.000	-0.197	0.000	-0.189	0.000
INDU15	-0.119	0.000	-0.163	0.000	-0.054	0.056
INDU16	-0.192	0.000	-0.143	0.000	-0.125	0.000
UNION	0.008	0.692	0.021	0.230	0.009	0.594
HOUR1	-1.317	0.000	-1.763	0.000	-1.460	0.000
HOUR2	-0.539	0.000	-0.439	0.000	-0.543	0.000
HOUR3	-0.157	0.000	-0.218	0.000	-0.123	0.000
HOUR4	-0.070	0.004	-0.094	0.001	-0.029	0.173
TMPE1	-0.114	0.000	-0.180	0.000	-0.205	0.000
TMPE2	-0.068	0.002	-0.095	0.000	-0.116	0.000
TMPE3	-0.013	0.558	-0.056	0.004	-0.064	0.005
TMPE4	0.003	0.898	-0.007	0.722	-0.036	0.049
WEXP	0.022	0.000	0.016	0.000	0.021	0.000
WEXPSQ	0.000	0.000	0.000	0.000	0.000	0.000

Variables	2001		1997		1993	
	Co-efficients	Significance	Co-efficients	Co-efficients	Significance	Co-efficients
<b>Structural effects for females</b>						
FEMALE	0.156	0.017	-0.145	0.045	0.144	0.051
MARF	-0.050	0.070	-0.044	0.102	-0.083	0.001
CHILDF			-0.047	0.058	-0.053	0.023
MIG6F					-0.108	0.019
PERMF			0.083	0.066	-0.115	0.018
OCC2F	0.046	0.098				
OCC3F			-0.076	0.026		
OCC7F	0.189	0.130				
OCC8F	0.160	0.010			0.162	0.001
EDU3F			-0.057	0.055	-0.088	0.003
EDU4F	-0.077	0.063				
EDU7F			-0.074	0.043		
EDU9F			-0.054	0.131	-0.049	0.110
FEDU1F					-0.112	0.039
FEDU2F	-0.126	0.016	-0.156	0.011		
FEDU3F					-0.150	0.001
FEDU7F			0.669	0.001		
FEDU8F					-0.434	0.056
INDU13F	0.056	0.044	0.053	0.078	0.104	0.000
INDU14F			0.118	0.000	0.186	0.000
INDU15F			0.078	0.048	0.056	0.110
INDU16F					0.081	0.023
UNIONF	-0.077	0.002	-0.042	0.065	-0.050	0.032
HOUR1F	-0.139	0.008	0.388	0.000		
HOUR2F			-0.096	0.055		
HOUR3F			0.124	0.000		
HOUR4F			0.082	0.070		
TMPE1F					0.073	0.092
TMPE2F					0.063	0.021
TMPE3F					0.060	0.030
WEXPF	-0.013	0.002			-0.003	0.003
WEXPSQF	0.000	0.017	0.000	0.000		
<b>Adjusted R-Square</b>	<b>74.7%</b>		<b>75.8%</b>		<b>73.3%</b>	

**CALCULATIONS OF THE LOCATION EFFECTS FOR TASMANIA, ACT AND THE NORTHERN TERRITORY**

46. As stated earlier, while the datasets include samples for Tasmania, ACT and the NT, it does not identify them because of confidentiality reasons. We were, however, able to estimate the location effects for these States with the help of supplementary data received from the ABS. We describe the process below.

47. A property of the regression model is that the average of the dependent variable mathematically equals the average of individual independent variables weighted by the estimates of their respective coefficients.

$$\overline{\ln(w)} = \overline{XB} \dots\dots\dots (C)^{44}$$

48. For the three States, the only unknown coefficients were those for the location variable. The ABS provided us, on a special requisition, the average of the ln (w) and the X variables for each State. Given the estimates of **B** for all other variables from the model, we estimated the coefficient for the location variable **I<sub>s</sub>** for each State s = (Tasmania, ACT and the NT) as follows.

$$I_{st} = \overline{\ln(w_{st})} - \overline{X_{s,-lt}B_{s,-lt}}$$

$$I_{st} = \overline{\ln(w_{st})} - \overline{X_{s,-lt}B_{st}} - \overline{X_{s,-lt}FB_{f,st}} \dots\dots (D)$$

where X<sub>-l</sub> represents all variable X excluding the location variable.

49. To do this, a slightly different but exactly equivalent specification was used for the location variable such that the location effects for these three States taken together equaled zero. We did this simply by using these three States in the sample as the omitted location dummy.

50. We obtained the values of  $\overline{\ln(w_{st})}$ ,  $\overline{X_{s,-lt}}$  and  $\overline{X_{s,-lt}F}$  from the ABS. This allowed us to estimate **I<sub>st</sub>**.

51. The process involves some approximation. Hence, the estimated location would not exactly equal zero. An equiproportional adjustment was made to the estimated coefficients to ensure that the final location coefficients for each State weighted by the respective number of samples equals 0. The estimated coefficients are listed in Table C - 12.

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<sup>44</sup> This is in matrix form.

Table C - 12 LOCATION EFFECTS FOR TASMANIA, ACT AND THE NT, RELATIVE TO INTERNAL AVERAGE, 2001

Adjusted AWOTE factors	Tas	ACT	NT	Internal Average
2001	-0.058	0.053	0.126	0.00000
1997	-0.062	0.045	0.092	0.00000

52. As stated above, the coefficients were estimated with these three States as the omitted location dummy (which means that other States' coefficients were measured relative to this). To translate this to the Australian average measures that we finally used, we used the estimate for these States in that model and added to those in the above table.

53. The Final estimated coefficients are given in Table C - 13.

Table C - 13 FINAL LOCATION EFFECTS FOR TASMANIA, ACT AND THE NT, 1997 AND 2001

Location factors	Tas	ACT	NT	Australian Average <sup>45</sup>
2001	-0.087	0.024	0.097	-0.029
1997 <sup>(a)</sup>	-0.061	0.047	0.093	0.002

(a) This is necessary only for comparing changes between 1997 and 2001, but they do not form part of the calculation of factors.

54. These numbers were reproduced in **Table 6** and used in the calculation of factors.

<sup>45</sup> This was calculated to make Australian average =0 consistent with specification in paragraph 7 (iii).

## ATTACHMENT D

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### ANALYSIS OF THE IMPACT OF NON-COMPETITIVE FEATURES OF PRIVATE SECTOR ON PUBLIC SECTOR WAGES

1. In this section, we report results on the impact of non-competitive effects on public sector wages. We use the steps in paragraphs 11 to 19 in Attachment B.

**We summarise the constructed variables for the industry, firm size and union effects in Appendix 2, and the regression results in Table D - 2 in Appendix 1, to this Attachment.**

2. Table D - 1 reproduces the coefficients of the three constructed private sector effects — PRIVATE, PFSIZE and PUNION.

3. We find that the industry and firm size effects for both male and female are in the expected direction, but the evidence is strong only for the industry effect for female. The union effect though significant for both male and female is not in the expected direction and its interpretation is difficult.

4. We therefore concluded that the industry and firm size structures in a State may have only weak influence on the public sector wages in that State. That is, wages in the public sector labour market, on balance, does not depend on industry and firm size structures in a State.

5. We decided to ignore the effect of unionisation on the results for two reasons. Firstly, of the three plausible effects, this had probably the weakest effects because the public sector has a strong union structure and bargaining environment that may be quite different from the private sector. Secondly, the unionisation in the private sector across the States does not appear very different from one another in the sample and hence we did not expect significant differential effects to arise.

**Table D - 1** SUMMARY REGRESSION RESULT — EFFECTS OF PRIVATE SECTOR CHARACTERISTICS ON WEEKLY EARNINGS OF EMPLOYEES, PUBLIC SECTOR

Private sector characteristics	Male	Female
Private sector industry effects (PRIVATE)	0.175	0.765 <sup>(a)</sup>
Private sector union membership effects (PUNION)	0.552	0.455
Private sector firm size effects (PFSIZE)	-1.126	-6.415 <sup>(a)</sup>

(a) Denotes significant at 10 per cent level.

## REGRESSION RESULTS

**Table D - 2** REGRESSION RESULTS, EFFECT OF PRIVATE SECTOR ON PUBLIC SECTOR WAGES

Variables	Male		Female	
	Co-efficients	Significance	Co-efficients	Significance
(Constant)	6.043		5.856	
NSW	-0.001	0.952	-0.029	0.183
VIC	-0.069	0.000	-0.066	0.003
QLD	-0.055	0.000	-0.049	0.004
SA	-0.103	0.000	-0.056	0.005
WA	-0.046	0.016	-0.094	0.000
CHILD	0.012	0.241	-0.031	0.007
MAR	0.056	0.000	0.004	0.712
MIG1	0.071	0.011	0.063	0.022
MIG2	0.068	0.037	0.078	0.018
MIG3	0.117	0.000	0.096	0.006
MIG4	0.159	0.000	0.080	0.043
MIG5	0.018	0.595	0.016	0.650
MIG6	-0.033	0.409	-0.011	0.751
OCC1	0.479	0.000	0.487	0.000
OCC2	0.381	0.000	0.411	0.000
OCC3	0.286	0.000	0.304	0.000
OCC4	0.136	0.000	0.134	0.014
OCC5	0.273	0.000	0.208	0.000
OCC6	0.175	0.000	0.153	0.000
OCC7	0.034	0.214	0.154	0.046
OCC8	-0.001	0.968	0.184	0.000
PERM	0.176	0.000	0.231	0.000
EDU1	0.285	0.000	0.301	0.000
EDU2	0.180	0.000	0.211	0.000
EDU3	0.165	0.000	0.189	0.000
EDU4	0.176	0.000	0.089	0.000
EDU5	0.136	0.000	0.088	0.000
EDU6	0.016	0.608	0.000	0.998
EDU7	0.079	0.000	-0.007	0.702

Variables	Male		Female	
	Co-efficients	Significance	Co-efficients	Significance
EDU8	0.151	0.000	0.128	0.007
EDU9	0.090	0.000	0.039	0.029
FEDU1	0.078	0.026	0.003	0.958
FEDU2	0.158	0.000	-0.029	0.562
FEDU3	0.058	0.110	-0.053	0.279
FEDU4	0.026	0.447	-0.013	0.784
FEDU5	0.040	0.248	-0.048	0.365
FEDU6	0.065	0.032	-0.041	0.615
FEDU7	0.037	0.310	0.614	0.001
FEDU8	-0.019	0.693	-0.184	0.125
FIRM1	0.061	0.049	0.016	0.605
FIRM2	0.056	0.065	0.048	0.112
FIRM3	0.104	0.001	0.104	0.000
HOUR1	-1.325	0.000	-1.406	
HOUR2	-0.466	0.000	-0.525	0.000
HOUR3	-0.179	0.000	-0.099	0.000
HOUR4	-0.075	0.000	-0.015	0.515
INDU10	0.035	0.038	0.108	0.000
INDU13	-0.078	0.000	0.012	0.470
INDU14	-0.189	0.000	-0.069	0.001
INDU15	-0.146	0.000	-0.069	0.001
INDU16	-0.144	0.000	-0.137	0.000
TMPE1	-0.185	0.000	-0.125	0.000
TMPE2	-0.104	0.000	-0.061	0.004
TMPE3	-0.054	0.000	-0.018	0.377
TMPE4	-0.001	0.956	-0.011	0.571
UNION	0.013	0.149	0.070	0.000
WEX	0.019	0.000	0.012	0.000
WEXSQ	0.000	0.000	0.000	0.000
<b>Effect of private sector influences</b>				
PRIVATE	0.175	0.607	0.765	0.050
PFSIZE	0.552	0.339	0.455	0.542
PUNION	-1.126	0.544	-6.415	0.005

Variables	Male		Female	
	Co-efficients	Significance	Co-efficients	Significance
<b>Structural effects from 1997</b>				
VICP1	0.054	0.015		
SAP1	0.063	0.016		
MIG1P1	0.061	0.053		
PERMP1	0.194	0.000		
MIG2P1	0.110	0.023		
MIG5P1	0.124	0.010		
MIG6P1	0.150	0.004		
OCC7P1	0.110	0.000		
EDU3P1	0.080	0.001		
EDU6P1	0.036	0.111	0.111	0.033
EDU6P1	0.036	0.111	0.111	0.033
FEDU7P1			-0.820	0.001
HOUR1P1	-0.152	0.043		
INDU14P1			0.050	0.068
INDU15P1	0.074	0.011	0.075	0.003
INDU16P1			0.093	0.031
TMPE4P1	-0.033	0.076		
WEXP1	0.006	0.089		
P1997P1	-0.133	0.002	-0.283	0.000
<b>Structural effects from 1993</b>				
MIG4P2	-0.122	0.042		
OCC3P2			-0.106	0.002
OCC8P2	0.063	0.130	-0.130	0.002
EDU3P2			-0.034	0.148
HOUR1P2	-0.424	0.000		
WEXP2	-0.005	0.146	0.007	0.033
P1993P2	-0.688	0.000	-0.354	0.000
<b>Adjusted R-square</b>	<b>71.0%</b>		<b>74.3%</b>	

## MEAN CONSTRUCTED PRIVATE SECTOR EFFECTS

**Table D - 3** MEAN CONSTRUCTED PRIVATE SECTOR INDUSTRY EFFECTS, UNION MEMBERSHIP EFFECTS AND FIRM SIZE EFFECTS BY OCCUPATION AND STATE

Occupation/Variable	2001			1997			1993		
	Industry	Firm	Union	Industry	Firm	Union	Industry	Firm	Union
<b>Managers and administrators</b>									
New South Wales	0.1940	0.1019	0.0034	0.2476	0.0819	0.0034	0.1716	0.0847	0.0023
Victoria	0.1787	0.0988	0.0014	0.2217	0.0845	0.0032	0.1624	0.1047	0.0049
Queensland	0.1858	0.0637	0.0027	0.2343	0.0614	0.0038	0.1800	0.0562	0.0039
South Australia	0.1152	0.0887	0.0038	0.2222	0.0580	0.0025	0.1383	0.0661	0.0074
Western Australia	0.1870	0.0649	0.0046	0.2653	0.0776	0.0022	0.2087	0.0639	0.0022
Tasmania/ACT/NT	0.1570	0.0707	0.0007	0.2032	0.0536	0.0044	0.1844	0.0617	0.0071
<b>Professionals</b>									
New South Wales	0.1752	0.0955	0.0080	0.2100	0.0924	0.0060	0.1445	0.0962	0.0097
Victoria	0.1505	0.0950	0.0062	0.2211	0.0890	0.0050	0.1394	0.1045	0.0086
Queensland	0.1491	0.0802	0.0103	0.1943	0.0781	0.0065	0.1304	0.0929	0.0105
South Australia	0.1498	0.0849	0.0087	0.2016	0.0938	0.0077	0.1354	0.1045	0.0098
Western Australia	0.1771	0.0893	0.0059	0.2149	0.0876	0.0047	0.1931	0.0863	0.0027
Tasmania/ACT/NT	0.1468	0.0815	0.0130	0.1888	0.0766	0.0098	0.1139	0.0771	0.0097
<b>Associate professionals</b>									
New South Wales	0.1795	0.0734	0.0093	0.2577	0.0815	0.0059	0.1809	0.0771	0.0096
Victoria	0.1813	0.0694	0.0117	0.2437	0.0704	0.0059	0.1641	0.0758	0.0087
Queensland	0.1732	0.0500	0.0052	0.2476	0.0604	0.0038	0.1335	0.0536	0.0067
South Australia	0.1719	0.0749	0.0109	0.2186	0.0652	0.0073	0.1629	0.0909	0.0103
Western Australia	0.2070	0.0635	0.0021	0.2415	0.0592	0.0060	0.1862	0.0641	0.0069
Tasmania/ACT/NT	0.1559	0.0570	0.0062	0.2379	0.0610	0.0061	0.1717	0.0605	0.0121

**Table D - 3** MEAN CONSTRUCTED PRIVATE SECTOR INDUSTRY EFFECTS, UNION MEMBERSHIP EFFECTS AND FIRM SIZE EFFECTS BY OCCUPATION AND STATE (continued)

Occupation/variable	2001			1997			1993		
	Industry	Firm	Union	Industry	Firm	Union	Industry	Firm	Union
<b>Tradespersons and related workers</b>									
New South Wales	0.1533	0.0554	0.0151	0.2281	0.0462	0.0098	0.1445	0.0484	0.0149
Victoria	0.1593	0.0582	0.0208	0.2168	0.0527	0.0130	0.1483	0.0520	0.0156
Queensland	0.1437	0.0475	0.0099	0.2161	0.0455	0.0076	0.1574	0.0505	0.0123
South Australia	0.1315	0.0540	0.0148	0.2144	0.0464	0.0100	0.1464	0.0595	0.0143
Western Australia	0.1496	0.0496	0.0106	0.2304	0.0516	0.0078	0.1621	0.0483	0.0129
Tasmania/ACT/NT	0.1464	0.0544	0.0185	0.2150	0.0408	0.0087	0.1370	0.0465	0.0155
<b>Advanced clerical and service workers</b>									
New South Wales	0.2202	0.0752	0.0068	0.2964	0.0749	0.0089	0.2238	0.0987	0.0106
Victoria	0.2375	0.0799	0.0010	0.2928	0.0643	0.0095	0.2054	0.0824	0.0118
Queensland	0.2185	0.0657	0.0142	0.2630	0.0423	0.0054	0.1914	0.0687	0.0086
South Australia	0.2309	0.0585	0.0320	0.1943	0.0223	0.0010	0.1960	0.0767	0.0122
Western Australia	0.2054	0.0605	0.0138	0.2804	0.0728	0.0061	0.2140	0.0697	0.0137
Tasmania/ACT/NT	0.2016	0.0452	0.0068	0.3050	0.0314	0.0011	0.2002	0.0603	0.0055
<b>Intermediate clerical, sales and service workers</b>									
New South Wales	0.1666	0.0755	0.0075	0.2462	0.0731	0.0084	0.1943	0.0780	0.0087
Victoria	0.1694	0.0866	0.0104	0.2402	0.0766	0.0070	0.1777	0.0767	0.0075
Queensland	0.1451	0.0629	0.0094	0.2369	0.0627	0.0054	0.1754	0.0665	0.0057
South Australia	0.1683	0.0732	0.0082	0.2260	0.0717	0.0076	0.1725	0.0705	0.0074
Western Australia	0.1639	0.0683	0.0068	0.2428	0.0680	0.0029	0.1764	0.0603	0.0067
Tasmania/ACT/NT	0.1509	0.0650	0.0130	0.2216	0.0669	0.0084	0.1762	0.0428	0.0092

**Table D - 3** MEAN CONSTRUCTED PRIVATE SECTOR INDUSTRY EFFECTS, UNION MEMBERSHIP EFFECTS AND FIRM SIZE EFFECTS BY OCCUPATION AND STATE (continued)

Occupation/Variable	2001			1997			1993		
	Industry	Firm	Union	Industry	Firm	Union	Industry	Firm	Union
<b>Intermediate production and transport workers</b>									
New South Wales	0.1822	0.0822	0.0239	0.2534	0.0980	0.0161	0.2043	0.1139	0.0271
Victoria	0.1774	0.0859	0.0265	0.2426	0.0834	0.0168	0.1774	0.0913	0.0255
Queensland	0.1804	0.0720	0.0137	0.2275	0.0767	0.0148	0.1904	0.0774	0.0199
South Australia	0.1709	0.1037	0.0236	0.2373	0.1070	0.0168	0.1750	0.1047	0.0216
Western Australia	0.1883	0.0741	0.0193	0.2628	0.0867	0.0105	0.2307	0.0862	0.0225
Tasmania/ACT/NT	0.1692	0.0884	0.0189	0.2403	0.0796	0.0156	0.2129	0.0862	0.0277
<b>Elementary clerical, sales and service workers</b>									
New South Wales	0.1231	0.0545	0.0085	0.2176	0.0586	0.0056	0.1312	0.0595	0.0106
Victoria	0.1333	0.0686	0.0113	0.2157	0.0601	0.0072	0.1365	0.0664	0.0106
Queensland	0.1201	0.0610	0.0132	0.2201	0.0587	0.0106	0.1311	0.0626	0.0120
South Australia	0.1278	0.0667	0.0087	0.2083	0.0504	0.0078	0.1274	0.0571	0.0113
Western Australia	0.1366	0.0575	0.0097	0.2186	0.0659	0.0067	0.1404	0.0605	0.0036
Tasmania/ACT/NT	0.1307	0.0548	0.0162	0.2235	0.0644	0.0094	0.1278	0.0552	0.0160
<b>Labourers and related workers</b>									
New South Wales	0.1680	0.0616	0.0133	0.2128	0.0738	0.0093	0.1536	0.0900	0.0175
Victoria	0.1641	0.0683	0.0173	0.2183	0.0855	0.0125	0.1651	0.0879	0.0197
Queensland	0.1590	0.0656	0.0105	0.2091	0.0620	0.0089	0.1569	0.0859	0.0153
South Australia	0.1617	0.0738	0.0108	0.1986	0.0640	0.0135	0.1570	0.0910	0.0194
Western Australia	0.1812	0.0549	0.0074	0.2238	0.0559	0.0044	0.1741	0.0673	0.0121
Tasmania/ACT/NT	0.1658	0.0477	0.0117	0.1857	0.0539	0.0091	0.1509	0.0676	0.0140

## ATTACHMENT E

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### ANALYSIS OF DOMINANT EMPLOYER EFFECT

1. In this section, we discuss the results of the ‘dominant employer’ effect in the public sector. The arguments concerning dominant employer effect imply that the dispersion of wages in the public sector for whatever reasons — for example, due to either location or other influences originating from the non-competitive features of the private sector — should diminish when occupations are concentrated in the public sector.
2. We follow the steps in paragraphs 21 to 28 in Attachment B.
3. **Table E - 9** in Appendix 1 to this Attachment summarises the regression results. Table E - 1 reproduces the intercept coefficients for all occupations and the differential for the dominant occupations.

**Table E - 1** LOCATION EFFECTS — EFFECTS OF DOMINANT OCCUPATIONS ON WEEKLY EARNINGS OF EMPLOYEES, PUBLIC SECTOR

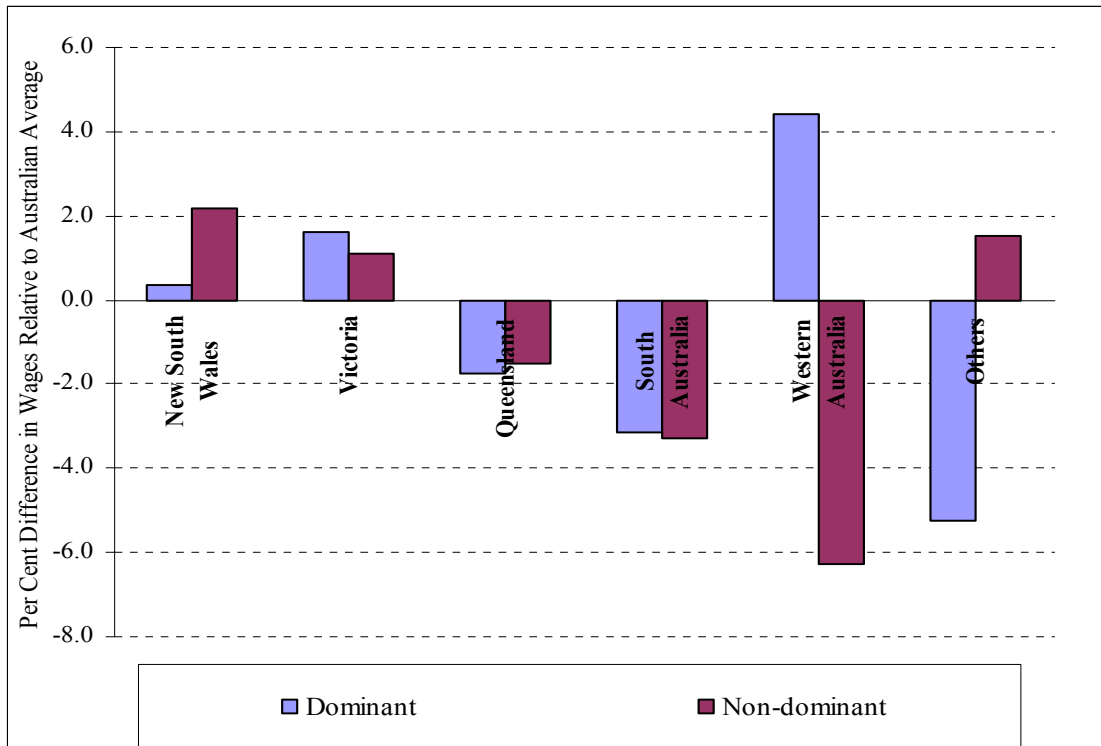
Private sector characteristics	Male	Female
<b>For dominant occupations (<math>\alpha_i</math>)</b>		
New South Wales	0.056	0.046
Victoria	0.069	0.050
Queensland	0.035	0.005
South Australia	0.021	0.063
Western Australia	0.097 <sup>(a)</sup>	0.048
Tasmania/ACT/Northern Territory (Others)	0	0
<b>Differential from the above for non-dominant occupations (<math>\alpha_i'</math>)</b>		
New South Wales	-0.049	-0.081
Victoria	-0.073	-0.085
Queensland	-0.065	-0.017
South Australia	-0.069	-0.143 <sup>(a)</sup>
Western Australia	-0.175 <sup>(a)</sup>	-0.092
Tasmania/ACT/Northern Territory (Others)	0	0
<b>Estimates for non-dominant occupations (<math>\alpha_i + \alpha_i'</math>)</b>		
New South Wales	0.007	-0.035
Victoria	-0.004	-0.035
Queensland	-0.030	-0.012
South Australia	-0.048	-0.081
Western Australia	-0.078	-0.044
Tasmania/ACT/Northern Territory (Others)	0	0

(a) Denotes level of significant at 10 per cent or better.

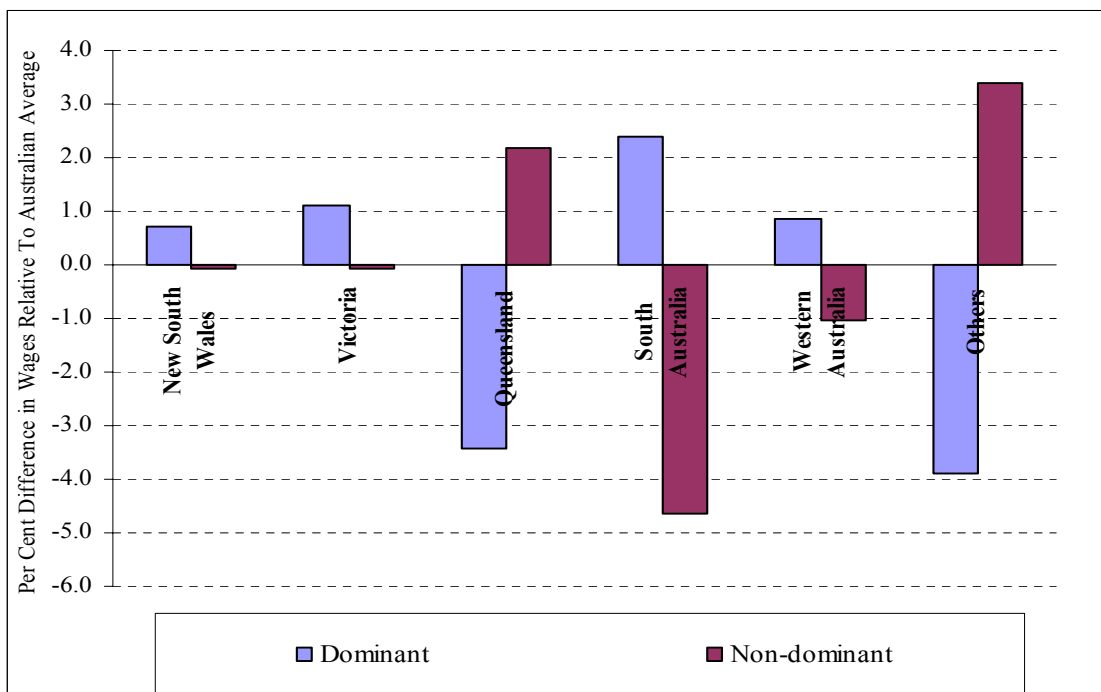
4. To evaluate signs of the location effects — that is, to see if the sign of  $\alpha_i + \alpha_i'$  for non-dominant occupations were the same as for  $\alpha_i$  for each State  $i$  — we plotted the location effects for both types of occupations.

5. Figure E - 1 and Figure E - 2 compare, separately for males and females, the results for dominant and non-dominant occupations.

**Figure E - 1** COMPARISON OF LOCATION EFFECTS BETWEEN DOMINANT AND NON-DOMINANT OCCUPATIONS, MALE, 1993



**Figure E - 2** COMPARISON OF LOCATION EFFECTS BETWEEN DOMINANT AND NON-DOMINANT OCCUPATIONS, FEMALE, 1993



6. Our expectation was that we would, if the dominant employer effect manifested itself, either find less differences across States compared with non-dominant occupations or find no differences at all in the extreme case. Instead, we found that in many cases location effects for the dominant occupations were opposite to those for non-dominant occupations. More importantly, the spread of the location effects appeared similar for the two types of occupations (spread for males was 9.7% for dominant occupations and 7.8% for non-dominant ones, while for females the spread was 7.1% for dominant occupations and 8.1% for non-dominant ones).

7. Test for differences between pairs of States however failed to establish that the wages between the States were different between them for any pair except between WA and 'other' States, either for the dominant or the other occupations. We report the calculations in Table E - 2 and Table E - 3 for males and females respectively.

**Table E - 2** EVALUATION OF PAIRWISE DIFFERENCE BETWEEN STATES, MALE

	NSW	VIC	QLD	SA	WA	Other
Location effects $\alpha_i$	0.056	0.069	0.035	0.021	0.097	0.000
<b>Pairwise difference</b>						
VIC	0.0128					
QLD	-0.0207	-0.0336				
SA	-0.0351	-0.0479	-0.0143			
WA	0.0407	0.0279	0.0614	0.0758		
<b>Variance-covariance matrix</b>						
NSW	0.0024					
VIC	0.0014	0.0027				
QLD	0.0014	0.0014	0.0032			
SA	0.0014	0.0014	0.0014	0.0028		
WA	0.0014	0.0014	0.0014	0.0014	0.0033	
<b>Pairwise differences: total variance<sup>46</sup></b>						
NSW	0.0024					
VIC	0.0022	0.0027				
QLD	0.0029	0.0030	0.0028			
SA	0.0025	0.0012	0.0033	0.0032		
WA	0.0029	0.0012	0.0019	0.0033	0.0033	
<b>Pairwise differences: t-values<sup>47</sup></b>						
NSW	1.136					
VIC	0.2709	1.335				
QLD	-0.3878	-0.6086	0.661			
SA	-0.7053	-1.4050	-0.2515	0.370		
WA	0.7529	0.7898	1.4209	1.3104	1.687	

<sup>46</sup> For any two pairs, Total Variance,  $TV_{ij} = V(\alpha_i) + V(\alpha_j) - 2 \text{cov}(\alpha_i, \alpha_j)$

<sup>47</sup> t-values,  $t_{ij} = (\alpha_i - \alpha_j)/TV_{ij}$

**Table E - 3** EVALUATION OF PAIRWISE DIFFERENCE BETWEEN STATES, FEMALE

	NSW	VIC	QLD	SA	WA	Other
Location Effects $\alpha_i$	0.046	0.050	0.005	0.063	0.048	0.000
<b>Pairwise difference</b>						
<b>VIC</b>	0.004					
<b>QLD</b>	-0.041	-0.045				
<b>SA</b>	0.017	0.013	0.058			
<b>WA</b>	0.002	-0.002	0.043	-0.015		
<b>Variance-covariance matrix</b>						
<b>NSW</b>	0.0023					
<b>VIC</b>	0.0012	0.0022				
<b>QLD</b>	0.0012	0.0011	0.0027			
<b>SA</b>	0.0012	0.0012	0.0012	0.0026		
<b>WA</b>	0.0011	0.0012	0.0011	0.0012	0.0024	
<b>Pairwise differences: total variance</b>						
<b>NSW</b>	0.0023					
<b>VIC</b>	0.0021	0.0022				
<b>QLD</b>	0.0026	0.0027	0.0027			
<b>SA</b>	0.0025	0.0010	0.0029	0.0026		
<b>WA</b>	0.0025	0.0009	0.0017	0.0026	0.0024	
<b>Pairwise differences: t-values</b>						
<b>NSW</b>	0.960	1.056	0.088	1.238	0.970	
<b>VIC</b>	0.0852					
<b>QLD</b>	-0.8091	-0.8691				
<b>SA</b>	0.3348	0.4058	1.0769			
<b>WA</b>	0.0335	-0.0744	1.0412	-0.2954		

8. None of the t-values are significant at 10%. This is in part due to lack of depth in the data that can adequately differentiate between small numbers.

9. To seek further confirmation, we examined actual wages data for the dominant occupations at different points in time.

10. Table E - 4, Table E - 5 and Table E - 6 represent comparative data for nurses, teachers and police, respectively, across States.<sup>48</sup>

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<sup>48</sup> The data are not always strictly comparable, because they do not include non-wage conditions or always reflect comparable classification structures across States.

**Table E - 4** COMPARISON OF ACTUAL WAGES FOR NURSE, SELECTED LEVELS

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Per Cent Differences Between the Maximum and the Minimum
<b>Salary at selected levels for registered nurses (\$ per annum)</b>									
<b>Dec, 2002<sup>(a)</sup></b>									
Level 1 -1	33266	34167	32747	35735	34989	33515	35885	36400	
Level 1 -7	44869	44837 <sup>(d)</sup>	42547	45624	44844	43241	44988	46728	
Level 2 -4	nc <sup>(c)</sup>	nc <sup>(c)</sup>	49086	51386	50569	49724	51056	52173	
<b>Salary index relative to NSW unless indicated</b>									
Level 1 -1	100.0	102.7	98.4	107.4	105.2	100.8	107.9	109.4	11.0
Level 1 -7	100.0	99.9	94.8	101.7	99.9	96.4	100.3	104.1	9.3
Level 2 -4 <sup>(c)</sup>	nc <sup>(c)</sup>	nc <sup>(c)</sup>	100.0	104.7	103.0	101.3	104.0	106.3	6.3
<b>Aug, 2001<sup>(a)</sup></b>									
Level 1 -1	32297	33172	32747	34198	33969	32740	32204	32708	
Level 1 -7	43561	43530 <sup>(d)</sup>	42547	43660	43537	42240	40373	41993	
Level 2 -4			49086	48390	49096	48573	45818	46658	
<b>Salary index relative to NSW unless indicated otherwise</b>									
Level 1 -1	100.0	102.7	101.4	105.9	105.2	101.4	99.7	101.3	6.2
Level 1 -7	100.0	99.9	97.7	100.2	99.9	97.0	92.7	96.4	7.5
Level 2 -4			100.0	98.6	100.0	99.0	93.3	95.1	6.7
<b>May 1995<sup>(b)</sup></b>									
Level 1 -1	26245	25337	25683	24939	25017	25434	25840	25584	
Level 1 -7	34727	33251	33259	32292	32397	32814	33586	33259	
Level 2 -4	38014	36339	38313	37196	37317	37734	38750	38376	
<b>Salary index relative to NSW unless indicated otherwise</b>									
Level 1 -1	100.0	96.5	97.9	95.0	95.3	96.9	98.5	97.5	5.0
Level 1 -7	100.0	95.7	95.8	93.0	93.3	94.5	96.7	95.8	7.0
Level 2 -4	100.0	95.6	100.8	97.8	98.2	99.3	101.9	101.0	6.3
<b>July 1991<sup>(b)</sup></b>									
Level 1 -1	23826	24426	23556	na	24000	23502	na	24000	
Level 1 -7	31522	32312	29036	na	31200	30103	na	31200	
Level 2 -4	34512	35376	33415	na	35200	34066	na	35200	
<b>Salary index relative to NSW unless indicated otherwise</b>									
Level 1 -1	100.0	102.5	98.9	na	100.7	98.6	na	100.7	3.9
Level 1 -7	100.0	102.5	92.1	na	99.0	95.5	na	99.0	10.4
Level 2 -4	100.0	102.5	96.8	na	102.0	98.7	na	102.0	5.7

Source: (a) PAYCHECK, Dec2002 and August 2001, published by Australian Nursing Federation.

(b) CGC Reports on Research in Progress, Volume 2, 1995.

(c) Comparable classification did not exist for NSW and Victoria. In this instance, the index was calculated relative to Queensland.

(d) The figures relate to RN Grade 2, Year 6.

11. A sizeable gap in salary of up to 11% for nurses has remained across States and over time. It is also notable that the spread of wages is similar to that for other occupations in public sector in 2001 (7.9% as in Table C - 5).

**Table E - 5** COMPARISON OF ACTUAL WAGES FOR TEACHERS, SELECTED LEVELS

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Per Cent Differences Between the Maximum and the Minimum
Salary at selected levels for teachers (\$ per annum)									
Current <sup>(a)</sup>	1-Jan-03	1-Apr-02	10-Apr-02	1-Aug-02	1-Jul-02	27-Feb-03	1-Jul-02	28-Aug-02	
3Years Training Min	37609	36702	34539	34914	35002	35678	35800	37037	
4Years Training Min	41109	39789	39034	37173	40147	39040	38600	39629	
Top of the Range	58692	57335	55040	54591	54575	57095	53500	55581	
Salary index relative to NSW unless indicated									
3Years Training Min	100.0	97.6	91.8	92.8	93.1	94.9	95.2	98.5	7.2
4Years Training Min	100.0	96.8	95.0	90.4	97.7	95.0	93.9	96.4	9.6
Top of the Range	100.0	97.7	93.8	93.0	93.0	97.3	91.2	94.7	8.8
May 1995 <sup>(b)</sup>									
3Years Training + 4	28218	30161	27743	25224	27170	27407	31485	29642	
3Years Training + 7	32816	34596	31675	31502	32192	31194	35718	32768	
Salary index relative to NSW unless indicated otherwise									
3Years Training Min	100.0	106.9	98.3	89.4	96.3	97.1	111.6	105.0	22.2
4Years Training Min	100.0	105.4	96.5	96.0	98.1	95.1	108.8	99.9	13.8
June 1991 <sup>(b)</sup>									
3Years Training + 4	26159	26718	26902	24205	26753	27521	29714	29017	
3Years Training + 7	30422	30013	30744	29220	31775	31996	33122	33930	
Salary index relative to NSW unless indicated otherwise									
3Years Training Min	100.0	102.1	102.8	92.5	102.3	105.2	113.6	110.9	21.1
4Years Training Min	100.0	98.7	101.1	96.0	104.4	105.2	108.9	111.5	15.5

Source: (a) Australian Education Union website <http://www.aeufederal.org.au>.

(b) CGC Research, 1995

12. A gap in salary of up to 10% for teachers has remained across States, although it would appear to have diminished over time. The gap is similar to that for other occupations in public sector in 2001 (7.9% as in Table C - 5).

**Table E - 6** COMPARISON OF ACTUAL WAGES FOR POLICE, SELECTED LEVELS

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Per Cent Differences Between the Maximum and the Minimum
Salary at selected levels for police (\$ per annum)									
Current <sup>(b)</sup>	Jan-03	Aug-02 <sup>(a)</sup>	Jul-02	Jul-02 <sup>(a)</sup>	Jul-02	Sep-02	Nov-02	Jul-02 <sup>(a)</sup>	
Constable Entry	37416	39293	34890	40416	34850	31128	29250	39615	
Constable Max	42358	46704	42362	47190	44451	42543	45350	45564	
Sergeant Min	55066	55650	49247	55995	49670	45032	62000	52855	
Salary Index Relative to NSW unless indicated									
Constable Entry	100.0	105.0	93.2	108.0	93.1	83.2	78.2	105.9	21.8
Constable Max	100.0	110.3	100.0	111.4	104.9	100.4	107.1	107.6	11.4
Sergeant Min	100.0	101.1	89.4	101.7	90.2	81.8	112.6	96.0	30.8
May 1995 <sup>(c)</sup>									
Constable Entry	25280	29544	27470	29417	25774	25391	27553	26463	
Constable Max	32711	38765	35464	34417	30585	32168	37557	31553	
Sergeant Min	37083	42013	38607	40917	35828	36732	39123	36577	
Salary index relative to NSW unless indicated otherwise									
Constable Entry	100.0	116.9	108.7	116.4	102.0	100.4	109.0	104.7	16.9
Constable Max	100.0	118.5	108.4	105.2	93.5	98.3	114.8	96.5	25.0
Sergeant Min	100.0	113.3	104.1	110.3	96.6	99.1	105.5	98.6	16.7
June 1991 <sup>(c)</sup>									
Constable Entry	24657	26235	25880	28384	25357	22442	25728	25507	
Constable Max	26685	30731	30680	31163	29464	24721	35275	27294	
Sergeant Min	34200	37220	36900	39408	35411	31377	36779	34641	
Salary index relative to NSW unless indicated otherwise									
Constable Entry	100.0	106.4	105.0	115.1	102.8	91.0	104.3	103.4	24.1
Constable Max	100.0	115.2	115.0	116.8	110.4	92.6	132.2	102.3	39.6
Sergeant Min	100.0	108.8	107.9	115.2	103.5	91.7	107.5	101.3	23.5

(a) The figures for Victoria include 13% shift loading. The figures are for 38 hours of work except for WA and NT which relate to 40 hours of work. They had no material impact on the conclusions.

(b) Sourced from Police Federation of Australia, except for ACT (we referred to AFP Certified Agreement 1999-2002 which may not be wholly comparable).

(c) CGC Reports on Research in Progress, Volume 2, 1995

13. A wage dispersion of over 30% in salary for police has remained across States and over time, and is well above that for other occupations in the public sector in 2001 (7.9% as in Table C - 5) including other dominant occupations.

14. We also examined the levels of maximum salary for 4-year trained teachers between 1996 and 2002, as provided by New South Wales to demonstrate that dominant employer effect did not exist. We reproduce in Table E - 7 the raw data.

**Table E - 7** COMPARISON ACROSS STATES OF MAXIMUM SALARY OF 4-YEAR TRAINED TEACHERS, 1996-2002

	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Aus
Oct-96	42436	43538	42565	40406	42320	40893	45430	40508	42262
Feb-97	42436	43538	42565	40406	42320	42570	46339	40508	42585
Mar-98	44133	46337	45153	45811	45493	45550	47504	46476	45807
Sep-99	50175	49159	48002	45811	48264	46916	49186	47870	48173
Apr-00	52182	49159	50402	45811	48264	49953	49186	47870	49103
Jul-01	53747	50634	52670	45811	51642	51974	49186	49306	50621
Jul-02	55897	52153	55040	47872	53708	54668	49186	50785	52414

Source: New South Wales' letter of 30 Apr 2003 to the Commission.

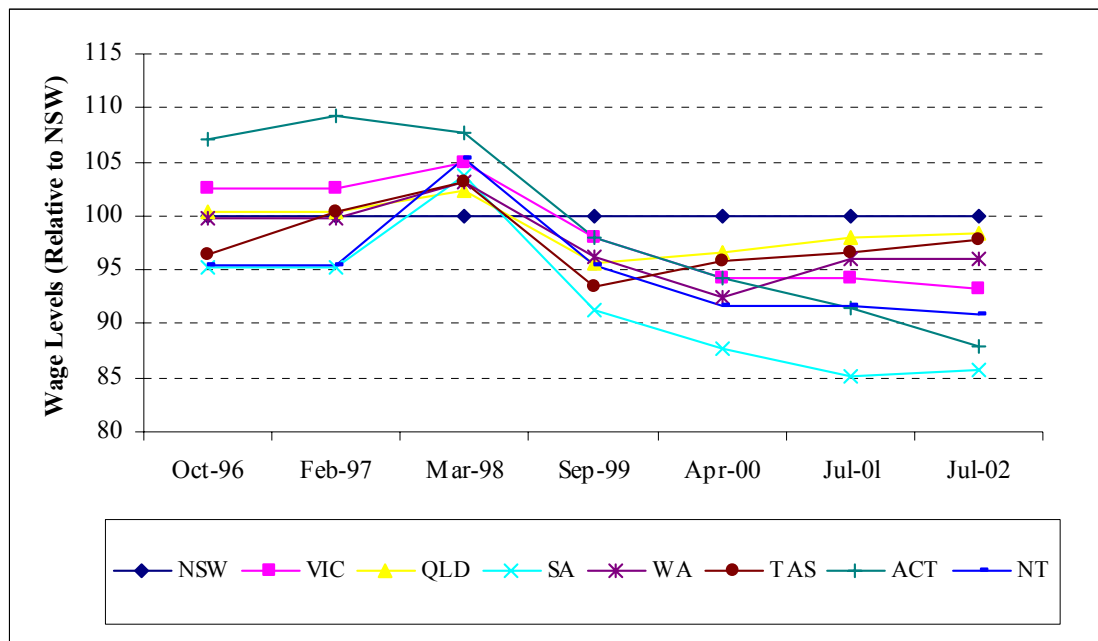
15. We present the same information relative to NSW in Table E - 8 and Figure 3.

**Table E - 8** COMPARISON ACROSS STATES OF MAXIMUM SALARY OF 4-YEAR TRAINED TEACHERS RELATIVE TO NEW SOUTH WALES, 1996-2002

Date	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Per Cent Differences Between the Maximum and the Minimum
Oct-96	100.00	102.60	100.30	95.22	99.73	96.36	107.06	95.46	11.8
Feb-97	100.00	102.60	100.30	95.22	99.73	100.32	109.20	95.46	14.0
Mar-98	100.00	104.99	102.31	103.80	103.08	103.21	107.64	105.31	7.6
Sep-99	100.00	97.98	95.67	91.30	96.19	93.50	98.03	95.41	8.7
Apr-00	100.00	94.21	96.59	87.79	92.49	95.73	94.26	91.74	12.2
Jul-01	100.00	94.21	98.00	85.23	96.08	96.70	91.51	91.74	14.8
Jul-02	100.00	93.30	98.47	85.64	96.08	97.80	87.99	90.85	14.4

Source: Table E - 7.

**FIGURE E-3** COMPARISON ACROSS STATES OF MAXIMUM SALARY OF 4-YEAR TRAINED TEACHERS, 1996-2002



16. The pattern is consistent with the comparisons above. It highlights that wage differentials are large and cyclical rather than steady, and have not diminished over time (about 12% in 1996 and about 15% in 2002).

17. We examined whether non-competitive effects might contribute to dominant employer effects, and did so by looking at how the current workplace relations environment operated for these occupations.

18. Subsequent to the federal government's Workplace Relations Act of 1996, agreements at an enterprise level, and not awards<sup>49</sup>, have been the main vehicle for negotiation of wages and conditions. This applies also to the dominant occupations.

19. The AIRC or its State counterparts certify the agreements in all cases, and do so provided only that the minimum stipulated in the relevant Act<sup>50</sup> are satisfied. As such, the AIRC facilitates but does not directly determine the outcome of agreements, which concerning dominant occupations, are products of negotiations between the State government and the relevant unions in the States.

20. The AIRC becomes directly involved when it is asked to settle disputes. Its Full Bench becomes involved in matters of national interest or of principles. The AIRC principles are about reinforcing differences across work groups and States through decentralisation of wage setting, away from nationally determined levels of wages.

<sup>49</sup> Paid rate awards are increasingly specifying only the minimum pay and working conditions. However, the IRC or the State counterparts need to certify the agreements.

<sup>50</sup> The States may operate under its own workplace relations statutes.

***Conclusions***

21. Taking the analysis of the statistical data and that of the actual wages data together, we found no evidence of dominant employer effects. The wage dispersion in either the econometric analysis or the actual salaries data appear very similar to other occupations in the public service.

22. This conclusion is consistent with the theory of competitive labour market that predicts that once other influences are accounted for, differences in wages across States would be determined by the location effects alone. In a competitive setting, the same would apply to the dominant occupations — that is, for each occupation, real wages across States would be equal. As such, the location effects would be no different for dominant occupation when compared with other public service occupations.

23. Commission staff remain also of the view that the AIRC in principle rejects interstate wages benchmarking or outcomes of other agreements as fundamental bases for arbitration.

24. Based on available evidence, we concluded that a policy neutral measure of interstate wage differential for the dominant occupation should be no different from other occupations.

## REGRESSION RESULTS

**Table E - 9** REGRESSION RESULTS, DOMINANT EMPLOYER

Variables	Male		Female	
	Co-efficients	Significance	Co-efficients	Significance
(Constant)	5.815	0.000	5.612	0.000
NSW	0.056	0.256	0.043	0.364
VIC	0.069	0.182	0.044	0.356
QLD	0.035	0.509	-0.008	0.883
SA	0.021	0.711	0.071	0.160
WA	0.097	0.092	0.049	0.319
NDOMNANT	-0.387	0.001	-0.032	0.733
NDOMNSW	-0.049	0.360	-0.087	0.120
NDOMVIC	-0.073	0.195	-0.083	0.138
NDOMQLD	-0.065	0.260	-0.023	0.700
NDOMSA	-0.069	0.266	-0.153	0.010
NDOMWA	-0.175	0.005	-0.093	0.111
CAPITAL	0.045	0.001	0.066	0.000
MARRIED	0.061	0.001		
CHILD	0.027	0.093		
MIG1	0.148	0.000	0.088	0.001
MIG2	0.183	0.000	0.124	0.009
MIG3	0.135	0.003	0.125	0.001
MIG4	0.158	0.002	0.123	0.007
MIG5	0.153	0.001		
MIG6	0.126	0.006		
PERM	0.362	0.000	0.206	0.000
OCC1	0.450	0.000	0.543	0.000
OCC2LESS	0.399	0.000	0.417	0.000
OCC3LESS	0.237	0.000	0.278	0.000
OCC4	0.099	0.000		
OCC5	0.275	0.000	0.281	0.000
OCC6	0.190	0.000	0.190	0.000
OCC7	0.149	0.000		
OCC8			0.146	0.000
NURSE	-0.214	0.069	0.291	0.001
POLICE	-0.116	0.283	0.352	0.007

Variables	Male		Female	
	Co-efficients	Significance	Co-efficients	Significance
INDU13	-0.063	0.000		
INDU14	-0.235	0.026	0.244	0.003
INDU16	-0.116	0.000	-0.074	0.001
EDU1	0.356	0.000	0.283	0.000
EDU2	0.267	0.000	0.222	0.000
EDU3	0.312	0.000	0.178	0.000
EDU4	0.185	0.000	0.144	0.000
EDU5	0.173	0.000	0.138	0.001
EDU6	0.121	0.000	0.101	0.014
EDU7	0.072	0.062		
EDU8	0.287	0.002	0.292	0.005
EDU9	0.079	0.000		
UNION			0.068	0.000
HOUR1	-1.471	0.000	-1.419	0.000
HOUR2	-0.488	0.000	-0.508	0.000
HOUR3	-0.137	0.000	-0.067	0.006
HOUR4	-0.045	0.050		
TMPE1	-0.213	0.000	-0.097	0.000
TMPE2	-0.126	0.000		
TMPE3	-0.081	0.000		
TMPE4	-0.044	0.021		
WEXP	0.024	0.000	0.015	0.000
WEXPSQ	0.000	0.000	0.000	0.000
<b>Adjusted R-square</b>	<b>65.5%</b>		<b>72.9%.</b>	