Table 3.24   Ranking of highest and lowest hotel turnover per machine per LGA

Rank	Local Government Area	Hotel Turnover	Rank	Local Government Area	Hotel Turnover per machine
1	Sydney	1,235,463,253	156	Gundagai	124,099
2	South Sydney	578,972,420	157	Coonamble	122,377
3	Fairfield	416,560,115	158	Glen Innes	116,758
4	Blacktown	413,387,114	159	Hume	112,719
5	Marrickville	399,163,571	160	Maclean	112,592
6	Liverpool	369,057,132	161	Berrigan	110,880
7	Parramatta	364,773,069	162	Corowa	110,133
8	Canterbury	363,548,476	163	Crookwell	109,841
9	Bankstown	334,453,957	164	Hay	107,151
10	Randwick	300,502,851	165	Tenterfield	105,934

3.8   Conclusion

Gaming machines account for 70 per cent of total gambling expenditure in NSW. The geographic distribution of expenditure on gaming machines accordingly covers a large part of the distribution of gambling as a whole. However, the geographic pattern implies that a significant portion of expenditure in at least some regions is spent by non-residents. The next steps in the analysis are accordingly to estimate expenditure by region of residence, rather than the region in which the gambling actually took place. In the process we will also include gambling expenditure other than on gaming machines, that is spending on racing, lotteries and the casino.

4.   Estimating local area gambling expenditures

4.1   Introduction

To estimate average household spending on a regional basis we utilise NIEIR's *SpendInfo 2001* product, which is designed to estimate the household spending characteristics of each small area in Australia. The analysis that underpins this product is constructed at the ABS Census collector district (CCD) level, which comprises 33,000 areas in the nation and over 11,000 in NSW.

SpendInfo 2001 relates the socio-demographic characteristics of each small areas' households to the ABS Household Expenditure Survey of nearly 8000 households. By utilising a high intensity mathematical algorithm developed by NIEIR we select the information for the 8,000 households that is consistent with the types of households within each CCD. This information is then further refined by considering the economic advantage or disadvantage of the area along with characteristics of employment, unemployment, education, ethnicity etc.

At a national and state level the estimates are further adjusted to match reported national totals of expenditure at the commodity or expenditure item level. On the basis of these estimates we have a starting point from which to estimate actual regional spending levels.

However we face two distinct problems:

- we must be able to reconcile *SpendInfo 2001*/Household Expenditure Survey gambling expenditure (i.e. reported losses) to the official Australian Gambling Statistics, published by the Tasmanian Gaming Commission for 2000-01; and

- we must reconcile the known distribution of actual gaming machine spending at hotels and clubs in the state with a feasible distribution of originating expenditure at the household level.

Table 4.1 details, by gambling type, the spending reported in Australia Gambling Statistics. Since it is collected from venue returns, this information will be taken as accurate, and hence must be matched by expenditure in the household sector. The NIEIR aggregation of spending types is also presented. This relates to the information available in the Household Expenditure Survey.

Table 4.1	Total spending in NSW by gambling type, plus NIEIR aggregations	
Gambling Type	2000/01 $m, NSW	NIEIR Aggregation
Lotteries	43.48	Lottery tickets
Lotto	331.93	Lotto type games and instant lottery
Instant Lottery	73.24	Lotto type games and instant lottery
Pools	4.63	Lotto type games and instant lottery
Casino	529.00	Blackjack, roulette & other casino type games
Keno	85.20	Club and Casino Broadcast Gaming
Gaming Machines	4,119.49	Gaming Machines
Sports Betting	0.60	TAB and on-course betting + sports
TAB	625.98	TAB and on-course betting + sports
On Course Totalisator	44.13	TAB and on-course betting + sports
Bookmakers	26.60	TAB and on-course betting + sports
Total	**5,883.98**	**Total**

4.2 Reconciling HES to ASGC Gambling Statistics

The HES is predominantly a self-reporting survey. Information available from respondent's records such as income, tax paid, mortgages and loans are verified, but the remaining items are mostly recall based. The deficiencies of recall based reporting are not only the problem of recollection itself but problems of guilt, deception and privacy. To a significant degree those reporting expenditures on gambling, i.e. gambling losses, underestimate or understate the amount lost.

4.2.1 Under-reporting gambling expenditures

When the raw (unadjusted) ABS household expenditure survey (HES) totals are analysed the following percentages of the expected losses are revealed.

Table 4.2 Under-reporting of gambling expenditures by type	
Gambling Type	Raw HES Totals
Lottery tickets	134%
Lotto type games and instant lottery	79%
Blackjack, roulette and other casino type games	30%
Club and Casino Broadcast Gaming	101%
Gaming Machines	36%
TAB and on-course betting	51%

The excess estimation in lottery tickets and the reverse in lotto-type games point towards a classification problem with the HES rather than significant under and over reporting of the two expenditure types taken together. However, there is serious under-reporting in the gaming machine and casino expenditure categories. It would appear that these are the areas where guilt, deception and sheer loss of memory are most significant. They are also the areas with widespread small winnings, which may cause people to under-estimate the amounts lost. It has sometimes been argued that these mis-statements of winnings and losses invalidate the HES as a source of information on gambling, but in one important aspect NIEIR believes that the data is reasonably accurate. This is the identification of persons who gambled. The amounts may be wrong, but the culprits are identified. Discounting the scale of losses, the relationship between the relative levels of betting reported and the amount of other expenditure recorded is informative. This is supported by the fact that the number of people reporting gambling is broadly consistent with reported rates of gambling from other sources[5].

The under reporting of amounts lost in the TAB and on-course arena is less than for the other two major categories, perhaps due to the maturity of the market and a greater level of social acceptance of gambling losses in this area. It may also be that the intellectual effort involved in this type of betting means that punters keep track of their net losses more accurately than casino or gaming machine gamblers.

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[5] VCGA Community Perceptions Survey, PC report. We must also remember that a two-week collection period was used for the HES.

Another hypothesis to account for the HES shortfalls is that they mainly represent under-statement by problem gamblers. It is almost a definition of a problem gambler that he/she is a person who lies about his/her gambling, and problem gamblers cannot be expected to be any more truthful to ABS interviewers than they are to their friends or family. For this reason, we have chosen to treat problem gamblers separately in this study, treating the HES estimates as reflecting, in large part, the losses of non-problem gamblers.

4.2.2 Proportion of spending attributable to problem gambling

Our aim in using *SpendInfo 2001* totals was not to estimate total spend. The HES unit records do not contain a single problem gambler, and *SpendInfo* accordingly omits problem gamblers. For this reason it was decided to account for expenditure by problem gamblers separately, and to rely on *SpendInfo* solely for the geographic distribution of expenditure by non-problem gamblers. By estimating the percentage of revenue that is attributable to responsible gambling in each expenditure type we were able to target the aggregate spending accordingly.

In Chapter 7 of the Draft PC report[6] a number of ways in which to determine the percentage of revenue from problem gamblers were presented. Additionally, international experience is presented. On the basis of this evidence, as well corrections for the source of funds, we made the assumptions shown in Table 4.3.

Table 4.3 Share of revenue attributable to problem gambling by gambling type		
Gambling Type	Responsible gambling	Problem gambling
Lottery tickets	100%	0%
Lotto type games and instant lottery	100%	0%
Blackjack, roulette & other casino type games	90%	10%
Club and Casino Broadcast Gaming	100%	0%
Gaming Machines	62%	38%
TAB and on-course betting	78%	22%

The assumption of zero problem gambling for lotteries and club gaming reflects the lack of meaningful evidence that problem gamblers spend significantly in these areas and the relatively low level of total expenditure.

Using these targets simple factors were used to magnify the HES totals to the levels expected for responsible gambling.

For TAB and on-course betting, club and casino broadcast gaming, lottery tickets, lotto type games and instant lotteries these estimates were used in the modelling. Further supply-related adjustments were made to gaming machines and casino type games.

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[6] Tables 7.12, 7.13, 7.14 and Figure 7.6.

4.3 Distribution of originating spending by LGA

4.3.1 Introduction

The second consideration in the development of local area spending estimates was determining a feasible distribution of gaming machine spending that matched the reported spending in the hotels and clubs. To do so the initial estimates of the *SpendInfo 2001* product were used, rebased to correct responsible gaming totals. In addition, we needed to analyse the way in which the supply of machines in an area contributes to the amount spent, and at the same time match the regional totals reported in actual expenditures. To do so we built an adaptive gravity model. Gravity models are commonly used in transport studies, and are a formal expression of the common experience that, the closer one lives to a pub or club, the more likely one is to gamble there. The gravity models adjust each region's estimated spending to the relative appeal of the local venues, adjusted for distance. For instance, a major club such as the Penrith Rugby Leagues Club will be able to draw people from a wider area than local pubs. Due to the quality of the establishment, and the level of inducements and entertainment available, areas which have easy access to it will spend more than the unadjusted *SpendInfo* estimates, based as they are on standard demographic patterns. On the flip-side, a region without local venues should not simply be assumed to travel further to gamble the same amount. In reality some will travel, and we need to account for their spending in the area they travel to, but some won't, resulting in lower expenditures than would be expected from the region's income and demographics.

Before such a model can be specified we also must identify regions likely to receive significant export (i.e. tourist) spending. Imports and exports were identified and removed to estimate local gambling spend. Regions with significant concentrations of accommodation relative to other facets of the hospitality sector were inferred to have significant gambling exports.

4.3.2 Gravity modelling of gaming machines expenditure

The gravity model matched spending in each local area to non-export turnover in each region. The distribution was based on a travel time matrix between almost 4,000 localities in New South Wales.

The share of an originating regions' expenditures applied in a particular destination area was a function of the following:

- a non-linear function of the time taken to travel between the two regions (greater than 90 minutes travel was considered infeasible);

- the relative attractiveness of the region, destination (beta);

- the relative supply based variation in the originating region's spending (theta);

- the originating region's estimated average spend; and

- the shares implied by other regional characteristics.

With fixed travel times, *SpendInfo*-based estimates for each originating region and known expenditures in each destination region, the variables which adapted were the non-linear function, along with the estimates of theta and beta for each region. Variations in theta adjusted originating spending upwards or downwards for the accessibility of venues.

4.3.3 Results – supply adjusted spending per LGA on gaming machines

The results from the gravity modelling were a set of estimates for gaming machines which were consistent with the spending reported by the clubs and pubs but also based on the original *SpendInfo* estimates.

The distribution that related the spending of each region to the revenue of another was also kept and used further in the report.

Tables 4.4 and 4.5 detail the highest and lowest amounts of spending per household per week on gaming machines. The amounts only represent the amounts spent per week by responsible gamblers. The further 38 per cent of gaming revenue from problem gamblers is not included. The highest expenditure areas are in Western Sydney, where incomes are moderate but the supply of machines and clubs along with the revealed levels of revenue in the area are very high. The lowest amounts per household per week are in rural and regional NSW where the numbers of machines are limited.

Table 4.4   Highest spending local government areas – supply adjusted gaming machine

Rank	Local government area	Spending per household per week, responsible gaming
1	Fairfield (C)[7]	30.53
2	Bankstown (C)	29.95
3	Liverpool (C)	29.25
4	Penrith (C)	28.74
5	Barraba (A)	26.74
6	Blacktown (C)	26.40
7	Holroyd (C)	25.66
8	Corowa (A)	24.95
9	Botany Bay (C)	23.71
10	Campbelltown (C) (NSW)	23.15

Table 4.5   Lowest spending local government areas – supply adjusted gaming machine

Rank	Local government area	Spending per household per week, responsible gaming
174	Snowy River (A)	5.88
173	Pristine Waters (A)	6.91
172	Yarrowlumla (A)	6.98
171	Cooma-Monaro (A)	7.52
170	Coffs Harbour (C)	7.81
169	Evans (A)	7.93
168	Yass (A)	7.99
167	Kyogle (A)	8.5
166	Wellington (A)	8.78
165	Cabonne (A)	9.07

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[7]   Throughout the report local government areas will have a letter in brackets after the name, this is symbol for an official title used in ABS regional descriptions, A refers to Area and C refers to the City of.

4.3.4　Casino modelling

We must also adjust casino expenditures as the *SpendInfo 2001* estimates do not vary with the distance from the casino and therefore two demographically identical communities in Broken Hill and South Sydney would be assumed to spend the same, even though Broken Hill is 1,100 kilometres away from Star City.

As such casino spending (responsible) was determined on the basis of three key factors:

1.　travel time distribution based on the closest casino to a region (some parts of New South Wales are closer to Melbourne's Crown or Brisbane's Jupiter's or the Adelaide Casino than to Star City);

2.　income and other gambling spending; and

3.　other socio-demographic factors.

Table 4.6 details the highest levels of spending on casinos. The ten highest spending LGAs on casinos differ from the highest for gaming machines. Wealthier areas including Sydney City, Canterbury, Willoughby feature along with LGAs that are close to the casino such, as Marrickville, Ashfield and Auburn.

The impact of distance on the modelling is clear from the aggregate regional averages presented in Table 4.7. The established suburban regions are modelled to spend almost twice the average of the state and four times the amount spent by inland regions.

Table 4.6	Casino expenditure by household	
	Top ten regions	Casino spending per household per week, responsible gaming
1	Sydney (C)	7.65
2	Auburn (A)	7.37
3	Ashfield (A)	6.87
4	Fairfield (C)	6.85
5	Burwood (A)	6.61
6	Canterbury (C)	6.42
7	Strathfield (A)	6.40
8	Marrickville (A)	5.96
9	Willoughby (C)	5.54
10	Ryde (C)	5.33
	Average NSW	**3.32**

Table 4.7 Casino expenditure, aggregate regions	
Aggregate regions	Casino spending per household per week, responsible gaming
Inland (excluding border regions)	1.33
VIC/QLD border regions	1.98
Northern Coastal	1.93
Southern Coastal	2.30
Inner Sydney	4.71
Established suburban	5.27
Outer Sydney Suburbs	3.87
Total NSW	**3.32**

4.4 Conclusion

A comparison of the HES and ASGC returns shows that the former under-estimate gambling spending. However, the HES is reasonably accurate in the division it makes between gambling and non-gambling households. The usefulness of the HES returns can be considerably increased by removing problem gamblers for separate analysis, and increasing estimated spending to account for the shortfall remaining after problem gamblers have been removed.

The HES estimates apply to Australia as a whole, but in this report form the basis of estimates at regional and local government area level. There are two stages in the preparation of local estimation from the HES:

- the HES is adjusted for local incomes and demographics as revealed in the 2001 Census, using *SpendInfo 2001*; and

- further adjustments are made for the accessibility of gambling venues from each local area.

The resulting estimates of local spending on gambling are used in the following chapters. Their derivation from the HES is especially useful, since it allows gambling to be placed in the context of other household expenditures in each region.

Further discussion of the status of HES data on gambling will be found in the VCGA report, *The Economic Impact of Gambling*, Section 4.5.

5.   Regional impact evaluation methodology

5.1   Introduction to 'top-down and bottom-up' evaluation

The innovative way in which the local area impacts are evaluated in this report is made possible by taking advantage of a vast range of socio-demographic and economic information at the local government area level.

The National Economics "*State of the Regions*" reports, prepared for the Australian Local Government Association, document the significant degree of differentiation between Australian regions. Difference in incomes, spending patterns, economic structure and demographics are considerable and require specialised attention.

When economic models are built using small area information as a base the modelling is said to be "bottom-up" because it takes account of local peculiarities. The strength of this approach is that behavioural or systematic relationships can be built which explain behaviour in the light of the range of local attributes. In a complex, diverse economy such as New South Wales there is always considerable regional variation and modelling this explicitly has the advantage of not over-simplifying the relationships at the state level.

With regard to gambling it is vital that these relationships are determined at the lowest possible level, and the local government area structure in New South Wales provides us with such an opportunity.

The evaluation is conducted by estimating flows of incomes, profits and expenditures. The impacts at a regional level and at the state level are assessed in terms of income effects at the household level. The "top-down" element in the methodology complements the "bottom-up" by ensuring that local area impacts add up to State totals.

5.2   The role of expenditure sources in estimating local area income effects

In economics consumption is often considered as an aggregate, with little attention being shown in its composition. However, this is misleading when the analysis for a regional economy is considered. The reason for this is that some expenditures have large flow-on impacts on the economy due to either more complex sources of intermediate goods or due to low levels of imports. Expenditures have different degrees of 'buy local' effects. Monies spent in a particular location can generate a great deal of income for the location if the profit or value-added component of the amount spent is reinvested in the local economy, or if the intermediate goods required to produce the goods or services bought were sourced locally.

Maintaining strong local economies is all about strengthening a region's capacity to provide opportunities for local purchasing. Gambling expenditures have a particular local focus. The scale of impact at the regional level involves a balance between the local benefits and the opportunity cost of other goods that could have been purchased, a balance between the benefits and the costs of financing gambling activity.

5.3   Determining net flows of activity at the regional level

The following diagram details the way in which the impacts of activity undertaken or foregone is measured using the regional modelling and national IMP[8] modelling.

The 'bottom-up' approach is built on measuring the local area effect of the direct activity and the indirect local effects caused by the flow-on activity undertaken either by the business sector in providing the activity, or by the spending of those employed.

Direct effects include the income of the workers in the venues as well as incomes generated in support services purchased locally such as cleaning, property services or wholesale trade. Incomes so generated in any municipality are distributed across LGAs as follows:

- wages and salaries are distributed according to journey-to-work returns from the Census; and

- profits are distributed depending on the nature of the ownership structure.

Indirect effects relate to the activity generated by the spending of those people who gain employment due to the direct effects. The indirect effects include all of the subsequent flows at the local level of this income.

The 'top-down' effect is then used to allocate the remaining activity across the state so that the total state-wide effect equals the estimated state effects from the IMP model. For instance if local area direct and indirect effects provide 65 per cent of the total impact anticipated at the state level, then the remaining 35 per cent will be allocated using the 'top-down' approach. In general this remaining impact is distributed according to regional shares of income or dividends.

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[8]   NIEIR's institute multi-purpose modelling, impacts are measured in terms of household consumption only and do not include the impacts of imputed household incomes and expenditures such as ownership of dwelling and the transfer of health payments etc.
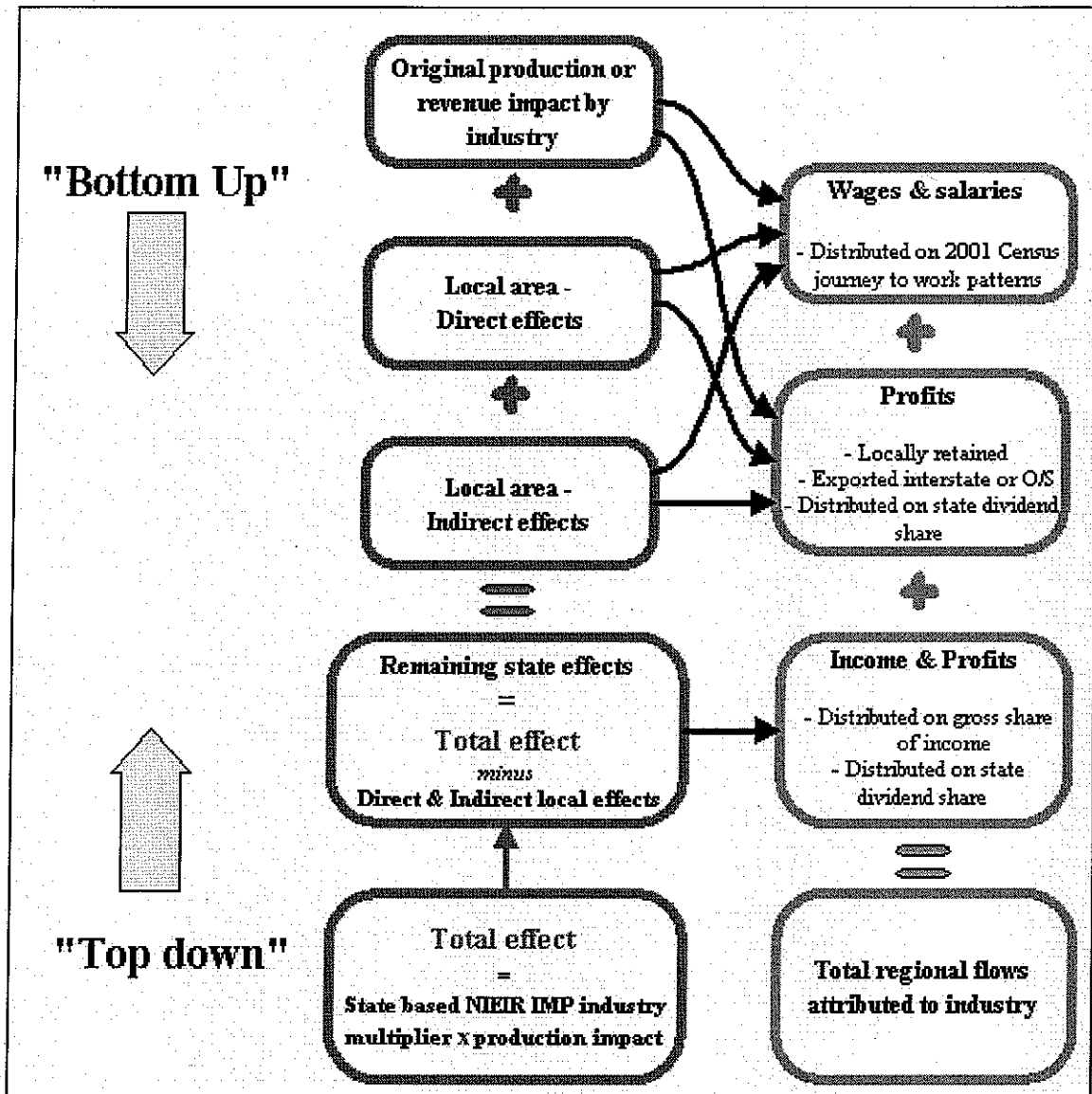
6. Problem gambling

6.1 Background

The costs to society of problem gambling are an important consideration in the analysis of the impact of gambling on the state and regions. The literature that tackles the prevalence, cost and sociology of problem gambling is extensive. It is not considered within the scope of this report or the expertise of the authors for any of this material to be critiqued or re-estimated. We will, however, use a selected amount of this research to present a feasible set of estimates and distributional patterns that provide an estimate of the local incidence of the cost of problem gambling.

To this end we have considered the relevant sections of the Productivity Commission (PC) report entitled "Australia's Gambling Industries". Some background knowledge of the issues underlying the theory and costs of problem gambling was required for the detailed analysis in this section of the report. The main issues and the way in which this report has tackled them are presented below.

- The identification of a problem gambler is often done using self-response questionnaires. The survey with the most widespread use and hence comparative data is the South Oaks Gambling Screen (SOGS). The higher the SOGS rating the more significant the gambling problem. Some researchers considered a rating of 5+ to be an adequate representation of those who encounter significant costs whilst others argue that a higher threshold should be reached.

- The societal costs of problem gambling depend heavily on calculations of the emotional costs caused by the problem gambler. The PC report suggested the appropriate costs as falling within the range $7,000 to $22,000 (1998-99 dollars).

- Research suggests that negative correlations exist between problem gambling and socio-demographic factors such as income or educational attainment. Regardless, there are still significant numbers of problem gamblers in most regions, income groups and occupational groups.

- On a ex-post basis it appears that there is a correlation between the density of gaming machines (i.e. accessibility) and the rates of those reporting to problem gambling support services. Considering that the density of gaming machines is often negatively correlated with incomes, the use of gaming machine density to influence the levels of problem gambling modelled appears sensible.

- The amount of money lost by problem gamblers is very large, and depends upon the individuals' access to funds. Whilst crime is one source of funds the majority of funds can be represented for the purposes of this research as a flow between individuals within the family and, to a lesser extent, friendship groups, or an inter-temporal transfer in the case of debt raised.

6.2 Allocating the prevalence of problem gamblers

Utilising research presented in the PC report:

- we have chosen to use the SOGS 7+ rating to determine the prevalence of problem gambling in the population 18+. Using this rating identifies 1.09 per cent of the adult population as being considered problem gamblers or 159,808 people Australia wide in 2001;

- based on research by Dickerson, the report suggests that there will be different levels of problem gambling in each state. Product lifecycle characteristics and the different levels of accessibility between states provide ample evidence of the need to use differential state levels. According to the Dickerson method, New South Wales has 32 per cent more than the Australian average rate of problem gambling. This implies that the prevalence of problem gambling in New South Wales is 1.44 per cent of the adult population (1.32 * 1.09 per cent), or 71,708 problem gamblers; and

- with this number defined, the allocation of gaming expenditures and costs can be related to income and machine density.

6.2.1 Estimating the rate of problem gambling on the basis of gaming machine density

The PC report suggested that in Victoria there was prima facie evidence of a relationship between the density of gaming machines and the rate of new clients reporting to official agencies for problem gambling support[9]. The report presented an equation between the two.

In NSW with the long history of gaming machines and the higher rates of problem gambling as reported by Dickerson it is likely that the prevalence of problem gamblers is also related to the density of gaming machines. The relationship between accessibility and problem gambling is assumed to hold in this report.

In Victoria, the estimated equation relates to a maturing product rather than the mature product that exists in New South Wales. However, evidence presented on the average gambling time period for problem gamblers suggests that, for a mature product, the relationship between the rates of problem gamblers reporting to counselling will be very similar to the rates of problem gambling in the entire population.

$$Clients = 0.039 + 0.059 \times EGMs, \quad R^2 = 0.39$$

The direct application to NSW of the equation based on Victorian data would be inappropriate due to the significantly larger number of machines in NSW and hence higher densities of machines. The relevance of the equation would intuitively appear to relate to the relative density of the machines rather than the absolute level of machines as the supply of machines is not constrained to a degree sufficient to produce significant queuing or search costs.

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[9] PC draft report pp8.14.

As such, the Victorian equation is transformed for application to NSW local government areas as follows.

$$PG\,DR = c \times \left(0.039 + \frac{0.059 * EGM}{4} \right)$$

where,

c	*is a statewide constant*
EGM	*is the number of gaming machines per 1000 population within 30 mins*

The constant, *c*, in the equation ensures that the total derived from within the brackets is the same as the total of 71,708 previously defined. Defining gaming machines within 30 minutes travel time as the appropriate catchment is at the upper end of travel times. Using such a travel time is partly due to the problems of identifying exact distances between clubs within LGA boundaries. The travel time used is measure by the midpoint distance between major population areas. Using a slightly larger than anticipated benchmark corrects the problem of within-LGA accessibility.

We make the assumption that the estimated values derived from the equations represent the raw number of problem gamblers in each region. We can compare the estimated number of problem gamblers relating to machine densities with the number that would be estimated assuming a fixed rate of problem gambling in the population.

We also require an estimate of the amount of losses that should be attributed to each region based on the estimated number of problem gamblers. The PC report, which detailed the amounts lost by problem gamblers in a year, shows a very skewed distribution. Because of the small number of problem gamblers and their heavy individual losses, over any particular year some local government areas will have fewer or more losses compared with their long run expected average losses. To estimate the long run expected losses we must assume that the amounts will be a function of the income of the regions and the average number of problem gamblers.

By applying the bounded average income relativity[10] we can simulate the lower levels of resources in poorer communities and hence a lower level of average losses for problem gamblers. This is used to adjust the losses of problem gamblers upwards in wealthy regions and downwards in poor regions. The total amount of problem gambling expenditure has already been estimated from the total revenue and hence the process of allocating this total expenditure will be simply estimated as the share of income-corrected problem gamblers.

Using the previously reported equation together with local area densities of gambling machines and the income relativities[11], relevant estimates can be constructed as in Table 6.1. The effect of these calculations can be seen in the table, which details these estimated impacts at the aggregate regional level.

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[10] The relativity is bounded between 60 per cent of average and 170 per cent of average. In addition this amount is raised to the power of 0.7, which tends to flatten out the differences. The impact of these measures is to reduce ratio of highest to lowest incomes from close to 6 to 2.1 thus implying that the cost of problem gambling does not increase linearly in income.

[11] The income relativity used is based on the NIEIR exertion income measure. 'Exertion income is derived from the Australia Taxation Office reported income tax statistics at a local area. Exertion income' is measured as the total taxable income less income derived from property rent and dividends.

Table 6.1 presents averages of the densities by region. Many LGAs within each region will present higher or lower levels of problem gambling than the regional average. By comparing the density-related numbers of problem gamblers with the number of problem gamblers that would be expected with a fixed rate of problem gambling, the impact of machine density can be seen.

The estimated number of problem gamblers is presented in the third column of the table. The expenditure relativity number of gamblers is not a measure of the number of people affected but rather a measure of the number of units of community cost that apply to a region. For example a region may be very wealthy and have significant access to resources. The region may have a gaming machine density related estimate of gamblers of 1000, which implies that 1000 people are problem gamblers. The income corrected number however could be 1200, which means that the 1000 people gamble an amount, and incur a cost to their community, that is equal to 1200 average New South Wales problem gamblers.

Table 6.1   **Aggregate regions – problem gambling**

	Average gaming machine density	Density related problem gambling constant	No of problem gamblers density related	No. of problem gamblers fixed rate	Expenditure relativity after income adjustment[1]	
					Density related	Fixed rate (no density adjustment)
Inland (excl. border regions)	2.298	0.175	9,411	9,141	8,189	8,312
VIC/QLD border regions	3.503	0.246	2,705	1,861	2,088	1,560
Northern Coastal	2.420	0.182	14,327	13,316	11,866	11,615
Southern Coastal	2.199	0.169	4,982	5,030	4,308	4,603
Inner Sydney	2.625	0.194	6,925	6,150	8,405	6,837
Established suburban	2.313	0.175	14,863	14,388	16,055	15,012
Outer Sydney Suburbs	1.763	0.143	18,494	21,821	20,797	23,769
Total NSW	**2.231**	**0.171**	**71,708**	**71,708**	**71,708**	**71,708**

Note: 1.   The unit in these columns are the equivalent number of problem gamblers in the region spending at the NSW-average loss rate.

The inland regions have a slightly higher than average density of machines than the state average and as such have an estimated 9,411 problem gamblers. This is clearly higher than the fixed rate estimate of 9,141. Machine density within the inland areas varies considerably, and along with machine density there would be increase in problem gambling in the major rural cities. When the income relativities are taken into consideration however, the direct community costs of problem gambling is reduced to below the level expected from an income adjusted fixed rate.

Due to the very small number of problem gamblers compared to the very large losses experienced by them, each region is assumed to derive a similar proportion of total revenue from problem gambling.

6.3   Estimating the costs of problem gambling

An important uncertainty in assessing the net benefits of gambling is the difficulty of quantifying the costs of problem gamblers. While some of these costs are readily identifiable, the vast majority of them are intangible and difficult to measure.

The range of costs that the Productivity Commission estimates falls into five broad categories. These include:

- financial costs (family debts and bankruptcy);

- effects on productivity and employment;

- crime (thefts, court cases and imprisonment);

- family impacts (divorce and separation, depression, suicide); and

- treatment costs.

The Productivity Commission estimates of the costs of problem gambling range from $7,000 to $22,000[12] per problem gambler. The details are discussed below. The PC report uses the Dickerson et al[13] methodology of estimating costs while extending their work in a number of key areas where they believe costs have not been accounted for.

In modelling the market for gambling, the lower end of this scale has been used.

6.3.1   The Productivity Commission estimates of costs

"The involuntary costs imposed on others by a problem gambler (and for that matter any other gambler) represent a cost to society of that activity. The significance of these costs is an important question.

Expenditures are divided into three types – internal, external or social costs and transfers. Of the three, only external costs are considered to be unambiguously costs borne by society. An example may involve the cost of counselling services associated with gambling and family problems and represent a real cost to society.

In estimating the social costs of gambling, a number of private costs have been included, since there are serious reservations that problem gamblers know the true benefits and costs of gambling. It is questionable that due to their condition that problem gamblers are spending their money voluntarily.

While transfers don't represent a cost to society, the process by which transfer payments are made is not a costless exercise."

It is suggested that the largest impacts stem from family impacts and the emotional costs of suicide, divorce etc. The intangible costs were estimated using a conservative approach whereby the Productivity Commission assigned values to them based on a range of compensation payments made available by governments in Australia. However, some

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[12]   PC Draft report Section10.1.

[13]   Dickerson M. et al 1998, 'Gaming machines players and responsible gambling', a paper presented to the National Association for Gambling Studies Practitioners Conference, Adelaide, November.

intangibles remained unquantified as they were considered too difficult to make a reasonable measure.

The Commission estimated that problems gamblers produce an annual cost of a range between $1.1 billion to $5.2 billion (Table 6.2).

Table 6.2 Private and social costs of gambling ($ million, 1997-98)[14]	Low	High
Bankruptcy	1.5	12.8
Productivity loss of work	18.1	129.8
Productivity loss outside work	8.2	58.3
Job change		
− Earnings loss	23.2	23.2
− Employee job search	12.7	12.7
− Employer staff replacement cost	20.8	20.8
Cost of police incidents	2.4	2.4
Court cases	4.8	4.8
Jail costs	1.3	4.8
Financial costs of divorce	32.1	32.1
Emotional costs of divorce	472.0	2832.0
Cost of violence	0.8	2.4
Depression	246.6	1479.9
Thought of suicide	225.4	450.8
Attempted suicide	4.5	115.2
Gambling counselling services	20.0	20.0
TOTAL	1094.3	5201.4
Total in 2000-01 dollars	1202.0	5713.2

The Commission estimate of transfers as a result of problem gamblers ranged from $10.8 to $30.0 million (Table 6.3).

Table 6.3 Value of transfers as a result of problem gambling ($ million, 1997-98)[15]	Annual Transfers low	Annual Transfers high
Debts	5.4	16.7
Unemployed payments	4.0	4.0
Value of money obtained illegally	1.4	9.3
TOTAL	10.8	30.0

[14] Replicated from Table 10.1 PC Draft Report.

[15] Replicated from Table 10.2 PC draft report.

As calculated by the PC, the range of estimates for the intangibles is large due to the variations in valuations that can be attributed to the individuals involved. It is also noticeable that the emotional cost of divorce is much higher than the financial costs. This is partly explained because it is assumed that costs are felt by the whole immediate family (Table 6.4).

Table 6.4 **Estimated number of people experiencing adverse impacts nationally (million, 1997-98)[16]**

	People affected annually
Bankruptcy	372+
Gambling debts	1329 (49,837)
Productivity loss of work	6,428+
Productivity loss outside work	2,901+
Job change	5,377
Unemployment payments	2,688
Theft	2,887
Police incidents	4,657
Court cases	603
Jail	86 (3239)
Financial costs of divorce or separation	29,226
Emotional costs of divorce or separation	94,400
Violence	158 (5,931)
Depression	49,329
Thought of suicide	15,028
Attempted suicide	149+(5582)

Note: Numbers in brackets represent 'lifetime' numbers from which annual numbers have been estimated. +indicates that this number is lower in a range. a: includes family members as well as problem gamblers (an average of 3.2 people per household).

6.4 Applying the estimates costs at a regional level

Based on the low range of costs, including transfer payments, expressed in 2000-01 dollars, there is an estimated impact of $Error! Not a valid link.per problem gambler. This is based on a population of gamblers, defined by the SOGS 7+ range, or 159,808 persons Australia-wide.

NIEIR believes that the lower range of estimates, whilst perhaps undervaluing the emotional and psychological costs of the trauma induced by problem gambling, is a better representation of the very broad basket of financial costs of problem gambling. It is important to note that these costs are not the losses experienced by the gambler, which are modelled in terms of the expenditures and wealth creation forgone (see Section 7.3 below), but rather the associated costs outlined previously.

[16] Replicated from Table 10.3 PC draft report.

Table 6.5   Costs of problem gambling, aggregate regions

	No. of problem gamblers density related	Income adjusted no. of problem gamblers density related	Regional costs – density related problem gamblers
Inland (excl. border regions)	9,411	8,189	334
VIC/QLD border regions	2,705	2,088	86
Northern Coastal	14,327	11,866	487
Southern Coastal	4,982	4,308	176
Inner Sydney	6,925	8,405	334
Established suburban	14,863	16,055	641
Outer Sydney Suburbs	18,494	20,797	822
Total NSW	**71,708**	**71,708**	**2,880**

Table 6.5 can be translated into a yearly cost of $542 million in New South Wales. To extrapolate this cost Australia-wide we can note that New South Wales represents 41 per cent of all gambling expenditure. Given expenditure correlates strongly with problem gambling costs, the cost to New South Wales equates to an Australian cost of $1.32 billion.

7. Opportunity cost of gambling expenditures

7.1 Introduction

In order to model the impacts of gambling we need to understand the benefit of economic activity generated, the cost of economic activity foregone and the community costs of problem gambling. The method for calculating incomes generated was described in Sections 5.2 and 5.3, while the cost of problem gambling was considered in Chapter 6. It remains to estimate the impact of activity foregone. To do this it is necessary to first determine what type of activity would have occurred in the absence of gambling.

One way on which we can infer the types of activity that would have occurred is to examine the difference in the patterns of spending by gamblers and non-gamblers. In Section 7.2 we analyse the ABS household expenditure survey to determine feasible set alternatives for non-problem gamblers. In Section 7.3 we consider the behaviour of problem gamblers. In Section 7.4 we determine the nature of spending foregone at the State level. The application of these patterns to the regions is discussed in Section 7.5. This discussion includes the degree to which the state levels are allowed to vary at the regional level to take account of significantly different economic resources.

7.2 Determination of opportunity cost of responsible gambling

The Household Expenditure Survey (HES) allows us to compare differences between the expenditure patterns of non-problem gamblers and households which do not gamble.

7.2.1 Expenditure patterns of non-gamblers and non-problem gamblers

To assist with the analysis of the difference between spending patterns of gambling households and non-gambling households, an analysis of the spending patterns of each is presented in Table 7.1.

From analysis of the HES it is likely that very few, if any, households in the Survey report expenditure patterns that are consistent with problem gambling. Dollar values of losses, and/or proportions of spending on gambling consistent with problem gambling, are not evident in the profile of any of the households in the HES. As such the analysis presented in this section is likely to relate to the behaviour of non-problem gambling households.

The following tables detail the proportion of spending in various expenditure classes, including housing, retail goods, discretionary items, capital expenditures and gambling.

Table 7.1 shows that on average households that gamble have more financial resources than those that do not. In this respect the results confirm that to the extent gambling is reported in the ABS Household Expenditure Survey (HES) the households that gamble can afford to do so. However, as we have seen, there is a high level of under-reporting of losses in the HES even with respect to the losses experienced by non-problem gamblers.

Consistent with general trends in the economy, approximately 50 per cent of the households in the HES reported a gambling expenditure in the survey period. After adjustment for the technicalities of sampling, these households represent approximately 52 per cent of the households in the nation. This is an important point to note because whilst there is significant under-reporting of the total losses in the HES the level of under-reporting of gambling activity is significantly less.

Table 7.1   Comparison of expenditure shares

Expenditure item	Gambling	Non gambling	Difference
Housing	0.211	0.259	-0.047
Food	0.151	0.154	-0.003
Alcohol & tobacco	0.040	0.031	0.008
Clothing & footwear	0.032	0.027	0.004
Household goods	0.114	0.117	-0.003
Household services	0.048	0.054	-0.007
Health	0.037	0.036	0.001
Transport	0.080	0.076	0.004
Books and newspapers	0.010	0.008	0.001
Recreation	0.022	0.017	0.004
Holiday	0.027	0.025	0.002
Animal expenses	0.008	0.007	0.001
Income tax	0.139	0.134	0.006
Capital purchases	0.040	0.037	0.003
Superannuation & life	0.018	0.016	0.002
Gambling	0.022	0.000	0.022
Total spending ($/wk)	**$1,147**	**$944**	**$203**
Households in HES	3469	3423	
– percentage	50.3%	49.7%	
HH in Australia (millions)	3.68	3.43	
– percentage	51.8%	48.2%	

The most striking element of Table 7.1 is the clear evidence that households that gamble have on average higher levels of current financial resources than those that do not gamble. This is in part due to the large number of non-gambling households that report very low levels of total spending, predominantly elderly households.

When the expenditure shares across expenditure classes are compared in Table 7.1, very important trends are revealed. Gambling households report significantly lower levels of spending on housing. The level of income tax is similar even though income is higher in the gambling households, which implies in a progressive taxation system that gamblers' income tax levels should be higher. The smaller than expected difference in taxation is also significant due to the large number of elderly households, which pay little income tax, being included in the non-gambling households.

The gambling households spend more on alcohol and tobacco (3.2 per cent vs. 2.7 per cent). This result is consistent with a strong degree of correlation between the consumption of the two. From Table 7.1 it appears that gaming expenditure is wholly funded by a reduction in spending on housing. The amount spent on food appears lower in the gambling households, however we expect that the proportion of the budget allocated to food is a decreasing function of total spending and the lower expenditure of gambling households probably reflects their higher incomes.

The low level of expenditure on housing and tax appears to point towards a generally lower level of financial resources and lower level of wealth creation through housing. This result supports previous research published by National Economics on the 1993-94 HES which found that whilst the gaming households did have on average a higher level of income and hence capacity to gamble, this was to the detriment of long-term asset accumulation. It

appears that gambling is a classical discretionary consumption good in that it represents an inter-temporal transfer on the part of the gambler between future income flows and current pleasure – hence the possibility of future regret.

In order to use the results from Table 7.1 we must first undertake a correction of the shares to account for the difference in total expenditure. This must be done because, for both gamblers and non-gamblers, the expenditure share on each item will be a function of the total size of the budget and so of income. In the following tables the expenditure shares reported in the HES are detailed for a series of expenditure classes. (We use expenditure classes rather than income classes because expenditure information is more accurate than income information in the HES.) In Table 7.2 and 7.3, the expenditure of gambling and non-gambling households respectively are broken down by equal ranges. The ranges represent equal shares of the Australian households in each of the gambling/non-gambling households.

The major features of Table 7.1 – higher expenditure on housing by non-gamblers, and higher expenditure on alcohol and tobacco by gamblers – apply across all ranges of total expenditure. The differences between gamblers and non-gamblers are otherwise less significant, save that low-income non-gamblers tend to spend more heavily on household services than low-income gamblers, to a differential which is not present at higher income levels.

In order to provide a breakdown of expenditures for use as a template for allocating foregone expenditures we considered differences between the spending patterns of similar income ranges in the gambling and non-gambling cohorts. An average of the expenditure groups 3 & 4 in gambling households and the expenditure group 4 in the non-gambling households provided a close match. Table 7.4 shows the expenditure shares for the two and the difference between them. These differences formed the basis of the allocation mix for the average household in New South Wales.

Table 7.2   Expenditure shares – gambling households by expenditure ranges

Expenditure group	Exp Group 1	Exp Group 2	Exp Group 3	Exp Group 4	Exp Group 5
Housing	0.239	0.191	0.190	0.203	0.235
Food	0.207	0.179	0.149	0.123	0.097
Alcohol & tobacco	0.050	0.047	0.042	0.033	0.028
Clothing & footwear	0.027	0.034	0.033	0.032	0.031
Household goods	0.103	0.115	0.113	0.116	0.123
Household services	0.062	0.057	0.045	0.041	0.035
Health	0.045	0.042	0.038	0.033	0.029
Transport	0.091	0.088	0.082	0.073	0.067
Books and newspapers	0.014	0.011	0.008	0.008	0.006
Recreation	0.017	0.022	0.022	0.024	0.022
Holiday	0.026	0.027	0.027	0.028	0.030
Animal expenses	0.010	0.009	0.008	0.007	0.006
Income tax	0.051	0.106	0.164	0.188	0.187
Capital purchases	0.016	0.031	0.038	0.052	0.065
Superannuation & life	0.005	0.013	0.021	0.025	0.027
Gambling	0.037	0.026	0.020	0.014	0.012
Total spending ($/wk)	**317**	**625**	**975**	**1,397**	**2,425**

Table 7.3   Expenditure shares – non-gambling households by expenditure ranges

Expenditure group	Exp Group 1	Exp Group 2	Exp Group 3	Exp Group 4	Exp Group 5
Housing	0.298	0.259	0.225	0.228	0.282
Food	0.227	0.182	0.149	0.121	0.091
Alcohol and tobacco	0.041	0.039	0.032	0.026	0.018
Clothing and footwear	0.023	0.028	0.030	0.027	0.029
Household goods	0.100	0.121	0.124	0.125	0.117
Household services	0.083	0.061	0.051	0.042	0.035
Health	0.047	0.041	0.037	0.031	0.025
Transport	0.083	0.088	0.081	0.070	0.058
Books and newspapers	0.011	0.009	0.009	0.007	0.006
Recreation	0.012	0.015	0.019	0.021	0.020
Holiday	0.019	0.027	0.026	0.025	0.028
Animal expenses	0.010	0.007	0.006	0.006	0.004
Income tax	0.029	0.090	0.158	0.191	0.201
Capital purchases	0.012	0.025	0.035	0.054	0.060
Superannuation & life	0.003	0.008	0.019	0.024	0.028
Gambling	0.000	0.000	0.000	0.000	0.000
Total spending	**224**	**454**	**757**	**1,166**	**2,120**

Table 7.4   Comparison of average expenditure shares

Expenditure item	Gambling (Avg. Gr. 3 & 4)	Non-gambling (Group 4)	Difference
Housing	0.197	0.228	-0.032
Food	0.136	0.121	0.015
Alcohol & tobacco	0.038	0.026	0.011
Clothing & footwear	0.033	0.027	0.005
Household goods	0.115	0.125	-0.010
Household services	0.043	0.042	0.001
Health	0.035	0.031	0.004
Transport	0.077	0.070	0.007
Books and newspapers	0.008	0.007	0.001
Recreation	0.023	0.021	0.002
Holiday	0.027	0.025	0.002
Animal expenses	0.007	0.006	0.001
Income tax	0.176	0.191	-0.015
Capital purchases	0.045	0.054	-0.010
Superannuation & life	0.023	0.024	-0.001
Gambling	0.017	0.000	0.017
Total spending ($/wk)	**1,186**	**1,166**	

The following features of Table 7.4 are highlighted.

- Housing expenditure is 3.2 percentage points lower in gambling households. Lower levels of housing expenditure are usually associated with higher levels of renting and lower values of housing being purchased. The further difference of 1 percentage point in capital purchases is also predominantly housing related.

- Taxation as a percentage of total spending is 1.5 percentage points lower in gambling households, indicating that for a similar level of total expenditure the total tax paid is significantly lower. This outcome is consistent with lower levels of recurrent savings, i.e. the total spending is likely to be relatively higher than income levels. Combined with the lower level of spending on housing points the tax differential towards a lower level of financial assets.

- Table 7.1 indicated that spending on food appeared to be a lower proportion of spending when comparing gambling and non-gambling households. When this difference is recalculated in Table 7.4 it is clear that the total spending on food is higher in gambling households (+1.5 percentage points). The positive difference in food is almost offset by a decline in household goods purchases of one percentage point. Interestingly, this behaviour appears consistent with the lack of investment in assets in general. Gamblers' higher expenditure on food may indicate that they more often eat out than non-gamblers.

Using these results it would be defensible to assume that the increase in gambling expenditures is funded by a reduction in housing investment, investment in capital and financial assets. This assumption would be an adequate representation of the median behaviour of households, but as the report seeks to model the impacts at the local area level it will be appropriate to consider behaviour in regions which have low incomes as well.

The question as to the extent to which gambling has reduced general retail expenditure has generated some controversy. *Prima facie* the HES shows very little difference in the general retail expenditure of gambling and non-gambling households. However, Table 7.5 provides evidence of a finance of gambling by reduced retail purchases by low-income households. This is believed to reflect the true current situation in NSW, where many families have reached the limit of their capacity to finance expenditures by reducing savings.

Unlike the median behaviour the total retail trade component of spending is compromised with a reduction of 2.8 percentage points. The reductions in housing and taxation are still apparent but it is clear that in this range there is a movement away from retail. This is also significant, though some of the movement reflects differences in total expenditure.

Table 7.5   Comparison of average expenditure shares, low income

Expenditure item	Gambling (Group 1)	Non-gambling (Group 1)	Difference
Housing	0.239	0.298	-0.059
Alcohol & tobacco	0.050	0.041	0.009
Retail			
Food	0.207	0.227	-0.020
Clothing & footwear	0.027	0.023	0.004
Household goods	0.103	0.100	0.003
Household services	0.062	0.083	-0.021
Health	0.045	0.047	-0.002
Recreation	0.017	0.012	0.005
Books and newspapers	0.014	0.011	0.003
Retail Total	**0.475**	**0.503**	**-0.028**
Transport	0.091	0.083	0.008
Holiday	0.026	0.019	0.007
Animal expenses	0.010	0.010	0.000
Income tax	0.051	0.029	0.022
Capital purchases	0.016	0.012	0.004
Superannuation & life	0.005	0.003	0.002
Gambling	0.037	0.000	0.037
Total spending ($/wk)	**317**	**224**	

7.2.2   Savings and debt

It is clear from the allocation mix investigated in the previous section that we have not considered the role that savings and or debt could play in the financing of gambling expenditure. We have not allowed for debt to finance current consumption nor considered that, were spending on gambling reduced, a proportion of these monies would be saved or used to reduce debt.   Indeed, in an Australian economy that has a savings rate approximately zero per cent, the savings/debt issue will play a considerable role in the ability to finance gambling and hence should be considered in the allocation of gambling expenditures.

In previous work undertaken by NIEIR[17], a key assumption underlying in the measurement of the economic impact in the macro setting was that gaming produces a long-term change in the savings rate of households. In Victoria in the 1990s there was clear evidence of this. The provision of electronic gaming machines in the early 1990s provided an outlet for an unsated demand. The reduction in savings that accompanied the expansion of the gaming provided clear evidence of the link.   The important economic consideration of this movement was the positive economic stimulus it provided for the economy in the context of slack demand in the aftermath of the 1990 recession.

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[17]   Economic Impact of Gaming, VCGA 2000.

In New South Wales, gaming machines have a long history within the household budget and as such it would be less likely that the gaming expenditure represents a long-tem reduction in savings. However, New South Wales did have another important development in the market in recent years which could point towards a similar, if smaller, expansionary effect for part of gaming revenue. The expansion of gaming in pubs represented an increase in the range of gambling products offered. Gaming in pubs provides an increase in supply of outlets, an increase in the accessibility of machines for many, and a slightly different product to the traditional club-based model of gaming or restricted machine concentration in pubs prior to the change in policy.

7.2.3   Gambling expenditure and savings

There is macro economic evidence that the increase in gaming expenditure following the expansion of the supply of machines has coincided with a fall in New South Wales savings and an increase in debt.

What is required is a macro "reality" check of the influence of gambling expenditure on the household savings ratio. The determinants of household savings are many and complex. However, the complexity can be reduced by estimating a New South Wales household savings function relative to the rest of Australia. This enables many of the influences of absolute household savings to be discarded.

The estimated equation is:

$$RSR \;=\; \begin{array}{l} 19.091 + 3.732 * RHI \\ \quad (8.7) \quad\;\; (2.9) \\ * \; -22.144 \; RPL \\ \quad (9.4) \\ - \, 0.275 \; RDE - 0.034 \; RGE \\ \quad (2.0) \qquad\quad (3.7) \end{array}$$

$$R^2 = \quad 0.966$$

Where:

RSR = NSW gross household savings ratio relative to the rest of Australia;

RHI = NSW household disposable income relative to the rest of Australia;

RPL = NSW implicit household consumption deflator relative to the same deflator for the rest of Australia;

RDE = NSW dwelling expenditure to household disposable income ratio relative to rest of Australia;

RGE = NSW gaming and casino expenditure to household disposable income relative to the same ratio for the rest of Australia.

In terms of the impact on New South Wales savings from the change in New South Wales gaming expenditure the equation is:

$$SAVNSW_t - SAVNSW_{t-x} \;=\; -0.235 * (GENSW_t - GENSW_{t-x})$$

The change in New South Wales gaming expenditure between 1997 and 2001 has been $1,635 million, hence the reduction in New South Wales household savings to fund this additional gaming expenditure is $389 million.

It is important to consider the reduction in savings from a micro-economic perspective as well. From Table 7.1 the capacity of gambling households to save in the absence of gaming was clear, as they had on average a higher level of resources than the non-gambling households. Additionally the lower levels of tax paid tend to indicate a relative shortfall in financial assets created through savings which would otherwise lead to an increase in income and tax paid.

7.3   Opportunity cost and problem gambling

As the percentage of revenue that is attributable to problem gamblers is significant, especially in the case of gaming machine revenue, it is important to also consider the possible patterns of expenditure for this group.

To do so we have used a table from the PC report that looks at the perceived opportunity cost of spending on gambling. We can compare these perceived opportunity costs of non-problem gamblers' spending versus problem gamblers' spending. We also compare the HES reported differences with the perceptions of non-problem gamblers.

In the PC table (7.6) the respondents did not quantify the percentage of gambling spending financed by reductions in spending on each identified alternative expenditure area, rather the areas in which gamblers had economised in order to find the cash to gamble. However, the identification of savings as the highest rated source for the non-problem gamblers supports the assertion made previously that gambling results in a net reduction in the savings rate.

Table 7.6   What do other gamblers give up in order to gamble?

Expenditure item	Non-problem non-regular gamblers	Non-problem regular gamblers	Problem gambler (SOGS 5+)	Severe problem gamblers (SOGS 10+)
	%	%	%	%
Groceries or small household items	15.7	19.1	17.3	16.5
Major household goods (e.g. TV)	2.4	1.9	3.9	7.6
Personal items (clothing, footwear)	7.0	12.2	27.3	32.1
Restaurant meals	5.1	8.1	7.7	11.2
Wine, beer	5.7	11.8	11.1	4.0
Movies or concert	2.8	4.4	3.8	0.0
Other entertainment & recreation	6.9	10.0	13.1	23.4
Paid off credit card or bills	1.7	2.5	11.7	25.9
Pay rent / mortgage	0.7	2.2	3.3	15.0
Spent on grandchildren	1.5	2.2	2.5	2.9
Petrol	0.6	1.2	3.6	0.0
Cigarettes	0.3	0.8	3.6	0.0
Donation to charity	0.5	0.0	2.3	0.0
Magazines / books	1.2	0.3	0.0	0.0
Other items	3.6	5.3	6.1	4.8
Saved it	8.0	22.7	17.7	23.9
Don't know	10.4	10.2	7.2	6.4

Source: Replicated from PC Draft Report 7.19.

From Table 7.6 it is clear that for the problem gamblers there was a ready identification of a number of sources that could be considered similar to debt financing. Similarly the depths of problem gambling and its association with debt and asset reduction are apparent in the SOGS10+ column. This group's gambling expenditures would be very large, yet despite this there is little identification of luxury items foregone such as movies or concerts or wine and beer.

The reduction in asset accumulation is witnessed by the identification of SOGS 10+ as gamblers giving up mortgage and rent as well as major household durables. Additionally the impact of current debts is apparent in the identification of paying of credit cards or bills.

7.4 Using opportunity cost to model the aggregate sources of gambling expenditures

This chapter so far has investigated the alternative expenditures which are reduced by various types of households in order to finance gambling. The purpose of the investigation has been to underpin modelling of the impact of changes in gambling opportunities on regional economies. For this purpose it is desirable to summarise the discussion in a simple table of expenditures which, on average, are reduced. Table 7.7 takes into account the average behaviour of non-problem gambling households, the behaviour of problem gambling households (which tend to display high degrees of variation), along with the behaviour gambling households with very low incomes.

Table 7.7   Final expenditure shares

Category	Share
Retail sales	22.9%
Debt financed	12.2%
Wealth creation	58.9%
– *housing construction*	*35.3%*
– *financial assets*	*23.5%*
Taxation	7.0%
Alcohol & tobacco	-1.0%
Total	**100.0%**

7.5 Introducing regional variation into the application of state aggregate sources of expenditure

The impact of gambling can be evaluated at the average (Table 7.7) level for each of the 175 local government areas of New South Wales. However, it is likely that there is considerable variation in the way in which gambling is undertaken and funded by individual households within each area. Some households will contain problem gamblers, some will borrow to gamble, some will go without retail goods and others will choose to forego investment opportunities either in housing or financial assets. It is therefore important to model the impact by LGA taking into account well known factors which may influence the distribution of expenditures reduced in order to finance gambling. These include features of the average household schedule at the state level along with a variety of local specific characteristics. Regardless of the extent to which local shares are varied, it is essential to maintain the state average shares.

The principal element in the design of the variation is to reflect capacity to pay within individual local government areas. It is important to remember that whilst the variation in share of expenditures foregone across the possible categories is a significant element in the determination of regional impact, by far the greatest influence is the actual amount per week the residents spend on gambling. If one LGA has only half the percentage of retail sales foregone on a expenditure share basis, but spends three times as much on gambling, the impact in the LGA with the lower expenditure share will still be higher.

7.5.1   Debt financed consumption

The primary consideration in this analysis is the expected level of debt financing within each region. In the poorest regions, and those with the lowest rates of savings, it is likely that a considerable component of gambling expenditure is debt financed. From an economic point of view, debt financing is expansionary in the short-run, but leads to high debt servicing costs in the future[18]. In those communities that have a high level of modelled debt financing it is important to attribute these future costs correctly. Debt financing does not necessarily simply include the raising of debt to fund gambling directly. For a household with a zero or negative savings rate the gambling expenditure will cause savings to fall below zero. These expenditures therefore have an effective cost equal to the highest rate of interest paid on other debts outstanding[19].

In wealthier regions, however, the proportion of debt financing is likely to be low.

In every community there will be a number of households for whom debt financing of an element of gambling expenditure is expected, even if it only includes the debt incurred by problem gamblers. For modelling purposes, this justifies a floor in the proportion, set at 3 per cent of expenditures.

As a result of these assumptions, the proportion of debt financing for each LGA is a decreasing function of savings rates and income. The figure below shows the progression of the modelled debt servicing rates throughout the local government areas when ordered from lowest debt servicing rates to highest. A large number of local government areas are placed on the floor of 3 per cent and the vast majority have rates below 30 per cent. In the very poorest area the debt service ratio quickly approaches 60 to 80 per cent of expenditures.

On average in the state of New South Wales the proportion of gambling expenditure that is debt financed is modelled to be 12.2 per cent[20]. This equates to $701 million per year in the 2000-01 reference period or 1.7 per cent of total amount of debt raised by household in that year and 4 per cent of non-housing debt. The amount of $701 million per year implies that prior to 1997 the amount of debt financed gambling would have been in the order of $312 million per year (312=701-389).

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[18] We have assumed that the debt raised is not repaid in the evaluation period. In other words, expenditures are 'pulled forward'; spending now is at the cost of spending in the future.

[19] It is assumed that in the absence of gaming similar levels of debt would not be raised for other consumption.

[20] The figure presented in Section 7.5.3 appears to have a slightly higher average than 12.2 per cent however this is due to the relatively small number of households in the local government areas with the highest debt service shares. The average for the state is evaluated as an average across all households in NSW i.e. a weighted average of local government rates weighted by number of households.
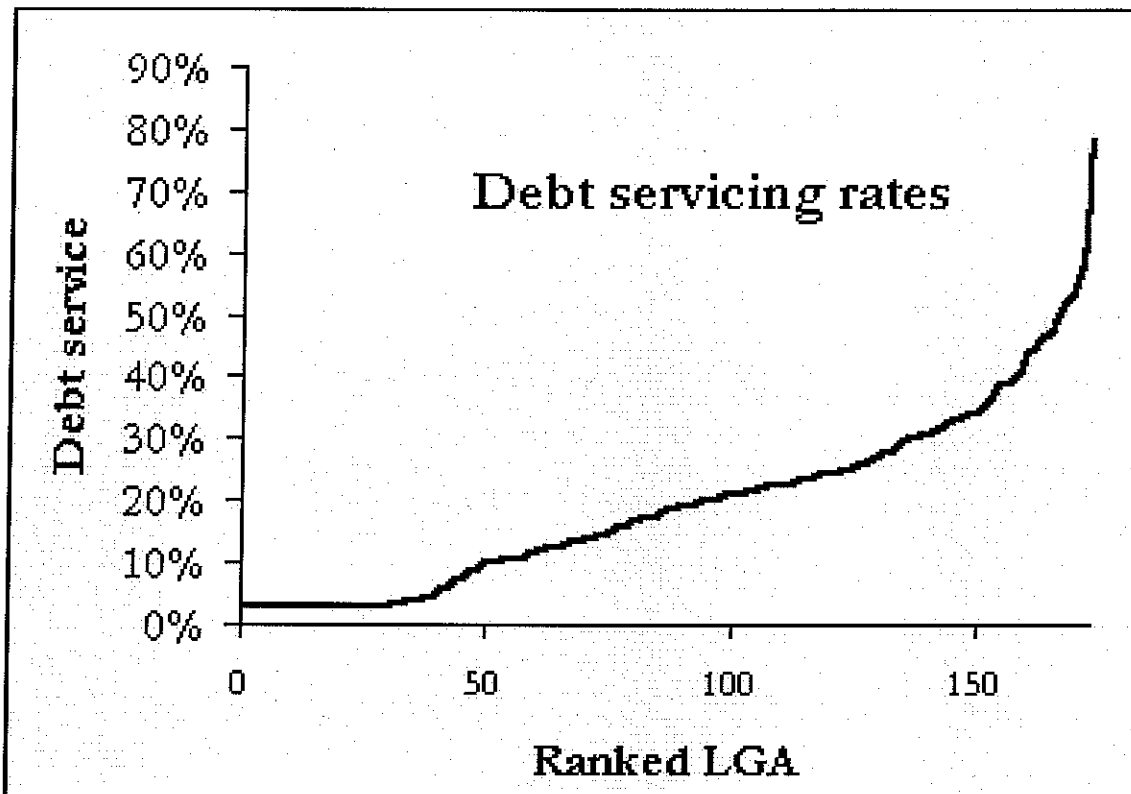
Utilising the aggregate regions defined in previous chapters the variation in debt financing across the state is apparent (Table 7.8). The wealth, high incomes and strong savings rates in the Inner Sydney area produce a very low share of debt-financed expenditure. The poor Northern coastal region has the highest modelled debt-financing level. This reflects the very low savings rates in this region.

Table 7.8   Debt service share, aggregate regions

Aggregate regions	Debt servicing share
Inland (excl. border regions)	0.177
VIC/QLD border regions	0.190
Northern Coastal	0.153
Southern Coastal	0.148
Inner Sydney	0.031
Established suburban	0.047

Local government areas with low levels of debt financing are those with either significant financial resources or high savings rates, such as mining communities. This is shown in Table 7.9.

Table 7.9 Low levels of debt financing	
Cobar	North Sydney
Drummoyne	Rockdale
Hornsby	Singleton
Hurstville	South Sydney
Ku-ring-gai	Sydney
Lane Cove	Waverley
Manly	Woollahra
Muswellbrook	

Areas with high levels of modelled debt financing include both very poor rural communities such as Windouran and Nundle (due to a low level of resources) and regions such as Camden and Wollondilly which have very low levels of savings due to mortgages that are relatively large compared to income. Table 7.10 illustrates the mix of regions.

Table 7.10 High levels of debt financing	
Murray	Windouran
Camden	Nundle
Manilla	Hume
Lockhart	Evans
Kyogle	Parry
Holbrook	Pristine Waters
Gunning	Conargo
Wollondilly	

7.5.2 Retail sales foregone

After the debt-financing proportion was determined the proportion of the remaining expenditures that are likely to be allocated to retail sales was estimated. Evidence presented in the previous section shows that compared to households that do not gamble, those that gamble do not forego much expenditure on retail goods. This was the case for the median households and those in the highest levels of expenditure. On the other hand the poorest expenditure groups did show a significant degree of substitution away from retail. In the light of this, the amount of gambling deemed to be financed by reducing retail purchases was varied with the level of retail spending as a percentage of total spend. The lower the level of current retail expenditure as a percentage of total expenditure, the lower the amount of substitution deemed to take place.

Consistent with economic theory and verified in the ABS HES 1998/9 the proportion of total expenditure devoted to retail sales is a diminishing function of income. The result of these observations is that we model regions with a low level of debt financing, a high current level of retail sales per household and a low proportion of retail sales in household budgets, as being unlikely to be displacing significant retail sales to finance gambling.

Regions with poorer households, on other the other hand, are likely to have a higher proportion of remaining (non-debt financed) gambling expenditure diverted from retail sales since they are within the threshold at which sales tend to reduce significantly.
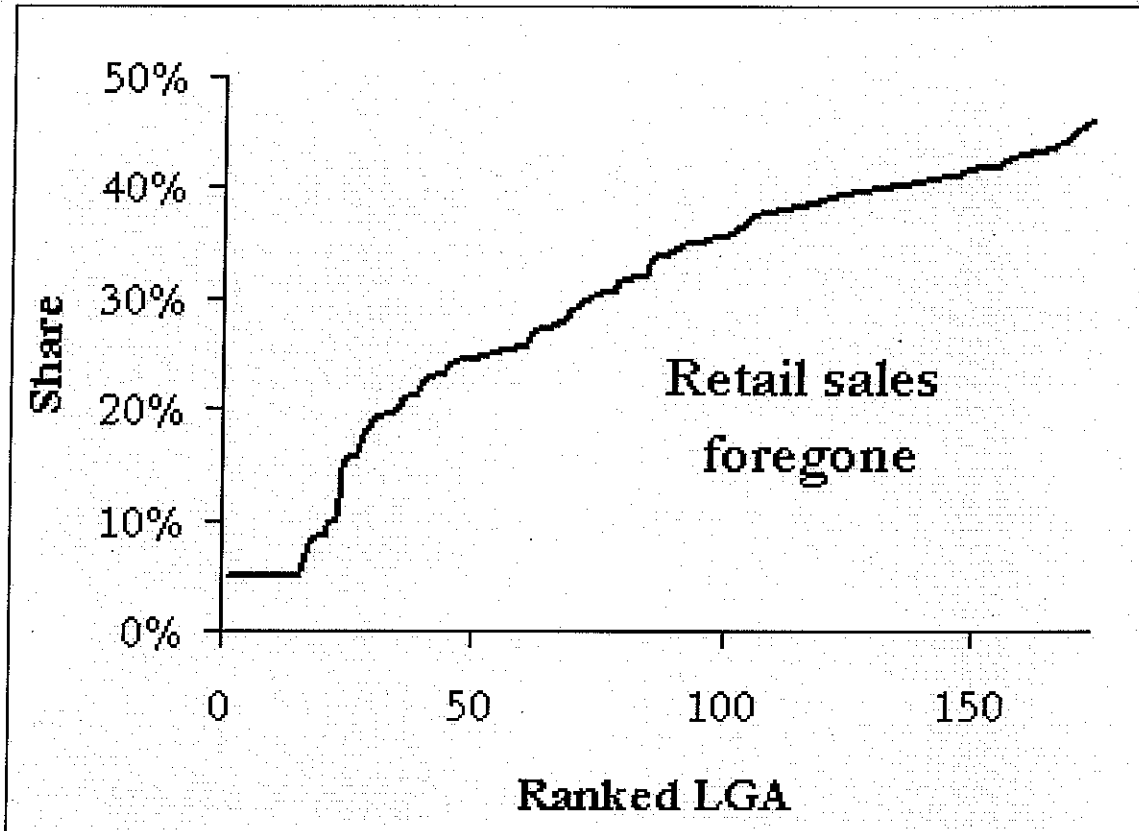
From the figure above, it is clear that there are a number of wealthier LGAs – all bar one of them suburban – for which gambling expenditures are unlikely to represent a significant movement away from other retail sales. These regions have been modelled to have an estimated share of expenditure diverted from retail at 3 per cent. Table 7.11 shows the local government areas subject to this assumption.

Table 7.11	Low levels of retail sales foregone	
Baulkham Hills	Mosman
Drummoyne	North Sydney
Hornsby	Pittwater
Hunter's Hill	Warringah
Ku-ring-gai	Willoughby
Lane Cove	Woollahra
Leichhardt	Yarrowlumla
Manly	

The amount of retail diverted in the poorest regions approaches 50 per cent which is consistent with the reported performance of the lowest expenditure households in Table 7.5. Table 7.12 lists LGAs with high levels of foregone retail expenditure. They tend to be concentrated in country areas where incomes are low.

Table 7.12	High levels of retail sales foregone
Manilla	Nambucca
Gundagai	Wentworth
Kyogle	Walgett
Maclean	Barraba
Great Lakes	Tenterfield

Manilla appears in both the table for high levels of debt financing as well as high levels of retail sales foregone which indicates that in the absence of gambling expenditure, there would not be a significant amount left for the expansion of wealth creation.

It is worth remembering that problem gamblers are reported to be very likely to reduce retail expenditures. Given that problem gambling represents approximately 39 per cent of total gambling expenditure, it is to be expected that the average level of the retail share of activity foregone will approach 25 per cent. As a result of these calculations, the average amount estimated to be diverted from retail sales is 22.9 per cent or $1.141 billion per year in New South Wales. This represents approximately 2.7 per cent of the 2000-01 total non-hospitality retail sales in New South Wales (ABS 8501.1).

Table 7.13	Retail sales share, aggregate regions
Aggregate regions	Retail sales share
Inland (excl. border regions)	0.315
VIC/QLD border regions	0.371
Northern Coastal	0.326
Southern Coastal	0.298
Inner Sydney	0.099
Established suburban	0.180

7.5.3   Income taxation not collected

As stated previously, much gambling expenditure is at the expense of long-term asset accumulation. Although in Australia our largest household investment vehicle, private owner-occupied housing, provides very little taxable income, investments in general are expected to attract an income flow in the longer term. These income flows would be expected to generate taxation revenue and increase the share of total expenditure going to taxation for those households that do not gamble.

The reallocation of 7 per cent of gambling expenditure to taxation would lift the average level of taxation paid by gambling households by 0.3 percentage points. In the long run if gambling was removed and gambling households displayed the same wealth creating characteristics as non-gambling households this amount would rise even more. In terms of modelling the alternatives to current gambling expenditure it was felt that a conservative assumption of the impact on income-generating wealth creation should be used.

We chose not to model any regional variation in the share of expenditure that represents foregone taxation and have left the proportion constant at 7 per cent across the board. One of the rationales for this is the complex relationship between the savings decision, investment profiles and the role of social security payments in lower income households. In the poorest of households a significant increase in the long-term level of savings could reduce receipts from social security due to the operation of the means test.

Additionally, the dominance of investment in housing would result in quite low levels of new income, and hence tax in the short term, as those households with underdeveloped housing investment seek to catch up.

7.5.4   Alcohol and tobacco expenditure

The relationship between smoking and gambling is very strong. In the ABS HES 1998-99 the prevalence of smoking and gambling together was 44 per higher than could be explained by the rate of gambling or smoking alone. This co-dependency of the two is significant. The relationship between gambling and alcohol is also significant.

In the absence of gambling much of the consumption of alcohol and tobacco would continue unchanged at least in the short term. However, a small part is likely to be directly complementary (it occurs perhaps even at the same time), which we expect to be reduced. As such by modelling the cost of gambling in terms of the opportunity cost of expenditure it is important to reduce the level of spending on tobacco and alcohol at the same time by a small amount to measure this effect as well.

7.5.5   Wealth creation expenditure foregone

By far the single largest contribution to gambling expenditure takes the form of wealth creation forgone. In the National Economics (NIEIR) study for the VCGA[21] a microsimulation study using the 1993-94 HES showed that the gamblers had consistently lower levels of assets of all kinds that would be expected of a group of people with a similar set of characteristics.

The long-term nature of asset accumulation foregone is a particularly interesting economic phenomenon, because it has both significant positive benefits in terms of economic activity and asset pricing as well as negative long-term distributive effects[22].

The residual after debt financing, retail sales foregone, taxation and changes in spending on tobacco and alcohol define the amount left over for wealth creation foregone. This reflects the nature of savings and asset accumulation in the household budget; both are maintained and built upon by securing a consistent positive gap between incomes and total expenditure. It is unlikely that the result that is apparent in the HES whereby gambling households have less assets was achieved by any particular design on their part. Rather, the decision to spend on gambling out of household budgets means that the savings residual was never as large as it would otherwise have been.

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[21]   "The Economic impact of Gambling", March 2000, Victorian Casino and Gaming Authority, by National Institute of Economic and Industry Research (NIEIR), Appendix 2

[22]   Note that the long-term consequences of distributive equity considerations have not been considered in this study. Effects could include reduced access to education, health services etc due to constrained household budgets. In general the flows are consistent with a widening of the gap between rich and poor households, as the benefits of gambling revenue tend to fall in households with strong employment and other incomes and asset accumulation.

This implies that the opportunity costs of gambling include major reductions in spending on housing and financial assets. In Australia, as noted previously, the vast majority of household assets are held in housing and as was shown in Chapter 7 housing was the largest foregone expenditure item. We have chosen to measure the impact of this reduction in wealth creation by looking at the foregone impact on the construction sector due to reduced housing expenditure. We also consider the impact of financial asset accumulation foregone.

Bearing in mind the wealth creation share of expenditures foregone in order to gamble was defined as the residual of debt financing, retail sales and taxation, Table 7.15 shows the LGAs with the highest levels of wealth creation foregone as a percentage expenditure.
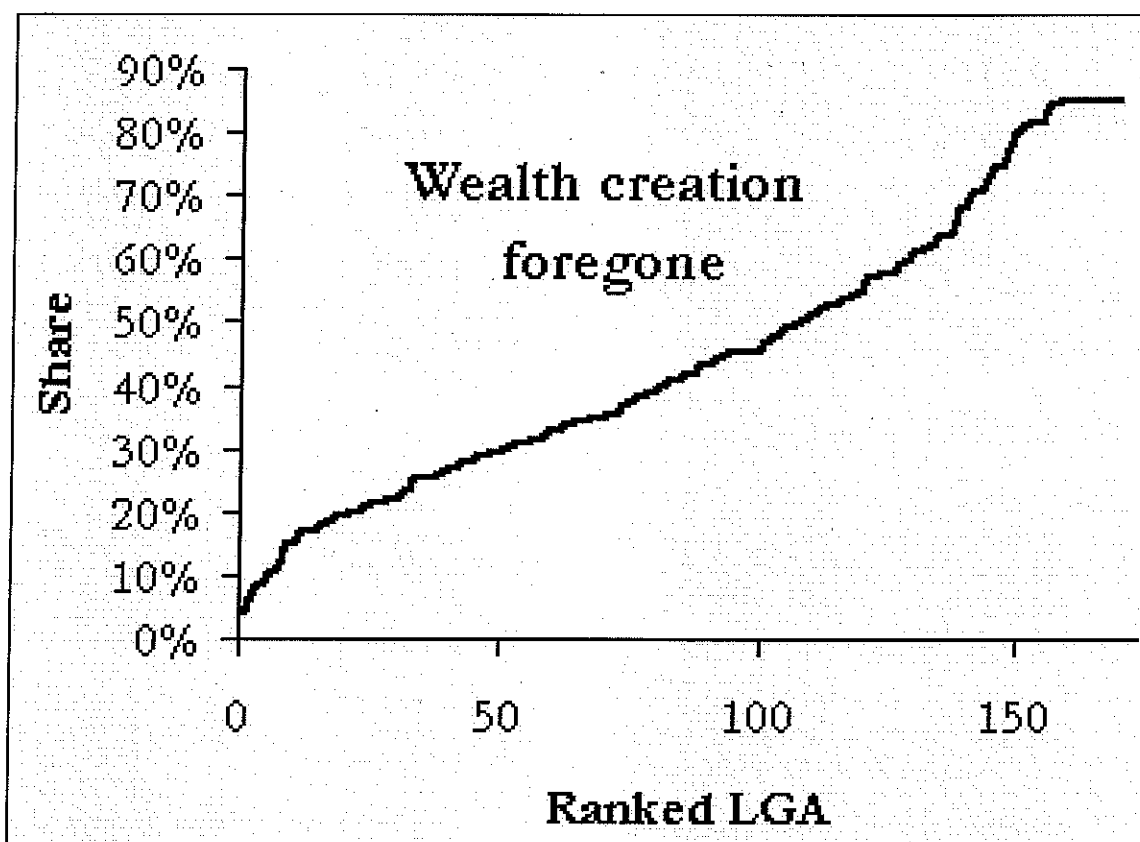
Table 7.14   Wealth creation share, aggregate regions

Aggregate regions	Wealth creation share
Inland (excl. border regions)	0.438
VIC/QLD border regions	0.369
Northern Coastal	0.451
Southern Coastal	0.484
Inner Sydney	0.799
Established suburban	0.703

Table 7.15	High levels of wealth creation foregone
Hunter's Hill	Mosman
Ku-ring-gai	North Sydney
Lane Cove	Warringah
Leichhardt	Willoughby
Manly	Woollahra

LGAs with low levels of wealth creation foregone are shown in Table 7.16.

Table 7.16	Low levels of wealth creation foregone
Pristine Waters	Coolah
Severn	Manilla
Nundle	Gunning
Kyogle	Hume
Yallaroi	Windouran

Based on the analysis of spending patterns and the anticipated long-term behaviour of households we have chosen to split wealth creation foregone in the following manner:

- 60 per cent of the local area wealth creation foregone represents losses in construction in the period. This would include the amount required to maintain existing households as well as the construction of new stock. This expenditure is not considered to generate future income flows; and

- 40 per of the wealth creation foregone is allocated to the purchase of financial products which are assumed to be income generating.

7.5.6   Financial assets

Financial assets accumulated have two direct impacts on the economy; one, the savings rate for the economy as a whole is increased as more money is accumulated in financial assets and two, those accumulating these assets receive a future benefit from the income flow associated with this activity.

There is a great deal of debate as to whether or not higher savings rates in Australia in the past fifteen years or in the next ten years would have positive benefits.

In the past twenty years, despite the vigorous effects of successive governments to stimulate savings through compulsory superannuation, the household savings rate has declined. The increase in compulsory superannuation savings has simply led households to reduce their discretionary savings levels. The impact of reduced savings has undoubtedly contributed to a sustained current account deficit, which in turn has led to an increase in foreign holdings of Australian domestic assets to fund this deficit.

At the macroeconomic level, the potential benefit of a low household savings rate (that is, a high consumption to income ratio) is that demand is generated which helps to maintain the level of economic activity. However, it is also possible that lack of savings will crowd out investment in maintaining and improving productive capacity, either through financial markets

(interest rates are higher than they would otherwise have been) or directly (as when a small business chooses to consume rather than re-invest in the business). If investment growth is crowded out, income growth is affected in the near future, since there is less capital to generate income. It is fairly certain that there was little or no crowding out of investment in the early 1990s, when investment was strongly discouraged by the recession and savings rates were relatively high, but opinion is divided concerning the period from around 1996. However, the experience with national superannuation suggests that the household sector is confident in its ability to decide how much to consume and hence how much to save in response to its view of the economic outlook.

In view of these uncertainties we have taken a neutral perspective on financial asset accumulation foregone. We have evaluated the future cash flows foregone at the household level, but have not included any further macroeconomic penalties. We also took into account lost activity in the processing of financial transactions in the financial sector of the economy.

7.5.7   Construction foregone

Some of the asset accumulation foregone has a direct impact on the construction sector as individuals fail to invest in housing for future income protection. The evidence of this trend in the current HES is seen clearly with the lower level of money spent on housing.

By international standards, Australia has a high level of investment in housing to the detriment of other viable investment alternatives. Perhaps Australia's overall wealth would be increased if gambling households stopped gambling and generated savings to finance investment other than housing. Whilst this remains a possibility we have allowed the price-based market mechanisms of the IMP model to account for the reallocation of resources, rather than explicitly assuming that savings generated by reduced gambling are invested in business capital. As a result, much of the savings foregone would have been spent on housing construction.

Modelling foregone construction requires us to evaluate the impact of an expansion in the construction sector at the local and state economy level. The expansion needs to be as large as would have accrued if the appropriate share of gambling money was spent on construction. A major proportion of this would appear in retail sales or household services such as landscaping, home handyman activities or household improvements.

No feedback mechanisms were assumed in the modelling of construction impacts. If the level of construction were increased by the amount suggested by the amount of gambling expenditure, this would have an impact of the supply of intermediate goods for the sector along with impacts on wages. However, there is a partial offset, in that reduced gambling expenditure would reduce investment in the construction and extension of pubs and clubs (see Section 5.3 above). In a sense, the modelling assumes flexibility between the pubs/clubs sector, the construction sector and subsequent flow-on industries.

The estimates do not include a flow-on impact on the pricing of housing and construction assets. In reality, if a significant portion of gambling expenditure were fully redirected to investment in housing, there would be pressure on the current regime of mortgage rates, the split between renters and mortgage holders, the level of urban land prices and the overall level of housing stock growth in the economy. In a fully developed scenario it is likely that in a perverse fashion, the reduced housing investment due to gambling is likely to have resulted in a lower level of housing costs than would have otherwise existed.

8. Econometric modelling of local area impacts

8.1 Introduction

Armed with information about the structure of the gambling industry within each LGA, the amount spent by the residents of each LGA and estimates of the opportunity cost of this expenditure we can model each of the activities generated and foregone to determine the total impact on a regional basis.

As noted in Section 5.4, local area effects are modelled separately to state-wide effects and then the two are consolidated. For each local area a separate model of the local economy was used. The model was based on the structure of the economy and the nature of the households in the area. Using these local area models the direct and indirect effects of any activity can be measured. The direct effects and indirect effects are reported in this study in the form of income flows generated either through wage income or profits.

Section 8.2 deals with the activities generated including the pubs, clubs, casinos and lotteries, as well as the impact of government spending of taxation revenues generated.

Section 8.3 deals with the activities that would have been undertaken if the gambling was not available as well as the costs of financing the present consumption and the federal government taxation flows foregone.

8.2 Activity generated by gambling expenditure

Gambling expenditure finances income generation through jobs and profits.

8.2.1 Modelling the economic activity generated by the operation of gambling in clubs

To determine the positive impact of clubs we need to identify the employment generated along with the nature of profit distribution. We have characterised this sector as having:

- low levels of profits distributed as dividends;

- a positive impact on local construction through the building and maintenance of attractive, often large scale, operations; and

- community focussed profit distribution (in cash or in kind).

These assumptions are very important in the analysis of local area impacts in New South Wales due to the clubs' large share of turnover. Changes in the assumptions underlying the distribution of surpluses generated by clubs will impact heavily on the local area outcomes[23].

It was assumed that a significant proportion of the surpluses generated were returns to the gamblers or community in the area in the form of real income effects. These income effects included subsidies for food and entertainment. Whilst being a non-cash transfer they

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[23] This is an important difference to the situation in Victoria in which the two large companies of Tabcorp and Tattersalls (plus PBL at Melbourne's Crown Casino) own the gaming machine licenses.

represent real savings to the individual or community that would otherwise have been financed from other sources.

In order to model this profit distribution we utilised the identical distribution of the source of gambling expenditure from households in the region, i.e. if a club was modelled to receive 50 per cent of its gambling revenue from the local economy, 50 per cent of the profits distributed in kind were applied to the same region[24].

The profits distributed in this fashion were assumed to be allocatively efficient in the sense that no wastage or leakage occurs. This is an aggressive assumption, as many individuals that receive the effective income transfer will have a lower level of consumer surplus or increased utility than they would have from a cash distribution. However to match this aggressive assumption, it was conservatively assumed that the incomes distributed in this fashion do not attract a local activity or income multiplier.

In terms of the measures used to model the activity of the industry, NSW state estimates of productivity, sales and costs were used. Wage rates and employment levels were based on state average incomes in the ANZSIC industry – Clubs (Census 2001). Direct employee income was adjusted by an area specific income relativity, resulting in a regionally differentiated wage income profile. Wages were allocated to the LGA of the worker's residence according to journey to work patterns.

Club local profits were assumed at the state average of a 14 per cent margin on gross revenue[25]. Eighty per cent of the 14 per cent was treated as direct local profit retained and distributed on the basis of the reach of the club calculated on an "allocated gravity" basis. In other words, the profits were repatriated to the places where people that use the club live. The remaining 20 per cent was distributed directly into the economy of the local government area in which the club is situated.

To highlight the methodology and provide broad regional comparisons the results of the aggregate regions in terms of modelling the impact of clubs are presented. In this chapter each of the activities applied or foregone is presented in a similar fashion. The aggregate results for all local government areas are presented in Appendix 4 of the report.

In Table 8.1 the revenues received in each area occupy the first column. From this amount direct wages paid were estimated. To be consistent with our measures of impacts on the household sector, these direct wages were then allocated to the LGAs of worker residence on the basis of journey to work patterns. Inner Sydney had a level of direct wages of $52.2 million, however when distributed only $38.4 million reached households in the area, whereas in the Outer Sydney Suburbs the $194.4 million generated locally was combined with a net positive inflow for a total of $225.6 million in allocated wages.

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[24] In the case of border communities or other regions with large export revenue these communities retain the export proportions of surpluses. As an example, a Victorian/New South Wales border community with significant interstate revenues sources is assumed to receive the lion's share of profits redistributed in New South Wales.

[25] Based on reported profitability in ABS input output tables 1996-97 by commodity.

Table 8.1 Modelling the flows of club activity, aggregate regions – Step 1

	Club revenue (excl. duty)	Direct wages	Allocated wages on JTW	Allocate direct profits	Total direct impacts
			A	B	C=A+B
Inland (excl. border regions)	206.3	66.5	65.8	27.0	92.8
VIC/QLD border regions	154.5	45.7	44.8	19.4	64.1
Northern Coastal	436.2	129.2	131.4	53.3	184.8
Southern Coastal	196.7	57.7	59.0	23.7	82.7
Inner Sydney	167.4	52.2	38.4	30.4	68.8
Established suburban	567.6	158.7	139.3	75.9	215.2
Outer Sydney Suburbs	681.6	194.4	225.6	81.4	307.0
Total NSW	**2,410.3**	**704.4**	**704.4**	**311.0**	**1,015.4**

The indirect effects of the activity were modelled in Step 2 (Table 8.2). It should be noted that direct wages (Table 8.1) were higher in the Victorian/Queensland border regions than indirect wages (Table 8.2), while in the Outer Sydney suburbs indirect wages were higher than direct. This was due to the range and complexity of production that occurs in the outer suburbs of Sydney compared to the broader regions. If material or services are required to support clubs it is much more likely to be sourced from the Outer suburban regions than from the rural or regional areas. The allocation of the remaining state effects added further to flow towards the city from the other areas. There would also be indirect effects outside New South Wales, but these were not considered in the present study.

Table 8.2 Modelling the flows of club activity, aggregate regions – Step 2

	Allocated indirect wages on JTW	Indirect profits retained	Allocated remaining state VA income effects	Total income effects, $m per yr	Total income effects, $m 5 yrs
	D	E	F	C+D+E+F	
Inland (excl. border regions)	47.1	12.7	74.7	227.4	1,137
VIC/QLD border regions	26.1	5.7	14.5	110.4	552
Northern Coastal	110.4	23.4	106.2	424.8	2,124
Southern Coastal	46.0	10.1	41.3	180.1	900
Inner Sydney	33.4	32.2	72.3	206.7	1,034
Established suburban	110.4	38.3	135.9	499.8	2,499
Outer Sydney Suburbs	208.7	58.7	221.0	795.4	3,977
Total NSW	**582.1**	**181.1**	**666.0**	**2,444.6**	**12,223**

The total impact over five years of gambling in clubs was to add $12.2 billion to economic activity in the state. When we compare the impact on the households in each of the areas in the following table we can see that much of the total benefit was captured in the Sydney area. The Victorian/Queensland border regions had the highest positive impacts per household due to the significant amount of exports generated.

Table 8.3	Modelling the flows of club activity, aggregate regions – Step 3	
	Total income effects, $m 5 yrs	Total effects, $ per household 5 yrs
Inland (excl. border regions)	1,137	3,614
VIC/QLD border regions	552	8,244
Northern Coastal	2,124	4,580
Southern Coastal	900	5,290
Inner Sydney	1,034	4,772
Established suburban	2,499	5,599
Outer Sydney Suburbs	3,977	5,982
Total NSW	**12,223**	**5,216**

8.2.2 Modelling the economic activity generated by the operation of gambling in pubs

The methodology used for pubs is analogous to the modelling used to determine the activity of clubs. In general we have characterised pubs as having:

• weaker local impacts with regard to the distribution of surpluses;

• more repatriation of profits interstate, and across New South Wales on the basis of dividend share (from a modelling perspective instead of having 80 per cent distributed locally to users of the machines only 20 per cent is distributed in this way);

• profitability was slightly higher per unit of revenue; and

• supply chain differences mean that indirect profit was less likely to be retained in the community than with clubs.

Presenting the impacts at an aggregate regional level Table 8.4 highlights the importance of the pubs in the Inner Sydney area and the relative lack of pubs in the border regions and the coastal areas. As noted the allocation of the direct profits from the pub sector tended to follow the general wealth distribution in the state rather than the more localised effects of the clubs. Total direct effects in the pub sector were slightly higher than clubs as a proportion of revenue due to their different cost structure.

Table 8.4	Modelling the flows of pub activity, aggregate regions – Step 1				
	Pub revenue (excl. duty)	Direct wages	Allocated wages on JTW	Allocate local profits	Total direct impacts
			A	B	C=A+B
Inland (excl. border regions)	109.5	34.2	33.1	9.5	42.6
VIC/QLD border regions	19.0	5.9	6.0	1.6	7.5
Northern Coastal	108.5	33.9	35.4	11.9	47.3
Southern Coastal	38.8	12.1	13.2	5.0	18.3
Inner Sydney	240.5	75.0	39.1	27.7	66.8
Established suburban	221.3	69.1	77.6	22.6	100.2

| Outer Sydney Suburbs | 207.1 | 64.6 | 90.3 | 34.9 | 125.2 |
| **Total NSW** | **944.8** | **294.8** | **294.8** | **113.2** | **408.0** |

Once again the importance of the indirect income effects in the Outer Sydney region is witnessed in Table 8.5, which records Step 2 effects. For an original revenue estimate of $207 million the total income effects in this region were estimated to be $307 million. This compares to the inland regions, which from a revenue of $109.5 million returned only $97 million in income generated.

Table 8.5   Modelling the flows of pub activity, aggregate regions – Step 2

	Allocated indirect wages on JTW	Indirect local profits retained	Allocated remaining state VA income effects	Total income effects, $m per yr	Total income effects, $m 5 yrs
	D	E	F	C+D+E+F	
Inland (excl. border regions)	30.3	8.1	16.4	97.4	487.0
VIC/QLD border regions	5.5	1.6	3.2	17.8	88.9
Northern Coastal	37.3	10.2	23.3	118.1	590.6
Southern Coastal	13.1	4.1	9.0	44.5	222.5
Inner Sydney	39.8	26.2	15.8	148.6	743.1
Established suburban	75.3	19.4	29.8	224.6	1,123.0
Outer Sydney Suburbs	105.5	28.1	48.4	307.2	1,536.0
Total NSW	**306.9**	**97.5**	**145.8**	**958.2**	**4,791.2**

On a per household basis the differences in activity generated are shown in the Step 3 Table 8.6. Due to the strong correlation between the activity of the pub sector with incomes generated in large corporate firms, the inner Sydney region was considerably advantaged by gambling in pubs.

Table 8.6   Modelling the flows of pub activity, aggregate regions – Step 3

	Total income effects, $m 5 yrs	Total effects, $ per household 5 yrs
Inland (excl. border regions)	487.0	1,548
VIC/QLD border regions	88.9	1,329
Northern Coastal	590.6	1,273
Southern Coastal	222.5	1,308
Inner Sydney	743.1	3,431
Established suburban	1,123.0	2,516
Outer Sydney Suburbs	1,536.0	2,310
Total NSW	**4,791.2**	**2,045**

8.2.3 Modelling the economic activity generated by the operation of gambling in casinos and lotteries

For the casino and lottery sector the flows are reasonably transparent in so far as both place of employment and residence is available for each. The nature of the services provided along with their profitability and distribution is also available. The flows from this sector can therefore be determined readily. Due to the location of the casino and the head office components of the lotteries sector, the impacts on activity were predominantly felt in the Sydney area.

The net results for casinos and lotteries are presented in Section 8.4 for the aggregate regions, and Appendix 4 for each local government area.

8.2.4 Modelling the economic activity generated by the operation of the TAB and the provision of income to the racing industry

The location of TAB services is readily determined as is the nature of the flows between the TAB, the government and racing interests. Activity in this sector can be broken down into three separate areas.

- Operation of TAB outlets, management etc.

- Distribution of proceeds to race clubs to help operate activity at racing centres. Wages and salaries in this sector were allocated on a journey to work basis as with other industries.

- Distribution of prize money to owners to subsidise training and ownership costs. This money was distributed according to the dividend share of income as a proxy for wealth.

We chose to model the distribution of prize money as a simply subsidy to owners, rather than considering that without the prize money the activity itself would not be undertaken. In this respect we have underestimated the opportunity cost due to the structural costs of reducing the amount of racing undertaken.

The net results for the TAB and racing are presented in Section 8.4 for the aggregate regions and Appendix 4 for each local government area.

8.2.5 Modelling the application of taxation revenue generated

Gambling taxes collected by the State Government were distributed back to the people as government services according to the share of population. This is a standard assumption that is tied to the concept of the taxes forming a small part of total consolidated revenue and hence equally likely to be spent on any state government service to any individual living in the state. For the purposes of the modelling, the activity generated by the application of this revenue back to community was through health and education, both primary state responsibilities.

As with other forms of activity the increase in government spending led to both direct and indirect employment and income effects at the regional level.

Table 8.7   Modelling the flows of government spending activity, aggregate regions –
             Step 1

	Allocated government expenditure on population	Direct local income effects	Indirect income effects	Allocated remaining state VA income effects	Total impact, 5 yrs
		A	B	C	5*(A+B+C)
Inland (excl. border regions)	148.1	100.7	41.9	39.5	910.4
VIC/QLD border regions	29.3	19.9	9.3	7.6	184.4
Northern Coastal	209.6	142.5	68.6	56.2	1,336.3
Southern Coastal	79.2	53.8	20.1	21.8	478.7
Inner Sydney	85.2	58.0	37.1	38.2	666.4
Established suburban	216.9	147.5	75.8	71.8	1,475.3
Outer Sydney Suburbs	351.8	239.2	122.0	116.8	2,390.0
Total NSW	**1,120.0**	**761.6**	**374.7**	**352.0**	**7,441.4**

Table 8.8   Modelling the flows of government spending activity, aggregate regions –
             Step 2

	Total income effects, $m per yr	Total income effects, $m 5 yrs	Total income effects, $ per household 5 yrs
Inland (excl. border regions)	182.1	910.4	2,894
VIC/QLD border regions	36.9	184.4	2,755
Northern Coastal	267.3	1,336.3	2,881
Southern Coastal	95.7	478.7	2,813
Inner Sydney	133.3	666.4	3,077
Established suburban	295.1	1,475.3	3,305
Outer Sydney Suburbs	478.0	2,390.0	3,595
Total NSW	**1,488.3**	**7,441.4**	**3,176**

8.3   Opportunity costs of gambling expenditure

When people spend on gambling, they forgo other expenditures and savings which would otherwise have generated incomes.

8.3.1   Debt financing

Debt financing has one clear impact on the households which go into debt. It reduces their disposable income in the future as the cost of servicing the debt is paid. To calculate the regional impact of debt, each LGA's debt-financing share was determined as outlined in Section 7.5.1. Based on this share of expenditure the amount anticipated to be borrowed over the period was determined. Interest costs were calculated using simple present value formulations to provide us with the cost of debt financing. The economic impact of debt financing is not the debt itself but the interest cost of servicing the debt.

At this point the question arises as to how to treat the servicing of past gambling debts. This depends on the nature of the comparison being made. At the one extreme, if it is argued that the comparison is between the current state of affairs and a hypothetical state in which there is no gambling and never has been any gambling, the cost of servicing all gambling-related debts is relevant. At the other extreme it may be argued that past debt is a sunk cost, and only current activity is relevant. This is an attractive point of view when our concern is for marginal changes in gambling habits. For the present study, NIEIR has adopted an intermediate position.

Were the level of gambling falling, it is clear that many gambling debts would be repaid (Section 7.3). However, since 1997 the level of gambling has increased, and this doubtless hindered the repayment of past gambling debts, an effect consistent with the fall in the household savings rate since 1997 (Section 7.2.2). For this study, we have assumed that, where new debt was incurred to finance gambling, the repayment of old debt slowed down, with the effect of adding 20 per cent to the cost of current borrowing. To refine this estimate further it would be necessary to investigate the dynamics of indebtedness, not only for problem gamblers but for other gamblers and for the non-gambling population.

The interest rate applied to current and future debt was 12 per cent, which is representative of levels of interest charged on unsecured personal loans. Many households may in fact have been securing credit at lower cost, however others including problem gamblers were likely to be paying significantly higher rates on credit cards and lines of credit. It is important to note that the wealthier regions with access to cheaper credit also have lower levels of debt financing need. It is probable that the average interest rate paid on gambling debts incurred by residents of these municipalities was around or less than 12 per cent (e.g. some of it may have been incurred by extending mortgages which would otherwise have been repaid). The application of a 12 per cent rate across the board is accordingly likely to under-estimate the difference in debt financing costs between the residents of poor and rich LGAs.

It should also be pointed out that the same rate of debt accumulation, related to household income and demographics, has been applied in all municipalities. However, in wealthy areas there are greater opportunities to finance gambling from asset sales instead of going into debt. The cash flow impacts are similar, but the costs of asset incomes foregone are likely to be less than the cost of debt incurred. Once again our assumptions tend to under-estimate the impact of debt finance in poor areas as compared to wealthy areas.

The cost of debt financing calculation is presented for the aggregate regions in Table 8.9. The clear pattern is the relatively high level of debt financing in regions other than Inner Sydney. In interpreting the table, we should remember the highly skewed nature of gambling debt accumulation, due to the role of debt with problem gamblers. A single problem gambler is likely to have up to 20 times the level of debt accumulation as the average household. The costs of such debts can be longstanding and be off-loaded onto families and acquaintances of gamblers as well as financial institutions.

Table 8.9   Aggregate regions: debt financing

	Debt finance share of gambling expend.	Total debt raised over 5 years ($m)	Debt raised per household ($)	Cost of debt financing, $m over 5 yrs	Debt finance cost per household $
Inland (excl. border regions)	0.177	562.8	1,789	376	1,195
VIC/QLD border regions	0.190	154.9	2,315	108	1,612
Northern Coastal	0.153	746.2	1,609	511	1,101
Southern Coastal	0.148	287.7	1,691	192	1,127
Inner Sydney	0.031	81.4	376	49	228
Established suburban	0.047	307.5	689	193	433
Outer Sydney Suburbs	0.142	1,365.5	2,054	854	1,284
Total NSW	**0.122**	**3,506.0**	**1,496**	**2,283**	**974**

8.3.2   Construction effects

Modelling the impact on construction has two components although the net measure is reported as construction activity foregone. Gambling households spend less on housing than non-gambling households, but gaming venues invest revenue in construction. This mitigates the negative construction impact of wealth creation foregone.

Sixty per cent of household wealth accumulation foregone was assumed to reduce construction activity. In reality not everyone who gambles would have purchased a new house. However, indirectly, the opportunities of asset accumulation foregone lead to a reduction in construction activity. Construction presents a good proxy for a lot of alternative spending and accumulation patterns that revolve around investment in physical capital goods. It is also a highly regional diverse activity in which there is significant direct spending from private sources similar to that which would be generated though stronger local asset accumulation. However, depreciation partly offsets the negative effects from wealth creation foregone. A 6 per cent rate has been assumed.

The modelling of construction activity foregone was done by applying the various regional models to determine the local and state direct and indirect income effects.

Table 8.10   Modelling the flows of construction activity foregone, aggregate regions – Step 1

	Wealth creation share	Cumulative construction spending foregone, $m 5 yrs	Spending foregone per household, $ 5 yrs	Additional activity generated by pubs and clubs, $m per yr	Net construction activity foregone in area, $m per yr
Inland (excl. border regions)	0.438	755	2,399	17.5	157.6
VIC/QLD border regions	0.369	164	2,455	9.6	27.4
Northern Coastal	0.451	1,264	2,726	30.2	260.4
Southern Coastal	0.484	491	2,887	13.1	111.6
Inner Sydney	0.799	1,073	4,954	22.6	195.3
Established suburban	0.703	2,277	5,101	43.8	326.6
Outer Sydney Suburbs	0.623	2,928	4,404	49.3	512.0
Total NSW	**0.587**	**8,952**	**3,820**	**186.2**	**1,599.0**

Table 8.11 Modelling the flows of construction activity foregone, aggregate regions –
Step 2

	Net construction activity foregone in area, $m per yr	Direct wages	Allocated wages on journey to work patterns	Indirect wages	Allocated indirect wages on journey to work patterns	Local profits retained
Inland (excl. border regions)	157.6	44.8	47.6	43.0	42.6	66.9
VIC/QLD border regions	27.4	7.8	7.6	8.8	8.7	13.3
Northern Coastal	260.4	73.9	68.9	81.1	87.8	112.8
Southern Coastal	111.6	31.7	28.3	26.9	30.5	41.5
Inner Sydney	195.3	55.5	76.5	89.1	47.0	68.5
Established suburban	326.6	92.8	101.6	115.1	101.7	137.4
Outer Sydney Suburbs	512.0	147.7	123.5	171.8	217.4	257.3
Total NSW	**1,599.0**	**454.1**	**454.1**	**535.7**	**535.7**	**697.5**

Table 8.12 Modelling the flows of construction activity foregone, aggregate regions –
Step 3

	Total direct, indirect wages and local profits	Allocate remaining state value added income effects	Total income effects, $ per year	Total income effects, $ 5 yrs	Total income effects per household , $ 5 yrs
Inland (excl. border regions)	157.2	77.5	234.7	1,173	3,730
VIC/QLD border regions	29.6	15.0	44.6	223	3,328
Northern Coastal	269.5	110.2	379.6	1,898	4,093
Southern Coastal	100.4	42.8	143.2	716	4,208
Inner Sydney	191.9	75.0	266.9	1,335	6,162
Established suburban	340.6	140.9	481.5	2,408	5,394
Outer Sydney Suburbs	598.1	229.2	827.3	4,136	6,222
Total NSW	**1,687.3**	**691.0**	**2,378**	**11,889**	**5,074**

8.3.3   Impact of financial assets not purchased

The remaining 40 per cent of the wealth creation capacity foregone was assumed to be financed from reduced purchases of financial assets. Such asset purchases directly generate only minimal impact on the economy, as the only activity created is in the form of financial management services and banking. The amount of savings foregone was not assumed to impact on the net availability of credit to the Australian economy, as there have been significantly cheaper sources of funds in Australia for well over ten years.

The activity foregone in this sector can therefore be represented by the income flows foregone from such assets along with the margin that was not created by the financial institutions offering such products. Estimating direct income foregone required a rate of interest to be applied. We assumed a conservative level of 4 per cent due to, one, the low level of anticipated returns to financial assets in the medium term, and two, the relative attractiveness of direct superannuation contributions which do not generate income in the medium term.

Table 8.13 shows considerably higher impacts on the inner suburbs of Sydney, due to the relative concentration of financial activity occurring in this area.

Table 8.13   **Modelling the flows of financial activity foregone, aggregate regions – Step 1**

Aggregate regions	Non saving or wealth creation share	Direct Cost of Wealth Creation foregone	Allocate direct and indirect income effects on journey to work pattern	Allocate remaining NSW Value Added income on Dividend and Income Shares	Total Cost of Wealth Creation foregone	Impact per household, $ 5 yrs
		A	B	C	= A+B+C	
Inland (excl. border regions)	0.438	62.0	12.9	68.8	143.7	455.7
VIC/QLD border regions	0.369	13.5	2.6	13.3	29.4	437.7
Northern Coastal	0.451	103.9	26.7	97.8	228.3	491.0
Southern Coastal	0.484	40.4	10.5	38.0	88.9	521.2
Inner Sydney	0.799	88.2	48.7	66.5	203.4	939.4
Established suburban	0.703	187.1	74.9	125.1	387.1	868.1
Outer Sydney Suburbs	0.623	240.6	109.6	203.4	553.6	834.7
Total NSW	**0.587**	**735.6**	**285.8**	**612.9**	**1,634**	**697.7**

8.3.4   Retail

Based on an estimate by LGA of the amount of retails sales foregone this activity was allocated across the system or model in the following manner.

- For each region an import ratio developed by NIEIR's *YourPlace-IO* local area modelling system was used to determine the amount of retail expenditure that would be likely to be spent locally.

- The remaining spending for the state as a whole was allocated in proportion to the share of retail activity of each local area in the state. This is important because the exact nature of the retail sales foregone cannot be reliably constructed to the point where we estimate the type of retail goods that have been foregone. (For instance, if a reduction in household spending on appliances dominated, a different distribution of locations in which that spending would have generated employment would have been appropriate, compared to the case in which the spending foregone was dominated by supermarket sales or other retailing options).

Reduced activity in retail trade

The impact of retail sales revenues foregone was modelled by first considering the loss in retailing activity itself (the activity of the shops physically selling the goods). At the local level this included the local flow-on effects of this activity. These flow-on effects included the income and employment generated in renting shop floorspace, employing cleaning services and accountants, and from purchases of transport and communication services.

The flows of incomes foregone through lower employment were distributed on the 2001 Journey to Work patterns. For instance, when retail activity was removed from the Sydney CBD the regional income change was received in the suburbs that currently provide workers in retailing in the CBD. Similarly the income and employment associated with the indirect activities foregone in the local areas were also distributed by journey to work patterns.

Table 8.14   Modelling the flows of retail activity foregone, aggregate regions – Step 1

Aggregate regions		Total retail sales foregone	Locally applied retail sales foregone	Local output foregone	Direct/ indirect local income lost A
Inland (excl. border regions)	0.315	207.0	110.0	28.4	24.1
VIC/QLD border regions	0.371	61.5	32.3	7.7	6.8
Northern Coastal	0.326	328.2	185.7	46.2	41.2
Southern Coastal	0.298	114.8	59.6	15.4	13.7
Inner Sydney	0.099	52.0	36.0	10.6	6.4
Established suburban	0.180	231.8	128.8	36.6	23.2
Outer Sydney Suburbs	0.165	322.9	176.0	51.4	48.9
Total NSW	**0.229**	**1,318.1**	**728.2**	**199.4**	**164.3**

Table 8.15   Modelling the flows of retail activity foregone, aggregate regions – Step 2

Aggregate regions	Retail sales activity originating in LGA, applied elsewhere, $m per yr	Applied remaining sales activity lost, $m per yr	Direct / indirect income lost from remaining sales, $m per yr B	Allocate remaining state value added, local and non-local, $m per yr C	Total income effects of retail activity foregone, $m per yr =A+B+C	Impact over 5 years, $m
Inland (excl. border regions)	25.3	21.8	26.2	12.9	63.2	316
VIC/QLD border regions	7.6	5.0	6.0	2.5	15.3	77
Northern Coastal	37.2	33.7	43.2	18.3	102.7	514
Southern Coastal	14.4	8.4	10.7	7.2	31.6	158
Inner Sydney	4.6	10.2	9.2	14.6	30.2	151
Established suburban	28.2	41.5	34.8	24.0	81.9	410
Outer Sydney Suburbs	40.8	37.9	66.2	39.4	154.5	773
Total NSW	**158.1**	**158.1**	**196.2**	**119.0**	**479.5**	**2,398**

Table 8.16   Modelling the flows of retail activity foregone, aggregate regions – Step 3

Aggregate regions	Impact over 5 years	Impact per household, $ per hh 5 yrs
Inland (excl. border regions)	316	1,004
VIC/QLD border regions	77	1,146
Northern Coastal	514	1,108
Southern Coastal	158	928
Inner Sydney	151	697
Established suburban	410	918
Outer Sydney Suburbs	773	1,162
Total NSW	**2,398**	**1,023**

The net result for retail sales activity foregone was not surprising felt most by the areas with the strongest representation of retail workers. The Inner Sydney area, despite having extensive retail sales, had the least impact due to the income effect being dispersed widely.

On an income relative basis the largest impact was in the inland areas as the generally lower levels of retail sales and lower wealth creation capacity resulted in a higher amount of gambling spending being sourced from other retail goods.

Foregone production of domestic retail goods and services

The reduction in retail sales also impacted on the production of the goods and services that would have been sold. To model these impacts we considered two pieces of information:

1.   the average rate of importing from interstate and overseas of retail goods sold in New South Wales; and

2.   for the remaining goods that would have produced in the state, the distribution of activity in the manufacturing /production of retail goods in the state.

Using the average level of imports and the average shares of detailed retail items purchased by households at the state level, we determined the total amount of manufacturing activity lost. Applying the distribution of such activity in the New South Wales economy a regionally specific loss of production[26] was estimated[27].

Once again using the regionally specific local economic models, the indirect impacts of the production of these goods was also estimated. As with retail trade activity all incomes were allocated on a journey to work basis.

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[26]   Includes wholesaling.

[27]   In this model the price impact of an increase in production is not considered. The modelling is effectively comparative static in nature as it compares an economy which has significant capital allocated to the gaming industry to one in which this option did not exist. As such any pricing impacts that would be associated with the economy moving towards the one described by the opportunity cost model need not be considered.

Table 8.17   Modelling the flows of production foregone, aggregate regions – Step 1

Aggregate regions	Value of goods not produced at place of production, $m per yr	Direct local income applied to JTW, $m per yr	Indirect local income applied, $m per yr	Remaining state based VA income, $m per yr	Total income effect, $m 5 yrs	Income effects per household , $ per household 5 yrs
		A	B	C	5(A+B+C)	
Inland (excl. border regions)	97.3	47.1	43.3	40.9	657	2,088
VIC/QLD border regions	17.2	8.5	8.1	8.0	123	1,842
Northern Coastal	102.8	54.7	56.2	57.7	843	1,817
Southern Coastal	35.9	19.9	18.4	23.2	308	1,807
Inner Sydney	151.6	32.5	41.3	61.3	676	3,120
Established suburban	166.2	70.0	81.3	79.2	1,152	2,581
Outer Sydney Suburbs	162.1	118.2	131.8	133.5	1,918	2,885
Total NSW	**733.0**	**350.9**	**380.6**	**403.8**	**5,676**	**2,422**

The impact of the loss of production was keenly felt in the Outer Sydney suburbs which had an income loss of $2,885 per household over five years. The impact on the Inner Sydney area was more in terms of income from profits and dividends than from employment. In the case of the inland and suburban regions the loss of production due to retail sales foregone was directly related to the level of employment foregone.

In this respect gambling expenditure is a reallocation of employment away from the production of consumer goods and towards the services sector. Although we have not considered the long run consequences of such a re-allocation it is clear than in the short term this results in a higher number of poorly paid jobs in the services sector at the expense of jobs that would probably be better paid and offer significantly higher levels of skills and technology transfer. On the other hand with a very high share of imports in retail sales the advantage of the services sector and gambling in particular is that it has a high level of local content. By contrast, the decline in the manufacturing sector (due in Australia to a mix of policy neglect and international competitive forces) has meant that the production of locally sold retail goods has diminished and could do so further. Balancing the possible further increase in import content for retail goods foregone with the cost of low skilled work we decided to model the impact on the sector in a structurally neutral manner. As such these transfers were not considered to impose additional long-run costs on society other than the opportunity costs of the production forgone, which were measured above.

Total impacts of retail sales foregone

When the impacts of manufactured goods production foregone is combined with retail sales activity foregone, the total opportunity cost of the diversion of expenditure from retail to gambling can be measured. As we witnessed in Tables 8.16 and 8.17, the impact of having a high resident workforce in these sectors combined with a strong manufacturing base resulted in the highest impacts being felt in the outer Sydney suburbs.

Aggregate regions	Manufactured goods impact, $m 5 yrs	Retail sales activity impact, $m 5 yrs	Total impacts, $m 5 yrs	Total impact per household, $ per household 5 yrs
Inland (excl. border regions)	657	316	973	3,092
VIC/QLD border regions	123	77	200	2,988
Northern Coastal	843	514	1,357	2,925
Southern Coastal	308	158	465	2,735
Inner Sydney	676	151	827	3,817
Established suburban	1,152	410	1,562	3,499
Outer Sydney Suburbs	1,918	773	2,690	4,047
Total NSW	**5,676**	**2,398**	**8,074**	**3,446**

Table 8.18   Modelling the flows of retail activity foregone, aggregate regions – Step 5

8.3.5   Allocating the effects of the net reduction in federal government income and expenditure

With the different changes in the types of goods and services purchased and the type of industry employment generated the effect on federal income taxation and GST needs to be measured. Income taxation foregone was measured by considering the changes in income at the regional level and the average income tax paid by these households.

The net change in GST was estimated based on the average GST paid at the industry or expenditure item level. GST was assumed to be returned to the state on a population share basis. The income tax revenue lost was assumed to have been at the expense of direct transfers to the community on a population basis. For conservatism's sake we removed any multiplier effects that the transfer foregone may have generated.

The net impact on Commonwealth transfers not returned to the state was -$303 million over five years. This impact can seem artificially high as it did not include the direct taxation generated by the gambling which was directly allocated to state government expenditure in Section 8.2.5.

The net results for federal spending foregone are presented in Section 8.4 for the aggregate regions and Appendix 4 for each local government area.

8.4   Total regional effects

The total regional impact of gambling is simply the sum of the impacts of gambling expenditure, less the impacts of the foregone activity implied by gambling, less the community costs of gambling.

The following tables combine the information both with respect to the total impact as well as expressing these impacts on a per household basis.

Table 8.19   Aggregate regions, positive impacts, $m over 5 yrs

	Clubs	Pubs	TAB & Racing	Gov't spending	Casino and Lotteries	Total positive impacts
Inland (excl. border regions)	1,137	487	420	910	193	3,147
VIC/QLD border regions	552	89	112	184	51	988
Northern Coastal	2,124	591	706	1,336	323	5,080
Southern Coastal	900	222	256	478	135	1,991
Inner Sydney	1,034	743	735	666	503	3,681
Established suburban	2,499	1123	1,196	1,475	674	6,967
Outer Sydney Suburbs	3,977	1536	1,486	2,390	992	10,381
Total NSW	**12,223**	**4791**	**4,910**	**7,441**	**2,871**	**32,236**

Table 8.20   Aggregate regions, negative impacts, $m over 5 yrs

	Retail sales activity	Goods not produced	Financial assets	Debt finance	Federal income	Construc tion	Total negative impacts
Inland (excl. border regions)	316	657	144	376	40	1,173	2,706
VIC/QLD border regions	77	123	29	108	8	223	568
Northern Coastal	514	843	228	511	57	1,898	4,051
Southern Coastal	158	308	89	192	21	716	1,484
Inner Sydney	151	676	203	49	23	1,335	2,437
Established suburban	410	1,152	387	193	59	2,408	4,609
Outer Sydney Suburbs	773	1,918	554	854	95	4,136	8,330
Total NSW	**2,398**	**5,676**	**1,634**	**2,283**	**303**	**11,889**	**24,183**

Table 8.21   Aggregate regions, net impacts, $m over 5 yrs

	Total positive impacts	Total negative impacts	Problem gambler cost	Net impact of gambling	% popul'n	% of net impact
Inland (excl. border regions)	3,147	2,706	334	107	13.3%	2.1%
VIC/QLD border regions	988	568	86	334	2.6%	6.5%
Northern Coastal	5,080	4,051	487	542	18.7%	10.5%
Southern Coastal	1,991	1,484	176	331	7.0%	6.4%
Inner Sydney	3,681	2,437	334	910	7.5%	17.6%
Established suburban	6,967	4,609	641	1,717	19.4%	33.2%
Outer Sydney Suburbs	10,381	8,330	822	1,229	31.4%	23.8%
Total NSW	**32,236**	**24,183**	**2,880**	**5,173**	**100.0%**	**100.0%**

The net impact of gambling over five years was a stimulus of $5.173 billion. The distribution of this benefit however, clearly favoured the wealthier regions of the state, at the expense of the inland and outer Sydney suburbs. Whilst the Inner Sydney region represents 7.5 per cent of the population, 17.6 per cent of the benefit of gambling was received in this region. The outer Sydney suburbs received 23.8 per cent of the benefit for 31.4 per cent of the population.

Table 8.22   Aggregate regions, per household positive impacts, $ per 5 yrs

	Clubs	Pubs	TAB & Racing	Gov't spending	Casino and Lotteries	Total positive impacts
Inland (excl. border regions)	3,614	1,548	1,334	2,894	614	10,004
VIC/QLD border regions	8,244	1,329	1,672	2,755	763	14,763
Northern Coastal	4,580	1,273	1,522	2,881	696	10,952
Southern Coastal	5,290	1,308	1,505	2,813	792	11,708
Inner Sydney	4,772	3,431	3,392	3,077	2,355	17,027
Established suburban	5,599	2,516	2,680	3,305	1,509	15,609
Outer Sydney Suburbs	5,982	2,310	2,235	3,595	1,492	15,614
Total NSW	**5,216**	**2,045**	**2,096**	**3,176**	**1,225**	**13,758**

Table 8.23   Aggregate regions, per household negative impacts, $ per 5 yrs

	Retail sales activity	Goods not produced	Financial assets	Debt finance	Federal income	Construction	Total negative impacts
Inland (excl. border regions)	1,004	2,088	456	1,195	127	3,730	8,600
VIC/QLD border regions	1,146	1,842	438	1,612	118	3,328	8,484
Northern Coastal	1,108	1,817	491	1,101	122	4,093	8,732
Southern Coastal	928	1,807	521	1,127	126	4,208	8,717
Inner Sydney	697	3,120	939	228	106	6,162	11,252
Established suburban	918	2,581	868	433	131	5,394	10,325
Outer Sydney Suburbs	1,162	2,885	835	1,284	143	6,222	12,531
Total NSW	**1,023**	**2,422**	**698**	**974**	**129**	**5,074**	**10.320**

Table 8.24   Aggregate regions, per household net impacts, $ per 5 yrs

	Total positive impacts	Total negative impacts	Problem gambler cost	Net impact of gambling	$ per household per week
Inland (excl. border regions)	10,004	8,600	1,062	342	1.31
VIC/QLD border regions	14,763	8,484	1,285	4,994	19.16
Northern Coastal	10,952	8,732	1,050	1,170	4.49
Southern Coastal	11,708	8,717	1,034	1,957	7.51
Inner Sydney	17,027	11,252	1,542	4,233	16.24
Established suburban	15,609	10,325	1,436	3,848	14.76
Outer Sydney Suburbs	15,614	12,531	1,236	1,847	7.08
Total NSW	**13,758**	**10,320**	**1,229**	**2,209**	**8.47**

When we recombine the amount spent by households with the regional benefit that gambling returns we get the long run opportunity costs of gambling. For instance in Table 8.25 the Northern Coastal regions spent on average $47.65 per week on gambling, while the activity of gambling had a net positive impact on the community of $4.49. By considering the surplus as a reduction in the real cost of gambling the long run cost of gambling is reduced by $4.49 to $38.20.

Table 8.25   Long run opportunity cost of gambling

	Average gambling expenditure	Net impact economic impact on region	Long run opportunity cost of gambling
	A	B	A-B
Inland (excl. border regions)	39.87	1.31	38.56
VIC/QLD border regions	47.65	19.16	28.49
Northern Coastal	42.69	4.49	38.20
Southern Coastal	43.70	7.51	36.19
Inner Sydney	46.01	16.24	29.77
Established suburban	54.32	14.76	39.56
Outer Sydney Suburbs	53.83	7.08	46.75
Total NSW	**48.21**	**8.47**	**39.74**

8.5   Effects at the LGA level

The geographical patterns of the impact of gambling on the economies of NSW LGAs are summarised in Maps 1-4. In these maps metropolitan LGAs are enlarged and country ones reduced in size. The result is distortion of shape, but boundary relationships are maintained. Map 1 names the LGAs.

8.5.1   Gambling expenditure per household

Estimated levels of gambling expenditure per household peak in the outer Western suburbs of Sydney (Map 2). They are moderately high in the middle-western and southern suburbs and in several country LGAs, notably in the Far North West and along the Murray River. Along the Murray, at least, the high levels of expenditure can be related to the existence of highly-attractive facilities originally developed to serve cross-border trade from Victoria. Estimated levels of gambling expenditure by the residents of these shires are high, even though allowance has been made for continuing cross-border trade. It would appear that the attractive facilities increase local patronage. Similarly the outer Western suburbs of Sydney have a number of large and highly attractive clubs, coupled with a relative lack of non-gambling entertainment venues. The lowest levels of expenditure are in various rural and retirement LGAs stretching in an arc from the Snowy River to Kyogle. Many of these low-gambling LGAs are low-opportunity areas.

Since gambling is a form of consumption expenditure, its significance for households can best be interpreted in relation to income. Map 3 shows gambling expenditure as a percentage of household income. The levels are higher than those implied by the state-wide returns used in Chapter 2, owing to differences in the definition of household disposable income at the local level, but the pattern is not affected by these differences.

Taking income into account, the residents of outer Western Sydney are still heavy spenders, but high rates of expenditure also occur in a number of low-income rural LGAs, in some cases as a result of high levels of opportunity. At the other extreme, expenditure as a proportion of income is low in the wealthy suburbs of Sydney—cash expenditures are moderate and incomes are high. Low expenditures as a proportion of income are also recorded in a number of 'slopes' LGAs, and also in Pristine Waters on the North Coast. These reflect low levels of estimated expenditure, tending to reflect low local provision of gambling opportunities.

8.5.2   Net economic impact

The final map, Map 4, offsets net benefits from gambling in terms of income generated against income spent. The following geographic groups may be suggested.

- Virtually all Sydney LGAs are net beneficiaries. In the wealthy suburbs this is the product of moderate gambling spending and high receipt of income, particularly from profits generated by gambling. In the Western suburbs, heavy expenditure on gambling is more than compensated by job generation, including manufacturing and construction jobs generated indirectly by gambling demand. Sydney also benefits from incomes generated in gambling administration.

- Most of the LGAs to the immediate north of the Murray from Corowa westwards are net beneficiaries, some of them considerably. This reflects cross-border revenues. The same applies to Tweed on the coastal border with Queensland and perhaps to Bourke, Brewarrina and Walgett. In these three remote shires the gaming machines are too far from the border to generate cross-border traffic, but there may be tourist traffic.

- Given the patterns of cross-border gaming, the position of Queanbeyan is notable. It is now 25 years since the ACT adopted gaming machines, and it appears that over this period Queanbeyan has lost most of its cross-border trade. The development of attractive venues in the ACT has deprived Queanbeyan clubs not only of revenue from Canberra residents, but taken away some of their revenue of Queanbeyan residents as well.

- Net benefits are also estimated to be high in isolated LGAs elsewhere. Some of these are LGAs which attract gamblers from neighboring LGAs. However, there is also a tendency for employment generated by gambling to outweigh the estimated costs in low-income, high-gambling shires. This result depends on there being few alternative sources of employment in these shires, and is also sensitive to the assessment of problem gambler costs.

- Net benefits are negative in an arc of rural LGAs covering most of the slopes. Some of these are losing gaming expenditure to their neighbors while not generating much local employment from gaming. There are also several such shires in the Riverina, with easy access to the clubs along the Victorian border. As a general rule, however, rural LGAs do not gain from the profit, manufacturing and administrative incomes generated from gaming, hence the many negative results.