



COMMONWEALTH GRANTS COMMISSION

DRAFT ASSESSMENT PAPER CGC 2003/06

GAMBLING TAXATION

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CONTENTS

INTRODUCTION	1
1999 REVIEW ASSESSMENT METHOD	1
Description of the category	1
Implications of tax reform	1
The revenue base	2
Importance of the category	5
ISSUES FOR THE 2004 REVIEW	6
Inclusion of racecourse development funds	6
The revenue base measure	6
The remote population adjustment	12
The revenue sharing agreement adjustment	14
PROPOSED ASSESSMENT METHOD FOR THE 2004 REVIEW	15
Calculation of the revenue base	15
2004 REVIEW DRAFT CALCULATIONS	16
Revenue raising capacity ratios	16
Standardised revenue	16
Grant share effects	17
Reality check	18
Updateability	18
RESULTS OF REGRESSION ANALYSES	19
State effects	19
Socio-demographic effects	20
Conclusion	21

INTRODUCTION

1. This paper presents a draft assessment for the Gambling Taxation category for the 2004 Review. It builds on the staff proposals set out in *Discussion Paper 2002/16, The Gambling Assessment* and responds to comments in State submissions and at the 2002 conferences.

1999 REVIEW ASSESSMENT METHOD

Description of the category

2. In the 1999 Review, the Gambling Taxation category comprised revenues from the licensing and taxing of activity of gambling operators. It included:

- Casino taxes — the taxes and levies on the holders of casino licences, including one-off premiums/licence fees. It encompassed taxes on poker machines at casinos.
- Lotteries taxes — the net proceeds from State lotteries, taxes on lottery subscriptions (including soccer football pools) and keno and other minor lotteries, and shares of profits of private operators.
- Poker machines (sometimes called Electronic Gaming Machines (EGMs)) taxes — the net proceeds from taxes and licences associated with poker machines in clubs and hotels and taxes on Club Keno games operated from clubs and hotels.
- Bookmaker and TAB taxes — the net proceeds from all taxes or commissions from bookmakers and totalisators, unclaimed totalisator dividends and fractions, excluding revenue retained by clubs or credited to racecourse development funds. It encompassed taxes on sports betting and other events with bookmakers or TABs.

Implications of tax reform

3. As part of the tax reforms associated with the introduction of the Goods and Service Tax (GST), the Australian and State Governments signed the *Intergovernmental Agreement on the Reform of Commonwealth-State Financial Relations (IGA)* in June 1999. Under the IGA, the Australian Government imposed the GST on gambling activity from 1 July 2000 and States reduced their gambling taxes so that the overall tax on gambling operators and their activities did not increase. Under the transitional arrangements of the IGA, update terms of reference since the 1999 Review have asked for two sets of relativities:

- (i) a set to distribute a combined pool of GST revenue and health care grants — hereafter called *the GST relativities*; and
- (ii) a set to distribute a combined pool of Financial Assistance Grants (FAG) and health care grants (based on the assumption of a continuation of the Australian—State Government financial arrangements which applied in 1999-2000) — hereafter called *the FAG relativities*.

4. For GST relativities, the category excluded gambling revenue foregone by States due to the reduction in their gambling taxes to make way for the GST. The Commission backcast the revenue foregone into earlier years by estimating the amount of revenue foregone for years before 2000-01 and removing it from States' actual revenue collections.

5. For FAG relativities, the category assumed that States continued to tax gambling operators at their pre-July 2001 tax rates. An estimate had to be made of the revenue foregone from 2001-02. The estimate was added to States' actual gambling revenues. So, the revenue standard for the FAG assessment was larger than the revenue standard for the GST assessment.

6. Table 1 shows the revenue standards for this category for both assessments. In 2001–02, Gambling Taxation totalled \$3 721.5 million (or \$189.88 per capita) for the GST relativities. This represented 9.68 per cent of State own source revenue in the 2003 Update. For the FAG relativities, Gambling Taxation totalled \$5 107.2 million (or \$260.58 per capita). This represented 10.47 per cent of State own source revenue in the 2003 Update.

Table 1 STANDARD REVENUE FOR GAMBLING TAXATION

		1997-98	1998-99	1999-2000	2000-01	2001-02
GST relativities						
Standard revenue	\$pc	153.17	158.26	167.31	184.05	189.88
Percentage of own source revenue	%	9.12	8.32	8.61	9.50	9.68
FAG relativities						
Standard revenue	\$pc	208.48	218.16	230.79	246.47	260.58
Percentage of own source revenue	%	10.05	9.23	9.53	10.13	10.47

Source: 2003 Update Working Papers, Volume 2, pages 17, 22, 254 and 258.

The revenue base

7. The revenue base was adjusted Gross Household Disposable Income (GHDI). Adjustments were made to better reflect how States actually levy gambling taxes and to improve policy neutrality. The adjustments were:

- **50 per cent discount.** This adjustment discounted interstate differences in GHDI per capita by 50 per cent. The discount

recognised that factors other than gamblers' incomes influenced gambling levels.

- **Remote population adjustment.** The remote population adjustment took account of differences in access of remote populations to gambling opportunities. The lack of gambling opportunities in remote areas translated into lower gambling activity and lower gambling revenue.
- **Revenue sharing adjustment.** The revenue sharing adjustment took account of the lower lottery revenue capacity of smaller States. The influence of large prize pools meant less populous States found it more effective to licence large lotteries operators from interstate than to run their own lotteries. However, they had to enter into revenue sharing agreements with New South Wales and Victoria. These agreements reduced the revenue they could raise from lotteries.

8. Table 2 shows the calculation of the revenue base. The same revenue base was used in the FAG and GST assessments.

Table 2 CALCULATION OF THE GAMBLING TAXATION REVENUE BASE

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
A. Gross Household Disposable Income (\$m)									
1997-98	133 072	94 674	61 836	35 687	27 686	7 853	8 731	3 842	373 381
1998-99	139 901	101 152	66 027	37 624	27 941	8 144	9 270	4 251	394 310
1999-2000	148 469	108 104	69 089	40 745	28 845	8 324	9 630	4 429	417 635
2000-01	162 921	118 925	75 102	43 534	32 137	8 907	10 846	4 767	457 139
2001-02	169 372	121 702	79 035	45 906	33 351	9 244	11 075	5 123	474 808
B. Gross Household Disposable Income per capita (\$pc)									
1997-98	21 043	20 464	18 047	19 700	18 626	16 595	28 181	20 313	20 024
1998-99	21 853	21 628	18 965	20 428	18 687	17 241	29 694	22 078	20 891
1999-2000	22 911	22 849	19 520	21 809	19 183	17 628	30 533	22 622	21 859
2000-01	24 810	24 816	20 846	22 988	21 270	18 855	33 965	23 999	23 617
2001-02	25 504	25 067	21 533	23 932	21 961	19 536	34 323	25 623	24 226
C. Implied capacity of GHDI per capita = B / B _{Aust}									
1997-98	1.0509	1.0220	0.9013	0.9838	0.9302	0.8288	1.4073	1.0144	1.0000
1998-99	1.0460	1.0353	0.9078	0.9778	0.8945	0.8253	1.4214	1.0568	1.0000
1999-2000	1.0481	1.0453	0.8930	0.9977	0.8776	0.8065	1.3968	1.0349	1.0000
2000-01	1.0505	1.0508	0.8827	0.9734	0.9007	0.7984	1.4382	1.0162	1.0000
2001-02	1.0528	1.0347	0.8888	0.9879	0.9065	0.8064	1.4168	1.0577	1.0000

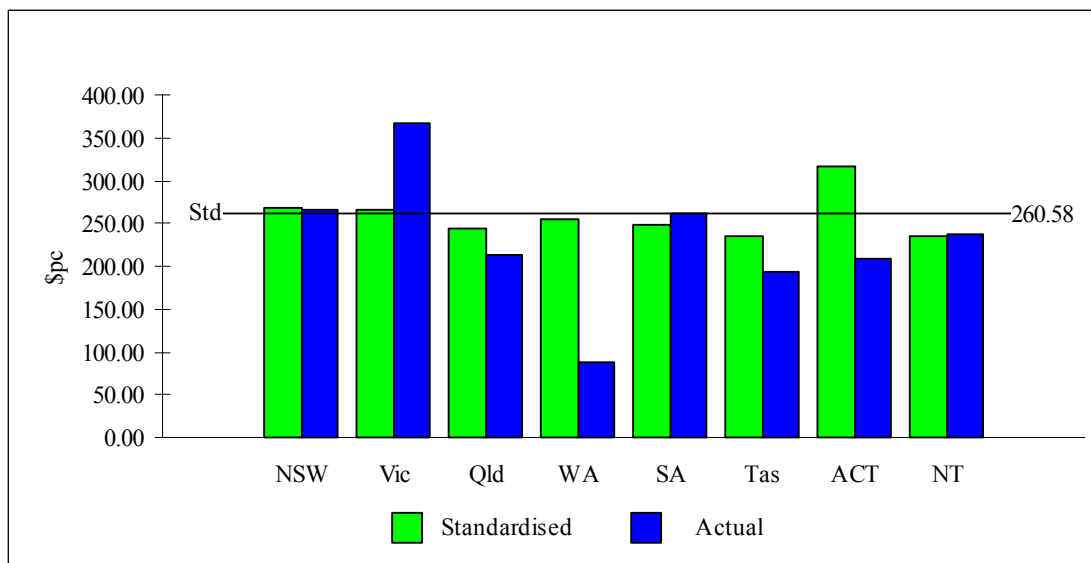
Table 2 CALCULATION OF THE GAMBLING TAXATION REVENUE BASE (continued)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
D. Discounted capacity = $\{(C - 1) * 0.5\} + 1$									
1997-98	1.0254	1.0110	0.9506	0.9919	0.9651	0.9144	1.2037	1.0072	1.0000
1998-99	1.0230	1.0176	0.9539	0.9889	0.9473	0.9126	1.2107	1.0284	1.0000
1999-2000	1.0241	1.0226	0.9465	0.9989	0.9388	0.9032	1.1984	1.0175	1.0000
2000-01	1.0253	1.0254	0.9413	0.9867	0.9503	0.8992	1.2191	1.0081	1.0000
2001-02	1.0264	1.0174	0.9444	0.9939	0.9533	0.9032	1.2084	1.0288	1.0000
E. Discounted GHDI (\$m) = A * D / C									
1997-98	129 851	93 656	65 222	35 980	28 725	8 664	7 467	3 815	373 381
1998-99	136 823	99 430	69 380	38 051	29 588	9 006	7 896	4 137	394 310
1999-2000	145 060	105 762	73 227	40 791	30 857	9 323	8 262	4 354	417 635
2000-01	159 003	116 051	80 092	44 129	33 909	10 032	9 194	4 729	457 139
2001-02	165 128	119 660	83 978	46 188	35 071	10 354	9 446	4 983	474 808
F. Remote population adjustment									
1997-98	1.0060	1.0059	0.9933	0.9874	1.0018	1.0034	1.0076	0.8779	1.0000
1998-99	1.0060	1.0059	0.9933	0.9874	1.0018	1.0034	1.0076	0.8779	1.0000
1999-2000	1.0060	1.0059	0.9933	0.9874	1.0018	1.0034	1.0076	0.8779	1.0000
2000-01	1.0060	1.0059	0.9933	0.9874	1.0018	1.0034	1.0076	0.8779	1.0000
2001-02	1.0060	1.0059	0.9933	0.9874	1.0018	1.0034	1.0076	0.8779	1.0000
G. Lotteries revenue sharing agreement									
1997-98	1.0000	1.0000	1.0000	1.0000	1.0000	0.9800	0.9800	0.9800	1.0000
1998-99	1.0000	1.0000	1.0000	1.0000	1.0000	0.9900	0.9900	0.9900	1.0000
1999-2000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2000-01	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2001-02	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
H. Revenue base (\$m) = E * F * G									
1997-98	130 625	94 205	64 787	35 527	28 777	8 520	7 374	3 282	373 097
1998-99	137 638	100 012	68 917	37 571	29 643	8 946	7 877	3 595	394 199
1999-2000	145 924	106 381	72 738	40 277	30 913	9 354	8 325	3 822	417 736
2000-01	159 951	116 731	79 558	43 572	33 971	10 066	9 264	4 151	457 264
2001-02	166 112	120 360	83 418	45 606	35 135	10 389	9 518	4 375	474 913

Source: *Australian National Accounts State Accounts 2001-02, ABS 5220.0*, Gross HDI from Table 27.

9. Figure 1 shows the per capita standard, actual and standardised revenue for the FAG assessment for 2001-02.

Figure 1 GAMBLING TAXATION: STANDARDISED, ACTUAL AND STANDARD REVENUES PER CAPITA, 2001-02



Importance of the category

10. The importance of the Gambling Taxation category differs between the GST and FAG assessments because the reduction in gambling taxes to make way for the GST reduced the category standard for the GST relativities.

11. Table 3 shows the grant share effects for both assessments in the 2003 Update. Compared with an equal per capita distribution, the GST assessment redistributed \$77.8 million and the FAG assessment redistributed \$102.4 million in the 2003 Update.

Table 3 GRANT DISTRIBUTIONS OF GAMBLING TAXATION COMPARED WITH EPC DISTRIBUTION

Change in grants	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total redistributed
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
GST relativities	-40.5	-24.2	42.9	7.7	14.0	8.8	-13.1	4.4	77.8
FAG relativities	-53.3	-31.8	56.4	10.1	18.4	11.6	-17.2	5.8	102.4

Source: 2003 Update Working Papers, Volume 2, page 117 and 292.

ISSUES FOR THE 2004 REVIEW

12. The issues for the 2004 Review were:
- (i) whether the category definition should be expanded to include racecourse development funds;
 - (ii) whether the revenue base measure should continue to be adjusted GHDI;
 - (iii) whether the remote population adjustment should be retained or adjusted; and
 - (iv) whether the revenue sharing arrangements adjustment should be retained.

Inclusion of racecourse development funds

13. In the 1999 Review, the Gambling Taxation category comprised revenues from the licensing and taxing of activity of gambling operators. It did not include racecourse development funds contributions.

14. ***Preliminary proposal.*** In Discussion Paper CGC 2002/16, *The Gambling Assessment*, Commission staff proposed including racecourse development funds contributions in the category standard because this was how the ABS classified them in its GFS classification system.

15. ***State views.*** The *Northern Territory* supported the proposal. No State opposed it.

16. ***Evaluation and analysis.*** Evidence suggest that racecourse development funds are much less prevalent than they used to be, particularly following the privatisation of State TABs. The Commission considers TAB contributions to racecourse development funds to be similar to gambling revenue. Also, the ABS classifies these contributions as gambling revenue.

17. ***Commission decision.*** The Commission has decided to expand the category definition to include contributions to racecourse development funds. No State opposed the proposal. Payment from those funds will be included in the relevant expenditure assessments.

The revenue base measure

18. In the 1999 Review, Gambling Taxation was assessed using discounted gross household disposable income (GHDI). A 50 per cent discount was applied to State's relative GHDI per capita because factors other than gamblers' incomes influenced the level of gambling expenditure.

19. **State views.** *Victoria* said research pointed to little correlation between GHDI and gambling expenditure. It said gambling was heavily concentrated in a small part of the population — 90 per cent of gambling expenditure was by 10 per cent of the population. Victoria proposed an assessment based on population aged 18 and over.

20. If GHDI was retained, it said the discount should be increased to move the assessment closer to EPC. It opposed the use of gambling expenditure as the revenue base measure.

21. *South Australia* considered GHDI to be an inferior measure of revenue capacity compared to actual gambling expenditure. It noted the proportion of disposable income devoted to gambling varied significantly from State to State even though the ‘price’ of gambling was substantially the same in all States. Therefore, it found it hard to accept that non-price policies accounted for the wide variation in per capita gambling expenditure between States.

22. South Australia proposed using gambling expenditure as the revenue base, with expenditure estimated for Western Australia to account for its gaming machine restrictions. As an alternative, it suggested the Recreation and Culture component of total household final consumption expenditure from the ABS *National Accounts: State Accounts* series. It said the alternative could be applied to all forms of gambling or it could be applied to revenue from casinos and gaming machines, with gambling expenditure being applied to other gambling revenues.

23. *Tasmania* said the two factors that had a significant impact on gambling revenue were accessibility of gambling options and the level of resources available to the gambler. It accepted the Commission had taken into consideration access to gambling opportunities through the remote population adjustment and the resources available through the GHDI.

24. Tasmania said the 50 per cent discount for GHDI gave too much weight to the argument that low income households gambled more than other households. It said higher income earners were able to spend a greater proportion of their income on gambling than lower income earners. It proposed the removal of the 50 per cent discount.

25. The *ACT* said it was opposed to broad measures of revenue capacity (such as GDHI) as a matter of principle, because they were insensitive to key influences which could differ markedly between States. It did not support GHDI because it failed to account for the different propensities of various groups to gamble, it failed to identify cross border flows from technologically advanced forms of gambling (phone betting and internet betting), and it failed to capture the different capacity of States to draw on tourism as a source of gambling activity. It strongly supported an equal per capita assessment.

26. The ACT was concerned that there was a limited relationship between GHDI and gambling expenditure. It argued that low income groups and people in non-metropolitan areas gambled more than those on high incomes. If GHDI was retained as the capacity measure, it should be adjusted for income distribution or, at the very least, the discount should be increased to 75 per cent.

27. The *Northern Territory* said the limitations of the current assessment method and the limitations of GHDI as the basis for the assessment were well known. In the absence of a better alternative the Territory supported the continued use of GHDI. It also said a further adjustment to the current assessment method was warranted to account for the issue of viability and its impact on implied capacity.

28. **Staff proposal.** In Discussion Paper CGC 2002/16, *The Gambling Assessment*, Commission staff said there were significant differences in State policies relating to the regulation and promotion of gambling. Policies for electronic gaming machines and casinos, which account for about 75 per cent of total gambling expenditure in 2000-01, differ significantly from State to State. Policies that regulate other activities in the venues, such as no smoking policies, also have an effect. It would be expected that these policy differences would exert a significant impact on interstate differences in the level of gambling. As a result, if gambling expenditure were to be used as the revenue base, it would need to be adjusted to remove the effects of differences in State policies.

29. If forms of gambling were perfect substitutes, a policy distortion in the level of expenditure in one form of gambling would be offset by an equal and opposite impact on the other forms of gambling and aggregate expenditure on gambling would be unchanged. Unfortunately, while there is substitutability in expenditure on various forms of gambling, that substitutability is far from perfect.

30. In part, this reflects the impact of expenditure by 'problem' gamblers. Based on the survey undertaken for the Productivity Commission inquiry into *Australia's Gambling Industries*, problem gamblers account for around a third of total gambling expenditure. That survey also found that problem gamblers heavily favoured electronic gaming machines and, to a lesser extent, wagering (racing) over other forms of gambling. As a result, policy differences between States that affect access to electronic gaming machines are also likely to have a significant impact on other forms of gambling expenditure, even where State policies for those forms of gambling are the same across States.

31. If gambling expenditure were to be used to measure the revenue base, extensive policy adjustments would be required because of the extensive influence of State policies on gambling expenditure, the variation in policies from State to State and the substitutability of expenditure between different forms of gambling.

32. On the question of whether there is a relationship between gambling expenditure and GHDI, the answer is: yes, especially at the aggregate level. Ordinary least squares regression analysis by Commission staff using pooled time series/panel data indicated that there was a statistically significant relationship between gambling expenditure and GHDI, particularly if allowance was made for policy restrictions in Western Australia and the ACT.

33. The fact that there is a (statistically significant) relationship between gambling expenditure and GHDI indicates that an assessment based on GHDI would better reflect relative revenue raising capacity than an equal per capita assessment. The current assessment has an element of equal per capita because GHDI is discounted by 50 per cent. This is arithmetically equivalent to an average of an equal per capita assessment (which is

approximately equal to an assessment based on population aged 18 and over) and an assessment based on GHDI.

34. From the regression analysis outlined in the discussion paper, GHDI explains 55 per cent (or just over half) of the variation in gambling expenditure. In this sense, those results provide strong support for the current discount of 0.5. Commission staff therefore proposed continuing to use GHDI as the revenue base and retaining the discount of 50 per cent.

35. **Further State views.** *New South Wales* supported an equal per capita assessment. It was not convinced that people with higher disposable incomes had higher propensities to gamble. It noted the results of the Productivity Commission Inquiry into the Australian Gambling Industry and the submission by the Council for Social Services in New South Wales. Both indicated that there was little correlation between GHDI and gambling expenditure — most gambling was done by lower income groups and gambling was heavily concentrated in a small part of the population (90 per cent of gambling expenditure was by 10 per cent of the population).

36. If equal per capita were not accepted, New South Wales proposed increasing the discount to move the assessment closer to equal per capita.

37. New South Wales expressed concerns with the measure of GHDI because it failed to take account of differences in housing costs across States. It said it overestimated the discretionary income of people in areas of high living costs (such as Sydney).

38. It did not support South Australia's proposal to use gambling expenditure as the revenue base measure. Differences in State gambling policies meant gambling expenditure was highly policy influenced.

39. **Queensland** said gambling expenditure was the best proxy for the propensity to gamble and it also captured the lack of access to gambling opportunities in remote areas. However, policy differences among States remained a major impediment to using gambling expenditure as the revenue base.

40. If gambling expenditure could not be adjusted for policy influences, Queensland favoured the GHDI measure. It said GHDI was the measure most closely correlated to gambling expenditure and it effectively represented gambling activity without being notably affected by policy differences. Queensland said the Commission's regression analysis supported a 50 per cent discount to the GHDI measure.

41. Queensland did not support the use of expenditure on recreation and culture as the revenue base because it was not sufficiently broad to be a proxy for gambling activity and it was significantly affected by policy distortions.

42. Queensland concluded GHDI should be used as the revenue base, until a more direct, reliable approach can be adopted.

43. **Western Australia** said State policy differences were not that large. It suggested that there were significant non-policy influences on gambling expenditures that

were not being picked up by the current assessment (such as the relatively low propensity to gamble of people in small, dispersed communities). It supported further investigation of gambling expenditure as the measure of the revenue base.

44. If the South Australian estimates of the policy-neutral gambling expenditure tax bases in each State were not accepted and the GHDI assessment was retained, Western Australia said its remote population adjustment should be increased significantly.

45. Western Australia said the Commission should not compensate the big gambling States like Victoria for the extra expenditures they incurred on police, justice and social services as a result of their legalisation of gaming machines in hotels and clubs.

46. *South Australia* argued that gambling expenditure (adjusted for Western Australia's restrictions on gaming machines) should be adopted as the revenue base for this category because it more closely aligned with what States actually taxed. It did not accept that the capacities implied by the GHDI measure were plausible because they implied the large differences in State per capita gambling expenditure were due to differences in tax effort. South Australia said that assumption was unsustainable. It said its low level of revenue raising reflected demographic and economic influences (including a low propensity to gamble). The GHDI measure did not capture its lower revenue raising capacity.

47. If gambling expenditure was not accepted as the revenue base, South Australia asked the Commission to consider using the Recreation and Culture component of total household final consumption expenditure from the ABS *National Accounts: State Accounts* series. It said this measure:

- captured expenditure in the entertainment and leisure market. It was, therefore, consistent with a view that gambling was part of the broader entertainment industry;
- had a relatively stable growth compared to gambling expenditure; and
- was not influenced by State policy. It said that if recreation and culture expenditure were used, an adjustment would not be required for the absence of gaming machines in Western Australia.

48. *Tasmania* supported GHDI as a measure of the revenue base, but disputed the need to discount per capita differences by 50 per cent. It said there was a fairly strong relationship between income and the level of gambling expenditure. While it accepted that low income earners may spend a disproportionately greater amount of their income on gambling than those on higher incomes, persons on lower incomes had lower disposable income, and it concluded that total spending would be less for those on low incomes than those on higher incomes. It said its view was supported by data from *Australian Gambling Statistics* which showed the States with higher average disposable incomes tended to have the higher average expenditure on gambling. It said the relationship between the average level of income and gambling expenditure was fairly consistent across States, except for Western Australia and the ACT — two States which had policy decisions that reduced the level of gambling expenditure in their State.

49. It did not support South Australia's proposal to use recreation and culture expenditure because it did not appear to represent an improvement over GHDI. It said South Australia's suggestion of using gambling expenditure may prove practical but there were policy differences between States and policy adjustments would be required to remove their influence from gambling expenditure.

50. The *ACT* provided evidence which it said cast serious doubts over the relationship between GHDI and gambling expenditure. It said the evidence demonstrated that propensity to gamble was influenced by a range of socio-economic and behavioural factors. It said the particular circumstances of the Territory meant the propensity to gamble was generally lower in the ACT. It concluded that its evidence did not justify the continued use of GHDI as a general measure in the gambling assessment.

51. It said it was not clear which measure would provide a better alternative to GHDI. It supported an EPC assessment because it would be less distortionary, simpler and more intuitive than GHDI. Failing that, it proposed increasing the discount applied to GHDI to 75 per cent.

52. The *Northern Territory* said GHDI overstated the average income of the Territory population living in remote communities. Nevertheless, in the absence of a better alternative, it supported the continued use of GHDI. The Territory did not support the alternative revenue base measures suggested by Victoria or South Australia.

53. *Evaluation and analysis.* The Commission does not consider gambling expenditures can be used as the revenue base measure. They are too policy contaminated and would require extensive policy adjustments.

54. South Australia suggested using the Recreation and Culture component of total household final consumption expenditure. The Commission is not inclined to adopt this measure because:

- (i) the measure captures activities unrelated to gambling;
- (ii) it is policy influenced (State gambling policies would influence the gambling component of recreation and culture expenditure); and
- (iii) it has little support among States.

55. In response to State comments about the various socio-economic characteristics that affect gambling activity, the Commission did further regression analyses. These analyses included variables for education, age, sex and ethnic background. Gross household disposable income was statistically significant in all the Commission's regressions. While the other variables may influence gambling expenditure at an individual level, their effect at the State level was either fairly small or not statistically different from zero. When they were omitted and gross household disposable income was used as the only explanatory variable, it explained about 50 per cent of the variability in gambling expenditure. Details of the regression analyses are in Attachment A.

56. The analyses convinced the Commission that, the best revenue base measure is gross household disposable income. The part of gambling expenditure that cannot be explained by gross household disposable income will be assessed equal per capita.

57. **Commission decision.** The Commission considers a conceptual case has been made for using discounted GHDI as the revenue base for Gambling Taxation. The available evidence indicates that there is a relationship between income and gambling expenditure. The Commission analyses show that the income effect is material and they also support a discount of 50 per cent discount. In the absence of information to the contrary, the Commission has decided to:

- (i) assess the Gambling category using GHDI per capita; and
- (ii) apply a 50 per cent discount to it.

The remote population adjustment

58. The remote population adjustment took account of differences in the access of remote populations to gambling opportunities. The Commission introduced this adjustment in the 1999 Review because it accepted that the lack of gambling opportunities in remote areas translated into lower gambling activity and lower gambling revenues.

59. The Commission based the factor on the proportions of each State's population in remote areas. It defined remote areas using the *Remote, Rural and Metropolitan Areas Classification, November 1994* of the then Departments of Primary Industries and Energy, and Human Services and Health.¹ The Commission treated remote urban centres of 1 000 persons or more, other than Aboriginal communities, as being non-remote because they were large enough to support clubs, hotels and lottery agents.

60. **Preliminary proposal.** In *Discussion Paper 2002/16 The Gambling Assessment*, Commission staff proposed reducing the remote population adjustment factor. They said the installation of gaming machines in small clubs and hotels, improved communications and the internet suggested that access was reaching smaller communities. Commission staff said they would investigate different population thresholds.

61. **State views. New South Wales** supported abolishing the remote population adjustment. It said no evidence had been provided to demonstrate that gambling activity per capita in rural/remote areas was less than that of metropolitan areas. Electronic gambling opportunities were available to anyone with access to a phone.

62. **Victoria** said the remote population adjustment should be abolished or, at a minimum, the population threshold should be reduced to 500 people. It said improved access to gambling (particularly electronic access) meant a remote population adjustment was no longer warranted.

¹ In the 1999 Review, expenditure assessments used the same remote area definition.

63. *Western Australia* said, if the current GDHI approach was retained, its remote population adjustment should be increased significantly. It provided evidence that the population required to support a profitable Lotteries Commission agency was 4 500.

64. *Tasmania* said the reasons for the adjustment had weakened considerably, particularly in the light of the broader distribution of gaming machines in smaller clubs and hotels. It noted that the Northern Territory submission included a table which showed gaming machines in centres of less than 1 000 persons.

65. The *ACT* argued that the remote population adjustment should be abolished or at least restricted to people in communities remote from consumer internet services. It noted that ABS data suggested, that between 1998 and 2000, farm access to internet services had increased from 11 per cent to 34 per cent nationally. It said the increase in access and the higher propensity to gamble by populations in non-metropolitan areas warranted the removal of the adjustment.

66. The *Northern Territory* said the remote population adjustment should be retained, if not increased. It said the 1999 Review adjustment did not take sufficient account of the lack of access of those living in remote areas to the range of gambling products. It provided evidence which it said demonstrated that Territory communities had quite different levels of accessibility to gambling products. It said the use of a remote communities population threshold of 1 000 people did not capture its differences in accessibility. It noted that some communities with less than 1 000 people had better access than other communities with more than 1 000 people and it concluded that a population of 1 000 people was not the most reliable measure of accessibility.

67. The Territory proposed a different assessment. It suggested replacing the 1999 Review adjustment with one based on the 'viability' of gambling products.

68. If the 1999 Review approach was retained, the Territory said:

- the population threshold should not be reduced below 1 000. Its remote population's access to gambling opportunities had not been significantly enhanced as a result of improved communications and the internet. ABS data demonstrated that use of home computers in the Territory was below the national average; and
- the Commission should make adjustments to its ARIA classification data, as they did for RRMA, to better capture remote and non-remote population data.

69. *Analysis and evaluation.* The remote population adjustment took account of the different access population groups had to gambling opportunities. The adjustment was based on an assumption that the lack of gambling opportunities in remote areas translated into lower gambling activity and lower gambling revenues.

70. The gambling environment has changed since the 1999 Review. The opportunities to gamble have increased through improved communications and access to the internet. These opportunities are available to most Australians, including those in smaller

or remote communities. The issue is whether remote populations have access to gambling opportunities, not whether they avail themselves of those opportunities.

71. Access issues may remain for small, very remote communities, but an adjustment based on a small population threshold is not likely to have a material impact on the gambling assessment.

72. **Commission decision.** The Commission does not consider, on balance, that a clear conceptual case has been made for continuing the remote population adjustment. While the evidence is limited, access to gambling opportunities has increased in remote communities. It appears accessibility issues are likely to be restricted to small or very remote communities. An adjustment based on a small population threshold would have an impact on the assessments which the Commission does not consider to be material. It therefore proposes not to assess a remote population adjustment in the 2004 Review.

The revenue sharing agreement adjustment

73. The revenue sharing adjustment took account of lower revenue capacity of smaller States. Because of the influence of large prize pools, less populous States found it more effective to licence large lottery operators from interstate than to run their own lotteries. However, they had to enter into revenue sharing agreements with New South Wales and Victoria, which limited their revenue raising capacity.

74. In 1998-99, Tasmania and the Northern Territory renegotiated their revenue sharing agreements with Victoria and they now receive full reimbursement of the relevant revenue. Victoria subsequently extended the changes negotiated in its revenue sharing agreement with the Northern Territory to the ACT. In the 2001 Update, the Commission reduced the disability adjustment to 1 per cent for 1998-99 (as the change took place mid-year) and discontinued it for later years. From 1998-99, the revenue raising capacities of the smaller States were no longer affected by revenue sharing agreements.

75. **Preliminary proposal.** In *Discussion Paper 2002/16 Gambling Taxation*, Commission staff proposed removing the adjustment because its impact on the 2004 Review assessments would not be material.

76. **State views.** No State opposed the proposal.

77. **Evaluation and Commission decision.** Since 1998-99, all the revenues collected by large States from the less populous States have been returned to them. There is thus no logical basis for the adjustment with effect from January 1999. The Commission has decided to remove the revenue sharing agreement adjustment in the 2004 Review.

PROPOSED ASSESSMENT METHOD FOR THE 2004 REVIEW

78. The Commission's assessment method for the 2004 Review will be similar to that used for the 1999 Review. The revenue base will be discounted gross household disposable income (GHDI). A discount of 50 per cent will apply to GHDI per capita.

Calculation of the revenue base

79. Table 4 presents the calculation of the revenue base. It is similar to that used in the 2003 Update.

Table 4 CALCULATION OF THE GAMBLING TAXATION REVENUE BASE

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
A. Gross Household Disposable Income (\$m)									
1997-98	133 072	94 674	61 836	35 687	27 686	7 853	8 731	3 842	373 381
1998-99	139 901	101 152	66 027	37 624	27 941	8 144	9 270	4 251	394 310
1999-2000	148 469	108 104	69 089	40 745	28 845	8 324	9 630	4 429	417 635
2000-01	162 921	118 925	75 102	43 534	32 137	8 907	10 846	4 767	457 139
2001-02	169 372	121 702	79 035	45 906	33 351	9 244	11 075	5 123	474 808
B. Gross Household Disposable Income (\$pc)									
1997-98	21 043	20 464	18 047	19 700	18 626	16 595	28 181	20 313	20 024
1998-99	21 853	21 628	18 965	20 428	18 687	17 241	29 694	22 078	20 891
1999-2000	22 911	22 849	19 520	21 809	19 183	17 628	30 533	22 622	21 859
2000-01	24 810	24 816	20 846	22 988	21 270	18 855	33 965	23 999	23 617
2001-02	25 504	25 067	21 533	23 932	21 961	19 536	34 323	25 623	24 226
C Implied capacity of GHDI per capita = B / B_{Aust}									
1997-98	1.0509	1.0220	0.9013	0.9838	0.9302	0.8288	1.4073	1.0144	1.0000
1998-99	1.0460	1.0353	0.9078	0.9778	0.8945	0.8253	1.4214	1.0568	1.0000
1999-2000	1.0481	1.0453	0.8930	0.9977	0.8776	0.8065	1.3968	1.0349	1.0000
2000-01	1.0505	1.0508	0.8827	0.9734	0.9007	0.7984	1.4382	1.0162	1.0000
2001-02	1.0528	1.0347	0.8888	0.9879	0.9065	0.8064	1.4168	1.0577	1.0000
D. Discounted capacity = {(C - 1) * 0.5} + 1									
1997-98	1.0254	1.0110	0.9506	0.9919	0.9651	0.9144	1.2037	1.0072	1.0000
1998-99	1.0230	1.0176	0.9539	0.9889	0.9473	0.9126	1.2107	1.0284	1.0000
1999-2000	1.0241	1.0226	0.9465	0.9989	0.9388	0.9032	1.1984	1.0175	1.0000
2000-01	1.0253	1.0254	0.9413	0.9867	0.9503	0.8992	1.2191	1.0081	1.0000
2001-02	1.0264	1.0174	0.9444	0.9939	0.9533	0.9032	1.2084	1.0288	1.0000

Table 4 CALCULATION OF THE GAMBLING TAXATION REVENUE BASE
(continued)

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
E. Revenue base (or Discounted GHDI) (\$m) = A * D / C									
1997-98	129 851	93 656	65 222	35 980	28 725	8 664	7 467	3 815	373 381
1998-99	136 823	99 430	69 380	38 051	29 588	9 006	7 896	4 137	394 310
1999-2000	145 060	105 762	73 227	40 791	30 857	9 323	8 262	4 354	417 635
2000-01	159 003	116 051	80 092	44 129	33 909	10 032	9 194	4 729	457 139
2001-02	165 128	119 660	83 978	46 188	35 071	10 354	9 446	4 983	474 808

Source: *Australian National Accounts State Accounts 2001-02, ABS 5220.0*, Gross HDI from Table 27.

2004 REVIEW DRAFT CALCULATIONS

Revenue raising capacity ratios

80. Table 5 shows the 2001-02 category revenue raising capacity ratios for the 2003 Update and the draft assessment.

Table 5 GAMBLING TAXATION REVENUE RAISING CAPACITY RATIOS,
2001-02

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Std
FAG relativities									
2003 Update	1.0323	1.0231	0.9379	0.9812	0.9548	0.9061	1.2174	0.9030	1.0000
2004 Review draft	1.0264	1.0173	0.9444	0.9940	0.9533	0.9032	1.2084	1.0289	1.0000
GST relativities									
2003 Update	1.0323	1.0231	0.9379	0.9812	0.9548	0.9060	1.2173	0.9029	1.0000
2004 Review draft	1.0264	1.0174	0.9444	0.9939	0.9532	0.9032	1.2084	1.0288	1.0000

Standardised revenue

81. Table 6 presents the draft assessment results and compares them with the 2003 Update results for the same year. Figure 2 shows the per capita standard, actual and standardised revenue for the FAG assessment for 2001-02.

Table 6 GAMBLING TAXATION ACTUAL AND STANDARDISED REVENUE, 2001-02

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Std
	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc	\$pc
FAG assessment									
(i) Actual revenue									
2003 Update	266.16	367.28	213.20	88.42	262.35	192.37	208.38	238.36	260.58
2004 Review draft assessment ^(a)	266.16	367.28	213.20	88.42	262.35	192.37	208.38	238.36	260.58
(ii) Standardised revenue									
2003 Update	268.99	266.60	244.40	255.68	248.80	236.10	317.22	235.30	260.58
2004 Review draft assessment	267.46	265.10	246.09	259.01	248.40	235.36	314.89	268.10	260.58
GST assessment									
(i) Actual revenue									
2003 Update	182.08	282.18	156.66	57.08	205.59	140.59	142.37	165.84	189.88
2004 Review draft assessment ^(a)	182.08	282.18	156.66	57.08	205.59	140.59	142.37	165.84	189.88
(ii) Standardised revenue									
2003 Update	196.01	194.27	178.09	186.31	181.29	172.04	231.15	171.45	189.88
2004 Review draft assessment	194.89	193.18	179.32	188.73	181.00	171.50	229.45	195.35	189.88

(a) Data have not yet been collected on racecourse development funds. These revenues have not been included in the standard for the draft assessment. The Commission will seek information from the States and include them in the 2004 Review calculations.

82. The draft assessment is similar to the 2003 Update assessment. The only changes have been the removal of the remote population adjustment and the revenue sharing agreement adjustment.

Grant share effects

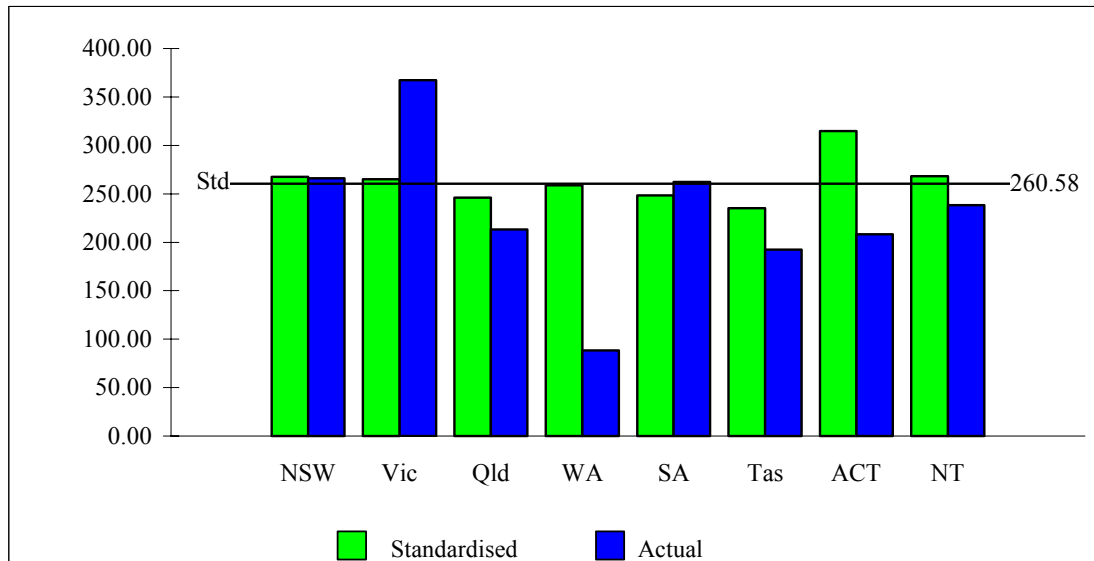
83. Table 7 shows the proposed assessment redistributes \$84.8 million compared with an equal per capita assessment. This level of redistribution is about \$19.2 million less than that produced by the 2003 Update assessment. The differences are due to the removal of the non-remote population and lotteries revenue sharing agreement adjustments.

Table 7 GRANT SHARE EFFECT OF THE PROPOSED METHOD OF ASSESSMENT, GAMBLING TAXATION, GST RELATIVITIES

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Restrib'n
	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m	\$m
2003 Update	-40.5	-24.2	42.9	7.7	14.0	8.8	-13.1	4.4	77.8
2004 Review draft assessment	-32.5	-18.4	38.4	3.0	14.5	8.6	-13.0	-0.7	64.5
Change	8.0	5.8	-4.5	-4.7	0.5	-0.2	0.1	-5.1	14.6

84. Figure 2 shows the draft assessment for 2001-02 for the 2004 Review in terms of standardised, actual and standard revenues.

Figure 2 GAMBLING TAXATION: STANDARDISED, ACTUAL AND STANDARD REVENUES PER CAPITA, 2001-02



Reality check

85. As can be seen from Figure 2, the standardised per capita are almost EPC (or standard), with the deviations from EPC reflecting the distribution of GHDI – that is, relatively low in, say, Tasmania, and relatively high in the ACT.

Updateability

86. The assessment is easily updated because it uses only GHDI data. These data will be updated in subsequent updates. They are published in the ABS Australian National Accounts State Accounts 2001-02 Product No. 5220.0. The 50 per cent discount will remain unchanged.

ATTACHMENT A

RESULTS OF REGRESSION ANALYSES

1. *Discussion Paper 2002/16, The Gambling Assessment*, reported the results of some regression analysis undertaken by Commission staff to test the relationship between gambling expenditure and gross household disposable income (GHDI).

2. In that analysis, staff used ordinary least squares (OLS) regression analysis to estimate the relationship:

$$GE_t = a + b*GHDI_t + u_t \quad (1)$$

where u is the stochastic error term and is assumed to be distributed identically and independently over States and time, t .

3. To test for the impact of differences between States as a result of, for example, differences in State policies, we also estimated the relationship:

$$GE_t = a + \sum d_i * D_i + b*GHDI_t + u_t \quad (2)$$

where D_i is a dummy variable with the value 1 if the State is State i , and zero for all other States. Only dummies for Western Australia and the ACT were included in *Discussion Paper 2002/16*.

4. Since then, Commission staff have extended that analysis to determine the impact of:

- (i) estimating State effects for all States in the regression analysis; and
- (ii) including socio-demographic variables in the regression analysis.

5. The results are presented below.

State effects

6. Table A.1 presents the regression results for the model :

$$GE = F(\text{GHDI, trend, State dummies})$$

where GE = gambling expenditure per capita
 GHDI = gross household income per capita
 trend = the increase in gambling opportunities over time.

7. The estimated model allows each State to have different average levels of gambling expenditure per capita.

8. The model was initially estimated without an explicit dummy variable for Tasmania. The results were then adjusted, following the method outlined by Suits², to calculate State effects for all States, assuming that the sum of the State effects was zero. The regression results were as expected: positive for New South Wales, Victoria, Queensland and the Northern Territory and negative for Western Australia, South Australia, Tasmania and the ACT. The only State effect that was statistically different from zero at the 95 per cent confidence level was that for New South Wales.

9. Table A.1 also shows that the coefficient on the income variable is positive and statistically different from zero at the 95 per cent level of confidence. This is also the case for the trend coefficient.

Socio-demographic effects

10. To assess the impact of socio-demographic factors on gambling expenditure, staff included variables covering the age structure of the population, education levels and the selected ethnic background in the regression analysis.

11. ***Education.*** In its Submission, the ACT said that the higher average level of education of its residents contributed to their lower level of gambling expenditure per capita. South Australia said the distribution of gaming machines in favour of lower income (and, presumably, lower education) areas in some States could also affect the average level of gambling expenditure per capita.

12. In the regression analysis, staff used the ABS index of education attainment to measure the level of education in each State. Table A.2 shows the estimated coefficient on the education variable was not statistically different from zero. The coefficients for the trend variable and the income variable remained statistically different from zero. The income and trend coefficients remained virtually the same, whether or not the education variable was included in the regression model.

13. ***Age.*** Most studies of gambling behaviour³ note the higher than average propensity of males aged 18 to 25 to gamble. However, when the share of 18 to 25 year-old males in a State's population was included in the regression equation, the estimated coefficient had a negative sign — suggesting the greater the share of 18 to 25 year-old males in a State's population, the lower that State's gambling expenditure per capita — but it was not statistically different from zero (see Table A.3).

² Daniel B. Suits, "Dummy Variables: Mechanics V. Interpretation", *Review of Economics and Statistics*, Vol. 66, No 1 (February 1984), pp 177-180.

³ See, for example, Australia's *Gambling Industries* (Productivity Commission, 1999).

14. Table A.3 shows that when the age variable was included, the estimated income coefficient was statistically different from zero and remained relatively unchanged from its value in the regression which did not include the age variable (Table A.1).

15. ***Ethnic background.*** Some States have said particular population sub-groups have a higher propensity to gamble. Residents from a Chinese background have in particular often been identified as having a higher than average propensity to gamble. To test this hypothesis, we included a variable showing a State's proportion of residents born in greater China (mainland China, Hong Kong S.A.R. and Taiwan) in the regression equation.

16. Table A.4 shows the estimated coefficient for the ethnic background variable is positive and statistically different from zero. The inclusion of this variable also impacted on the estimated State effects, in most cases reducing their size. The actual impact of this variable would be small because the regression coefficient is small and the share of greater China-born Australian residents is also small. In Tasmania, for example, the share is less than a quarter of a per cent of the State population. Even in New South Wales, the State with the largest share, the number is only 2 per cent of the State population.

Conclusion

17. While at an individual level, factors such as education, age, sex and ethnic background may influence gambling expenditure, at a State level the effect is either fairly small or not statistically different from zero.

18. The estimated coefficient of gross household disposable income per capita was statistically different from zero in all our regressions. The coefficient was, however, small. When only gross household disposable income per capita was used as an explanatory variable, it explained about 50 per cent of gambling expenditure. Overall, the analysis appears to support the current assessment — gross household disposable income per capita (discounted by 50 per cent). The regression analyses show the income variable explains about 50 per cent of the differences in gambling expenditure (Table A.5).

Table A.1 INDIVIDUAL STATE EFFECTS

<i>Regression Statistics</i>						
Multiple R	0.9329					
R Square	0.8703					
Adjusted R Square	0.8553					
Standard Error	0.0839					
Observations	88					

ANOVA						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	9	3.6811	0.4090	58.1601	6.10414E-31	<i>TASD</i> -0.0054
Residual	78	0.5485	0.0070			Intercept -0.4618
Total	87	4.2296				

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	
Intercept	-0.4672	0.1948	-2.3984	0.0189	-0.8551	-0.0794	Intercept -0.4618
ghdi	0.0358	0.0119	3.0138	0.0035	0.0121	0.0594	Tasmania -0.0054
WAD	-0.0775	0.0538	-1.4395	0.1540	-0.1847	0.0297	WA -0.0721
ACTD	-0.1784	0.1549	-1.1521	0.2528	-0.4868	0.1299	ACT -0.1730
NTD	0.0405	0.0758	0.5336	0.5951	-0.1105	0.1914	NT 0.0459
QLDD	0.0629	0.0396	1.5890	0.1161	-0.0159	0.1418	QLD 0.0684
NSWD	0.1766	0.0670	2.6353	0.0101	0.0432	0.3101	NSW 0.1821
VICD	0.0370	0.0606	0.6113	0.5428	-0.0836	0.1576	VIC 0.0425
SAD	-0.0175	0.0390	-0.4494	0.6544	-0.0952	0.0602	SA -0.0121
t	0.0229	0.0100	2.2962	0.0244	0.0031	0.0428	

Notes: The dependent variable is gambling expenditure per capita. ghdi is gross household disposable income per capita. WAD, ACTD, NTD, QLDD, NSW, VICD and SAD are State dummies. The last two columns indicate the results for 8 dummies, using the Suits method.

Table A.2 EFFECTS OF ALLOWING FOR DIFFERENCES IN EDUCATIONAL ATTAINMENT

<i>Regression Statistics</i>	
Multiple R	0.9329
R Square	0.8703
Adjusted R Square	0.8535
Standard Error	0.0844
Observations	88.0000

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	10.0000	3.6811	0.3681	51.6730	0.0000
Residual	77.0000	0.5485	0.0071		
Total	87.0000	4.2296			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-0.5921	236269.8	0.0000	1.0000	-470474.4	470473.2	-470474.4	470473.2
ghdi	0.0358	0.0	2.9944	0.0037	0.0	0.1	0.0	0.1
WAD	-0.0665	14354.6	0.0000	1.0000	-28583.8	28583.6	-28583.8	28583.6
ACTD	-0.1905	65278.1	0.0000	1.0000	-129985.6	129985.2	-129985.6	129985.2
NTD	0.0301	61487.3	0.0000	1.0000	-122436.9	122437.0	-122436.9	122437.0
QLDD	0.0807	480.2	0.0002	0.9999	-956.1	956.2	-956.1	956.2
NSWD	0.1841	22113.2	0.0000	1.0000	-44032.8	44033.2	-44032.8	44033.2
VICD	0.0439	23503.1	0.0000	1.0000	-46800.8	46800.8	-46800.8	46800.8
TASD	0.0291	25398.6	0.0000	1.0000	-50575.0	50575.1	-50575.0	50575.1
Education	0.0011	2527.2	0.0000	1.0000	-5032.3	5032.3	-5032.3	5032.3
t	0.0229	0.0	2.2814	0.0253	0.0	0.0	0.0	0.0

Notes: Education is an index of the share of people with year 12 education, TAFE, or above, relative to Australian average.

All other variables are the same as those in Table A.1.

Table A.3 EFFECTS OF ALLOWING FOR DIFFERENCES IN POPULATION SHARES OF MALES 18 TO 25

<i>Regression Statistics</i>	
Multiple R	0.9333
R Square	0.8710
Adjusted R Square	0.8542
Standard Error	0.0842
Observations	88.0000

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	10.0000	3.6839	0.3684	51.9787	0.0000
Residual	77.0000	0.5457	0.0071		
Total	87.0000	4.2296			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-0.1673	0.5149	-0.3249	0.7461	-1.1927	0.8581	-1.1927	0.8581
ghdi	0.0363	0.0119	3.0359	0.0033	0.0125	0.0601	0.0125	0.0601
Male 18-25	-0.0347	0.0551	-0.6296	0.5308	-0.1443	0.0750	-0.1443	0.0750
WAD	-0.0507	0.0688	-0.7358	0.4641	-0.1877	0.0864	-0.1877	0.0864
ACTD	-0.1042	0.1952	-0.5338	0.5950	-0.4928	0.2844	-0.4928	0.2844
NTD	0.1501	0.1901	0.7898	0.4321	-0.2284	0.5287	-0.2284	0.5287
QLDD	0.0911	0.0598	1.5225	0.1320	-0.0280	0.2102	-0.0280	0.2102
NSWD	0.1839	0.0683	2.6937	0.0087	0.0480	0.3198	0.0480	0.3198
VICD	0.0508	0.0646	0.7862	0.4342	-0.0779	0.1795	-0.0779	0.1795
SAD	-0.0160	0.0393	-0.4067	0.6854	-0.0941	0.0622	-0.0941	0.0622
t	0.0167	0.0141	1.1817	0.2409	-0.0114	0.0448	-0.0114	0.0448

Notes: Male 18-25 is the share of male persons aged between 18-28 in the State population.
 All other variables are the same as those in Table A.1.

Table A.4 EFFECTS OF ALLOWING FOR DIFFERENCES IN POPULATION SHARES OF CHINESE BORN AUSTRALIANS

<i>Regression Statistics</i>	
Multiple R	0.9381
R Square	0.8800
Adjusted R Square	0.8644
Standard Error	0.0812
Observations	88.0000

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	10.0000	3.7220	0.3722	56.4614	0.0000
Residual	77.0000	0.5076	0.0066		
Total	87.0000	4.2296			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-0.5136	0.1895	-2.7101	0.0083	-0.8911	-0.1362	-0.8911	-0.1362
ghdi	0.0373	0.0115	3.2374	0.0018	0.0143	0.0602	0.0143	0.0602
Chinese	0.1865	0.0748	2.4920	0.0149	0.0375	0.3356	0.0375	0.3356
WAD	-0.1620	0.0622	-2.6049	0.0110	-0.2858	-0.0382	-0.2858	-0.0382
ACTD	-0.4072	0.1758	-2.3160	0.0232	-0.7573	-0.0571	-0.7573	-0.0571
NTD	-0.0457	0.0811	-0.5627	0.5753	-0.2072	0.1159	-0.2072	0.1159
QLDD	-0.0461	0.0582	-0.7929	0.4303	-0.1620	0.0697	-0.1620	0.0697
NSWD	-0.1908	0.1611	-1.1843	0.2399	-0.5115	0.1300	-0.5115	0.1300
VICD	-0.1630	0.0994	-1.6395	0.1052	-0.3609	0.0350	-0.3609	0.0350
SAD	-0.0653	0.0424	-1.5416	0.1273	-0.1497	0.0191	-0.1497	0.0191
t	0.0187	0.0098	1.9041	0.0606	-0.0009	0.0383	-0.0009	0.0383

Notes: Chinese is the share of persons born in the greater China region (mainland China, Hong Kong SAR, Taiwan and Singapore) in State population.

All other variables are the same as those in Table A.1.

Table A.5 EFFECTS OF INCOME WITH ONLY WA DUMMY

<i>Regression Statistics</i>	
Multiple R	0.7637
R Square	0.5833
Adjusted R Square	0.5735
Standard Error	0.1440
Observations	88.0000

ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	2.0000	2.4672	1.2336	59.4926	0.0000
Residual	85.0000	1.7625	0.0207		
Total	87.0000	4.2296			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-0.3107	0.0872	-3.5615	0.0006	-0.4842	-0.1373	-0.4842	-0.1373
ghdi	0.0357	0.0034	10.5610	0.0000	0.0290	0.0425	0.0290	0.0425
WAD	-0.0948	0.0465	-2.0392	0.0445	-0.1873	-0.0024	-0.1873	-0.0024

Notes: The dependent variable is gambling expenditure per capita and ghdi is gross household disposable income per capita. WAD is a dummy for Western Australia.