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CENTRE FOR ECONOMIC STUDIES
ADELAIDE & FLINDERS UNIVERSITIES

The South Australian Gambling Industry

Final Report

Commissioned by:

South Australian Independent Gambling Authority

Report prepared by:

The SA Centre for Economic Studies

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Phase 1: Profile of the Gambling Industry

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Phase 1: Profile of the Gambling Industry

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Abbreviations

ABS	Australian Bureau of Statistics
BES	BreakEven Services
CPSE	Centre for Population Studies in Epidemiology
EGM	Electronic Gaming Machine(s)
FaCS	Department for Families and Communities (SA)
FTE	Full-time Equivalent
HDI	Household Disposable Income
HES	Household Expenditure Survey
IGA	Independent Gambling Authority
na	Not available
nec	Not elsewhere classified
nfd	Not further defined
OESR	Office of Economic and Statistical Research (Queensland)
OLGC	Office of the Liquor and Gaming Commissioner
SACES	South Australian Centre for Economic Studies
SEIFA	Socio-Economic Index for Areas (ABS)
TRSA	Thoroughbred Racing SA

Overview of this Report

The Independent Gambling Authority (IGA) commissioned the South Australian Centre for Economic Studies to undertaken this study into the South Australian Gambling Industry. The study proceeded in sequence ─ Phase 1 and then Phase 2 ─ and each phase was reported on separately. The two phases were:

- Phase 1: develop, prepare and present a comprehensive report on the **Profile of the Gambling Industry** in South Australia; and
- Phase 2: undertake further research and analysis and prepare a report on the **Economic Impact of Gambling** in South Australia.

The two components of the study were specifically designed in such a way that any research questions or significant points of interest documented or highlighted in Phase 1, could then be examined further in Phase 2.

So for example, in Phase 1 in Profiling the Gambling Industry we sought to report on employment in the gambling sector, whether employment had been drawn away from other sectors, the job intensity of the gambling industry and to provide comparative analysis across selected states. In Phase 2 we were concerned to analyse whether the structure of the industry favoured employment in hotels more than clubs, the hotels sector more than 'other gambling services' such as lotteries, and how venues with gambling facilities compared to those without gambling. We were also concerned with questions of distribution, impact, benefits and costs. The design of the study allowed for multiple research and econometric techniques to be used to examine the economic impacts of gambling.

Phase 1 ─ A Profile of the Gambling Industry ─ sought to describe and summarise the history of gambling in South Australia, the size and structure of the industry, provide relevant interstate comparisons where appropriate and consider changes in trends in gambling behaviour and participation, change in employment, the impact of gambling on other expenditures and government revenue and payments arising from the gambling industry.

Phase 2 ─ Economic Impact of Gambling ─ asks (and answers) the questions:

- what is the economic contribution of the gambling industry;
- what is the economic impact of gambling on other industry sectors, on other forms of expenditure, on employment patterns; and
- what are economic benefits and costs of the industry.

Phase 2 specifically addressed questions of distribution, expenditure switching from other household expenditures and between gambling sectors (e.g., from wagering to EGMs), who gambles, who and where are problem gamblers located, what are the economic benefits and costs of the gambling industry and what are the benefits (e.g., changes in consumer preferences, tourism) and costs (e.g., crime, problem gambling).

The two phases are drawn together here in one, final report.

The study commenced in August 2005 and was completed in March 2006. The draft report was then subject to peer review and final comments from the reference group overseeing the study. The final report was submitted at end June 2006.

The Final Report is set out in the following manner:

- a single Executive Summary that includes an overview and discussion of the research findings from the two phases of the study;
- Phase 1: Chapters 1 to 7;
- Phase 2: Chapters 1 to 8; and
- a separate bibliography and the appendices are shown at the end of each phase of the report.

The researchers were not requested to provide recommendations to the Independent Gambling Authority.

Peer Review and Editorial Comments

The authors record their appreciation of the many people who assisted with the study in supplying data, making time available for interview and checking and verifying the accuracy of draft material. The IGA and the research reference group provided valuable feedback. We record our appreciation of the assistance provided by Ms Christine Walter (IGA) throughout the course of the study. Two independent peer reviewers provided very helpful comments and suggestions and we gratefully acknowledge these.

Michael O'Neil
Director
SA Centre for Economic Studies

Executive Summary

The Independent Gambling Authority (IGA) commissioned the South Australian Centre for Economic Studies[1] to prepare a profile of the South Australian gambling industry and to analyse the economic impacts of the gambling industry on particular industry sectors and the South Australian economy.

A consolidated Executive Summary is included here covering the major research findings and conclusions from the two phases of the study.

Phase 1 Research Findings: Profile of Gambling Industry

While there is no comprehensive account of the gambling history of South Australia, early forms of gambling involved wagering on thoroughbred racing (Adelaide's first race meeting was held in 1838), greyhound coursing and later, trotting in 1880. The range of gambling activities legally available to South Australians has increased in the last 40 years with the establishment of the Lotteries Commission of South Australia (1966) and the off-course totalisator agency board (TAB). The opening of the Adelaide casino in 1985 and the introduction of electronic gaming machines (EGMs) in 1994 considerably expanded gambling opportunities and real expenditure on gambling. The last two innovations have also contributed to increased social awareness regarding the economic and social costs of gambling and how best to manage and regulate gambling activities.

Evolution of Gambling and Enabling Technologies

- gambling law and policy, initially dealing with racing and wagering has evolved since the time of colonisation.
- until the mid-1960s racing and wagering were the dominant gambling modes; in the past forty years the introduction of lotteries (1966), the Adelaide Casino (1985) and electronic gaming machines (EGMs) in hotels and clubs (1994) have expanded consumer choices for gambling. The term lotteries covers those forms of gambling including X-lotto, PowerBall, instant lotteries (i.e., scratchies), Keno and the Pools.
- gambling opportunities continue to evolve through the **widening of the wagering and gambling product** such as sports betting, and **enabling technology platforms** such as the internet and mobile telephone.
- a characteristic of the gambling industry in terms of opportunities to gamble (i.e., the product) and technology is the high rate of innovation within the industry.

Structure and Size of the Industry

The gambling industry largely comprises racing and wagering, lotteries and lottery products, the casino, electronic gaming machines in hotels and clubs and other minor forms of gambling conducted by charitable organisations and for trade promotions. The introduction of EGMs into hotels and clubs in 1994 was a significant policy decision. It is largely because of this decision that changes in gambling behaviour and participation have followed, such that South Australia's per capita spend on gambling has reached 84.2 per cent of the national

[1] Hereafter referred to as "the researchers" or "SACES".

average (up from 55 per cent in 1978-79). South Australians now spend (lose!) more than twice the amount on EGMs than every other type of gambling combined. It is incontrovertible that EGMs are responsible for the substantial increase in the number of problem gamblers, just as they represent the key driver of continuous growth in real gambling expenditure.

Prior to the introduction of EGMs the forecasts or predictions for annual revenue from these machines was extremely conservative and were quickly proved wrong. The introduction of bills to freeze the number of gaming machines were a failure. The policy of compulsorily removing gaming machines is poised on the same policy precipice ─ at the current rate of removal it will take 23 years to achieve.

In summary:

- EGMs account for 68.3 per cent of gambling expenditure; racing, lotteries and the casino approximately 10 per cent each.
- changes in gambling behaviour and participation follow closely the introduction of the casino, and then EGMs in hotels and clubs.
- real expenditure on gambling in South Australia rose from $216.7 million to $1,062 million in the twenty five years to 2004 at 6.6 per cent per annum (Australia: 5.4 per cent).
- in 2004-05 each machine in a hotel generated on average 69 per cent more revenue than an EGM in a club at $56,055 per hotel machine compared to $33,104 per club machine.
- expenditure on wagering (horses, greyhounds) has declined by $25 per capita since EGMs were introduced and now stands at $90 per capita per annum. Expenditure on lotteries is approximately $95 per capita and sales have been flat since EGMs were introduced.
- At the current rate of removal of machines it will take another 23 years to achieve the target of 3,000 machine removals.

Gambling Behaviour and Participation

South Australians' overall gambling participation rate does not appear to have increased in the five years to 2004 yet real per capita gambling expenditure has continued to rise form $766 to $898 (1998-99 to 2003-04). This represents an increase in real terms of 17.3 per cent. If the industry is not attracting a larger share of the population it is instead raising greater expenditure from those already gambling. If this is an accurate assessment then this situation poses even greater challenges for harm minimisation policies.

Expanding opportunities to gamble increases expenditure and the participation rate. The clearest example of this fact is the situation in Western Australia (with no EGMs) where household disposable income (HDI) spent on gambling is less than half that of South Australia and Australia. The real concern is that expenditure is not evenly spread across all households.

In summary:

- the ratio of gambling expenditure to household disposable income (HDI) is the best measure of the impact of gambling behaviour on household budgets. When the only two means of gambling were racing and the lottery, South Australians spent just under 1 per cent of HDI on gambling. It increased to 1.5 per cent following the establishment of the casino. A further sharp rise continued after the introduction of EGMs. By 2004 it was 2.91 of HDI.
- the national expenditure figure as a proportion of household disposable income (HDI) is 3.1 per cent. In Western Australia, with no EGMs in hotels and clubs, only 1.4 per cent of HDI is expended on gambling.
- approximately 77 per cent of adult South Australians gamble at least once a year and this rate does not appear to have changed in the last five years. The most popular form of gambling is "buying a lotto ticket" (55 per cent of South Australians do so each week).
- some 37 per cent of South Australians play EGMs or "poker machines" and EGM gamblers play more frequently than all other forms of gambling apart from Lotto.
- age and gender are important predictors of participation in gambling – young people aged 18-24 have high participation rates on EGMs; there is a strong bias towards males aged in the 25-34 age bracket for wagering, no significant gender difference in lotto purchases, although a bias towards females for "scratchie tickets", while male table game players at the casino outnumber female players by over 3:1.
- some 20 per cent of South Australians wager on horse or greyhound racing at least once a year. Some 7 per cent visit a casino, but few do so on a regular basis.

Employment Impact of the Gambling Industry

The economic significance of an industry is not to be measured in the number of employees it has, but a better measure is the productivity of the industry and perhaps export performance. Labour productivity of the hotel, accommodation, café and restaurant sector is relatively low and is rated 15 out of 17 ABS industry sectors.[2] Similar to the retail sector, hotels, cafés and restaurants are labour intensive. However, the gambling sector is not labour intensive; specifically the job intensity of the EGM component of the gambling sector is very low at 3.2 jobs per $1 million of gambling income (see below).

While we show that employment in hotels and clubs did rise following the introduction of EGMs, most of the job growth came at the expense of other sectors, notably cafés and restaurants. This findings is consistent with the predictions from economic theory, that the introduction of new products will not necessarily lead to an increase in the total number of jobs in the economy.

In summary:

- the introduction of EGMs into hotels and clubs did provide a boost to employment in hotels, taverns, bars and clubs. In the period 1985 to 1993 modest job growth of 0.7 per cent per annum was observed in hotels and clubs. In the period 1993 to 2005 (the post EGM period) the rate of job growth was 5.6 per cent per annum.

[2] See, Mining the Labour Market, SA Centre for Economic Studies, 2006.

- the researchers estimate that total employment in hotels and clubs increased by between 5,000 to 6,000 jobs following the introduction of EGMs. **However**, the researchers estimate that hotel and clubs jobs have come at the expense of approximately 4,000 jobs in the café and restaurant sector.[3]
- the job intensity of the EGM sector is quite low. The researchers estimate that there are 3.2 jobs per $1 million of gambling income, 8.3 jobs per $1 million from sales of liquor and beverages and 20.2 jobs per $1 million of takings from food and meals in hotels, taverns, bars and clubs. The design of gambling equipment, electronic equipment (self services note exchangers/coin dispensers, ATMs, etc.), and the design of venues supports these conclusions.
- employment in the racing industry in South Australia, measured by full-time equivalent persons (FTEs) is estimated at 2,100 persons, which is considerably lower than industry estimates. Combined employment of lotteries and SkyCity casino is less than 1,000 persons as at 2005. The average wage and salaries paid is highest for lotteries.

Impact on Non-Gambling Expenditure

If EGM expenditure and all gambling expenditure had a significant effect on household spending, it should be noticeable in the figures for Household Final Consumption Expenditure (HFCE) or perhaps reported in the Household Expenditure Survey (HES).[4] Here we explore whether the increase in gambling expenditure had any significant effect on household spending in non-gambling sectors.

Because the impact of changes in expenditure are simply too small to be distinguishable in a dynamic economy where household expenditure fluctuates from year to year, we conclude that there is no evidence that EGMs had a significant negative impact on other household spending. Of course, what holds in the aggregate is not necessarily true for any individual or family. We explore differences in expenditure patterns between gamblers and non-gamblers using HES data in Phase 2.

In summary:

- the researchers find, that following the introduction of the casino and later EGMs, while they did contribute to an increase in the proportion of HDI spent on all forms of gambling, that this impact was too small in aggregate terms, to impact on other household spending.[5]
- real non-gambling household final consumption expenditure (HFCE) did not decline following the introduction of EGMs – in fact it rose faster on average than the five years before EGMs were introduced. Still a degree of caution is warranted here, as the pre-EGM period was marked by a severe recession.
- a preliminary analysis of household expenditure data (HES) was conducted. The analysis here was based on a comparison of those "gambling State's expenditure patterns" with the "non-gambling" State of Western Australia. No significant

[3] These estimates and actual employment numbers are derived from publicly available data (Australian Bureau of Statistics), econometrics modelling and thirdly, comparative analysis of employment outcomes for Western Australia and South Australia.

[4] Because of significant under-reporting of gambling expenditure in the HES we confined our analysis in this section to a comparison between States and major expenditure classifications.

[5] For individual families and for problem gamblers themselves, this may not obviously be the case.

differences were observed that could be attributable to EGMs. Further analysis of HES data are provided in Phase 2 to analyse the behaviours of gambling and non-gambling households.

Government Revenue, Payments

Taxation of gambling products is the domain of State and Territory governments, although with the introduction of the Goods and Services Tax (GST) the Commonwealth applies taxation to gambling revenue and reimburses the States. Thus, total tax revenue includes State taxes levied on gambling and GST receipts. Over the last ten years to 2003-04 the growth in taxation reflects growth in expenditure (principally that on EGMs) rather than a rise in tax rates. Tax rates and the tax mix should continue to reflect the loss of public revenue from racing and lotteries and the growth in expenditure on gaming machines which are largely privately owned. Gambling taxes are now a substantial share of own state taxation revenue.

In summary:

- between 1994-95 and 2003-04 gambling taxation revenue increased in real terms at the rate of 8.9 per cent per annum, from $223 million to $479 million (115 per cent).
- South Australia currently ranks second of all States and Territories in terms of total taxation revenue derived from gambling taxes at 13.5 per cent.
- the growth in taxation revenue has been driven almost solely by taxation revenue from gaming machines, as revenue derived from racing declined by $14 million and from lotteries by $7 million in the period 1994-95 to 2003-04.
- the share of taxation revenue derived from gaming machines has increased from 31 per cent in 1994-95 to 72 per cent by 2003-04.
- specific programs are provided to redistribute funds back to communities for sport and recreation, for welfare and not for profit human service agencies and community development funds.
- the gambling industry contributes $1.6 million and the State contributes $3.8 million for gambling rehabilitation. The most significant “earmarked or hypothecated” funding from gambling is the Hospitals Fund paid by the Lotteries Commission. In 2004-05 approximately $90 million was paid by SA Lotteries to the Hospitals Fund.

Phase 2 Research Findings: Economic Impact of Gambling

In Phase 2 of this study the South Australian Centre for Economic Studies evaluated the economic impact of the gambling industry across South Australia. This involved employing a number of economic and statistical techniques to quantify impacts, including to examine:

- the impact of expenditure switching;
- behaviours and expenditure patterns of gambling and non-gambling households;
- estimates of problem gamblers;
- estimates of the economic costs and benefits from gambling;
- problem gambling and disadvantage; and
- other costs and benefits.

Expenditure, Switching

There is no single, agreed methodology to measure the economic benefits and costs of the gambling industry. In this report the researchers have used a number of approaches to examine the potential impact of gambling on, *inter alia*, other forms of gambling, on non-gambling expenditures, on investment, consumer benefits (i.e., "consumer surplus") and social costs (i.e., problem gamblers), payments to government and finally, to provide an estimate of the net social benefit/cost of gambling.

Here we summarise our findings on the most likely "source" of the increase in gambling expenditure and report on differences in expenditure patterns between non-gambling households and gambling households, as well as "high" and "low" gambling/households.

Prior to the introduction of the casino and then EGMs in South Australia the proportion of consumption expenditure devoted to gambling out of household disposable income was 0.90 per cent. It is now estimated at 2.91 per cent of HDI. Consumption expenditure devoted to gambling has clearly increased. The potential 'sources of funds' are either transfers out of non-gambling expenditure, switching of current gambling expenditure (say from lotteries to EGMs) or a decrease in savings.

For the problem gambler, all three transfers are most likely experienced; for the recreational gambler, *a priori*, the source of funds is indeterminate.

- a time series model of consumption spending found no evidence of a statistically significant impact on the **total level** of consumption following the introduction of EGMs.
- there is some evidence of compositional changes in expenditure but little of the increase in EGM expenditure was due to reductions in other forms of expenditure.
- it is our view that the increase in gambling expenditure is principally driven by falls in net household saving rates.

Participation in Gambling

The researchers examined the ABS Household Expenditure Survey data (HES)[6] to test whether there were any statistically significant differences in expenditure patterns and other characteristics by the type of gambling household.

In summary:

- Those that **participated** in gambling by **type of household** (not accounting for income) are statistically more likely to spend more than non-gambling households on all expenditure items, except current housing costs and household furnishings and equipment. They also have higher total weekly expenditures.
- Gamblers and "high gamblers" tend to have higher expenditure on tobacco.
- Households that participate in gambling (whether it be normal or "high") generally are more likely to have higher incomes than households that do not gamble. However, there is a non-linear relationship between income and gambling, illustrating that households on middle incomes are more likely to gamble than low or high income households.
- "high gambling" households are more likely to be located in an area of disadvantage.
- "high gambling" households were more likely than "low" and non-gambling households to report that their present standard of living compared with two years ago was worse.
- there is some evidence that socio-economic status, occupation and income and educational attainment are factors that influence the decision to participate in gambling.

Employment Impact of Gambling on Non-Gambling Industries

We have earlier shown that total employment in hotels and clubs increased following the introduction of EGMs and that the job intensity per million dollars of income was low. What was the impact on other sectors of industry, on other gambling services and venues without gambling facilities? The researchers used a model to analyse time series data to compare differences in forecast and actual employment.

In summary:

- the results of the model support our earlier finding that employment in hotels, taverns and bars had increased by approximately 5,500 persons, that the increase was driven largely by part-time employment and that clubs had not benefited as much as hotels, taverns and bars.
- we report that actual employment in cafés and restaurants rose relative to our forecast level and conclude employment levels would have risen more strongly in the absence of EGMs. Actual employment levels in the gambling services sector (lotteries, casino and gambling services nec) had fallen relative to the forecast level.
- hotels and clubs with gambling facilities had an average of 22 employees per premise while those without gambling facilities had 5 employees per premise.

[6] Because of the researchers concerns with the reliability of HES data our analysis focuses on whether households *participated* in gambling and potential differences in expenditure patterns by type of gambling household.

- venues with gambling facilities had an average total income of $2.2 million per premise compared to an average $0.3 million for those without gambling facilities. Gambling has had a positive impact on economic activity of those venues with gambling facilities.
- standardising for venue size, venues with gambling facilities have drawn away activity from venues without these facilities.

Estimates of Problem Gamblers

It is imperative that the gambling's economic contribution and social benefit arising from changes in consumer preferences are compared with the costs resulting from problem gambling. The researchers examine the relative expenditures of problem and non-problem gamblers and provide an estimate of the number of problem gamblers in South Australia. The study identifies that there has been a change in the pattern of EGM spending as a proportion of gross household disposable income over the period 1989-90 to 2002-03. The share of HDI devoted to EGM gambling rose from 1.5 per cent to 1.8 per cent. However, there appears to be no change in the proportion of the population participating in EGM gambling.

The chapter discusses the reasons for the conclusion reached by the researchers that the number of problem gamblers in South Australia is close to 33,000 representing 2.8 per cent of the adult population and contributing 52 per cent of all net gambling expenditure.

In summary:

- EGM expenditure grew (by 51 per cent) at more than twice the rate of household disposable income (24 per cent) between 1998-99 and 2002-03. Given that participation in EGM gambling does not appear to have changed significantly since 1999, this suggests there has been some change in the pattern of EGM spending.
- There are estimated to be 32,964 problem gamblers in South Australia in 2002-03, which is equivalent to 2.8 per cent of the adult population. This compares with an estimated 23,196 problem gamblers in 1999, which was equivalent to 2.04 per cent of the adult population.
- In terms of the regional breakdown of problem gamblers, 25,802 problem gamblers (2.86 per cent of adults) were estimated to be in the Adelaide metropolitan area, 4,083 (3.68 per cent) in regional South Australia or the Provincial Cities, and 3,080 (1.86 per cent) in rural South Australia.
- The average loss per problem gambler is estimated at $10,500 per problem gambler.
- The results imply that 52 per cent of all net gambling expenditure in South Australia comes from 2.8 per cent of the adult population.
- It is not unreasonable that the number of problem gamblers would have increased over the past few years. New clients to BreakEven Services (BES) have averaged 1,600 per year for each year 2001 to 2005.

Estimates of Net Social Benefit of EGM Gambling

To calculate the social benefits and costs of EGM gambling, having first calculated the number of problem gamblers, the researchers consider the sources of these costs and benefits. Direct social costs include, *inter alia*, increased crime such as fraud and embezzlement, health impacts, legal and financial issues, lost time at work, diminished productivity and absenteeism. The second source of costs is the "excess loss" by problem gamblers. The sources of benefits are also specified using the methodology developed by the Productivity Commission. The researchers are careful to explain the reasons for the increase in the number of problem gamblers and to test this against the number of new clients to BreakEven Counselling Services.

Productivity Commission estimates of the social costs of problem gambling were used to estimate the social costs of problem gambling in relation to EGMs based on the estimated number of problem gamblers derived by the researchers.

In summary:

- The **total social cost** of electronic gaming machine related problem gambling in South Australia in 2002-03 is estimated to range from a lower bound of $528 million to an upper bound of $960 million.
- The **total benefits** of EGM gambling in South Australia in 2002-03 are estimated to range from a low of $378 million to a high of $472 million.
- Despite the scale of the benefits consumers enjoy from having access to EGMs, for the State as a whole, the **range of net benefits** from EGMs are estimated to extend from –$582 million to –$56 million; even taking the lowest estimate of costs and the highest estimate of benefit the net benefit is still negative.

Estimates of problem gamblers and the range of net benefits are plausible given that:

- EGM gambling expenditure as a share of household disposable income has increased by more than the increase in consumption overall.
- EGM expenditure grew by 54 per cent while incomes grew by only 24 per cent, and that EGM gaming participation rates have not increased.

Gambling and Disadvantage

The study was required to assess the economic contribution of gambling to the State and regional areas. To understand those factors that influence gaming machine expenditure, econometric analysis was conducted to determine what socioeconomic and demographic factors have a significant influence on average per adult gaming machine expenditure.

An important conclusion is that, measured on a range of variables, the more disadvantaged a region is in socioeconomic terms (lower average income, higher unemployment, lower educational attainment) the higher is their EGM expenditure. This is associated with the prevalence of gaming venues and machines.

Regions with a greater prevalence of BreakEven gambler clients tends to have a relatively higher average EGM expenditure. Because of the widespread availability of EGMs, and that people are able to travel to nearby regions to gamble, the research indicates that efforts to

reduce problem gambling in a particular region by reducing the prevalence of EGMs will have little or no effect on the incidence of problem gambling. A policy response of this nature would probably be more effective in rural and remote areas where distance may act as a barrier to participation.

In summary:

- Statistical analysis found that there was a positive relationship between average EGM expenditure per adult and the number of electronic gaming machines per 1,000 adults and the number of gaming venues per km^2 by SLA.
- There is an inverse relationship between the ABS index of relative socio-economic disadvantage (SEIFA) and average EGM expenditure per adult by SLA. That is, the more disadvantage a region (in this case SLA) is in terms of factors such as employment, income, educational attainment, and occupation etc., the higher is their EGM expenditure.
- The following variables were statistically significant in positively influencing net gaming revenue (i.e., as they increase so does expenditure): number of machines per 1,000 adults in SLA; number of venues per km^2; percentage of single parent families in SLA population; percentage of the population aged between 20 and 39 years; percentage of the population aged above 65 years; and percentage of the population that is unemployed.
- The number of new BreakEven Services clients by SLA was compared with average EGM expenditure per adult by SLA. A weak positive correlation between the relative number of Break Even Services clients and net EGM expenditure per adult was found, indicating that a region with a greater prevalence of BES clients tends to have relatively higher average EGM expenditure per adult.
- No correlation between the prevalence of EGMs and BES gambler clients was found for South Australian SLAs. This suggests that efforts to reduce problem gambling in a specific region, particularly in the metropolitan area, by reducing the density of EGMs will have little to no effect on the incidence of problem gambling.
- The more disadvantaged a region is in socio-economic terms, the higher is the relative prevalence of BES gambler clients.

Economic Cost: Links Between Crime and Gaming

In a preliminary analysis of the link between EGM expenditure and crime rates the researchers examined three offence categories, namely total offences, property offences and violent offences. While there are limitations in the data set, and we conclude further research is required, there is some support for the argument that increased gambling expenditure increases crime rates. However, the results need to be interpreted conservatively and cautiously. What is required is an improvement in the reporting of crime that have problem gambling (or gambling debts) as a motivating factor.

In summary:

- Areas (SLAs) with higher levels of EGM expenditure per adult were found to have higher total offences per 1,000 persons in 2002-03.

- Three models, (a) for total offences, (b) property offences and (c) violent offences found links between EGM expenditure and offence rates. However, the links were weak. The coefficients on all the gambling variables used ranged from 0.01 to 0.11. This indicates that one additional dollar per adult spent on EGMs in South Australia is associated with an increase in the offence rate per 1,000 head of population of up to 0.11. Such an influence is small in both absolute and relative terms.
- Other variables were found to play a much larger role in influencing offence rates than EGM expenditure including the percentage of Aboriginal population, percentage of single parent families, percentage of male population, and percentage of non-english speaking population. The results also suggest that offence rates tend to be higher in SLAs with lower and higher incomes.
- The relationship over time between average EGM expenditure per adult and total offences per 1,000 persons in South Australia was also examined. A high correlation was found between the two time series, indicating that they do tend to move together. However, correlation analysis does not provide any definitive answers or relationships. Further research is required.

Economic Benefit: Tourism

Increases in tourism numbers are often claimed to be a benefit flowing from the availability of gambling opportunities, including the location of a casino. The reality is that international tourism flows and interstate flows are influenced by a host of other factors and that it is difficult to find any evidence that links "new tourism" with the casino. While tourists do visit the casino (we can attribute about 18 per cent patronage rate) the overwhelming majority of casino revenue is derived from local residents. The benefits of the casino are largely confined to local recreational gamblers, the net jobs created and the taxation revenue the casino generates. The major cost is problem gamblers.

In summary:

- Australian data indicates that between one quarter and one fifth of international visitors have gone to a casino at least once during their stay in Australia.
- The great majority of casino revenue is derived from local residents rather than overseas visitors. Only 8 per cent of casino revenue in Australia in 2003-04 was derived from international players.
- Approximately 13 per cent of visitors to the casino in South Australia in 2003 were from interstate, while 5 per cent were from overseas. The corresponding rates for Australia were 12 per cent and 5.6 per cent.
- South Australia, Western Australia and Queensland all enjoyed international tourist growth that was superior to growth in other States in the five years after the introduction of casinos in 1985. However, such changes in tourist numbers cannot be ascribed to any singular cause since international tourism flows are influenced by a multitude of factors.

Phase 1

South Australian Gambling Industry

A Profile of the Gambling Industry

1. Introduction

This study was conducted in two phases and the final report follows the research design of the study. The Terms of Reference governing the conduct of the study are shown at Appendix A.

In Phase 1, the researchers were asked to prepare a comprehensive profile of the South Australian gambling industry, including a brief overview of the history of gambling in South Australia. In profiling the industry we have considered the structure, size and scope of the industry, changes and trends in gambling behaviour and participation, the impact of gambling on non-gambling expenditure and trends in employment. The contribution to State revenue and payments, for administrative purposes and for community grants is also considered.

Where appropriate and relevant, we have presented the profile of the industry in a comparative way, so that it may be compared and contrasted with other jurisdictions. For example, the structure of the electronic gaming machine sector of the industry in Victoria and South Australia is quite different – Victoria's industry is a "statutory duopoly" model, whereas the South Australian industry is characterised as an "owner-operator" model. These two models contain varying implications and consequences (intended and sometimes unintended) for legislators and regulators and give rise to different financial, economic and social issues. For example, the Tabcorp (Vic) licence is effectively operated in the manner of a joint venture with the Victorian racing industry where the "joint venture arrangement provides 25 per cent of profit from Tabcorp's (Vic) wagering and gaming to the racing industry".[7] The joint venture has created an important economic inter-relationship between the racing industry and Tabcorp (Vic), but also between various forms of gambling. No such relationship exists in South Australia.

The numbers of machines allocated to clubs and hotels may impact on the flow of investment and could either threaten or strengthen community based clubs. Community reaction to the proliferation of gambling opportunities impacts on the policy environment, well illustrated in debates and legislation related to smoking bans, the number of machines, a freeze or caps on machine numbers, hours of opening, the use of technology to enhance consumer protection, industry codes of practice and the economic and social impact of problem gambling.

In several instances we have drawn on comparisons between South Australia and Western Australia – both States opened a casino in 1985 (as did Queensland) and both provide for wagering and lotteries – but Western Australia does not provide for EGMs outside of the Burswood casino. Western Australia offers a "natural control group" for some comparative purposes.[8]

In Phase 1 we also consider publicly available data on economic benefits including, *inter alia*, on employment and the impact of EGMs on household spending.

Phase 2 of the study looks somewhat more closely at the economic impacts of the gambling industry on particular sectors of the economy including expenditure switching, and further analysis of employment and consumption impacts. We also examine issues related to problem gambling and the extent of this phenomena in South Australia to derive an estimate of the net social benefit of EGM gambling, which comprises almost 70 per cent of total gambling expenditure in South Australia.

[7] The licence and joint venture agreement is in place until 2012.

[8] See SACES: "Community Impacts of Electronic Gaming Machines: A Comparative Study of Victoria and Western Australia", December 2005.

As with almost all gambling studies, the researchers found limitations in the data sets, inconsistencies in the data (e.g., HES) and the unavailability of some data at a state or regional level. However, we continue to apply consistent and rigorous methodologies to explore questions of economic impact, following methodologies we have previously discussed with the Productivity Commission[9] and/or used for other gambling studies.

[9] SACES: "The Impact of Gaming Machines on Small Regional Economies", August 2001.

2. The History of Gambling in South Australia

Terms of Reference

- Provide a brief summary of the history of the development of the gambling industry in South Australia.

2.1 Introduction

The idea that Australians are a 'nation of gamblers' has become part of this country's folk history (AIGR, 6). But despite its social and economic importance, the history of gambling in Australia has not attracted much scholarly attention.

There are two studies which provide a historical survey of Australian gambling in its social, political and economic context. These are *A Mug's Game* (1988) by Professor John O'Hara, and *Australian Gambling* (1999), by the Australian Institute for Gambling Research (AIGR) at the University of Western Sydney.

There is no comprehensive account of the gambling history of South Australia, but some particular aspects are examined in a small number of theses and reports. A list of these works, and relevant primary source materials, can be found in the bibliography.

This chapter will briefly describe the evolution of gambling law and policy in this State. The major developments are summarised in Box 2.1 below.

Box 2.1
South Australian Gambling History – Timeline of Major Events

Racing and Wagering	1838	Adelaide's first race meeting.
	1879	SA introduces Australia's first on-course totalisator.
	1883	All gambling banned on Adelaide racetracks.
	1888	On-course totalisator re-introduced.
	1933	Off-course betting shops legalised.
	1946	Betting shops closed down.
	1967	Totalisator Agency Board (TAB) established for off-course betting.
	2002	SA TAB privatised (sold to UNiTAB Ltd, formerly TAB Queensland).
Lotteries	1965	Referendum on State lottery receives majority vote in favour.
	1966	*State Lotteries Act* enacted by State Parliament.
	1966	Lotteries Commission of South Australia established.
	1967	First Lottery Commission tickets go on sale in South Australia.
	1978	Instant Money Games ("scratchies") launched.
	1981	SA Lotteries and agencies in Victoria and WA form Australian Lotto Bloc.
	1984	Fully computerised betting system launched.
	1990	"Club Keno" introduced across the State.
Casino	1983	*Casino Act* enacted by State Parliament.
	1985	Adelaide casino opens.
	1991	Casino authorised to operate casino game style electronic gaming machines.
	1993	Casino authorised to operate conventional electronic gaming machines.
	2000	Casino purchased by SKYCITY Entertainment Group Limited.
Electronic Gaming Machines (EGMs)	1992	*Gaming Machines Act* enacted by State Parliament.
	1994	EGMs appear in hotels and clubs.
	2000	Government announces freeze on EGM numbers.
	2005	Trading system commences, with aim of reducing EGM numbers by 20 per cent (3,000 machines).

Source: *Australian Gambling* (1999), Australian Institute for Gambling Research.

2.2 Racing and Wagering

Horse and dog racing are two of the oldest sports in the world. They were popular in Britain during the 18th and 19th centuries, and soon appeared in the Australian colonies. The first organised race meeting in this country was held in Sydney in 1810.

Adelaide's first race meeting was held in 1838. Early South Australia was relatively liberal towards entertainments brought across from the English rural gentry (O'Hara, 48).

In addition to thoroughbred racing, two other racing sports appeared in the late 19th century. Australia's first greyhound 'coursing' club was established at Naracoorte in 1868, and a trotting club was formed at Victoria Park in 1880 (AIGR 56-58). However, these two sports would always remain relatively small.

Bookmakers operated for several decades after settlement. However, opposition to them mounted and in 1879 South Australian legislators seized on the totalisator system as an alternative. This was the nation's first legal tote. It was hoped that punters would abandon bookmakers in favour of the tote, and the new system also promised additional income for the race clubs (O'Hara, 97).

The tote proved successful in raising revenue, but it failed to get rid of bookmakers. Bowing to public pressure, primarily from the Protestant churches, the South Australian parliament banned all racetrack gambling in 1883. This had the obvious effect of slashing public attendance. The racing industry almost collapsed: clubs were dissolved, Morphettville racetrack was sold off, and the Adelaide Cup was moved to Melbourne! (O'Hara, ibid)

After State elections in 1887, the new parliament had a change of heart on gambling. The damage to the racing industry was causing spill-over effects on other sectors of the economy, such as horse breeding. In 1888 the tote was reintroduced (although bookmakers remained prohibited). The racing and jockey clubs were revived and racing recommenced at Morphettville.

Around the turn of the century, there was, across Australia, another concerted attack on gambling led by the evangelical Protestant churches (O'Hara 130). This time a particular target was off-course bookmakers, who were associated with corrupt and immoral practices, such as encouraging betting on credit. Off-course betting was also disfavoured by the racing industry, which lost racecourse income, and by the government, which lost tax revenue. Between 1902 and 1907, the South Australian parliament passed a series of Acts that increased police power to stop off-course betting.

Despite these legislative efforts, off-course betting proved difficult to suppress. The perceived losses to the industry and the government were particularly painful during the onset of the Great Depression. To investigate the extent of the problem, the State Government established a Royal Commission into betting in 1933. The commission conducted a survey which suggested that about 15 per cent of South Australian adults participated regularly in off-course betting, which mostly took place in hotels, billiard saloons, hairdressers and tobacconists (O'Hara 188).

The 1933 Royal Commission concluded that underground off-course betting could never be eliminated purely by legislation. It would be better to provide regulated legal alternatives. Accordingly, the Commission recommended the re-licensing of on-course bookmakers and the establishment of an off-course totalisator. The State Government accepted the first recommendation but not the second, opting instead to allow registered betting premises.

The latter – the infamous "betting shops" – have not been fondly remembered by South Australians. They were accused of a variety of unsavoury practices, such as encouraging betting on credit, and standover tactics to force creditors to pay up (Kromwyk 15). Betting shops were sharply criticised in the report of a subsequent Royal Commission held in 1937. They were temporarily shut during the Second World War, and then permanently closed down in 1946 (apart from eight shops in Port Pirie).

In 1958-59 a Royal Commission in Victoria considered off-course betting again and came to the conclusion that a totalisator agency board (TAB) system was the best solution. In the 1960s TABs were established in Victoria and NSW.

A lengthy debate ensued in South Australia. The Playford Liberal Government was unconvinced of the merits of a TAB system, and would not introduce it. However, in 1965 the newly-elected Walsh Labor Government ran a referendum on a State lottery, in part to test public sentiment towards gambling in general. There was an overwhelming 'yes' vote, and in 1966 off-course TAB legislation was passed.

Up to 2002, the South Australian Totalisator Agency Board (SA TAB) was a government agency. In June 2000, legislation to allow for the disposal of the SA TAB was introduced into State Parliament. The legislation comprised the *TAB (Disposal) Act* 2000 and a companion Act to provide for a new regulatory regime, the *Authorised Betting Operations Act* 2000. The two Acts were assented to in December 2000.

Settlement of the sale of the SA TAB occurred on 14 January 2002. The purchaser was UNiTAB Ltd (formerly TAB Queensland). SA TAB is now a wholly-owned subsidiary of UNiTAB.[10]

Racing in South Australia is organised through a network of clubs. There are currently 26 thoroughbred racing clubs – two metropolitan clubs (the South Australian Jockey Club and the Oakbank Racing Club), four provincial clubs and twenty country clubs – all under the umbrella of Thoroughbred Racing SA. There are also twelve harness clubs, with Harness Racing SA as a peak body. Greyhound racing has ten clubs under the umbrella of Greyhound Racing SA.

Betting now occurs not just in the traditional TAB agencies, but also in many hotels through PubTAB, where facilities range from the smaller, stand-alone kiosk to the expansive 'entertainment space' with multiple televisions, tables and lounge facilities, bar and services by counter staff. With a combination of better facilities, access to alcohol and food, other forms of entertainment, and extended opening hours, the PubTAB model has proved very successful and will undoubtedly continue to increase its market share at the expense of traditional TABs.

[10] UNiTAB is now the subject of a takeover with rival bids from Tattersall's (Vic) and Tabcorp (Vic) presented to shareholders.

The TAB system will continue to exploit new technology to improve and expand its services. Over the years, technological developments have included phone and internet betting, and the introduction of televised race meetings via Sky Channel.

2.3 Lotteries

The first large-scale lotteries in Australia were sweepstakes held at the Tattersall's Hotel in Sydney. They were ultimately shut down by the NSW government, but the proprietor of Tattersall's, George Adams, took his business to Tasmania and sold tickets through the mail to the rest of Australia. Recognising the level of public demand, the New South Wales and Queensland Governments set up State lotteries in the early decades of the 20th century.

In South Australia, lotteries had been prohibited by legislation since 1875. The Act did however permit a one-off lottery if funds were needed in an emergency. (Such a lottery was held once, in 1956, to provide for flood relief.)

In 1936 a Royal Commission was appointed in South Australia to advise if a SA lottery should be set up. The commission concluded against it, on the grounds that it would not be economically viable: the State's population was too small and a SA lottery would be unable to compete against the New South Wales and Tasmanian lotteries (which many South Australians bought by mail) (O'Hara 173-74). The government accepted this conclusion and no lottery was instituted.

In the 1950s and 1960s political pressure for a SA lottery grew. However, the Playford Liberal Government remained opposed to the idea. In 1965 the new Walsh Labor Government decided to hold a referendum on the subject. A 71 per cent vote in favour of the lottery was recorded.

The *State Lotteries Act* 1966 was then enacted, the Lotteries Commission of South Australia was established, and in May 1967 sold its first ticket. In 1981 it joined forces with lotto agencies in Victoria and Western Australia (and later Queensland) to form the Australian Lotto Bloc, which allows tickets to be sold nationally and prize money to be pooled.

The Commission has proved to be innovative in its development of new products. In 1978 it launched the first instant money games ("scratchies") in Australia; in 1990 "Club Keno" was introduced across the State; and in 1994 the "Easiplay Club", a player registration system, commenced operation.

Commission products (see Section 3.5, Box 3.3) are sold through a network of agents across the State. They include newsagencies, chemists, lottery kiosks, supermarkets, delicatessens, service stations, hotels and clubs. There were a total of 531 agents at 30 June 2005.

2.4 The casino

Casinos in their modern form have existed since the mid-nineteenth century, but it was to be over a century before the first Australian casino was established – in Hobart – in 1973.

The inauguration of the Hobart casino was the culmination of decades of debate throughout Australia over casino legalisation. In addition to the general moral and religious concerns about gambling, casinos suffered from a perceived association with organised crime and

corruption. This helps to explain why, in all States, casinos came after the legalisation of bookmakers, TABs, and lotteries.

The factors leading to the development of casinos were:

- increased public acceptance of legal gambling from the 1960s onwards;
- the rapid post-war expansion of tourism;
- pressures experienced by regional economies during economic difficulties of the 1970s and 1980s; and
- efforts by state governments to maintain a stable revenue base (AIGR 120).

Casinos appeared first in the smallest and most vulnerable regional economies: Tasmania in 1973, and the Northern Territory in 1979. There were no major public scandals associated with these casinos (AIGR 128). So when economic pressures on other States intensified during the early 1980s, their governments found it difficult to resist the tourism and revenue potential.

Nevertheless, casino legalisation did not come easily in South Australia. Three casino Bills were defeated in the House of Assembly (in 1973, 1981, and 1982) before legislative approval finally came with passage of the *Casino Act 1983*. There has been a history in South Australia of allowing a "free vote" or conscience vote on a variety of gambling legislation, rather than the more traditional practice of voting along party lines. This "idiosyncrasy of the South Australian regulatory system"[11] partly explains the lengthy debates, defeat and subsequent re-introduction of bills several years later. The Adelaide casino opened in 1985 (along with casinos in Queensland and Western Australia).

The casino licence was originally granted to the Lotteries Commission of South Australia, which was required to appoint an operator, approved by the then Casino Supervisory Authority, to manage the casino on the Lotteries Commission's behalf.

In March 1991, the casino was authorised to operate video card and keno games. In October 1993 it was allowed to operate conventional electronic gaming machines (EGMs). This effectively gave the casino a lucrative State monopoly on EGMs. But the monopoly was short-lived – EGMs were introduced into hotels and clubs from July 1994.

A new *Casino Act* was passed in 1997. Supervision and regulation of the casino became the responsibility of the Independent Gambling Authority and the Liquor and Gambling Commissioner. In June 2000 the casino was purchased by its current owner and licence-holder, SKYCITY Entertainment Group Limited.

2.5 Gaming Machines

Gaming machines were illegal throughout Australia until 1956, when they were legalised in NSW within registered clubs. The ACT followed suit in 1976, but a ban remained in place in the other States until the 1990s. Nevertheless, it is believed that for almost a century illegal machines existed across the nation, including in South Australia (AIGR, 181).

[11] Explaining the history of much South Australian gambling legislation and regulation as summarised by one of the Peer Reviewers. We concur with this.

Opponents of legalisation argued that gaming machines were a very addictive form of gambling, and particularly dangerous to problem gamblers. Some opponents, such as the former Premier of Victoria, John Cain, claimed that gaming machines targeted the working class and would exacerbate poverty (AIGR 175). Several Royal Commissions and government reports found evidence of widespread organised crime connected to the legal machines in NSW clubs (AIGR 166-67).

These concerns held back the Australia-wide legalisation of gaming machines until the beginning of the 1990s. By that time, State governments were becoming more receptive to economic arguments for legalisation – particularly the benefits for the hotel industry and non-profit associations. The promise of gambling tax revenue was appealing. There was also the issue of inter-State jealousy at domestic and international tourists playing machines in NSW. Furthermore, the computerisation of gaming machines had increased their reliability and reduced the possibility of crime (i.e., criminal activity directly related to the actual machine).

In 1991 Victoria and Queensland legalised gaming machines in hotels and clubs. The next year South Australia did likewise with the enactment of the *Gaming Machines Act 1992*. The Northern Territory and Tasmania followed in later years, leaving Western Australia as the only State in which gaming machines are still banned (apart from the Burswood casino).

Each State's statutory regime has rules regarding the operation and quantity of gaming machines. There are statutory caps on the number of machines that can be operated by each venue (a maximum of 40 per hotel and club in South Australia).

A common feature across the States is that each gaming machine must be connected to an electronic automated monitoring system, operated independently of the venue in which the machine is located. Among other things, this provides independent verification of the gaming tax payable.

In some jurisdictions, there is also a State-wide 'cap' on the overall number of machines. No such cap was originally incorporated into the South Australian legislation. However, the State Government imposed a freeze on the number and location of gaming machines in South Australia with effect from 7 December 2000.

More recent developments concerning EGMs in South Australia, including the compulsory removal of gaming machines (as part of an eventual 3,000 machine reduction), establishment of a gaming machine entitlements trade system, and establishment of a special club licences, are discussed in Chapter 3.

2.6 Other Forms of Gambling

Churches, community groups, and charitable organisations have long operated various kinds of minor gambling to raise funds for their activities. These have included lotteries, raffles, art unions, 'lucky envelopes', 'chocolate wheels' and so on. Probably the most significant has been bingo, which boomed during and after the Second World War as an avenue for wartime and charitable fundraising. It is now conducted in large licensed centres by professional organisers.

The revenue from all forms of minor gambling has undoubtedly been severely impacted by the introduction of EGMs, but it is difficult to quantify precisely the effect. The available statistics for minor gambling are incomplete and unreliable. The Australian Institute for Gambling Research points out that "minor gaming in its various forms has been rarely the subject of research" (AIGR 202).

An English coin game, 'pitch and toss', was widely popular among early settlers and convicts. By the mid 19th century it had adapted into the Australian game 'two-up'. Gambling promoters organised famous two-up 'schools', some in the major cities, others travelling throughout rural areas. It was played extensively by soldiers during the World Wars, and became associated with Anzac Day functions. It has now become a historical curiosity, played on occasion at some Australian casinos (including SKYCITY Adelaide), and otherwise largely forgotten.

Trade promotions (for example, coupon competitions, 1900 telephone competitions, 'scratch-it' tickets) are permitted in every Australian state and territory for the purpose of promoting a product or service.

2.7 Conclusion

The range of gambling activities legally available to South Australians has increased significantly over the past 40 years. South Australians now have available every major type of gambling played in Australia. Major events during this time include the establishment of the Lotteries Commission of South Australia and off-course totalisator agency board (TAB) in 1966 respectively, the opening of the Adelaide casino in 1986, and the introduction of electronic gaming machines in 1994.[12]

While a mature gambling industry has now been established in South Australia, increased social awareness about gambling had led to increase debate about how to best manage and regulate gambling to ameliorate its social costs.

Related to the issue of social costs, but also that legislation of gambling activities has conferred significant market power to some gambling operations, a further issue of debate is what is the appropriate level of tax to impose.

[12] The Lotteries Commission sold its first ticket in 1967.

3. Structure, Size and Scope of the Gambling Industry

Terms of Reference

- Profile the structure, size and scope of the industry.
- Describe recent changes within industry sectors (such as the gaming machine freeze, industry profile).

3.1 Introduction

This chapter profiles the South Australian and national gambling industries, drawing on the available statistics on expenditure and participation in gambling activities. Changes within industry sectors are also examined. The principal source of data on expenditure is the annual publication *Australian Gambling Statistics* produced by the Queensland Treasury.[13] A summary of the major points is shown at Box 3.1.

Box 3.1: Summary

Real expenditure on gambling in South Australia rose from $216.7 million (in 2003-04 dollars) to $1,062 million – an annualised growth rate of 6.6 per cent – in the twenty five years to 2004. This was faster than the growth rate for all Australia at 5.4 per cent.

In 1978-79 South Australian's per capita spend on gambling was 54.9 per cent of the national average. By 2004 it had reached 84.2 per cent of the national average – ranked fourth behind New South Wales, Victoria and Queensland.

Changes in gambling behaviour and participation follow closely the introduction of a casino and then the introduction of EGMs in hotels and clubs.

South Australians now spend more than twice the amount on EGMs than on every other type of gambling combined. EGMs account for 68.3 per cent of total gambling expenditure; racing, lotteries and the casino each account for about 10 per cent.

Paradoxically (albeit predictably) previous attempts to freeze the number of machines resulted in a rush of applications and an increase in the number of machines installed.

EGM numbers reached a peak of 14,865 in 2003, but the overall number is being wound back under a statutory trading system intended to eventually reach a target of 12,086. Hotels have almost 90 per cent of EGMs; clubs have the remainder. The removal of 2,202 machines through the compulsory reduction from 1st July 2005 (2,168 machines) and the first two trading rounds (34 machines) has not so far had a noticeable effect on total spend.

At the current rate of machine removals (based on the first two rounds) it will take a further 23 years to remove the 798 machines required to achieve the target of 3,000 machine removals.

Wagering on horse and greyhound races in South Australia currently stands at $90 per capita (adult). It has declined by about $25 per capita since EGMs were introduced. The great majority of wagering is through the TAB; the bookmakers' share has almost evaporated.

SA Lotteries currently receives about $95 per capita (adult) from sales of lotto, keno, and instant lotto. Sales of lottery products have been flat since EGMs appeared. Notably, spend per capita on lotteries is highest in Western Australia, the only State without EGMs in hotels and clubs.

The SkyCity casino received $108 million in 2003-04 from table games and EGMs. Casino revenue declined sharply in 1994-95 when it lost its temporary monopoly on EGMs, but the last few years have seen revenue rising again.

[13] *Australian Gambling Statistics* was produced by the Tasmanian Gaming Commission up to 2002-03.

3.2 National Gambling Industries

Gambling is a diverse collection of activities. Each has its own unique practices and customs, and there is a separate regulatory structure for each type of gambling in each State. The following table summarises legal availability of gambling across the States and Territories.

Table 3.1
Forms of Gambling Currently Undertaken by State/Territory

	SA	NSW	Victoria	Queensland	WA	Tasmania	ACT	NT
Racing	✓	✓	✓	✓	✓	✓	✓	✓
Sports Betting	✓	✓	✓	✓	✓	✓	✓	✓
Lotteries	✓	✓	✓	✓	✓	✓	✓	✓
EGM	✓	✓	✓	✓	×	✓	✓	✓
Casino	✓	✓	✓	✓	✓	✓	✓	✓
Keno	✓	✓	✓	✓	×	✓	✓	✓
Football Pools	✓	✓	✓	✓	✓	✓	✓	✓
Minor Gaming	✓	✓	✓	✓	✓	✓	✓	✓
Interactive	×	×	×	×	×	×	×	×

Source: Office of Economic and Statistical Research (OESR), Queensland Treasury, *Australian Gambling Statistics 2005*.

Interactive (internet casino) gambling was banned by the Commonwealth under the *Interactive Gambling Act* 2001. Aside from this, every type of gambling is available in every State and Territory – with the important exception of Western Australia, where electronic gaming machines and keno are not available outside the Burswood casino. This study will make use of Western Australian data as a comparative indicator of the effects of not legalising gaming machines and keno, beyond the casino.

As a whole, the Australian gambling industries have undergone tremendous growth in the past quarter of a century. One way to measure this is through total expenditure on gambling – total amount wagered less the amount returned to gamblers through their winnings (which equates to the net amount lost by gamblers frequently referred to as NGR: Net Gaming Revenue). In real terms, this has risen from $4,327 million in 1978-79 (expressed in 2003-04 dollars) to $16,210 million in 2003-04 – an average annualised growth rate of 5.4 per cent.

Over the same period, real expenditure on gambling in South Australia rose from $216.7 million (in 2003-04 dollars) to $1,062 million – an average annualised growth of 6.6 per cent.

Tables 3.2 and 3.3 present the nominal and real expenditure figures and annual growth rates over the past 25 years for Australia and South Australia. It should be noted that real (inflation-adjusted) figures are appropriate for making comparisons over time.

Table 3.3 also includes annual growth rates for Western Australia. The rapid growth in gambling expenditure in both South Australia and Western Australia from 1983-84 to 1988-89 is a product of the opening of casinos in both States in the same year – 1985. In the last ten years, however, South Australia and Western Australia expenditure headed in different directions, as a result of the divergence on EGM policy. The changes in real expenditure following the introduction of the casino, and then the introduction of EGMs in South Australia provide the first insight into changes in gambling behaviour and participation.

Table 3.2
Gambling Industries – Nominal and Real Expenditure

	Australia		South Australia	
	Nominal Expenditure ($ million)	Real Expenditure (2003-04 $ million)	Nominal Expenditure ($ million)	Real Expenditure (2003-04 $ million)
1978-79	1,236.4	4,327.3	61.9	216.7
1983-84	2,140.8	4,726.2	113.7	250.9
1988-89	4,002.3	6,202.3	262.5	406.8
1993-94	6,917.9	9,000.1	355.2	462.2
1998-99	12,459.3	14,679.1	738.6	870.2
2003-04	16,210.6	16,210.6	1,062.2	1,062.2

Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

Table 3.3
Gambling Industries – Average Annualised Growth in Real Expenditure Over Selected Periods
(Per cent)

	Australia	South Australia	Western Australia
1978-79 to 1983-84	1.8	3.0	5.3
1983-84 to 1988-89	5.6	10.1	14.6
1988-89 to 1993-94	7.7	2.6	11.0
1993-94 to 1998-99	10.3	13.5	-1.4
1998-99 to 2003-04	2.0	4.1	-0.8
1978-79 to 2003-04	5.4	6.6	5.6

Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*. Calculations by SACES.

South Australia experienced higher average growth in gambling over the past 25 years than the national average, but it should be noted that it began from a lower base spend. The South Australian per capita gambling expenditure in 1978-79 was only 54.9 per cent of the national average, making South Australia fourth highest among the six States. The top spending State, New South Wales, had per capita expenditure three times the South Australian level. (Gambling in New South Wales has historically been subject to less restriction than in the other States, and in particular, gaming machines have been legal there since 1956.)

Over the past 25 years, per capita expenditure in South Australia has moved closer to the national average – it is now 84.2 per cent of the national average – but the State still retains its fourth-ranked position, behind New South Wales, Victoria and Queensland. Table 3.4 shows real per capita expenditure levels across the States and nationally since 1978-79 adjusted for inflation.

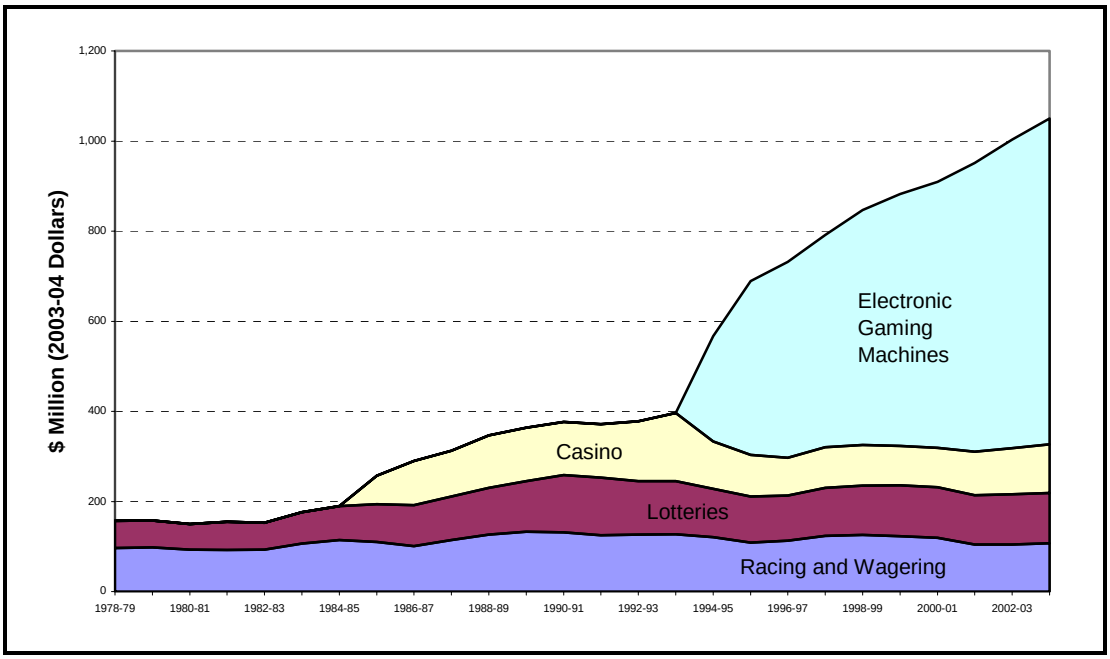
The driver of expenditure growth in South Australia over the last 25 years has been firstly, the introduction of a casino, and then much more dramatically, the spread of electronic gaming machines through hotels and clubs, as is illustrated in Figure 3.1. The same factors have driven continuous growth in the other States apart from Western Australia, where real expenditure peaked at $711 per capita in 1995-96, and has been declining since.

Table 3.4
Gambling Industries – State and National – Real Per Capita Expenditure
Adjusted for Inflation (Base Year: $ 2003-04)[a]

	SA	NSW	Victoria	Qld	WA	Tasmania	Australia
1978-79	239.42	711.62	341.88	210.56	226.32	369.97	436.26
Average 1979-80 to 1983-84	242.43	711.98	336.88	212.78	226.13	410.32	437.34
Average 1984-85 to 1988-89	338.55	688.28	354.45	334.09	342.56	431.95	471.97
Average 1989-90 to 1993-94	404.03	790.64	422.62	508.02	540.02	459.24	580.86
Average 1994-95 to 1998-99	672.29	1,062.76	980.09	777.73	644.96	567.39	903.40
Average 1999-00 to 2003-04	835.38	1,289.72	1,201.65	905.71	503.82	749.70	1,069.64
2003-04	898.44	1,285.65	1,122.79	967.96	493.10	788.61	1,066.95

Note: [a] The figures in this table have been expressed in dollars adjusted for inflation with base year 2003-04.
Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

Figure 3.1
Gambling Industries – South Australia – Real Expenditure
1978-89 to 2002-03



Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*. Calculations by SACES.

As Figure 3.1 shows, the rise of EGM expenditure has been dramatic: South Australians now spend more than twice the amount on the 'pokies' than on every other type of gambling combined. EGMs account for 68.3 per cent of total gambling expenditure. The other major sectors each account for around 10 per cent of total gambling expenditure. Table 3.5 provides the most recent figures for each sector. This shift in expenditure by gambling type provides the second insight into the relatively recent changes in gambling behaviour and participation.

Table 3.5
Gambling Industries – South Australia – 2003/04 Expenditure

Gambling Type	Expenditure ($ million)	% of Total Expenditure
Electronic Gaming Machines	723.6	68.3
Casino	107.9	10.2
Lottery Products (inc. Keno)	111.8	10.5
Racing	107.0	10.1
Minor Gaming	9.3	0.9
Total	1,059.5	100.0

Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

The following sections profile each sector of the South Australian gambling industry in turn.

3.3 Electronic Gaming Machines

In the jurisdictions in which they are legal, electronic gaming machines (EGMs) have spread extensively throughout hotels and clubs. Table 3.6 provides the most recent figures on the number of EGMs in the States and the legislative restrictions on their numbers.

Table 3.6
Electronic Gaming Machines – Numbers (as at 30 June 2004) and Restrictions[a]

	SA	NSW	Vic	Qld	Tas
EGMs in Clubs	1,724	74,990	13,474	20,441	173
EGMs in Hotels	13,075	24,166	13,658	17,813	2,114
Total EGMs in Hotels & Clubs	14,799	99,156	27,132	38,254	2,287
Machines per 1,000 adults	12.5	19.4	7.2	13.3	6.3
Caps	12,086 overall[b]	104,000 overall 78,020 club cap 25,980 hotel cap	27,500 overall (50% clubs, 50% hotels)	No overall cap 18,843 hotel cap	None
Maximum number per venue	40 per club 40 per hotel	450 per club 30 per hotel	105 per club 105 per hotel	280 per club 40 per hotel	40 per club 30 per hotel

Note: [a] This table does not include gaming machines in casinos. Western Australia has no EGMs permitted in hotels or clubs.
[b] The number of machines in South Australia is being reduced in conjunction with a licence trading system until it reaches 12,086, with that reduction beginning 1 July 2005.

Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*, p 9. Australian Gaming Council, *A Database on Australia's Gambling Industries* (2004), Table 2-5, and *Gaming Machines Regulations 2005* (SA).

As Table 3.6 indicates, there are significant differences between the States in the allocation of machines to hotels and clubs. In New South Wales, the club industry is large and well-established, and has been operating gaming machines for almost 50 years, so it is not surprising that they are now the major operators of EGMs. In Victoria and Queensland, EGMs are roughly split 50:50 between hotels and clubs, whereas in South Australia and Tasmania the hotels hold most machines.

There is also significant variation in the number of machines per capita. In some cases this is constrained by a Government cap. In 1996 the Victorian government capped the State-wide number outside of the Crown Casino at a relatively low 27,500, and so the number per capita is now around one-third that of New South Wales (where there is a much less restrictive cap).

In South Australia, gaming machine numbers and licensing are regulated by the *Gaming Machines Act 1992*. The Act allows the holder of a hotel or club licence to apply to the Liquor and Gambling Commissioner for a gaming machine licence to possess up to 40 approved machines.

The first South Australian EGMs were installed in hotels and clubs in July 1994. The hotel industry originally had the lion's share of EGMs, and hotels have added machines more quickly than clubs. Between 1995 and 2004, the number of hotel venues with EGMs doubled, and the number of hotel machines also roughly doubled (at an average growth rate of 12.2 per cent per annum). Over the same period, the number of club venues rose by 60 per cent and their number of machines increased by 55 per cent (average growth of 6.8 per cent per annum). The annual venue and machine numbers are provided in Table 3.7a, and the growth in EGMs is shown in Table 3.7b.

Table 3.7a
Electronic Gaming Machines – South Australia – Venues and Numbers

	Venue Numbers		Machine Numbers	
	Hotels	Clubs	Hotels	Clubs
1995	252	55	6238	1136
1996	343	74	7907	1355
1997	402	82	9057	1394
1998	428	85	9498	1400
1999	455	84	10495	1449
2000	479	85	11222	1516
2001	501	86	12454	1642
2002	505	87	12957	1690
2003	508	88	13084	1757
2004	506	87	13075	1724

Source: Office of the Liquor and Gambling Commissioner, *Annual Statistics 1995-2004*.

Table 3.7b
Growth in Electronic Gaming Machines – Hotels and Clubs
1995 to 2004

	Number	Per cent
Growth in Hotel EGM Numbers	6,837	109.6
Average Growth Per Annum	760	12.2
Growth in Club EGM Numbers	621	54.7
Average Growth Per Annum	78	6.8

Source: Office of the Liquor and Gambling Commissioner, *Annual Statistics 1995-2004*.

Over the ten years to 2004 shown in Table 3.7a, the share of machine numbers in clubs in South Australia declined from 18.2 per cent to 13.2 per cent. If clubs are held to be more 'community focussed' than privately owned hotels – by reason of their ownership structure and purpose of establishment – then the decline in the proportion of machines held by clubs effectively represents a shift in profit distribution from the public/community sector to private owners of hotels.

A recent initiative to improve the position of clubs is the creation of a new body, 'Club One', which is to hold a new type of licence called a special club licence. This will allow Club One to operate gaming machines for which other clubs hold a gaming machine licence. So the clubs will collectively have the opportunity to establish a central EGM venue with facilities of

a comparable standard to the larger hotels, and thereby obtain similar levels of patronage and revenue. Box 3.2 provides more information on Club One.

Box 3.2: Club One

The *Gaming Machines (Miscellaneous) Amendment Bill 2004* created a single "special club licence" that is referred to as Club One. The legislation requires that the licence be granted to a body that satisfies the Commissioner that "it is representative of a substantial number of clubs in the State" and "has available to it the appropriate skills and expertise to operate gaming machines, and conduct gaming machine business".

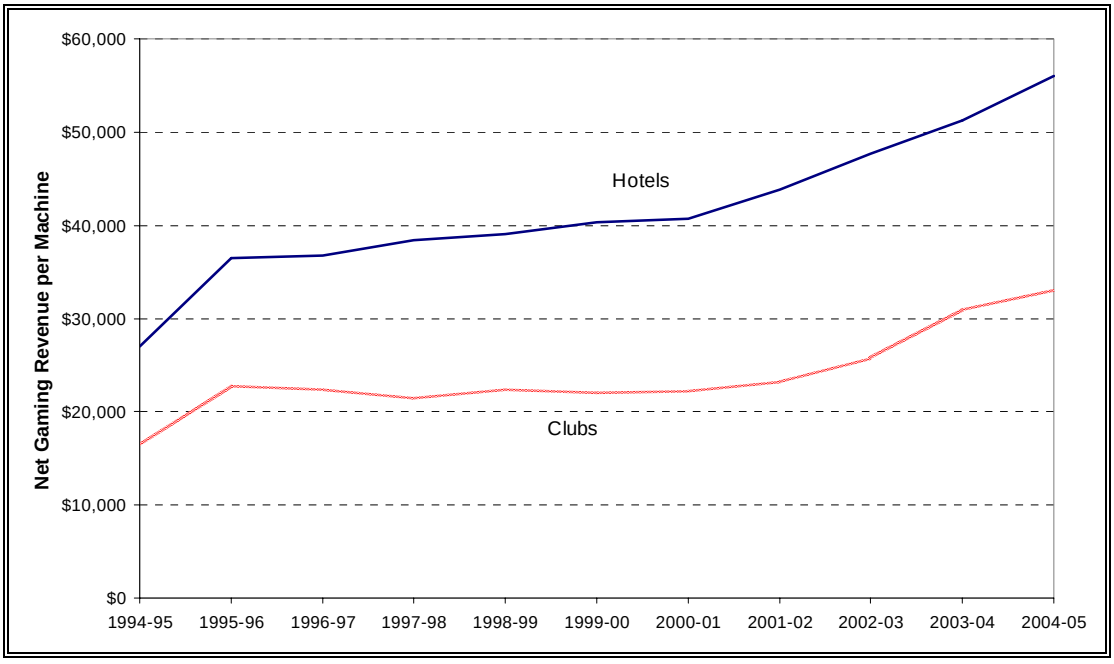
The holder of the special club licence is entitled to possess gaming machine entitlements. These are obtained through the trading system which requires that 25 per cent of entitlements offered for sale by non-profit associations be transferred to Club One. Club One can also obtain gaming machine entitlements by purchasing them through the trading system, while a "non-profit association that holds a gaming machine licence may transfer a gaming machine entitlement to Club One under an arrangement approved by the Commissioner".

Gaming machines owned by Club One can be operated on the premises of some other person or entity that holds a gaming machine licence (i.e., clubs or hotels). Club One may also establish and operate its own gaming venue which would be subject to the same approvals process that applies for any other application for a gaming machine licence.

Note: All quotes are from *Gaming Machine Act 1992*.
Source: *Gaming Machine Act 1992*, Office of the Liquor and Gaming Commissioner *Annual Report 2004-05*.

Figure 3.2 shows the trend in Net Gambling Revenue per machine in South Australia. Since the introduction of EGMs, hotels have been much more successful than clubs in attracting gamblers. In 2004-05, each machine in a hotel produced, on average, 69 per cent more revenue than a club machine ($56,055 per hotel machine compared to $33,104 per club machine).

Figure 3.2
Average Net Gaming Revenue per Machine – Hotels and Clubs



Source: Office of the Liquor and Gambling Commissioner.

In South Australia, hotels have several advantages over clubs: they are larger on average, often better located, and have a wider potential clientele (club facilities are often restricted to a limited number of members, although many clubs have become more flexible in recent years). Hotels enjoy better access to finance, and it may be argued that they also, in general, have the benefit of superior management and marketing skills.

As mentioned above, some States that legalised EGMs imposed a State-wide cap on the overall number of machines. No such cap was explicitly incorporated into the South Australian legislation. However, in response to public concern, the State Government imposed a gaming machine freeze with effect from 7 December 2000. Under the *Gaming Machines (Freeze on Gaming Machines) Act 2000*, the Liquor and Gambling Commissioner was prevented from granting any applications for new licences or increases in the number of EGMs.

The impact of the freeze on gaming machines (including Bills that intended to freeze the number of gaming machines that failed to be passed) and recent compulsory reduction in gaming machine numbers is examined in section 3.3.1.

In June 2002 the Government requested the Independent Gambling Authority (IGA) to prepare a report into the management of gaming machine numbers. The report was handed down on 22 December 2003. The IGA came to the conclusion that "there needs to be reduced access for the general population to the opportunity to gamble with gaming machines" (IGA 2003, 83). The IGA believed a one-third reduction of machines would be necessary to alleviate problem gambling; as a first step, it recommended a reduction by 20 per cent.

The Government accepted the 20 per cent reduction target, and drafted legislation to achieve this goal in conjunction with a machine licence trading system. The *Gaming Machines (Miscellaneous) Amendment Act 2004* established this system; it was assented to on 9 December 2004.

On 30 June 2005, the Government announced that 2,195 machines would be removed from circulation through the compulsory reduction (2,168 machines) and completion of the first trading round (27 machines), and there would be further cuts in subsequent rounds until the 20 per cent reduction was achieved. Under the *Gaming Machines Regulations 2005*, the 'statutory objective' of the trading system is to reduce the number of machines in the State to 12,086 or less.

As noted in Section 3.2, gaming machine expenditure in South Australia far exceeds spending on any other form of gambling. The same is true in the other States where they are legal. Recent figures are provided in Table 3.8. New South Wales has the highest per capita expenditure – $915. South Australia is second highest at $612, slightly ahead of Victoria at $605. (Victorian expenditure has fallen from a peak of $736 per capita in 2001-02, following a smoking ban in gaming facilities imposed by the Victorian government in September 2002.)

Note that these figures average the expenditure among the entire adult population of each State. According to Productivity Commission (1999) estimates, 39 per cent of the adult population play EGMs at least once a year, and only 15 per cent play once a month or more, so the average per capita spend must be considerably higher among regular players than the figures shown in Table 3.8.

Expenditure per machine in Victoria is around double that in the other mainland States. The principal explanation for the higher expenditure per machine in Victoria is due to the unique structure of the industry in that State. The duopolists – Tattersall's and Tabcorp – have the flexibility to relocate machines to local and regional venues where net gaming revenue is highest.[14] The duopolists also have access to information on machine NGR, venue, and local area performance, that enables commercial decisions designed to maximise revenue to be made. The important point here is that the unique duopoly structure of the industry in Victoria confers market power to the dual operators that translates into highly efficient use of machines.[15]

Table 3.8
Electronic Gaming Machines – Expenditure – 2003-04

	SA	NSW	Vic	Qld	Tas
Expenditure ($ million)	723.6	4,673.4	2,290.9	1,499.0	123.7
Expenditure Per Capita ($)	612	915	605	519	342
Expenditure Per Machine ($)	48,895	47,132	84,437	39,185	54,073

Note: "per capita" in this table refers to the adult population of each State (aged 18 and over).
Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

EGM expenditure trends have been similar across the States in which they have been introduced. In the immediate 2 to 4 years following their introduction there was typically very high expenditure growth – sometimes well over 100 per cent per annum. (This largely reflects the fact of starting from zero expenditure.)

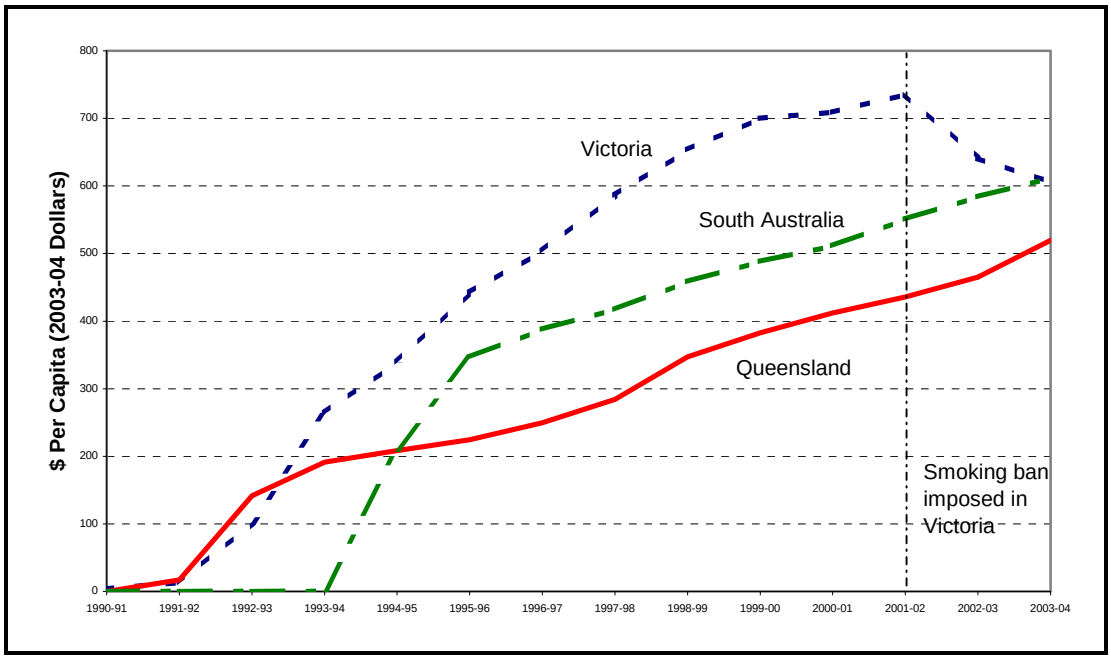
After this initial rapid expansion, expenditure settled into steady continuous growth, generally within a range of 5-10 per cent growth per annum. Real per capita expenditure in South Australia, Victoria, and Queensland is illustrated in Figure 3.3, which shows that the slope of the three lines (expenditure growth) is similar from 1995-96 to 2001-02. High prolonged expenditure growth was not foreseen by the South Australian government (refer discussion 'The Perils of Forecasting').

It is not always the case that EGM expenditure rises. In Victoria, there has been a remarkable fall in expenditure in the last two years, with falls of 12.9 per cent in 2002-03 and 5.6 per cent in 2003-04. The principal explanation for this fall is that it is a consequence of the smoking ban in gaming rooms mentioned above. Taxation revenue declined from $903m in 2001-02 in Victoria to $826m in 2002-03 (a decline of $77m or 8.5 per cent).

[14] This "flexibility" or commercial responsiveness is constrained by metropolitan and regional caps on machine numbers, local/ regional caps and the requirements for social and economic impact assessments to be argued before the VCGA.

[15] The motivation exists to maximise revenue. Profit maximisation (rather than profitability at the venue level) is more likely to lead to harm maximisation.

Figure 3.3
Electronic Gaming Machines – South Australia, Victoria and Queensland
Real Per Capita Expenditure



Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

The Perils of Forecasting

In the lead-up to Parliamentary debates on the introduction of gaming machines, the South Australian government prepared a paper discussing options for the operation of EGMs. This paper, released in June 1991, contained a detailed forecast of the annual revenue that could be expected ('revenue' in this context meant total EGM net gambling revenue). It stated:

> "Although experience in New South Wales and the ACT suggests that the potential exists for up to $244 million in [annual] revenue to be raised [in SA] from the introduction of gaming machines in licensed premises, this is very much an upper limit."

The paper outlined several reasons why this $244 million "upper limit" was unlikely to be reached in South Australia. There was an income differential between New South Wales and South Australia, and New South Wales also had the benefit of higher tourism. The paper also suggested that, not having the slot-machine club culture of New South Wales, the South Australian community had "developed different preferences for entertainment". It concluded: "In a mature South Australian gaming machine market therefore the available revenues may be of the order of $168 million."

The actual figures from the introduction of EGMs onwards are presented in Table 3.9. They have been deflated to 1990-91 dollars to make them comparable with the option paper figures.

Table 3.9
Electronic Gaming Machines – Expenditure – 1994-95 to 2003-04

	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
Expenditure (1990-91 $m)	171	283	319	345	383	410	433	470	503	531

Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*. Calculations by SACES.

In the first year, before the market could be considered "mature", expenditure exceeded the $168 million forecast which the options paper considered most likely. By the second year, expenditure exceeded the paper's $244 million "upper limit". By 2003-04 that "upper limit" had more than doubled.

This is instructive for two reasons. Firstly, it illustrates the general point that economic forecasting can be a hazardous enterprise. Secondly, and pertinently for this report, it shows that the State government did not predict the meteoric rise of EGM gambling expenditure. The regulation and taxation structures originally set up by the government might have been quite different if it had been anticipated how lucrative gaming machines would be.

3.3.1 Impact of Gaming Machine Freeze and Removal of Gaming Machines

Bills to Freeze Gaming Machine Numbers

The growth in the size of the electronic gaming machine industry has been significantly influenced by proposed and actual changes to gambling legislation. Even proposed changes to legislation that failed to proceed have influenced growth in the industry. As Figure 3.4 shows, the introduction of bills to freeze the number of gaming machines, despite being eventually defeated, have been associated with temporary rises in the number of applications for gaming machines.[16] In particular, a private members bill introduced to the South Australian Parliament on 30th March 2000 by Independent MP Rory McEwen, which intended to cap the number of machines at 12,600, was associated with a large rise in applications for gaming machines over the following two months. The McEwen bill was eventually defeated on 13th July 2000.

In effect, the initiative of private member bills to freeze the number of gaming machines only served to encourage the number of applications for gaming machines to be brought forward. In fact, the monthly average number of installations of gaming machines rose from 66 per month in 1999-00 to 113 per month in 2000-01 around the time the "McEwen freeze" was introduced, debated and ultimately defeated. The Liquor and Gambling Commissioner stated in his 2000-01 *Annual Report* on the *Gaming Machine Act 1992* that he "suspected" that the rise in average gaming machine installations was "the result of the industry's anticipation of a freeze on gaming machines."[17]

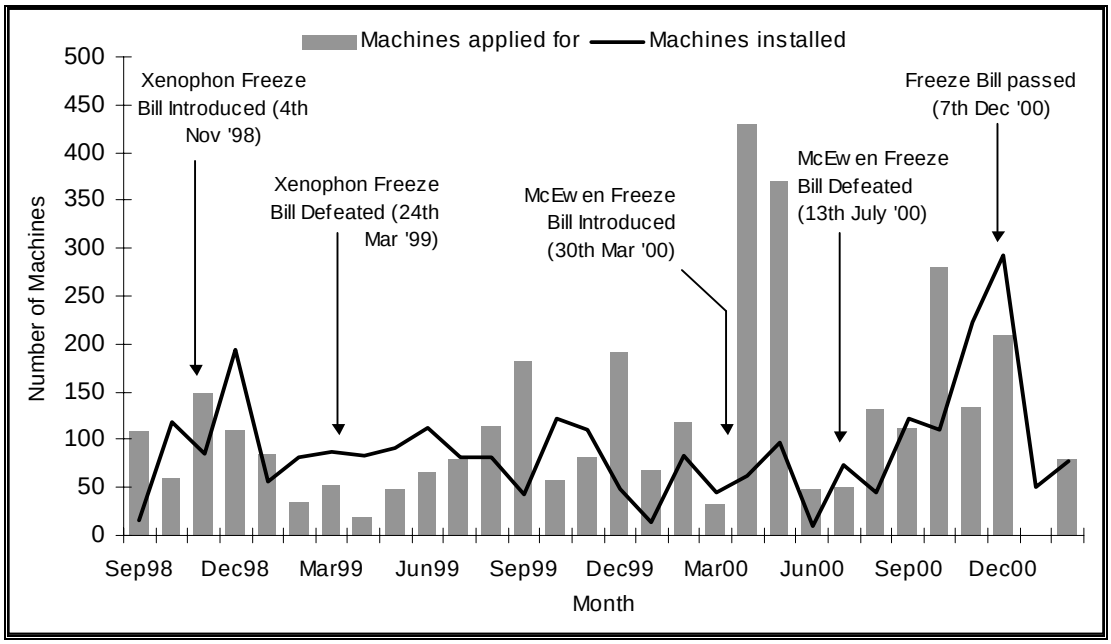
Despite the defeat of the McEwen Bill in July 2000, the apparent commitment of parliament to make another attempt at implementing a cap on gaming machine numbers once parliament resumed later in the year encouraged another rise in applications prior to a temporary freeze finally being implemented from 7th December 2000 (under a Bill introduced by Independent MLC Nick Xenophon) – see Figure 3.4.

The failed members' bills combined with the intention to eventually implement a cap on the number of gaming machines clearly had the paradoxical effect of bringing forward applications for, and installation of gaming machines. Hence the number of machines that were applied for and installed by the time the freeze was finally introduced was artificially higher than it would have been had no attempt been made to reduce the number of gaming machines.

[16] Applications for gaming machines include applications for new gaming machines associated with an application for the grant of a gaming machine licence, and applications for an increase in the number of approved gaming machines.

[17] Office of the Liquor and Gambling Commissioner, p. 15.

Figure 3.4
Number of Electronic Gaming Machines Applied for and Installed by Month[a]
South Australia – September 1998 to February 2001



Note: [a] Number of gaming machines applied for includes gaming machines sought by applicants for grant of gaming machine licence, and applications for an increase in approved number of gaming machines.
Source: Office of the Liquor and Gambling Commissioner.

However, the freeze on gaming machines only voided applications received on or after 7th December 2000, meaning that applications received before this date could still be approved, while there was also a significant number of machines approved but not yet installed. The result was that despite a freeze being implemented from 7th December 2000, the number of installed gaming machines continued to rise after the freeze from 13,603 at end December 2000, to a peak of 14,865 at end April 2003.

The freeze on applications for new gaming machines was extended several times until a more permanent solution was found with the passing of the *Gaming Machines (Miscellaneous) Amendment Bill 2004* on 8th December 2004. Under this bill, the specification that no new gaming machine entitlements could be allocated combined with the (eventual) removal of 3,000 gaming machines effectively placed a cap on the number of gaming machines allowed in South Australia of 12,086 machines.

Impact of Compulsory Removal of Gaming Machines

Under the *Gaming Machines (Miscellaneous) Amendment Bill 2004*, a total of 3,000 gaming machines are to be removed from South Australia through an initial removal of about 2,200 gaming machines on 1st July 2005, and thereafter by the gradual removal of machines through successive trading rounds.

The removal of machines from venues on 1st July 2005 proceeded according to the following formula:

- For hotels, the following reductions applied according to the number of gaming machines the venue had been approved to operate:
  - 29 machines and over – reduced by 8 machines;

- 21 to 28 machines – reduced to 20 machines; and
- 20 machines or less – no reduction.

- No reduction in the number of gaming machines applied for non-profit associations such as clubs and community hotels.

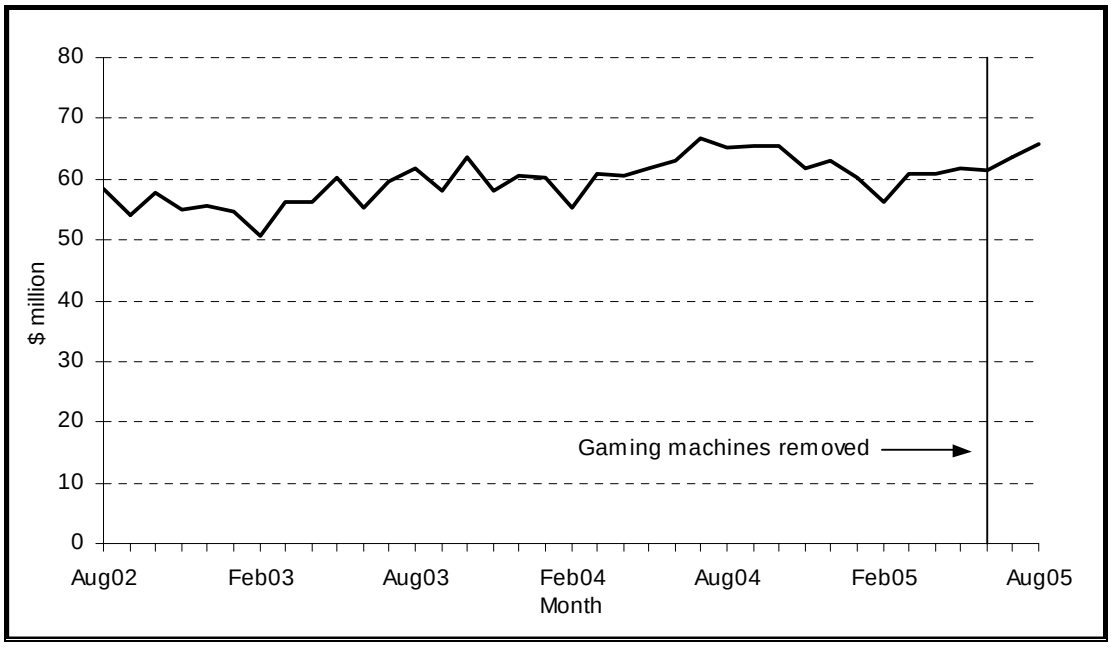
The reduction in machines was achieved by granting venues gaming machine entitlements according to the above formula. A gaming machine entitlement permits the holder of the entitlement to operate 1 gaming machine under a gaming machine licence.

While no new gaming machine entitlements can be approved under the new legislation, gaming machine entitlements can be sold through a newly established trading system.

A total of 2,168 gaming machines were removed from the State as a result of the compulsory reduction from 1st July 2005 (a further 27 were cancelled as a result of the first trading round).

There are now a couple of months worth of data available with which to gauge the impact of the removal of machines on EGM expenditure. Figure 3.5 shows that monthly net gambling expenditure on EGMs in hotels and clubs actually rose in July and August 2005 following the removal of machines from 1st July 2005. In fact, monthly expenditure for August 2005 was the second highest on record after July 2004 when household incomes were boosted by additional benefits and tax cuts associated with the 2004-05 Federal Budget. It therefore appears that the reduction in EGMs has had no impact on aggregate expenditure.

Figure 3.5
Electronic Gaming Machine Net Gambling Expenditure Per Month
South Australia – August 2002 to August 2005



Source: Office of the Liquor and Gambling Commissioner.

Of course, it could have been the case that gaming machine expenditure would have grown more strongly in the absence of the reduction in gaming machines. Nevertheless, the rise in aggregate expenditure is consistent with the view that repeated failures to introduce legislation from late 1998 to mid 2000 to freeze the number of gaming machines brought forward the installation of machines, leading to an excess supply of machines.

The rise in gaming machine expenditure following the reduction in gaming machines from 1st July 2005 would be explained in part by an increase in disposable incomes associated with further tax cuts from 1st July 2005, and robust growth in aggregate incomes due to solid employment growth (South Australia's unemployment rate fell to a record low in July 2005). Higher aggregate expenditure has subsequently been achieved by simply gambling on existing machines more intensively. Average monthly expenditure per machine rose from $4,381 in June 2005 to $5,213 in August 2005. As well, any 'negative' impact of the reduction in machines on aggregate expenditure will have been minimised to the extent that venues have acted commercially and removed their least profitable machines.

So, it is not simply a matter of lower machine densities per capita that give rise to higher expenditure per machine, an observation that found support in Victoria when under the regional caps policy, lowering machine densities actually resulted in an increase in regional expenditure. One reason for this result was that the machine utilisation rate was found to increase. That is to say, the least profitable and oldest machines were removed and the remaining machines were used more intensively (SACES; 2004).

It is impossible to determine whether the reduction in EGMs has had any impact on problem gambling. Nevertheless, the increase in expenditure suggests that it has had no effect since problem gamblers account for a significant proportion of total EGM expenditure (42 per cent according to the Productivity Commission), meaning we would expect some fall in expenditure if there were a reduction in problem gambling.

The reduction in EGMs has increased the intensity of machine use (as demonstrated by the increase in expenditure per machine). In theory, that might reduce problem gambling by causing some problem gamblers to leave venues after having difficulty obtaining access to a machine – but, in practice, there appears to still be a sufficient supply of machines to prevent any excessive crowding in venues.

Removal of Remaining Machines Through Trading System

The remaining machines that are required by legislation to be removed from venues (about 800 machines) will be progressively removed through the trading system. Under this system, licensees apply to sell and buy gaming machine entitlements with these applications being matched through a 'pooling system'.[18] The rules of the pooling system are complex and we do not go in to the detail of the trading system here. Nonetheless, in terms of the removal of machines, 25 per cent of the total amount of entitlements offered for sale in any trading round are withheld. Of these withheld entitlements, a proportion are cancelled while the remainder are transferred to the holder of the special club licence – Club One. The proportion of entitlements cancelled is calculated based on the proportion of *total* entitlements offered for sale that are offered by *for-profit* venues.[19]

Table 3.10 summarises the outcomes of the two trading rounds that have so far been conducted (both in 2005). Demand to buy gaming machine entitlements has far exceeded the supply of entitlements for sale. In the first round, 186 venues applied to buy 1,346 entitlements compared to 21 venues offering to sell 169 entitlements, while in the second

[18] Buyers purchase a gaming machine entitlement at the fixed cost of $50,000 per entitlement while the amount received by sellers is equal to the gross proceeds from sales divided by the total amount of entitlements sold and withheld.

[19] For example, if 100 entitlements are offered for sale by 80 for-profit venues and 20 not-for-profit venues, then of the 25 entitlements withheld (25 per cent of 100 entitlements), 20 entitlements will be cancelled (80 per cent of 25 entitlements), while 5 entitlements will be transferred to Club One (20 per cent of 25 machines).

round 149 venues offered to buy 976 entitlements compared 10 venues offering to sell 75 entitlements.

A total of 61 entitlements were withheld over the two trading rounds with 34 of these entitlements being cancelled and 27 being transferred to Club One.

Table 3.10
Outcomes of the First Two Trading Rounds

	Number of entitlements offered for sale			Number of entitlements offered to buy	Entitlements withheld		
Round	For-profit venues	Not-for-profit venues	Total		Cancelled	Transferred to Club One	Total
First	107	62	169	1,346	27	15	42
Second	26	49	75	976	7	12	19

Source: OLGC *Bulletin*.

The cancellation of 34 entitlements means that a total of 2,202 gaming machines have now been removed from the State under the *Gaming Machines (Miscellaneous) Amendment Bill 2004* (2,195 were removed by 1st July 2005: 2,168 from compulsory reduction; 27 from first trading round). With 798 machines still being required to be removed, the relatively small number of entitlements being cancelled through the trading rounds suggests that it may take many years before the target of removing 3,000 machines is finally achieved. For example, if we assumed that two trading rounds are conducted per year, and that the average number of entitlements cancelled per round equals the average number cancelled over the first two rounds (i.e., 17 machines), it will take about 23 years to remove the 798 machines needed to achieve the required total reduction of 3,000 machines.

Given that there has already been a significant fall in the total number of gaming machine entitlements offered for sale between the first and second trading rounds (from 169 to 75 entitlements), it will be interesting to see how the supply of gaming machines for sale changes over subsequent trading rounds. With there being a fixed price for the sale of a gaming machine entitlement ($50,000 per entitlement), it is likely that the supply of entitlements for sale will decline as the aggregate pool of gaming machines falls after subsequent trading rounds (since, *ceteris paribus*, average net gambling revenue per machine will rise, increasing the opportunity cost of selling a machine). This implies that it will take longer to achieve the required reduction in gaming machines than the simple back of the envelope calculations presented above suggests.

3.4 Racing and Wagering

Expenditure on racing across the States is shown in Table 3.11 (thoroughbred, harness and greyhound racing combined). Currently South Australians are fifth ranking in per capita expenditure.

It is notable that New South Wales spends more per capita on racing than any other State except Victoria, despite also having the largest EGM per capita spend. Western Australians spend less on racing than people in New South Wales or Victoria, despite EGMs being unavailable in Western Australia (outside the Perth casino). This might suggest, at first glance, that racing and EGM expenditure are independent, or poor substitutes for one another.

Table 3.11
Racing and Wagering – Expenditure – 2003-04

	SA	NSW	Vic	Qld	WA	Tas
Expenditure ($ million)	107.0	762.9	575.8	287.0	194.3	24.9
Expenditure per Capita ($)[a]	90.48	149.36	152.09	99.46	131.16	68.69

Note: [a] "per capita" refers to the adult population of each State (aged 18 and over).
Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

Thoroughbred Racing SA (TRSA) would not agree. They have a very strong view that EGMs have had a significant impact on racing expenditure in SA. TRSA informed us:

> "We have tracked TAB turnover, against Gaming turnover in South Australia and Western Australia up to and including 2004/05 … The picture that this creates is that back in 1991/92 the South Australian TAB actually had a greater turnover than the Western Australian TAB. Whilst the Western Australian TAB started to outgrow South Australia for a few years after that point, in recent years (coinciding with the dramatic growth in EGM turnover in South Australia) the Western Australian TAB has continued to rapidly grow to the point where in the financial year just finished, the Western Australian TAB is now almost double the South Australian TAB turnover. Our view is that the significant competition provided by EGMs in South Australia has significantly impacted on South Australian TAB's ability to grow."

Measured from 1991-92 to 2003-04, Western Australia was the only State to enjoy positive growth in racing turnover and expenditure – more than 40 per cent over the 12-year period. Victoria had 6.6 per cent expenditure growth; all the other States, including South Australia, went negative. The figures for real turnover, expenditure and growth in each State from 1991-92 to 2003-04 are presented in Table 3.12.

Table 3.12
States – Real Racing and Wagering Turnover and Expenditure – 1991-92 to 2003-04

		WA	SA	NSW	Vic	Qld	Tas
Real Turnover	1991-92	854.9	892.9	6415.3	3864.0	2159.7	309.2
(03-04 $million)	2003-04	1208.3	801.8	5296.9	3806.7	1808.6	288.6
	% Change	41.3	-10.2	-17.4	-1.5	-16.3	-6.7
Real Expenditure	1991-92	134.8	125.0	870.6	540.4	315.5	46.3
(03-04 $million)	2003-04	194.3	107.0	762.9	575.8	287.0	24.9
	% Change	44.1	-14.4	-12.4	6.6	-9.0	-46.4

Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*. Calculations by SACES.

However, the researchers contends that this is a slightly misleading way of comparing State racing industry performance. TRSA has picked a start year for its comparison – 1991-92 – in which racing turnover and expenditure in Western Australia and other States was depressed (during the period 1991 to 1993) following the sharp economic recession in 1991-92. The Western Australia racing industry bounced back impressively during the '90s, but it is not accurate to suggest that Western Australian growth rates could have been achieved by other States if they had not had EGMs.

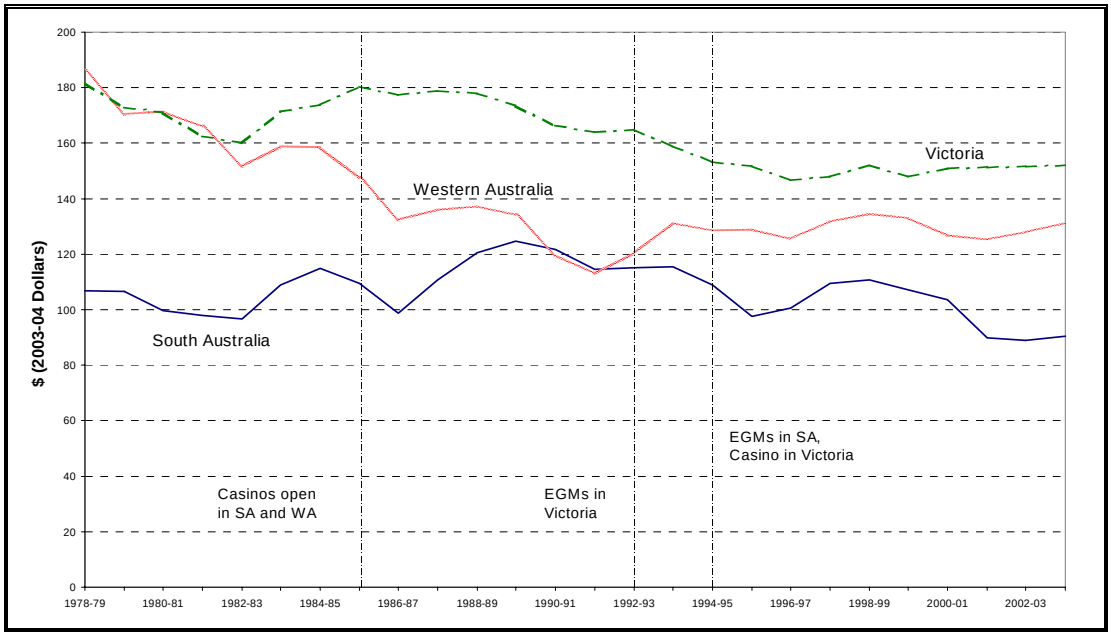
It is also pertinent to note that Western Australia has enjoyed very fast population growth, which has boosted all forms of consumption, including gambling. From 1991-92 to 2003-04, the Western Australia population grew by 24 per cent, compared to 8 per cent in South Australia.

It is therefore more valid to compare racing expenditure trends over a longer period, calculated on a per capita basis (persons aged 18 and over). This is illustrated in Figure 3.6 for South Australia, Victoria and Western Australia over the past 25 years.

In Victoria, real expenditure per capita began declining from 1985-86 onwards, kept declining after pokies were introduced, and eventually stabilised around 1996-97.

In Western Australia, real expenditure per capita declined through the 1980s, reached a trough in 1990-91 and 1991-92 (exactly the economic recession years), recovered over the following two years, and was essentially flat thereafter.

Figure 3.6
Racing and Wagering – South Australia, Victoria and Western Australia
Real Per Capita Expenditure



Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

In South Australia, real expenditure per capita has bounced around within a $90 to $125 band throughout the past 25 years. It was $115 in 1993-94, the year before EGMs appeared. It dipped to $98 in 1995-96, then recovered to $111 in 1998-99, before falling to its current level of around $90.

If we assume that, but for the effect of EGMs, real per capita expenditure in South Australia would have remained flat since 1993-94, as in Western Australia, then EGMs would be currently responsible for around $25 per capita loss to racing (the difference between 1993-94 and current spending). With a South Australian adult population of 1.18 million in 2003-04, that equates to about $30 million annually.

However, there is no reason to assume that EGMs are fully responsible for the decline in racing expenditure. Consumer preferences change over time as new products appear and relative prices change, and disposable income varies as a result of a multitude of factors, including business cycle effects and changes in house prices. A mono-causal explanation for the decline of racing may be attractive to some, but fails to explain why racing expenditure fell in Western Australia throughout the 1980s, and in Victoria in the late '80s – both in the absence of EGMs.

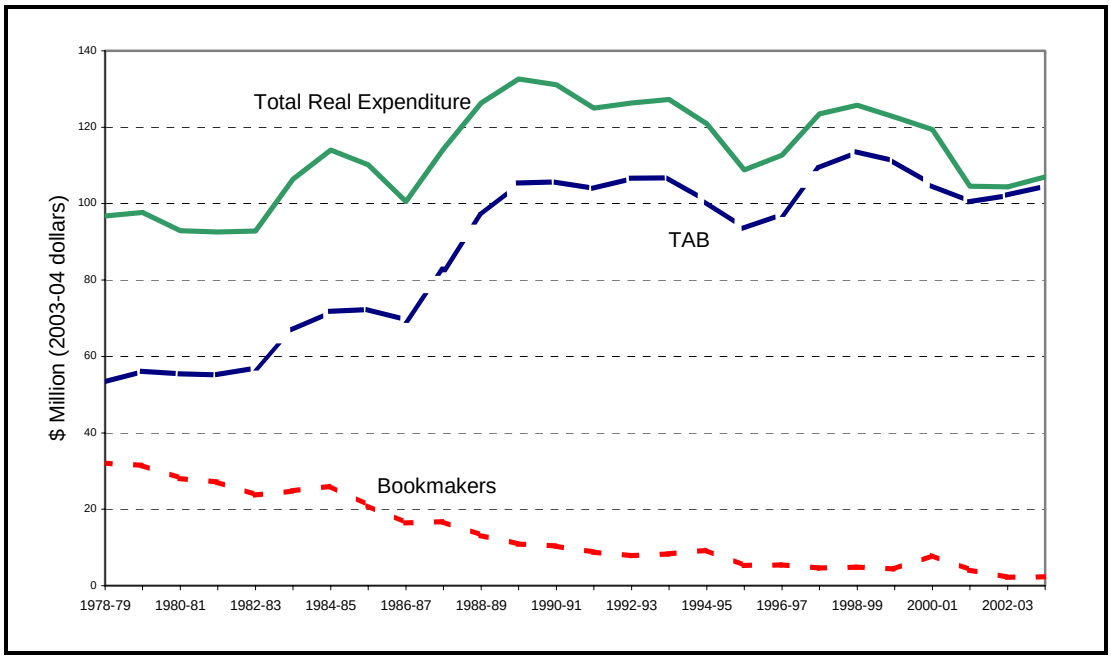
The regulatory framework for racetrack gambling is set out in the *Authorised Betting Operations Act 2000*. That Act empowers the Liquor and Gambling Commissioner to issue licences for bookmakers and bookmaker's agents. The Commissioner is responsible to the Independent Gambling Authority to ensure that the operations of each licensed business are subject to constant scrutiny, and must report annually to the Authority on the administration of the Act.

The Act also regulates totalisator betting, and authorises one totalisator licence to be in force at any time. The original licensee was the South Australian Totalisator Agency Board, a government agency, but SATAB was sold in 2002 to UNiTAB Pty Ltd (formerly TAB Queensland). UNiTAB now holds the licence and operates the TAB network across the State.

As Figure 3.7 illustrates, the TAB has the lion's share of racing industry betting. Its success has come partly at the expense of bookmakers, who have seen their share of turnover and expenditure tumble to a fraction of what it once was. Expenditure on bookmakers – their gross profits – was $2.4 million in 2003-04, barely a fifth of the peak level twenty years earlier.

It is also notable that bookmakers' profitability as a proportion of turnover has been in decline. The bookmakers' $2.4 million gross profit in 2003-04 represented just 2.4 per cent of turnover. By comparison, the TAB turned over $663.9 million and made $104.6 million gross profit – 15.8 per cent of turnover.

Figure 3.7
Racing and Wagering – South Australia – Real Expenditure



Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

3.5 Lottery Products

The lottery products discussed in this section are the traditional lotto games (in South Australia, they are Lotto, Oz Lotto, PowerBall and SA Lotto), as well as instant lotteries, Keno, and Soccer Pools.

Box 3.3: SA Lotteries Commission Gambling Products

The SA Lotteries Commission has operated a range of gambling products since its inception in 1966. A brief description of these products is provided here.

Lotto is SA Lotteries' premier game. Lotto has its origins in the Saturday X-Lotto, established by the Commission in March 1973. South Australia was the second State to introduce this form of lottery after Victoria.

Saturday X-Lotto was succeeded by an inter-jurisdictional Lotto game when the States of South Australia, Victoria and Western Australia joined to form the Australia Lotto Bloc in March 1981. (Queensland joined later while New South Wales joined in December 2000.) By combining prize pools, a much larger Division One prize pool could be offered. A Wednesday night Lotto was introduced in October 1983, but was subsequently moved to Thursday Night in October 1992. It was eventually replaced by PowerBall in May 1996.

Certain aspects of Lotto have changed over time, including the total number of possible balls that winning numbers are drawn from, the number of games that can be played per ticket, and the cost per game etc. The game is marketed under different names in the various States (i.e., "Tattslotto" in Victoria, Tasmania, ACT and Northern Territory; "Lotto" in New South Wales, South Australia and Western Australia; and "Gold Lotto" in Queensland).

Super 66 was introduced as an add on game to Saturday Lotto in February 1986. A 6-digit number ranging from 000000 to 999999 is generated by simultaneously drawing 6 numbered balls. Players must match their selected numbers with the drawn numbers in the order they are drawn.

SA Lotto, originally called X Lotto Xtra, was introduced in 1990 as a South Australian only version of Lotto drawn on Monday nights. An additional Wednesday night draw was introduced in November 2003.

SA Lotto was replaced in April 2006 by an expanded version after SA Lotteries joined NSW Lotteries and LotteryWest (i.e., Western Australia) to establish an interstate Lotto game drawn on Monday and Wednesday nights. Expanding the customer base has increased the prize pool. The game is identical in form to Saturday night Lotto.

Oz Lotto was introduced in February 1994 and was effectively Australia's first national lotto game (with the exception of the less popular Pools) given that New South Wales did not join the Saturday Lotto draw until December 2000. The game was identical to Saturday Lotto draw with the exception that the subscription cost was higher.

PowerBall replaced Thursday night Lotto in May 1996. It is based on the PowerBall lottery game which operates in the United States and features two barrels of 45 numbered balls whereby a player must match 5 balls drawn from the first barrel and 1 ball from the second barrel (the PowerBall) to win a Division One prize.

Distribution of Total Prize Pool for Lottery Games (Per Cent)[a]

Division	Lotto (Sat)	Lotto (Mon & Wed)	Oz Lotto	Powerball	Super 66
Division 1	27.2	50.0	40.0	37.5	65.0
Division 2	6.5	3.7	1.7	14.0	2.0
Division 3	12.2	6.8	3.5	6.4	6.0
Division 4	20.9	17.0	1.8	5.0	15.0
Division 5	33.4	22.5	2.1	2.8	12.0
Division 6	na	na	24.0	12.5	na
Division 7	na	na	26.9	21.8	na

Note: [a] Distribution as at 7th June 2006.
Source: SA Lotteries, *Rules* [Online]. Available: http://www.salotteries.com.au/aboutus/default.asp [2006, June 7].

Keno was developed by SA Lotteries and launched in March 1990. This game is computer operated with 20 numbers being randomly selected from a pool of 80 numbers (ranging from 1 to 80). Players forecast up to 10 numbers, which must be matched against the drawn numbers in order to win.

Keno games were originally drawn every 5 minutes. The frequency has since been increased to every 3 and a half minutes. Each draw closes 40 seconds before the draw commences. Results are displayed on linked computer screens located in most agents throughout the State.

Instant Scratchies were introduced by SA Lotteries in December 1978 as "Instant Money Games". In these games players purchase a ticket and scratch off a latex panel in order to reveal symbols or prizes. Tickets currently range in price from $1 to $5 per ticket.

The Pools is a niche lotto style game where the winning numbers are based on the outcomes of soccer matches. A national competition known as "The Pools" was established in May 1989 with the formation of the Soccer Pools Bloc. SA Lotteries assumed national responsibility for the administration of this game.

Source: SA Lotteries, *History* [Online], *Rules* [Online], and *Annual Report* (various) [Online]. Available: http://www.salotteries.com.au [2006, June 7]. Productivity Commission (1999), 'An overview of Australia's Gambling Industries', in *Australia's Gambling Industries*, pp. 2.1 to 2.23.

Expenditure by State on these products varies between $95 and $150 per capita per annum, as set out in Table 3.13. The traditional lotto games are still more popular than the newer products. There is a wide variation between the States in spending on instant lotteries and keno. Currently South Australians are sixth ranking in per capita expenditure on lottery products.

It is notable that Western Australians – where there are no EGMs or Keno outside of the casino – spend more per capita on lotteries than the people of any other State. By contrast, the three States in which per capita EGM spending is highest – New South Wales, South Australia, and Victoria – are also the States in which per capita spending on lotteries is lowest.

Trends in real per capita expenditure on Lotto, Tattslotto and general lotteries for South Australia, Western Australia and Victoria are presented in Figure 3.8. Expenditure in South Australia steadily rose until 1990-91. The peak in that year coincided with the introduction of a popular lotto game for South Australians only (originally called 'X Lotto Xtra', now SA Lotto). Since the introduction of EGMs in 1994-95, lottery expenditure in South Australia has been essentially flat.

Western Australian and Victorian lottery expenditure have been trending in different directions. Western Australian expenditure has risen substantially over the 25-year period, whereas Victorian expenditure has been slowly declining since the introduction of EGMs in 1992.

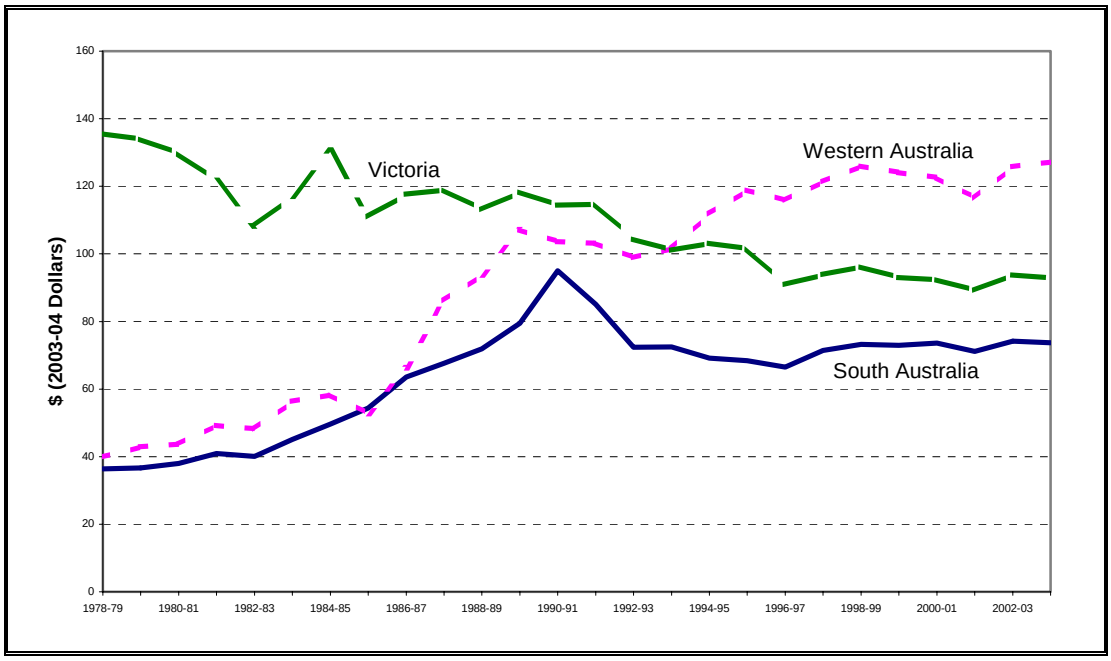
The figures suggest, on first sight, that lotteries are partial substitutes for EGMs, and thus lottery expenditure may to some degree be inversely related to EGM expenditure. This will be examined in later sections of this report.

Table 3.13
Lottery Products – Per Capita Expenditure ($) – 2003/04

	SA	NSW	Vic	Qld	WA	Tas
Lotto[a]	73.74	83.81	92.92	86.17	127.22	57.05
Instant Lotto	11.01	14.47	6.55	31.17	22.62	6.02
Keno	9.54	7.19	1.77	23.73	0.00	46.78
Soccer Pools	0.24	0.75	0.25	0.55	0.47	0.19
Total	94.53	106.22	101.48	141.62	150.32	110.04

Note: [a] "Lotto" here is a combination of Lotto, Tattslotto, and general lotteries.
Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

Figure 3.8
Lotto, Tattslotto and Other Lotteries – South Australia, Victoria and Western Australia
Real Per Capita Expenditure



Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

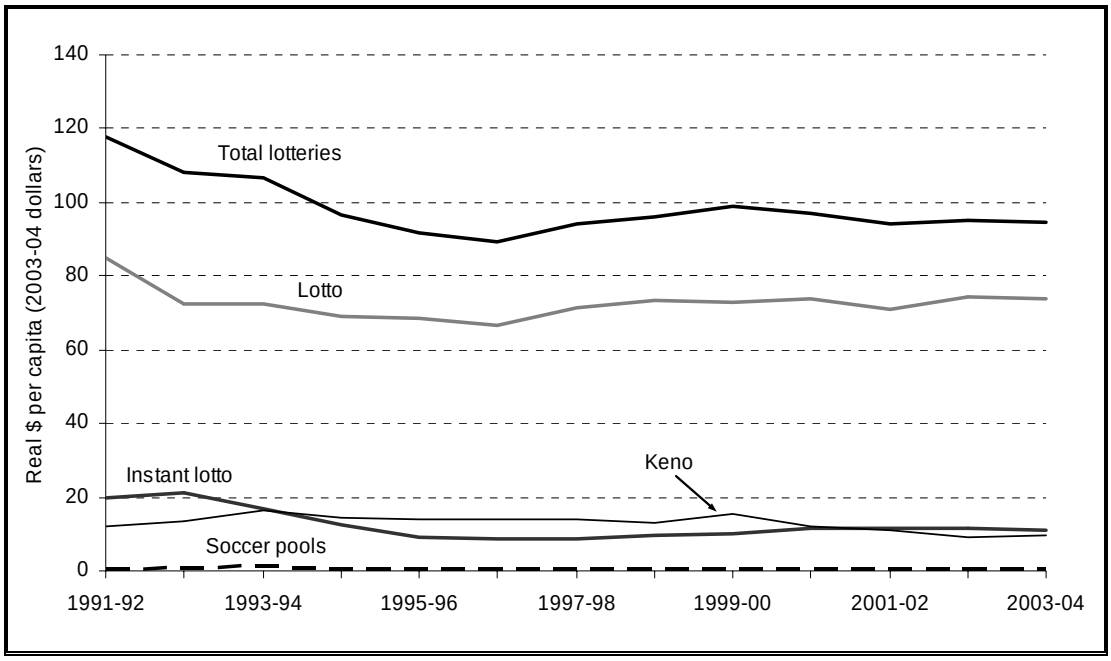
Figure 3.9 shows how real per capita expenditure on the various forms of lottery products has evolved in South Australia since 1991-92.

There were falls in per capita expenditure on lotto and instant lotto in the early 1990s which would reflect the impact of the recession on consumer spending and the introduction of gaming machines in 1994-95 in terms of diverting expenditure. Expenditure on these forms of gambling have remained fairly steady since the introduction of gaming machines.

Keno was introduced in 1990 and real per capita expenditure on this form of gambling consequently rose in the initial years. However, real per capita expenditure on Keno also declined slightly following the arrival of gaming machines. While per capita expenditure remained fairly stable from the mid to late 1990s, there has been a further decline in recent years (see Figure 3.9). SA Lotteries report that the average weekly sales per licensed agent (198 hotels, clubs, casino) was $3,833 and for 355 retail agents the average was $2,143 (or 56 per cent of average weekly sales of licensed agents) as at March 2006.[20]

As Figure 3.9 shows, the soccer pools remain a minor form of gambling relative to other lottery and gambling products.

Figure 3.9
Real Per Capita Expenditure on Lottery Products
South Australia – 1991-92 to 2003-04



Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

Table 3.14 shows the total number of SA Lotteries agents that supplied each type of lottery product between 2002-03 and 2004-05. The total number of agents fell slightly over this period from 537 to 531. The total number of agents in 2004-05 represents a statewide average prevalence of 4.4 agents per 10,000 adults.

With the exception of instant scratch tickets, the complete range of SA Lotteries products are supplied by almost all SA Lotteries agents. However, instant scratch tickets were supplied by approximately 80 per cent of SA Lotteries agents in 2004-05.

[20] SA Lotteries Submission: IGA Review 2006 — Regulatory Functions Code of Practice, May 2006, p. 12.

Table 3.14
SA Lotteries Agents By Type of Lottery Product Supplied (Number)

Year	Lotto	SA Lotto	OZ Lotto	PowerBall	Super 66	Pools	Keno	Instants	Total Agents
2002-03	536	536	536	536	536	536	537	429	537
2003-04	535	535	535	535	535	535	536	415	536
2004-05	530	530	530	530	530	530	531	430	531

Note: Lottery agents for Keno include 533 as at March 2006 with 335 retail agents and 198 licensed agents. Retail agents comprise newsagents, delicatessens, chemists, supermarkets, kiosks, service stations, hotels and clubs.
Source: SA Lotteries, unpublished data.

3.6 Casinos

There is one casino operating in South Australia, offering a variety of table games and electronic gaming machines. It is licensed and regulated by the *Casino Act* 1997. Under the Act, there is not to be more than one casino licence in force at any time. The first grant of a licence under the Act was to Adelaide Casino Pty Ltd; it is currently held by SkyCity Entertainment Group Ltd.

Every State and Territory in Australia has at least one casino. Expenditure in casinos varies greatly from one State to another, as can be seen from Table 3.15.

Table 3.15
Casinos – Numbers and Expenditure – 2003-04

	SA	NSW	Vic	Qld	WA	Tas
Number of casinos	1	1	1	4	1	2
Expenditure ($million)	107.9	551.0	963.8	592.1	287.1	96.4

Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*, and Australian Gaming Council, *A Database on Australia's Gambling Industries* (2004).

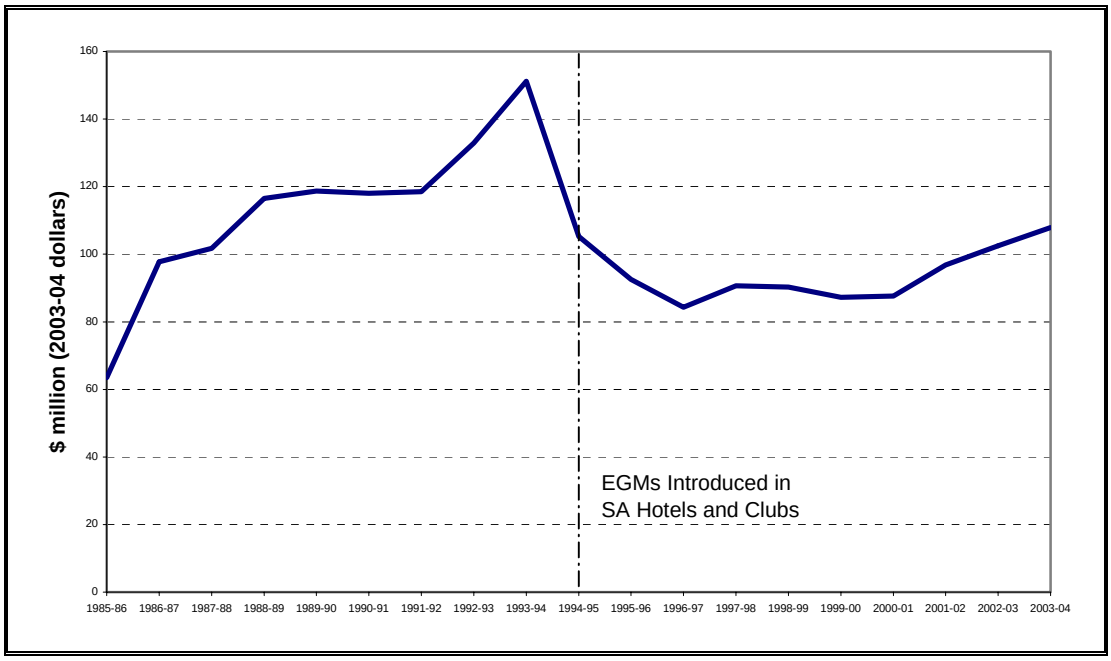
The casino industry as a whole generated expenditure of $2,698.3 million in 2003-04. More than one-third of that came from Melbourne's Crown Casino.

Casino expenditure is influenced by domestic and international tourism (the extent to which this is so will be considered elsewhere in this report). A significant proportion of the dollars spent in a casino may come from outside the State. So it would be misleading to make comparisons between each State's per capita expenditure in casinos, as we have done with other forms of gambling.

It is interesting to note that in some places around the world, in order to protect the local population from problem gambling arising from a casino, that local citizens are required to pay a levy to gamble in a casino or are barred outright. As Singapore embarks on its first casino, Singaporeans will be required to pay a daily levy of $A86 (approximately) if they want to gamble.

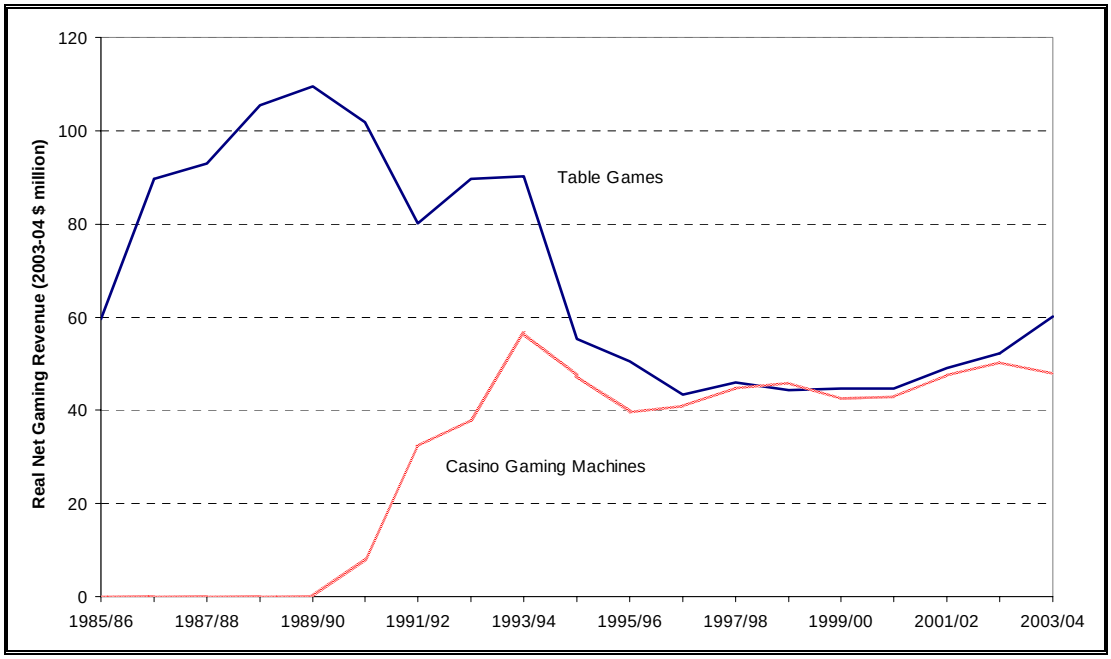
Figure 3.10 illustrates real expenditure in the Adelaide casino since its opening in 1985.

Figure 3.10
Casino – South Australia – Real Expenditure



Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

Figure 3.11
South Australia – Casino – Real Net Gaming Revenue



Source: Office of the Liquor and Gambling Commissioner.

The casino has two main streams of revenue: its table games and its EGMs. Real net gaming revenue from each is illustrated in Figure 3.11. Casino gaming machine net gaming revenue rose strongly after the introduction of the first video card and keno games in March 1991. When combined with table game NGR, this produced an overall surge in casino revenue peaking in 1993-94 as illustrated in Figure 3.10.

Table game NGR suffered from the arrival of EGMs in the casino itself in 1991 and, then further, from the introduction of EGMs in hotels and clubs in 1994-95. Since then, it has stabilised at a level roughly equal to casino gaming machine NGR.

3.7 Minor Gambling

Minor gambling is the collective term for minor lotteries, bingo, trade promotions, sweepstakes, etc. It is difficult to make firm statements about the size and scope of minor gambling in South Australia. Bingo is probably the most important component, but official figures for bingo in this State have not been available since 1999-00. Unfortunately, as no official expenditure data has been collected for bingo and instant tickets since 1999-2000, it is impossible to identify the underlying trend in expenditure on minor gambling since 1999-2000.[21]

Earlier figures suggest minor gambling, in general, was severely impacted by the introduction of EGMs. In the 1980s and early 1990s, real minor gambling expenditure was running at $60 to $70 million per annum (expressed in 2003-04 dollars). In 1994-95, the year EGMs appeared in hotels and clubs, real minor gambling expenditure shrank by half to $30 million (in 2003-04 dollars). It remained around that level up to 1999-00.

The Liquor and Gambling Commissioner is responsible for ensuring that all minor lotteries and gaming are fair and equitable, and that they are conducted in accordance with the *Lottery and Gaming Act* 1936, the *Lottery and Gaming Regulations* 1993, and the *Collections for Charitable Purposes Act* 1939.

Sportsbetting is one of the more recent forms of gambling products that are available. Figure 3.12 shows real per capita expenditure on sportsbetting for South Australia from 1994-95 to 2003-04 (expenditure is not shown for 2001-02 since data on TAB fixed odds sportsbetting was not available for 2001-02).

Expenditure on sportsbetting in South Australia is very low, with an average expenditure of $2.27 per adult in 2003-04. National expenditure was slightly higher at $9.87 per adult.

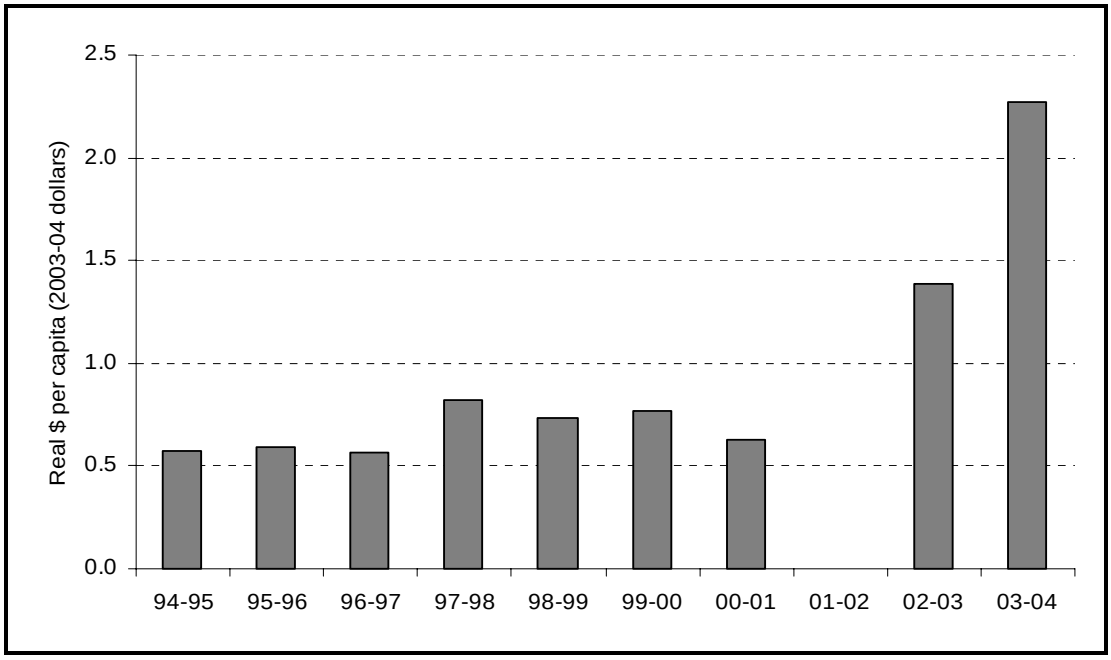
Expenditure on sportsbetting accounted for just 0.3 per cent of total expenditure on gambling in South Australia in 2003-04. At the national level it accounted for 0.9 per cent of total gambling expenditure.

While expenditure on sportsbetting is low, it has grown at a rapid pace and tends to be influenced by the occasion of major events such as World Cup Soccer, international cricket and tennis events. South Australia real expenditure on sportsbetting grew at an annual average rate of 17.3 per cent per annum between 1994-95 and 2003-04. In comparison, total

[21] Note that the AGS says data not collected from 2001-02 and onwards, but there was a large fall in expenditure in 2000-01. While the dates vary, the overall picture is a significant decline in real minor gambling expenditure as EGMs were introduced which has continued up to today.

real gambling expenditure for the State grew at an annual average rate of 6.6 per cent over this period.

Figure 3.12
Real Per Capita Expenditure on Sports Betting
South Australia – 1991-92 to 2003-04[a]



Note: [a] Data on *TAB fixed odds* sports betting was unavailable for 2001-02, so total sportsbetting expenditure is not shown for this year. Data on *TAB tote odds* has also been unavailable for 2001-02 to 2003-04, so total expenditure shown for these years is understated (as a guide, average annual sportsbetting expenditure on *TAB tote odds* was $0.5 million over the 5 years to 2000-01).

Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

4. Changes and Trends in Gambling Behaviour and Participation

Terms of Reference

- Discuss changes and trends in gambling behaviour and participation.

4.1 Introduction

Most of the adult population, both in South Australia and across the nation, gamble at least once a year. This chapter will consider the numbers who participate in each major form of gambling, the demographic profile of gamblers, and the incidence of problem gambling. The major summary points are shown in Box 4.1.

Box 4.1: Summary

Around three-quarters of adult South Australians gamble at least once a year. As a proportion of household disposable income, gambling rose from roughly 1 per cent in the early 1980s, to 1.5 per cent after the casino opened, and then rose swiftly after the introduction of EGMs to currently stand at 2.91 per cent. Western Australia again is the exception, with spending falling every year since 1995-96 (Western Australia: 1.43 per cent).

The most popular form of gambling is lotto: 55 per cent of South Australians buy a lottery ticket each week.

The second most popular are EGMs, which are played by around 37 per cent of South Australians. EGM gambling has high prevalence in younger age brackets, particularly 18-24 year olds. There is a strong correlation between the density of EGMs in a given area and net gaming revenue.

Around 20 per cent of South Australians wager on horse or greyhound racing at least once a year, but many of these only wager on a major event (such as the Melbourne Cup). Prevalence has a strong bias towards males. Attendance at the racetrack has been falling over recent years, which the industry blames on an unsatisfactory funding model leading to under-investment in facilities.

Only around 7 per cent of South Australians visit the casino, and very few do so on a regular basis. However, the amount expended per visit is often quite large. Prevalence of table game playing is higher among young males.

4.2 National Gambling Behaviour

The most comprehensive data on Australian gambling habits comes from a national survey conducted by the Productivity Commission in 1999. The Commission estimated that 77 per cent of South Australian adults gamble at least once per year (compared to a national participation rate of 82 per cent).

The survey indicated that South Australians have a lower participation rate than the national average in all major forms of gambling, with the exception of gaming machines (although the national figure in this case is lowered by the absence of EGMs in Western Australia).

In 2001, the Centre for Population Studies in Epidemiology (CPSE) carried out a survey of gambling patterns in South Australia. Also, data are available from Health Monitor Surveys carried out by the South Australian Department of Health from 2002 to 2004, which included

questions on gambling activity. All these surveys produced very similar figures for the overall gambling prevalence in South Australia (see Table 4.1).

Table 4.1
Per Cent of Adult Population Who Participated in Gambling Activities in Past 12 Months

	Productivity Commission		CPSE	Department of Health		
	Australia 1999	SA 1999	SA 2001	SA 2002	SA 2003	SA 2004
Any Gambling in the past 12 months	82	77	75.6	77.7	75.6	76.7

Note: Sample sizes were as follows: Productivity Commission 10,500 nationally and 1,000 in SA; CPSE 6,045; Health Department 2005, 2009 and 2012 in years 2002, 2003 and 2004 respectively. All surveys measured the adult population (18 years and over).
Source: Productivity Commission (1999), CPSE (2001) Table 4.1, and Delfabbro (2004) Figure 4.

Based on these figures, South Australians' overall gambling participation rate has not increased in the last five years.

However, over this period, South Australians spent more on gambling every year. The average per capita expenditure rose by 17.3 per cent in real terms from 1998-99 to 2003-04 (see Table 4.2). The ratio of gambling expenditure to household disposable income (HDI) rose in four of the last five years, and now stands significantly higher than it was in 1998-99 (Table 4.2).

So the industry is not attracting a larger share of the population as customers; it is instead raising greater expenditure from those already gambling.

Table 4.2
South Australia – Real Per Capita Gambling Expenditure, Growth, and Ratio to HDI

	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04
Real Per Capita Gambling Expenditure ($ 2003-04)	765.6	794.5	794.8	825.6	863.5	898.4
Annual Growth (%)		3.8	0.0	3.9	4.6	4.0
Total Growth 1998-99 to 2003-04 (%)						17.3
Gambling Expenditure as % of HDI	2.6	2.7	2.6	2.7	2.9	2.9

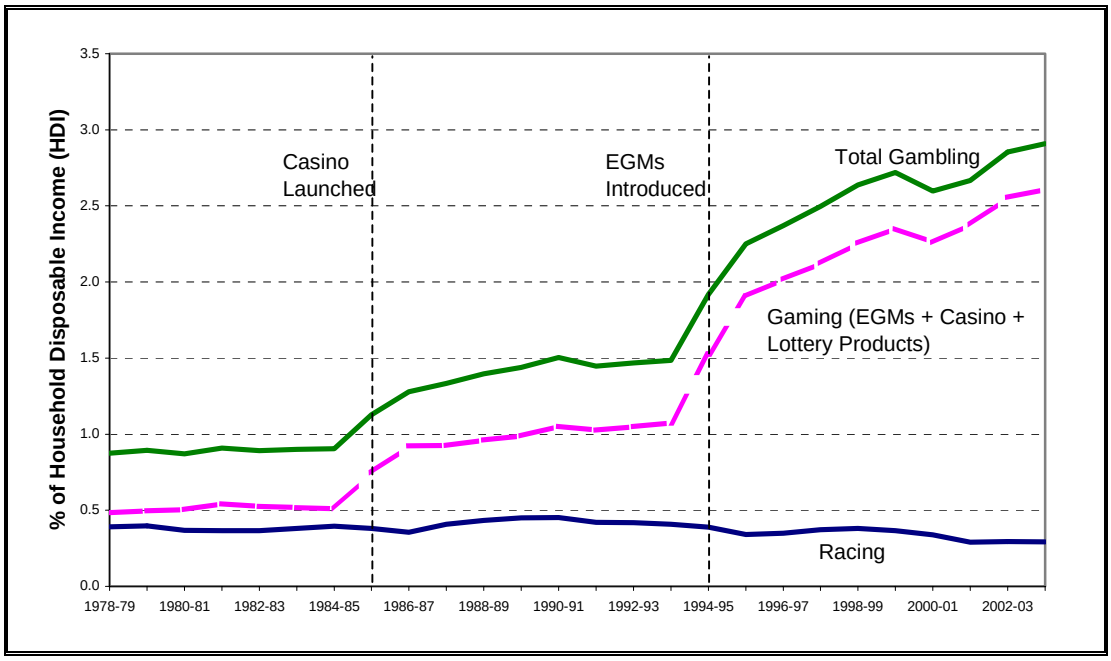
Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

The ratio of gambling expenditure to HDI is the best measure of the impact of gambling behaviour on household budgets. It is illustrated for South Australia over the past 25 years in Figure 4.1.

When the only two means of gambling were racing and the lottery, South Australians spent just under 1 per cent of HDI on gambling. This proportion first rose around the time the casino was established, to around 1.5 per cent in the late 1980s. A further sharp rise occurred in 1994-95, when EGMs were introduced. The proportion of HDI that South Australians spent on gambling continued to rise in most subsequent years. In 2003-04 it reached 2.91 per cent of HDI.

South Australians now spend a little less of their household income on gambling than the residents of most other States (the national figure is 3.1 per cent of HDI). It should be noted however that in Western Australia, with no EGMs, only 1.4 per cent of HDI is expended on gambling.

Figure 4.1
South Australia – Gambling as a percentage of Household Disposable Income



Source: OESR, Queensland Treasury, *Australian Gambling Statistics 2005*.

Gambling as per cent of HDI is presented for all States at five-year intervals in Table 4.3. South Australia, Victoria, Queensland and Tasmania all started from a low base, with gambling's share of HDI increasing dramatically over the last 10-15 years. Western Australia again is the unusual case with the proportion falling every year since 1995-96 (gambling expenditure in Western Australia essentially remained flat while household income rose strongly).

Table 4.3
Gambling as a percentage of Household Disposable Income

	SA	NSW	Vic	Qld	WA	Tas
1978-79	0.87	2.35	1.15	0.76	0.80	1.40
1983-84	0.90	2.18	1.14	0.84	0.92	1.65
1988-89	1.40	2.34	1.11	1.39	1.45	1.71
1993-94	1.48	2.69	1.92	2.34	2.19	1.84
1998-99	2.64	3.72	3.42	3.01	1.72	2.42
2003-04	2.91	3.64	3.15	3.17	1.43	2.71

Source: Office of Economic and Statistical Research, Queensland Treasury, *Australian Gambling Statistics 2005*, Table 135.

It must be kept in mind that 3 per cent of household disposable income is a small proportion. If this figure were distributed evenly among all households, it is unlikely that gambling would be perceived to cause social problems. The concern, of course, arises because expenditure is not evenly spread, with some households spending much more than they can sustainably afford. The issue of 'problem gambling' will be considered further in Phase 2 of this study.

4.3 Electronic Gaming Machines

In recent gambling surveys in South Australia, between 36.4 per cent and 41.0 per cent of respondents had played EGMs in the previous 12 months (see Table 4.4). From these figures, the prevalence of EGM gambling does not appear to be rising.

Table 4.4
Per Cent of Adult Population Who Played Electronic Gambling Machines in Past 12 Months

	Productivity Commission		CPSE	Department of Health		
	Australia 1999	SA 1999	SA 2001	SA 2002	SA 2003	SA 2004
Played EGMs anywhere	39	41	36.4	38.8	38.6	37.0
At Hotel	18	37	-	-	-	-
At Club	30	19	-	-	-	-
At Casino	17	18	-	-	-	-

Note: Sample sizes were as follows: Productivity Commission 10,500 nationally and 1,000 in SA; CPSE 6,045; Health Department 2005, 2009 and 2012 in years 2002, 2003 and 2004 respectively. All surveys measured the adult population (18 years and over).
Source: Productivity Commission (1999), CPSE (2001) Table 4.1, and Delfabbro (2005) Figure 7a.

Recent EGM prevalence figures for other States and Territories include the 2003 *Victorian Longitudinal Community Attitudes Survey* estimate of 33.5 per cent, and the 2001 *ACT Gambling Survey* estimate of 38.6 per cent. That less than half the adult population indicate that they had played EGMs in the previous 12 months begs the question as to whether per capita or average spend calculations should be re-calculated with this proportion of the adult population as the denominator. What is implied here is that the average spend of only those who play EGMs – recreational, moderate and problem gamblers – is obviously much higher than the aggregate per capita adult population estimates that are usually quoted.

The Australian Bureau of Statistics estimated the South Australian adult population (18 years and over) at 1.182 million in 2003-04.[22] If the 2004 Health Department participation figure from Table 4.4 is applied to this population estimate, it equates to 437,000 South Australians playing EGMs at least once per year.

Which leads to the question: who are these EGM players? Do the surveys highlight any demographic characteristics at a statistically significant level? Delfabbro (2005) analysed the recent South Australian surveys and commented:

> "In previous research … it was found that age and gender were the only two demographic factors that reliably predicted gambling participation rates and gambling preferences. Although marital status and occupational status have also been found to be related to variations in gambling habits, these factors are confounded with age and gender. Younger people or males are more likely to be single or in the workforce, so that when age and gender are controlled in regression analyses, almost all other demographic factors tend to be non-significant."

Delfabbro (2005) found that for EGM participation in South Australia, there is no significant gender difference. However, age is a significant factor. Table 4.5 presents figures by age bracket from the 2001 CPSE survey (this may be regarded as the most reliable of the recent South Australian surveys, since it had a higher sample size than any other and more detailed questions).

[22] In June 2005, estimated resident population 18 years and over was 1,197,301 and this equates to 443,000 who play EGMs.

Table 4.5
South Australia - Population in Each Age Bracket Who Played EGMs in Past 12 Months

	18-24	25-34	35-44	45-54	55-64	65-74	75+	All Ages
EGM Participation	51.1	35.7	32.2	36.9	38.8	34.3	24.8	36.4

Source: CPSE (2001) Table 4.1.

High EGM participation – around 50 to 60 per cent – in the 18-24 age bracket is reported in the other State and national surveys. The colourful, fast-paced, computerised nature of EGM play may be particularly attractive to young gamblers, and they are spread throughout hotels and clubs which 18-24's frequent. This has important implications for the future. If these young gamblers continue to play EGMs as they grow older, the proportion of people playing EGMs will rise, with obvious consequences for expenditure levels and social costs such as problem gambling.

The CPSE study identified several other demographic characteristics of EGM players at a statistically significant level. However, most of these characteristics, as Delfabbro (2005) observed, appear to be correlated with the age profile – these include marital status, income, educational qualifications, and household size. One characteristic of EGM players that does not seem related to age or gender is their ethnicity – there is a significantly lower prevalence in persons born outside Australia, the UK or Ireland.

In recent research, the researchers have investigated other factors correlated with EGM expenditure at a regional level. *The Impact of Gaming Machines on Small Regional Economies* (SACES 2001) found a significant positive correlation between average per capita EGM expenditure for council areas in South Australia and the following influences:

- average personal after-tax income;
- unemployed persons as a proportion of adults;
- persons of an Aboriginal or Torres Strait Islander background as a proportion of the population; and
- the proportion of the population resident in Housing Trust accommodation.

The methodology used in this study was discussed with and verified by the Productivity Commission.

It should be noted that the above influences may have opposing effects. The first influence – income – would suggest that low-income areas would have low EGM expenditure. But in practice they may have relatively high expenditure because of the prevalence of the latter three influences (high unemployment, ATSI background, and/or Housing Trust habitation).

In addition to demographic factors, another significant influence on EGM participation is accessibility. The Productivity Commission (1999) and SACES (2001) found a relatively close relationship between the number of EGMs per capita and EGM expenditure per capita. SACES (2001) also found a correlation between the number of venues per square kilometre and EGM expenditure – the researchers estimated through regression analysis that, in South Australian regional areas, each additional venue per km^2 was correlated with an increase in net gaming revenue per adult of $273.

Delfabbro (2003) in a specific study to examine the links between the density of EGMs and negative gambling related impacts in metropolitan South Australia commissioned by the IGA as part of its Inquiry into Management of Gaming Machine Numbers, concluded the following:

> "There is a very high correlation between the density of EGMs in SLAs and net revenue (or the amount lost). Variations in net revenue across the metropolitan area cannot be accounted for by variations in demographic characteristics across those regions. The relationship between EGM densities and losses holds very strongly even after demographic factors have been statistically controlled. There was a clear positive association between the distribution of problem gambling clients and the density of EGMs. Overall, the study provides reasonable evidence to support the existence of a positive association between gambling related harm and EGM numbers." (Executive Summary, pp. 41-42).

The final compelling piece of evidence in the 'density/accessibility, *vis a vis* the number of problem gamblers/expenditure on EGMs debate' is of course, the comparison between the situation of Western Australia and other States, where Western Australia has a much lower rate of problem gambling and lower spend on all forms of gambling as a proportion of household disposable income.

A further issue is frequency of play. From the CPSE report, it is apparent that, on average, EGM gamblers play more frequently than those using any other form of gambling, apart from lotto. Out of the total number of EGM gamblers, 37 per cent played at least monthly, and 50 per cent played less than monthly but more than yearly.

4.4 Racing and Wagering

In 2002-03, there were over half a million recorded visits to South Australian racetracks (see Table 4.6). Of these, 59 per cent were to thoroughbred meetings, 31 per cent to harness meetings, and 10 per cent to greyhound meetings. Not surprisingly, most visits (68 per cent) were to racetracks in the Adelaide metropolitan area or outer Adelaide.

Table 4.6
South Australian Racetracks – Number of On-Course Customers – 2002/03

Region	Thoroughbred	Harness	Greyhound	Total	Per cent
Adelaide Metro	102,000	78,645	28,100	208,745	38.7
Outer Adelaide	138,892	11,800	9,990	155,192	28.8
Northern Region	5,418	66,266	5,910	77,594	14.4
South East Region	22,325	5,756	4,500	32,581	6.0
Yorke & Lower North	21,790	3,000	600	25,390	4.7
Murray Lands	15,000	0	3,000	18,000	3.3
Eyre Region	13,825	2,166	0	15,991	3.0
Total	319,250 (59.2%)	167,633 (31.1%)	52,100 (9.7%)	538,983 (100.0%)	

Source: IER, *Size & Scope of South Australian Racing Industry* (2004).

The figures in Table 4.6 are for the total number of visits, but this gives no indication of the number of racegoers who made those visits. For that we must turn to the Australian Bureau of Statistics, which conducts a 'General Social Survey' every few years, and asks participants if they attended particular sports in the previous 12 months (ABS, *Sports Attendance*, 2002). The most recent surveys were conducted in 2002, 1999 and 1995. The resulting estimates for

thoroughbred racing attendance are reproduced in Table 4.7, for harness racing in Table 4.8, and for greyhounds in Table 4.9.

Table 4.7
Persons Attending Thoroughbred Racing – By State and Territory – 1995, 1999 and 2002

	Persons ('000)			Attendance Rate (% of Adult Population)		
	1995	1999	2002	1995	1999	2002
South Australia	**121.4**	**113.1**	**98.9**	**11.0**	**10.2**	**8.7**
New South Wales	528.5	571.0	594.1	11.7	12.6	12.1
Victoria	443.8	482.0	577.7	13.2	14.3	15.8
Queensland	307.5	300.2	359.4	12.9	12.6	13.3
Western Australia	142.8	152.0	163.8	11.4	12.1	11.5
Tasmania	41.3	39.1	31.4	12.0	11.4	9.1
Australia[a]	1,632.2	1,698.8	1,865.2	12.3	12.8	12.9

Note: [a] Includes Northern Territory and ACT.
Source: ABS, *Sports Attendance,* 2002 (Cat. No. 4174.0).

Table 4.7 shows that attendance at thoroughbred racing in South Australia has been experiencing a slump that has not been apparent across the country. In fact, national attendance has been rising since 1995 (led largely by the increase in Victoria from 443,800 persons in 1995 to 577,700 in 2002). Thoroughbred Racing SA consider that EGMs have not directly had an impact on attendances, but that the major reason to explain falling attendances is "poor customer facilities". In Victoria, under a Joint Venture Agreement (JVA) with Tabcorp (Vic), the joint venture of thoroughbred racing, harness and greyhound racing receive 25 per cent of the profit from Tabcorp's wagering and gaming activities. Tabcorp's distribution to the three codes in 2002-03 was Racing Victoria $171.1m (72 per cent), harness racing $40.6m (17 per cent) and greyhound racing $28.0m (11 per cent). One important effect of the JVA is that it has encouraged each code to be more commercial and wagering-focussed as possible in order to increase their revenue share. According to TRSA, the funding model in South Australia "has not enabled prize money and investment in facilities to keep up with other States". It is also likely that investment in hotel facilities and TAB facilities (standalone and in hotels) have provided improved customer comforts, further impacting on racing attendances.

Table 4.8
Persons Attending Harness Racing – By State and Territory – 1995, 1999 and 2002

	Persons ('000)			Attendance Rate (% of Adult Population)		
	1995	1999	2002	1995	1999	2002
South Australia	**59.3**	**40.0**	**48.1**	**5.4**	**3.5**	**4.2**
New South Wales	137.3	144.3	162.6	3.0	3.0	3.3
Victoria	164.7	157.0	155.8	4.9	4.4	4.3
Queensland	61.0	42.1	36.1	2.6	1.6	1.3
Western Australia	106.7	102.2	90.0	8.5	7.5	6.3
Tasmania	16.8	18.3	10.0	4.9	5.3	2.9
Australia[a]	553.3	508.4	508.3	4.2	3.6	3.5

Note: [a] Includes Northern Territory and ACT.
Source: ABS, *Sports Attendance,* 2002 (Cat. No. 4174.0).

Tables 4.8 and 4.9 show that attendance at harness and greyhound racing events has declined in South Australia since 1995. In both cases, this seems to be part of a national trend, with Australia-wide numbers and participation rates falling steadily from 1995 to 2002.

It may well be the case that, in an environment of ever-increasing choice in gambling and entertainment, harness and dog racing will find it harder to market their activities, and will continue to decline. However, in a couple of States they managed to buck the trend: in New South Wales, harness attendance increased by 18 per cent between 1995 and 2002, and in Victoria, greyhound attendance increased by 37 per cent over the same period.

Table 4.9
Persons Attending Dog Racing – By State and Territory – 1995, 1999 and 2002

	Persons ('000)			Attendance Rate (% of Adult Population)		
	1995	1999	2002	1995	1999	2002
South Australia	**15.4**	**19.5**	**13.3**	**1.4**	**1.7**	**1.2**
New South Wales	93.1	89.4	60.2	2.1	1.9	1.2
Victoria	55.4	53.8	75.9	1.6	1.5	2.1
Queensland	46.8	31.7	21.0	2.0	1.2	0.8
Western Australia	53.0	49.9	52.0	4.2	3.7	3.7
Tasmania	10.2	9.9	6.0	3.0	2.9	1.7
Australia[a]	280.0	258.0	232.3	2.1	1.8	1.6

Note: [a] Includes Northern Territory and ACT.
Source: ABS, *Sports Attendance*, 2002 (Cat. No. 4174.0).

Of course, a large proportion of racetrack gambling is done off-course at the TAB or via the telephone or internet. So even if racetrack attendance is falling in South Australia, it does not necessarily mean that participation in racetrack gambling is declining. As discussed in Chapter 3, racetrack gambling expenditure on a per capita basis, in real terms, has essentially remained flat over the past 25 years (Figure 3.7). There has been some year-to-year volatility, but per capita expenditure has stayed in a band of roughly $90 to $120 (expressed in 2003-04 dollars) over this period.

Recent South Australian surveys found that between 15 and 20 per cent of adults had bet on a horse or greyhound race in the previous 12 months (see Table 4.10). Applying the 2004 Health Department survey figure to ABS population estimates for 2003-04, would give a figure of 181,000 persons gambling on a race in the past year.

Table 4.10
Percentage of Adult Population Who Participated in Racetrack Gambling in Past 12 Months

	Productivity Commission		CPSE	Department of Health		
	Australia 1999	SA 1999	SA 2001	SA 2002	SA 2003	SA 2004
Bet on Horse or Greyhound Race	24	19	16.1	19.6	18.2	15.3
On-course	13	8	-	-	-	-
Off-course	19	16	-	-	-	-
By Telephone	3	3	-	-	-	-

Note: Sample sizes were as follows: Productivity Commission 10,500 nationally and 1,000 in SA; CPSE 6,045; Health Department 2005, 2009 and 2012 in years 2002, 2003 and 2004 respectively. All surveys measured the adult population (18 years and over).
Source: Productivity Commission (1999), CPSE (2001) Table 4.1, and Delfabbro (2005) Figure 7a.

The CPSE report identified the following characteristics of the racetrack gambler at a statistically significant level:

- a strong bias towards males (the proportion of males to females was almost 2:1);
- higher prevalence in the 25 to 34 age bracket, and lower prevalence in the over 65 brackets; and
- a lower prevalence in persons born outside Australia, the UK or Ireland.

These characteristics were also reported in the researcher's profile of wagering in Victoria (*Changes in Wagering Within the Racing Industry,* SACES 2004).

The average frequency of racetrack gambling is less than the frequency of gambling on EGMs and lottery products. From the CPSE survey, 27 per cent of racetrack gamblers wager at least monthly, 34 per cent less than monthly but more than yearly, and 39 per cent only once a year (presumably in most cases on a major event such as the Melbourne or Adelaide Cups).

4.5 Lotteries

Recent surveys indicate that around three-fifths of South Australians play lotto at least once per year; about a third buy instant scratch tickets; and around one in eight play Keno (see Table 4.11). Participation rates appear stable.

As discussed in Chapter 3, the traditional lotto games still attract the bulk of the expenditure in South Australia: an average of $74 per capita in 2003-04, compared to $11 for instant lottery and $10 for Keno.

Table 4.11
Percentage of Adult Population Who Played Lottery Games in Past 12 Months

	Productivity Commission		CPSE	Department of Health		
	Australia 1999	SA 1999	SA 2001	SA 2002	SA 2003	SA 2004
Played Lotto	60	55	61.2	60.6	55.1	61.0
(Weekly)	57	54	-	-	-	-
(Daily)	12	8	-	-	-	-
Bought Instant Lottery	46	32	32.1	37.9	33.3	32.8
Played Keno	16	14	10.7	13.4	11.4	12.6

Note: Sample sizes were as follows: Productivity Commission 10,500 nationally and 1,000 in SA; CPSE 6,045; Health Department 2005, 2009 and 2012 in years 2002, 2003 and 2004 respectively. All surveys measured the adult population (18 years and over).
Source: Productivity Commission (1999), CPSE (2001) Table 4.1, and Delfabbro (2005) Figure 7a.

The CPSE and Health Department surveys show no significant gender difference for lotto participation rates. However, there is a significant bias towards females for instant lottery, and a significant bias towards males for Keno.

A significantly lower proportion of 18-24 year olds play lotto, but a significantly higher proportion in that bracket play instant lottery and Keno.

It is apparent from the Productivity Commission and CPSE reports that almost all those who play lotto do so on a regular weekly basis. But only about 10 per cent of instant lotto and Keno gamblers play once a week; the majority in both cases do so less than once a month.

4.6 Casino

Only a small minority of South Australians play table games at the casino. Survey data suggests the participation rate is between 5 and 7 per cent (see Table 4.12). It is likely that many more people visit the casino to play electronic gaming machines: this was estimated at 18 per cent of the population in 1999 (see Table 4.4).

Table 4.12
Percentage of Adult Population Who Played Casino Table Games in Past 12 Months

	Productivity Commission		CPSE	Department of Health		
	Australia 1999	SA 1999	SA 2001	SA 2002	SA 2003	SA 2004
Played Table Games at Casino	10	7	4.9	6.9	6.9	5.9

Note: Sample sizes were as follows: Productivity Commission 10,500 nationally and 1,000 in SA; CPSE 6,045; Health Department 2005, 2009 and 2012 in years 2002, 2003 and 2004 respectively. All surveys measured the adult population (18 years and over).
Source: Productivity Commission (1999), CPSE (2001) Table 4.1, and Delfabbro (2005) Figure 7a.

Table game participation has a strong gender bias. In the CPSE survey, male table game players outnumbered female players by over 3:1. There was also significantly higher participation in the younger age brackets (18-24 and 25-34 years old).

Those who play table games do so infrequently. In the CPSE survey, 87 per cent of table gamers played less than once per month. Only 8 respondents (out of a survey of 6,045 persons) admitted to playing table games on a weekly basis.

5. Employment in the Gambling Industry

Terms of Reference

- Analyse trends in employment in various sectors of the gambling industry.

5.1 Introduction

This chapter provides data on the current level of employment in South Australian gambling industries (see Box 5.1), and also comments on trends in gambling employment.

Box 5.1: Summary

The introduction of electronic gaming machines into South Australian hotels and clubs is associated with a rise in employment in that sector of roughly 5,000 to 6,000 jobs. However, the researchers estimate that a very significant component of this job growth has come from job-switching from other sectors.

Measured on an average per capita basis, the proportion of the workforce employed in "cafes and restaurants" in South Australia and Western Australia was 0.64 and 0.72 per cent respectively in the period 1985 to 1993, just prior to EGMs. The difference widened significantly since EGMs were introduced (South Australia 0.84; Western Australia 1.12 per cent) over the period 1994 to 2005. Using Western Australia as a comparative yardstick, South Australian hotel and club jobs have come at the expense of perhaps around 4,000 jobs in the café and restaurant sector.

Job intensity associated with EGM gambling in Australia is quite low at 3.2 jobs per $1 million of gambling income, compared to 8.3 jobs per $1 million from sales of liquor and beverages, and 20.2 jobs per $1 million of takings from food and meals.

By comparison, as measured by the ratio of job intensity to income, the retail sector in Australia employs 6.5 persons per $1 million of income or twice that of the gambling sector.

Almost 25,000 people are involved in the South Australian racing industry. Many of these people participate on a part-time, casual or voluntary basis. The number of full-time equivalent (FTE) jobs is approximately 2,100 as estimated by the researchers and not 3,500 as estimated by studies commissioned by the industry. Average salaries are relatively low.

SA Lotteries directly employs 80 people and, on a full-time equivalent basis, the SkyCity casino employs almost 900 people. Salaries in both sectors are average or above average.

It must be noted from the outset that there are inherent difficulties in analysing employment in some sectors of the industry. The major problem is that some jobs cannot be isolated as purely related to gambling – they involve other industries as well. For example, how do we classify retail workers in a newsagent, who sell lottery and keno tickets along with a variety of newsagent products? Should they be considered to be working in the gambling industry? If lotteries ceased, the profitability of newsagents would decline, and some would undoubtedly reduce their workforce, but there is no way of knowing how many jobs would be lost. So when we provide figures on employment related to lotteries, we can only include those who work directly for SA Lotteries.

Another major problem is that, while we do have reliable current figures, historical figures are not available for some sectors of the industry. We can provide detailed figures on current employment at the racetrack and the casino, but cannot show how they changed over time (as we have done elsewhere in this report with expenditure data).

The starting point for any discussion of employment would normally be the Census conducted by the Australian Bureau of Statistics at five-year intervals. The two most recent were held in 1996 and 2001. The Census is an actual count of the entire Australian population at a moment in time; it therefore avoids the problems associated with surveys that extrapolate from a limited sample of the population.

However, the researchers have significant concerns about the reliability of Census employment figures, particularly those related to electronic gaming machines. EGM employment, as with lottery-related employment discussed above, is difficult to directly quantify. One measure is to analyse employment numbers in the hotel and club sector since EGMs appeared. However, hotel and club employment figures in the most recent Census are far too low to be believable, and they do not reconcile with figures from other ABS publications and other sources. The researchers will therefore not rely on Census data for gambling-related employment.

We will now examine employment in each sector in turn.

5.2 Electronic Gaming Machines

Under the *Gaming Machines Act 1992*, persons who work in the gaming machine sector must be approved by the Office of the Liquor and Gambling Commissioner (OLGC). They are classified as gaming managers or gaming employees, depending on their level of responsibility. According to the OLGC, the number of approved persons changes frequently, and they cannot provide historical data. The number as at 22 September 2005 is shown in Table 5.1.

Table 5.1
South Australia – Approved Gaming Machine Employees and Managers – as at 22 September 2005

	Gaming Managers	Gaming Employees	Total
Hotels	3,672	1,169	4,841
Clubs	644	78	722
Total	4,316	1,247	5,563

Source: Office of the Liquor and Gambling Commissioner, unpublished data.

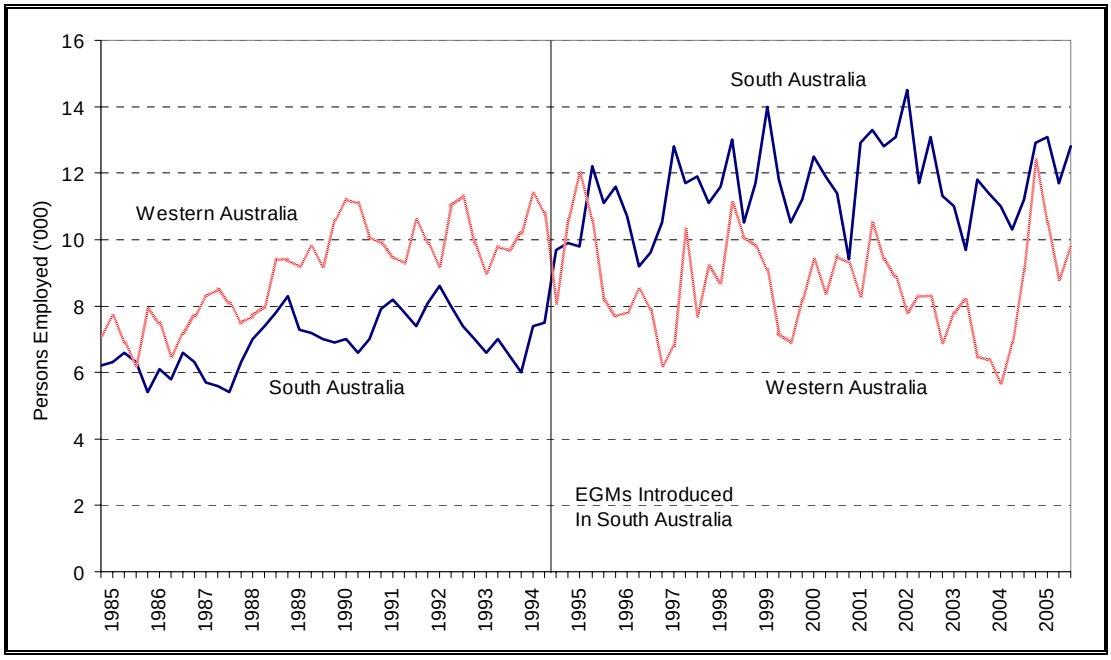
An OLGC approval is a licence. It should not be assumed that it represents a job that would not exist but for the gaming industry. Some of these managers and employees will hold other functions in hotels and clubs, and their jobs would certainly not disappear if EGMs were removed.

One way to gauge the impact of EGMs on employment is to compare employment trends in those sectors that operate gaming venues in South Australia with the corresponding sectors in Western Australia, where EGMs are not permitted (outside the casino).

Figure 5.1 shows quarterly estimates of total employment in hotels, taverns, bars and clubs for South Australia and Western Australia from the November quarter 1984 to the August quarter 2005, taken from the Labour Force Survey. There is large variation from quarter to quarter, which would largely reflect sampling variability associated with the fact that the data are derived from a sample of the population, meaning the sample estimate may differ from the true population value. For this reason, changes from quarter to quarter should be treated with caution, and not interpreted literally. However, despite the 'noise' in the data, longer terms trends in the data should be indicative of actual changes.

Employment in hotels, taverns, bars and clubs in Western Australia essentially remained flat from 1984 to 2005. An important point to note is that up to 1994 total employment in both States tracked each other, again with some 'noise' from quarter to quarter. However, employment in SA venues rose strongly around the time EGMs were introduced, and remained at a significantly higher level thereafter. It appears, therefore, that the introduction of EGMs did provide a boost to employment in hotels, taverns, bars and clubs in South Australia.

Figure 5.1
Total Employment in Hotels, Taverns, Bars and Clubs:
South Australia and Western Australia, 1985 - 2005



Source: ABS, *AusStats*, Labour Force (Cat. No. 6291.0).

The quarterly variation apparent in Figure 5.1 can be minimised by averaging each four quarters into annual figures. The compound annual growth rate of hotel and club jobs can then be calculated for each State. The figures are presented in Table 5.2 for the eight-year period before EGMs appeared in South Australia (1985-1993) and from the year before EGMs to the present day (1993-2005).

As Table 5.2 shows, from 1985 to 1993 there was very modest job growth in the South Australian hotel and club sector: an average of 0.7 per cent per annum. This reflects the general economic performance of the sector in the pre-EGM period. It was suffering from the effects of the recession of the early 1990s and the introduction of tougher drink-driving laws in 1992. The financial viability of many hotels and clubs was under pressure.

Table 5.2
Total Employment in Hotels, Taverns, Bars and Clubs: South Australia and Western Australia
Compound Annual Growth Rate (CAGR), Per cent

	1985-1993	1993-2005
South Australia	0.7	5.6
Western Australia	3.8	0.0

Source: ABS, *AusStats*, Labour Force (Cat. No. 6291.0) and calculations by the researchers.

EGMs transformed the financial landscape of the industry. The average rate of job growth jumped to an impressive 5.6 per cent per annum over the post-EGM period. There is no plausible explanation for such a strong improvement other than EGMs.

Current employment in this sector is roughly 12,500 (the average of ABS labour force survey figures for the first three quarters of 2005). If employment had followed the 1985-1993 growth rate of 0.7 per cent through to the present day, there would be approximately 7,100 persons working in the sector. The difference – 5,400 jobs – must be considered largely attributable to EGMs.

It is also worth noting that, over the 1993 to 2005 period, the Western Australian hotel and club sector had virtually zero job growth while it was rising so fast in South Australia. We are not aware of any significant differences between the hotel and club industries of the two States – apart from the presence of EGMs.

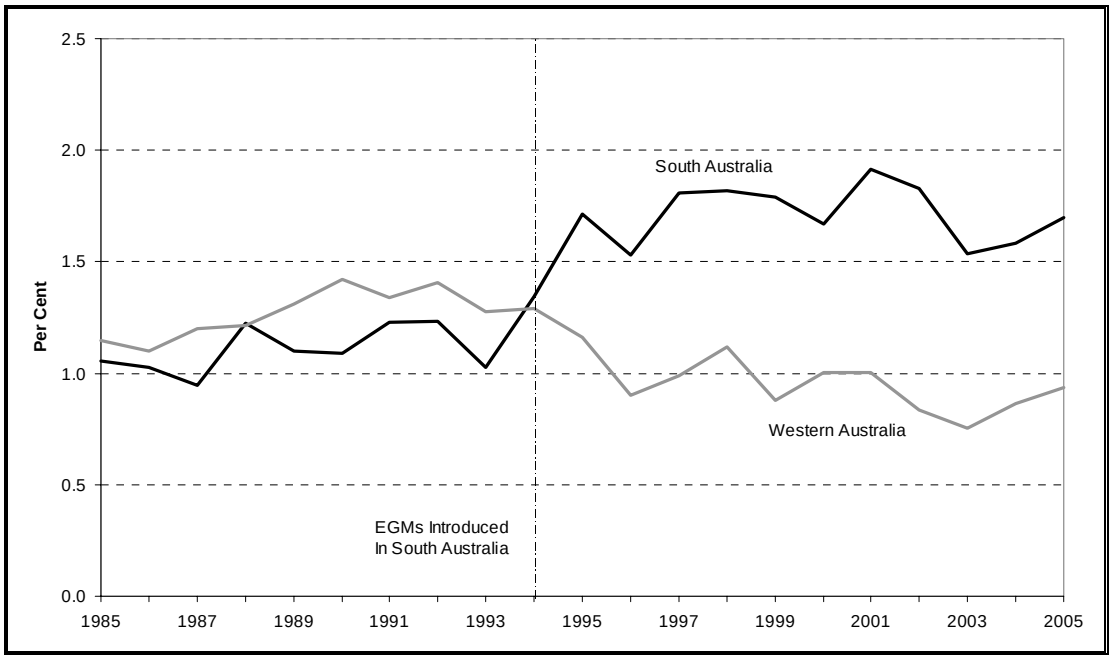
An econometric model of employment growth is provided in Phase 2. It forecasts changes in employment based on the trend up to the introduction of EGMs. This forecast can be compared to the actual current figure to give an indication of the effect of EGMs. This model suggests that an upper figure of 6,000 South Australian hotel jobs may be attributable to EGMs.

A much more complicated economic model, requiring a range of explanatory variables, would be necessary to draw firm conclusions and arrive at a more precise figure. Nevertheless, the researchers believe that, given the limitations of the data, our estimate of around 5,400 to 6,000 EGM-related jobs is reasonable.

The different employment outcomes for South Australia and Western Australia due to EGMs is further illustrated in Figure 5.2, which shows the share of total State employment in hotels, taverns, bars and clubs. In Western Australia the sector's share fell steadily from 1993 onwards, due to flat employment in the sector and strong employment growth in other sectors of the economy. In contrast, the sector's share of total South Australian employment rose from 1.0 per cent in 1993 to 1.6 per cent in 2004.

Gaming machine advocates may consider the extra employment in South Australian hotels and clubs to be an unambiguous economic benefit of the introduction of EGMs. However, it is important to consider where these jobs came from. Economic theory suggests that the introduction of new products will not necessarily lead to an increase in the total number of jobs in the economy. Rather, the new jobs may come at the expense of jobs in other industries as consumer demand and investment move from old sectors to the new one. In other words, jobs are simply shifted from one sector to another.

Figure 5.2
Hotels, Taverns, Bars and Clubs: South Australia and Western Australia
Share of Total Employment (Per cent)



Source: ABS, AusStats, Labour Force (Cat. No. 6291.0).

The State Government was well aware of this before EGMs were introduced. In 1991 the Government prepared for Parliament an options paper on EGMs. Undoubtedly reflecting the views of State Treasury, the paper stated that it was necessary to "sound a note of caution against claims that the introduction of gaming machines will 'create jobs' or otherwise have a beneficial effect on the South Australian economy. … The ultimate effect may be positive, negative or neutral depending on what forms of expenditure people forego in order to play the gaming machines."[23] If gaming machine manufacturers resided in South Australia and exported gaming machine products interstate and to overseas destinations, then the claim of 'net job creation' may have greater substance as contracts were signed, production increased and exports rose. However, this is not the case for South Australia.

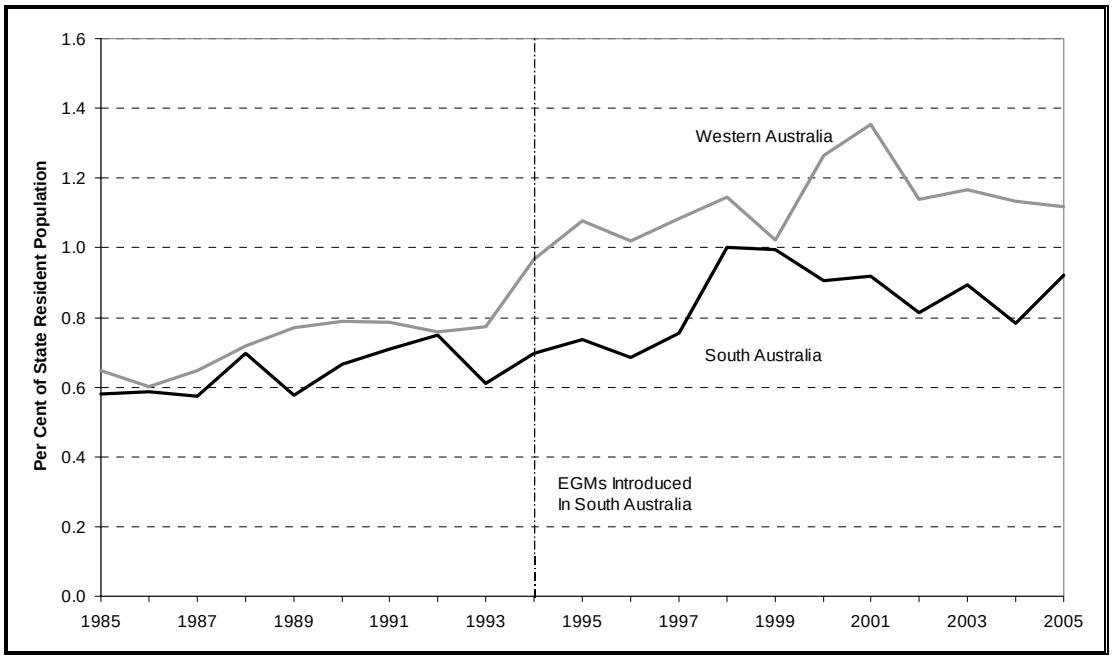
To assess the net effect of EGMs on jobs, we may compare job growth in other industry sectors in South Australia and Western Australia. A prime candidate would be the café and restaurant sector, which has considerable overlap with hotels and clubs. Café and restaurant services are arguably the closest economic substitutes for hotel and club services. Figure 5.3 shows their employment levels (full-time and part-time combined) in South Australia and Western Australia on a per capita basis.

A lower percentage of the South Australian population work in cafés and restaurants than in Western Australia. This difference has widened significantly since EGMs appeared in South Australia.

Average per capita figures for each State, pre- and post-EGMs, are given in Table 5.3. The figures may seem small, but it should be kept in mind that the resident population of South Australia is around 1.5 million, so even 0.1 per cent per capita represents 1,500 jobs.

[23] Government of South Australia (1991), *The Introduction of Coin Operated Gaming Machines into Licensed Clubs and Hotels in South Australia: An Options Paper,* unpublished paper, p 44.

Figure 5.3
Employment in Cafés and Restaurants, 1985-2005: South Australia and Western Australia
Per Capita



Source: ABS, *AusStats*, Labour Force.

Table 5.3
South Australia and Western Australia –Employment in Cafés and Restaurants
Average Per Capita

	South Australia (Per cent)	Western Australia (Per cent)
Average 1985 to 1993 (**Before** EGMs Introduced in SA)	0.6	0.7
Average 1994 to 2005 (**After** EGMs Introduced in SA)	0.8	1.1

Source: ABS, *AusStats*, Labour Force.

Measured on an average per capita basis, the proportion of the workforce employed in "cafes and restaurants" in South Australia and Western Australia was 0.6 and 0.7 per cent respectively in the period 1985 to 1993, just prior to EGMs. The difference widened significantly since EGMs were introduced (South Australia 0.8; Western Australia 1.1 per cent) over the period 1994 to 2005. Using Western Australia as a comparative yardstick, South Australian hotel and club jobs have come at the expense of some 4,000 jobs in the café and restaurant sector. In other words, the South Australian café and restaurant sector would have employed around 4,000 extra staff per year if its per capita average employment, post-EGMs, had matched that of the Western Australia café and restaurant sector.

Of course, this does not prove that the lower performance of the South Australian café and restaurant sector in generating jobs is due, wholly or partially, to EGMs. But some degree of job switching from the café and restaurant sector to the hotel and club sector is very likely in our assessment.

Jobs in other sectors may also have been affected by EGMs. One possibility is the retail trade sector. As Figure 5.4 shows, in Western Australia there has historically been a slightly higher percentage of the population working in the retail trade sector than in South Australia. This gap widened marginally after EGMs appeared in South Australia. There may have been an element of job switching from the retail trade sector as a result of EGM expenditure displacing consumer spending. However, we would not assert this with any degree of certainty, given that we have found elsewhere in this report that there is no evidence EGMs had a significant negative impact on general household spending.

Figure 5.4
South Australia and Western Australia – Employment in Retail Trade Sector – Per Capita

Source: ABS, *AusStats*, Labour Force (Cat. No. 6291.0).

One important characteristic of the EGM sector is that its job intensity is quite low. This is as a result of the specific features of the design of gambling equipment and venues. EGMs are highly reliable, electronic based computers, in standalone facilities (in fact, they are located in restricted gaming areas) with minimum interaction between staff and patrons through the introduction of note exchangers/coin dispenser machines, self-service ATMs, self-service facilities for tea/coffee. Often, players themselves do not like to be interrupted or to engage with others. The point is, virtually the entire gaming experience can be designed to minimise labour inputs and contact with others.

Table 5.4 shows employment by occupation and income by source for all Australian hotels, taverns, bars and clubs in 2000-01 (data are not available on a State basis). By attributing certain occupations to income earned from particular sources, one can derive estimates of the job intensity of particular activities. In this case, earnings from the sale of liquor and other beverages have been attributed to bar managers and bar staff, earnings from gambling income to gaming staff and cashiers, and takings from meals and food sales to catering staff. While the estimates are not precise due to the nature of the data and simplified methodology used (e.g., staff may perform more than one activity), they should nevertheless provide a useful indication of the relative job intensity of particular venue activities.

Table 5.4
Australia – Hotels, Taverns, Bars and Clubs – Jobs per $million of Income – 2000-01

	Venues with gambling facilities	Venues without gambling facilities
Occupation of persons employed:		
Managers and admin staff	13,922	2,650
Bar managers and staff	49,064	11,865
Gaming staff and cashiers	18,866	-
Catering staff	23,125	4,486
Other	21,356	3,815
Total	126,332	22,816
Sources of total income ($ million):		
Sale of liquor and other beverages	5,855	1,203
Gambling income	5,957	-
Takings from meals and food sales	1,145	227
Other	689	198
Total	13,676	1,628
Persons employed per $million of income:		
Sale of liquor and other beverages	8.3	9.9
Gambling income	3.2	-
Takings from meals and food sales	20.2	19.7

Source: ABS, *Clubs, Hotels, Taverns and Bars, Australia* (Cat. No. 8687.0).

Table 5.4 suggests that gambling activities in the hospitality industry are not as job intensive as other activities. For venues with gambling facilities, there were 3.2 jobs per $million of gambling income, compared with 8.3 jobs per $million income from sales of liquor and other beverages, and 20.2 jobs per $million income from meals and food sales.

This potentially understates the contribution of gambling to employment in hotels and clubs since revenue from EGMs has enabled many venues to improve their facilities and services, which may in turn have increased their patronage and boosted employment related to food and beverages.

Nonetheless, that job intensity associated with EGM expenditure is low remains a significant finding. This is because, as noted above, analysis of the benefits of gambling should take into account the jobs lost due to expenditure diverted from other activities. If expenditure is diverted from high job-intensity activities to low job-intensity activities, ultimately the net impact on employment of EGM expenditure may be negative.

The Australian Bureau of Statistics survey of retail industries shows that the Australian retail industry employed 6.5 persons per $1 million of income in 1998-99, which is considerably higher than the job intensity associated with gambling in hotels, taverns, bars and clubs.

5.3 Racing and Wagering

The South Australian Office for Racing commissioned IER Pty Ltd to prepare a report, *Size and Scope of South Australian Racing Industry* (June 2004). It contains figures for the number of participants in the racing industry, and the number of full-time equivalent (FTE) jobs created.

Participant figures, extracted from the IER report, are provided in Table 5.5. It should be noted that these figures include those involved in the racing and wagering industries on a full-time, part-time, casual, or voluntary basis. It should also be noted that there may be some level of duplication – individuals participating in two or more categories or owners of horses who reside interstate – although IER state that they made every effort to avoid double-counting.

Table 5.5
Participation in Racing and Wagering in South Australia – 2004

Participant Type	Thoroughbred	Harness	Greyhound	Total
Breeders	642	800	158	1,600
Breeders Staff	96	75	0	171
Syndicate Members	920	720	200	1,840
Owners[a]	10,837	1,865	432	13,134
Trainers	349	480	499	1,328
Stablehands	809	240	0	1,049
Farriers	24	8	0	32
Float Operators	3	3	0	6
Owner/Attendants	0	0	165	165
Total Producing Racing Animals	**13,680**	**4,191**	**1,454**	**19,325**
On-Course Wagering Staff	393	46	27	466
Off-Course TAB Staff	316	68	51	434
Bookmakers Assistants	288	44	22	354
Bookmakers	29	12	10	51
Jockeys	37	0	0	37
Apprentice Jockeys	16	0	0	16
Drivers	0	314	0	314
Club Secretaries	26	12	10	48
Committee Members	308	104	93	505
Full-Time Staff	126	15	26	167
Part-Time & Contractors	1,843	195	105	2,143
Volunteers	818	92	58	968
Race Day Doctors & Vets	55	12	8	75
Total Race Clubs & Racedays	**4,255**	**914**	**410**	**5,579**
Total Participants	**17,935**	**5,105**	**1,864**	**24,904**

Note: [a] Includes all owners who hold a share in a racehorse, interstate owners.
Source: Office for Racing, *Size and Scope of South Australian Racing Industry*, p. 10.

The participation figures do not tell us much about the economic impact of the racing industry. It is difficult to quantify the economic benefit derived from volunteer participation. The economic impact of part-time or casual employment is best appreciated by aggregating figures into full-time equivalents (FTEs). Table 5.6 provides FTE figures calculated by IER.

The salaries and wages generated by the racing industry are provided in Table 5.7.

Table 5.6
FTE Employment Generated by Racing – 2004

	Thoroughbred		Harness		Greyhound		Total	
	Direct	Total	Direct	Total	Direct	Total	Direct	Total
Racing	871	1,338	325	499	124	192	1,320	2,029
Wagering	647	989	147	224	141	215	934	1,428
Total	1,518	2,327	472	723	264	407	2,254	3,457

Source: Office for Racing, *Size and Scope of South Australian Racing Industry*, p. 12.

Table 5.7
Wages and Salaries Generated by Racing – 2004 ($ million)

	Thoroughbred		Harness		Greyhound		Total	
	Direct	Total	Direct	Total	Direct	Total	Direct	Total
Racing	21.4	37.3	8.0	13.9	3.1	5.3	32.5	56.5
Wagering	15.5	27.4	3.5	6.2	3.4	6.0	22.3	39.6
Total	36.9	64.7	11.5	20.2	6.4	11.3	54.8	96.1

Note: Some figures may not precisely add to total due to rounding.
Source: Office for Racing, *Size and Scope of South Australian Racing Industry*, p. 12.

A significant proportion of the participation in Table 5.5 and employment in Table 5.6 would actually be generated by racing in other States. This would be the case with TAB jobs, since most of the betting on the South Australian TAB is on interstate races. Some of the employment generated by South Australian owners and breeders would also ultimately be dependent on interstate racing. The researchers do not have the data to quantify this effect, but it must be kept in mind when considering State racing industry employment.

Dividing total salary payments by FTEs, we find that the average salary in 2004 was $27,788 in thoroughbred racing, $27,879 in harness racing, and $27,742 for greyhound racing. The average across the three codes was $27,802.

By comparison, the Australian Bureau of Statistics estimated South Australian 'AWOTE' (average weekly ordinary time earnings) as $877.90 in May 2004, equating to annual income of $45,651 (ABS 6302.0 Average Weekly Earnings, Australia). On this basis, we estimate full-time equivalent employment at around 2,100 people (much less than the 3,457 provided in Table 5.6 by IER study). However, it may be this industry has lower than average full-time salaries, say at $33,000 a year, and this would imply 2,900 full-time equivalent people employed but still lower than the IER study. On balance, it is a reasonable assumption that racing and wagering is a relatively low wage industry and that the IER report overstates the extent of full-time employment in the industry.

Further, the SACES report on "Changes in Wagering within the Racing Industry"[24] was critical of the IER study on the Size and Scope of the Australian Thoroughbred Racing Industry (2001) in overstating the economic impacts of racing on the Australian economy. The same criticisms apply in the recent study on the industry in South Australia in estimating the 'economic impacts' of the racing industry. Suffice to say:

> "the primary source of value of the racing industry to the [South] Australian economy is in terms of the enjoyment provided to the viewers, punters and racing participants that is in addition to the enjoyment they could obtain from any other source of entertainment, and is not in terms of employment and economic activity. Secondary is a potential 'economic impact' from additional international tourism or perhaps import replacement ... it only makes sense to measure the 'economic impact' resulting from international tourism [and to South Australia from interstate] related to racing, not general spending by local consumers (i.e., if the racing industry didn't exist [South] Australians would enjoy their leisure time and expenditure in other ways)". ("Changes in Wagering Within the Racing Industry", pp. 27-28).

[24] Prepared for the Victorian Gambling Research Panel, May 2005. See pages 24-28 of that report.

It is also difficult to discuss employment trends over time in the racing industry, due to a lack of historical data. The only category for which it is available is that of bookmakers and their agents, which is shown in Table 5.8. It is clear that employment in this sector has been steadily declining over the past 10 years, which corresponds with the steady fall in expenditure on bookmakers discussed in Chapter 3.

Table 5.8
South Australia – Licensed Bookmakers and Agents – 1995 to 2005[a]

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Bookmakers	58	51	45	45	46	42	37	37	37	38	35
Agents	572	534	na	na	na	na	na	302	322	310	241

Note: [a] Figures as at 30 June of each year.
Source: Office of the Liquor and Gambling Commissioner.

5.4 SA Lotteries

Recent employment figures for SA Lotteries are presented in Table 5.9. Historical data are not readily available. However, data from SA Lotteries Annual Reports indicate that total direct employees have fallen over the last 4 years, from 95 employees in 2000-01 to 80 in 2004-05.

The average wage in the gaming and wagering sector is highest for lotteries where employment is categorised as professional and administration and is mostly full-time. Part-time and casual employment are significant components in all other sectors of gaming and wagering.

Table 5.9
South Australia – SA Lotteries – Employment – Financial Year

Year	Number of Employees	Full-Time Equivalents	Total Wages 2003-04	Average Wage / FTE
2003-04	80	77.4	$5,484,000	$70,853
2004-05	80	77.2	$5,332,000	$69,067

Source: Lotteries Commission of South Australia, *Annual Report, 2003-04* and *2004-05*.

5.5 The casino

Recent employment figures for SkyCity casino are presented in Table 5.10. Historical data are not readily available.

Table 5.10
South Australia – SkyCity Casino – Employment – 2005[a]

Number of Employees	Full-Time Equivalents	Total Wages 2004-05	Average Wage / FTE
1400	878	$38,700,000	$44,077

Note: [a] Employee numbers as at 22 September 2005. FTEs as at 30 June 2005.
Source: Office of the Liquor and Gambling Commissioner and SKYCITY Adelaide Pty Ltd.

6. Impact of Gambling on Non-gambling Expenditures

Terms of Reference

- An analysis of the extent to which people have switched their expenditure from *non-gambling recreational* activities to *gambling* (both generally and for specific types of gambling).

6.1 Introduction

It is often claimed that gaming machine expenditure has a negative effect on household spending, which impacts on retail trade, and particularly harms small business. In a submission to the Productivity Commission inquiry into gambling, the Australian Retailers Association warned, "Spending on gambling continues to impact negatively on traditional areas of retailing expenditure and continues to place great strain on the viability of many once profitable businesses."[25] In 1999, the Local Government Association conducted a survey of South Australian councils relating to EGMs, and 65 per cent observed a "medium to high" negative impact on local businesses.[26]

Box 6.1
Summary

Opponents of electronic gaming machines are known to claim that they have had a detrimental impact on retail trade and small businesses. However, when the figures for household consumption expenditure (non-gambling) are examined, the introduction of EGMs had no noticeable impact. That is not to say, that there may be some isolated situations where a particular business establishment has not felt some impact.

Data from the household expenditure survey (HES) was also analysed, despite concerns about the reliability of the data. Spending patterns in South Australia and Western Australia were compared to check for any significant difference that might be attributable to EGMs, but no such difference was observed.

6.2 Effect of the Introduction of EGMs on Household Spending

If EGMs have a significant effect on household spending, it should be noticeable in the national accounts prepared by the Australian Bureau of Statistics. In particular, it should show up in the figures for Household Final Consumption Expenditure (HFCE), which measures "current expenditure by households and non-profit institutions serving households".

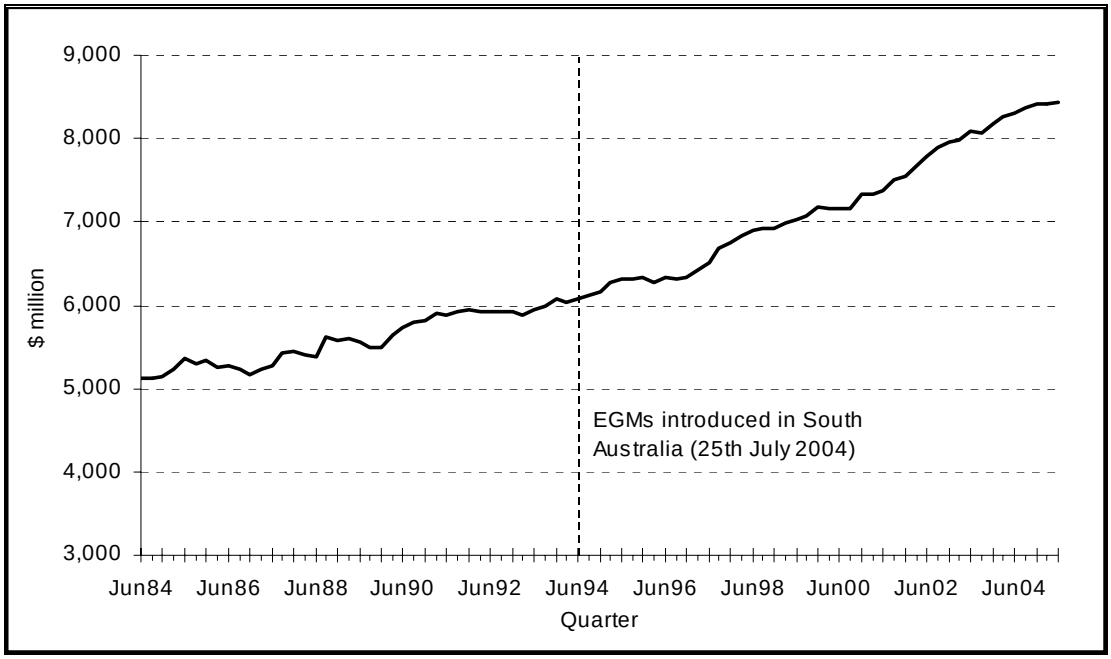
HFCE figures are available for each State and Territory, and are broken down into 12 categories.[27] The category 'Recreation and Culture' includes gambling expenditure. Figure 6.1 charts real HFCE, minus 'Recreation and Culture', in South Australia since 1983. EGMs were introduced in June 1994, but it is not apparent from data summarised in Figure 6.1 that they had any significant effect on household spending in non-gambling categories.

[25] Australian Retailers Association, *Submission to Productivity Commission Australia's Gambling Industries Inquiry* (November 1998), available at http://www.pc.gov.au/inquiry/gambling.

[26] Independent Gambling Authority, *Report of the Inquiry into Management of Gaming Machine Numbers* (December 2003), p. 37.

[27] The categories are: 01 Food and non-alcoholic beverages; 02 Alcoholic beverages, tobacco and narcotics; 03 Clothing and footwear; 04 Housing, water, electricity, gas and other fuels; 05 Furnishings, household equipment and routine maintenance of the house; 06 Health; 07 Transport; 08 Communications; 09 Recreation and culture; 10 Education; 11 Hotels, cafes and restaurants; 12 Miscellaneous goods and services.

Figure 6.1
South Australia – Real Household Final Consumption Expenditure minus 'Recreation and Culture' (Gambling Expenditure)



Source: ABS Cat. No. 5206.0 *Australian National Accounts*, Table 87, and calculations by the researchers.

It is worth examining HFCE growth rates around the time gaming machines appeared. Table 6.1 shows growth in real non-gambling HFCE in the five years before and five years after the introduction of EGMs. A five-year period has been selected because gaming machine expenditure in South Australia grew most rapidly from 1994 to 1999, and so this is the period in which any effect on other spending would be most noticeable.

Table 6.1
South Australia – Real Household Final Consumption Expenditure minus 'Recreation and Culture' (Gambling Expenditure)

Annual Growth (%) Prior to EGMs		Annual Growth (%) Post EGMs	
1989-1990	0.53	1994-1995	4.06
1990-1991	4.79	1995-1996	0.29
1991-1992	0.33	1996-1997	2.79
1992-1993	-0.66	1997-1998	6.01
1993-1994	2.64	1998-1999	1.75
Total 1989-1994	7.77	Total 1994-1999	15.72

Source: ABS Cat. No. 5206.0 *Australian National Accounts*, Table 87, and calculations by the researchers.

Table 6.1 shows that real non-gambling HFCE did not decline in the years following the introduction of EGMs – in fact it rose faster, on average, than before. Caution needs to be exercised here, as the pre-EGM period was marked by a severe recession in 1991-92 (notice decline in HFCE in 1992-93), accompanied by high interest rates and a significant decline in consumer and business confidence.

Nevertheless, this leaves open the possibility that EGMs reduced the rate of growth in non-gambling HFCE than would otherwise have occurred. One way to judge this is by comparing growth rates across the States during the period 1994 to 1999, which are set out in Table 6.2.

Table 6.2
Growth Rate in Real Household Final Consumption Expenditure minus 'Recreation and Culture' (Gambling Expenditure) – 1994 to 1999 (Per cent)

South Australia	New South Wales	Western Australia	Victoria	Queensland	Tasmania
15.7	19.9	18.7	22.7	20.1	8.8

Source: ABS Cat. No. 5206.0 *Australian National Accounts*, Tables 84-89, and calculations by the researchers.

Non-gambling HFCE in South Australia grew more slowly in the five years after EGMs than in any other mainland State. One might be tempted to blame EGMs. However, HFCE is provided as aggregate State expenditure figures, without taking population into account. During the 1994-1999 period referred to in Table 6.2, South Australian population growth was only 3.25 per cent. Over that period, population growth in the other mainland States ranged from 6 per cent in Victoria to 11 per cent in Queensland. The early years include the sharp impact of the failure of the State Bank – which exacerbated the impact of the 1990 recession – that contributed to slower population growth (in fact, an exodus from the State), higher unemployment and some moderation in consumption expenditure. When these factors are taken into account, the HFCE growth rate in South Australia is comparable to the other mainland States. And further, the growth rate in HFCE compares favourably in all States that introduced EGMs in the 1990s with Western Australia.

The researchers conclude that there is no evidence that EGMs had a significant negative impact on other household spending, or its growth rate. Indeed, it would be quite surprising if gambling expenditure did have such an effect. As illustrated in Figure 4.1, gambling took just under 1 per cent of Household Disposable Income before the Adelaide casino was launched, then it rose to around 1.5 per cent by 1990, and then climbed to just under 3 per cent after EGMs appeared. The impact of these changes is simply too small to be distinguishable in a dynamic economy where household expenditure fluctuates from year to year for a variety of reasons.

A 1997 study by the Victorian Casino and Gaming Authority (VCGA) came to a similar conclusion regarding Victoria:

> "The retail sector is currently experiencing particularly dynamic and volatile trading conditions. In this turbulent environment it is difficult to ascribe particular negative retail trends to the recent and on-going increase in gambling opportunities. … At the state level there is little evidence to suggest that increased gambling expenditure adversely affected the retail industry generally."[28]

A 1995 study prepared for the AHA (SA) just one year after the introduction of EGMs into hotels and clubs in South Australia reached a similar conclusion to the VCGA study "... that the average, and vast majority of retail operators are not being unduly influenced by poker machine operations, and any influence is likely to be in more isolated cases".[29] Consistent with our analysis, it was thought this transfer from other forms of gambling combined with some reduction in savings, and lower nominal and real interest rates that support higher consumption expenditure in other sectors of the economy, contributed in part to gambling expenditure.

[28] Victorian Commission for Gambling Regulation, *The Impact of the Expansion in Gaming on the Victorian Retail Sector*, available at http://www.vcgr.vic.gov.au.

[29] Economic Research Consultants Pty Ltd, p. 10.

However, the VCGA study stated that there were "probably" significant effects on retail in some particular localities in Victoria. That is also a possibility in South Australia. However, even if such effects (in isolated cases) were to be observed, they need to be set against changes in consumer tastes and preferences, pressure on small retailers and smaller supermarkets, expansion of weekend trading, general changes in shopping hours and demographic changes – all part of much broader environmental change most likely to impact on small retailing businesses.

6.3 The Household Expenditure Survey

The Household Expenditure Survey (HES) is conducted as a sub sample of the ABS Survey of Income and Housing (SIH). The most recent HES was conducted in 2003-04. The HES is composed of a survey of usual residents of private dwellings throughout Australia comprising:

- a household level computer assisted interview questionnaire;
- an individual level computer assisted interview questionnaire; and
- a personal diary which residents use to record their expenditure over a two-week period.[30]

The survey is conducted with different households across a 12-month enumeration period in order to derive expenditure estimates that are representative for the year as a whole (i.e., 2003-04).

An advantage with the HES is that it collects detailed data on household expenditure patterns, which could possibly be used to gain insight into the extent to which gambling has diverted expenditure away from non-gambling related activities. This could be done by comparing differences in household expenditure patterns for States with different levels of accessibility to gambling (e.g., South Australia and Western Australia). Unfortunately the HES is unreliable when it comes to analysing gambling expenditure as it severely underestimates average gambling expenditure. As Table 6.3 shows, the HES indicates that average weekly household expenditure on gambling in South Australia was $5.24 in 2003-04. This equates to an aggregate expenditure on gambling of $171 million. In comparison, administrative data indicates that total gambling expenditure in South Australia was in fact equal to about $1,062 million in 2003-04, indicating that the HES significantly under reports gambling expenditure.[31]

Other anomalies in the South Australian data include that households reported that they actually had negative expenditure (i.e., they won money) in relation to "TAB, on-course betting" ($1.10 per week on average) and TAB betting other than animal racing ($0.23 per week) in 2003-04.[32]

Some of the anomalies may be partly explained by sampling variability. In other words, because the estimates are derived from a sample of the relevant population, they may differ from those that would have been obtained had the whole population been surveyed (in this

30 ABS (2005), Household Expenditure Survey, Australia, Summary of Results. Cat. No. 6530.0.

31 By a factor of 6.2 times.

32 In Phase 2 of this study we look somewhat more precisely at the degree of under-reporting of gambling expenditure in the HES and analyse the data to observe whether there were any statistically significant differences in expenditure between classes or categories of gamblers.

case all dwellings). One measure of sampling variability is given by standard error, which indicates how close the survey estimate is likely to be to the value for the population as a whole. The relative standard error for some of the estimates in Table 6.3 are quite high since they are based on a relatively small sample of the population, and should therefore be used with caution, or not used at all (see footnotes to the table for further information).

Table 6.3
Household Expenditure Survey: Average Weekly Expenditure on Gambling ($)
Selected States and Australia – 2003-04

Type of Gambling	South Australia	New South Wales	Victoria	Western Australia	Australia
Lottery tickets	0.65	0.60	0.10[b]	-	0.32
Lotto type games & instant lottery	3.32	2.65	3.73	5.30	3.52
TAB, on-course betting & related	-1.10[b]	0.12[b]	0.76[a]	0.32[b]	0.09[b]
Poker machines & ticket machines	1.46	1.07[a]	0.64[a]	0.04[b]	0.76
Blackjack, roulette & other casino games	0.07[b]	-0.02[b]	-0.24[b]	-0.74[b]	-0.14[b]
TAB - betting (excluding animal racing)	-0.23[b]	0.06[a]	0.08[b]	0.09[b]	0.03[b]
Club & casino broadcast gaming	0.10[b]	0.15[a]	0.01[b]	-	0.07[b]
Gambling nec	0.45	0.85	0.48	0.51	0.59
Gambling nfd	0.50[a]	0.24[b]	-	0.20[a]	0.25[a]
Total gambling	5.24	5.71	5.56	5.71	5.48
Est. total annual gambling expenditure ($m)	171	749	551	229	2,204

Note: [a] This estimate has a high relative standard error (of 25 to 50%) and should be used with caution (e.g., a relative standard error of 50 per cent implies that there is a 2 in 3 chance that the true population value lies within a range of 50 per cent either side of the survey estimate).
[b] This estimate has a very high relative standard error (of greater than 50 per cent) and is considered too unreliable for general use.
Source: ABS, AusStats, DataCubes, Household Expenditure Survey 2003-04.

The undercount of gambling expenditure by the HES would also largely reflect non-sampling error, whereby respondents have underreported their usual gambling expenditure.[33] For instance, gamblers may have decided not to gamble or gamble less often during the two-week period in which the survey was conducted, while others may have deliberately underreported their gambling expenditure. The latter may be a particular issue for heavy or problem gamblers who may seek to hide their spending from family members, and account for a large share of gambling expenditure (the Productivity Commission estimated that problem gamblers account for about 42 per cent of all gaming machine expenditure). There is also evidence that people tend to be better at recollecting their winnings rather than their losses in relation to gambling, which would further explain the discrepancy between HES and administrative data.

There are other reasons which make it effectively impossible to use State comparisons of aggregate HES data to determine the extent to which gambling has diverted expenditure from other sources. Firstly, since gambling expenditure represents a very small proportion of household expenditure, it would be impossible to identify from what sources expenditure has been diverted if gambling has diverted expenditure from multiple sources. Secondly, and perhaps more importantly, the pattern of expenditure is determined by a variety of factors, including differences in income levels, consumer tastes, access to credit, gender, age etc., meaning that differences in expenditure patterns cannot easily be solely attributed to differences in the relative accessibility of gambling.

[33] It would also partly reflect that the survey was restricted to persons and households residing in private dwellings only. However, this would only account for a small proportion of the difference since an overwhelming majority of the adult population live in private dwellings. There may be some attrition bias where heavy gamblers declined to participate and observation bias where a change in behaviour takes place over the collection period.

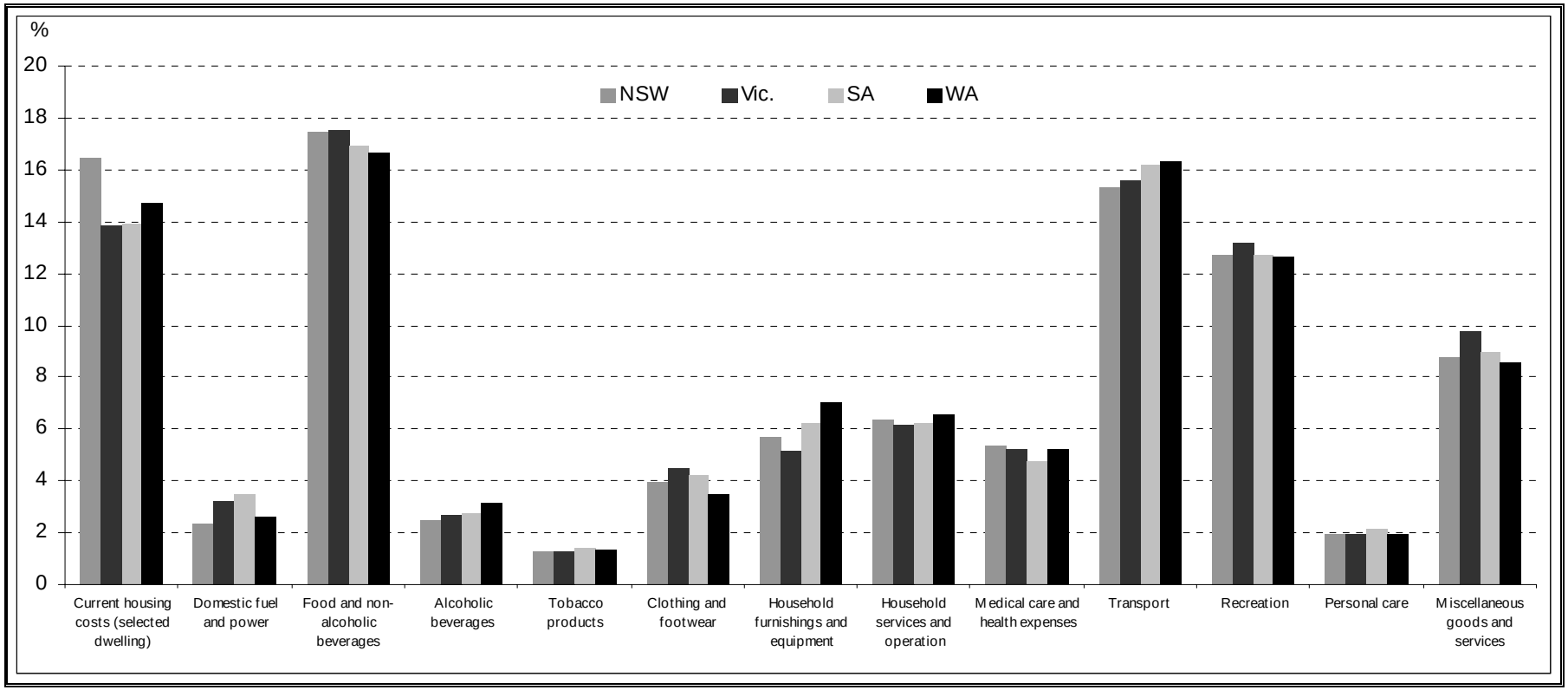
Despite the inherent problems and difficulties associated with using HES data to determine the sources from which gambling may have diverted expenditure, a preliminary investigation of the HES data was conducted to determine whether there were any significant or obvious differences in expenditure patterns between Western Australia and other States that may be explained by the reduced availability of gambling in the former. That is to say, in this report we confined the analysis to a comparison between States and major expenditure classifications.

Figure 6.2 shows for selected States the average weekly expenditure on broad items of goods and services as a proportion of total expenditure on goods and services. Proportions are used to partly adjust for differences in expenditure levels that may be explained by differences in income levels between the States.

There are no broad goods and services items in which Western Australia has significantly higher expenditure relative to the other states. Western Australia does have slightly higher expenditure on household furnishings and equipment relative to the other three States and while this sector may appear to be a likely candidate from which discretionary spending may have been diverted, the difference between the four States could readily be accounted for by stronger inward migration into Western Australia, housing establishment and a slightly younger population in the "household formation stage" (see discussion, Phase 2: Section 2.2.2).

A brief and preliminary analysis of the HES data has been conducted here. An advantage of the HES is that data are available at the household and individual record level. This means that more robust econometric analysis can be conducted to determine whether there are any significant differences in expenditure patterns between gamblers and non-gamblers. This would provide insight into the types of non-gambling expenditure (if any) that gamblers may have diverted their expenditure away from. Such an analysis will be conducted during phase two of the study, specifically to assess the economic impact of gambling on other forms of expenditure.

Figure 6.2
Average Weekly Household Expenditure on Selected Goods & Services as a Proportion of Total Expenditure on Goods & Services



Source: ABS, AusStats, DataCubes, Household Expenditure Survey 2003-04.

7. Government Revenue, Payments and Administration

Terms of Reference

- identifiable payments by Government associated with gambling, including costs of rehabilitation services and costs of regulation.

7.1 Introduction

This chapter considers the State government's role in relation to South Australia's gambling industries. The chapter begins by examining the recent trend in government taxation revenue derived from gambling. While gambling is an important source of revenue, the government also makes various payments in relation to gambling that are also considered. Such payments include the various funds established under the *Gaming Machines Act 1992* and *State Lotteries Act 1966* which earmark gambling taxation revenues for particular spending purposes; government contributions to the Gamblers Rehabilitation Fund; and other government payments associated with problem gambling (e.g., cost of government services accessed by problem gamblers). The chapter concludes with a brief description of the roles and resources of the two State government agencies that have responsibility for regulating South Australia's gambling industries: the Independent Gambling Authority and the Office of the Liquor and Gambling Commissioner.

Box 7.1
Summary

Total gambling taxation revenue in real terms grew strongly between 1994-95 and 2003-04, rising by $257 million or 115 per cent, from $223 million to $479 million over this period. This equates to an average growth rate of 8.9 per cent per annum.

South Australia was ranked second among States and Territories in 2003-04 in terms of the highest share of state tax revenue derived from gambling taxes (13.5 per cent).

Growth in tax revenue has been driven almost solely by tax revenue from gaming machines, which in real terms increased by $277 million from $69 million in 1994-95 to $345 million in 2003-04. The increase in gaming machine tax revenue is explained by the substantial increase in expenditure on gaming machines since their introduction.

Revenue derived from racing and wagering and lotteries declined between 1994-95 and 2003-04 (by $14 million to $17 million for racing and wagering, and by $7 million to $90 million for lotteries), while tax revenue derived from the casino increased slightly over this period (by $1 million to $27 million).

The share of total state government revenue from gambling industries derived from gaming machines has risen sharply, from 31 per cent in 1994-95 to 72 per cent in 2003-04.

The following funds were established by the *Gaming Machines (Miscellaneous) Amendment Act 1996* (current annual funding levels shown in brackets): Sport and Recreation Fund ($3.5 million), Charitable and Social Welfare Fund ($4.0 million), and Community Development Fund ($20 million). These funds were established to redistribute a share of gaming machine taxation revenue back to the community in recognition of the financial pressure that gaming machines might have exerted on sporting and community groups, and communities in general.

The Government also contributed $3.8 million to the Gamblers Rehabilitation Fund in 2005-06. The GRF is used to support problem gambler rehabilitation and prevention services in metropolitan and non-metropolitan areas throughout South Australia. The gambling industry contributed $1.6 million to the GRF in 2005-06 (hotels and clubs $1.5 million; casino $110,000), leading to total funding of $5.5 million.

The State Lotteries Act 1966 requires that a proportion of net gambling revenue derived by the SA Lotteries Commission be paid into the Hospitals Fund and Recreation and Sport Fund. In 2004-05, about $89 million was paid by SA Lotteries into the Hospitals Fund, while $0.2 million was paid into the Recreation and Sport Fund.

The Government also incurs a range of other implicit or explicit payments in relation to problem gambling. These costs include: in-kind assistance provided by the Department for Families and Communities in relation to the administration of the GRF; state and federal government funded health, medical, counselling and welfare services accessed by problem gamblers and/or their families; education programs for children such as "Dicey Dealings" that are designed to prevent problem gambling (funding allocation of $0.8 million over 4 years); and police and other judicial services used in dealing with crimes committed by problem gamblers and other adverse consequences of problem gambling (e.g., divorce).

The Independent Gambling Authority and the Office of the Liquor and Gambling Commissioner are the two State government agencies responsible for regulation of gambling industries in South Australia. The IGA had an operating budget of $1.4 million in 2004-05 and employed 7.2 full-time equivalent employees at 30 June 2005. In relation to the OLGC, the net cost of administering the Casino Act 1997 was $154,000 in 2004-05, while the net cost of administering other gambling industries was estimated to be $2.8 million. An average of 18.5 full-time equivalent staff were employed by the OLGC in relation to its gaming regulation responsibilities in 2004-05.

7.2 Government Revenue Associated with Gambling

Taxation of gambling has historically been the domain of State and Territory governments. In South Australia, the types of State taxes levied on gambling include direct taxes on net gambling revenue (i.e., gaming machines, casino, SA Lotteries Commission and TAB) or turnover (on-course totalisator and bookmakers), dispersions of profits from government owned providers (i.e., SA lotteries), and licence fees (i.e., trade promotion lotteries). The rates of taxation levied on different types of gambling in South Australia are summarised in Appendix B.

Taxation regimes in respect of gambling differ across States and Territories. Appendix C presents an interstate comparison of gambling taxes taken from *Interstate Comparison of Taxes 2005-06* (Office of Financial Management, New South Wales Treasury). It shows there are significant differences in the rates of taxation that apply for the same forms of gambling, and how these rates are applied (e.g., whether they are based on net gambling revenue or gross gambling revenue).

Commonwealth Government taxation of all forms of gambling was introduced in 2000 with the introduction of the Goods and Services Tax. GST is levied on the operators 'margin' or net gambling revenue (i.e., total amount wagered less total monetary prizes paid to gamblers). South Australian gambling tax arrangements were altered to achieve revenue neutrality after the introduction of the GST. These changes included a reduction in State tax rates applied to gaming machines and the casino by an equivalent of GST.[34] The resulting loss in direct State taxation revenue has been fully compensated through GST revenue disbursements to the States.

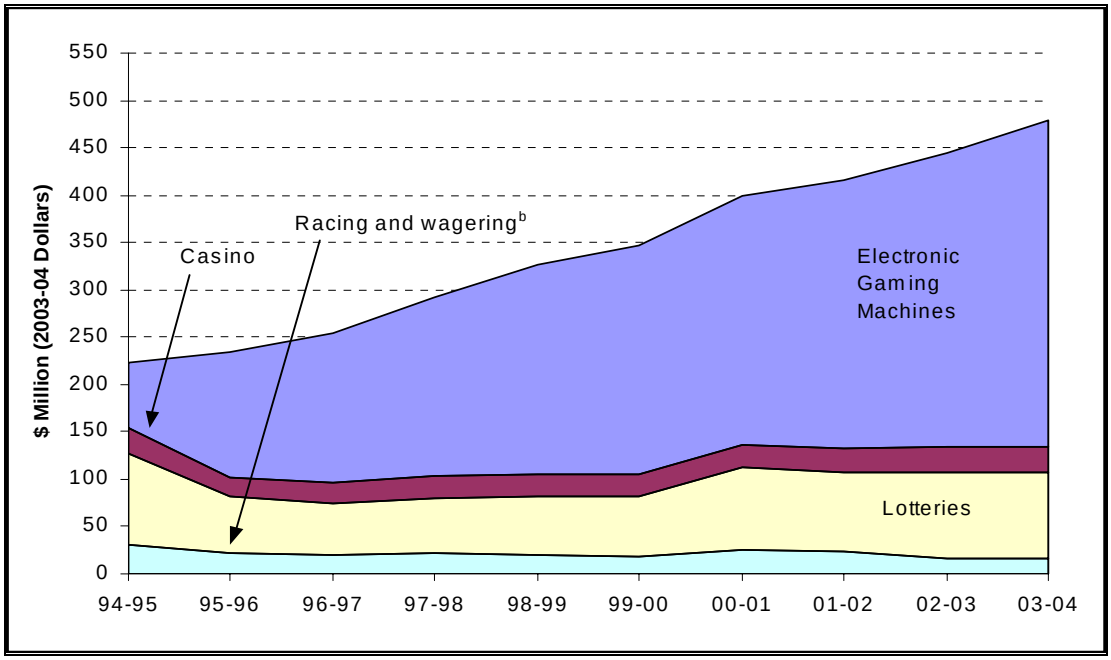
[34] The complete set of changes in State gambling tax arrangements implemented are described in State Government *Budget Statement 2000-01* (p.5.4).

Figure 7.1 shows the estimated total tax revenue collected from gambling industries in South Australia from 1994-95 to 2003-04 in real terms. Total tax revenue includes direct State taxation receipts and estimated GST receipts.[35]

Total gambling taxation revenue in real terms rose strongly between 1994-95 and 2003-04, rising by $257 million or 115 per cent, from $223 million to $479 million, over this period. This equates to an average growth rate of 8.9 per cent per annum over this period. The growth in aggregate taxation revenue largely reflects growth in expenditure (and obviously EGM expenditure) rather than a rise in tax rates; total gambling expenditure in real terms is estimated to have increased by 6.3 per cent per annum between 1994-95 and 2003-04.

Growth in tax revenue has been driven almost solely by tax revenue from gaming machines, which in real terms has increased by $277 million from $69 million in 1994-95 to $345 million in 2003-04. The rise in gaming machine tax revenue is of course explained by the very substantial increase in expenditure on gaming machines since their introduction. In comparison, revenue derived from racing and wagering (hereafter racing), and lotteries has fallen between 1994-95 and 2003-04 (by $14 million to $17 million, and $7 million to $90 million respectively), while tax revenue from the casino has increased slightly (by $1 million to $27 million). The fall in tax revenue from racing largely reflects that with the privatisation of the TAB in 2001-02, the after tax distribution previously derived by the State government has ceased.

Figure 7.1
Estimated Real Taxation Revenue From Gambling Industries
South Australia[a] (2003-04 dollars)



Note: [a] Taxation revenue includes direct state taxation receipts and GST receipts imputed from gambling expenditure.
[b] State tax revenue was unavailable for on-course totalisator in 2001-02, and for bookmakers in 2002-03 and 2003-04.

Source: SA Treasury, Australian Gambling Statistics 2005, SA Lotteries Annual Report 2003-04. GST calculations by the researchers.

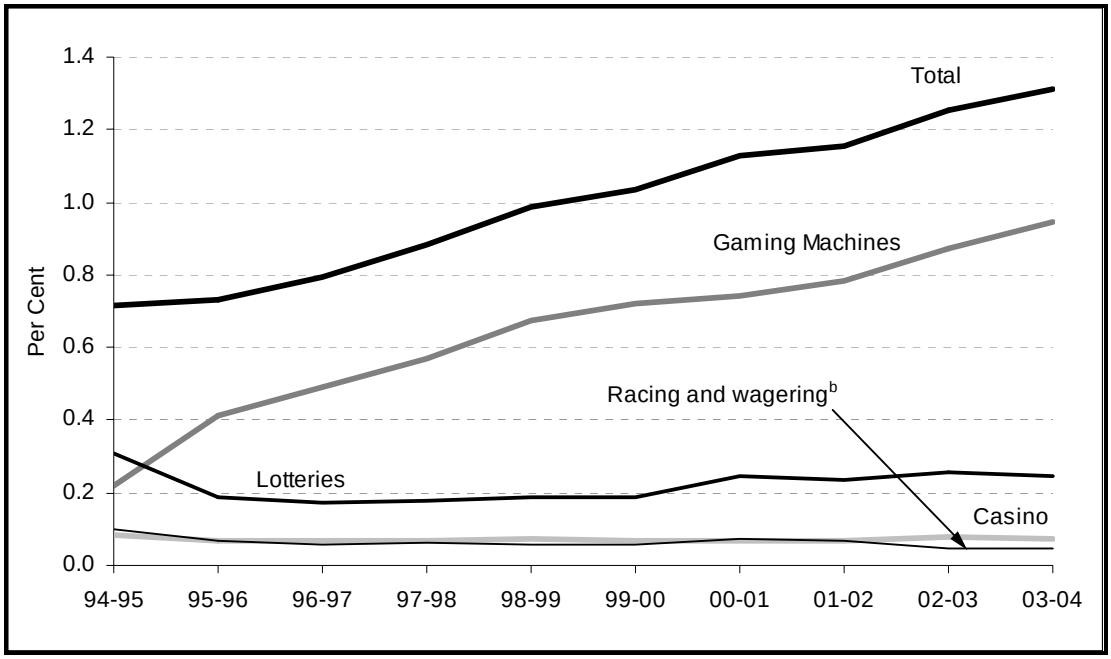
[35] Tax receipts from direct state taxation was obtained from SA Treasury for major forms of gambling, and from *Australian Gambling Statistics (AGS) 2005* for 'minor gaming', 'on-course totalisator' and 'bookmakers'. GST receipts were calculated by the researchers based on expenditure data reported in AGS 2005, except for lotteries, which was obtained from SA Lotteries Annual Report 2003-04.

The fall in revenue derived from lotteries and racing in 1995-96 reflects the introduction of income tax equivalents and wholesale sales tax equivalents rather than any impact from the introduction of gaming machines on expenditure in these sectors. The introduction of these equivalents reduced the level of "after tax" distributions to the government from SA Lotteries and the TAB.

Robust growth in expenditure on gaming machines has seen the share of total government revenue from gambling industries derived from gaming machines rise sharply, from 31 per cent in 1994-95 to 72 per cent in 2003-04. It should be noted that reliance on revenue derived from gaming machines is greater than indicated by Figure 7.1 because the majority of tax revenue collected from the casino is derived from gaming machines. This reflects that the State tax rate levied on gaming machines in the casino (34.41 per cent of NGR) is significantly higher than the rate levied on table games (0.91 per cent of NGR). Tax revenue derived from gaming machines in the casino was $16.5 million in 2003-04 compared to $0.5 million from table games (based on net gambling revenue of $48 million and $60 million respectively).[36]

Due primarily to the introduction of gaming machines, there has been a rise in the relative level of gambling taxation. For instance, total gambling taxation revenue as a proportion of household disposable income (HDI) in South Australia has increased from 0.7 per cent in 1994-95 to 1.3 per cent in 2003-04 (see Figure 7.2). Total gaming machine taxation revenue as a proportion of HDI increased from 0.2 per cent to 0.9 per cent over this period. In contrast, tax revenue from lotteries, the casino, and racing and wagering as a proportion of HDI has fallen slightly or remained steady over this period.

Figure 7.2
Estimated Taxation Revenue as a Proportion of Household Disposable Income
South Australia[a]

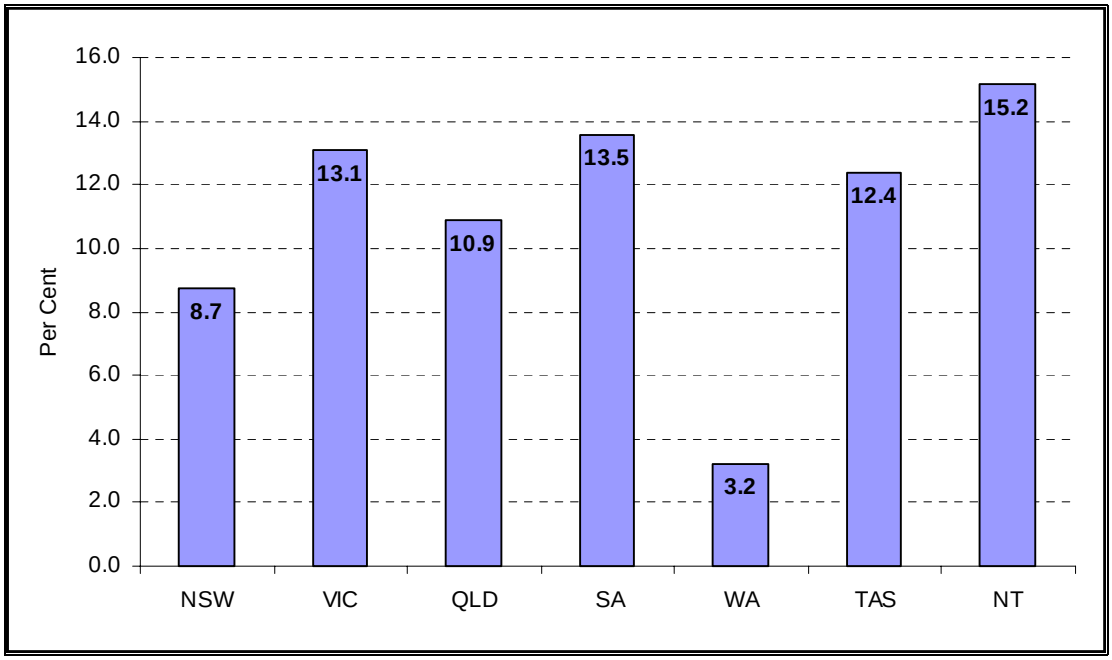


Note: [a] Taxation revenue includes direct state taxation receipts and GST receipts imputed from gambling expenditure estimates.
[b] State tax revenue unavailable for on-course totalisator in 2001-02, and for bookmakers in 2002-03 and 2003-04.
Source: Australian Gambling Statistics 2005, SA Lotteries Annual Report 2003-04, and SA Treasury. GST calculations by the researchers.

[36] Independent Gambling Authority, Annual Report 2003-04.

The share of State taxation revenue derived from State gambling taxes for South Australia and other States in 2003-04 is illustrated by Figure 7.3 (i.e., revenue from non-state sources such as the GST are excluded). South Australia was ranked second in 2003-04 in terms of the highest share of tax revenue derived from gambling taxes (13.5 per cent). Only the Northern Territory (15.2 per cent) had a higher share of revenue derived from gambling taxes. Western Australia had the lowest share of revenue sourced from gambling (3.2 per cent), which reflects that gambling opportunities are much more restricted in that State.

Figure 7.3
State Taxes on Gambling as a Proportion of Total State Taxation Revenue [a], 2003-04



Note: [a] Refers only to revenue derived from State taxes.
Source: ABS, Taxation Revenue, 2003-04 (Cat. No. 5506.0).

7.3 Government Payments Associated With Gambling

In assessing the economic impact of gambling industries, one needs to take into account the various government payments made in respect of gambling industries. These payments include the costs associated with administering gambling legislation or regulating gambling industries, providing services or funding to prevent and treat problem gambling, and funding allocations from gambling taxation revenue specified in the *Gaming Machines Act 1992* and *State Lotteries Act 1966* that are earmarked for specific purposes such as financial support for community and sporting organisations. The following section provides a description of identified government payments associated with gambling.

7.3.1 Funds Established Under the Gaming Machines Act 1992

In recognition of the financial pressure that the introduction of gaming machines may have exerted on various sporting and community groups, and communities in general, the following funds were established under Section 73 of the *Gaming Machine Act 1992* to redistribute a share of gambling taxation revenue back to the community:

- Sport and Recreation Fund;
- Charitable and Social Welfare Fund; and
- Community Development Fund.

These funds were incorporated into the *Gaming Machines Act 1992* as part of the *Gaming Machines (Miscellaneous) Amendment Act 1996*, and took effect from 1996-97.

More recently, the Gamblers Rehabilitation Fund (GRF) was officially incorporated into the *Gaming Machines Act 1992*, with the relevant provision of the Act commencing on 1st February 2005.

A brief description of each of the funds is provided below.

Sport and Recreation Fund

The Sport and Recreation Fund was established in 1996 to provide financial assistance for sporting and recreation organisations. The fund is administered by the Office for Recreation and Sport and is distributed through the following programs:

- Active Club Program;
- Move It! Making Communities Active Program; and
- State Sports Facility Fund.

The general aim of the programs is to improve community participation in recreation and sport, and thus the general health of the community, by improving the accessibility and quality of recreation and sporting facilities available to the community. Funding is typically provided to community and other organisations through competitive grant funding rounds, with funding being used to improve existing recreation and sporting facilities, or establish new facilities.

In accordance with the Act, financial assistance drawn from the Sport and Recreation Fund cannot be given to an organisation that is the holder of a gaming machine licence.

The Sport and Recreation Fund was initially established with annual funding under the Gaming Machines Act 1992 of $2.5 million, which was subsequently increased to its current level of $3.5 million per annum from 1st February 2003. This funding level is equivalent to 0.5 per cent of expenditure on gaming machines, or 1.0 per cent of total State government taxation revenue from gaming machines in 2003-04.

Funding for the recreation and sport sector is also derived from gambling revenue earned by SA Lotteries. This funding is described in Section 7.3.2 under Recreation and Sport Fund.

Charitable and Social Welfare Fund

The Charitable and Social Welfare Fund is known publicly as Community Benefit SA, and provides financial assistance to charitable and social welfare organisations. The fund was initially established with annual funding of $3.0 million, which was subsequently increased to its current level of $4.0 million per annum from 1st February 2003.

The overall objective of Community Benefit SA is to:

> "*provide one-off project funding to assist incorporated, non government non-profit charitable and social welfare organisations to improve the well-being, quality of life, community participation and life management skills of disadvantaged individuals and communities, and to develop and strengthen communities across the metropolitan, rural and remote regions of South Australia*".[37]

This is achieved by providing grants for one-off projects that contribute to the above objectives. These "Normal Grants" are made available through biannual competitive funding rounds. The maximum amount available for normal grants is currently $35,000. A total of 2,862 projects, undertaken by approximately 800 agencies, have now been funded with a total value of $26.3 million over 19 funding rounds between 1996-97 and 2004-05 (a more detailed analysis up to 2003-04 is provided below).

Between 1997-98 and 2002-03, "Special Grants" and "Strategic Special Grants" were also funded from the Charitable and Social Welfare Fund.

Special Grants of up to $75,000 were introduced in 1997-98 to provide assistance for large charitable organisations whose revenue earning capacity may have been adversely affected by the introduction of gaming machines. These grants were replaced by Strategic Special Grants in 2000-01, which were established to provide once only funding for a period of up to three years to 2002-03. The application process for these grants was undertaken in July and August of 2000.

Special Grants and Strategic Special Grants were allocated $600,000 per annum from the Charitable and Social Welfare Fund between 1997-98 and 2002-03. Funding for these grants ceased from 2003-04.

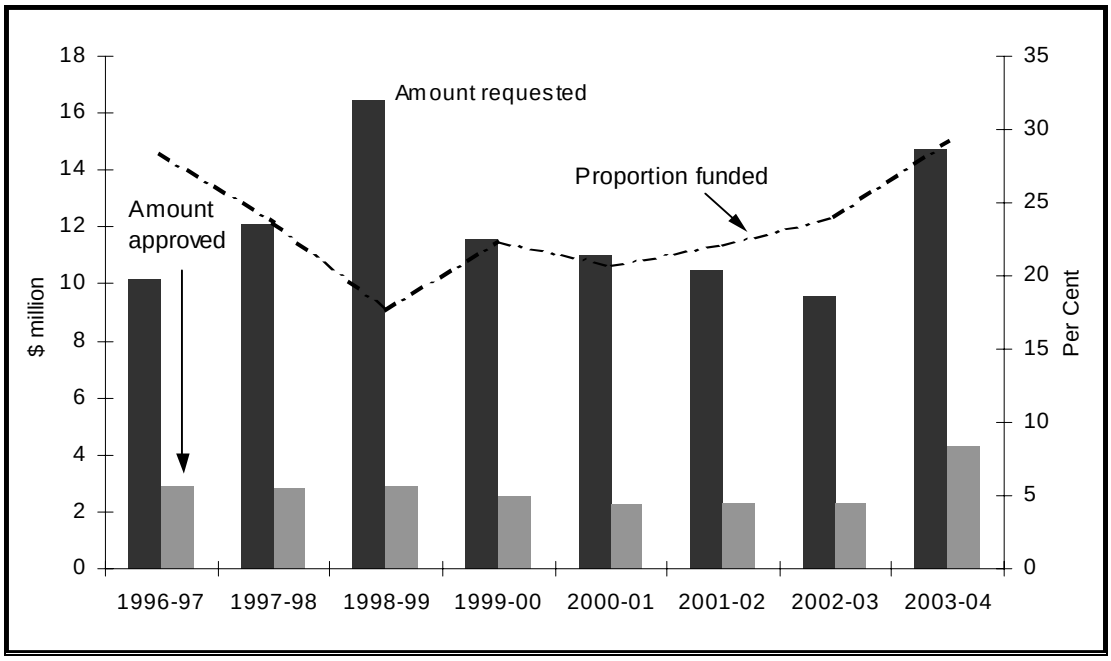
Figure 7.4 shows the total amount of Normal Grants applied for under the Charitable and Social Welfare Fund, the amount that was eventually approved, and the proportion of funding applied for that was approved, for each financial year from 1996-97 to 2003-04. The total amount of Normal Grants applications in each financial year has consistently exceeded the amount approved since the fund was established, indicating that there remains significant demand within the community for assistance.

Demand for funding increased significantly in the first three years of the fund, but then generally subsided after 1998-99. This could reflect frustration with the small amount of demand that was being met, or it could reflect issues with the quality and appropriateness of applications that were being received. With the increase in funding in 2003-04, there was a significant rise in demand for funding during the year (up $5.1 million or 53 per cent).

A total of $4.3 million in grants were approved in 2003-04. This is equivalent to 0.6 per cent of expenditure on gaming machines, or 1.2 per cent of total State government taxation revenue from gaming machines in 2003-04. The additional funding provided in 2003-04 enabled 29 per cent of the funding applied for to be approved – the highest level achieved in the life of the Fund.

[37] Community Benefit SA, Annual Report 2003-04, p. 3.

Figure 7.4
Community Benefit SA: Amount of Funding Applications, Amount Approved, and Proportion of Applications Approved



Source: Community Benefit SA Annual Report 2003-04.

Community Development Fund

The *Gaming Machines Act 1992* states that money paid into the Community Development Fund should be applied towards:

- "financial assistance for community development", and
- "the provision of government health, welfare or education services".

The fund is administered by the Department of Treasury and Finance, with monies being allocated to government health, welfare and education bodies to fund mainstream services that contribute to the above objectives. The fund was initially established in 1996-97 with an annual allocation of $19.5 million, which was subsequently increased to $20 million per annum. This amount is equivalent to 2.8 per cent of expenditure on gaming machines, or 5.8 per cent of total State government taxation revenue from gaming machines in 2003-04.

In recognition of the impact of the introduction of gaming machines on the local live music industry, an amendment, commencing from 1st February 2003, was inserted into the Act to allocate $500,000 from the fund towards "programs that will be of benefit to the live music industry" in each financial year. These funds are distributed though grants which are administered by Arts SA.

Gamblers Rehabilitation Fund

The GRF was established in 1994-95 following an agreement between the government and representatives of the hotel and club industry. The fund is used to support problem gambler rehabilitation and prevention services in metropolitan and non-metropolitan areas throughout South Australia.

The majority of GRF funding is allocated to Break Even Services, which comprises a number of regional (metro and non-metro) and specialist state-wide agencies that provide problem gambling counselling, treatment and community education services. Recurrent funding is also allocated to a state-wide Gambling Helpline, state-wide community education programs (through Health Promotion SA), and other program development and support services, such as program administration and coordination, training, data management, and research.

The total amount of funding for the GRF has increased in nominal terms from $1.5 million in 1999-00 to $5.5 million in 2005-06 (see Table 7.7 which shows total annual funding for the GRF by source). Voluntary funding of $1.5 million per annum from 1994-95 to 1999-00 was initially provided solely by the hotel and club industry through payments made by the Independent Gaming Corporation.[38] A government contribution of $0.5 million commenced in 2000-01, although in kind assistance associated with the administration of the fund was (and continues to be) provided by the Department for Families and Communities (DFC) since its inception. While the DFC does receive some funding from the GRF for administrative purposes (e.g., towards the cost of project officer salaries dedicated to working with the GRF programme), this relatively small amount does not cover all administrative support provided by the DFC (e.g., salaries of upper management, finance, contracting etc.).

In recognition of the need for increased funding for problem gambler rehabilitation services, the government contribution has risen over recent years to reach $3.8 million in 2005-06. The SkyCity casino also commenced a voluntary contribution of $110,000 per annum from 2004. From 2005, any commission paid on the sale of gaming machines, such as through the Gaming Machine Entitlement Trading Rounds, must be paid into the Gamblers Rehabilitation Fund.

Excluding commission paid on the sale of gaming machines, the total government funding contribution to the GRF was $3.8 million in 2005-06 (70 per cent of total GRF funding), while the total industry contribution was $1.6 million (30 per cent).

Total GRF funding as a proportion of gaming machine and casino expenditure fell slightly from about 0.6 per cent in 1994-95 to 0.5 per cent in 2004-05. However, with the significant increase in funding for 2005-06, it is likely that GRF funding as a share of gaming machine and casino expenditure will increase slightly in 2005-06.

[38] The IGC is an incorporated body that is jointly owned by the Australian Hotels Association (SA) and the Licensed Clubs Association of SA. It holds the single gaming machine monitoring licence allowed under the *Gaming Machine Act 1992*, which authorises it to "provide and operate an approved computer system for monitoring the operation of all gaming machines". All gaming machines in the State are connected to the computer system, which collects gambling statistics such as expenditure for every machine. These data are used by the OLGC to assess the amount of tax payable. The computer system also ensures that gaming machines only operate during the hours of operation authorised by the licence by automatically enabling and disabling the machines.

Table 7.7
Annual Funding for Gamblers Rehabilitation Fund by Source ($ million)[a]

	1994-95 to 99-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Government	0.0	0.5	0.8	1.8	1.8	2.7	3.8
Hotels and clubs	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Casino	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total	1.5	2.0	2.3	3.3	3.3	4.3	5.5

Note: a Does not include commission paid on the sale of gaming machines through Gaming Machine Entitlement Trading Rounds which commenced in 2005.
Source: South Australian Treasury, SACES.

Table 7.8 shows how the allocation of GRF funds have evolved since 2000-01. The majority of new funding to the GRF has been allocated to Break Even Services and the state-wide community education program which has an emphasis on prevention of problem gambling.

A total of $2.7 million was allocated to Break Even services in 2004-05. $1.1 million was allocated to metropolitan agencies while $0.6 million was allocated to rural agencies. Approximately $1 million was allocated to agencies providing state-wide services and the Gambling Helpline. State-wide agencies provide services for particular sub-groups such as ethnic minorities and indigenous persons that may be hard to reach through mainstream services or have a relatively higher risk of developing gambling problems. A further $0.4 million was put towards a state-wide community education programme. The remaining $0.5 million was allocated to program development and support services, such as research projects ($0.2 million), program administration ($0.1 million), and program coordination ($0.08 million).

Table 7.8
Allocation of GRF Funds by Program Function ($'000)

	2000-01	2001-02	2002-03	2003-04	2004-05
Break Even Services	**1,201**	**2,047**	**2,127**	**2,421**	**2,683**
Metropolitan	524	746	761	972	1,101
Rural	339	481	516	586	604
State-wide services incl Gambling Helpline	339	820	849	864	978
Other Community Services	**[a]0**	**[a]0**	**500**	**410**	**410**
Community Education – State-wide programme	[a]0	[a]0	500	410	410
Program Development and Support Services	**[a]268**	**[a]318**	**328**	**528**	**528**
Data Management	[a]0	[a]0	[a]0	30	30
Programme Administration	57	107	117	117	117
Programme Coordination	84	84	84	84	84
Training	67	67	67	67	67
Research Projects	50	50	50	220	220
Helpline additional costs	10	10	10	10	10
Total	**[a]1,469**	**[a]2,365**	**2,954**	**3,359**	**3,620**

Note: [a] Does not include once-off funding of $600,000 that was allocated across three years from 1999-00 to 2001-02 for state-wide media campaigns, data management and the conduct of a state-wide prevalence study.
Source: Gamblers Rehabilitation Fund Program, Department for Families and Communities.

Table 7.9 shows a breakdown of funding for Break Even agencies by the regions they service and the region's share of adult population and expenditure on gaming machines – the form of gambling most commonly associated with problem gambling. Rural areas appear to be well funded with country north and country south receiving a higher share of funding relative to

their share of total adult population and total expenditure on gaming machines. However, this does not imply that rural areas are adequately funded, as there may be particular areas which are not adequately serviced, while in some areas demand for services may exceed supply. For instance, a recent strategic review of the Gamblers Rehabilitation Fund stated that:

> *"Geographically, the service system strains to cover the state. Twenty three worksites in most of the major centres is good coverage for a relative small workforce, but there are inevitably locations that are 'missing out' or poorly serviced."*[39]

Greater funding for rural areas would also partly reflect the higher costs (e.g., travel) and greater inefficiencies associated with servicing larger and/or more sparsely populated areas.

While the data in Table 7.9 suggests that metropolitan areas, particularly metro north and metro south, are not well funded given they receive a lower share of funding relative to their share of the adult population and expenditure on gaming machines, it should be noted that the funding estimates do not include funding for agencies providing state-wide specialist services, some of which have a metropolitan focus (funding for these agencies could not be supplied broken down on a regional basis). Hence, funding for metropolitan and rural areas is higher than indicated by Table 7.9.

Table 7.9
Funding for Break Even Services, Adult Population and EGM Expenditure by Region[a]
South Australia – 2004-05 (except estimated adult population: at 30 June 2004)

	Funding for BES		Adult Population		Gaming Machine NGR	
	$'000	Per Cent	('000)	Per Cent	$m	Per Cent
Metro North	284	16.6	332	28.0	207.5	27.7
Metro South	284	16.6	346	29.2	178.4	23.8
Metro East	284	16.6	182	15.3	123.9	16.5
Metro West	250	14.7	170	14.3	135.9	18.1
Country North	365	21.4	85	7.2	56.5	7.5
Country South	238	14.0	72	6.1	47.0	6.3
Total	1,705	100.0	1,187	100.0	749.3	100.0

Note: [a] Regions have been defined using FaCS regional classification.
Source: FaCS, OLGC and ABS, AusStats, Population Trends and Estimates. Calculations by the researchers.

7.3.2 Funds Established Under the State Lotteries Act 1966

The *State Lotteries Act 1966* stipulates that a proportion of net gambling revenue derived by the SA Lotteries Commission should be paid to the Hospitals Fund and the Recreation and Sport Fund. The distribution paid into each fund for the last five years is shown in Table 7.10.

Hospitals Fund

Under the *State Lotteries Act 1966*, 41 per cent of net gambling revenue in respect of all lotteries operated by the SA Lotteries Commission except for sport lotteries and special lotteries, and 50 per cent of the amount of unclaimed prizes in respect of lotteries other than sport lotteries and special lotteries, is to be paid into the Hospitals Fund. The Hospitals Fund

[39] The Prevention and Treatment of Problem Gambling in South Australia through the Gamblers Rehabilitation Fund: A Strategic Review, p22.

is administered by the Department of Treasury and Finance, and "may only be used for the provision, maintenance, development and improvement of public hospitals and equipment for public hospitals by making payments as approved by the Treasurer to the Consolidated Account to match amounts appropriated by Parliament and paid for from the Consolidated Account for these purposes".[40]

About $89 million was paid by SA Lotteries into the Hospitals Fund in 2004-05 (see Table 7.10). An average of almost $82 million has been paid into the fund over the past five years with a total of $408 million being paid into the fund over this period (in nominal terms).

Recreation and Sport Fund

The Recreation and Sport Fund was established under the *State Lotteries Act 1966* and should not be confused with the Sport and Recreation Fund which is a separate fund established under the *Gaming Machines Act 1992*. The *State Lotteries Act 1966* stipulates that 41 per cent of net gambling revenue in respect of all sport lotteries and special lotteries, and 50 per cent of the amount of unclaimed prizes in respect of sport lotteries and special lotteries is to be paid into the Recreation and Sport Fund.

A distribution of $216,000 was paid into the Recreation and Sport Fund in 2004-05 (see Table 7.10). In nominal terms, an average of $242,000 has been paid into the fund over the past five years, with a total of $1.2 million being paid into the fund over this period.

Table 7.10
SA Lotteries Distribution Paid into Hospitals and Recreation and Sport Funds ($'000)

	2000-01	2001-02	2002-03	2003-04	2004-05
Hospitals Fund	78,377	74,665	82,801	83,628	88,951
Recreation and Sport Fund	263	227	256	250	216

Source: Lotteries Commission of South Australia *Annual Report*, various issues.

7.3.3 Other Government Payments Associated with Problem Gambling

The State government contribution to the Gamblers Rehabilitation Fund is not the only government payment made in relation to problem gambling. Other implicit and explicit payments or costs incurred by government (State and Commonwealth) in relation to problem gambling include:

- (as stated previously) assistance provided by the Department for Families and Communities in relation to the administration of the Gamblers Rehabilitation Fund (i.e., offices, equipment, administrative staff);
- government funded health, medical and counselling services (e.g., General Practitioners, financial counselling network) outside the Break Even Services system that are accessed by problem gamblers and their relatives or friends that are adversely affected by problem gambling;
- the 'Dicey Dealings' program which is an education program for children in Years 6 to 10 about the risks of gambling that is administered by the Department of Education and Children's Services. The program is composed of, among other things, curriculum materials, professional development sessions for teachers and

[40] State Lotteries Act 1966.

student counsellors, and information forums for the community. The Department has been allocated $800,000 over 4 years to develop and deliver the program, with 12 pilot schools being selected in 2004 to trial the program[41];

- police and other judicial services in relation to dealing with crimes committed by problem gamblers in connection with their gambling problem (e.g., costs of court cases and housing prisoners), and other adverse consequences of problem gambling (e.g., court costs in relation to divorce cases);
- public housing for problem gamblers and/or their families who are displaced from private housing due to the financial impact of problem gambling; and
- other government welfare services and payments intended for people in need, such as unemployment benefits that are accessed by problem gamblers and their families ultimately due to the adverse impact that gambling has had on their lives.

The actual monetary costs associated with most of the above costs and payments are generally unknown, partly because administrative data are not collected at this level of detail. Nevertheless, they are likely to be significant relative to the level of government funding provided to the Gamblers Rehabilitation Fund.

7.3.4 Government Administration and Regulation

Responsibility for the administration and regulation of gambling industries in South Australia is divided among the following government bodies:

- The Independent Gambling Authority; and
- The Office of the Liquor and Gambling Commissioner.

Independent Gambling Authority

The Independent Gambling Authority is the senior regulator for commercial forms of gambling in South Australia. The functions of the Authority as defined by Section 11 (1) of the *Independent Gambling Authority Act 1995* are:

> *"(aa) to develop and promote strategies for reducing the incidence of problem gambling and for preventing or minimising the harm caused by gambling; and*
>
> *(aab) to undertake, assist in or co-ordinate ongoing research into matters relevant to the Authority's functions, including research into—*
>
> *(i) the social and economic costs and benefits to the community of gambling and the gambling industry; and*
>
> *(ii) the likely impact, both negative and positive, on the community of any new gambling product or gambling activity that might be introduced by any section of the gambling industry; and*
>
> *(iii) strategies for reducing the incidence of problem gambling and preventing or minimising the harm caused by gambling; and*

[41] Sources: Department of Education and Children's Services Annual Report 2004, and Department for Families and Communities, Dicey Dealings: Responsible Gambling Education – a Strategy for South Australian Schools [online], Available: http://www.problemgambling.sa.gov.u/Default.aspx?tabid=32

(iv) any other matter directed by the Minister; and

(a) to ensure that an effective and efficient system of supervision is established and maintained over the operations of licensees under prescribed Acts; and

(b) to advise, and make recommendations to, the Minister on matters relating to the operations of licensees under prescribed Acts or on any aspect of the operation, administration or enforcement of prescribed Acts; and

(c) to perform other functions assigned to the Authority under this Act or a prescribed Act or by the Minister."

In addition to the above functions, the Authority has roles and powers assigned to it under the following Acts:

- Authorised Betting Operations Act 2000;
- Casino Act 1997;
- Gaming Machines Act 1992;
- Racing (Proprietary Business Licensing Act) 2000;
- State Lotteries Act 1966; and
- Problem Gambling Family Protection Orders Act 2004.

Among these functions includes making recommendations on the approval and renewal of licences, and developing and reviewing mandatory 'advertising' and 'responsible gambling' codes of practice for licensed gambling industries, including the SkyCity Adelaide Casino, hotels and clubs with gaming machines, licensed racing clubs and bookmakers, TAB and SA Lotteries. Other key functions of the IGA include the administration of a state-wide voluntary barring scheme in relation to the casino and hotels and clubs with gaming machines, and the problem gambling family protection orders scheme. Under the latter, a person can make a complaint to the IGA about a family member's gambling problem, with the IGA then able to give directions to address the person's gambling problem, such as having the person barred from gambling venues, being required to attend counselling, etc.

The Independent Gambling Authority had 7.2 full-time equivalent employees at 30 June 2005. There are also 7 board members who receive a fee. The IGA had an operating budget of $1.4 million in 2004-05, with total expenses from ordinary activities of $1.3 million.[42] About $300,000 of the budget was specifically provided for the purpose of conducting/ commissioning research into matters relevant to the IGA's functions.

The Office of the Liquor and Gambling Commissioner

The Office of the Liquor and Gambling Commissioner (OLGC) is responsible for administering the following Acts in relation to gambling:

- Gaming Machines Act 1992;
- Casino Act 1997;

[42] Independent Gambling Authority, Annual Report 2004-05.

- Authorised Betting Operations Act 2000;
- Racing (Proprietary Business Licensing) Act 2000; and
- Lottery and Gaming Act 1936.

The OLGC is responsible to the Independent Gambling Authority for the constant "scrutiny" of the operations of various licensed gambling operators approved under the above Acts, including hotels and clubs, SkyCity Adelaide Casino, the TAB, racing clubs, bookmakers and clerks. This includes ensuring that licensed operators comply with relevant legislation, regulations and codes of practice.

The OLGC is also responsible for, *inter alia*, approving gaming machines, games and equipment; approving persons occupying various positions within the gambling industries (e.g., persons in a position of authority, gaming machine managers and employees, "sensitive positions" and "positions of responsibility" within the casino); collecting gaming and wagering tax; compiling gambling statistics; and taking disciplinary action against licensees.

Information on the costs incurred by the OLGC in undertaking its gambling regulation functions is published in the Justice Portfolio Statement as part of the State Budget papers. The net cost of administering the Casino Act 1997 (i.e., the Casino sub-program) was estimated to be $154,000 in 2004-05, while the net cost of regulating other gambling industries (i.e., Gambling Industries sub-program) was estimated to be $2.765 million.[43] The total net cost associated with undertaking all its gambling regulation functions was therefore estimated to be $2.919 million in 2004-05.

The OLGC employs approximately 50 to 60 people in total. A large proportion of administrative and inspectorial staff have duties that are split between gaming and liquor regulation.[44] Of the total persons employed, there was an average of 18.5 full-time equivalent staff were employed by the OLGC in relation to its gaming regulation responsibilities in 2004-05 (only a few staff have duties that are completely dedicated to gaming).

[43] *Portfolio Statement*, Budget Paper 4, State Budget 2005-06.
[44] *Gaming Machines Act 1992 Annual Report 2004-05.*

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Appendix A

Terms of Reference

The research is to be conducted in 2 phases, namely:

- Phase 1: preparation of a comprehensive profile of the South Australian Gambling industry; and
- Phase 2: an analysis of the economic impacts of the gambling industry on particular industry sectors and the South Australian economy (both regionally and the State as a whole).

These research phases are described below.

Phase 1: Profile of the South Australian Gambling Industry

The first phase will be to document and profile the gambling industry in South Australia. This will include, but is not limited to:

- a brief summary of the history of the development of the gambling industry in South Australia;
- the structure, size and scope of the industry (i.e., casino, gaming venues, wagering, lotteries, minor gaming), including trends in employment in the various sectors of the industry;
- an analysis of the extent to which people have switched their expenditure from non-gambling recreational activities to gambling (both generally and for specific types of gambling);
- changes and trends in gambling behaviour and participation;
- changes within industry sectors (such as the gaming machine freeze, industry profile);
- economic benefits, including ancillary benefits, arising from the development of the various sectors of gambling industry (such as employment of staff, tourism, overflow affect to other sectors such as building industry, suppliers of goods, and so on);
- identifiable payments by Government associated with gambling, including costs of rehabilitation services and costs of regulation.

It is expected that State (regional and whole) and national trend gambling data will be examined. It is not intended that Phase One will involve detailed analysis, as this is to occur in Phase Two. It is expected that Phase One will identify questions of enquiry and points of analysis for Phase Two.

Phase 2: Analysis of Economic Impacts

The second phase will entail an analysis of the economic impacts of the gambling industry on particular industry sectors and the South Australian economy (both regionally and the State as a whole).

The economic contribution of gambling will be assessed for:

- each gambling sector and the gambling industry as a whole;
- non-gambling industries and sectors;
- South Australia (State and regional areas).

The economic impact of gambling will be assessed for impacts:

- of any particular gambling industry sectors on other gambling industry sectors;
- of any particular gambling industry sector and the industry as a whole, on non-gambling industries and sectors;
- on other forms of expenditure (e.g., entertainment, recreational, retail, household staples), for gambling as a whole and for the particular sectors of gambling; and
- on employment patterns.

Appendix B

South Australian Tax Rates for Various Forms of Gambling

The following identifies the current State tax regimes that apply to gambling activities in South Australia.

B.1 Electronic Gaming Machines

Tax rates are levied on net gambling revenue (NGR) which is the total amount of all bets paid less the total amount of all prizes won. Different tax rates apply in respect of "non-profit businesses" such as clubs and community hotels (see Table B.1) and "any other case" such as for-profit hotels (see Table B.2).[45]

Table B.1
Tax Rates for "Non-Profit Business"

Net gambling revenue amount	Tax rate
$0 to 75,000	Nil
$75,001 to $399,000	21 per cent of excess
$399,001 to $945,000	$68,040 plus 28.5 per cent of excess
$945,001 to $1.5 million	$223,650 plus 30.91 per cent of excess
$1.5 to $2.5 million	$395,200.50 plus 37.5 per cent of excess
$2.5 to $3.5 million	$770,200.50 plus 47 per cent of excess
Over $3.5 million	$1,240,200.50 plus 55 per cent of excess

Source: Gaming Machines Act 1992.

Table B.2
Tax Rates for "any other case"

Net gambling revenue amount	Tax rate
$0 to 75,000	Nil
$75,001 to $399,000	27.5 per cent of excess
$399,001 to $945,000	$89,100 plus 37 per cent of excess
$945,001 to $1.5 million	$291,120 plus 40.91 per cent of excess
$1.5 to $2.5 million	$518,170.50 plus 47.5 per cent of excess
$2.5 to $3.5 million	$993,170.50 plus 57 per cent of excess
Over $3.5 million	$1,563,170.50 plus 65 per cent of excess

Source: Gaming Machines Act 1992.

B.2 Casino

Casino duty is payable at a rate of 0.91 per cent of net gambling revenue in relation to table games, and 34.41 per cent of net gambling revenue in relation to gaming machines.

[45] *Gaming Machines Act 1992.*

B.3 SA Lotteries Commission

A tax rate of 41 per cent is payable on net gambling revenue from all gambling activities, while net proceeds are also returned to the State. Tax revenue and net proceeds derived from "sports lotteries [i.e., soccer pools] and special lotteries" are paid into the Recreation and Sport Fund, while tax revenue, net proceeds and income tax equivalent derived from all other lotteries conducted by the Commission (i.e., Lotto, PowerBall, Super 66 and instant lotteries) are paid into the Hospitals Fund.[46]

B.4 TAB

A tax rate of 6.0 per cent is levied on net wagering revenue. Prior to the privatisation of the TAB in 2001-02, after tax proceeds were returned to the State.

B.5 Racing

Tax in respect of on-course totalisators is levied on total turnover – i.e., sum of bets placed – for each race meeting. Tax rates levied in respect of on-course totalisators are summarised in Table B.3.

GST paid in respect of on-course totalisators is reimbursed by the State.

Table B.3
Tax Rates for On-course Totalisators

Turnover per club per meeting	Tax rate
$0 to $30,000	1.0 per cent
$30,001 to $60,000	$300 plus 2 per cent of excess
$60,001 to $120,000	$900 plus 3 per cent of excess
More than $120,000	$2,700 plus 5.25 per cent of excess

The State tax on bookmaker's turnover was abolished on 2nd December 2001 to bring South Australia in line with tax arrangements that exist in most other States. The tax on sports betting with bookmakers was also abolished although a tax of 0.25 per cent of turnover on sports bets from persons outside Australia remains in place.

[46] State Lotteries Act 1966, and Office of Financial Management, New South Wales Treasury, *Interstate Comparison of Taxes*, 2004-05.

Appendix C

Interstate Comparison of Gambling Taxes 2005-06

The following appendix presents an interstate comparison of the various taxation arrangements that apply in respect of gambling industries across different jurisdictions of Australia. The interstate comparison is taken from *Interstate Comparison of Taxes 2005-06* (Office of Financial Management, New South Wales Treasury).

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
RACING TAXES: **ON-COURSE TOTALIZATOR TAX** Gross deduction from investment:	Privatised entity. Maximum, including FootyTAB, of 16% over the year. (Maximum commission from any one pool 25%). <u>Fixed Odds (Futures) Racing Betting</u> Not applicable (Fixed Odds basis).	Privatised entity. Maximum of 16% over the year. (Maximum commission from any one pool 25%).	Privatised entity. Maximum of 16% over the year. (Amount of deduction percentage can vary from type of bet and from time to time depending on policy. The percentage is limited to a maximum of 25% on any one event but out of the total amount invested in a financial year in totalizators the percentage will not exceed 16%.)	Participate in Supertab, for interstate racing and Perth gallops **Win/Place:** 14.25% **Non-Supertab Win/Place average of:** 15.60% **Doubles, Quinella, Quartette, Trifecta, Sweepstakes, Superfecta:** 20.00% **Favourite numbers:** 25.00%	The deduction percentage is limited to a maximum of 25% from investment. Deduction percentage can vary according to type of bet.		Privatised entity. Abolished. All Pools combined with TABQ. Maximum of 16% over the year. (Amount of deduction percentage can vary from type of bet and from time to time depending on policy. The percentage is limited to a maximum of 25% on any one event but out of the total amount invested in a financial year in totalizators the percentage will not exceed 16%.) <u>Fixed Odds Betting</u> TABQ has rights to a licence from 1 January 2001.	

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
Net percentage received by Government:	From 1 July 2000 Parimutuel Tax rate: 19.11% of player loss (i.e. gross deduction). Subject to approval by the Treasurer, tax on 'domestic' non-TAB totalizator investments fully rebated to clubs. Fixed Odds (Futures) Racing Betting Tax rate: 10.91% of player loss	**Tax rate:** 19.11% of player loss (i.e. gross deduction). (Minimum 84% returned to players). Payment of taxation is required within 14 days after the event.	20% of commission (gross deduction) of which 8.5% is allocated to the Community Investment Fund. Tax is collected monthly in arrears. GST credit provided. Quarterly licence fee $159,200. Increases on 1 October each year based on CPI.	Nil **Note:** State Government reimburses GST paid by racing clubs on their gross totalizator margin.	Abolished 1 July 2005		Totalizator 40% of licensee's commission deducted less GST. For races other than thoroughbred, harness horse and greyhound races and prescribed sporting events held **In Australia:** 20% of licensee's commission deducted less GST. **Outside Australia:** 10% of licensee's commission deducted less GST.	Government receives: ▪ Licence fee monthly of 10% of capital value divided by 12 less GST. ▪ Dividend and Tax Equivalent Payments (2000-01 = 3.6%). In addition clubs receive 4% and RDF 0.5%.
OFF-COURSE TOTALIZATOR TAX Gross deductions from investments:	Parimutuel Pools As for on-course Totalizators. Fixed Odds (Futures) Racing Betting As for on-course Totalizators.	As for on-course Totalizators.	As for on-course Totalizators.	Participate in Supertab, for interstate racing and Perth gallops **Win:** 14.50% **Place:** 14.25% **Non-Supertab Win/Place average of:** 15.60% **Doubles, Quinella, Quartette, Trifecta, Sweepstakes, Superfecta:**.. **Favourite numbers:** 25.00% For non-combined pools operations the win/place deduction is currently 14.25%. Legislative amendments are being progressed to increase the Win deduction to 14.5% for non-combined pools operations.	As for on-course Totalizators.	Abolished.	As for on-course Totalizators.	As for on-course Totalizators.

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
Net percentage received by Government:	Parimutuel Pools As for on-course Totalizators. Fixed Odds (Futures) Racing Betting As for on-course Totalizators.	As for on-course Totalizators.	As for on-course Totalizators.	**All pools:** 5% of turnover. However, 0.5% is returned as rebate to TAB (effective 1 February 2001). **Note:** State Government reimburses GST paid by TAB on gross gambling margin.	6% of net wagering revenue (deductions) .		As for on-course Totalizators.	As for on-course pools.
BOOKMAKER'S TURNOVER TAX Net percentage received by Government **Racing**:	Abolished.	Abolished.	Abolished.	All courses **Racing:** 0.00% **Note:** State Govt reimburses GST paid by bookmakers on gross gambling margin.	Abolished.	On Course **On horse racing & greyhound racing in either Tasmania or outside Tasmania** 1.0% **On all other bets placed by persons in Australia or New Zealand:** 0.5% **On all other bets placed by persons outside of Australia or New Zealand:** 0.25% Bookmakers can offset the amount of tax payable by GST amounts they have paid.	0.33% of turnover on racing events (the rate is GST exclusive).	Abolished 29 September 2003.

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
Sports Betting:	TAB Totalizator Sports Betting **Maximum deduction:** 25.00% Note: Included in maximum commission average of 16% across parimutuel pools. **Tax Rate:** 19.11% of player loss. Fixed Odds Sports Betting **Tax Rate:** 10.91% of player loss. Bookmakers Abolished.	Totalizator Sports Betting **Maximum deduction:** 25.00% **Tax Rate:** 19.11% of deduction. Payment of taxation is required within 14 days after the event. Fixed Odds Sports Betting **Tax Rate:** 10.91% of player loss. Payment of taxation is required monthly within 7 days of the end of the month.	**From investments:** Totalizator As for on-course and off-course Race Totalizator. Fixed Odds Betting Not applicable (based on gross revenue i.e. bets taken less payouts). **Gross deductions** **Net percentage received by Government:** Totalizator 20% of commission (gross deduction) of which 8.5% is allocated to the Community Investment Fund. Tax is collected monthly in arrears. GST credit provided.	**At a racecourse:** 0.5% **At a sporting venue:** 2.0%	From 2 December 2001 **Bets made by persons outside of Australia:** 0.25% of turnover. **Other Bets:** Nil		From 1 July 2000 **Domestic sourced bets:** reduced to Nil (Bets are subject to GST.) **International sourced bets:** 0.25% of turnover. (Bets are not subject to GST.)	0.25% on designated international sports. 0.50% on head to head bets. 1.00% on other fixed odds. 6.75% index betting. 6.00% parimutuel. GST credit provided.

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
Sports Betting (continued):			Fixed Odds Betting Tax Rate 20% of gross revenue of which 8.5% is allocated to the Community Investment Fund. Tax is collected monthly in arrears. GST credit provided.					
OTHER GAMBLING TAXES **GAMING MACHINE TAX** (Also known as Poker Machine Tax)				Not Applicable.		The Federal Group has exclusive rights to conduct casino operations and operate gaming machines in Tasmania for a 15 year period starting from 1 July 2003. At the conclusion of this period, the licence converts to a rolling five year licence renewable annually.		
Clubs:	From 1 September 2005 Levied on annual profits (equates to player loss or gross margin of operator) derived from gaming machines. **Up to $200,000:** 0.0% **$200,001-$1m:** 10.70% **$1m-$5m:** 19.40% **$5m-$10m:** 22.30% **>$10m:** 23.70%	24.24% of gross profit (equates to player loss or gross margin of operator).	Based on monthly metered win (i.e. amount bet less payout to players). Monthly Metered Win **$0-$9,500:** 0.0% **$9,501-$75,000:** 17.91% **$75,001-$150,000:** 20.91% **$150,001-$300,000:** 23.91%	No gaming machines	Tax based on annual net gambling revenue in a financial year. **$0-$75,000:** Nil **$75,001-$399,000:** 21% of excess. **$399,001-$945,000:** $68,040+28.5% of excess.	Tax based on annual net gambling revenue in a financial year. **<$35m:** 20.88% **≥$35m:** 25.88% of excess. In addition, a community support levy of 4% of gross profit is levied.	Based on monthly gross profits: **$0-$5,000:** 12.91% **$5,001-$50,000:** 22.91% **$50,001-$150,000:** 32.91% **>$150,000:** 42.91%	Tax is levied on gross monthly gaming machine revenue (player loss) as follows: **<$15,000:** 0.0% **$15,000<$25,000:** 15% **$25,000<$50,000:** 16% **>$50,000:** 18% Unlawful: 100%

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
Clubs (continued)	(Under the Community Development and Support Expenditure Scheme, the marginal tax rate on clubs' earnings above $1m is reduced by 1.5% if clubs contribute 1.5% of gaming revenue in excess of $1m to eligible community projects). Club tax rate changes are being phased in over seven years, starting from 1 September 2004 (see Table 1, Appendix B) GST rebate payments will continue to be provided to all clubs on the first $200,000 of gaming profits from 2004-05.		**$300,001-$1,400,000:** 25.91% **Over $1,400,000:** 35.91% (includes a levy of 8.5% for the Community Investment Fund). Note: These tax rates are Post-GST.		**$945,001-$1.5m:** $223,650+30.91% of excess. **$1.5m-$2.5m:** $395,200.50+37.5% of excess. **$2.5m-$3.5m:** $770,200.50+47% of excess. **Over $3.5m:** $1,240,200.50+55% of excess. These rates apply to all clubs and other not-for profit licensees.			
Reference Period:	Payments are quarterly, relating to the previous 3 months' transactions.	Payment of taxation is required weekly within 7 days of the end of the week.	Payments are made monthly relating to previous month's activity.		Payments are made monthly relating to previous month's activity.	Payments relate to previous month's activity.	Payments are made monthly relating to previous month's activity.	Payments are monthly and relate to transactions in the previous month.
Hotel:	From 1 July 2005 Levied on annual profits (equates to player loss or gross margin of operator) derived from gaming machines. **Up to $25,000:** 5.70% **$25,001-$200,000:** 15.70% **$200,001-$400,000:** 18.50% **$400,001-$1m:** 27.10%	32.57% of gross profit of which 8.33% is allocated to a Community Support Fund. In addition, Tattersall's is required to pay additional tax equal to 7% of its gross gaming revenue at clubs and hotels (in lieu of a licence fee payment).	35.91% of monthly metered win (i.e. amount bet less payout to players). (Includes 8.5% levy for the Community Investment Fund). In addition, hotels are required to contribute to the Major Facilities Fund. Based on monthly metered win (i.e. amount bet less payout to players).	No gaming machines.	Tax based on annual net gambling revenue in a financial year. **$0-$75,000:** Nil **$75,001-$399,000:** 27.5% of excess. **$399,001-$945,000:** $89,100+37% of excess.	As for clubs. In addition, a community support levy of 4% will be levied.	42.91% of gross profit plus a Community Benefit Levy at 10% of gross profit.	25.9% of gross monthly gaming machine revenue.

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
Hotel (continued)	**$1m-$5m**: 32.10% **>$5m:** 36.40% Hotel tax rates changes are being phased in over seven years, starting from 1 July 2004 (see Table 2 Appendix B)		Monthly Metered Win **$0-$100,000:** 0.0% **$100,001-$140,000:** 3.5% **$140,001-$180,000:** 5.5% **$180,001-$220,000:** 7.5% **$220,001-$260,000:** 13.5% **over $260,000:** 20.0% **Note:** These tax rates are Post-GST.		**$945,001-$1.5m:** $291,120+40.91% of excess. **$1.5m-$2.5m:** $518,170.50+47.5% of excess. **$2.5m-$3.5m:** $993,170.50+57% of excess. **Over $3.5m:** $1,563,170.50+65% of excess.			
Reference Period:	Payments are quarterly, relating to the previous 3 months' transactions.	Payment of taxation is required weekly within 7 days of the end of the week.	Payments are made monthly relating to previous month's activity.		Tax payments are made monthly relating to previous month's activity.	Payments relate to previous month's activity.	Payments are made monthly relating to previous month's activity.	Payments are monthly and relate to transactions in the previous month.
Gaming Machine Levy:		Health Benefit Levy: **From 2005-06:** $3,033.33 per annum for each operating machine. The levy is payable by the two gaming operators and the casino operator in two equal instalments by 15 December and 15 June each year.			A stamp duty surcharge applies to the transfer of a gaming machine business. See transfer duty.			

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
CASINO								
Licence fee:	A once only non-refundable lump sum payment of $256m (fully paid).	$358.4 million (fully paid).	$164,900 per quarter. Increases on 1st July each year based on CPI.	$2.09 million (2004/05). (indexed annually according to CPI)	Nil	For 2005-06, $118,900 per month (amount is indexed annually).	Not imposed.	Annual fee $658,372 for 2003-04 CPI linked.
Tax rate:	From 1 July 2005 10.91% of gross revenue from table gaming plus super tax on table revenue above $277m p.a. at 1% per each $7m to a maximum of 35.91%. 13.41% of gross revenue from slots. International "high-roller" program suspended from 1 July 2001.	Regular Players 21.25% of gross gaming revenue from table games and gaming machines plus a super tax. **Super tax:** 1% for each $20m of gross gaming revenue above $500m (CPI adjusted from 1994) up to maximum of 20% on gross gaming revenue over $880m (CPI adjusted from 1994). The maximum total tax on marginal revenue for regular players is 41.25%. Commission-based Players 9% of gross gaming revenue from dedicated gaming tables plus a super tax. **Super tax:** 1% for each $20m of gross gaming revenue over $160m (CPI adjusted from 1994) up to a maximum of 12.25% on gross gaming revenue over $380m (CPI adjusted from 1994).	20% of monthly gross revenue for Gold Coast and Brisbane casinos and 10% of gross revenue for Townsville and Cairns casinos. **Junkets (Premium players):** 10% of monthly gross gaming revenue for Gold Coast and Brisbane casinos and 8% for Cairns and Townsville casinos. (Gross gaming revenue equates to amount bet less amount won by players.) Taxes are collected monthly in arrears. GST credit provided.	15% of gross revenue. (Subject to legislative amendments currently being progressed through Parliament.) **Proposed changes to come into effect are:** International Commission Business (ICB) 13% Dec'02 – Dec'04 12% Dec'04 – Dec'06 11% Dec'06 onwards EGMs & Trackside 17% Dec'02 – Dec'03 18% Dec'03 – Dec'04 20% Dec'04 onwards Table Games & Keno 16% Dec'02 – Dec'04 17% Dec'04 – Dec'06 18% Dec'06 onwards.	Table games at 0.91% of net gambling revenue. plus gaming machines at 34.41% of net gambling revenue.	The Federal Group has exclusive rights to conduct casino operations and operate gaming machines in Tasmania for a 15 year period starting from 1 July 2003. At the conclusion of this period, the licence converts to a rolling five year licence renewable annually. The tax is based on gross profit earned in a financial year. Keno & Table Gaming The tax rate applying to keno is 5.88% of gross profit. The gaming tax rate applying to casino table games is 0.88% of gross profit. Gaming Machines **<$35m:** 20.88% **≥$35m:** 25.88% of excess. From 1 July 2013, a single flat tax rate of 25.88% will apply to all gross profit.	**Lasseters Casino** Table Games 8% of gross profit (effective rate is 0% after GST). Poker Machine Tax 21% on gross profit. (Tax payable is calculated at the prescribed rate and is to be reduced by an amount equal to GST). Internet Casino Australian sourced bets are not permitted. International sourced bets: 4% of gross profit. (Bets are not subject to GST). **Skycity Darwin Casino** In-house Keno & Table Games 12% of gross profit less GST.	**General Gaming Operations:** 20% of gross revenue. GST credit provided. **Commission-based Operations:** 10% of gross revenue. GST credit provided. Interactive Gaming **Licence Fee:** • $200,000 on the day licence is granted; • $100,000 on each anniversary of that day. **Tax rate:** Tax payable is 20% of gross profit each month. This drops to 10% in the month after total profit for the year exceeds $10m. The month after profits first exceeds $20m, the rate drops to 5% until the end of the financial year. Not subject to GST.

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
Tax rate (continued):		The maximum total tax on marginal revenue for commission-based players is 21.25%. There are no dedicated gaming machines for commission-based players. Where commission-based players play on gaming machines, the 21.25% tax rate applying to regular players applies. GST credit provided. Payment of taxation is required monthly within 7 days of the end of the month. Super tax is calculated annually and payment is required by 7 July of the following financial year.					<u>Poker Machine Tax</u> 20% of gross profit. (Tax payable is calculated at the prescribed rate and is to be reduced by an amount equal to GST.)	
Other State Charges:	Community Benefit Levy of 2% of gross gaming revenue.	1% of gross revenue of both regular and commission- based players (Community Benefit Levy).	1% of monthly gross revenue to Community Benefit Fund.	1% of gross revenue for upkeep of Burswood Park.				
LOTTERIES	66.1% of **player loss** (i.e. subscriptions less outgoings for the public lottery) from 1 September 2001.	79.4% of player loss where GST is payable. 90.0% of player loss where GST is <u>not</u> payable. (The minimum return to players is 60%)	62% of monthly gross revenue for **declared lotteries** of which 8.5% is allocated to the Community Investment Fund. 55% of monthly gross revenue for **Instant Scratch-its** of which 8.5% is allocated to the Community Investment Fund.	**Weekend Lotto, Oz Lotto, PowerBall, Super 66 and Instants** Under the *Lotteries Commission Act 1990*: 40% of net subscriptions to Hospitals, 5% to the Arts, 5% to Sport and 12.5% to eligible organisations.	**Lotto, Oz Lotto PowerBall, Super 66 and Instant lotteries (scratchies):** 41% of net gambling revenue is paid into Hospitals Fund. Distributable surplus and income tax equivalent is paid into the Hospitals Fund.	No State Lotteries. Tasmania receives 100% of duty paid to the Victorian Government for Tasmanian subscriptions to Tattersall's Lotteries.	Northern Territory receives a share of duty paid to the Victorian Government for NT subscriptions to Tattersall's Lotteries.	<u>Victoria:</u> ACT receives 79.4% of the proportion of player loss on all tickets sold in the ACT for all games except Soccer Pools which is 57.52% of player loss.

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
LOTTERIES (continued)		(Revenue transferred by standing appropriation from Consolidated Fund to Hospitals and Charities Fund and Mental Health Fund.) Payment of taxation is required within 7 days of the determination of the lottery. **Footy Tipping:** 58.41% of player loss where GST is payable. 67.50% of player loss where GST is not payable. (The minimum return to players is 60%) Payment of taxation is required within 7 days of the determination of the lottery.	45% of monthly gross revenue for **Golden Casket** of which 8.5% is allocated to the Community Investment Fund. 59% of monthly gross revenue for **Soccer Pools** of which 8.5% is allocated to the Community Investment Fund. (Monthly gross revenue equates to total receipts less prizes.) Taxes are collected monthly in arrears. GST credit provided.	Up to 5% to Festival of Perth and Australian Commercial Film Industry. (Net subscriptions = sales less prizes)			The Australian Territory Company, Global Players Network Pty Ltd, DK Marketing Pty Ltd and CMS Pty Ltd have licences to conduct a mail order lottery.	NSW: ACT receives 66.1% of the proportion of player loss on all tickets sold in the ACT for all games.
Soccer Pools:	As per above.	57.52% of player loss where GST is payable. 68.0% of player loss where GST is not payable. (The minimum return to players is 50%) Payment of taxation is required within 7 days of the determination of the lottery.	As above.	As above.	41% of net gambling revenue from soccer pools and the net proceeds of soccer pools are paid into the Recreation and Sport Fund.	As for lotteries. Tasmania receives 100% of duty paid to the Victorian Government for Tasmanian soccer pools subscriptions.	57.52% of player loss.	As above.
Licence Fee:			\$161,800 per quarter. Increases on 1 October of each year based on CPI.					

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
OTHER GAMBLING TAXES	**Fixed Odds (Futures) Racing Betting** 10.91% of monthly gross profit (i.e. sales less payments). **Fixed Odds Sports Betting** 10.91% of monthly gross profit. (i.e. sales less payments). **FootyTAB, Soccer TAB, SportsTAB** 19.11% of player loss (commission).		**Interactive Tax –** if the game is a game approved under a gaming Act − the rate of tax specified in that Act for the game or if this does not apply: 50% of gross profit of which 8.5% is allocated to the Community Investment Fund. (Gross profit equates to the amount bet on a game less amount won by players.) The tax is collected monthly in arrears. GST credit provided. Quarterly licence fee of $57,800. Increases on 1 October each year based on CPI.	**Australian Rules, Football and Cricket TAB betting Gross Commission:** 25.0% **Tax to Government:** 5.0% 75% of sport betting receipts are paid out in dividends and the remainder (i.e. net of the sports betting tax and after the TAB has deducted its administrative expenses) is made available for allocation by the Minister for Sport and Recreation.	**Fixed Odds Sports Betting conducted by TAB** **State Tax:** 6.0% of net wagering revenue.	Taxes related to minor gaming activities including lucky envelopes; bingo; instant draw bingo; sweepstakes; raffles and gratuitous gaming abolished from 1 July 2004.		Nil
Keno:	**For all games of Keno including Heads or Tails?** 8.91% of player loss (total amount wagered less contribution to the Keno Prize Fund) where player loss is less than or equal to $86.5 million, and 14.91% of player loss thereafter. Payment of taxation is required weekly and is payable on the following Monday.	**Club Keno** 24.24% of player loss subject to a minimum player return of 75%. Payment of taxation is required weekly in respect of the week ending Saturday and is payable on the following Tuesday.	**Keno** Jupiters Keno (Statewide) 26.25% of monthly gross revenue, after deducting casino commissions, of which 8.5% is allocated to the Community Investment Fund. The tax is collected monthly in arrears. GST credit provided. Quarterly Licence Fee $161,800. Increases on 1 October each year based on CPI.		**Keno** (Operated by SA Lotteries) 41% of net gambling revenue is paid into the Hospitals Fund. Distributable surplus and income tax equivalent is paid into the Hospitals Fund.	**TAS Keno** 5.88% of gross profit.	**NT Keno** 20% on gross profit. (Tax payable is calculated at the prescribed rate and reduced by the GST amount.)	**VIC Keno** Refer to Victorian Keno under Lotteries. **ACTTAB Keno:** 2.53% of turnover.

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
Keno (continued) **Internet Gaming**			Brisbane and Gold Coast Casinos Receive 25% commission on sales of Jupiters Keno and pay tax at 21% (including a 1% Community Benefit Levy (CBL)) on commissions. Townsville and Cairns Casinos Receives 25% commission on sales of Jupiter Keno and pay 11% tax (including a 1% CBL) on commissions.			**Internet Gaming:** Sportsbetting Endorsement 0.5% of turnover in relation to wagers from persons in Australia and New Zealand. 0.25% of turnover in relation to wagers from overseas persons. Fixed Odds Wagering Endorsement 1.0% of turnover. Simulated Gaming (Internet Gaming) Endorsement *Within Australia for gross profit* **<$10m:** 20% **$10m-<$20m:** 17.5% of excess.		

TAX	*NSW*	*VIC*	*QLD*	*WA*	*SA*	*TAS*	*NT*	*ACT*
Internet Gaming (continued)						**>$20m:** 15.0% of excess. *Outside Australia* 4.0% of total gross profits. Major Lottery Endorsement 35.55% of turnover		

Phase 2

South Australian Gambling Industry

Economic Impact of Gambling

Phase 2: Economic Impact of Gambling

Contents

Phase 2: Economic Impact of Gambling

Contents (continued ...)

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1. Economic Benefits and Costs

1.1 Introduction

This is the second part of the report into the South Australian gambling industry. The first part – Phase 1 – presented a comprehensive profile of the industry, including *inter alia*, the racing industry, EGMs in hotels and clubs, the casino and lotteries. The employment impacts of the EGM industry were also examined. This report – Phase 2 – continues the research into the South Australian gambling industry, focussing on the economic impact of gambling. Several economic and statistical techniques are used to quantify impacts in a way that is intended to be useful to policy-makers.

It should be explained why certain techniques have been chosen and not others. Also, some of these techniques require an explanation of the concepts underlying them. That is the purpose of this chapter.

Like most industries or activities, gambling has an array of economic and other impacts. These include:

- consumer spending within the gambling industries and in other industries;
- investment spending within the gambling industries and in other industries;
- transfer payments from the industry to the community (gambling taxes, licence payments, and voluntary community contributions);
- employment within the gambling industries and in other industries;
- the 'consumer surplus' (consumer utility or satisfaction) derived from gambling; and
- social and private costs of gambling (including the cost of treatment of problem gamblers, preventative spending, and costs associated with distress to family members, depression, suicide, etc.).

This chapter will consider each type of impact in turn.

1.2 Consumer Spending

In Chapter 3 of Phase 1 of this report, the researchers outlined the extent of consumer expenditure on gambling. The numbers involved are large in absolute terms: South Australian gambling expenditure was $1.062 billion in 2003-04. But this only constituted a relatively small component of total consumer spending: 2.91 per cent of total Household Disposable Income (HDI).

The researchers pointed out in Chapter 6 of Phase 1, that it is difficult to identify the impact of changes in gambling expenditure on overall consumer spending. There was no noticeable effect on overall household expenditure from the introduction of EGMs in this State. The growth rate of non-gambling household expenditure actually *increased* in the years after EGMs appeared, although a note of caution was sounded in that the immediate pre-EGM period was marred by a significant recession and high interest rates. These factors acted to constrain household expenditure on all items. The post-EGM period (1994-99) was associated with declining interest rates, a fall in inflation and stronger employment growth, so that consumer confidence and business confidence was strongly positive. In the last five years, rising house prices and stable interest rates have led to 'wealth effects', with higher

household debt, an increase in credit card debt and a maintenance of consumer and business confidence. Only the drought in 2001-02 and rising petrol prices have dented confidence and resulted in some expenditure switching.

Notwithstanding, that the growth rate of non-gambling household expenditure did increase in the immediate post-EGM period, this still leaves open the possibility that particular non-gambling sectors might have experienced negative impacts from gambling expenditure. In Chapter 2 of this report, different approaches are used to examine the potential impact of gambling on non-gambling expenditures. A time series model of consumption expenditure excluding gambling is developed to test whether the introduction of EGMs has had a significant impact on non-gambling consumption expenditure. Household level data from the Household Expenditure Survey are then used to compare average expenditure patterns for gamblers and non-gamblers to identify statistically significant differences between the two groups. This provides insight into the types of non-gambling expenditure from which gambling has diverted spending.

There is another consumer-focussed method for analysing the economic impact of gambling. It is based around the concept of consumer surplus – the utility or satisfaction consumers derive from gambling. This is discussed in section 1.4.

1.3 Investment Spending

There is undoubtedly a large amount of investment associated with the expansion of gambling over the last few decades. The list would include casino facilities, the upgrading of racetracks, improvement of TABs, installation of lottery terminals in newsagents, and the development of electronic gaming machines with better graphics and more features. In addition to the investment directly related to gambling, there would also be a large amount that is indirectly related. For example, a hotel owner who has installed EGMs may choose to upgrade bar and dining facilities to provide a complete hospitality package and to differentiate the hotel from other EGM venues with lesser facilities.

Much of the investment related to gambling in South Australia is not actually spent within the State. For example, as far as the researchers are aware, there is no investment related to the design or manufacture of EGMs in this State so that a 'considerable part of the revenue is used to purchase gaming machines from outside the State'.[47] Much of the betting at the SA TAB is on races run on interstate tracks. Gambling investment in South Australia mainly involves the locations where people go to gamble – hotels, clubs, the casino, TABs, local racetracks, and newsagents.

To many people, capital investment would seem the most obvious economic impact of the gambling industry. From the economist's point of view, however, there are two problems with focussing on investment spending. The first problem is that no reliable data exists. The Australian Bureau of Statistics does not provide figures for investment spending broken down by detailed industry and State (this may be due to the inherent difficulty of defining and measuring investment). There is no other source of data that the researchers are aware of. So to obtain any reliable figures, it would be necessary to directly survey all elements of the industry. In addition to the cost involved, there would be problems in relation to commercially sensitive information.

[47] As was noted in the discussion paper prepared for Parliament (1991), p. 44.

The other problem with analysing investment is the difficulty of measuring the switching effect predicted by economic theory. The pool of investment available for the South Australian hospitality and recreation industries is finite. A hotel owner who borrows a million dollars for an EGM facility upgrade will be reducing the investment available for other South Australian businesses, or at least increasing the 'price' (interest rate) of other investment. Since we cannot get reliable data on investment by industry sector, we cannot measure the extent of this switching effect. There is a second component of investment switching that we have already pointed to. Investment expenditure for renovations, extensions or 'new start-up ventures' in the café and restaurant sector may decline in the event that patronage declines, as consumers switch attendance patterns to hotels, clubs and taverns. The net impact may be only, that capital investment spending has switched sectors in response to the economic incentives (and disincentives) created by the introduction of EGMs.

In its calculation of the economic costs and benefits associated with gambling, the Productivity Commission consciously refrained from analysing the economic effect of investment in the gambling industry. The Commission stated:[48]

> ***The important message is that measures of an industry's size (denoted by such things as investment, turnover, employment, etc.) are not measures of the net contribution of an industry to the wellbeing of the community or the economy.***

1.4 Consumer Surplus

In its landmark report, *Australia's Gambling Industries,* the Productivity Commission (1999) used an innovative consumer surplus approach to quantify the total benefit (and loss) generated by gambling.

The consumer surplus from the purchase of a product is the difference between the amount which the consumer pays for the product, and the maximum amount which the consumer would be prepared to pay. If you buy an apple for $1.00, but you would in fact have been willing to pay up to $1.50 for it, you have just received a consumer surplus benefit of 50¢.

The Commission calculated the consumer surplus for recreational gamblers using the standard economic methodology, as if gambling were just like any other product in the marketplace. It then calculated consumer surplus for problem gamblers in a two-stage process. Firstly, it broke down problem gambler spending into:

(a) the amount they might spend in the absence of their compulsion; and

(b) the 'excess' amount caused by their compulsion.

Consumer surplus for (a) was calculated as per recreational gamblers. For (b), a figure was calculated for the satisfaction gained from 'excess' spending. The difference between the actual value of 'excess' spending and the satisfaction gained from it was counted as a loss to the problem gambler. This loss dramatically outweighed the benefit from (a), producing a large overall loss for problem gamblers – estimated at $2.7 billion (of which $2.2 billion derived from EGMs).

[48] Productivity Commission (1999), Vol. 1, p. 5.27.

The final element of consumer surplus involved the tax and licence revenue from gambling and the voluntary community contributions made by gambling providers. These effectively represented a transfer of consumer surplus from the gambler to the government or community, and thus needed to be added back into the consumer surplus total.

The calculation of the total benefit from all gambling involved adding the consumer surplus from non-problem gamblers, the loss to problem gamblers, and the tax and licence revenue and community contributions. The Commission's figures for all are shown in Table 1.1.

Table 1.1
Consumer Surplus and Tax Benefits from All Gambling (1997-98 $ billion)

	Benefits	Costs	Total
Consumer Surplus – Recreational Gamblers	2.745 – 4.460		2.745 – 4.460
Consumer Surplus – Problem Gamblers – Benefit from 'normal' spending (spending in absence of compulsion)	0.165 – 0.267		0.165 – 0.267
Consumer Surplus – Problem Gamblers – Loss on 'excess' spending		2.856 – 2.963	(2.856) – (2.963)
Tax, licences and community contributions	4.312		4.312
Net Total Benefit/Surplus			4.365 – 6.076

Source: Productivity Commission (1999), p. C.25.

One major advantage of this approach is that consumer surplus from gambling (or any other industry) can be studied in isolation. No 'switching effect' applies, because consumer surplus is a measure of the *net* gain for the consumer, and already implicitly includes the losses arising from consuming less of the alternative.[49]

However, the researchers have some reservations about the consumer surplus approach. It is perfectly logical and consistent with economic theory, but nevertheless has some inherent problems. The most obvious problem is related to the elasticity of demand for gambling (in other words, the sensitivity of demand for gambling to changes in the 'price' of gambling). The concept of elasticity is described in Box 1.1.

Box 1.1: Elasticity of Demand

Elasticity is an economic concept that refers to how demand for a product or service responds to a change in price for the product or service. Demand is said to be elastic (i.e. greater than 1) when the change in the quantity demanded is proportionally greater than the proportional change in price (e.g. quantity demanded increases by 10 per cent following a 5 per cent decrease in price). Demand is described as inelastic (i.e. less than 1) when the proportional change in quantity demanded is less than the proportional change in price (e.g. quantity demanded increases by 2 per cent following a 5 per cent decrease in price). Unitary elasticity (i.e. equals 1) applies when the proportional change in quantity demanded is equal to the proportional change in price (e.g. quantity demanded increases by 5 per cent following a 5 per cent decrease in price).

[49] Productivity Commission (1999), Vol. 3, p. C.3.

Elasticity figures cannot be measured directly – they must be estimated by econometric methods. This is a difficult task, and different attempts have produced wildly different figures. As the late Anne Hawke noted, there is "no conclusive evidence either in Australia, or in other parts of the world, on the appropriate ranges for elasticity measures".[50] The Commission prepared a table summarising empirical research on gambling elasticity: the estimates ranged widely from very elastic (up to 3.05) to very inelastic (0.03).[51]

Although most studies suggested demand was elastic (greater than 1), the Commission did not believe that this was accurate. It chose three ranges of elasticities: from 0.3 to 1 for severe problem gamblers, from 0.6 to 1 for moderate problem gamblers, and from 0.8 to 1.3 for recreational gamblers. These figures are reasonable, but they still amount essentially to informed guesswork. The problem is that elasticity is crucial to the consumer surplus calculations, and even a small change in elasticity can produce a large change to the final consumer surplus figure.

Since the Commission report appeared, the only new study of gambling elasticity was of the demand for EGM gambling in new casinos in several American states over the period 1991 to 1998.[52] The study calculated an elasticity of 1.5 in 1991, falling to 0.9 by 1998 – figures comparable with the Commission's estimates for recreational gamblers.

Despite the inherent uncertainty with elasticity figures for gambling, the researchers will use the Commission figures in our calculation of the gambling consumer surplus in South Australia. This is done in Chapter 5 using the Commission's consumer surplus equations updated with the latest expenditure figures for South Australia and with our estimates of the numbers of problem and non-problem gamblers in this State, which are derived in Chapter 4. In the Centre for Economic Studies report, *The Impact of Gaming Machines on Small Regional Economies* (2001) the researchers developed a methodology for estimating problem gambler numbers on a State or regional basis.[53]

1.5 Tax and Licence Payments and Community Contributions

Australian governments collect a vast amount of revenue from gambling. This reflects the phenomenal growth in gambling expenditure and the high rates of tax imposed. For example, in South Australia, the marginal tax rate on hotel EGMs reaches up to 65 per cent – a rate that would be unthinkable for most other products. Then there is the Goods and Services Tax on gambling, collected by the Federal Government and disbursed to the States. Furthermore, licence fees must be paid for the right to legally operate in the industry and for the approval of employees.

When the Productivity Commission report on gambling was released 6 years ago, total government revenue from gambling in South Australia was $340 million (in 2003-04 dollars). By 2003-04 it had risen to $479 million, according to the researcher's calculations, representing 13.5 per cent of total State tax revenue.[54]

[50] Hawke, A. (2000), p. 4.
[51] Productivity Commission (1999), Vol. 3, p. C.5.
[52] Thalheimer, R. and M. M. Ali (2003).
[53] SACES (2001), p. 107.
[54] See Chapter 7 of Part I of this report.

What is the economic effect of this heavy taxation? In most other industries, taxes cause prices to rise, which reduces the quantity demanded. However, in the gambling industry, prices are, to a large degree, determined by legislation ('price' in this context means the mandatory minimum return to the gambler). So gambling taxes are largely absorbed by the industry and reduce the profits of operators – their 'producer surplus' in economic jargon.

If tax rates were raised further, eventually they would reach a level where it was uneconomic to supply gambling services, and operators would leave the industry. It is clear that taxes are not even close to that level. This was illustrated most starkly in the 2005 EGM trading rounds, which offered EGM operators the opportunity to leave the industry, or reduce their level of involvement, with a windfall payment of $50,000 per machine (in practical terms, $37,500, taking into account the simultaneous reduction in entitlements). In the first trading round, 186 venues put in applications to buy a total of 1,346 entitlements, but only 21 venues were willing to sell entitlements, 169 in total.[55] In the second round, similarly, 149 operators wanted 976 entitlements, but only 10 operators wished to sell a mere 75 entitlements. This imbalance between supply and demand for EGM entitlements clearly shows that EGMs remain highly profitable even after the application of taxes.

Gambling tax and licence payments represent a transfer of consumer and producer surplus to the Government. As such, the tax and licence revenue is counted as a social benefit in Chapter 5 which estimates overall benefits and costs of EGM gambling.

The gambling industry also makes voluntary contributions to charities and community groups. These would certainly count as a social benefit; however, no data are available on the amount of these contributions in South Australia.[56] It is also important to distinguish between revenue generated by clubs and community groups, which is directed back into improving services for members, and revenue available for public goods to meet the needs of the broader community.

1.6 Costs of Gambling

The consumer surplus generated by gambling is a benefit for its consumers. It must be balanced by the costs that gambling generates. These can be divided into social costs and private costs. To the extent that costs are knowingly and freely borne by the consumer or producer, they are referred to as private costs. To the extent that they are not so borne but fall on the rest of society, they are referred to as social costs. Only social costs form a basis for government intervention.

In some respects, the economists' definition of social cost is idiosyncratic, and does not necessarily accord with its common usage. For example, non-economists may be surprised to hear that there is no social cost arising directly from theft: it is simply an (involuntary) wealth transfer, with the victim's loss exactly balanced by the thief's gain.[57] The social cost arises indirectly – the value of resources diverted from productive uses to protect from theft (e.g. car alarms) plus policing, court and jail costs.

[55] Independent Gambling Authority (2006), p. 23.
[56] The researchers invited the industry to provide information to this study but none was provided.
[57] Walker, D. (2003), p. 162..

Defining and quantifying social costs is a major challenge for economists – not just in relation to gambling, but to all human activity. For example, there is debate in the economic literature on whether 'psychic costs' (costs of emotional distress) should be included, and if so how to measure them. There is, in theory, a neat way to quantify such costs: the amount the affected individuals would be willing to pay to avoid the distress.[58] In practice, this can be very hard to estimate.

In preparing an estimate of the costs of gambling, one is faced with many choices regarding which social costs to include. In the Productivity Commission report, the decision was made to only include costs relating to problem gambling. Implicit in this approach is that the non-problem gambler – the 'rational', fully-informed gambler who does not have an addiction to gambling, and whose expenditure does not exceed a reasonable proportion of income – does not generate any social costs. (There may be significant private costs for the individual, depending on the opportunity cost of other uses for money lost, but these private costs are difficult to measure and in any event are not a valid basis for government intervention.)

The other important choice the Commission made was to include certain internal 'psychic costs' relating to problem gamblers, such as depression and thoughts of suicide, that would otherwise normally be considered private costs. The Commission recognised that including these costs was a controversial decision, and justified it as follows:[59]

> *[The Commission had] serious reservations about the extent to which problem gamblers are aware of the true costs and benefits of gambling – misperceptions about how the games operate and the true likelihood of winning are widespread and persistent. More importantly, for many problem gamblers, it is questionable whether they are spending money on gambling in a 'voluntary' way, exercising the 'consumer sovereignty' that would normally be assumed to apply.*

In other words, the Commission argued that private costs become relevant to government policy-making when those costs are *not* freely borne by the consumer in a rational, fully-informed manner.

Table 1.2 contains the list of relevant costs quantified by the Commission for Australia.

Some of the costs listed in Table 1.2 could be measured with some precision, such as the $20 million cost of counselling services. However, these were generally the smaller costs. The monetary estimation of the larger costs was highly speculative, which led to a wide range of values. In a couple of instances, the Commission was evidently uncertain whether there is a real social cost at all – notice, for example, how the estimate for 'emotional distress to parents' ranges from $666 million to zero.

Commission estimates for psychic costs were derived from a study of compensation payments for emotional pain and suffering, as awarded by courts or prescribed by legislation. The Commission stated that its calculation of costs was conservative, but nevertheless resulted in quite large dollar values. For example, the Commission assigned a per capita cost of between $15,000 and $30,000 to 'thoughts of suicide' (note that this relates just to ideation, not to attempted or actual suicide) based on amounts prescribed in New South Wales and Queensland victims' compensation acts. On the basis of its National Gambling Survey, the Commission estimated that around 8,000 problem gamblers had seriously contemplated suicide in the previous year, which led to a total economic cost of $120 to $239 million.

[58] Eadington, W. (2003), p. 197.
[59] Productivity Commission (1999), Vol. 1, p. 9.6.

Table 1.2
Costs of Problem Gambling (1997-98 $ million)

	Low	High
Financial		
Bankruptcy	1.3	1.3
Productivity and Employment		
Productivity loss at work	21	150
Productivity loss outside work	7.2	50
Job change		
Earnings loss	24	24
Employee job search	13	13
Employer staff replacement cost	22	22
Crime and Legal		
Cost of police incidents	3.2	3.2
Court cases	5.6	5.6
Jail costs	5.1	5.1
Personal and Family		
Emotional distress of immediate family:		
Moderate problem gamblers	ne	ne
Severe problem gamblers	756	2,267
Emotional distress of parents:		
Moderate problem gamblers	ne	ne
Severe problem gamblers	0	666
Break-up of a relationship	288	864
Financial cost of divorce	2.8	2.8
Emotional cost of divorce	126	253
Cost of violence	2.8	8.3
Depression	231	692
Thought of suicide	120	239
Attempted suicide	70	117
Impact on immediate family	81	161
Impact on parents	0	21
Treatment Costs		
Gambling counselling services	20	20
TOTAL	1,800	5,586

Source: Productivity Commission (1999), p. 9.11.

A criticism that might be made of this approach is that values found in victims' compensation legislation and damages awarded by courts may not actually reflect the *economic* cost of suffering as defined above (the amount affected individuals would be willing to pay to avoid the distress). It may instead reflect legal and political factors.

Despite these caveats, the fact remains that the Productivity Commission estimates are the only detailed, comprehensive attempt to provide a figure for the social cost of problem gambling in this country. In the researchers' calculation of the costs and benefits of gambling, we will be using the problem gambler per-capita figure from the Commission report (updated to current dollars).

It was not possible for the researchers to be able to prepare alternative social cost estimates within the scope of this project: it would require an interdisciplinary team with a significant budget for surveys and field research. It could not be carried out by economists alone: input

from the disciplines of psychology, criminology, social work, and perhaps others, would be necessary to give the project and the final estimates any validity.

1.7 Conclusion

This chapter has outlined the concepts and approaches the researchers have used in analysing the benefits and costs of gambling. The following chapters will attempt to quantify those benefits and costs.

It must be noted that most of what follows relates specifically to electronic gaming machines. This is because the EGM is unquestionably the most significant form of gambling from a policy perspective. Expenditure on EGMs in South Australia is more than double the expenditure on every other type of gambling put together, and there is a much stronger link between EGMs and problem gambling. As one example of this, in 2003-04 about 70 per cent of new clients registering for problem gambling counselling with Break Even reported that they spent over $200 per month on EGMs.[60] Only 10 per cent reported spending over $200 per month on all other forms of gambling combined.

Furthermore, the data relating to EGMs are much more detailed and analytically useful than the data available for some other types of gambling (such as racing). As a result, the methodologies used to estimate social benefits and costs, problem gambler numbers, and expenditure patterns by local area, are designed for EGMs and are not readily transferable to other forms of gambling.

[60] Department for Families and Communities (2005), p. 8.

2. Expenditure Switching and Impact of the Introduction of EGMs

Terms of Reference

The economic impact of gambling will be assessed for impacts:

- of any particular gambling industry sectors on other gambling industry sectors;
- of any particular gambling industry sector and the industry as a whole, on non-gambling industries and sectors; and
- on other forms of expenditure (e.g., entertainment, recreational, retail, household staples), for gambling as a whole and for the particular sectors of gambling.
- An analysis of the extent to which people have switched their expenditure from non-gambling recreational activities to gambling (both generally and for specific types of gambling);

2.1 Introduction

This chapter investigates the:

- impact of gambling expenditure on other forms of non-gambling expenditure; and
- the impacts of EGM gaming expenditure on other forms of gambling.

The first question to examine is whether the introduction of EGMs had any significant impact on the level of non-gambling consumption expenditure (see 2.2.1). The second question follows, that even if stable consumption expenditure patterns overall were found, has there been any significant change in the *composition* of expenditure resulting from the introduction of EGMs (see 2.2.2). A summary of conclusions, which point to a decline in household saving rates is provided in section 2.2.3.

Two different approaches are used to study the potential for expenditure switching. A time series model of consumption expenditure excluding gambling is developed to test whether the introduction of EGMs has had a significant impact on non-gambling household final consumption expenditure and this is considered in section 2.2. The data set used here is the ABS National Accounts, Household Income Account and Australian Gambling Statistics.

In section 2.3, unit record data from the ABS Household Expenditure Survey (HES) are analysed to identify statistically significant differences in gambling patterns for gambling and non-gambling households, and then "high" gambling and "non" and "low" gambling households. In addition, influences on household participation in gambling, and differences between households' answers to financial difficulty questions are examined for gambling/non-gambling and high/low/non gambling households.

In section 2.4 the researchers examine the relationship between expenditure on lotteries and EGMs.

Box 2.1: Summary

Time Series Analysis

A time series model of consumption spending found that there was no evidence that the introduction of EGMs had a statistically significant impact on the total level of consumption expenditure. This does not preclude that EGMs had an impact on consumption expenditure.

An economic analysis of time series data for seventeen expenditure categories indicates some evidence of an impact from the introduction of EGMs for three categories:

- a positive impact on 'food', although this could be due to some exogenous variable shifting both forms of expenditure (e.g., income);
- a negative impact on 'hotels, cafes and restaurants' (in our view largely due to a transfer from cafes and restaurants to hotels with gaming facilities); and
- a possible negative impact on 'furnishings and household equipment', which could not be verified because there were several other apparent structural breaks in the series after 1994-95, suggesting there were other significant factors shifting these expenditure patterns.

However, the results of the time series analysis suggest that little of the above trend increase in gambling expenditure that occurred following the introduction of EGMs was due to significant reductions on other forms of expenditure. Rather it would seem to have been primarily driven by falls in net household savings rates.

HES Unit Record Data Analysis

Household level data from the ABS Household Expenditure Survey was analysed to see if there were any statistically significant differences in expenditure patterns and other characteristics for "gambling" versus "non-gambling" and "high" versus "low" and "non" gambling households in South Australia.

It should be noted that the results from the Household Expenditure Survey need to be interpreted with caution given that gambling expenditure is significantly under reported in the HES.

The results indicate the following for South Australia:

- those that **participated** in gambling by **type of household** (not accounting for income) are statistically more likely to spend more than non gambling households on all expenditure items, except current housing costs and household furnishings and equipment. They also have higher total weekly expenditures;
- Gambler and "high gamblers" tend to have higher expenditure on tobacco;
- Households that participate in gambling (whether normal or "high") generally are more likely to have higher incomes than households that do not gamble. However, there is a non-linear relationship between income and gambling, illustrating that households on middle incomes are more likely to gamble than low or high income households;
- households that gamble "highly" are more likely to be located in an area of disadvantage;
- households that gamble and gamble "highly" are more likely to spend a higher percentage share of their weekly expenditure on tobacco;
- households that gamble and/or gamble "highly" were found to have statistically significant lower expenditure on current housing costs, domestic fuel and power, household furnishings and equipment, medical and health expenses, transport and other capital housing costs. This suggests that it is these forms of expenditure from which gambling may have diverted expenditure. This is an interesting result as these forms of expenditure are not the typical categories of retail spending that have often been identified as being adversely affected by the introduction of EGMs; and
- households that gamble "highly" were more likely than "low" and non-gambling households to state that their present standard of living compared with two years ago is worse from analysis of responses to financial difficulty questions.

It was found that there was a positive association between lottery sales and EGM expenditure with regions of high EGM expenditure tending to be associated with high lottery expenditure. This result could be interpreted as indicating that lotteries and EGMs are complements rather than substitutes. However, it is more likely that the positive correlation reflects a common response from some other third factor, such as regional population, income levels, the pattern of urban development, particular demographic and socio-economic factors etc.

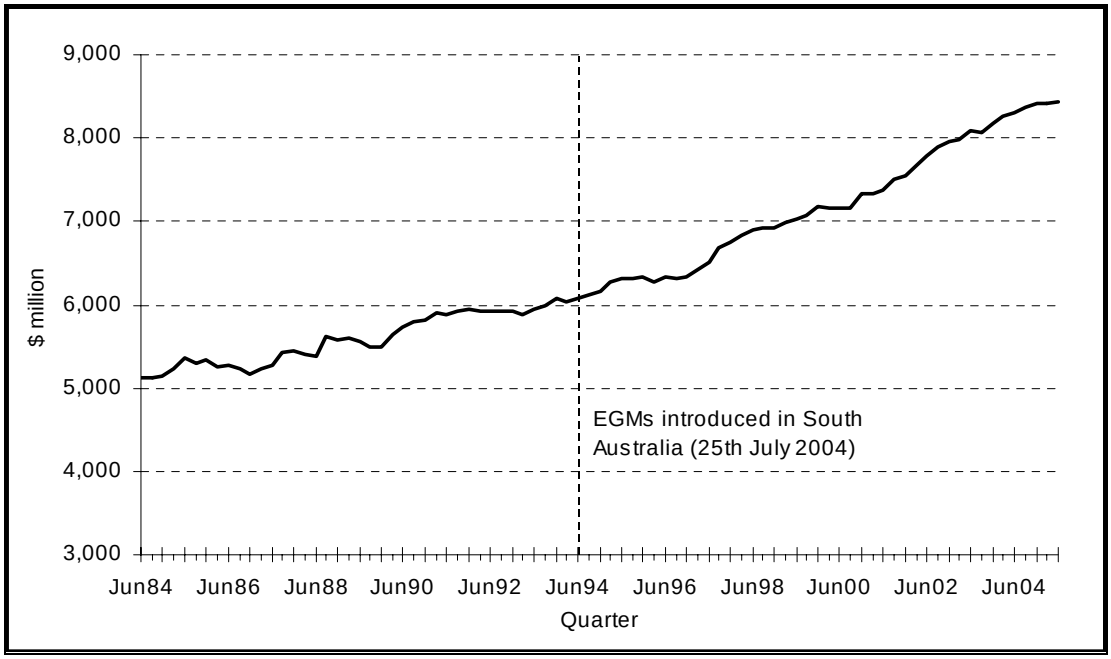
An econometric analysis using ordinary least squares regressions was conducted to more thoroughly test the relationship between lottery sales and EGM expenditure. Lottery sales were statistically insignificant in terms of influencing EGM expenditure per adult. This means there is no statistical support for the argument that lottery sales and EGM expenditure are complements despite the fact that they are weakly correlated at the regional level.

2.2 Time Series Econometric Data Analysis

2.2.1 EGM Introduction and the Level of Consumption Expenditure

The effect of the introduction of EGMs on retail trade has been controversial with claims made of the adverse impact of EGMs on small businesses. As discussed in Phase 1, a visual scan of South Australian consumption expenditure excluding gambling does not show any sign of a significant impact following the introduction of EGMs (see Figure 2.1).

Figure 2.1
South Australia – Real Household Final Consumption Expenditure minus 'Recreation and Culture' (Gambling Expenditure)



Source: ABS Cat. No. 5206.0 *Australian National Accounts*, Table 87, and calculations by the researchers.

Nor, as was also pointed out in Phase 1, is the scale of net expenditure on EGMs high enough for it to be expected to have any impact on overall trends in retail trade expenditures. Even at its highest relative level in 2003-04 (which is also the most recently available figure), gambling only represented 2.91 per cent of household disposable income which is not large enough to meaningfully impact on the overall figures.

It is possible that this visual inspection of the time trend in expenditure data is misleading, and that there is indeed a shift in the overall level of household final consumption due to the introduction of EGMs. For this reason a time series model of the level of consumption spending excluding gambling was estimated. The model structure used was an Auto Regressive Distributed Lag (ARDL), which is often used in modelling consumption

behaviour. A key advantage of the ARDL structure is that it allows specifications which model the impact of the past values which is necessary for consumption as modelling consistently shows that past levels of consumption are important in explaining current consumption.

The basic functional form was to model current (non-gambling) consumption as a function of current and past levels of income, past values of (non-gambling) consumption, and current values of gambling expenditure. The series used for consumption was 'final consumption expenditure' (minus gambling expenditure), and income was 'gross disposable income', both obtained from the ABS' *Household Income Account*, *5220* (Table 37, South Australia). Data on gambling expenditure came from *Australian Gambling Statistics 2005*, produced by the Office of Economic and Statistical Research, Queensland Treasury.

There is no *a priori* reason to follow a particular lag structure for either consumption expenditure or income, and so different structures need to be tested as part of the model development process. Initially three lags each were included in the equation and this lag structure was then 'tested down' to identify the best system of lags, with lags being removed one at a time, and the explanatory power of this new lag structure being compared to the previous one using tests of model specification (using the Akaike Information Criterion and Schwarz Criterion[61]), as well as the value of the Durbin-Watson statistic to ensure that removing the lag hadn't introduced autocorrelation. In this case it was found that the best model specification was the inclusion of consumption from the previous period in the regression, but not to only use the current value of household disposable income. As all of the variables increase over time, logs were used in the model and a deterministic trend was included to capture the natural propensity for consumption to grow at a changing rate over time.

The explanatory variables of the final model were (all in log form[62]):

- Current household disposable income;
- The previous period's level of non-gambling consumption expenditure;
- A time trend; and
- The level of expenditure on gambling.

The model appears to be a good fit for the data, with no evidence of any systematic pattern in the residuals, and the Durbin-Watson statistic indicating that serial correlation is not a problem. The F-Statistic is a measure of the joint statistical significance of all the explanatory variables; in this case its value of 707 means that the probability that the explanatory variables are not jointly significant in explaining consumption behaviour is 0.000000.

[61] The Akaike Information Criterion and the Schwarz Criterion are methods of comparing alternative specifications to adjust the residual (RSS) for the sample size and the number of variables. The use of these methods is designed to improve the 'exactness' or degree of fit of the model to explain or to account for changes in the dependent variable.

[62] Reference to "log form" refers to use of logarithm in econometric analysis or specification of the equation in the exponential functional form, given the assumption of constant elasticity. One advantage of this form of specification is that they make it easier to assess impacts in percentage terms.

Table 2.1
Determinants of South Australian Household Non-Gambling Final Consumption Expenditure
Dependent Variable is Log Non-EGM Consumption

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	-2.707**	0.834237	-3.244307	0.0101
Log Income	0.512**	0.158274	3.234146	0.0103
Log non-EGM consumption (t-1)	0.736*	0.117960	6.239430	0.0002
Log Time Trend	-0.091*	0.024987	-3.647859	0.0053
Log Gambling	0.052	0.041394	1.250120	0.2428

Note: * significant at the 1% level
** significant at the 5% level

F-statistic	707.3702
Prob (F-statistic)	0.000000
Durbin-Watson statistic	2.08

As summarised in Table 2.1, the coefficient for gambling (log gambling) is not significant, meaning that expenditure on gambling does not appear to have any impact on the level of non-gambling consumption behaviour. Even if the impact was different from zero (and there is still a chance that it actually is) the coefficient takes a positive value, indicating that rather than consumption expenditure falling as gambling expenditure increases, it increases. It is unlikely that there would be a causal relationship with increasing gambling expenditure inducing increased other consumption expenditure, rather it would be more likely that they were both affected by some other variable such as income or changes in wealth.

It could be the case that, although the coefficient for gambling expenditure is not significant, the overall pattern of consumption behaviour changed with the legalisation of EGMs. This can be tested for with the Chow test, which tests whether there has been a significant change in a particular data relationship after a specific point in time. The point of time chosen in this instance was 1994-95, the introduction of electronic gaming machines to hotels and clubs in South Australia. By using the Chow test, we can assess whether there was any change in the pattern of overall consumption behaviour at the point in time at which EGMs were introduced. If the Chow test is significant then this shows that the factors influencing consumption behaviour were different after that point in time than they were before it. As the F-statistic is 0.688 (calculations not shown here) compared to a critical value of 4.74 we can reject the hypothesis that there was a structural break in the series in 1995. The CUSUM, and CUSUM squared tests were then used to test whether there was an apparent structural break of the series in any other year, but this was found unlikely to be a problem as the residuals were within the confidence intervals through the entire sample period (1984-2004).[63]

In summary, it is concluded that expenditure on gambling does not appear to have any significant impact on the level of non-gambling consumption behaviour.

2.2.2 EGM Introduction and Compositional Changes

Turning to the second question, even with stable consumption expenditure patterns overall, it is possible that this disguises a significant change in the ***composition*** of expenditure driven by EGM expenditure that may have impacted on businesses in specific sectors. In general

[63] Of course this model is only looking at aggregate behaviour, so this does not mean that the consumption behaviour of some individual households didn't change.

economists treat any shift between sectors as irrelevant in terms of net economic impact. From the point of view of the welfare of the population as a whole, it doesn't matter whether expenditure occurs in one sector (or on one good/service) rather than another, provided that this spread of expenditures represents the rational choices of the consumer rather than a response to compulsion (whether legal, illegal, or through addiction).

An activity can only have a net economic impact if it leads to a higher level of expenditure than would otherwise have been the case (either through attracting export income[64], or through increasing the share of income consumers choose to spend,[65] or if there is some externality that increases the efficiency of the economy). In this case, as a significant share of EGM expenditure comes from problem gamblers (the Productivity Commission estimated 41 per cent) it cannot necessarily be said to represent a rational choice, and therefore there are two potential sources of externality:

- the induced expenditure; and
- the social harms caused by problem gambling.

Hence, it is legitimate to seek to discover whether this 'involuntary' expenditure has come from expenditure switching from other sectors, reduced growth in expenditures in other sectors, or from reduced savings.

There are always difficulties in trying to get to grips with the 'economic impact' — whether in terms of employment or GDP — of a policy change, as there are rarely good natural experiments. We are never faced with a situation where the only thing changing is the policy choice. Instead, in most cases, almost everything is changing and it is necessary to use statistical techniques to try and establish whether there appears to be any additional impact of the policy.

The source for our detailed information on expenditure patterns is the components of state final demand in the national accounts (ABS 5206, Table 87), which split household consumption expenditure into a number of categories. In order to identify the impact of gambling we created two additional variables – "EGM gambling" and "other gambling" – from the Australian Gambling Statistics data (Office of Economic and Statistical Research, Queensland Treasury, 2005). To remove double counting these gambling expenditures were extracted from the series 'recreation and culture' where they are recorded. The categories of expenditure are set out below:

- Food;
- Cigarettes and tobacco;
- Alcoholic beverages;
- Clothing and footwear;
- Rent and other dwelling services;
- Electricity, gas and other fuel;

64 As one economist puts it in private correspondence to the researchers, "The message is that in the absence of export income, the gambling industry simply acts to transfer income from everyday necessities to publicans and casino owners. In other words if you remove the gambling industry children get fed or adequate health care instead of pub owners buying luxury goods".

65 This is likely to have an ambiguous effect, increasing short term growth but potentially leading to lower long-term growth as lower savings either decreases investment directly, or in an open economy tends to increase interest rates as investment capital needs to be attracted from abroad.

- Furnishings and household equipment;
- Health;
- Purchase of vehicles;
- Operation of vehicles;
- Transport services;
- Communications;
- Recreation and culture (minus net gambling expenditure);
- Education services;
- Hotels, cafes and restaurants;
- Insurance and other financial services;
- Other goods and services;
- EGM gambling; and
- Other gambling.

Graphing the rates of growth in categories of retail sales expenditure allows us to form initial views as to the existence or otherwise of any impact from the introduction of EGMs. As there is such a substantial list of expenditure categories they have been split into four groups for the purposes of this graphing (see Figures 2.2 to 2.5).

It is clear that expenditure between categories of consumption shifts strongly year to year (as would be expected given their relative prices are shifting). Although visual scans are by no means definitive, there does appear to have been a shift in 'other gambling' which occurred at the time of the introduction of EGMs and a shift in expenditure on hotels, cafes and restaurants (refer Figure 2.2).

Expenditure on 'recreation and culture' (minus net gambling expenditure) and 'cigarettes and tobacco' may have fallen after EGMs were introduced (see Figure 2.3), although this is uncertain. Whilst the changes are much less significant than that of 'other gambling', a visual scan of the charts also suggest the possibility that expenditure on 'furnishings and household equipment' (see Figure 2.4) may have fallen after the introduction of EGMs.

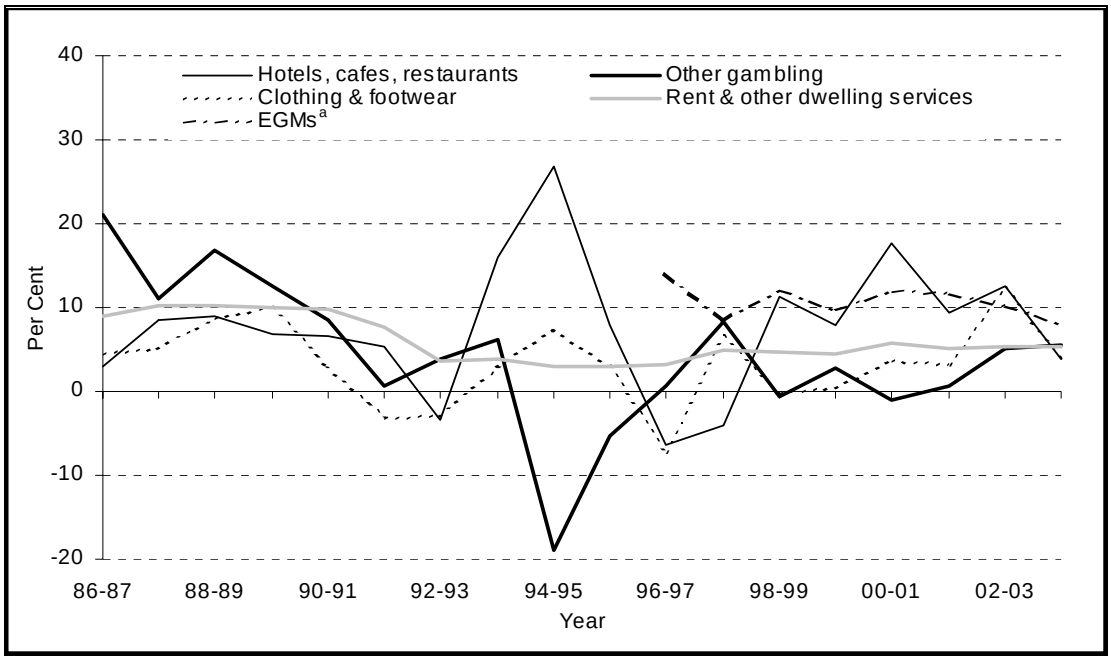
On a visual scan there does not appear to have been any shift in the other categories of consumption shown following the introduction of EGMs.

In order to test whether the intuition of our visual scans is correct we have applied statistical tests by running regressions of the expenditure on various categories of consumption to test whether the level of EGM expenditure was negatively correlated with expenditure. Of course as correlation does not prove causation, even a strong negative correlation between some category of retail sales and EGM expenditure would not necessarily indicate that expenditure had switched to EGMs, but it would highlight a relationship that was worth further study.

As with our earlier modelling of consumption as a whole, an ARDL specification is used (which allows for the influence of the history of expenditure and income as well as their current values). As we were faced with an uncertain lag structure, and wanted to be able to undertake a Chow test for the year 1995, we needed a series which stretched back at least 8 or

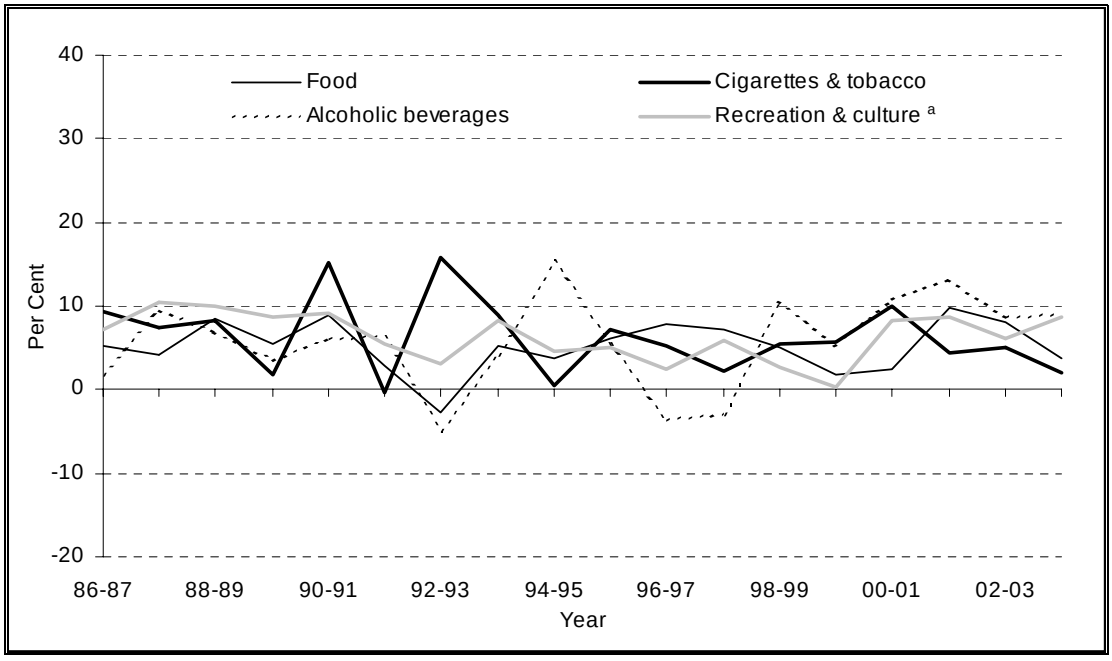
9 years before then. This precluded the use of the series used in the aggregate equation described in section 2.2.1; due to changes in the National Accounts this data are not available prior to 1989-90. Instead we used the components of state final demand (SFD) in the national accounts (ABS 5206, Table 87).

Figure 2.2
Rates of Growth in Categories of Consumption Expenditure



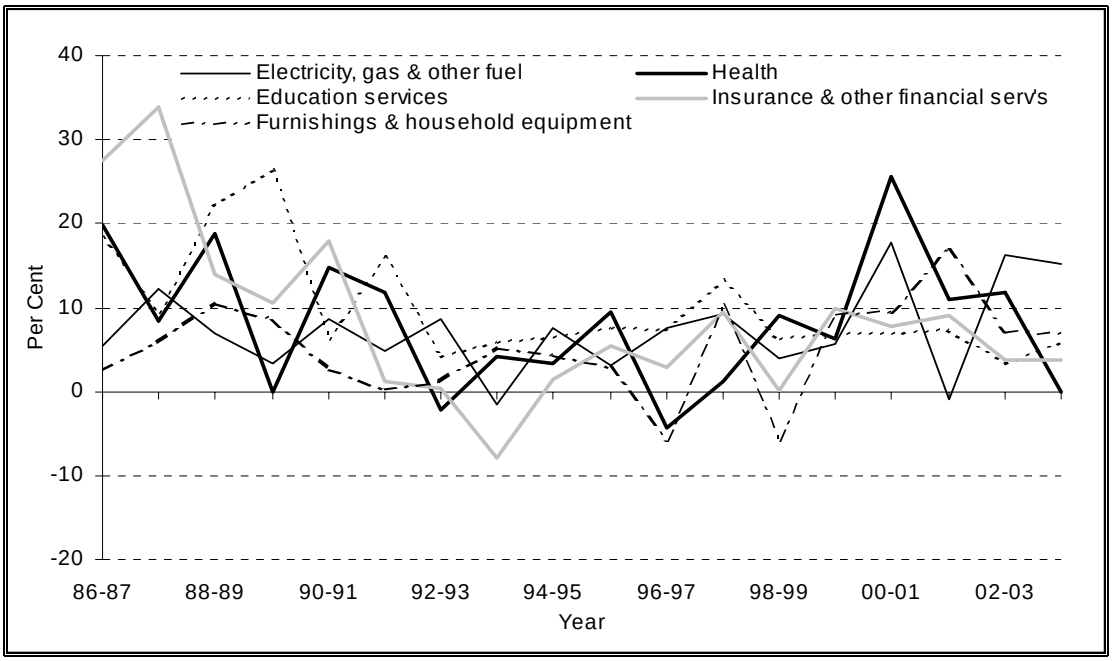
Notes: [a] The first year's change in EGM expenditure has been excluded as EGMs were not available for all of 1994-95, and hence the expenditure growth from 1994-95 to 1995-96 is exaggerated.
Source: ABS; calculations by the researchers.

Figure 2.3
Rates of Growth in Categories of Consumption Expenditure



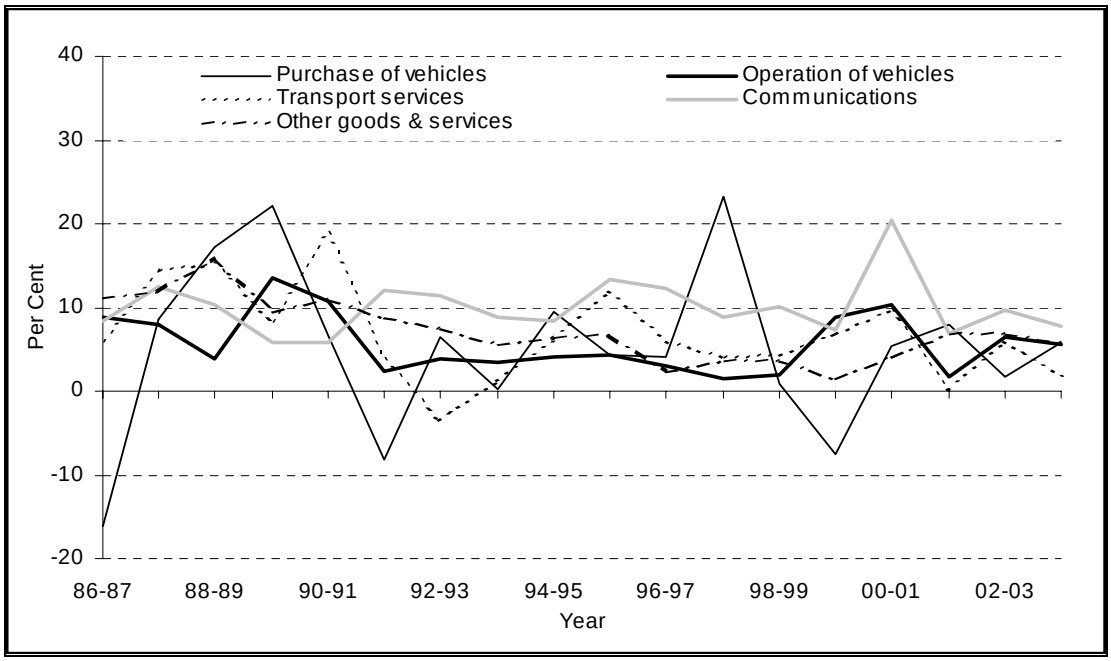
Notes: [a] Expenditure on gambling has been subtracted from 'recreation and culture' to prevent double counting.
Source: ABS; OESR, Queensland Treasury, *Australian Gambling Statistics 2005*, calculations by the researchers.

Figure 2.4
Rates of Growth in Categories of Consumption Expenditure



Source: ABS; OESR, Queensland Treasury, *Australian Gambling Statistics 2005,* calculations by the researchers.

Figure 2.5
Rates of Growth in Categories of Consumption Expenditure



Source: ABS; OESR, Queensland Treasury, Australian Gambling Statistics 2005, calculations by the researchers.

There is no direct equivalent to 'household disposable income' in the SFD series, so we needed to identify an alternative. The two logical alternatives were compensation of employees (wages) and total consumption expenditure. Compensation of employees has the advantage that it is an income measure, but the disadvantage that it does not include non-wage income, nor does it include calls on income such as taxes, so it is not a perfect measure of the resources households have available. Consumption is a better reflection of household's resources, however, it is obviously not a direct measure of income, and does not necessarily

move in line with changes in income because savings decisions can change. To make the choice the three variables were graphed together from 1989-90. This showed that the growth of compensation of employees over time was very close to that of disposable income, whereas consumption diverged significantly, hence compensation of employees was used in the analysis. Data on gambling expenditure came from *Australian Gambling Statistics 2005*, produced by the Office of Economic and Statistical Research, Queensland Treasury.

For each of the types of expenditure a simple regression model was estimated with the dependent variable being expenditure on the category of retail sales in question, and the explanatory variables being: compensation of employees in the current period; compensation of employees in previous periods; expenditure on gambling[66]; a time trend; and previous periods' expenditures on the category in question. Initially, a maximum of the three previous periods for each of compensation of employees and expenditure on the consumption category in question was included in the model.

These lagged structures were then 'tested down' to identify the best system of lags, with lags being removed one at a time, and the explanatory power of this new lag structure being compared to the previous one using tests of model specification (using the Akaike Information Criteria and Schwarz criteria), as well as the value of the Durbin-Watson statistic to ensure that removing the lag hadn't introduced autocorrelation. In most cases it was only the current period's income, and only the immediate previous period's consumption which were significant, but there were a few exceptions.

As this is a relatively generic structure it will generally not produce the best model possible (e.g., it will miss out consumption category specific events, such as the downturn in new car sales in the year from the announcement of the New Tax System and the actual introduction of the GST), but it should be a good approximation. This confidence in the general model structure was borne out by the explanatory power of the estimated models. In each case the F-test indicated that the included variables were jointly very significant in estimating the behaviour of the explanatory variable.

As with our model for total consumption, the impact of gambling expenditure on other forms was tested for in two ways. The direct test for its impact is to include current expenditure on gambling in the ARDL equation. If its coefficient is significantly different from zero this indicates that there is a correlation between the expenditure variable being tested and gambling expenditure. Even if the coefficient for gambling expenditure is significant, this does not necessarily indicate that that gambling expenditure is causing the change in consumption. It could be gambling causing the change in consumption, it could be changes in the consumption expenditure causing changes in gambling, or the changes in both variables could be jointly caused by some other factor which isn't in the model, such as unanticipated increases in household wealth.

As discussed in the previous section, even if the coefficient for gambling expenditure is not significant it is still possible that gambling has impacted on expenditure through changes in the overall pattern of consumption of this sub-category of expenditure after the legalisation of electronic gaming machines. This can be tested for with the Chow test, which tests whether there has been a significant change in a particular data relationship after a specific point in time. The point of time chosen in this instance was 1994-95, the introduction of electronic gaming machines to hotels and clubs in SA. If the Chow test is significant then this shows

[66] Note that we used gambling as a whole rather than EGM and non-EGM gambling, as it is not possible to take the log of zero, and EGM expenditures were 0 before 1994-95.

that the factors influencing consumption behaviour were different after that point in time than they were before it.

As there are 17 models, the full results are not presented here; instead Table 2.2 presents the results for the significance of gambling, particularly gambling on electronic gaming machines, in explaining expenditure levels in each of the 17 sub-categories. The first four columns present the coefficient for gambling expenditure estimated in the regression, and information on its statistical significance. The next three columns show the results of the Chow test, and consequently whether there was a break in the series in 1994-95.

Table 2.2
Significance of Gambling Expenditure on Categories of Consumption Expenditure
Dependent Variable is Log Expenditure on the Consumption Category

	Significance of Gambling variable				Chow breakpoint test 1994-95		
Expenditure Category	Coefficient	Std. Error	Prob.	Different from zero?	F-statistic	Prob.	Different after 1995?
Alcoholic beverages	0.057	0.117	0.637	×	2.335	0.137	×
Cigarettes & tobacco	-0.174	0.130	0.208	×	2.358	0.182	×
Clothing & footwear	-0.091	0.092	0.341	×	1.591	0.266	×
Communications	0.087	0.095	0.374	×	1.738	0.244	×
Education services	0.010	0.083	0.906	×	0.681	0.621	×
Food	0.099	0.050	0.068	×	0.589	0.710	×
Health	-0.010	0.164	0.950	×	1.502	0.290	×
Furnishings & household equipment	-0.129	0.109	0.259	×	3.611	0.053	✓
Hotels, cafes and restaurants	0.201	0.200	0.334	×	4.481	0.038	✓
Insurance and other financial services	0.300**	0.078	0.002	✓	0.389	0.812	×
Other goods and services	-0.041	0.040	0.318	×	2.223	0.139	×
Recreation & culture (-gambling)	-0.018	0.051	0.731	×	0.998	0.453	×
Rent & other dwelling services	-0.003	0.019	0.897	×	1.194	0.485	×
Transport services	0.076	0.084	0.381	×	2.658	0.096	✓
Electricity, gas & other fuel	0.087	0.094	0.375	×	0.478	0.783	×
Purchase of vehicles	0.142	0.124	0.276	×	0.090	0.991	×
Operation of vehicles	-0.039	0.055	0.484	×	1.164	0.383	×

Note: * significant at the 1% level
** significant at the 5% level
a. Heteroskedascticity was present in this model, and so it was estimated using White's Heteroskedascticity Consistent Standard Errors, to ensure that the standard errors were correctly estimated.

The results of the consumption function equations show that gambling only had a statistically significantly impact on one of the categories of consumption expenditure, 'food'. The coefficient for gambling expenditure in this equation is positive, indicating that as gambling expenditure increases, so does expenditure on food. As this is a log form the coefficient is effectively the elasticity, hence the coefficient suggests that a 1 per cent increase in gambling expenditure leads to a 0.1 per cent increase expenditure on food. The interpretation of this is not straightforward. If there was reason to believe that these two forms of expenditure were complements (e.g., expenditure on coffee and sugar would generally be expected to influence one another as many people will only consume coffee with sugar) then the interpretation would be simple. There does not seem any reason why spending money on gambling would

be complementary with expenditure on food, nor vice versa. This suggests that there may be some exogenous variable influencing expenditure on both 'food' and 'gambling'.

Turning to the results of the Chow test, there were three expenditure categories which had a structural break in their time trend in 1994-95. These were:

- Furnishings and household equipment;
- Hotels, cafes and restaurants; and
- Transport services.

In order to interpret these results it is necessary to estimate the two component models for expenditure on this category; from 1985-86 to 1994-95, and from 1994-95 to 2003-04. It is the values, and significance of, the coefficients (particularly for gambling expenditure) which determine the meaning of this break in the series, and so each of the variables will be discussed in turn.

In the case of ***'furnishings and household equipment'*** the coefficient for gambling expenditure is positive and significantly different from zero up to 1994-95, and negative but insignificant from 1994-95 on. The other important differences between the pre- and post-1994-95 equations are that income has a more significant positive impact on expenditure, and there is a significant negative time trend (which was insignificant in the 1985-86 to 1994-95 equation). These results may suggest that, all other things being equal, gambling expenditure had a relatively more negative impact on 'furnishings and household equipment' expenditure after 1994-95 than before, but the other changes are somewhat anomalous.

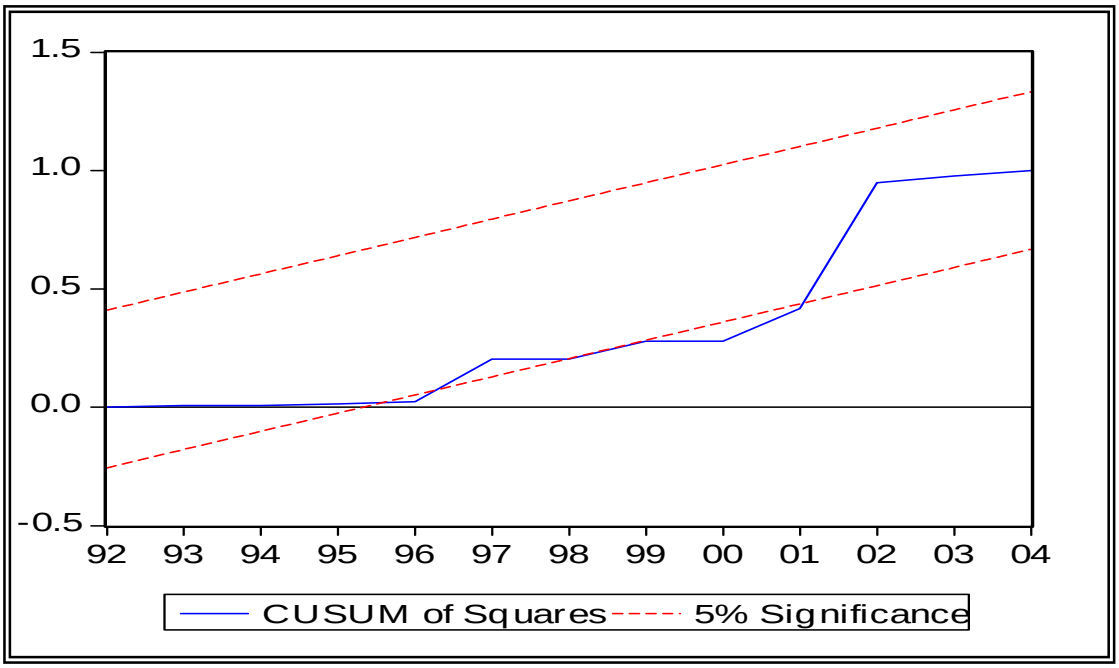
As a further test for the stability of the model the CUSUM Squared test was run for the full time series. The CUSUM Squared test (Brown, Durbin, and Evans, 1975, quoted in E-views econometrics software) is based on the cumulative sum of the squared recursive residuals. This test plots the cumulative sum together with the relevant 5% critical lines. The test finds parameter or variance instability (and hence a potential structural break in the series) if the cumulative sum goes outside the area between the two critical lines (see Figure 2.6).

In this case there are several points at which the test statistic equals or passes its critical values, indicating potential structural breaks in the series. This means that whilst the introduction of EGMs may (or may not) have changed the pattern of expenditure on 'furnishings and household equipment', there have been other factors changing the pattern of expenditure. Therefore it is impossible to isolate the impact of the introduction of EGMs, and any conclusions need to be tentative.

In the case of **hotels, cafes and restaurants** the impact of gambling expenditure is more straightforward. Prior to 1994-95 gambling had a significant, positive, coefficient; post-1994-95 it had a negative and significant coefficient.[67] The other difference is that prior to 1994-95 expenditure on this category, *ceteris parebis*, tended to decline with income, whereas after 1994-95 it was increasing with income. The results of the CUSUM Squared test indicate that 1994-95 is the only point of instability in the series.

[67] For the pre-1994-95 period, the relevant results for the impact on Hotels, Cafes and Restaurants expenditure of Log Gambling were Coefficient: 1.516; Std. Error: 0.2445; t-Statistic: 6.198; Prob. equal to zero: 0.0085. Post-1994-95, the results were Coefficient: -0.934; Std. Error: 0.424; t-Statistic: -2.201; Prob. equal to zero: 0.079.

Figure 2.6
Results of the CUSUM Squared Test for the 'Furnishings and Household Equipment' Expenditure Equation



The results for the equations before and after 1994-95 could suggest that two factors were at work, firstly that growth in expenditure on gambling after the introduction of EGMs was to some degree due to reductions in expenditures on 'hotels, cafes and restaurants', although whether this represents transfers of expenditure *within* premises which have EGMs (e.g., spending less on food in a hotel as it provides food in its gaming room, or less on alcohol as more money is being spent on EGMs) or a transfer of expenditure between venues that do not and those that do have EGMs (i.e., includes from cafes and restaurants to hotels and from hotel to hotel) cannot be identified with this level of data. In our view, it is most likely to represent a combination of the above, including a transfer from cafes and restaurants to hotels.

The second effect, the apparent shift from 'hotels, cafes and restaurants' being an inferior good (one which consumers use less as their income increases) to a normal good is more ambiguous, although it almost certainly represents a change in the characteristics of those who use hotels after the introduction of EGMs, as noted by consultees quoted in SACES, 2001.

The results of the Chow Test for **transport services** indicate that there is a clear break in the series in 1994-95, and this is confirmed by the CUSUM Squared test, which also indicates that 1994-95 is the only likely breakpoint in the series. However, the nature of this impact was impossible to distinguish as all variables in the sub-time period equations were individually insignificant. Furthermore, there is no clear logical reason why gambling expenditure would have a significant positive or negative impact on transport services. It could simply be that some other factor not related to gambling has had an impact on transport services.

2.2.3 Conclusion on the Expenditure Impact of the Introduction of EGMs

The impact of the introduction of electronic gaming machine in 1994-95 on other forms of expenditure appears to have been minimal. At the aggregate level, gambling is not a statistically significant variable in the equation modelling household final consumption expenditure. Nor does there appear to be a structural break in the consumption equation at 1994-95.

There is some limited evidence of impact at the disaggregated level with three of the seventeen expenditure categories showing some evidence of impact from the introduction of EGMs. The nature of this impact of either gambling expenditure or the year 1994-95 was quite varied:

- For 'food' the impact appears to be positive, although this could be due to some exogenous variable shifting both forms of expenditure;
- For 'hotels, cafes and restaurants' the impact appeared to be negative; and
- For 'furnishings and household equipment' there appeared to be a *prima facie* negative impact from the introduction of EGMs, however, as there were several other apparent structural breaks in the series after 1994-95 suggesting there were also other significant factors shifting these expenditure patterns, it is impossible to verify this.

These results together would appear to suggest that little of the significant above trend increase in gambling expenditure that has occurred since the introduction of Electronic Gaming Machines in 1994-95 was due to significant reductions in other forms of expenditure.

Rather it would seem to have been primarily driven by falls in net household savings rates.

2.3 Analysis of Household Expenditure Survey Data

2.3.1 Overview

The ABS collects HES data every five years from a sample of Australian households. As well as providing information on levels and patterns of expenditure on commodities and services, it includes a range of demographic and socio-economic data. Data are available at the household level, at the individual level, and at a detailed level of expenditure.

In 1998-99 there were 8,908 Australian households surveyed (covering 13,964 persons), with 564 households in South Australia. The response rate was 77 per cent. The survey was conducted from July 1998 to June 1999, and each household that participated had to complete diaries for two weeks on expenditure incurred. Expenditure that occurred on a more infrequent basis (such as health services, electricity, telephone and consumer durables), were either recorded on a 3-month basis or a 12-month basis (i.e., for items such as education and vehicle expenses). HES reports household expenditure levels for recreation, which includes 9 gambling categories.

The latest year unit record data was available for the HES was 1998-99, though individualised records from 2002-03 are meant to be available sometime in 2006. Unfortunately this was too late for this study.

2.3.2 Gambling Data

There are 9 individual codes for gambling expenditure data in HES. These include:

- Gambling nfd (i.e., not further defined) – 1102010000;
- Lottery tickets – 1102010101;
- Lotto type games and instant lottery – 1102010201;
- TAB on course betting and related – 1102010301;
- Poker machines and ticket machines – 1102010401;
- Blackjack, roulette and other casino-type games – 1102010501;
- TAB – betting (excluding animal races) – 1102010601;
- Club and casino broadcast gaming – 1102010701; and
- Gambling nec (i.e., not elsewhere classified) – 1102019999.

Gambling expenditure is defined in HES as the amount wagered by a consumer, less the amount of winnings, during the two-week survey period.

The researchers agree with Access Economics (2002a) that the estimates of gambling participation, as distinct from gambling expenditure, as indicated by the HES seem plausible. Around a third of all adult respondents reported net gambling expenditure. However, since the survey was undertaken over a two-week period, it will underestimate participation to the extent that people gambled outside this period. This would be a particular issue for people that gamble on an infrequent basis (e.g., once or twice a year); however, the HES should provide better coverage of frequent gamblers.

It is very important to be aware that the amount of gambling expenditure reported by the HES is significantly underestimated. An analysis of the level of under-reporting of gambling expenditure presented in Appendix A reveals that reported gambling expenditure in the HES for Australia was equivalent to only 17 per cent of actual expenditure in 1998-99 (as indicated by administrative data).

There are a number of potential reasons why gambling expenditure is under-reported in the HES. Due to psychological reasons, respondents may be under-reporting losses and over-reporting wins. Of the 238 households reporting gambling expenditures, 9 per cent suggested they had actually won during the 2-week period. Given that the Productivity Commission's National Gambling Survey indicated that 10 per cent of all gamblers claimed they were winning when they had actually lost (Access Economics 2002a), then in all likelihood more households had larger net gambling expenditure than was actually reported.

The second reason is attrition bias whereby heavy gamblers decline to take part in the HES. Although the high response rate of the survey minimises the problem of attrition bias, the issue of problem gamblers accounting for a large share of gambling expenditure means that this could have a significant impact on total gambling expenditure.

The third may be observation bias whereby respondents have deliberately refrained from undertaking gambling expenditure over the diary's two-week collection time.

Hence, the quality of expenditure data on EGMs, TAB and Casino categories in the 1998-99 HES is not very high and needs to be treated with extreme caution. This is the reason that when analysing the HES data for South Australian households, the analysis focussed solely on

whether households *participated* in gambling or not, and did not use gambling expenditure data for any econometric or statistical analysis.

To examine how gambling participation influences household expenditure and activity, SACES conducted a variety of analyses.

2.3.3 Differences between Households Expenditure by Gambling and Non-gambling Households

First of all, a simple analysis of the differences between expenditure levels by gambling and non-gambling households was conducted. This was broken down into two types:

- households that gamble versus those that do not; and
- households that gamble "heavily" (i.e., "high" gamblers) versus those who do not gamble and those who have low gambling expenditure.

There were 238 South Australian households who had participated in some form of gambling at least once in the survey time period, and 326 households that had not participated.[68] Households that gamble "heavily" were defined by the percentage share of their total household taxable income relative to total gambling expenditure. Households that spent more than 2 per cent of their total household income on weekly gambling expenditure were classified as "high gamblers". Some 119 South Australian households were classified as "high gamblers".

It is important to note that "high gamblers" are not necessarily the same as "problem gamblers", though it is likely that they are correlated. To what extent, it is impossible to say from the ABS data.

Table 2.3 illustrates the average amount spent by gambling households versus non-gambling households, and high gamblers versus all other households by the 18 main expenditure classifications.

Based on a very simple t test comparison of the types of households, households that gamble are statistically more likely (at a 15 per cent level of significance or below) to spend more than households that do not gamble on: food and non-alcohol beverages, alcohol beverages, tobacco products, transport, recreation, mortgage repayments, and have a higher total household weekly expenditure. There are no broad categories in which gambler households had statistically significant lower expenditure relative to non-gambling households (in fact, there were only two categories: current housing costs and household furnishings and equipment).

Table 2.3 shows that households that have "high" gambling expenditure (refer column 4) are statistically more likely (at a 15 per cent level of significance or below) than households that do not gamble or have "low" gambling expenditure (refer column 5) to spend more on: tobacco products, recreation and other capital housing costs. Households with "high" gambling expenditure are statistically more likely to spend less than "low" and non-gambling households on: current housing costs, income tax, superannuation and life insurance.

[68] The researchers attempted to do the analysis by households that gambled on EGMs, however there was not enough records at the South Australian level to conduct such an analysis. Only 61 SA households recorded expenditure for EGMs in 1998-99.

That gamblers and "high" gamblers tend to have higher expenditure on tobacco is interesting as it is consistent with the experience in Victoria where bans on smoking in hotels and clubs led to reduced expenditure on gaming machines. The results suggest that a similar effect is likely in South Australia when smoking bans are eventually applied to gaming rooms.

Table 2.3
Broad Level Expenditure by Household Gambling Participation

Household weekly expenditure item	Gambling household average expenditure ($)	Non-gambling household average expenditure ($)	Significance	High gambling household average expenditure ($)	Low or non-gambling household average expenditure ($)	Significance
Current housing costs	7,844	7,884	0.94	7,168	8,122	0.151
Domestic fuel & power	2,042	1,908	0.16	1,841	1,997	0.175
Food & non-alcoholic bev's	12,035	10,353	0.00	11,176	11,032	0.836
Alcohol beverages	2,102	1,248	0.00	1,654	1,596	0.835
Tobacco products	1,443	855	0.00	1,861	901	0.000
Clothing & footwear	2,920	2,674	0.59	2,715	2,794	0.885
H'hold furnishings & equip	3,376	3,682	0.62	2,767	3,763	0.183
H'hold services & operation	3,613	3,468	0.58	3,273	3,597	0.300
Medical care & health exp's	3,322	2,873	0.13	2,738	3,149	0.257
Transport	9,640	7,840	0.11	7,913	8,783	0.520
Recreation	9,066	7,219	0.06	9,441	7,612	0.125
Personal care	1,271	1,156	0.41	1,030	1,251	0.185
Misc goods & services	6,215	5,238	0.31	5,475	5,697	0.849
Income tax	15,531	13,470	0.23	9,928	15,520	0.007
Mortgage repayments	2,788	1,391	0.00	1,726	2,048	0.513
Other capital housing costs	2,315	1,379	0.61	4,358	1,083	0.143
Superann'n & life insurance	1,860	1,670	0.56	1,240	1,887	0.103
Total weekly expenditure	87,382	74,307	0.01	76,303	80,766	0.493

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Given the discussed relationship between gambling, alcohol and tobacco expenditure, the researchers looked at a more detailed expenditure level for alcohol beverages and tobacco. Some 15 categories were considered, which are listed in Appendix B at B.1.

Table 2.4 illustrates the results of the simple comparison between gambling and non-gambling households for alcohol and tobacco. Results for categories are only shown if expenditure occurred. South Australian households that gamble are statistically more likely (at a significance level of 5 per cent) to spend more than households that do not gamble on: 'beer for consumption off licensed premises' and 'beer for consumption on licensed premises'. No other differences for gambling households, in terms of alcohol and tobacco consumption, were found.

Households that gamble "highly" (column 4) are statistically more likely (below a 15 per cent significance level) to spend more on cigarettes, other tobacco products and beer for consumption off licensed premises. "High" gambling households were statistically more likely (at a significance level of 15 per cent or below) to spend less than households that do not gamble or gamble "lowly" on: wine for consumption off licenses premises.

Finally, the researchers looked at a more detailed expenditure level data for the recreation expenditure category. Some 20 categories were considered (they are listed in Appendix B at B.2).

Table 2.4
Detailed Alcohol and Tobacco Expenditure by SA Household Gambling Participation

	Average Gambling Household expenditure	Average Non-gambling Household expenditure	Significance	Average High Gambling HH expenditure	Average Low or Non Gambling HH expenditure	Significance
Beer for consumption:						
off licensed premises	538	339	0.05	573	394	0.13
on licensed premises	613	403	0.05	476	519	0.72
Wine for consumption:						
off licensed premises	362	437	0.52	164	478	0.02
on licensed premises	165	125	0.33	135	148	0.79
Spirits for consumption:						
off licensed premises	133	139	0.9	86	153	0.24
on licensed premises	109	84	0.45	102	95	0.84
Alcoholic beverages nfd and nec	131	148	0.76	82	158	0.24
Other alcoholic beverages:						
off licensed premises	17	18	0.97	18	17	0.91
on licensed premises	34	31	0.88	17	38	0.41
Cigarettes	1,280	1,064	0.25	1,613	1,025	0.01
Other tobacco	117	113	0.96	183	92	0.24
Tobacco products nec	46	5	0.18	65	12	0.13

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Again, Table 2.5 only shows expenditure for recreational categories if they were non-zero.

Table 2.5
Detailed Recreational Expenditure Differences by SA Household Gambling Participation

	Average gambling household expenditure	Average non-gambling household expenditure	Significance	Average high gambling household expenditure	Average low or non gambling household expenditure	Significance
Camping equipment	183	54	0.22	221	84	0.26
Fishing equipment	16	56	0.34	24	40	0.73
Golf equip't (excl. specialist shoes)	19	7	0.47	6	15	0.64
Sports equipment nec	115	312	0.29	27	276	0.25
Rec. & sports equipment nec	43	279	0.13	29	205	0.33
Hire of rec. & education equip't nec	63	43	0.78	126	28	0.24
Health and fitness studio charges	26	93	0.22	14	75	0.33
Sporting club subscriptions	6	199	0.14	11	133	0.42
Ten pin bowling charges	35	64	0.59	12	62	0.41
Green fees	22	24	0.87	17	25	0.65
Sports lessons	49	262	0.37	58	187	0.64
Spectator admission fees to sport	134	63	0.16	128	88	0.5
Sport fees and charges nec	84	160	0.15	79	136	0.34
Cinema fees and charges	168	195	0.57	60	222	0

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Little difference was found in the expenditure levels on recreation categories between gambling and non-gambling households. Households that gamble were statistically more likely (at a 15 per cent level or lower) to spend less on recreational and sports equipment nec (not elsewhere classified), sporting club subscriptions and sports fees and charges nec. Households that gamble "highly" were statistically more likely (at a significance level of lower than 1 per cent) to spend less on cinema fees and charges than all other households.

The problem with these comparisons of household expenditure levels by gambling participation is that it is a very simple analysis. For example, it does not take into account that some households have higher incomes, and therefore can spend more. A more detailed econometric analysis of gambling participation is therefore required. The following section provides such an analysis.

2.3.4 Influences on Household Gambling and "High" Gambling

An econometric analysis[69] on household participation in gambling was conducted to find out the factors that influence participation and the corresponding effect on other expenditure categories. The dependent variable/s were household participation in gambling (coded 1 for participation and 0 for non-participation), and household participation in "high" gambling (coded 1 for high gambling households and 0 for all others).

The independent variables that were considered for use in the regression/s are listed in Appendix B at B.3.[70] The expenditure categories were included as proportions of household weekly expenditure to account for differences in aggregate income on the level of expenditure between gamblers and non-gamblers.

Influences on Household Gambling[71]

Table 2.6 illustrates the following variables were statistically significant (at a 10 per cent level or below) in positively influencing whether households participated in gambling or not (i.e., the higher these variables, the more likely a household is to participate in gambling):

- An increase in household taxable income;
- The percentage share of household weekly expenditure on tobacco (only weakly significant);
- The percentage share of household weekly expenditure on recreation;[72]
- The percentage share of household weekly expenditure on mortgage repayments;
- An increase in the proportion of household members aged from 45 onwards.

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69 A logit econometric technique was used. Here the dependent variable is treated as a dummy, equal to zero or one in order to assess those influences on household gambling.

70 Total household taxable income was modelled in the regression analysis as a linear form (i.e., total household income) and a non-linear quadratic form (i.e., total household income squared). The linear form assumes the rate of change in the gambling dependent variable remains constant for a unit rate of change in the income variable (i.e., whether expenditure rises on average overall as income rises, or falls on average overall as income rises). The significance of the variable indicates the strength of the linear relationship between the two variables. The non-linear form identifies whether the effect of income on gambling expenditure strengthens or lessens as income rises. For example, where the income squared variable is found to be positive, this indicates that low and high income groups have a tendency to spend more than middle income groups, while a negative income squared variable indicates that middle income groups have a tendency to spend more than low and high income groups.

71 In Tables 2.6 and 2.7 Model 1 is the test of the full theoretical model, Model 2 is the model of only the significant variables that influence the dependent variable, arrived at by a testing down approach. In 99 per cent of cases, the variables that are significant in Model 1 are those that are left in Model 2.

72 Recreation expenditure included gambling expenditure. Gambling expenditure was separated out from recreation for the regressions on high gambling households (because the dependent variable was formed from gambling expenditure), but was not separated for the gambling households. Tests reveal there were no differences in the gambling regressions between recreation with gambling expenditure or recreation without gambling. This was not the case for the high gambling regressions where recreation with gambling expenditure was included was significant, whereas recreation without gambling was not significant.

Table 2.6
Influences on SA Household (HH) Participation in Gambling – Logistic Regression

	Model 1		Model 2	
Variable	**Coefficient**	**z-Statistic**	**Coefficient**	**z-Statistic**
Total household taxable income	3.85E-05	3.554942***	3.62E-05	4.224653***
Total household taxable income squared	-2.06E-10	-2.873022***	-2.17E-10	-3.35645***
Percentage share of HH weekly expenditure on:				
Current housing costs	-0.029821	-2.546924**	-0.033028	-3.45905***
Domestic fuel & power	-0.106728	-2.315166**	-0.120188	-2.94006***
Food and non-alcohol beverages	0.013553	1.101488		
Alcohol beverages	0.027701	0.995025		
Tobacco products	0.026865	1.268736	0.027747	1.452465
Clothing and footwear	-0.021754	-1.149911		
Household furnishings and equipment	-0.02305	-1.714474*	-0.024656	-2.051016**
Household services and operation	-0.012628	-0.522531		
Medical care and health expenses	-0.026806	-1.382917	-0.035069	-1.978533**
Transport	-0.015997	-2.04134**	-0.015479	-2.73925***
Recreation	0.013497	1.22563		
Personal care	-0.069515	-1.481683		
Miscellaneous goods & services	0.011383	0.87049		
Income tax	-0.038542	-3.19929***	-0.029619	-3.19689***
Mortgage repayments	0.050089	2.185540**	0.052107	2.435629**
Other capital housing costs	-0.014549	-2.252728**	-0.017213	-5.00223***
Superannuation, life insurance	-0.023059	-0.704705		
Country of birth dummy variable	0.04683	0.097315		
Occupation of reference person in HH dummy	0.196069	0.835697		
Estimated value of dwelling	-1.89E-06	-1.315081		
Index of relative socio-economic disadvantage	-0.015952	-0.409375		
Hours worked in jobs by HH reference person	0.006026	1.006573		
Number of people in the household	-0.101973	-1.136259		
Whether the household renting government housing	-0.494284	-1.411521		
Proportion of household members aged 45+	0.006139	2.232963**	0.006203	2.847777***

Notes: * Significant at 10 per cent level
** Significant at 5 per cent level
*** Significant at 1 per cent level

n = 564
Total correct prediction: 363 out of 564 or 58%. Correctly predicted non-gamblers 63%, correctly predicted gamblers 50%

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.6 illustrates the following variables were statistically significant in negatively influencing whether households participated in gambling or not (i.e., the higher these variables, the less likely a household is to participate in gambling):

- An increase in the taxable income of the household squared (i.e., the significant negative influence of household income "squared" indicates that middle income groups have a tendency to spend more than low and high income groups ─ refer footnote 70);
- An increase in the percentage share of household weekly expenditure on current housing costs;
- An increase in the percentage share of household weekly expenditure on domestic fuel and power;

- An increase in the percentage share of household weekly expenditure on household furnishings & equipment;
- An increase in the percentage share of household weekly expenditure on medical care and health expenses;
- An increase in the percentage share of household weekly expenditure on transport;
- An increase in the percentage share of household weekly expenditure on income tax; and
- An increase in the percentage share of household weekly expenditure on other capital housing costs.

Influences on Household "High" Gambling

Table 2.7 illustrates the following variables were statistically significant in positively influencing whether households participated in "high" gambling or not:

- An increase in taxable household income;
- An increase in the percentage share of household weekly expenditure on tobacco products; and
- An increase in the proportion of household members aged from 45 onwards.

Table 2.7 illustrates the following variables were statistically significant in negatively influencing whether households participated in "high" gambling or not:

- An increase in the percentage share of household weekly expenditure on domestic fuel and power;
- An increase in the percentage share of household weekly expenditure on household furnishings & equipment;
- An increase in the percentage share of household weekly expenditure on medical care and health expenses;
- An increase in the percentage share of household weekly expenditure on transport;
- An increase in the percentage share of household weekly expenditure on personal care;
- An increase in the percentage share of household weekly expenditure on income tax;
- An increase in the percentage share of household weekly expenditure on other capital housing costs;
- An increase in the socio-economic disadvantage index (marginally significant at 13 per cent); and
- If the household is in government housing.

Table 2.7
Influences on SA Household Participation in "High" Gambling – Logistic Regression

	Model 1		Model 2	
Variable	**Coefficient**	**z-Statistic**	**Coefficient**	**z-Statistic**
Total household taxable income	3.45E-05	2.024765**	3.37E-05	2.410343**
Total household taxable income squared	-3.42E-10	-2.132103**	-3.31E-10	-2.303471**
Percentage share of HH weekly expenditure on:				
Current housing costs	-0.012854	-0.978143		
Domestic fuel & power	-0.176557	-2.840896***	-0.197521	-4.07458***
Food and non-alcohol beverages	0.018398	1.291461		
Alcohol beverages	0.015494	0.494739		
Tobacco products	0.054541	2.328106**	0.05053	2.331803**
Clothing and footwear	0.001694	0.076969		
Household furnishings and equipment	-0.030212	-1.798999*	-0.031079	-1.976788**
Household services and operation	-0.036622	-1.22542		
Medical care and health expenses	-0.055736	-2.057394**	-0.051796	-2.057677**
Transport	-0.028943	-2.959555***	-0.028656	-3.651553***
Recreation	1.05E-06	0.075912		
Personal care	-0.110173	-1.818597*	-0.099271	-1.750473*
Miscellaneous goods & services	-0.0082	-0.557268		
Income tax	-0.050649	-3.300694***	-0.046932	-3.704378***
Mortgage repayments	0.000711	0.028951		
Other capital housing costs	-0.027695	-3.61704***	-0.027223	-5.389858***
Superannuation, life insurance	-0.019358	-0.478824		
Country of birth dummy variable	0.084137	0.153379		
Occupation of reference person in HH dummy	-0.257025	-0.887191		
Estimated value of dwelling	1.36E-06	0.704032		
Index of relative socio-economic disadvantage	-0.062901	-1.308457	-0.059706	-1.50749
Hours worked in jobs by HH reference person	0.008475	1.179364		
Number of people in the household	-0.095998	-0.841745		
Whether the household renting government housing	-0.471372	-1.146213	-0.738665	-2.017854**
Proportion of household members aged 45+	0.007672	2.37378**	0.008898	3.374031***

Notes: * Significant at 10 per cent level
** Significant at 5 per cent level
*** Significant at 1 per cent level

n = 564
Total correct prediction: 400 out of 564 or 70%. Correctly predicted non-gamblers 82%, correctly predicted gamblers 31%
Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Summary of Influences on Household Participation in Gambling

The analysis in this section has yielded the following key observations.

Firstly, the role of household income is an interesting one. South Australian households that participate in gambling (whether it be as a normal or "high" gambler) generally are more likely to have higher incomes than households that do not gamble, that is, an increase in household income increases the probability of the household gambling. However, the quadratic form of the relationship between household income and gambling participation is significant and negative. This indicates that there is a non-linear relationship between income and gambling participation, illustrating that households on middle incomes are more likely to gamble than low or high-income households.

Households that gamble "highly" are more likely to be located in an area of disadvantage (as classified by the ABS); in general, gambling households are not more likely than non-gambling households to be relatively socio-economically disadvantaged.

Households that gamble heavily are more likely to spend a higher percentage of their weekly expenditure on tobacco and recreation than all other households.

In terms of economic impacts on various sectors of the economy, the household expenditure analysis suggests that there may be some switching expenditure impacts by gamblers in areas such as current housing costs[73]; domestic fuel and power,[74] household furnishings and equipment, medical and health expenses, transport, and other capital housing costs.[75] This suggests, that it is these forms of expenditure from which gambling, particularly the introduction of EGMs, may have diverted expenditure. This is an interesting result as these forms of expenditure are not the typical categories of retail spending that have often been identified as being adversely affected by the introduction of EGMs. The other important point here is that these expenditures impact on the family and standard of living in terms of housing, health, heating/cooling and transport and may contribute to a lower quality of life.

2.3.5 Differences Between Households Answers to Financial Difficulty Questions by Gambling Participation

ABS's Household Expenditure Survey asks a number of questions that are designed to find out if the household has experienced any financial difficulties in the past year. A sub-section of these questions were analysed by household gambling participation to assess if gambling households experienced greater financial difficulties than non-gambling households. The analysis was also repeated for "higher" gambling households versus all others. Questions that were analysed include:

- Present standard of living compared with 2 years ago;
- Reason household does not have holiday away for at least one week a year;
- Reason household does not have a night out once a fortnight;
- Reason household members buy second hand clothes most of the time;
- Reason household members do not spend time on leisure or hobby activities;
- Management of household income;
- Whether could not pay gas/electricity/telephone bill due to shortage of money;
- Pawned or sold something due to shortage of money;
- Went without meals due to shortage of money;
- Unable to heat home due to shortage of money;
- Assistance sought from welfare/community organisations due to shortage of money;

[73] Current housing costs include rent, mortgage repayments – interest component, water and sewerage rates and charges, general rates, house and contents insurance, repairs and maintenance, loans for alterations and additions, and body corporate repayments (ABS, 2000).

[74] Domestic fuel and power includes electricity, mains and bottled gas, heating oil, wood for fuel, bottled gas for BBQ etc (ABS, 2000).

[75] Other capital housing costs include principal component of mortgage repayment, purchase of any other property, additions and extensions, internal renovations, insulation, in-ground swimming pool, outside building, landscape contractor, other outside improvements, and capital housing costs nec (ABS, 2000).

- Sought financial help from friends/family due to shortage of money;
- Whether had any cash flow problems in the past year; and
- Ability of household to raise emergency money.

Only statistically significant different results by the different types of households are shown (see Tables 2.8A to 2.8K). Households that gamble are more likely (at a significance level 10 per cent or below) than non-gambling households to: break even in their weekly budget or to save less; and not be able to raise at least $2,000 in emergency money. On the other hand, non-gambling households are more likely than gambling households to not have a holiday away for at least one week a year because they could not afford it; to not have a night out once a fortnight because they can't afford it; buy second hand clothes most of the time because they can't afford new clothes; have sought financial help from friends/family due to shortage of money; have had any cash flow problems in the past year.

Households that gamble "highly" are more likely than "low" or non-gambling households to: state that their present standard of living compared with 2 years ago is worse. On the other hand, households that gamble "low" or not at all are more likely than "high" gambling households to: not have a holiday away for at least one week a year because they could not afford it; not be able to pay gas/electricity/telephone bill due to shortage of money; have pawned or sold something due to shortage of money; to have gone without meals because of a shortage of money; have sought financial help from friends/family.

It is hard to conclude much from this analysis of gambling versus non-gambling households without taking into consideration their financial state. It is clear that many low and non-gambling households do not have any scope within their limited budget to devote to discretionary expenditures such as for gambling. High gambling households report that their standard of living has not improved as a result of participation in gambling.

Table 2.8A
Present standard of living compared with 2 years ago

	Better	Worse	Same
High gambling households (per cent)	18.84	50.72	30.43
Low and non-gambling households (per cent)	29.34	39.44	31.22
Significance test	0.01		

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.8B
Reason household does not have holiday away for at least one week a year

	Can't afford	Other reasons
Gambling Households (per cent)	18.91	81.09
Non-gambling households (per cent)	25.46	74.54
	0.00	
High gambling households (per cent)	19.57	80.43
Low and non-gambling households (per cent)	23.71	76.29
Significance test	0.05	

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.8C
Reason household does not have a night out once a fortnight

	Can't afford	Other reasons
Gambling Households (per cent)	17.23	82.77
Non-gambling households (per cent)	26.07	73.93
Significance test	0.01	

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.8D
Reason household members buy second hand clothes most of the time

	Can't afford new clothes	Other reasons
Gambling Households (per cent)	7.14	92.86
Non-gambling households (per cent)	15.03	84.97
Significance test	0.00	

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.8E
Management of household income

	Save money most weeks	Break even most weeks	Spend more than received
Gambling Households (per cent)	23.19	65.22	11.59
Non-gambling households (per cent)	34.98	52.35	12.68
Significance test	0.09		

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.8F
Whether could not pay gas/electricity/telephone bill due to shortage of money

	Yes, couldn't pay	other
High gambling households (per cent)	16.81	83.19
Low and non-gambling households (per cent)	24.85	75.15
Significance test	0.02	

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.8G
Pawned or sold something due to shortage of money

	Yes, pawned things	Not pawned things
High gambling households (per cent)	1.45	98.55
Low AND non-gambling households (per cent)	5.40	94.60
Significance test	0.05	

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.8H
Went without meals due to shortage of money

	Yes	No
High gambling households (per cent)	1.26	98.74
Low and non-gambling households (per cent)	4.29	95.71
Significance test	0.04	

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.8I
Sought financial help from friends/family due to shortage of money

	Sought help	Didn't seek help
High gambling households (per cent)	5.80	94.20
Low and non-gambling households (per cent)	11.97	88.03
Significance test	0.04	
Gambling Households (per cent)	7.98	92.02
Non-gambling households (per cent)	12.27	87.73
Significance test	0.10	

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.8J
Whether had any cash flow problems in the past year

	Yes, had cash flow problems	No problems
Gambling Households (per cent)	23.11	76.89
Non-gambling households (per cent)	29.45	70.55
Significance test	0.09	

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

Table 2.8K
Ability of household to raise emergency money (at least $2,000)

	Yes	No
Gambling Households (per cent)	17.65	82.35
Non-gambling households (per cent)	25.15	74.85
Significance test	0.03	

Source: ABS, Household Expenditure Survey, Australia: Confidentialised Unit Record File, 1998-99. Calculations by the researchers.

2.4 Lottery Sales and EGM Expenditure

2.4.1 Relationship Between Lottery Sales and EGM Expenditure

Aggregate data presented in section 3.2 of the Phase One report showed that expenditure on lotteries declined following the introduction of EGMs in mid 1994. This suggests that the introduction of EGMs diverted expenditure away from lotteries.

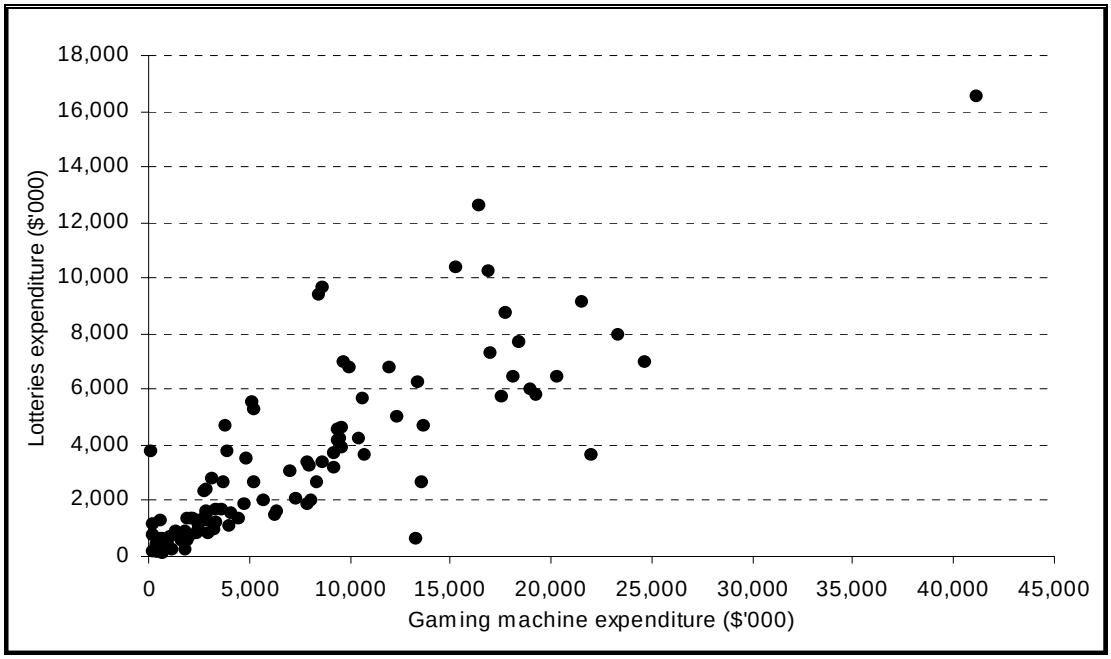
To determine whether there is any positive or negative association between lotteries and EGM expenditure, the correlation between SA Lotteries gross sales (hereafter lottery sales) and EGM expenditure was examined on a regional basis. Data on lottery sales was supplied by SA Lotteries on a post code basis and converted to a Statistical Local Area (SLA) basis using a post code to SLA concordance from the ABS. Data on EGM expenditure by SLA was supplied by the Office of the Liquor and Gambling Commissioner.

Data on lottery sales was used since data on lottery expenditure are not available on a regional basis. Though the concept of sales (the amount wagered) is different to expenditure (the amount lost), regional comparisons of the relative intensity to gamble based on sales and expenditure are possible since the nature of gambling means that sales for any gambling product should have a strong positive correlation with expenditure (i.e., a region that gambles more will be more likely to lose more). However, the level of lottery sales is not directly comparable with the level of EGM expenditure for a particular region given the difference in concepts.

Figure 2.7 plots all SLAs in South Australia by the level of their lottery sales and EGM expenditure in 2004-05. There is a positive association or correlation between lottery sales and EGM expenditure with high EGM expenditure tending to be associated with high lottery sales, and vice versa.[76]

A robust positive correlation suggests that lotteries and EGMs are complements rather than substitutes. This is not unreasonable given that both activities are variants of the broader 'gambling' product – a person wanting to gamble may prefer to gamble on two or more forms of gambling (at the expense of some other expenditure) rather than substitute one form of gambling for the other.

Figure 2.7
Statistical Local Areas by Lottery and EGM Expenditure
South Australia – 2004-05



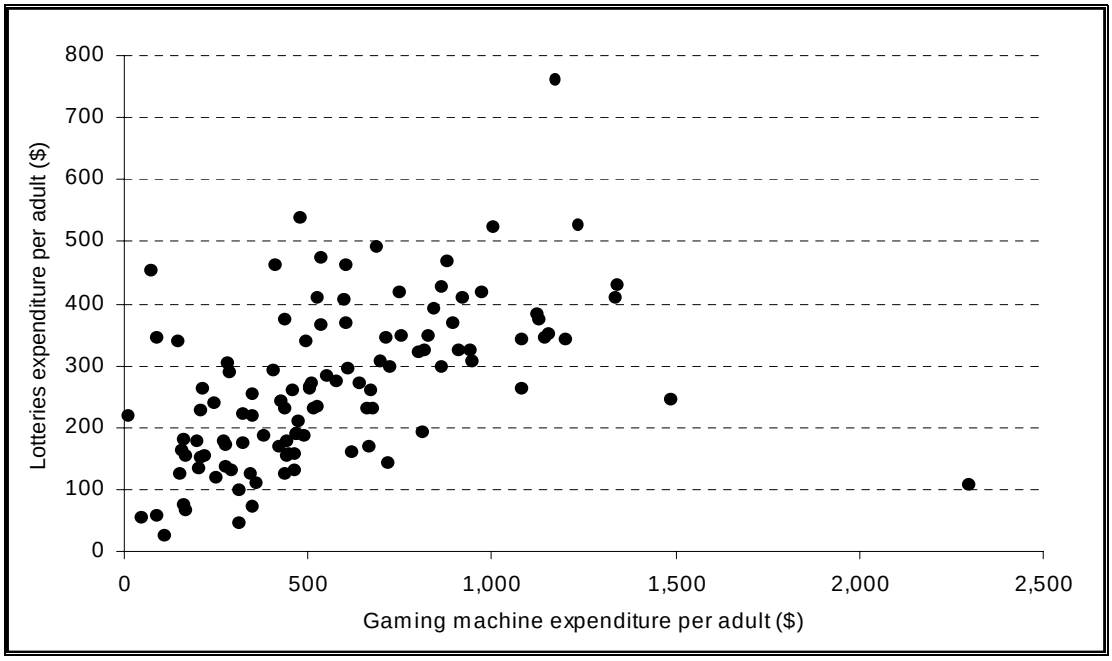
Source: OLGC, and SA Lotteries, unpublished data.

However, the positive association between lottery and EGM expenditure may be explained by a common response from some other factor. For example, at the regional level, higher expenditure on lotteries and gaming machines would to a large degree be explained by greater population size, greater aggregate income, and other socio-economic and demographic factors.

Figure 2.8 addresses the impact of population size by plotting SLAs by their average per adult lottery and EGM expenditure (Adelaide (C) has been excluded as it is a significant outlier due to its status as the entertainment and service centre for the wider metropolitan area). Correcting for population size reduces the strength of the positive correlation between lottery sales and EGM expenditure for SLAs.[77] However, there remains a moderate correlation between the two, indicating that either both forms of gambling are complements, or more likely, some other factor or factors such as income, socio-economic characteristics etc., continues to influence both forms of expenditure.

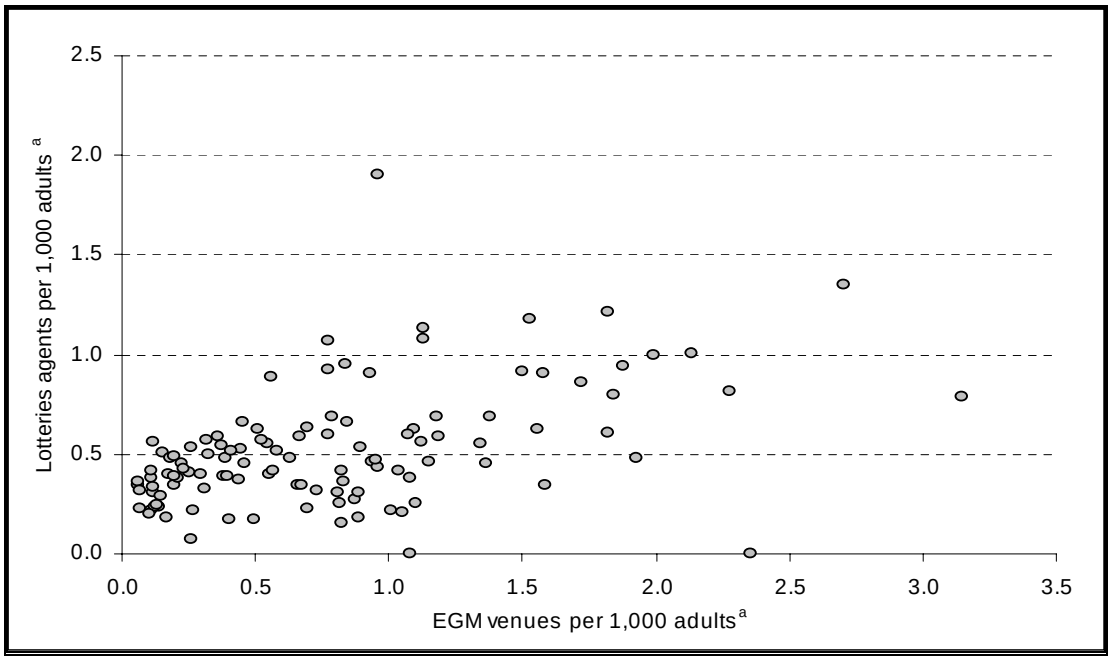
[76] The correlation coefficient was estimated to be 0.8 – excluding Adelaide (C) – which indicates a robust positive correlation.
[77] The correlation coefficient falls from 0.8 to 0.5 after adjusting for population.

Figure 2.8
Statistical Local Areas by Lottery and EGM Expenditure Per Adult
South Australia – 2004-05[a]



Note: [a] Based on adult population as at 30 June 2004. Adelaide (C) is excluded.
Source: OLGC, and SA Lotteries, unpublished data, and ABS, *AusStats*, Population Trends and Estimates.

Figure 2.9
SLAs by Prevalence of Lottery Agents and Gaming Machine Venues
South Australia – 2004-05



Note: [a] Based on adult population as at 30 June 2004.
Source: OLGC, and SA Lotteries, unpublished data, and ABS, *AusStats*, Population Trends and Estimates.

The accessibility or availability of gambling facilities would be important in explaining the correlation between lottery sales and EGM expenditure, although greater availability of EGMs does not necessarily imply greater availability of lotteries. Nonetheless, one would expect that accessibility to both would be at least loosely correlated with some other factor, such as total population or the historical pattern of urban development. Figure 2.9, which plots SLAs by the number of lottery agents and gaming machine venues per 1,000 adults in these areas, shows there is a moderate correlation between accessibility of lotteries agents and gaming machine venues.[78]

Given that various related and unrelated factors influence lotteries and EGM expenditure, it is difficult to separate out the effect of one on the other through a cross section analysis. Since expenditure on lotteries and gaming machines would seem to be possible partial substitutes for one another, at least in some circumstances, it may be more pertinent to examine whether there is any relationship between changes in expenditure on both forms of gambling.

2.4.2 Changes in Lotteries and EGM Expenditure

If expenditure on lotteries and gaming machines are substitutes, it would be expected that there would be an inverse relationship between changes in expenditure on both forms of gambling at a regional level. That is, all other things being equal, a relatively stronger rise in EGM expenditure in a region would tend to be associated with a relatively weaker rise in lottery sales.

It is clear from analysis of State data that lotteries expenditure declined following the introduction of EGMs, indicating there was some expenditure shifting in aggregate from lotteries to EGMs as the new form of gambling was progressively introduced. Unfortunately it was not possible to obtain detailed regional data on lotteries sales prior to 1999 due to a change in SA Lotteries operating system. However, SA Lotteries was able to provide lotteries expenditure data for 1999-00 for select regions identified by the researchers. Data for these regions are analysed in the following section.

2.4.3 Comparison of Lotteries and EGM Expenditure for Selected Regions

Table 2.9 shows the change in average EGM expenditure per adult and SA lotteries sales per adult for select local government areas and South Australia between 1999-00 and 2004-05. The change in EGM expenditure and lotteries sales is illustrated graphically in Figure 2.10.

There is no clear relationship between changes in lotteries sales and EGM expenditure for the regions. For example, Burnside (although it is somewhat of an outlier) experienced a relatively strong percentage rise in EGM expenditure and very weak rise in lotteries sales between 1999-00 and 2004-05 – albeit from a low base – which may suggest an inverse relationship between EGM and lotteries expenditure (i.e., they are substitutes). However, Port Adelaide, Salisbury and Tea Tree Gully all experienced a relatively strong rise in EGM expenditure and lotteries sales, which indicates a positive relationship between the two forms of gambling (i.e., they are complements).

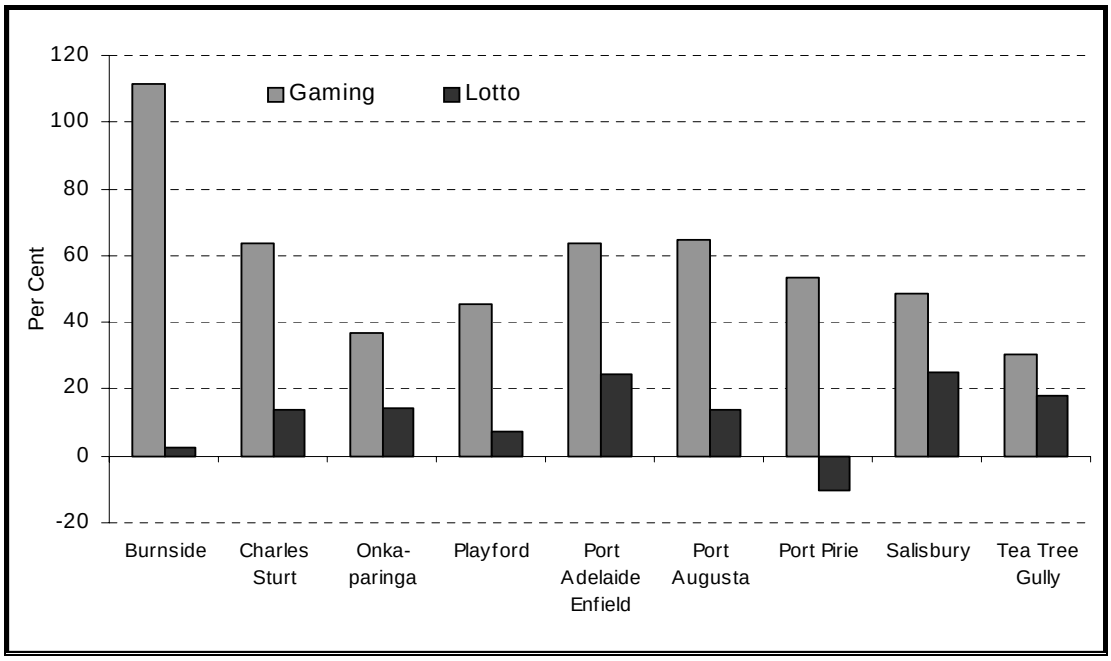
[78] The correlation coefficient for the number of lottery agents and gaming machine venues per 1,000 adults is 0.5.

Table 2.9
Gaming Machine Expenditure and Lotteries Sales per Adult
Local Government Areas: 1999-00 and 2004-05

	Electronic Gaming Machine Expenditure				SA Lotteries Sales			
	$ per adult		Change		$ per adult		Change	
LGA	1999-00	2004-05	$	Per Cent	1999-00	2004-05	$	Per Cent
Burnside	52	110	58	111.2	181	186	5	2.6
Charles Sturt	472	771	300	63.6	369	421	52	14.0
Onkaparinga	417	570	153	36.6	209	239	30	14.4
Playford	430	626	196	45.5	321	345	24	7.5
Port Adelaide Enfield	521	854	333	63.9	269	336	66	24.6
Port Augusta	560	922	362	64.5	360	409	49	13.7
Port Pirie	438	671	233	53.3	393	351	-41	-10.5
Salisbury	523	778	255	48.7	276	345	69	25.0
Tea Tree Gully	379	494	115	30.4	248	293	44	17.9
Victor Harbor	613	697	84	13.7	309	306	-2	-0.7
South Australia	426	631	205	48.1	259	294	35	13.6

Source: OLGC, and SA Lotteries, unpublished data, and ABS, *AusStats*, Population Trends and Estimates.

Figure 2.10
Percentage Change in EGM Expenditure and Lotteries Sales Per Adult
Selected Local Government Areas - 1999-00 to 2003-04



Source: OLGC, and SA Lotteries, unpublished data, and ABS, *AusStats*, Population Trends and Estimates.

There are some interesting differences between the regions, particularly when they are compared by their average EGM and lottery expenditure along with other socio-economic and accessibility of gambling indicators.

Table 2.10 shows that Burnside had the lowest EGM expenditure and lottery sales per adult of the LGAs shown despite having by far the highest average income ($50,600 in 2001-02, which is 39 per cent higher than the State average). Burnside LGA is characterised by relatively lower accessibility of gaming machines, and to a lesser degree lotteries. There were only 0.9 gaming machines per 1,000 adults in the region at 30 June 2005 relative to an

average of 12 machines for the State as a whole; and 3.5 lottery agents per 10,000 adults compared to a State average of 4.5 agents per 10,000 adults.

At the other end of the scale, Port Augusta had a very high concentration of gaming machines that is more than double the state average (28 machines per 10,000 adults). Port Augusta has a significantly higher per adult expenditure on gaming machines relative to the State ($925 cf. $615) despite having an average income below the State average ($33,850 cf. $36,400).

The contrasting scenarios for Burnside and Port Augusta illustrate the significant influence of accessibility on gambling expenditure, but it is also suggestive that socio-economic status, occupation and income and educational attainment are factors that influence the decision to participate in gambling.

Table 2.10
Local Government Areas by Gambling Expenditure and Socio-economic Indicators

LGA	EGM expenditure per adult ($) 2003-04[a]	Lottery sales per adult ($) 2003-04[a]	Average income ($) 2001-02	Unemployment rate (%) 2003[b]	No. of gaming machines per 1,000 adults 2004-05[c]	No. of lottery agents per 10,000 adults 2004-05[c]
Burnside (C)	112	181	50,587	3.1	0.9	3.5
Charles Sturt (C)	740	417	35,920	6.5	10.7	5.3
Onkaparinga (C)	561	234	33,265	6.8	7.3	3.6
Playford (C)	608	339	31,477	14.6	6.4	4.8
Pt Adelaide Enfield (C)	817	334	32,993	9.7	16.8	5.1
Port Augusta (C)	925	404	33,847	10.1	27.6	6.9
Port Pirie (C)	657	343	34,415	11.9	18.1	4.6
Salisbury (C)	769	346	31,701	8.4	8.0	4.4
Tea Tree Gully (C)	482	285	34,925	3.7	5.0	3.4
Victor Harbor (C)	723	328	31,089	5.4	11.1	3.9
South Australia	615	294	36,405	6.2	11.8	4.5

Note: [a] Based on adult population at 30 June 2003.
[b] September quarter.
[c] Based on adult population at 30 June 2004.
Source: OLGC, and SA Lotteries, unpublished data, and ABS, *AusStats*, Population Trends and Estimates, and National Regional Profiles.

Salisbury is also an interesting case. It has an above average EGM and lottery spend (relative to the State) despite having a below average prevalence of EGMs and a density of lottery agents in line with the State average (see Table 2.10). It also has a relatively low average income ($31,701 which is 13 per cent below the State average). Salisbury also has the highest proportion of BreakEven Service counselling clients per 1,000 adults in South Australia.

2.4.4 Econometric Analysis

Given the inconclusiveness of the simple correlation analysis of lottery sales and EGM expenditure by region, and changes in expenditure by region, an econometric analysis[79] was conducted to determine whether lottery sales have a significant influence on EGM expenditure at the regional level.

[79] The methodology of the econometric analysis was ordinary least squares regressions.

Lottery sales was included as an explanatory variable in a variant of the model developed in section 6.2.2 to examine the influences on net EGM expenditure per adult by SLA to determine the effect of lottery sales on EGM expenditure per adult. An advantage of the econometric approach is that the effect of other independent variables on EGM expenditure (i.e., the dependent variable) is taken into account. However, this is a very simple way of testing for the complementarity or substitutability of lottery expenditure, and a more sophisticated form of econometric modelling would be required before any definite conclusions could be drawn. Nevertheless, the results from the simple econometric modelling are summarised in Table 2.11.

Table 2.11
Testing the Influence of Lotteries on Net EGM Revenue per Adult by SA SLA

Variable	Coefficient	t-Statistic
C	1840.4100	1.2692
MACHINES1000	23.5137	8.8703
VENUESKM2	212.5267	1.6973
MEANDISPYPA	-0.0553	-0.7807
MEANDISPYPA2	0.0000	0.8315
AGE20P	16.6221	3.5764
AGE40P	-13.9597	-2.5550
LOTTERY03	0.0000	1.2350
AGE65P	21.4642	2.0775
MALESP03	-9.3240	-0.5644
STUDP01	-6.0152	-1.6337
NONENGLISHP	2.9061	1.0451
RENTP01S	4.4168	0.9466
MVP	-31.1557	-2.5293
ATSIP01	-6.6714	-1.0375
UEP03	21.5239	2.4303
DISABILP	-14.3859	-0.9740
NOCHILDFAMILYP	-9.1318	-1.1256
SINGLEPARENTP	4.2615	0.3866
RURALD	-46.9296	-0.9497
ALCOHOLKM2	-21.8876	-0.4877

The lottery variable is statistically insignificant in terms of influencing EGM expenditure per adult. This means there is no statistical support for the argument that lottery sales and EGM expenditure are complements despite the fact they are weakly correlated at the regional level. While the weak positive correlation suggests that a region with greater lottery sales will spend more on EGMs in an absolute sense, in a statistical sense there is no significant relationship.

The model was tested with lotteries expenditure as the dependent variable and EGM expenditure as the independent variable. Again, no statistically significant relationship between the two was found.

3. Employment

Terms of Reference

The economic impact of gambling will be assessed for impacts:

- of any particular gambling industry sectors on other gambling industry sectors;
- of any particular gambling industry sector and the industry as a whole, on non-gambling industries and sectors; and
- on employment patterns.

3.1 Introduction

The impact of gambling on employment, in particular in relation to electronic gaming machines, is a major issue in the debate over the benefits and costs of gambling. The first section of this chapter explores how the introduction of EGMs potentially affected employment by industry in South Australia. The second section examines data from ABS surveys of the hotels and clubs industry to compare differences in the size and performance of these venues, in particular between those venues with and without gambling facilities. This gives some indication of the potential impact of gambling on venue activity.

Box 3.1: Summary

An auto-regressive model was used to forecast employment levels for various industry sectors for the period in which electronic gaming machines have operated in South Australia.[80]

Comparisons of forecast and actual employment indicate that introduction of EGMs had a significant positive impact of employment in the hotels, taverns and bars sector, with actual employment in the sector in 2005 being about 5,500 persons higher relative to the forecast employment level.

Actual levels of employment for clubs (hospitality) were down slightly relative to the forecast level of employment, indicating that EGMs may have adversely affected employment in this sector, despite clubs being able to operate EGMs. This outcome may reflect that EGMs have shifted market power from clubs to hotels as the latter have found it relatively easier to acquire and operate EGMs.

Actual employment levels in the gambling services sector, which includes lotteries, casinos and gambling services not elsewhere classified, have fallen slightly below forecast levels. This may reflect that the introduction of EGMs has had an adverse impact on employment in other gambling sectors, but other factors such as labour displacing technological change may also be significant.

Clubs and hotels **with gambling facilities** have significantly higher employment and total income compared to those without gambling facilities. South Australian clubs and hotels with gambling facilities had an average of 22 employees per premises while those without gambling facilities had 5 employees per premises. Venues with gambling facilities had an average total income of $2.2 million per premises compared to an average total income of $0.3 million for those without gambling facilities.

The researchers contend, that standardising for venue size, that venues with gambling facilities have drawn away activity from venues without gambling facilities.

[80] The model basically estimates employment for an industry based on historical data for a period when EGMs were not in existence. By comparing differences in forecast and actual levels of employment, a sense of the impact of the introduction of EGMs on employment in particular industry sectors can be obtained. However, the model has some important limitations which are explained in the chapter.

Average employment for all hotels, taverns and bars in South Australia rose from 19 persons per business in 1994-95 to 23 persons per business in 2000-01. Average employment for all clubs also rose, from 6.5 to 8.1 persons per organisation.

Reflecting that gambling facilities, and in particular EGMs, tend to provide a significant boost to the financial performance of venues that acquire them, average total income for clubs and hotels in South Australia with gambling facilities rose from $2.0 million in 1994-95 to $2.4 million in 2000-01, while average income for those without gambling facilities fell from $0.4 million to $0.3 million over this period. Average total income in 2000-01 was significantly higher for venues with gambling facilities than those without gambling facilities for both hotels ($2.7 million c.f. $0.7 million per business) and clubs ($0.9 million c.f. $0.2 million per organisation).

3.2 EGM Introduction and Employment Trends by Sector

3.2.1 Overview

Total employment can be increased by gambling due to the creation of new jobs (reducing unemployment) and increased demand for non-gambling goods and services. On the other hand, local businesses may close because the introduction of EGMs diverts expenditure away from these businesses and/or reduces the demand for non-gambling goods and services. Therefore, there can be positive or negative multiplier effects that may result from gambling, indeed, many studies have found evidence of both multiplier effects when studying the effect of gambling. The ultimate effect may also be neutral.

It is to be expected that some industry sectors will be affected more than other sectors, due to the nature of the links of the gambling industry with other industries. This chapter explores the effect of the introduction of EGMs in South Australia on the industries and sub industry sectors presented in Table 3.1.[81] Industry data are available at a state level only. It would be preferable to do this analysis, especially in the sectors that show some potential effect, by local area where EGMs are most predominant.

The analysis was conducted on total employment levels, though the analysis for the State as a whole considered full-time and part-time employment effects (as indicated in brackets in the industry sector table).

Table 3.1
Industry Sectors Analysed

Manufacturing	Finance and Insurance
Construction	Property and Business Services
Wholesale Trade	Education
Retail Trade	Health and Community Services
Accommodation, Cafes and Restaurants	Cultural and Recreational Services
Accommodation	Sport and Recreation
Pubs, Taverns and Bars	Gambling Services
Cafes and Restaurants	Personal and Other Services
Clubs (Hospitality)	Total Employment (Total, Full-time and part-time)

[81] Sectors that were not analysed for employment changes (because past studies indicate very little change in employment figures from gambling introduction) include Agriculture, Forestry and Fishing; Mining; Electricity, Gas and Water Supply; Transport and Storage; Communication Services and Government Administration and Defence.

3.2.2 Methodology

This current study follows the methodology developed by Garrett (2004) to forecast changes in employment. It is important to note that there are a number of methodologies that could be used to evaluate changes in employment, such as survey analysis, CGE modelling, input-output analysis, etc. However, given the time and data restrictions we have used the best methodology available. Quarterly employment numbers by industry in original terms were obtained from the ABS Labour Force Survey for the period November 1984 to August 2005. (EGMs were introduced in South Australia in 1994.) This survey data may not reflect the actual industry employment situation, particularly for industry sectors that have very low employment which means these estimates have very high standard errors – i.e., there is a high probability that the true population value differs from the survey estimate.

An ARIMA (auto-regressive integrated moving average) (p, d, q) model is used to explain the behaviour of each industry employment series prior to EGM introduction. The model's specification is:

$$x(t) = \gamma + \alpha_1 x(t\text{-}1) + \ldots. + \alpha_p x(t\text{-}p) + e(t) + \beta_1 e(t\text{-}1) + \ldots.. + \beta_q e(t\text{-}q)$$

where x is total industry employment, γ is a constant term, $e(t)$ is the error term, p is the number of autoregressive lags, q is the number of moving average lags and d is the order of integration. (Other methodological details of a technical nature are summarised in Appendix C.)

ARIMA models are used to analyse time-series data because time series values can be expressed as being dependent on the preceding estimation errors. ARIMA models take past estimation or forecasting errors into account when estimating the next time series value. Therefore, they are of greater value than using a simple trend line analysis of prediction.

The ARIMA model forecasts employment based on historical data during a period when EGMs were not operating in South Australia. Therefore, by comparing differences in forecast and actual employment, a sense of the impact of EGMs on employment in particular sectors may be obtained. However, the model has some limitations. For instance, choosing the right ARIMA models relies on detecting patterns in data, which is often more of an art than a science. The models rely on having enough time-series data to forecast into the future, and often the forecasted data are of little use after a period of five years. More importantly, the model is unable to take into account the complex range of factors that influence employment outcomes in industries, e.g., policy changes, investment decisions, changes in exchange rates, consumer sentiment, and other transient factors such as wealth effects associated with rising house prices etc.

The model is most useful (for our purposes) in providing insights into the impact on those sectors where the introduction of EGMs would be expected to have a significant impact (e.g., hotels and clubs); it is least useful in describing the effects of gambling on South Australian employment.

3.2.3 Empirical Results

Graphs depicting the difference between forecast employment levels from 1994 onwards versus actual employment levels for all industry sectors considered are presented in Appendix D, while graphs for select industry sectors most relevant to this study are presented in Figures

3.1 to 3.5. Series names that end with an F or F1 indicate the forecast series. Persons employed are in 1,000 persons.

What do the graphs tell us about total employment levels by industry? Firstly, actual total employment levels have increased significantly above the forecast since 2001 (see Figure 3.1). Much of this increase is driven by increases in part-time jobs (from 1999 onwards), though full-time jobs have increased since 2002.

The underestimation of total employment by the model would partly reflect that it takes into account actual employment levels in the early 1990s which were subdued due to the impact of the 1990 recession, which was compounded by the collapse of the State Bank. This illustrates the limitations of the model, namely its inability to take into account dynamic economic events that affect employment outcomes.

Industries that have experienced falls in actual employment below the forecast levels include: Clubs (Hospitality) (see Figure 3.2), Gambling Services (Total) (Figure 3.3), and not shown here Manufacturing, Wholesale, Finance and Insurance, and Gambling Services (Part-time).

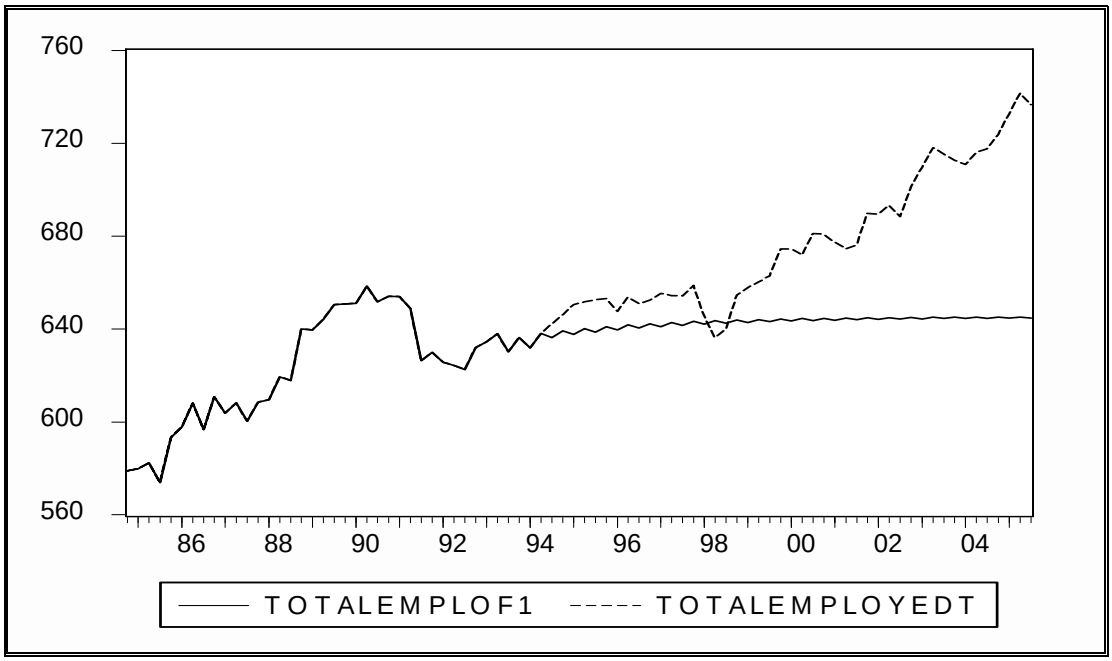
Industries that have experienced increases in actual employment above the forecast levels include: Accommodation, Cafes/Restaurants (Figure 3.4), Pubs/Taverns/Bars (Figure 3.5), and not shown here Construction, Retail Trade, Property and Business Services, Education, Health and Community Services, Cultural and Recreational Services, and Personal and Other Services.

The actual level of employment for pubs, taverns and bars was significantly higher than the forecast level of employment, indicating that, as would be expected, the introduction of EGMs had a significant positive influence on employment in the sector. The difference between actual and forecast levels was about 5,500 persons. This figure is consistent with our estimate from Phase 1 (section 5.2) of a positive gross impact of 5,400 jobs in the hotels, taverns, bars and clubs sector due to the introduction of EGMs based on before and after growth comparison.

The model finds that growth was concentrated in pubs, with actual level of employment in clubs (hospitality) falling slightly relative to the forecast level of employment despite the introduction of EGMs into some of these venues. This suggests that EGMs have not benefited clubs as much as pubs/hotels, largely because clubs have greater difficulty competing against pubs/hotels for various reasons, including they have greater difficulty obtaining finance since they are smaller on average. The result is that relatively fewer clubs have EGMs compared to hotels, taverns and bars (see section 3.3 which provides a more detailed comparison of employment differences between hotels and clubs).[82]

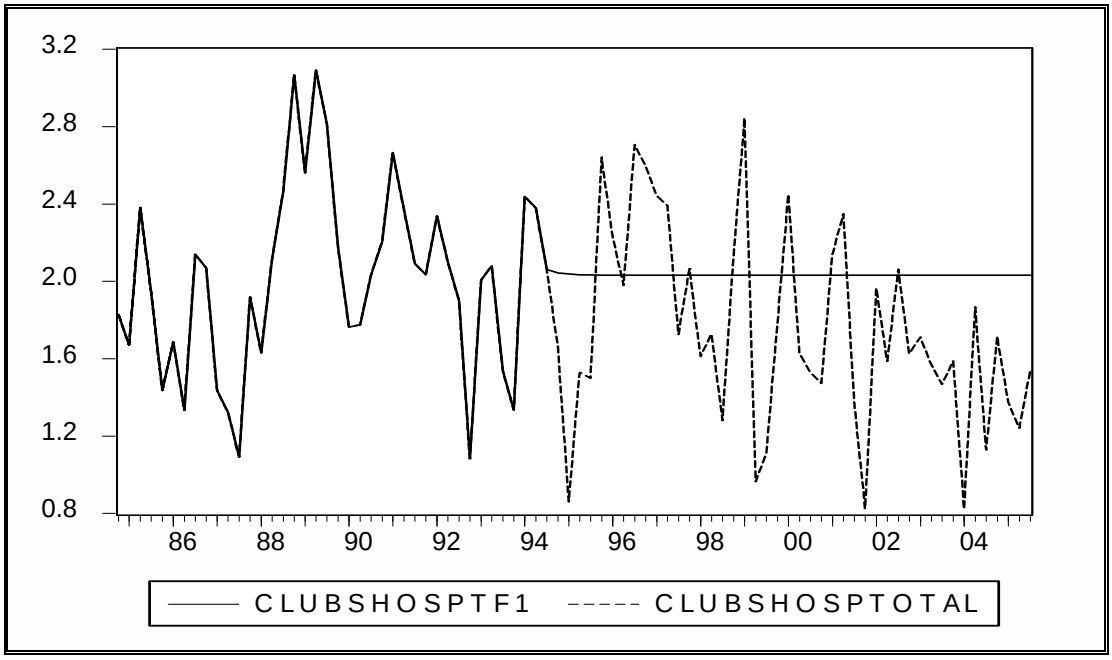
[82] The data for clubs (hospitality) should be treated with caution given that the employment estimates are quite low, implying they have a high degree of sampling variability (i.e., have high standard errors and therefore increased chance of differing from actual employment estimates).

Figure 3.1
Actual and Forecast Total Employment – South Australia ('000 persons)



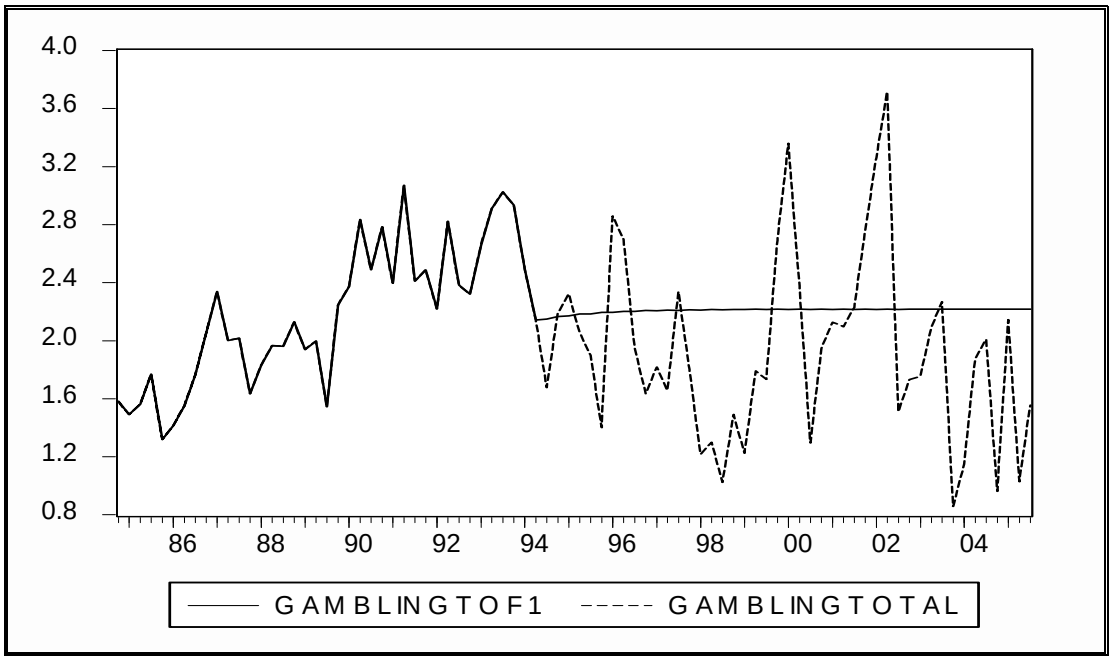
Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure 3.2
Actual and Forecast Employment in Clubs (Hospitality) – South Australia ('000 persons)



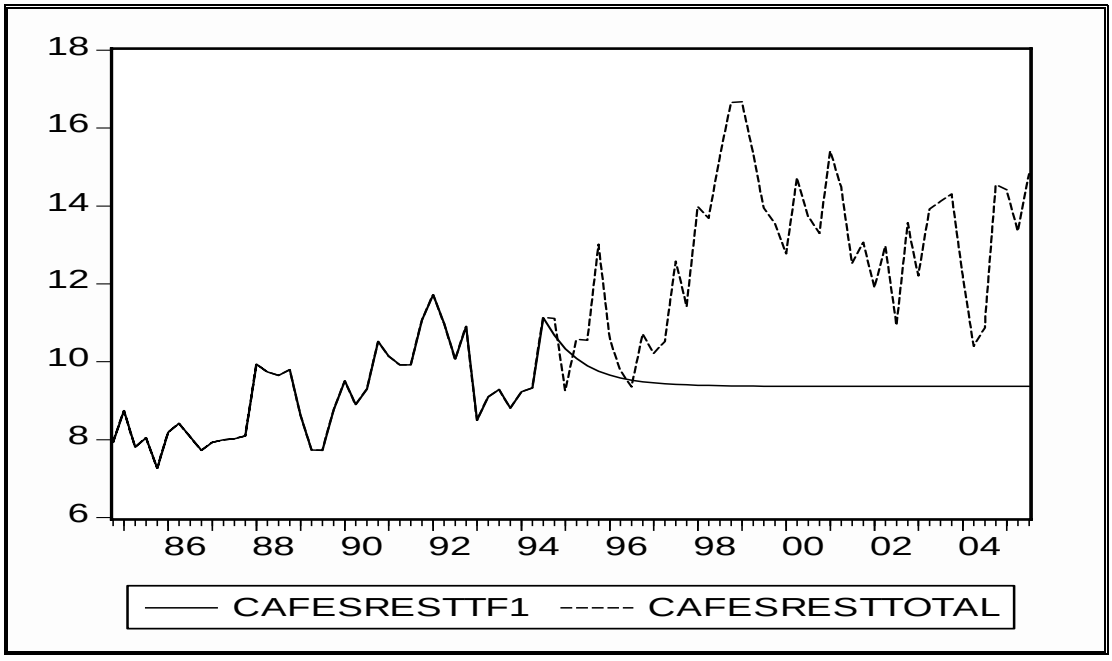
Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure 3.3
Actual and Forecast Employment in Gambling Services – South Australia ('000 persons)



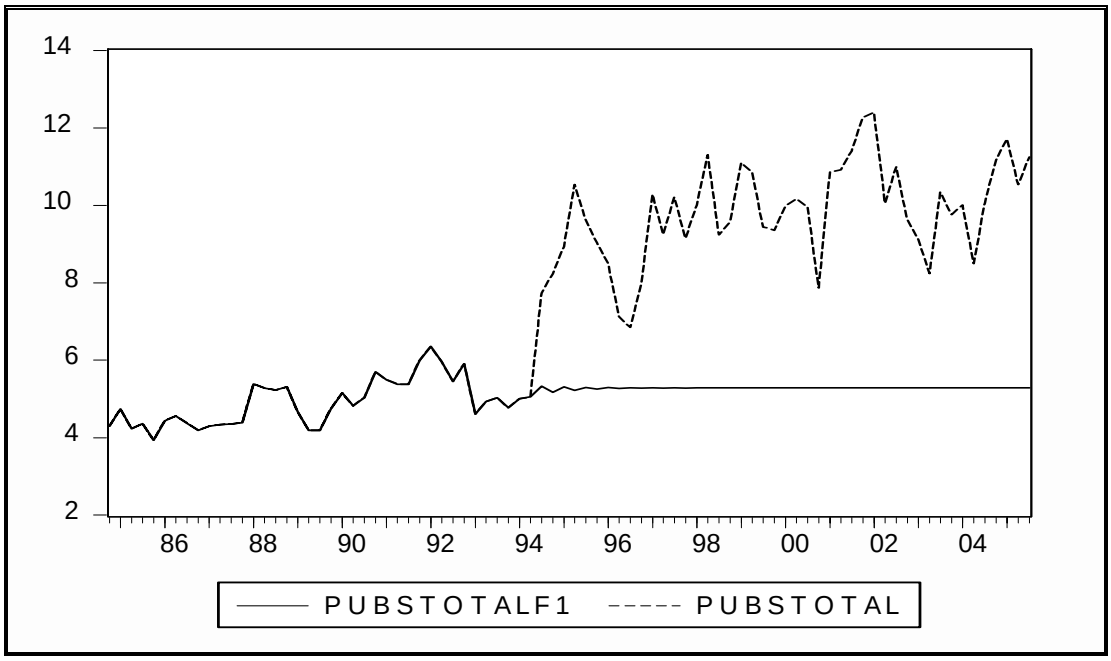
Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure 3.4
Actual and Forecast Employment in Cafes and Restaurants – South Australia ('000 persons)



Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure 3.5
Actual and Forecast Employment in Pubs, Taverns and Bars – South Australia ('000 persons)



Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

That actual employment in cafes and restaurants rose relative to forecast levels is interesting given that it contradicts our conclusion in phase one that gaming machines have reduced employment in cafes and restaurants (due to EGMs switching expenditure from this sector) based on comparative relative employment levels in this sector for South Australia and Western Australia. The likely explanation is that actual employment in cafes and restaurants in South Australia would have risen by more than indicated by Figure 3.4 had EGMs not been introduced, implying that EGMs have had an adverse impact on employment in cafes and restaurants, but not prevented employment growth in the sector. This issue demonstrates how the modelling results need to be interpreted with caution.

Another interesting outcome is that the industry of gambling services has experienced a slight fall in total employment (mainly as a result of a loss of part-time jobs) below forecast levels. Gambling services includes lotteries, casinos and gambling services not elsewhere classified (i.e., betting shop operation, bookmaker operation (own account), football pools operation, totalisator agency operation). The fall may be a result of other jobs being lost in gambling as EGM employment increases, or technological change leading to job shedding and rationalisation of TAB facilities and venues.

3.2.4 Summary

It is extremely difficult to confidently detect the influence that the introduction of EGMs in 1994 had on employment in certain industries. A much more complicated economic model requiring a range of explanatory variables would be required before any such conclusions could be drawn. However, we can point to both positive and negative impacts.

In particular, there has been a definite positive impact on employment in pubs, taverns and bars with the actual employment level being well above the forecast level. However, employment in clubs appears to have been adversely affected despite these venues being able to operate EGMs.

A slight fall in the level of total employment in gambling services below the forecast level suggests the introduction of EGMs may have had an adverse impact on employment in other gambling industries. However, other factors such as labour saving technological change (e.g., telephone and internet betting in relation to TAB) may have contributed to the fall in employment in the gambling services sector.

3.3 Clubs, Hotels, Taverns and Bars

A survey of clubs, hotels, taverns and bars conducted by the ABS in respect of 2000-01 provides some indication of the relative economic performance of venues with gambling facilities versus those without gambling facilities. Table 3.2 shows the average employment and total income per premises for clubs, hotels, taverns and bars in South Australia, Victoria, Western Australia and Australia. For the sake of brevity, "hotels" in the remainder of this section is used to refer to hotels, taverns and bars as a whole.[83]

Venues with gambling facilities have significantly higher employment and total income compared to those without gambling facilities. South Australian clubs and hotels with gambling facilities had an average of 22 employees per premises while those without gambling facilities had 5 employees on average. Total income per premises was also significantly higher for South Australian venues with gambling facilities ($2.2 million cf. $0.3 million). This also likely reflects that differences in employment levels and income existed prior to the introduction of EGMs. For instance, in inner-eastern suburbs of Adelaide most older hotels are small with only a few large venues, often where new additions have been added to the existing hotel. In contrast, in the northern suburbs (by design) there are fewer hotels but they are much larger (e.g., in Salisbury and Elizabeth). Many of the larger venues were most easily able to accommodate 40 machines without the need for major renovations and/or additions.

Venues with gambling facilities also had higher average employment and income relative to those without gambling facilities in Victoria and Western Australia. However, the difference was relatively lower for Western Australia where the only real differentiation between hotels in terms of recreation, is whether they host TAB facilities or they do not. Hotels in Western Australia with gambling facilities (i.e., TAB facilities, kiosk) had an average of about 5 more employees compared to those without gambling facilities. In comparison, South Australia venues with gambling facilities had about 13 employees more on average, while Victorian venues with gambling facilities had 30 more employees on average. The smaller difference for Western Australia reflects that gambling opportunities are much more limited in that State with gaming machines not permitted in hotels and clubs.

[83] We have used the more common term "hotels" rather than "pubs", which is the term used by the ABS.

Table 3.2
Average Employment and Total Income Per Premises: Clubs, Hotels Taverns and Bars
Selected States and Australia, 2000-01

	South Australia	Victoria	Western Australia	Australia
Employment per premises at end June (No.)				
Hotels, Taverns and Bars				
With gambling facilities	22.4	42.7	19.8[a]	21.3
Without gambling facilities	9.0	12.3	14.5	11.8
All	20.3	24.2	16.1	18.2
Clubs				
With gambling facilities	16.0	27.4	na	29.2
Without gambling facilities	3.1	4.8	na	4.6
All	6.3	16.4	4.0	20.8
Clubs, Hotels, Taverns and Bars				
With gambling facilities	21.5	36.8	na	24.4
Without gambling facilities	4.8	10.2	na	8.9
All	15.5	21.7	10.9	19.2
Total income per premises ($m)				
Hotels, Taverns and Bars				
With gambling facilities	2.4	3.6	2.4[a]	2.5
Without gambling facilities	0.6	0.8	1.2	0.9
All	2.1	1.9	1.6	1.9
Clubs				
With gambling facilities	0.8	1.7	na	2.9
Without gambling facilities	0.1	0.3	na	0.2
All	0.3	1.0	0.2	2.0
Clubs, Hotels, Taverns and Bars				
With gambling facilities	2.2	2.8	na	2.6
Without gambling facilities	0.3	0.7	na	0.6
All	1.5	1.6	1.0	2.0

Note: [a] This estimate should be interpreted with caution as it has a high relative standard error. In Western Australia gambling facilities refers to TAB full service or kiosk facilities.
Source: ABS, Clubs, Pubs, Taverns and Bars, 2000-01 (Cat. No. 8687.0).

Higher employment and income for venues with gambling facilities suggests that gambling has had a positive impact on economic activity at these venues. However, in terms of the net economic impact, it is likely that venues with gambling facilities have drawn activity away from venues without gambling facilities.

Table 3.3 shows how average employment on a 'per business' basis has changed between 1994-95 – i.e., the first full year gaming machines operated in SA – and 2000-01.[84] It should be noted that some changes between the two years could be partly explained by differences in coverage between the two surveys. Nevertheless, the data should give a reasonable picture of general trends within the industry and relative differences between industry sub-sectors and States.

Average employment for all hotels, taverns and bars in South Australia rose from 19 persons per business in 1994-95 to 23 persons per business in 2000-01. Average employment for all clubs also rose, from 6.5 to 8.1 persons per organisation.

[84] Data in this section are presented on a 'per business' basis in the case of hotels, taverns and bars, and 'per organisation' basis in the case of clubs rather than on a 'per premises' basis since data on the number of premises was not published for 1994-95.

Table 3.3
Average Employment (at 30th June) for Hotels, Taverns, Bars and Clubs[a]

	South Australia		Victoria		Western Australia		Australia	
	1994-95	2000-01	1994-95	2000-01	1994-95	2000-01	1994-95	2000-01
Hotels, Taverns and Bars								
With Gambling Facilities	26.6	25.2	31.3	53.2	24.6	24.3	20.9	25.8
Without Gambling Facilities	9.7	9.5	10.8	12.9	14.5	15.4	11.4	12.5
Total	19.2	22.6	15.6	27.0	16.7	17.8	16.5	21.0
Clubs								
With Gambling Facilities	11.5	16.9	23.2	28.3	np	np	24.8	30.8
Without Gambling Facilities	5.5	4.4	9.5	5.0	8.6	np	8.2	5.1
Total	6.5	8.1	14.0	17.1	8.6	4.4	19.0	22.3
Clubs, Hotels, Taverns and Bars								
With Gambling Facilities	24.3	24.0	28.3	42.5	24.6	np	22.8	28.0
Without Gambling Facilities	7.5	6.1	10.4	10.7	12.1	np	10.3	9.5
Total	14.5	18.0	15.1	23.6	13.8	11.9	17.6	21.6

Note: [a] Average refers to per "business" in relation to hotels, taverns and bars, and per "organisation" in relation to clubs.
Source: ABS, *Clubs, Pubs, Taverns and Bars, Australia*. Calculations by the researchers.

Interestingly, the rise in average employment for all hotels, taverns, and bars came about despite a fall in average employment for these venues *with* gambling facilities (from 27 to 25 persons) and those *without* gambling facilities (from 9.7 to 9.5 persons). The rise in average employment for all venues is explained by an increase in the proportion of venues *with* gambling facilities (which have higher employment on average), rather than venues with existing gambling facilities taking on more employees (although firms that did establish gambling facilities, usually gaming machines, did subsequently experience strong employment growth). The proportion of hotels with gambling facilities increased from 56 per cent in 1994-95 to 83 per cent in 2000-01.

Unlike South Australia, average employment for Victorian hotels *with* gambling facilities did rise significantly between 1994-95 and 2000-01 (from 31 to 53 employees per venue). This outcome appears to be explained by differences in the structure of the industry between the two States. A higher limit on the number of gaming machines allowed in clubs and hotels (105 machines compared to 40 in South Australia) would enable venues in Victoria to grow to a larger aggregate size, in part by allowing venues to support other activities or services that may not be sustainable with a smaller number of gaming machines. A duopoly arrangement combined with the ability to move gaming machines between venues would also tend to ensure that machines are placed in venues or regions that offer greater growth potential. The result of these differences is that gaming machines tend to be more concentrated in Victoria, with relatively fewer hotels in the State having gambling facilities compared to hotels in South Australia (35 per cent cf. 83 per cent in 2000-01). The greater competition between venues combined with the lower maximum number of machines allowed in venues would tend to limit the growth of individual venues in South Australia.

Average employment for South Australian clubs *with* gambling facilities did rise between 1994-95 and 2000-01, from an average of about 12 employees to 17 employees. This reflects that clubs started from a lower base in terms of aggregate size relative to hotels, meaning they had further scope to grow. Clubs *with* gambling facilities had an average of almost 12 employees per organisation at 30 June 1995 compared to an average of 27 employees per 'business' for hotels *with* gambling facilities.

A rise in average employment for all clubs between 1994-95 and 2000-01 (from 6.5 to 8.1 persons per organisation) may be interpreted as being inconsistent with the finding in the previous section that employment in clubs (hospitality) has fallen during the period in which EGMs have operated. However, the latest data considered here are for 2000-01, whereas the fall in actual employment observed in the previous section largely took place after 2000-01, meaning the differences could simply reflect that different time periods have been considered in relation to the two data analyses.

Table 3.4 shows how total income per business has changed between 1994-95 and 2000-01. Average total income per business for all clubs, hotels, taverns and bars in South Australia rose from $1.1 million in 1994-95 to $1.7 million in 2000-01. The rise was driven by an increase in average revenue for venues *with* gambling facilities (from $2.0 million to $2.4 million), and an increase in the proportion of venues *with* gambling facilities (from 42 per cent to 67 per cent), which have higher average total revenue compared to those venues *without* gambling facilities ($2.4 million cf. $0.3 million in 2000-01).

Average total income for hotels *with* gambling facilities rose more strongly than for those *without* gambling facilities between 1994-95 and 2000-01 ($0.4 million cf. $0.2 million). Average total income also rose more strongly for clubs *with* gambling facilities than those *without* such facilities. The rise in total income for venues that acquired gambling facilities between 1994-95 and 2000-01 would of course be more substantial. These outcomes indicate that gambling facilities, and in particular gaming machines, tend to provide a significant boost to the financial performance of venues that acquire them. However, such an experience may not be universal. For instance, venues that acquire a small number of gaming machines may not see a significant improvement in their financial performance because they have a small clientele; a limited choice of machines encourages gamblers to visit larger venues instead; and a small number of machines does not provide sufficient cash flow to expand other facilities at the venue to attract potential customers.

Table 3.4
Average Total Income for Hotels, Taverns, Bars and Clubs[a]

	South Australia		Victoria		Western Australia		Australia	
	1994-95	2000-01	1994-95	2000-01	1994-95	2000-01	1994-95	2000-01
Hotels, Taverns and Bars								
With Gambling Facilities	2.3	2.7	2.5	4.4	2.5	2.9	2.0	3.0
Without Gambling Facilities	0.5	0.7	0.8	0.9	1.2	1.3	0.8	1.0
Total	1.5	2.4	1.2	2.1	1.5	1.7	1.5	2.3
Clubs								
With Gambling Facilities	0.7	0.9	1.3	1.7	np	np	2.0	3.1
Without Gambling Facilities	0.2	0.2	0.4	0.3	0.4	np	0.4	0.3
Total	0.3	0.4	0.7	1.0	0.4	0.3	1.4	2.2
Clubs, Hotels, Taverns and Bars								
With Gambling Facilities	2.0	2.4	2.0	3.3	2.5	np	2.0	3.0
Without Gambling Facilities	0.4	0.3	0.7	0.7	0.9	np	0.7	0.7
Total	1.1	1.7	1.0	1.7	1.1	1.1	1.5	2.2

Note: [a] Average refers to per "business" in relation to hotels, taverns and bars, and per "organisation" in relation to clubs.
Source: ABS, *Clubs, Pubs, Taverns and Bars, Australia*. Calculations by the researchers.

4. Estimates of Problem Gamblers

Terms of Reference

The economic contribution of gambling will be assessed for:

- South Australia and regional areas.

4.1 Introduction

To this point we have considered the economic impacts of the gambling industries, including *inter alia*, the structure, size and scope of the industry, growth over time, employment and consumption expenditure and switching between consumption goods. The economic impact is usually thought of in terms of employment, economic development (i.e., creation of a stock of wealth), investment, and tax revenue for the purposes of public expenditures and tourism. For example, we have considered employment impacts to show that the gambling industry is a relatively low generator of jobs; that is to say we are able to document increased employment in 'hotels and clubs' that is almost matched by reduced employment (or slower growth) in other sectors.[85]

In order to understand the net economic contribution of the industry, we need some measure of the costs and benefits generated by the industry.

Thus, having examined potential impacts of gambling on employment and expenditure, the following two chapters examine the aspect of gambling's economic contribution, the relative weights of the social benefit of people being able to spend their money on a more valued service (EGM gaming), and the cost resulting from problem gambling. In order to do this we need to be able to estimate the number of problem gamblers in South Australia and the relative expenditures of problem and non-problem gamblers, which is the focus of this section. This analysis, and that of the following section, concentrates on electronic gaming machine gambling as this form of gambling gives rise to the bulk of problem gambling in South Australia.

Box 4.1: Summary

EGM expenditure grew (by 51 per cent) at more than twice the rate of household disposable income (24 per cent) between 1998-99 and 2002-03. Given that participation in EGM gambling does not appear to have changed significantly since 1999, this suggests there has been some change in the pattern of EGM spending, either with those gambling willing to spend a greater proportion of their income on EGMs, or that there has been an increase in the proportion of individuals experiencing problem gambling, or some combination of the two.

The model,[86] using regional expenditure and income data to estimate the number of problem gamblers, suggests that problem gambling numbers have increased significantly since 1998-99. There are estimated to be 32,964 problem gamblers in South Australia in 2002-03, which is equivalent to 2.8 per cent of the adult population. This compares with an estimated 23,196 problem gamblers in 1999, which was equivalent to 2.04 per cent of the adult population.

[85] This was predicted by a Government discussion paper (1991) provided to State Parliament and referred to earlier, "... sound note of caution against claims that the introduction of gaming machines will create jobs ...", p. 44.

[86] The model was first developed by the researchers in 2001 to estimate the economic impact of gambling and the number of problem gamblers in the Provincial Cities of South Australia.

In terms of the regional breakdown of problem gamblers, 25,802 problem gamblers (2.86 per cent of adults) were estimated to be in the Adelaide metropolitan area, 4,083 (3.68 per cent) in regional South Australia or the Provincial Cities, and 3,080 (1.86 per cent) in rural South Australia.

If the results are correct, they imply that 52 per cent of all net gambling expenditure in South Australia comes from 2.8 per cent of the adult population.

The results are only indicative. However, the significant increase in expenditure does suggest that something significant has changed.

It is not unreasonable that the number of problem gamblers would have increased over the past few years. Over time it is likely that the inflow and outflow of the pool of persons experiencing problem gambling will stabilise. However, as problems only emerge with time, and there was a sudden one-off boost in the proportion of the population exposed to EGMs with their introduction to hotels and clubs, there is likely to be a one off "wave" of problem gamblers which will take some time to work through the system. Indeed, evidence suggests that problem gamblers who seek treatment will, on average, have been experiencing problem gambling for 9 to 10 years.

4.2 Problem Gambling

In the literature, the terms 'compulsive', 'pathological', 'disorder', 'excessive' and 'problem' gambling have often been used interchangeably, to describe someone who exhibits an emotional dependence on gambling and impaired control over such behaviour. The term 'problem gambling' is now more generally accepted because it is more neutral and it avoids any implication that there is an underlying disease model to explain the gambling behaviour (Blaszczynski, Walker, Sagris & Dickerson, 1997).

In a recent report, "Problem Gambling on Harm: Towards a National Definition",[87] commissioned by Gambling Research Australia for the Ministerial Council on Gambling, the following definition of problem gambling was proposed (and accepted) within Australia:

> "Problem gambling is characterised by difficulties in limiting money and/or time spent on gambling which leads to adverse consequences for the gambler, others, or for the community".

Problem or disordered gambling appears to be a robust phenomenon that can be reliably identified in many study settings. Shaffer et al (1997) find, on the basis of a survey of 152 papers, that lifetime prevalence of problem or disordered gambling in the US and Canada was between 1.35 per cent and 1.85 per cent. They also identify a second group of gamblers, roughly 2 to 3 times as common, who suffer many of the negative consequences of problem or disordered gambling but to a sub-clinical degree. These rates appear to have been increasing over the past two decades.

There appears to be a general consensus within the literature, that the estimate of the number of pathological gamblers combined with those who experience significant gambling problems, ranges between the lower bound of 1.5 per cent to an upper bound of 3.7 per cent in Australia; that the rates are slightly higher for Australia than the USA or Canada (where certainly access to all forms of gambling and particularly EGMs is more restricted); and that a

[87] The definition was prepared by the researchers (SACES) and Dr Paul Delfabbro (Psychology Department, University of Adelaide).

figure of at least one third (Productivity Commission says 42.5 per cent) of all money spent on EGMs is sourced from problem gamblers.

In addition the Productivity Commission found that problem gambling was higher among gaming machine gamblers compared to gamblers who favoured other forms of gambling. This finding is consistently confirmed by other survey data, and independent research, and is associated with the preferred form of gambling nominated by gamblers themselves. Gaming machines are played by much larger numbers of people and they represent a continuous form of gambling whereas other forms of gambling are restricted to weekly or several times a week, while gambling at a casino is less accessible to much of the population.

Key findings from the Productivity Commission's (1999) report related to the relationship between electronic gaming machines and problem gambling in Australia were:

- that nationally, 2.1 per cent of the adult population is estimated to have a significant problem with gambling. Of these 1 per cent have severe gambling problems and 1.15 per cent have moderate gambling problems;
- 4.67 per cent of all gaming machine gamblers are problem gamblers;
- those States with high concentrations of gaming machines and other forms of gambling have high problem gambling prevalence rates (New South Wales 2.55 per cent, Victoria 2.14 per cent); and
- those States with no gaming machines or limited gaming activity had lower problem gambling prevalence rates (Western Australia 0.7 per cent, Tasmania 0.44 per cent).

4.3 Evidence on the Distribution of Problem Gambling

About 80 per cent of adults in Australia have gambled at some stage in their lives. The overwhelming majority gamble responsibly and experience no problems as a result of this form of entertainment. Nevertheless, a significant number do experience problems with, by one estimate, around 1 per cent meeting the criteria for pathological gambling and 2.3 per cent experiencing significant gambling problems (Blaszczynski 2002).

Electronic gaming machines have been identified by many community groups and state governments as being of particular concern, because they represent such a large share of all gambling and because they are perceived to be linked to the development of a range of social problems. The Productivity Commission noted a more robust relationship between problem gambling and numbers of EGMs than for other indicators of gambling availability, and this remains persuasive notwithstanding later criticisms. These perceptions appear to be mirrored internationally.

While a small proportion of players, the contribution of problem gamblers to industry revenue is significant; the Productivity Commission (1999) estimated that 42.5 per cent of all money spent on EGMs in Australia is by problem gamblers, of which the majority is spent by those with severe problems. The costs to the problem gambler of time spent gambling can be equally disruptive to their families, friends and career. Jackson, *et al* (2000) report that problem gamblers that normally use EGMs typically play for spells of around 3 hours, an average of 8 times per month.[88]

[88] Estimates vary. Roy Morgan (2001) found that the average time spent playing EGMs by those identified as 'at risk' was 195 minutes per week compared to 27 minutes among all players.

4.4 The Centre's Calculation Methodology

Since the Productivity Commission's survey in 1999, EGM expenditure has continued to grow strongly. Between 1998-99 and 2002-03, South Australian expenditure on EGMs rose by more than twice the rate of gross household disposable income (51 per cent compared to 24 per cent). Given that survey data indicates that participation in EGM gambling has not changed significantly since 1999, this suggests that there has been some change in the pattern of EGM spending, either with those gambling willing to spend a greater proportion of their income on gaming machines, or that there has been an increase in the proportion of individuals experiencing problem gambling, or some combination of the two. For this reason it was decided to repeat the analysis that the researchers first undertook in 2001 which used regional expenditure and income data to try and assess the potential distribution of problem gambling in South Australia.

The original motivation behind the development of this methodology was a desire to try and examine the extent to which problem gambling may vary between regions. This is a difficult issue to examine through the use of surveys, as to determine the level of a relatively rare phenomenon in individual local authorities would require a very large sample size. The advantage of using expenditure data is that they are available at a very disaggregated level, they are even available at SLAs within councils, but of course it is impossible to actually prove that any "excess" expenditure is due to problem gambling and so the results can only ever be indicative.

The model developed by the researchers in 2001 used data from the Productivity Commission on average national net EGM gaming expenditure by problem and non-problem gamblers to calculate the average proportion of after tax income spent by each type of gambler.[89] By making the assumption that these averages were constant between regions average net gaming revenue estimates could be calculated for both types of gambler. This data was then combined with information on overall participation in gaming to estimate the number of problem gamblers implied by each of the council's expenditure levels. The key result was that whilst for the state as a whole these calculations imply a slightly smaller number of problem gamblers than the Productivity Commission's survey, there were significant regional variations. The methodology for estimating problem gambler numbers is summarised in Box 4.2.

Box 4.2: Methodology for Estimating Problem Gambler Numbers

The first stage in our calculation methodology is to determine the proportions of average income spent nationally by non-problem and problem gamblers.

Let **a = (R1/npg)/Y1**, where R1 is the net gaming revenue of non problem gamblers, npg is the number of non-problem gamblers (both based on data in the Productivity Commission's report) and Y1 is average income per non-problem gambler.

Similarly, let **b = (R2/pg)/Y2**, where R2 is the net gaming revenue of problem gamblers, pg is the number of problem gamblers (with both estimates again coming from the Productivity Commission's report) and Y2 is average income per problem gambler.

[89] See Section 4, SACES (2001).

Assume **Y1 = Y2 = Y,** where Y is average national disposable income (defined as Total Income minus Net Tax[90] divided by the number of adults). This assumption means that we are assuming that problem gambling is broadly even distributed between income levels. Evidence from the Productivity Commission's report on Gambling suggests this is probably a reasonable assumption, though it may obviously not be true in all regions. Also note that **R1 + R2 = R**, where R is total net gaming revenue.

We know that total net gaming revenue can be expressed as follows:
$\mathbf{R_m = (R1_m * npg_m) + (R2_m + pg_m)}$

In any given region we know the regional disposable income Y_m (from TaxStats data) where the subscript 'm' refers to a specific region. We can then specify the regional expenditure function in terms of income (which we know) rather than the regional expenditures by problem and non-problem gamblers (which we don't know).

$\mathbf{R_m = (aY_m * npg_m) + (bY_m * pg_m)}$

We also know R_m (total gaming revenue) and g_m (the number of gamers). Since $\mathbf{npg_m = g_m - pg_m}$, we can substitute this into the equation leaving only one unknown - the number of problem gamblers.

$\mathbf{R_m = (aY_m * (g_m - pg_m)) + (bY_m * pg_m)}$

This equation can then be rearranged and solved for $\mathbf{pg_m}$ to produce an estimate of the number of problem gamblers in the region **m**:

$\mathbf{p_g = (R_m - (aY_m * g_m))/(bY_m - aY_m)}$

As with any model, the results are only as accurate as the model's assumptions and the data used in the model. The extent to which these assumptions appear to be reasonable determines whether or not the methodology is appropriate for a particular region. Three key assumptions were made by the researchers in order to implement the methodology. It was assumed that:

- the proportion of persons using electronic gaming machines in regions other than the Provincial Cities reflects the results of the CPSE survey (i.e., 37.5 per cent in Adelaide and 33.2 in rural South Australia). For the Provincial Cities we have applied the Productivity Commission's participation rate for South Australia (Vol. 3, p. B.2) of 41 per cent to reflect the greater role of hotels in these cities[91];
- homogeneous preferences across the state within gambler types, for both problem and non problem gamblers; and
- the majority of expenditure in each region is due to local residents.

Turning to the implications of the assumptions not being met, if the actual overall proportion of South Australians who gamble was below the estimate used then the model would tend to understate regional problem gambler numbers. Conversely if the estimate understates the number of South Australians participating in gaming then the model would overstate the extent of the problem.

[90] Both from 2002-03 TaxStats data.

[91] Providing that on average the average participation rates for each of the Adelaide metropolitan area; the regional cities; and the rest of the state are in line with the assumed average then the estimates will be accurate, although estimates at an individual council level may be inaccurate. Data from the South Australian Department of Health presented in Table 4.4 of the Phase 1 report showed that the participation rate for gaming machines remained stable at 37 per cent in 2004.

If preferences (in terms of expenditure shares for problem gamblers and non-problem gamblers) were not homogeneous between regions and within gambler types, then the model would tend to overestimate the number of problem gamblers in high expenditure regions, and underestimate it for low expenditure regions. The most likely cause of preferences not being homogeneous would be in rural councils where the significant distance between many residents and the hotels or clubs of the region means that an average gambler may gamble less often and generally spend less because of the inconvenience of gambling. However this inconvenience factor would at least be partially reflected in the reduced participation rate for rural South Australia and may or may not flow through to lower expenditure once the decision is made to gamble.

If the assumption of local expenditure did not hold then the model would overestimate the number of problem gamblers in regions which cater to gamers from neighbouring councils and under estimate numbers for councils with few gaming facilities which saw their gamblers go to neighbouring regions. This would suggest that whilst aggregate results from the model may be reasonably accurate, it is inappropriate for councils such as the Adelaide City Council (covering the CBD), and certain other metropolitan councils which act as "entertainment hubs" for several councils.

It is worth noting when considering the realism of the key assumptions that the model does not appear to have an inherent propensity to overestimate problem gambler numbers. When it was developed and applied to 1998-99 data the model suggested that the rate of EGM related problem gambling in South Australia was 2.04 per cent; significantly lower than the result of the Productivity Commission's survey, and slightly lower than the results of the CPSE survey.

There is an additional complication in using this approach on recent data. In 2001 it was considered reasonable to use the results from the Productivity Commission's study without any modification as it was survey results collected in 1999 being applied to data from 1998-99. However, in the current analysis, given the time that has past since the PC undertook their survey, some modifications were made.

The share of overall expenditure devoted to EGM gambling seems to have been superseded. The most important factor in suggesting this is the very rapid growth in EGM expenditure in South Australia as a proportion of gross household disposable income (rose 22 per cent from 1.5 in 1989-90 to 1.8 per cent in 2002-03) while household final consumption expenditure rose 5.4 per cent from 87.9 per cent to 92.6 per cent.

The impact of the continued growth of EGM expenditure on the results of the model can be significant. For example, if it were assumed that the expenditure shares on EGM gambling for both problem and non-problem gamblers, and the overall proportion of the South Australian population currently experiencing problem gambling were still at the level they were when the Productivity Commission undertook their research, then in order to explain the current levels of expenditure would require 50 per cent of the population to be non-problem gamblers, implying that participation in gambling as a share of the population had increased by over 25 per cent in four years. Given it seems unlikely that half the South Australian adult population are now EGM gamblers (given all of the surveys conducted in South Australia have suggested rates of 41 per cent or less, see Phase 1, Table 4.4) this increase in expenditure suggests that there have been some changes that will need to be accounted for in the model.

The most likely change which needs to be accounted for is some shift in the share of disposable income available to spend on EGM gambling. Over the period in question total consumption as a share of disposable income has increased by 7.3 per cent, and there is no reason to think that this wouldn't affect EGM expenditure. The harder question is deciding whether it is more likely that this increase in expenditure would affect only non-problem gamblers or whether problem gamblers would also increase the share of their income (from the already high average of 68 per cent). This is likely to depend on the extent to which the fall in savings represents an increased willingness to use financial products to access wealth/smooth income, and the extent to which it represents an increase in wealth because of the housing market. If it is the former then the income share of non-problem gamblers should arguably be up rated, as it is likely that problem gamblers were already using dissaving and debt as much as they could to be able to afford to spend an average of 68 per cent of their income. However, if it is the latter then problem gamblers would have more wealth to access and could spend an even higher share of their income.

Lacking any information to the contrary, it appears reasonable to assume that all EGM gamblers (i.e., problem gamblers and non-problem gamblers) have increased their net gaming expenditure by a proportion equal to the overall increase in consumption as a share of household income in South Australia since the Productivity Commission's survey. This gives average expenditure shares for EGM gamblers of 4.9 per cent of after tax income for non-problem gamblers and 73.1 per cent for problem gamblers.

4.5 Results

To summarise the discussion from the previous section, there are four key assumptions underlying the calculation approach:

- **The proportion of persons using electronic gaming machines in the three regions are 37.5 per cent in Adelaide; 41 per cent in Regional South Australia and 33.2 in Rural South Australia.**[92]

  If the actual participation rates are lower than this then the model will underestimate the scale of problem gambling in the region concerned.

  If the actual participation rates are higher than this then the model will over estimate problem gambler numbers in the region.

- **Homogeneous (consistent) preferences across the state within gambler types, for both problem and non-problem gamblers.**

  The impact if preferences are not homogeneous depends on how widespread it is. If preferences are not homogenous between councils, but the aggregate preferences for each of the 3 high level regions are, then this assumption holds at the level of this analysis. If, however, preferences (as reflected by expenditure shares) are different at the regional level, e.g. if people in rural South Australia who chose to gamble spend a smaller share of their income on EGMs, then the model's estimates will be incorrect.

  If actual expenditure shares are lower than assumed then the model will underestimate the scale of problem gambling in the region concerned.

  If the actual expenditure shares are higher than assumed the model will over estimate problem gambler numbers in the region.

[92] Adelaide represents Adelaide metropolitan area, Regional SA represents the Provincial Cities, while rural South Australia represents remainder of the State.

- **The majority of expenditure in each region is due to local residents.**

  Obviously this assumption will not hold universally at a council level however providing it holds at the aggregate level then the model's results are robust.

  If it does not hold, then the model will underestimate the number of problem gamblers resident in a region that is a net exporter of gaming expenditure, while the reverse holds if the region is a net importer of gaming expenditure.

- **The share of their after tax income that EGM gamblers (both problem and non-problem) spend on gaming has increased since the Productivity Commission's survey by 7.2 per cent, the same proportion as overall consumption spending (e.g. that EGM expenditure has remained constant as a share of total consumption expenditure).**

  If actual expenditure shares are lower than assumed then the model will underestimate the scale of problem gambling in the region concerned.

  If the actual expenditure shares are higher than assumed the model will over estimate problem gambler numbers in the region.

Table 4.1 sets out the results of these calculations for South Australia and for each of the three broad 'regions'. As can be seen, the model suggests that problem gambling numbers have increased significantly. If these results are correct they would imply that 52 per cent of all net gaming expenditure in South Australia comes from the 2.80 per cent of the adult population who are problem gamblers. This is a significant increase since the researchers' previous study, which estimated that South Australia had 23,196 problem gamblers (2.04 per cent of the adult population) with an average annual spend of $9,733). As was the case in the analysis of the 1998-99 data, South Australia's regional cities appear to experience significantly higher rates of problem gambling than the rest of the State.

Table 4.1
Prevalence of Electronic Gaming Machine Related Problem Gambling
South Australia: 2002-03

	Adult Pop.	After tax income	Gamers	Non-Problem Gamers	Problem Gamers		Ave. loss per NPG	Ave. loss per PG
	(No.)	($)	(No.)	(No.)	(No.)	(% of adults)	($)	($)
Adelaide Metro	901,662	16,620	338,123	312,322	25,802	2.86	806	10,567
Regional SA	110,947	15,336	45,488	41,405	4,083	3.68	748	10,983
Rural SA	165,311	15,965	54,883	51,804	3,080	1.86	775	9,336
Total SA	1,177,921	16,407	438,495	405,531	32,964	2.80	796	10,504

Source: Productivity Commission, Office of Economic and Statistical Research, Queensland Treasury, and ATO, calculations by the researchers.

Obviously these results are indicative. However, in examining the data, the significant increase in expenditure does suggest that something significant has changed.

It is not possible to definitively assert that these calculations are correct and that the increase in EGM expenditure has been driven primarily by increased numbers of problem gamblers. However, there is a very plausible reason why it is not unreasonable that the number of problem gamblers would have increased over the past few years.

Over time it is likely that the inflow and outflow of the pool of persons experiencing problem gambling will stabilise (as the population of those gambling seems to remain relatively constant suggesting that new people take up the activity at about the same rate as some existing users decide to stop). However, as problems only emerge with time, and there was a sudden one-off boost in the proportion first exposed to regular and accessible EGM gambling with the legalisation of EGMs in hotels and clubs, there is likely to be a one off "wave" of problem gamblers which will take some time to work through the system. Indeed evidence suggests that problem gamblers who seek treatment will, on average, have been experiencing problem gambling for 9 to 10 years (Blaszczynski, 2002). This suggests that many of those who developed gambling problems in the first few years of legalisation of EGM gambling have as yet not even sought treatment, let alone have been able to stop; whilst a more 'normally' sized cohort of problem gamblers has developed in each year since then, creating a demographic 'bulge'.

It is important to note that our estimate of a significant increase in the number of problem gamblers is consistent with other recent research conducted in respect of population gambling trends in South Australia. Delfabbro (2005), in an analysis of data from a 2001 large-scale prevalence study by the Centre for Population Studies in Epidemiology (2001) and Health Monitor Surveys for 2002 to 2004, found that participation rates for problem and non-problem gamblers in EGM gambling in South Australia remained steady between 2001 and 2004.[93] This suggests that growth in per-capita EGM expenditure has been driven by changes in individuals' gambling behaviour, such as their frequency of gambling, the amount they spend, and/or the types of gambling activities they participate in (i.e., the results suggest that problem gamblers have decreased their participation in lottery products, which implies that expenditure on lottery products may have been diverted to EGMs, though there was no data available from the surveys to confirm the latter). More importantly though:

> "*Analysis of the limited problem gambling data indicated that there has been an increase in the percentage of the population concerned about their own gambling as well as the gambling of others close to them. The percentage of the sample reporting at least some difficulty with gambling (i.e., who were not willing to give themselves the minimum rating on a 10-point scale) had increased significantly from 2001 by 50%…"*. [p.21]

While the percentage of the sample indicating respondents were concerned about their own gambling does not represent an actual problem gambling prevalence rate,[94] the results nevertheless suggest that there has been an increase in problem gambling. As well, analysis of BES client data shows an average of 1,600 new clients each year from 2001 to 2005. Ultimately the robustness of SACES estimate of total problem gamblers will need to be tested by comparing them with the results of future large-scale problem gambling prevalence studies conducted for South Australia.

[93] The participation rate for problem gamblers fell from 86.4 per cent in 2001 to 85.5 per cent in 2004, while the participation rate for non-problem gamblers rose from 36.4 per cent to 37 per cent over this period.

[94] The Health Monitor Surveys only employed a rating scale (1 = not a problem, 10 = a serious problem) to indicate whether a respondent had a gambling problem, whereas the 2001 study employed the South Oaks Gambling Screen, which is a common screen (i.e., questionnaire) used for measuring problem gambling. To derive a measure of problem gamblers for the Health Monitor Surveys, Delfabbro had to determine what score on the 10-point scale could be used to differentiate between problem and non-problem gamblers based on the results of the 2001 prevalence study.

5. Estimates of Net Social Benefit of EGM Gambling

Terms of Reference

The economic contribution of gambling will be assessed for:

- each gambling sector and the gambling industry as a whole; and
- South Australia and regional areas, employing a benefit-cost framework.

5.1 Introduction

Having derived estimates of problem gambler numbers from the expenditure data and expenditure shares, it is now possible to turn to the task of weighing up EGM gambling's economic contribution by calculating the social benefits and costs of EGM gambling. This allows us to form a view as to whether EGM gambling is likely to be a net benefit or cost to the state, although this estimate is extremely sensitive to the estimates of problem gamblers.

Box 5.1: Summary

Productivity Commission estimates of the social costs of problem gambling were used to estimate the social costs of problem gambling in relation to EGMs based on the estimated number of problem gamblers derived by the researchers. Social costs may be grouped into the categories of financial impacts, effects on productivity and employment, crime and legal costs, personal and family impacts, and treatment costs. The other source of costs from problem gambling is the 'excess loss' by problem gamblers, which is the actual money problem gamblers lose, minus the amount they would have lost had their gambling been rational.

The **total social cost** of electronic gaming machine related problem gambling in South Australia in 2002-03 is estimated to range from a lower bound of $528 million to an upper bound of $960 million. The lower and upper bound estimates reflect the uncertainties involved in valuing many of the social impacts.

In terms of benefits, EGMs provide enjoyment for non-problem gamblers. That is, they allow consumers to spend their money on a good that they value more highly than those that were previously available. The satisfaction that consumers derive from their consumption of a good or service is measured by the economic concept of consumer surplus (i.e., the maximum that a consumer would be willing to pay less the price they actually paid to receive it). The other benefits associated with EGMs are those derived by the community through more funds being available for the delivery of government services through the taxation of net gambling expenditure.

The **total benefits** of EGM gambling in South Australia in 2002-03 are estimated to range from a low of $378 million to a high of $472 million.

Despite the scale of the benefits consumers enjoy from having access to EGMs, for the State as a whole, the **range of net benefits** from EGMs are estimated to extend from –$582 million to –$56 million; even taking the lowest estimate of costs and the highest estimate of benefit the net benefit is still negative.

While the model's assumptions are plausible, and there is a plausible explanation of its results – i.e., a rise in problem gamblers associated with a demographic bulge in the data – the results may not be true, and it would seem sensible to commission research to test the model's basic assumptions, or cross check them with other research results as they arise (e.g., estimates of problem gamblers from any epidemiological surveys conducted).

5.2 Approach

In order to assess the social benefits or costs of electronic gaming machines in South Australia several pieces of information are needed: the numbers of problem and non-problem gamblers who use EGMs; their respective average expenditures; and the social costs associated with problem gambling. The first of these was calculated in the previous chapter with the results presented below.

Table 5.1
Prevalence of Electronic Gaming Machine Related Problem Gambling
South Australia: 2002-03

	Adult Pop.	After tax income	Gamers	Non-Problem Gamers	Problem Gamers		Ave. loss per NPG	Ave. loss per PG
	(No.)	($)	(No.)	(No.)	(No.)	(% of adults)	($)	($)
Adelaide Metro	901,662	16,620	338,123	312,322	25,802	2.86	806	10,567
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Rural SA	165,311	15,965	54,883	51,804	3,080	1.86	775	9,336
Total SA	1,177,921	16,407	438,495	405,531	32,964	2.80	796	10,504

Source: Productivity Commission, Office of Economic and Statistical Research, Queensland Treasury, and ATO, calculations by the researchers.

5.3 Sources of Cost

Having derived estimates of the number of problem gamblers, it is possible to estimate the social costs of problem gambling for the State as a whole and by region. The cost of problem gambling has two dimensions. First there is the direct social cost which results from factors such as increased crime (particularly embezzlement), health impacts on problem gamblers, the cost of relationship breakdown, and the psychic cost of living with a problem gambler to the families of severe problem gamblers.

The problems experienced by problem gamblers are both serious and numerous. The researchers identified in an earlier study that Victorian GPs were 4 times more likely to identify patients presenting with health issues associated with gambling than their Western Australian counterparts.[95] Depression, stress, physical and emotional problems and relationship issues due to excessive gambling were most often cited. Problem gamblers increasingly seek assistance from financial counsellors as well as specialist Gambler's Help staff. While the problem gambler suffers, the costs also spill over to the gambler's family members, friends, employers, creditors, and the whole community. The Productivity Commission (1999) estimated that on average, for each problem gambler, seven other people are negatively affected. Some of the possible impacts associated with problem gambling include[96]:

- **Personal**: Gambling problems can be associated with feelings of guilt, low self-esteem, stress and poor health. Gambling problems heighten depression and anxiety in some people, and this depression may sometimes lead to suicide. The Commission reported that around half of those surveyed who experienced at least moderate gambling problems reported suffering depression as a result of gambling on at least one occasion, one in ten problem gamblers seeking counselling report an

[95] SACES (2005), "Community Impacts of Electronic Gaming Machine Gambling", December.
[96] This section draws heavily on the work of the Productivity Commission (1999) in Australia, though similar problems are cited by the National Opinion Research Centre (1999) for the United States.

attempted suicide, and between 35 and 60 suicides in Australia in 1997 were linked to gambling problems.

- **Interpersonal**: The heightened levels of stress, financial problems and reduced time spent with family (and friends) can lead to arguments, relationship breakdown and in some cases domestic or other violence. The Commission's (1999) survey revealed that around one-fifth of problem gamblers believe they do not spend enough time with family as a result of their problem, and around one in ten has experienced a relationship break-up linked to their gambling problem. More recent data for Victoria (Jackson, *et. al.*, 2000) indicates that roughly one-half of problem gamblers seeking help have jeopardised a relationship or employment as a result of their gambling problem.
- **Financial**: The financial losses inevitably associated with gambling problems combined with the ready availability of credit leads to bad debts (imposing costs on creditors, which often also include family and friends), asset repossessions including the forced sale of houses, financial hardship for the gambler and immediate family, and the consequences of bankruptcy.
- **Legal**: The financial stress and employment problems that many problem gamblers experience makes meeting basic living expenses difficult after gambling expenditure. This provides an incentive to steal – both common theft and employee fraud. At the same time, the social isolation that many people with problems feel reduces the disincentives. A criminal history then exacerbates the difficulty of finding work on release.
- **Work**: Preoccupations with gambling and, in many cases, the associated time spent away from the workplace can result in poor job performance, absenteeism and finally job loss. The Commission found that around one-fifth of problem gamblers said they lost time from work or study due to gambling; one problem gambler in 200 indicated that they had been sacked as a result of their gambling. Job loss represents a cost both to the employee, who may require significant time and effort to find new employment, and employer, who faces the search, recruitment and training costs for new staff, and lost productivity both because of the problem gambler's poor performance in work, and whilst the resulting vacancy is filled.
- **Community**: Inevitably, the poverty resulting from excessive gambling losses presents greater need to charitable community organisations for basic support in the form of food and clothing, etc. These community organisations often also provide counselling help to problem gamblers. At the same time, the widespread availability of gambling opportunities means that charitable organisations have greater difficulty raising the money needed to provide these services through raffles and bingo nights. Loss of employment may also lead to social security receipt, adding a burden to the public purse.

The researchers have used the Productivity Commission's estimates of the social costs of problem gambling to estimate the social costs of gaming machine related problem gambling for regions in South Australia.[97] The Commission grouped the various social costs of problem gambling into the following categories:

- financial impacts (bankruptcy, family debts);
- effects on productivity and employment;
- crime and legal costs (imprisonment, court cases);
- personal and family impacts (depression, attempted suicide, divorce); and
- treatment costs.

Given the inherent difficulties and numerous uncertainties involved in quantifying the social costs of problem gambling, the Productivity Commission presented high and low cost estimates for each adverse social impact where appropriate. This was particularly important for intangible impacts — e.g., depression, emotional distress of family members and thoughts of suicide — where the degree of impact varies from person to person, making it almost impossible to provide a point estimate of the social cost of the adverse impact. The high and low cost estimates in some cases were based on "a range of the dollar values ascribed to the consequence, and in others a range in the number of people affected". In most cases, the number of people affected by certain adverse consequences was determined from the results of the Productivity Commission's *National Gambling Survey*. These cost estimates are presented in aggregate and per problem gambler terms in Table 5.2. Note that the aggregate results refer to problem gambling costs associated with all forms of gambling rather than just gaming machines.

As it has been observed that other factors (e.g., divorce, break-up of a relationship) might potentially be the originating source for the adverse impacts experienced by problem gamblers rather than gambling activities themselves, the Productivity Commission, following a discussion with problem gambling researchers, "made an adjustment for 'causality' in its estimates of the personal and family impacts of problem gambling, by applying a 20 per cent discount to the costs relating to adverse consequences in this broad category". It should also be noted that the Commission's estimates are potentially understated. Due to a lack of adequate information (for both the prevalence and costs of certain impacts) and the inherent difficulty in measuring certain impacts, the Commission erred on the conservative side for some estimates, while other potential impacts have not been estimated.

In order to be of use in our estimates, these aggregate costs need to be converted into a per problem gambler basis. From the Productivity Commission's estimated number of total problem gamblers (292,737 persons), and converting the data to 2002-03 dollars (using the 'eight cities weighted average CPI) the aggregate estimates imply that the social cost of problem gambling ranges from a low of $6,230 per problem gambler to a high of $19,330 per problem gambler.

[97] It should be noted that the Productivity Commission estimates of the social costs of problem gambling include some internal costs of problem gambling in addition to the external costs of problem gambling. This decision has caused some controversy because traditionally only external costs – costs that are imposed involuntarily on third parties who were not party to the decision to undertake the activity – are included in cost-benefit analysis. However, to the extent that these internal costs results from the public availability of a good which induces irrational behaviour in individuals that can often only be curbed by third-party intervention (e.g., by counselling services and/or the State through regulation of access), then it seems reasonable to treat such internal costs as social costs.

These estimates, combined with our estimate of the number of problem gamblers allow us to calculate the first aspect of the total cost.

Table 5.2
Estimated of Individual and Aggregate Impacts of Problem Gambling
Productivity Commission, Australia: 1999

Impact	People Impacted	Per Person Cost Assumption		Total Cost	
	Number	Low $	High $	Low $ million	High $ million
Financial					
Bankruptcy	317	4,000	4,000	1.3	1.3
Productivity and employment					
Productivity loss at work	7,000-49,200	3,000	3,000	21	150
Productivity loss outside work				7.2	50
Earnings loss	5,600	4,300	4,300	24	24
Employee job search	5,600	2,400	2,400	13	13
Employer staff replacement cost	5,600	3,900	3,900	22	22
Crime and legal costs					
Cost of police incidents	6,300	510	510	3.2	3.2
Court cases	700	8,000	8,000	5.6	5.6
*Jail costs**	336	15,000	15,000	5.1	5.1
Personal and family					
Emotional distress of immediate family members[a]					
Moderate PGs	190,901	ne	ne	ne	ne
Severe PGs	151,129	5,000	15,000	756	2,267
Emotional distress of parents[b]					
Moderate PGs	168,200	ne	ne	ne	ne
Severe PGs	133,200	0	5,000	0	666
Break-up of a relationship[c]					
Gambler	28,800	5,000	15,000	144	432
Other party	28,800	5,000	15,000	144	432
Divorce and separation					
Gambler and family	12,107	15,000	30,000	182	363
Violence	551	5,000	15,000	2.8	8.3
Depression[d]					
Rarely to sometimes	108,320	ne	ne	ne	ne
Often to always	46,160	5,000	15,000	231	692
Seriously thought of suicide[e]					
Gambler	7,972	15,000	30,000	120	239
Immediate family	5,377	15,000	30,000	81	161
Parents	4,212	0	5,000	0	21
Effective suicides	35-60	ne	ne	ne	ne
Gambling counselling services				20	20
Total				1,800	5,586

Note: [PG] Problem gambler. [ne] Not estimated. * Per person cost assumption based on annual per prisoner cost of $52,983 and average jail duration time of 3.4 months. [a] Excludes breakdown of a relationship, divorce and separation and attempted suicide numbers who are estimated separately. [b] Excludes attempted suicide group who are estimated separately, and parents for whom the gambler reported 'no effect at all'. [c] Excludes divorce and separation numbers. [d] Excludes subsequent suicide groups. [e] excludes attempted suicide group. All number include a causality adjustment.
Source: Productivity Commission, 1999.

The second source of costs is 'excess loss' by problem gamblers. Following the Productivity Commission, this is defined as the difference between the actual money problem gamblers lose, minus the amount they would have lost had their gambling been rational, assuming that if they were gambling rationally, the average loss for problem gamblers would equal the average loss for their SLA.

Table 5.3 outlines the extent of the total social costs stemming from problem gambling in South Australia. As can be seen these costs are substantial, but are also subject to a very wide range because of the uncertainties involved in valuing many of the social impacts outlined in Table 5.2.

Table 5.3
Social Cost of Electronic Gaming Machine Related Problem Gambling
South Australia: 2002-03

	Social Impacts Lower Bound	Social Impacts Upper Bound	Excess Loss	Total Social Cost
	($'000)	($'000)	($'000)	($'000)
Adelaide Metro	-160,668,990	-498,789,779	-254,478,700	-415,147,690 to -753,268,479
Regional SA	-25,425,793	-78,933,250	-41,853,251	-67,279,044 to -120,786,502
Rural SA	-19,177,948	-59,537,092	-26,365,867	-45,543,815 to -85,902,959
Total SA	-205,272,731	-637,260,121	-322,697,818	-527,970,549 to -959,957,939

Source: Productivity Commission, Office of Economic and Statistical Research, Queensland Treasury, and ATO, calculations by the researchers.

5.4 Sources of Benefit

Of course the costs of electronic gaming machines are only part of the picture. Their enjoyment by non-problem gamblers produces a benefit, through allowing consumers to spend their money on a good that they value more highly than those which were previously available. There are also benefits to the community through more funds being available for the delivery of government services through the taxation of all gambling revenue.

In calculating the benefits to consumers the researchers have followed the methodology developed by the Productivity Commission (with some modifications). They identified two sources of community benefit as resulting from the use of electronic gaming machines:

- the consumer surplus; and
- the taxation revenues.

Consumer surplus is the value of the satisfaction consumers derive from their consumption of a good/service (e.g., the maximum they would have been willing to pay minus the price they had to pay to receive it). The level of consumer surplus will depend on the current price, and the responsiveness of consumers to a change in the price. The less responsive consumers are to price changes (a low price elasticity of demand) the higher their consumer surplus will be, all other things being equal.

Calculating the consumer surplus for a type of product like gambling where it can be "addictive" for some consumers is considerably more difficult as it does not seem intuitively logical to ascribe a benefit for the enjoyment of spending which only occurs because of a compulsion that is ultimately destructive. In their report on gambling the Productivity

Commission got around this problem in an innovative way. They calculated consumer surplus normally for expenditure by non-problem gamblers, but used an "adjusted" consumer surplus for problem gamblers. The overall consumer surplus was then calculated as the sum of the actual consumer surplus for non-problem gamblers and the adjusted consumer surplus for problem gamblers.

The adjusted consumer surplus was calculated for problem gamblers by assuming that they only derive satisfaction from that portion of their expenditure which they would spend if they were not addicted (e.g. the gap between the actual loss and the 'excess loss' described in the calculation of the social cost). Hence, it has been assumed that the average problem gambler only receives consumer surplus for a level of spending equal to the average non-problem gambler in their SLA.

5.5 Results

Table 5.4 presents the results of the researcher's calculations of the Costs and Benefits (and the Net Benefits) of gaming on electronic gaming machines for each of the three broad regional aggregates and for the state as a whole. Cost is comprised of the direct social costs of problem gambling, and the 'excess losses' incurred by problem gamblers. The Benefits of gaming comprise consumer surplus for non-problem gamblers, adjusted consumer surplus for problem gamblers, and the taxation revenues received from electronic gaming machines. The range within which Total Net Benefits are estimated to lie is calculated by adding the highest cost figure to the lowest benefit figure, and the lowest cost to the highest benefit.

Table 5.4
Benefits and Costs of Electronic Gaming Machines
South Australia: 2002-03

	Total Costs		Total Benefits		Total Net Benefit	
	Lower bound ($'000)	Upper bound ($'000)	High elasticity ($'000)	Low elasticity ($'000)	Lower bound ($'000)	Upper bound ($'000)
Adelaide Metro	-415,147,690	-753,268,479	305,159,897	370,031,520	-448,108,582	-45,116,169
Regional SA	-67,279,044	-120,786,502	37,788,768	45,954,390	-82,997,734	-21,324,655
Rural SA	-45,543,815	-85,902,959	35,494,980	56,410,103	-50,878,319	10,395,948
Total SA	-527,970,549	-959,957,939	378,443,645	472,396,014	-581,984,635	-56,044,875

Source: Productivity Commission, Office of Economic and Statistical Research, Queensland Treasury, and ATO, calculations by the researchers.

The results presented here indicate the scale of costs that are being experienced by South Australia *should* these estimates of the prevalence of problem gambling be accurate. Despite the scale of the benefits consumers enjoy from having access to electronic gaming machines, for the State as a whole the range of net benefits from electronic gaming machines extends from -$582 million to -$56 million; even taking the lowest estimate of costs and the highest estimate of benefit the net impact is still negative (the mid point of the range is -$319 million).

EGM gambling expenditure as a share of household disposable income has increased by more than the increase in consumption overall (22 per cent vs 5.4 per cent, and EGM expenditure grew by 54 per cent whilst incomes grew by 24 per cent). As discussed, there could be several possible explanations for this (or indeed it could be some combination of some or all of these factors):

- EGM gaming participation rates have increased (although there is no evidence for this in the survey data);
- Non-problem gamblers are spending a greater share of their income on EGM gaming for some reason;
- Problem gamblers are spending a greater share of their income on EGM gaming; or
- The share of the population with EGM related problem gambling has increased.

Using a plausible set of assumptions, the model developed in this report suggests that the most significant factor in the change has been a significant increase in problem gambler numbers. The evidence identified by Blaszczynski — that problem gamblers who seek treatment will, on average, have been experiencing problem gambling for 9 to 10 years (2002) — together with the timing of the legalisation of EGMs in hotels and clubs, suggests a potential explanation for a growth in problem gambler numbers. Most of those who became problem gamblers in the first few years would still be experiencing problems, and new problem gamblers would be being created (as BES data illustrates, Chapter 4) and the 'normal' long term rate, creating a 'demographic bulge' in the data.

Of course, just because the model's assumptions are plausible it would seem sensible to commission research to test the model's basic assumptions, or possibly to seek to gather estimates of problem gambler numbers through an epidemiological survey.

6. Aspects of EGM Expenditure and Problem Gambling

Terms of Reference

The economic contribution of gambling will be assessed for:
- South Australia and regional areas.

The economic impact of gambling will be assessed for impacts:
- of any particular gambling industry sectors on other gambling industry sectors.

6.1 Introduction

In order to further our understanding of the impact of gambling on industry sectors and whether participation in gambling has a regional dimension, it was considered important to examine influences on gambling participation and expenditure. The following examines two aspects of the gambling industry in respect of gaming machines:

- factors that influence gaming machine expenditure at a regional level; and
- the relationship between problem gambling and gaming machine expenditure at a regional level.

In terms of factors that influence gaming machine expenditure, econometric analysis is conducted to determine what socio-economic and demographic factors have a significant influence on average per adult gaming machine expenditure at the statistical local area (SLA) level in South Australia. A similar analysis was conducted by the researchers[98] for South Australia in the late 1990s in a report for the Provincial Cities Association. It was decided to update this analysis in order to determine whether the influences on gaming machine expenditure have changed.

The last section compares regional data on BreakEven Services clients with data on gaming machine expenditure, the prevalence of gaming machines and relative socio-economic disadvantage to determine whether there are any significant relationships between these last three variables and the prevalence of problem gambling.

Box 6.1: Summary

Econometric analysis was conducted to examine statistically significant influences on EGM expenditure. It was found that there was a positive relationship between average EGM expenditure per adult and the number of electronic gaming machines per 1,000 adults and the number of gaming venues per km2 by SLA.

There is an inverse relationship between the ABS index of relative socio-economic disadvantage (SEIFA) and average EGM expenditure per adult by SLA. That is, the more disadvantage a region (in this case SLA) is in terms of factors such as employment, income, educational attainment, and occupation etc., the higher is their EGM expenditure.

[98] SACES (2001).

Further analysis was conducted to determine those variables behind the influence of socio-economic disadvantage on EGM expenditure. The following variables were statistically significant in positively influencing net gaming revenue (i.e., as they increase so does expenditure): number of machines per 1,000 adults in SLA; number of venues per km2; percentage of single parent families in SLA population; percentage of the population aged between 20 and 39 years; percentage of the population aged above 65 years; and percentage of the population that is unemployed.

Variables that were statistically significant in negatively influencing net gaming revenue per adult (i.e., as they increase expenditure decreases) were: percentage of dwellings without a motor vehicle; whether SLA was classified as rural (country based); percentage of the population aged between 40 and 54 years; and percentage of the population that are students.

To better understand the relationship between EGM expenditure and problem gambling, data on the number of new Break Even Services clients by SLA was compared with average EGM expenditure per adult by SLA. A weak positive correlation between the relative number of Break Even Services clients and net EGM expenditure per adult was found, indicating that a region with a greater prevalence of BES clients tends to have relatively higher average EGM expenditure per adult.

No correlation between the prevalence of EGMs and BES gambler clients was found for South Australian SLAs. This outcome suggests that efforts to reduce problem gambling in a specific region, particularly in the metropolitan area, by reducing the density of EGMs will have little to no effect on the incidence of problem gambling.

The relationship between new BreakEven Services gambler clients and the SEIFA[99] was examined to see if there was any systematic relationship between the two at an SLA level. There was a weak inverse correlation between the two series, indicating that the more disadvantaged a region is in socio-economic terms, the higher is the relative prevalence of BES gambler clients.

6.2 Analysis by Statistical Local Area Data

6.2.1 Overview

The purpose of this section is to understand the influences on gambling expenditure by SLA (statistical local area) in South Australia.

The Productivity Commission (1999) report found the following relationships for South Australia:

- An inverse relationship between income levels and the density of gaming machines;
- A positive relationship between the number of gaming machines in a location and the amount spent per machine; and
- An inverse relationship between income and the total amount spent on gaming machines.

SACES (2001) found the following in their econometric analysis of influences on average net gaming revenue per adult by council area in South Australia (1998-99):

- Positive relationship between average net gaming revenue and density of gaming machines and venues;

[99] ABS, "Socio-Economic Index for Areas", 2001.

- Slight positive relationship between disposable income and average net gaming revenue;
- A positive relationship between average net gaming revenue and unemployment levels;
- A positive relationship between average net gaming revenue and Aboriginal and Torres Strait Islander (ATSI) levels; and
- A positive relationship between average net gaming revenue and proportion of housing trust homes.

6.2.2 Econometric Analysis of SLAs

The purpose of the current analysis was to explore a wider range of factors that may influence EGM expenditure by SLA in South Australia, for the year 2003. The analysis differs from the SACES 2001 report in that SLA level data are used instead of council data, providing a greater number of observations. In addition, a wider variety of factors were used in the analysis. The time period is also 5 years later, hence a number of influences on EGM expenditure may have changed considerably in this time period.

Ordinary least square regressions (OLS) were used to examine the influences on EGM expenditure in South Australia. Estimates of how well the actual variation of EGM expenditure was explained by the independent variables are illustrated in the Adjusted R-square, and the F-statistic measures the overall fit of the model. The statistical significance of each variable in explaining the dependent variable is indicated in the tables. Statistical significance indicates how confident we can be about the results obtained. Models were also tested for multicollinearity, goodness of fit, simultaneous bias and heteroskedasticity, which are all potential problems associated with OLS. Again, the less problems detected, then the more confident we can be about the regression output.

The dependent variables used included net gaming revenue (i.e., EGM expenditure) per adult (NGRPA03) and EGM gaming revenue by SLA (NGR03) for 2002-03. The independent variables that were considered are listed in Appendix C, C.4. Not all the variables above could be used in a regression examining the influences on average net gaming revenue by adults, as they are simply not appropriate as independent variables. Some variables were highly correlated with each other.

Tables 6.1 and 6.2 describe the influences on average net gaming revenue per adult. The first table considers only the Index of Disadvantage, number of venues per km^2, the number of machines per 1,000 adults by SLA and a constant.

The 2001 Socio-Economic Index for Areas (SEIFA) includes variables that reflect or measure relative disadvantage. The variables include low-income, low educational attainment, high unemployment and people with low skilled occupations – all factors likely to influence how a community copes with changing circumstances. The SEIFA provides a populated weighted value for each SLA across Australia. The index values enable areas to be ranked and compared against one another. A low index value reflects relative disadvantage and occurs where there are a large proportion of low-income families, people with low skilled

occupations and high proportions of the population without training. A high value reflects a lack of disadvantage in an area.[100]

Table 6.1 shows a positive relationship between the number of machines per 1,000 adults, number of venues per km^2 and average EGM gaming revenue per adult by SLA. It also shows an inverse relationship between the Index of Disadvantage and average gaming revenue per adult by SLA. That is, the more disadvantaged a SLA is (in terms of employment, income, educational attainment and occupation), the larger their gaming expenditure.

Table 6.1
Influences of the Index of Socio-Economic Disadvantage on Average Gaming Revenue per Adult by SLA in SA

Variable	Coefficient	Std. Error	t-Statistic
C	1748.106	318.9314	5.481134***
MACHINES1000	17.19204	2.341193	7.343280***
VENUESKM2	435.0066	64.59282	6.734597***
SOCIO01	-1.549306	0.306644	-5.052455***
Adjusted R-squared	0.625526		
F-statistics	59.57809		
Prob (F-statistics)	0.000000		

Note: *** Indicates statistical significance at the 1 per cent level.
Source: OLGC, unpublished data, and ABS (2003). Calculations by the researchers.

To find out which variables that make up socio-economic disadvantage influence average EGM expenditure, further regression testing was conducted. Table 6.2 provides further detail on influences on EGM expenditure per adult by SLA.[101] Model 1 provides the starting theoretical model, and Model 2 includes only variables that were at least significant at the 10 per cent level that were arrived at using a testing down approach. The variables that were statistically significant in positively influencing EGM expenditure (that is, as they increase so does gaming expenditure) by adult were:

- Number of machines per 1,000 adults in SLA;
- Number of venues per km^2 in SLA;
- Percentage of single parent families in SLA population;
- Percentage of the population in SLA aged between 20 to 39;
- Percentage of the population in SLA aged above 65; and
- Percentage of the population that is unemployed in SLA.

The variables that were statistically significant in negatively influencing EGM expenditure (that is, as they increase EGM expenditure decreases) by adult were:

- Percentage of dwellings without a motor vehicle by SLA;
- Whether the SLA was classified as rural (country based);
- Percentage of the population in SLA aged between 40 to 54; and

[100] ABS (2003).
[101] All SLAs except Adelaide (because a high percentage of gambling turnover here is not related to local residents), Playford (East Central) (no venue data), Orroroo/Carrieton (no venue data), and unincorporated SLAs were included in the analysis.

- Percentage of the population in SLA that are students (only significant at 15 per cent).

There were no statistically significant relationships found between mean disposable income per adult, the percentage of males in the area; the percentage of households in SLA receiving rent assistance, percentage of non-English speaking families; percentage of Aboriginals; percentage of adult population receiving disability payments; percentage of no child families; or the number of alcohol licences per km^2. Comparing these 2003 results to the 1998 results may suggest that the profile of gambling is changing (however it is important to keep in mind that different variables were used and council areas have changed).

Table 6.2
Influences on Net Gaming Revenue by Adult by SA SLA

	Model One		Model Two	
Variable	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**
C	1931.953	1.330185	90.42380	0.279290
MACHINES1000	22.84219	8.778300***	21.78784	10.46472***
VENUESKM2	204.3116	1.629195*	190.2782	2.474825**
MEANDISPYPA	-0.055983	-0.788677		
MEANDISPYPA2	8.90E-07	0.808336		
AGE20P	17.18325	3.704044***	20.91161	6.148988***
AGE40P	-14.91088	-2.748523***	-17.66511	-3.64955***
AGE65P	20.62744	1.994898**	11.84955	2.215722**
MALESP03	-10.98394	-0.665074		
STUDP01	-5.564426	-1.514259	-3.959167	-1.385094
NONENGLISHP	3.027281	1.086174		
RENTP01S	4.712701	1.008349		
MVP	-30.66006	-2.483070**	-18.89335	-2.036174**
ATSIP01	-6.093174	-0.947285		
UEP03	20.51549	2.319538**	9.929113	1.766611*
DISABILP	-12.09295	-0.822848		
NOCHILDFAMILYP	-8.511083	-1.048053		
SINGLEPARENTP	5.426779	0.492713	11.87016	1.875918*
RURALD	-60.39588	-1.249384	-89.54881	-2.219306**
ALCOHOLKM2	-8.813055	-0.201503		
Adjusted R-squared	0.809689		0.797448	
F-statistic	19.92920		39.37002	
Prob (F-statistic)	0.000000		0.000000	
Sample Size	111		111	

Notes: * Significant at 10 per cent level.
** Significant at 5 per cent level.
*** Significant at 1 per cent level.
Simultaneous bias was tested for within the equation (and not found) using the Hausman test.
Source: OLGC, unpublished data, and ABS, various. Calculations by the researchers.

6.3 Socio-Economic Disadvantage and EGM Expenditure

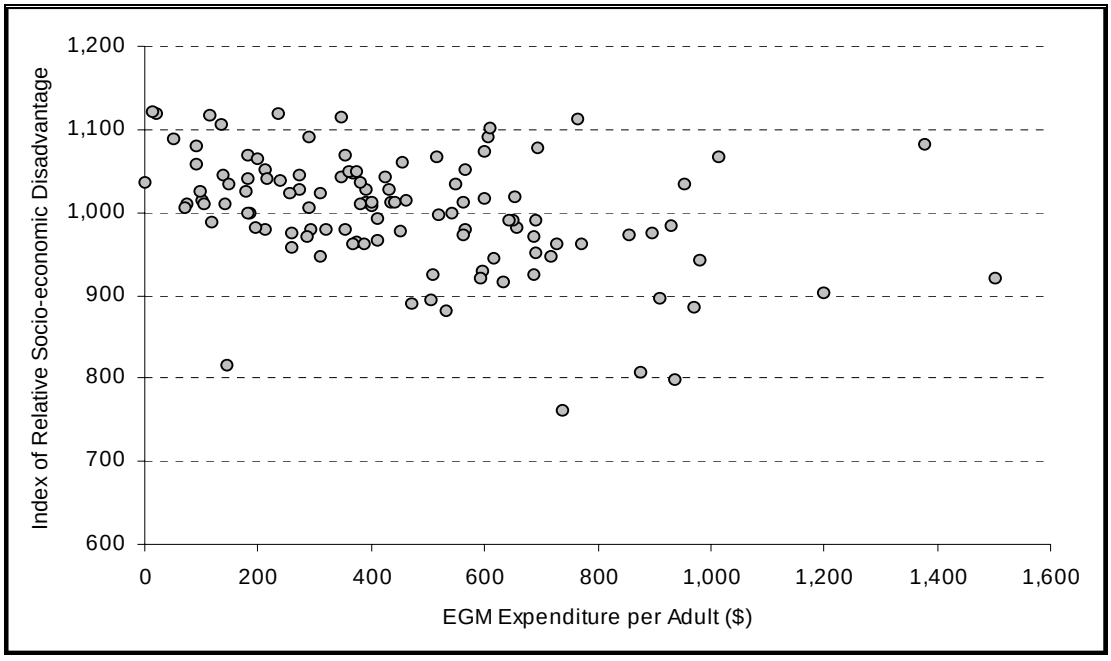
The econometric analysis in section 6.2.2 revealed that for South Australian SLAs, there is a statistically significant inverse relationship between the ABS SEIFA Index and average EGM expenditure per adult. That is, the more disadvantaged a region is in socio-economic terms (lower average income, higher unemployment etc.), the higher is their EGM expenditure.

The inverse relationship between the SEIFA Index and EGM expenditure per adult for SLAs in South Australia is illustrated graphically by Figure 6.1. It shows that regions with a lower Index value (i.e., are relatively more disadvantaged) tend to have a higher average expenditure per adult on EGMs. The relationship is weak which reflects that other factors such as the prevalence of gaming venues and machines also have a significant impact on expenditure.

For every additional index point in terms of the SEIFA Index for an SLA, average expenditure per adult is $1.55 lower. That is to say, a SLA ("1") with 100 index points greater than SLA ("2") will on average have an expenditure per adult that is $155 lower.

The inverse relationship between socio-economic disadvantage and EGM expenditure could be explained by people on lower incomes tending to view gambling as a potential means of raising their incomes. It may also be explained by hotels and clubs tending to be located in areas of lower socio-economic disadvantage.

Figure 6.1
South Australian Statistical Local Areas by Index of Relative Socio-Economic Disadvantage (2001) and EGM Expenditure per Adult (2001-02)



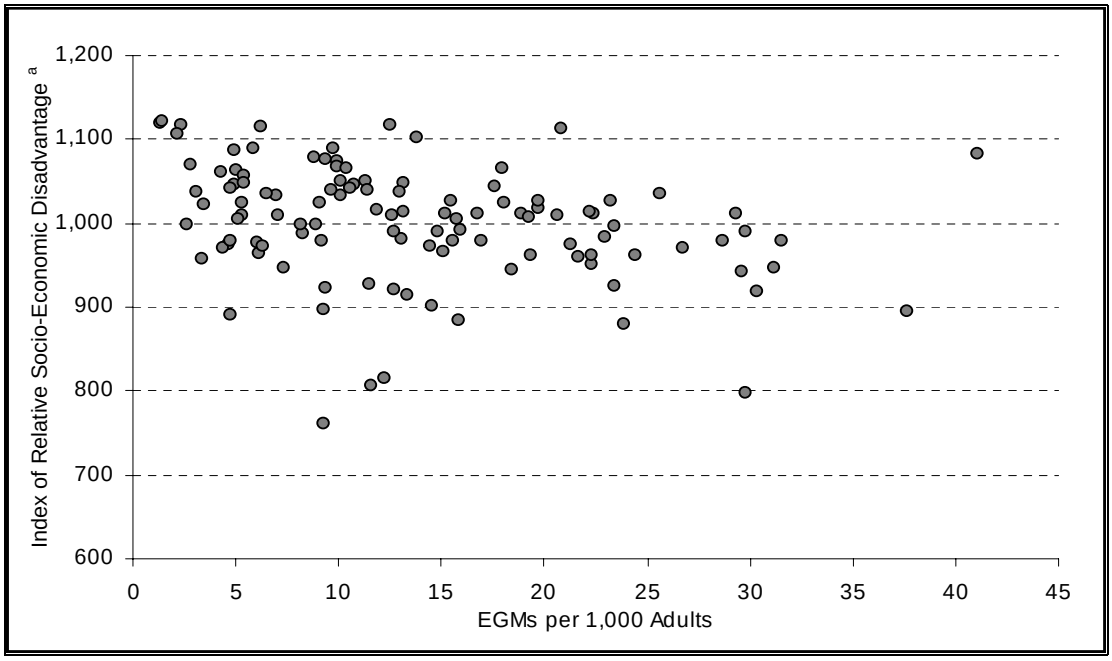
Source: Office of the Liquor and Gambling Commissioner (OLGC), unpublished data, and ABS.

Figure 6.2 shows that there is a weak inverse correlation between the SEIFA Index and the number of EGMs per 1,000 adults for Statistical Local Areas.[102]

A weak inverse relationship between accessibility of EGMs and relative level of socio-economic disadvantage may reflect that people from a lower socio-economic background tend to prefer the types of entertainment services provided by hotels and clubs, and/or that people tend to move away from areas of lower socio-economic disadvantage – and therefore areas of higher accessibility to EGMs – as their economic status improves.

[102] The correlation coefficient is -0.3, excluding Adelaide (C).

Figure 6.2
South Australian Statistical Local Areas by Index of Relative Socio-Economic Disadvantage (2001) and EGMs per 1,000 Adults (30 June 2001)[a]



Note: [a] A lower index indicates that a region is relatively more disadvantaged.
Source: OLGC, unpublished data, and ABS, *AusStats*, Population Trends and Estimates, and SEIFA.

6.4 Problem Gamblers and Forms of Gambling

6.4.1 Problem Gamblers and EGM Expenditure

The introduction to this report observed that when assessing the economic impact of gambling industries, the negative costs associated with problem gambling need to be taken into account. The estimates of the net economic benefit associated with the South Australian electronic gaming machine industry presented in Chapter 5 take account of such costs.

To further understand the issue of problem gambling, and particularly the relationship between problem gambling and forms of gambling at the region level, data on the number of new registered Break Even Services clients by post code was obtained from the Department for Families and Communities (DFC) and compared with various regional characteristics of gambling data. The data on BES clients refers to the residential address of the client. The client data here only refers to gamblers and not family members or others who attend in support of a client.

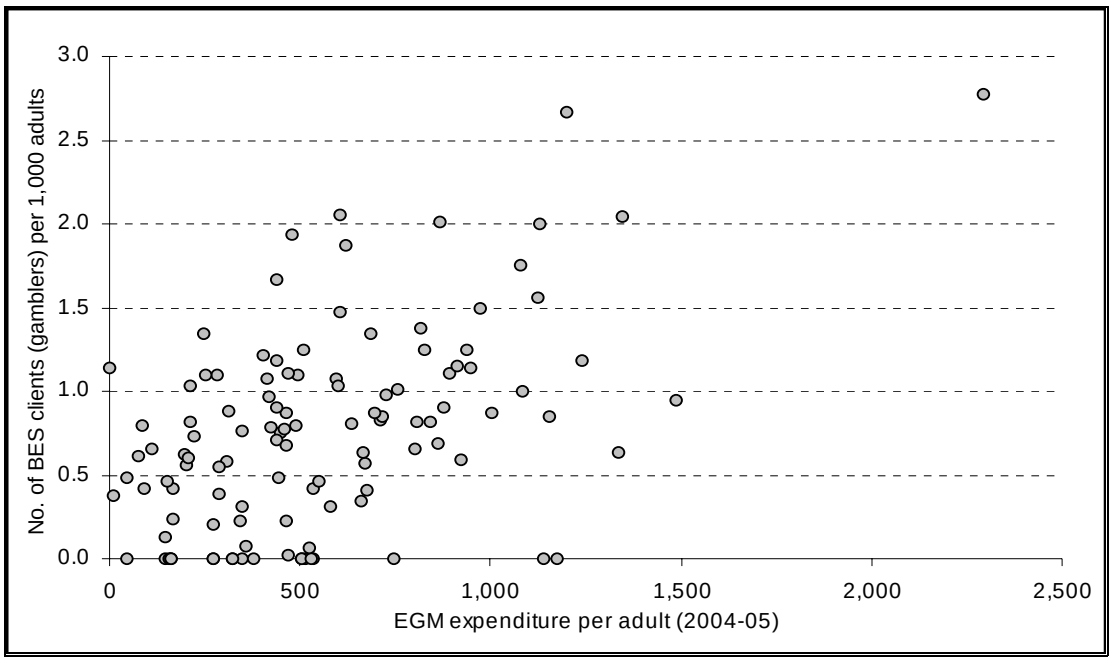
Data on BES clients by post code were converted to a Statistical Local Area basis using a post code to SLA concordance to enable a comparison of client data with gambling data.

Number of BES clients and average expenditure ...

Figure 6.3 plots SLAs by the number of BES clients per 1,000 adults in the region in 2004 and average EGM expenditure per adult in 2004-05. There is a weak positive correlation between the number of BES clients and net EGM expenditure per adult.[103] In other words, a region with a greater prevalence of BES gambler clients tends to have a relatively higher average EGM expenditure per adult. This outcome is consistent with the Productivity Commission conclusion that problem gamblers account for a relatively large share of total EGM expenditure (42 per cent).[104] It indicates that average EGM expenditure per adult is a reasonable proxy of the relative prevalence of problem gambling.

It is important to note that BES gambler client data includes people that have gambling problems with any form of gambling. However, since problem gambling is most strongly associated with EGMs – BES data indicates that EGMs were the major form of gambling for 68 per cent of gambler clients in 2004 – comparisons of the entire BES gambler client data set with EGM expenditure data are feasible.

Figure 6.3
South Australian SLAs by Break Even Services Gambler Clients (2004) Per 1,000 Adults and Electronic Gaming Machine Expenditure Per Adult (2004-05)



Source: FaCS, OLGC, and ABS. Calculations by the researchers.

Given the positive association between the prevalence of BES clients and EGM expenditure, a further analysis was conducted to see if there was any relationship between the number of BES clients and number of EGMs at the SLA level.

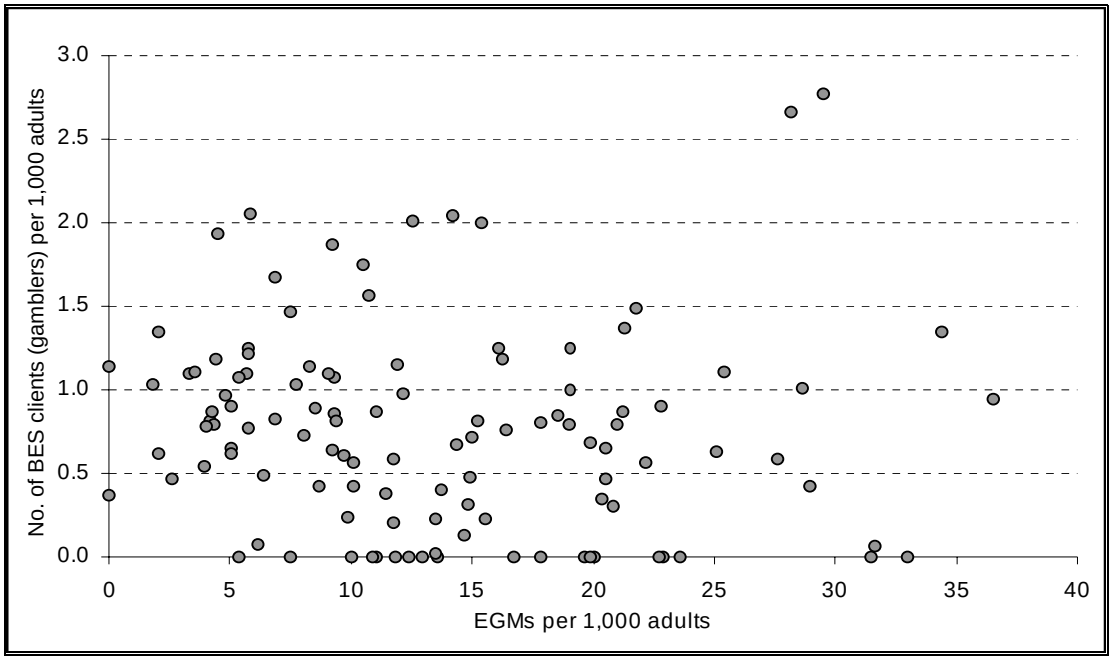
[103] The correlation coefficient is 0.5 excluding Adelaide (C).
[104] PC (1999), p 5.15.

Number of BES clients and the number of EGMs ...

Figure 6.4 shows there is no correlation between the prevalence of EGMs and BES gambler clients for South Australian SLAs.[105] This outcome suggests that efforts to reduce problem gambling in a specific region by reducing the prevalence of EGMs will have little to no effect on the incidence of problem gambling. The researchers demonstrated the same result and therefore conclusion with a three year study into the impact of regional caps in five regions in Victoria over the period 2002 to 2004.[106]

The lack of any correlation suggests that the EGM sector has matured with venues and machines saturating the marketplace, providing people with ample opportunities to gamble. And in any case, the utilisation rate of machines is low. The widespread availability of EGMs, particularly in the metropolitan area, combined with the identical nature of the gambling product across venues also means people are able to travel to a nearby region to gamble if their immediate region has a relative lack of EGMs.

Figure 6.4
South Australian SLAs by Break Even Services Gambling Clients (2004) Per 1,000 Adults and Electronic Gaming Machines Per 1,000 Adults (2004-05)



Source: FaCS, OLGC, and ABS. Calculations by the researchers.

Efforts to reduce problem gambling by changing the prevalence of gaming machines would probably be more effective in rural and remote areas where greater distances between regional centres act as a barrier to participation.

6.4.2 Break Even Services Clients and Socio-Economic Disadvantage

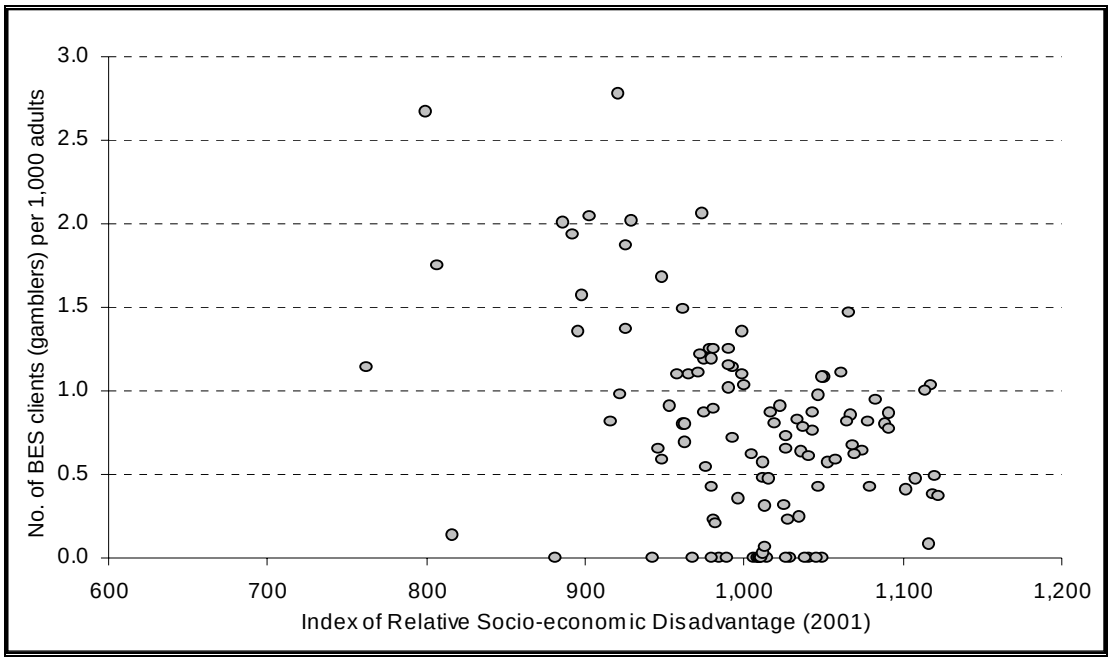
The econometric analysis in section 6.2.2 found that there is an inverse relationship between net EGM expenditure per adult and the SEIFA Index for SLAs in South Australia. A correlation analysis of the number of BES gambler clients per 1,000 adults and the Index was

[105] The correlation coefficient is only –0.1, excluding Adelaide (C).
[106] "Study of the Impact of Caps on Electronic Gaming Machines", May 2005.

conducted to see if there is also an inverse relationship between the incidence of BES gambler clients and relative socio-economic disadvantage at a spatial level.

Figure 6.5 shows there is a weak inverse relationship between the Index and the number of BES clients per 1,000 adults.[107] That is, the more disadvantaged a region is in socio-economic terms, the higher is the relative prevalence of BES clients (and by implication overall problem gambling). Given that problem gamblers account for a relatively large share of EGM expenditure, this outcome is consistent with the modest inverse relationship identified between the Index and EGM expenditure per adult in section 6.2.2.

Figure 6.5
South Australian SLAs by Break Even Services Gambling Clients (2004) Per 1,000 Adults and Index of Relative Socio-economic Disadvantage (2001)



Source: FaCS and ABS. Calculations by the researchers.

The BES client data of course only captures new registered clients that received treatment in 2004, which represents only a small proportion of the population that experiences problems with gambling. The BES data recorded 1,335 newly registered gambler clients in 2004 (of which 89 did not state their post code). If the spatial distribution of all problem gamblers was known, the correlation between the prevalence of problem gambling and relative socio-economic disadvantage may be quite different to the relationship found here (i.e., it may be stronger or weaker).

A list of all Statistical Local Areas (SLAs) in South Australia sorted in descending order by the number of BES gambler clients per 1,000 adults, together with EGM expenditure per adult in 2004-05, EGMs per 1,000 adults at 30 June 2005, and the Index value for each SLAs is presented in Appendix E.

[107] The correlation coefficient is –0.4, excluding Adelaide (C).

The list shows that SLAs with a higher prevalence of BES clients tend to have higher socio-economic disadvantage. For instance, the average index for all South Australian SLAs was 994. SLAs with an index below this average level (i.e., reflecting higher disadvantage) tend to be concentrated at the top of the table (reflecting a higher prevalence of BES clients), while SLAs with an index above this average level (i.e., reflecting lack of disadvantage) tend to be concentrated at the bottom of the table. The exception is Adelaide (C), which has a high concentration of EGMs, average expenditure per adult and BES clients per 1,000 adults.

It should be noted that a lack of BES clients for particular regions almost certainly reflect a lack of Break Even Services in these regions. For instance, Ceduna (DC) and Coober Pedy (DC) both have no BES clients per 1,000 adults but have very high levels of EGM expenditure per adult. The remoteness of these regions make it more difficult for problem gamblers in these regions to access counselling services.

7. Links Between Crime and Gaming Revenue by SLA

Terms of Reference

The economic contribution of gambling will be assessed for:

- South Australia and regional areas.

7.1 Introduction

The researchers were interested in exploring the link between EGM expenditure by SLA and crime rates as it is a potential cost to society arising from gambling. There has been much talk in the literature about the links between crime and gambling. Some reports suggest that increasing the number of venues where gambling is available (potentially decreasing the incidence of illegal gambling) leads to a decrease in crime. There is also the argument that because the gambling industry has led to some increase in employment this then decreases crime rates. Opponents of gambling disagree, they believe that gambling leads to various forms of street crime, robbery and automobile thefts. Gazel *et al* (2001) found that the opening of casinos in the US led to significant increases in crime for both violent and property crimes.

To study this issue entirely would involve a large collection of data and sophisticated economic modelling, which is beyond the scope of this report. Nevertheless, SACES believes it is possible to undertake some preliminary analysis on the links between crime rates and gaming expenditure by SLAs in South Australia. The three offence categories on which analysis was undertaken were total offences, property offences and violent offences.

Box 7.1: Summary

The regression results indicate some support for the argument that a greater prevalence of gambling activities — as indicated by gambling expenditure — is associated with higher crime rates. Areas (SLAs) with higher levels of EGM expenditure per adult were found to have higher total offences per 1,000 persons in 2002-03.

The three models for total offences, property offences and violent offences found links between EGM expenditure and offence rates. However, the links were weak and should be interpreted conservatively. The coefficients on all the gambling variables used ranged from 0.01 to 0.11. This indicates that one additional dollar per adult spent on EGMs in South Australia increases the offence rate per 1,000 head of population by up to 0.11. Such an influence is small in both absolute and relative terms.

Other variables were found to play a much larger role in influencing offence rates than EGM expenditure. Other variables that had a positive influence on offences included the percentage of aboriginal population, percentage of single parent families, percentage of male population, and percentage of non-english speaking population. The results also suggest that offence rates tend to be higher in SLAs with lower and higher incomes.

The number of alcohol licences per km2 was not significant in influencing total offence rates, contrary to most views on alcohol. However, this may be a reflection of the second best nature of the data used, and therefore needs to be treated with caution.

The relationship over time between average EGM expenditure per adult and total offences per 1,000 persons in South Australia was also examined. A high correlation was found between the two time series, indicating that they do tend to move together. However, correlation analysis does not provide any definitive answers or relationships. Further research is required to determine what other variables play a role in influencing offence rates over the long-term.

7.2 Links Between Total Offences and Gaming Revenue by SLA

We obtained data on total offences in 2002-03 per 1,000 population and used it as a dependent variable in an OLS regression. Offences are all counts of all offence recorded on Police incident reports. Net gaming revenue per adult (i.e., EGM expenditure) was used as an independent variable, along with average disposable income levels per adult, unemployment levels, ATSI percentage, percentage of males in SLA, the proportion of the population aged 40-54, 55-69 and 70+, the percentage of child abuse and neglect in SLA; the percentage of single parent families; the percentage of non-English speaking families; and the number of venues with licenses to sell alcohol per km^2.

Alcohol consumption is often cited as a major causal influence on crime. Fergusson and Horwood (2000) found links between alcohol consumption and violent crime in juveniles. Unfortunately, alcohol consumption was not available by SLA, hence we had to use a second best form of data: liquor licence data from Office of the Liquor and Gaming Commissioner (OLGC) for 2001. The OLGC liquor licence data is made up of different types of licences, and is available on a post code basis, which we converted to SLAs.[108] We included those licences which have a strong influence on local consumption (because they would typically serve local residents), rather than some other purpose (e.g., entertainment, accommodation). These licences include: hotel licences; retail liquor licences; club licences; special circumstances licences; and limited clubs licence. We excluded the following licences: residential licences (geared towards accommodation); wholesale liquor licences (do not sell to final customers); entertainment venues licences (geared towards entertainment); producers licences (i.e. typically wineries: wine tasting, sell for take away, and would thus not reflect local consumption); direct sales licence (i.e. direct sales to customer through internet, over phone etc., would not reflect local consumption) and restaurants (more geared towards serving food than alcohol). The alcohol licences by SLA were then divided by the area of the SLA in km^2.

The regression results in Table 7.1 indicate some statistical support for the argument that increased EGM expenditure increases crime rates. Positive statistically significant influences on total offences per adult by SLA include percentage of ATSI population, mean disposable income per adult squared; percentage of male population; percentage of single parent families; percentage of non-English speaking population; and net gaming revenue per adult. In other words, areas that have higher levels of EGM expenditure also have higher crime rates, holding other variables constant. The significant squared income variable indicates a u-shaped function: indicating that total offences are higher in areas with low and high income than in more middle income areas.

Negative statistically significant influences on total offences per adult by SLA include percentage of students in area. Therefore, the more educated the area is (with the student population as a proxy for education), then the lower the crime rate.

[108] Venues in a post code are allocated to SLAs based on the percentage of the post code population in various SLAs. For example, 1 venue in post code A which has 60 per cent of its population in SLA B, and 40 per cent in SLA C will be allocated as 0.6 to SLA B and 0.4 to SLA C. Some of the post codes on the licencing database that were not in the concordance file, had to be allocated manually. This affected about 40 of the 2,455 venues.

Table 7.1
Influences on Total Offences per 1,000 Population by SLA in 2002-03

	Model One		Model Two	
Variable	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**
C	-346.7415	-0.820698	-430.9055	-2.215166**
MEANDISPYPA	-0.007506	-0.413996		
MEANDISPYPA2	1.64E-07	0.604605	4.33E-08	2.012654**
NGRPA03	0.109853	6.273540***	0.109666	7.090585***
UEP03	-0.180338	-0.054768		
ATSIP01	3.627066	1.393041	4.198845	2.482280**
STUDP01	-1.995920	-2.071028**	-1.789095	-1.964954*
MALESP03	9.401910	2.188680**	9.589772	2.527786***
AGE40P	0.874693	0.669770		
AGE55P	1.910462	0.942893		
AGE70P	-0.492571	-0.304788		
CHILDP02	1.134494	0.486004		
ALCOHOLKM2	8.024685	1.065331		
NONENGLISHP	2.048126	2.437447**	2.255265	2.485464**
SINGLEPARENTP	9.250506	3.592716***	9.732952	6.942713***
Adjusted R-squared	0.822702		0.781322	
F-statistic	37.45888		0.827303	
Prob (F-statistic)	0.000000		0.000000	
Sample Size	111		111	

Notes: All regressions obtained using Huber-White robust standard errors
* Significant at 10 per cent level
** Significant at 5 per cent level
*** Significant at 1 per cent level

The number of alcohol licences per km^2 was not significant in influencing total offence rates, contrary to most views on alcohol. Whether this is a reflection of the second best nature of the data is unknown.

Of course, there may be other variables that should be included in the regression analysis that would decrease the strength of the relationship between average EGM expenditure and crime rates, so care must be cautioned in drawing any conclusions from this preliminary analysis.

7.3 Links Between Property Offences and Gaming Revenue by SLA

We obtained data from the Office of Crime Statistics and Research on the break down of total offences for 2002-03 into eight categories: offences against the person including acts endangering life; robbery and extortion; burglary, break and enter, fraud, forgery, false pretences and larceny; damage property and environmental; offences against good order; drug offences; driving, motor vehicle, traffic and related offences; and other offences. Property crimes were classified as: burglary, break and enter, fraud, forger, false pretences and larceny and used as a dependent variable at a rate of 1,000 population in an OLS regression.

Positive statistically significant influences on property offences per adult by SLA include: mean disposable income per adult squared; percentage of male population; percentage of single parent families; percentage of non-English speaking population; number of alcohol licences per km^2 and net gaming revenue per adult (see Table 7.2).

Table 7.2
Influences on Property Offences per 1,000 Adult Population by SLA in 2002-03

	Model One		Model Two	
Variable	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**
C	92.69752	0.580426		
MEANDISPYPA	-0.010773	-1.349713	-0.008595	-2.030684**
MEANDISPYPA2	1.83E-07	1.476678	1.44E-07	2.163783**
NGRPA03	0.043226	4.910730***	0.046292	6.158742***
UEP03	0.817828	0.780844		
ATSIP01	-0.492927	-0.505620		
STUDP01	-0.498582	-1.388276		
MALESP03	1.446871	0.845732	2.180911	1.658782*
AGE40P	0.283832	0.514666		
AGE55P	0.726650	1.068495		
AGE70P	-0.183808	-0.270063		
CHILDP02	0.045564	0.054834		
ALCOHOLKM2	10.64728	2.960114***	8.378572	2.479351**
NONENGLISHP	1.051821	2.667732***	1.000823	2.583001***
SINGLEPARENTP	2.753788	2.888547***	3.526339	6.187958***
Adjusted R-squared	0.777508		0.783487	
F-statistic	28.45715			
Prob (F-statistic)	0.000000			
Sample Size	111		111	

Notes: All regressions obtained using Huber-White robust standard errors
* Significant at 10 per cent level
** Significant at 5 per cent level
*** Significant at 1 per cent level

Negative statistically significant influences on property offences per adult by SLA include mean disposable income per adult. This indicates that overall, property offences increase in areas with low income. The significance and positive sign of the squared income variable indicates that property crimes also increase in areas with low and high income.

7.4 Links Between Violent Offences and Gaming Revenue by SLA

Violent crimes were classified as offences against the person including acts endangering life and acts of robbery and extortion.[109] This was used as a dependent variable at a rate of 1,000 population in an OLS regression. The results are summarised in Table 7.3.

Positive statistically significant influences on violent offences per adult by SLA include: percentage of ATSI population; percentage of male population; percentage of single parent families; percentage of population aged between 55 to 70; and net gaming revenue per adult.

Negative statistically significant influences on violent offences per adult by SLA include mean disposable income per adult squared; percentage of students in area; and percentage of population aged 70 plus. The negative sign of the squared income variable suggests that violent crime falls in areas of higher income.

[109] An aspect of "crime and gambling" that is reported in the public arena, but for which the ultimate classification of the crime tends to conceal the role and motivation of gambling, is murder. A recent case illustrating this was the murder of a Melbourne woman (May 2006: Ms J. Zhang) and the accused, a workmate allegedly spent five hours at Crown Casino gambling $9,100 stolen from the murdered woman.

Table 7.3
Influences on Violent Offences per 1,000 Adult Population by SLA in 2002-03

	Model One		Model Two	
Variable	**Coefficient**	**t-Statistic**	**Coefficient**	**t-Statistic**
C	-67.37225	-1.927116**	-47.45668	-2.790742***
MEANDISPYPA	0.001107	0.719372		
MEANDISPYPA2	-1.11E-08	-0.476681	5.73E-09	2.295088**
NGRPA03	0.005675	5.211927***	0.005683	5.724079***
UEP03	-0.206044	-0.787857		
ATSIP01	0.684130	3.569309***	0.653442	4.729440***
STUDP01	-0.257822	-3.167143***	-0.237240	-2.956561***
MALESP03	1.021001	3.294797***	0.976761	3.288321***
AGE40P	0.015887	0.191371		
AGE55P	0.374563	2.340423**	0.323139	2.472060**
AGE70P	-0.117615	-1.048109	-0.130165	-1.542576
CHILDP02	0.158245	1.178381		
ALCOHOLKM2	0.046181	0.087655		
NONENGLISHP	0.057697	1.039656		
SINGLEPARENTP	1.139463	5.563623***	1.141371	9.800949***
Adjusted R-squared	0.882708		0.878531	
F-statistic	60.13102		100.4480	
Prob (F-statistic)	0.000000			
Sample Size	111		111	

Notes: All regressions obtained using Huber-White robust standard errors
* Significant at 10 per cent level
** Significant at 5 per cent level
*** Significant at 1 per cent level

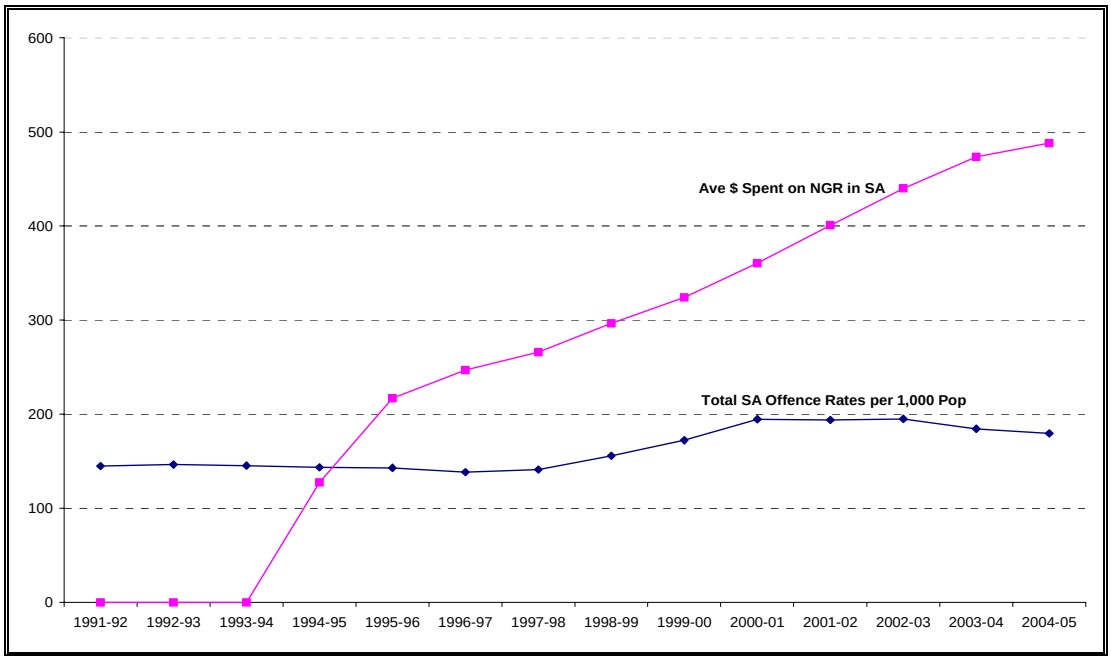
Further tests SACES conducted included looking at different ways in which crime rates are reported. For example, we also looked at individual rates, where an individual is counted once per year per offence group in each SLA where that individual is alleged to have committed an offence. No significant differences in results were found. In addition, we looked at where individuals resided (instead of where they committed the offence), and again, there were no significant differences found between models, hence the results are not reported here.

Although all three models studied here have found links between gaming machine expenditure and offence rates, there is a need to be conservative about suggesting how much gambling influences crime rates. For example, the coefficient on all the gambling variables used has ranged from 0.01 to 0.11. That is, one additional dollar per adult spent on pokies in South Australia in 2002-03 is associated with an increase in the offence rate per 1,000 head of population of up to 0.11. Such an influence is small in both absolute and relative terms. The percentage of single parent families, non-English speaking population, male population and ATSI population play a much larger role in influencing offence rates in SLAs.

7.5 Links Between Total Offences and Gaming Revenue From 1991-92 to 2004-05

Figure 7.1 shows the relationship between the average dollar amount spent in South Australia on gaming machines and the total offence rate per 1,000 population from 1991-92 to 2004-05. The correlation between the two time-series is very high, 0.77 (or 0.83 for 1994-95 to 2004-05). This indicates that the two time-series, on average, do tend to move together.

Figure 7.1
Total Offences and Average EGM Expenditure per Adult



Source: Office of Crime Statistics and Research, unpublished data, and OLGC.

Table 7.4 shows the correlations between offence rates per 1,000 persons and average net gaming revenue per adult for the time period of 1994-95 to 2004-05. Correlations of SLAs are shown in ascending order. Some areas have negative correlations (such as Burnside, Ceduna and Adelaide) while most of the remainder have positive correlations. Regions with high positive correlations indicate that increases in average expenditure per adult tend to be associated with increases in offence rates per 1,000 population for the region (and vice versa). Regions with high negative correlations indicate that increases in average EGM expenditure per adult tend to be associated with decreases in offences per 1,000 population (and vice versa).

SLAs that have positive correlations between gambling expenditure and offence rates above 0.9 respectively include: Salisbury (C) - South-East, Wattle Range (DC) – East, Murray Bridge (RC), Onkaparinga (C) - South Coast, Marion (C) – Central, Tea Tree Gully (C) – Central, Playford (C) - West Central.

The correlation analysis does not provide any definitive answers on the relationship between gambling expenditure and crime rates. Further research would be useful in determining what other variables play a role in influencing offence rates over the long-term. In particular, more research at looking at how gambling expenditure may spill over to influence crime rates in surrounding SLAs would also be useful. A panel data-set taking in a number of years where census data are available (i.e., not just 2002-03) would provide more detail on the relationship between gambling expenditure and offence rates. It is possible that the relationship between variables changes over time. Given time and resource constraints of the current research, it was not possible to undertake such analyses.

Table 7.4
SA SLAs by Correlation Between Offence Rates per 1,000 Persons and Average Net Gaming Revenue Per Adult: 1994-95 to 2004-05

SLA	Correlation	SLA	Correlation	SLA	Correlation
Burnside (C) - South-West	-0.79	Orroroo/Carrieton (DC)	0.52	Coober Pedy (DC)	0.76
Ceduna (DC)	-0.68	Northern Areas (DC)	0.53	Playford (C) - Hills	0.77
Adelaide (C)	-0.42	Barunga West (DC)	0.54	Tea Tree Gully (C) - South	0.77
Karoonda East Murray (DC)	-0.38	Adelaide Hills (DC) - Central	0.55	Yankalilla (DC)	0.77
Kimba (DC)	-0.30	Alexandrina (DC) - Coastal	0.55	Copper Coast (DC)	0.78
Port Pirie C Dists (M) Bal	-0.23	Tea Tree Gully (C) - North	0.55	Port Lincoln (C)	0.78
Robe (DC)	-0.17	Kangaroo Island (DC)	0.55	Port Augusta (C)	0.78
Flinders Ranges (DC)	-0.17	Franklin Harbor (DC)	0.56	Marion (C) - North	0.78
Berri & Barmera (DC) - Berri	-0.13	Burnside (C) - North-East	0.58	Onkaparinga (C) - Morphett	0.79
Wattle Range (DC) - West	-0.07	Onkaparinga (C) - Hills	0.59	Barossa (DC) - Tanunda	0.80
Renmark Paringa (DC) - Renmark	-0.05	Mitcham (C) - West	0.59	Loxton Waikerie (DC) - East	0.80
Mount Remarkable (DC)	0.08	Peterborough (DC)	0.61	Playford (C) - West	0.81
Elliston (DC)	0.16	Mount Gambier (C)	0.63	Berri & Barmera (DC) - Barmera	0.82
Loxton Waikerie (DC) - West	0.16	Mid Murray (DC)	0.65	Prospect (C)	0.82
Le Hunte (DC)	0.26	Charles Sturt (C) - Inner West	0.66	Mount Barker (DC) - Central	0.83
Kingston (DC)	0.27	Mount Barker (DC) Bal	0.66	Salisbury (C) - Central	0.83
Cleve (DC)	0.28	West Torrens (C) - East	0.67	Onkaparinga (C) - Hackham	0.83
Renmark Paringa (DC) - Paringa	0.29	Norw. P'ham St Ptrs (C) - West	0.67	Charles Sturt (C) - Inner East	0.83
Victor Harbor (C)	0.29	Salisbury (C) Bal	0.68	Gawler (T)	0.84
Southern Mallee (DC)	0.31	Norw. P'ham St Ptrs (C) - East	0.70	Alexandrina (DC) - Strathalbyn	0.84
Adelaide Hills (DC) - North	0.32	Naracoorte and Lucindale (DC)	0.70	Roxby Downs (M)	0.85
Grant (DC)	0.33	Campbelltown (C) - East	0.70	Port Adel. Enfield (C) - Inner	0.85
Tumby Bay (DC)	0.35	Onkaparinga (C) - North Coast	0.71	Salisbury (C) - North-East	0.85
Streaky Bay (DC)	0.37	Port Adel. Enfield (C) - East	0.71	Light (RegC)	0.85
Walkerville (M)	0.41	Yorke Peninsula (DC) - South	0.72	Salisbury (C) - Inner North	0.85
Campbelltown (C) - West	0.42	Onkaparinga (C) - Reservoir	0.72	Whyalla (C)	0.86
Charles Sturt (C) - Coastal	0.45	Tatiara (DC)	0.72	Port Pirie C Dists (M) - City	0.86
Unley (C) - West	0.46	Wakefield (DC)	0.72	Playford (C) - Elizabeth	0.88
Lower Eyre Peninsula (DC)	0.47	Charles Sturt (C) - North-East	0.72	Port Adel. Enfield (C) - Port	0.88
Adelaide Hills (DC) - Ranges	0.48	West Torrens (C) - West	0.73	Clare and Gilbert Valleys (DC)	0.90
Holdfast Bay (C) - South	0.48	Yorke Peninsula (DC) - North	0.73	Salisbury (C) - South-East	0.90
Goyder (DC)	0.49	Mitcham (C) - North-East	0.73	Wattle Range (DC) - East	0.90
Mitcham (C) - Hills	0.49	Onkaparinga (C) - Woodcroft	0.74	Murray Bridge (RC)	0.91
Marion (C) - South	0.50	Barossa (DC) - Barossa	0.74	Onkaparinga (C) - South Coast	0.92
Holdfast Bay (C) - North	0.50	Mallala (DC)	0.75	Marion (C) - Central	0.92
Unley (C) - East	0.50	The Coorong (DC)	0.75	Tea Tree Gully (C) - Central	0.93
Tea Tree Gully (C) - Hills	0.51	Adelaide Hills (DC) Bal	0.75	Playford (C) - West Central	0.95
Barossa (DC) - Angaston	0.52	Port Adel. Enfield (C) - Coast	0.76		

7.6 Summary

Areas of high socio-economic disadvantage in South Australia in 2002-03 were much more likely to spend more on EGM gambling than areas of lower socio-economic disadvantage. In particular, areas with high unemployment, a larger share of single parent families and lower education levels are more likely to spend more per adult on EGM gambling.

The correlation (from 1994-95 to 2004-05) between offence rates and EGM expenditure for South Australia is very high at 0.83, although it varies widely between SLAs. One expects a correlation given the links of gambling and crime with areas of high socio-economic disadvantage, however the size of the correlation is considerably high. Unlike some other *a priori* key predictors of crime (such as alcohol availability, unemployment, income etc) EGM expenditure was consistently found to be positively linked with forms of crime in the regression analyses, indicating that the more an area spends on EGMs, the higher the crime rate. The link between gambling expenditure and offence rates is small though, indicating that although there is a link, it is only very slight.

Other variables play a much larger role in influencing offence rates than EGM expenditure does. Other positive influences on crime rates include percentage of Aboriginal population, percentage of single parent families, percentage of male population and percentage of non-English speaking population. Negative influences on crime include percentage of student population and percentage of population aged over 70. Offence rates in SLAs are higher in areas of lower and higher income respectively. Interestingly, this study found no statistically significant link between the number of alcohol licences per square km and overall offence rates, though a positive statistical link was found with alcohol licences per square km and property offences.

8. Tourism

Terms of Reference

- Economic benefits, including ancillary benefits, arising from the development of the various sectors of gambling industry (such as employment of staff, tourism, overflow effect to other sectors such as building industry, suppliers of goods, and so on).

8.1 Introduction

This section discusses the economic effect of gambling-related tourism. It is not axiomatic that the location of a casino complex will generate economic benefits over and above economic costs. To the extent that the number of international tourists increase then this is likely to be a positive and discernible impact, including higher tax revenue and employment from international visitations. However, pre-existing businesses such as restaurants and hotels may lose patronage from local residents, they may not gain patronage from international tourists, while wages may be bid up to the detriment of local employers and there will be strong competition for the 'entertainment dollar'. The increase in the number of problem or compulsive gamblers may serve the casino, however, the full costs would rarely be met by any casino, but by taxpayers. The benefit of a casino includes for those who enjoy the experience and gain in utility (i.e., recreational gamblers), net jobs created, investment, taxation revenue and urban development where it occurs.

It is not possible in this study to conduct a benefit-cost analysis of the casino. Rather, we examine gambling related tourism, specifically international tourists who visit the Adelaide casino. One can hardly imagine tourists visiting South Australia for the purpose of playing electronic gaming machines or buying South Australian lottery tickets, and Adelaide thoroughbred racing events are unlikely to attract significant international attendance. (We focus on international tourists because data on domestic tourism are both less available and less reliable and it is international tourists that most clearly provide a positive economic impact.)

Box 8.1: Summary

Australian data indicates that between one quarter and one fifth of international visitors have gone to a casino at least once during their stay in Australia.

The great majority of casino revenue is derived from local residents rather than overseas visitors. The Australian Casino Association estimates that approximately 8 per cent of casino revenue in Australia in 2003-04 was derived from international players.

Approximately 13 per cent of visitors to the casino in South Australia in 2003 were from interstate, while 5 per cent were from overseas. The corresponding rates for Australia were 12 per cent and 5.6 per cent.

South Australia, Western Australia and Queensland all enjoyed international tourist growth that was superior to growth in other States in the five years after the introduction of casinos in 1985. However, such changes in tourist numbers cannot be ascribed to any singular cause since international tourism flows are influenced by a multitude of factors, including political and macro-economic developments, exchange rates, airfare pricing, and the effectiveness of marketing.

8.2 Casino and International Tourists

A large number of international tourists to Australia visit a casino during the course of their holiday. Table 8.1 presents national estimates for casino visitation from the 'International Visitors Survey' conducted by Tourism Research Australia (formerly the Bureau of Tourism Research). In recent years, between a quarter and a fifth of foreign tourists have gone to a casino at least once.

Table 8.1
Australia – Number of International Visitors who Visit a Casino
Number and Per cent

	1999	2000	2001	2002	2003	2004
Visit a Casino	1,073,800	1,044,600	914,700	881,700	929,200	971,300
As % of Total Visitors	26	23	20	20	21	20

Source: Tourism Research Australia, *International Visitor Survey*, supplied by the South Australian Tourism Commission.

Despite the popular image of casinos being patronised by international 'high-rollers', casinos actually derive the great majority of their revenue from local residents, and most of that is generated by EGMs. The Australian Casino Association (ACA) estimated that approximately 8 per cent of casino revenue in 2003-04 was sourced from international players, which equates to about $260 million (ACA 2005). However, the ACA believes that this figure somewhat understates the total from international sources, since data were not available for "non-rated and non-junket international visitor revenue".

It might be expected that the Adelaide casino would attract significantly less foreign tourists than other Australian casinos, given that casinos in Queensland and Western Australia enjoy closer proximity to Asia, and that several interstate casinos (particularly Melbourne's huge Crown Casino) would undoubtedly have larger international marketing budgets. Nonetheless, the percentage of overseas visitors reported by for Adelaide casino is only slightly less than the average for casinos across Australia (see Table 8.2).

Table 8.2
South Australia and Australia – Origin of Casino Visitors (Per cent)

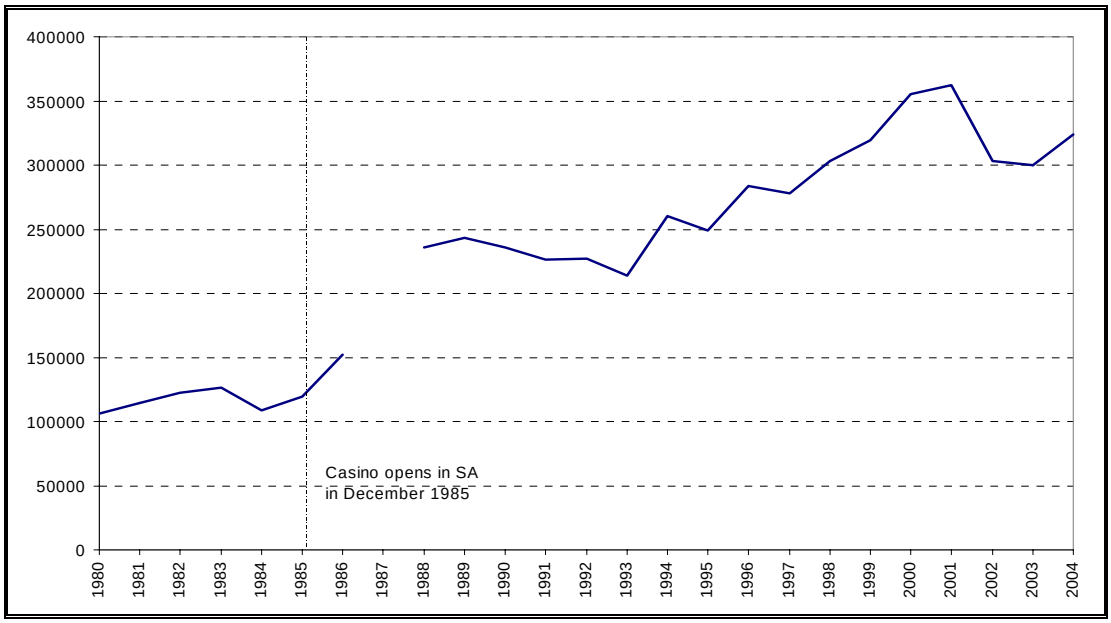
	South Australia	Australia
Local	82	82.3
Interstate	13	12.1
International	5	5.6

Note: South Australian figures are for calendar 2003, Australian figures for 2003-04.
Source: SKYCITY Adelaide and Australian Casino Association, *2003-04 Economic Survey Report*.

The most important question is whether the presence of a casino is a consideration affecting the destination choice of a significant number of tourists, thereby generating revenue both for the casino and the wider South Australian economy – revenue that would have gone elsewhere but for the casino.

Data on short-term tourist arrivals in each State are available from the International Visitors Survey. Figure 8.1 shows tourist arrivals to South Australia since 1980 (there is unfortunately a gap in the series, since the survey was not conducted in 1987).

Figure 8.1
South Australia – International Short-Term Visitors, 1980-2004 (Number)



Note: The survey from which these figures are drawn was not conducted in 1987.
Source: Tourism Research Australia, *International Visitor Survey*, supplied by the South Australian Tourism Commission.

In the years following the opening of the Adelaide casino in December 1985, there was a large upswing in tourism to this State. However, this expansion of tourism was a national phenomenon in the mid to late 1980s, occurring across all States whether or not they had recently opened casinos (South Australia, Western Australia and Queensland opened casinos in 1985, the Hobart casino had been operating since 1973, but New South Wales and Victoria did not have legal casinos until the mid 1990s). South Australia was also host to the Australian Grand Prix commencing in 1985. International visitors to the Grand Prix were estimated at 5 per cent of total visitation (SACES: 1986).

The South Australian Tourism Commission warns against ascribing changes in tourist numbers to any individual cause and the researchers agree. International tourism flows are influenced by a multitude of factors, including political and macro-economic developments, exchange rates, airfare pricing, and the effectiveness of marketing.

Nonetheless, it is interesting that the three States with a new casino in 1985 enjoyed international tourist growth over the next five years that was superior to the other States (see Table 8.3). In expanding the range of entertainment options in South Australia, Western Australia, and Queensland, casinos undoubtedly made some small contribution to tourist growth, but the extent of that contribution is impossible to quantify. However, there is no evidence that the existence of the casino has substantially boosted **new tourism** to the State, either international or interstate. The essential point is the great majority of casino revenue is derived from local residents.

Table 8.3
Growth in International Short-Term Visitors (Stopovers) (Per cent)

	SA*	Qld*	WA*	NSW	Vic	Tas	Australia
1-Year Growth (1985 to 86)	27	37	24	25	19	38	25
5-Year Growth (1985 to 90)	98	188	120	85	69	97	97

Note: * Denotes States that established a casino in 1985.
Source: Tourism Research Australia, *International Visitor Survey* stopover figures (excludes in transit), supplied by the South Australian Tourism Commission.

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Appendix A

Estimating the Degree of Under-reporting of Gambling Expenditure in the HES

Gambling is closely regulated in Australia and gambling operators are required to provide financial data to governments. This data will with few exceptions be very accurate, and they can be regarded as true estimates of the actual expenditure for our purposes. Gambling expenditure data are also collected in the HES (see discussion 2.3.1.), and it is possible to estimate population gambling expenditure from them.

Problems arise because there is a large discrepancy between total estimates drawn from individuals reporting of gambling expenditure and the total for the industry across states. By comparing the two figures for Australia and South Australia, one can get an idea how great under-reporting of gambling expenditure is in the HES, to better grasp the limitations of the data set. Estimates have been drawn from the HES for South Australia and Australia, and in Table A.1 the estimated expenditures for the different types of gambling assessed in the HES are compared to the actual industry figures.

Table A.1
The Extent of Under-reporting of Gambling Expenditure, by Type

Type	Reported ($A million)	RSE[b] (per cent)	Actual ($A million)	Reporting of actual expenditure estimates[a]		
				Low	Mean	High
Australia						
Lotteries and Instant Lotto	1,360.3	3.6	1,475.5	.86	.92	.99
Racing	262.3	26.1	1,731.3	.07	.15	.23
Gaming Machines	417.5	31.8	6,852.3	.02	.06	.10
Casino type games	31.4	45.4	2,193.5	.00	.01	.03
Sports Betting	1.7	42.6	22.9	.01	.08	.14
Minor gaming	233.9	9.5	183.8	1.03	1.27	1.51
Total Gambling	2,149.2	6.5	12,459.2	.15	.17	.19
South Australia						
Lotteries and Instant Lotto	99.6	10.7	92.8	.85	1.07	1.30
Racing	18.4	54.8	106.7	-.02	.17	.36
Gaming Machines	20.2	47.7	442.5	.00	.05	.09
Casino type games	-19.6	68.1	76.6	.09	-.26	-.60
Sports Betting	-1.7	63.9	.708	.68	-2.43	-5.55
Minor gaming	22.9	26.6	19.3	.56	1.19	1.82
Total Gambling	139.8	18.9	738.6	.12	.19	.26

Note: [a] These estimates are the mean and 95 per cent confidence intervals of the degree of under-reporting. Perfect reporting would be 1, complete under-reporting would be 0.
[b] RSE is the relative standard error of the reported expenditure figures, indicated as a percentage. Any estimates with errors between 25-50 per cent should be treated with caution, estimates with errors higher than 50 per cent should be disregarded.
Source: ABS, Household Expenditure Survey, 1998-99, Australian Gambling Statistics, 2002-03.

The extent of under-reporting in Australia is great, with only 17 per cent of actual expenditure being reported by households responding in the 1998-99 HES. Reporting of gambling expenditure is very accurate in lotteries and instant lotto, with reported expenditure on average at 92 per cent of industry figures. However in the cases of casino gaming, racing, and

electronic gaming machines (EGMs), the data indicates almost complete under-reporting: only 1 per cent, 15 per cent and 6 per cent respectively. The differences in under-reporting between different types of gambling are large: if one looked at reported gambling expenditure, one might conclude (incorrectly) that EGMs and casino gaming were not large earners in the gambling industry, when they are in fact the largest two.

These HES figures on reported expenditure are clouded by moderate to sometimes very large sampling errors in the estimates (due to the variability and sample sizes of the data). Even for the sample drawn from across Australia, there is still a relative standard error (RSE) of greater than 25 per cent for the two largest gambling expenditures, EGMs and casino gaming. The RSEs for South Australia are even larger, as a consequence of the sample size, with all but one gambling type with an error of greater than 25 per cent.[110] If we adopt the conventional 95 per cent significance rule to test equality between South Australian and Australian reports, we conclude that there is no statistically significant difference between reported expenditures.

There are several possible causes for the high degree of under reporting of gambling expenditure. Access Economics (May, 2002) suggested that problem gamblers may deliberately underreport their expenditure, regular gamblers may deliberately limit their gambling during the time they are reporting their expenditure, and also that gamblers may simply be mistakenly reporting losses as wins. There may also be confusion in expenditure from the amounts and frequency of gambling contributing to underreporting; lotteries and instant lotto have a small level of under-reporting and lotto tickets typically come in standard amounts at fixed times in a week, compared to EGMs, with different denomination machines, potential withdrawal of cash during gambling, and open time frames to gamble. Gamblers unsure of exact amounts they gambled may guess the amount and the frequency, and then round down, rather than up their expenditure. Another suggested possibility is that selective memory may be at play: gamblers may remember proportionally less occasions where they have lost money in small amounts, and remember proportionally more of the occasions they have won.

For South Australia the comparison between reported expenditure and industry reported expenditure is stark. Reported expenditure on EGMs is only $20 million, when the industry figure is $440 million. Reported expenditure on racing is $18 million, the industry figure is $106 million. Reported expenditure on casino gaming sum to winnings of $20 million when the industry reports expenditure of $76 million. The only major case of reported expenditure close to the industry figure is lotteries and instant lotto: $100 million reported to industry figures of $93 million.

Estimates of expenditure on gambling from the Household Expenditure Survey ought to be treated with caution.

[110] For instance, with an RSE of 25 per cent, although the estimate may be $100 million, there would be a 95 per cent chance the true figure if you had asked the entire population what their expenditure was would be between $75 and $125 million. Bearing this in mind, when the sample is reduced from Australia wide to only South Australia, the increase in error makes comparison to Australia very difficult to do with great confidence.

Appendix B

Data Categories

B.1 Alcohol and Tobacco Expenditure Categories

The following categories were considered in the econometric analysis of differences in expenditure on alcohol and tobacco by gambling participation (see Table 2.4):

- ALCO1="Beer nfd";
- ALCO2="Beer for consumption off licensed premises";
- ALCO3="Beer for consumption on licensed premises";
- ALCO4="Wine nfd";
- ALCO5="Wine for consumption off licensed premises";
- ALCO6="Wine for consumption on licensed premises";
- ALCO7="Spirits nfd";
- ALCO8="Spirits for consumption off licensed premises";
- ALCO9="Spirits for consumption on licensed premises";
- ALCO10="Alcoholic beverages nfd and nec";
- ALCO11="Other alcoholic beverages for consumption off licensed premises";
- ALCO12="Other alcoholic beverages for consumption on licensed premises";
- ALCO13="Cigarettes";
- ALCO14="Other tobacco"; and
- ALCO15="Tobacco products nec".

B.2 Recreational Expenditure Categories

The following categories were considered in the econometric analysis of differences in expenditure on recreation expenditure categories by gambling participation (see Table 2.5):

- REC1="Camping equipment";
- REC2="Sporting equipment nfd";
- REC3="Fishing equipment";
- REC4="Golf equipment (excluding specialist shoes)";
- REC5="Specialist sports shoes";
- REC6="Sports equipment nec";
- REC7="Recreational and sports equipment nec";
- REC8="Hire of sports equipment";
- REC9="Hire of recreational and educational equipment nec";
- REC10="Repair of sports equipment";
- REC11="Repair of recreational and educational equipment (excluding audiovisual equipment) nec";

- REC12="Health and fitness studio charges";
- REC13="Sporting club subscriptions";
- REC14="Squashcourt hire charges";
- REC15="Ten pin bowling charges";
- REC16="Green fees";
- REC17="Sports lessons";
- REC18="Spectator admission fees to sport";
- REC19="Sports fees and charges nec"; and
- REC20="Cinema fees and charges".

B.3 Analysis of Household Participation Variables

The following variables were considered in the logistic regression analysis of influences on household participation in gambling (see Tables 2.6 and 2.7):

- Total household taxable income (TAXINCH) and taxable income squared (TAXINCH2);
- The percentage share of household weekly expenditure on current housing costs (EXPP01);
- The percentage share of household weekly expenditure on domestic fuel and power (EXPP02);
- The percentage share of household weekly expenditure on food and non-alcohol beverages (EXPP03);
- The percentage share of household weekly expenditure on alcohol beverages (EXPP04);
- The percentage share of household weekly expenditure on tobacco products (EXPP05);
- The percentage share of household weekly expenditure on clothing and footwear (EXPP06);
- The percentage share of household weekly expenditure on household furnishings and equipment (EXPP07);
- The percentage share of household weekly expenditure on household services and operation (EXPP08);
- The percentage share of household weekly expenditure on medical care and health expenses (EXPP09);
- The percentage share of household weekly expenditure on transport (EXPP10);
- The percentage share of household weekly expenditure on recreation (EXPP11);
- The percentage share of household weekly expenditure on personal care (EXPP12);
- The percentage share of household weekly expenditure on miscellaneous goods and services (EXPP13);
- The percentage share of household weekly expenditure on income tax (EXPP14);
- The percentage share of household weekly expenditure on mortgage repayments (EXPP15);

- The percentage share of household weekly expenditure on other capital housing costs (EXPP16);
- The percentage share of household weekly expenditure on superannuation and life insurance (EXPP17);
- The number of dependents in the household aged under 25 (DEPSHH);
- The number of people in the household (NOHLD);
- A dummy variable based on country of birth, 1 = European origin, 0 = other (COBDUMMY);
- A dummy variable based on occupation of reference person in household, 1 = white collar occupation, 0 = other, (OCCUPDUMMY);
- Estimated value of dwelling (VALUE);
- Whether the household is renting government housing, 1 = governmental housing, 0 = other, (DTENU);
- The proportion of household members aged from 45 onwards (AGE45P);
- Index of relative socio-economic disadvantage, 1 = lowest, 9 = highest (SOCIO);
- Number of hours worked in jobs by household reference person (HDHRS); and
- Number of males in household (MALESHH).

B.4 Independent Variables for Econometric Analysis of SLAs

The following independent variables were considered in the econometric analysis of factors that influence EGM expenditure by SLA (see section 6.2.2):

- Number of machines per 1,000 adults in SLA (MACHINES1000);
- Machines in SLA (MACHINE);
- Number of venues per km^2 in SLA(VENUESKM2);
- Number of machines per venue per 1,000 adults in SLA (GMVENUE);
- Mean disposable income per adult in SLA (MEANDISPYPA) (this variable was tested in a logged and quadratic form (MEANDISPY2));
- Mean taxable income per adult in SLA (YPA);
- Disposable income in SLA (DISPY);
- Taxable income in SLA (Y);
- Percentage of adult population in SLA that are ATSI (ATSIP);
- Number of ATSI population in SLA (ATSI);
- Percentage of adult population in SLA that are disability pensioners (DISABILP);
- Number of disability pensioners in SLA (DISABIL);
- Percentage of adult population in SLA that are unemployed (UEP2);
- Number unemployed in SLA (UE);
- Percentage of adult population in SLA that are aged pensioners (PENSIONERP);
- Number of aged pensioners in SLA (PENSIONER);
- Index of Relative Socio-Economic Disadvantage, 2001 (SOCIO01);

- Percentage of households in SLA receiving rent assistance (RENTP);
- Number of rent assistance households by SLA (RENT);
- Percentage of households in SLA renting (RENTP01S);
- Percentage of families with no children in SLA (NOCHILDP);
- Percentage of single parent families in SLA (SINGLEPARENTP);
- Percentage of non-English speaking families in SLA (NONENGLISHP);
- Whether the SLA was in a rural area (RURALD);
- Whether the SLA was a provincial city (PROVCITYD);
- Number of offences involving apprehension in SLA (OFFP03);
- Percentage of child abuse and neglect in SLA (CHILDP02);
- Number of child abuse and neglect by SLA (CHILD);
- Percentage of obese and overweight 4 year olds in SLA (OBESEP01);
- Number of obese and overweight 4 year olds by SLA (OBESE);
- Percentage of low income families in SLA (LIFP01);
- Number of low income families by SLA (LIF);
- Percentage of students in full-time secondary education by SLA (STUDP01);
- Number of students in full-time secondary education by SLA (STUD);
- Percentage of dwellings without a motor vehicle by SLA (MVP);
- Number of dwellings without a motor vehicle by SLA (MV);
- Percentage of population that are male by SLA (MALESP03);
- Number of males by SLA (MALES03);
- Percentage of population aged 20 – 39, aged 40 – 54, aged 55 – 70, aged 70 plus and aged 65+ by SLA (AGE20P, AGE40P, AGE55P, AGE65P, AGE70P);
- Number of population aged 20 – 39, aged 40 – 54, aged 55 – 70 by SLA (AGE20, AGE40, AGE55);
- Adult population by SLA (POP);
- Number of alcohol licences by SLA (ALCOHOLVENUES01); and
- Number of alcohol licences by SLA divided by area of SLA in squared km (ALCOHOLKM2).

Appendix C

Methodology for Forecast of Employment by Industry

Augmented Dickey-Fuller tests for stationarity were conducted on each industry's employment data (for period 1984 to 1994) to find out the level of integration. Industry employment data that were non-stationary were first-differenced (where $x(t)$ becomes $\Delta x(t) = x(t) - x(t\text{-}1)$. Correlograms and Akaike information criteria were used to determine what kind of ARIMA model to use (based on data prior to 1994). For example, if the autocorrelation function dies off smoothly at a geometric rate, and the partial autocorrelations were zero after one lag, then a first-order autoregressive model is appropriate. Alternatively, if the autocorrelations were zero after one lag and the partial autocorrelations declined geometrically, a first-order moving average process would seem appropriate.

The ARIMA models used for each industry series were: Total Employment ARIMA (1,1,1), Total Employment by part-time ARIMA (1,1,1), Total Employment by full-time ARIMA (1,1,1), Accommodation/Cafes/Restaurants ARIMA (1,1,1), Cafes/Restaurants ARIMA (1,1,1), Clubs/Hospitality ARIMA (1,0,1), Pubs/Taverns/Bars ARIMA (1,1,1), Manufacturing ARIMA (2,1,1), construction ARIMA (1,0,1), Wholesale Trade ARIMA (1,0,1), Retail Trade ARIMA (2,1,1), Finance and Insurance ARIMA (2,1,1), Property & Business Services ARIMA (2,1,1), Education ARIMA (1,1,1), Health & Community Services ARIMA (2,1,1), Cultural and Recreational Services ARIMA (1,1,1), Sport and Recreation ARIMA (1,1,1), Gambling Total ARIMA (1,1,1), Gambling Full-time ARIMA (1,1,1), Gambling Part-time ARIMA (1,1,1), Personal and Other Services ARIMA (1,1,1).

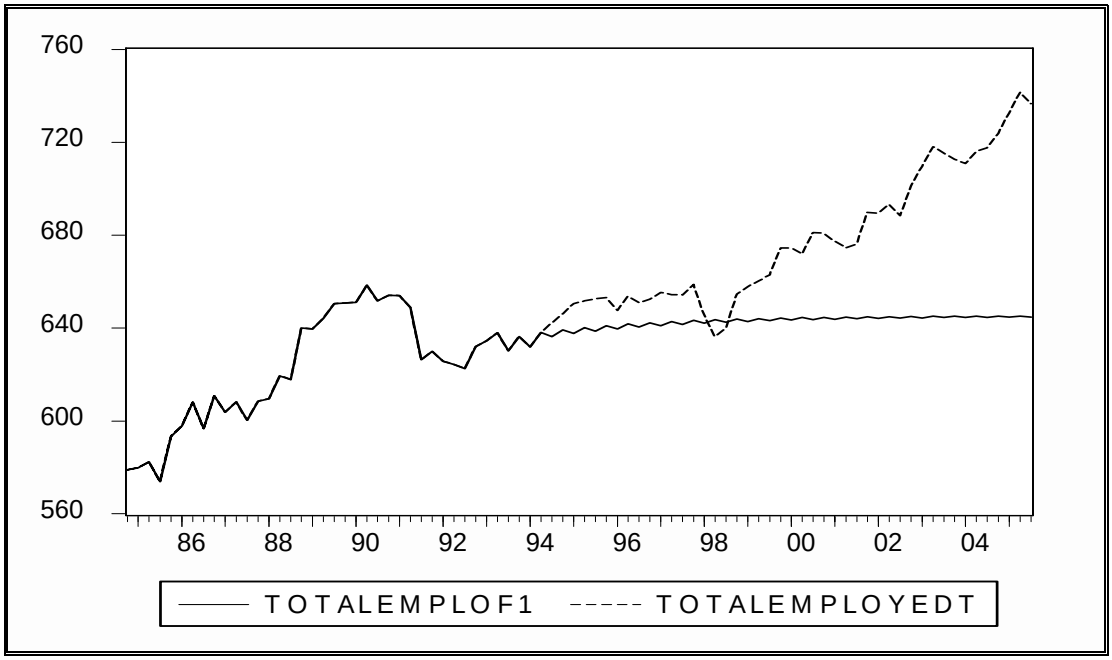
Appendix D

Actual and Forecast Employment Graphs

This appendix presents graphs that compare actual employment outcomes for each industry sector in South Australia with forecast employment for each sector from 1994 to 2005 based on the econometric model presented in section 3.2. Differences between actual and forecast levels of employment for particular sectors may be reflective of the impact of the introduction of EGMs on employment in those sectors. However, given the limitations of the model, particularly that it cannot take into account many of the various factors that influence employment outcomes, the results need to be interpreted with caution (see section 3.2.2 for more details).

Series names that end with an F or F1 indicate the forecast series in each graph.

Figure D.1
Actual & Forecast Total Employment – South Australia ('000 persons)

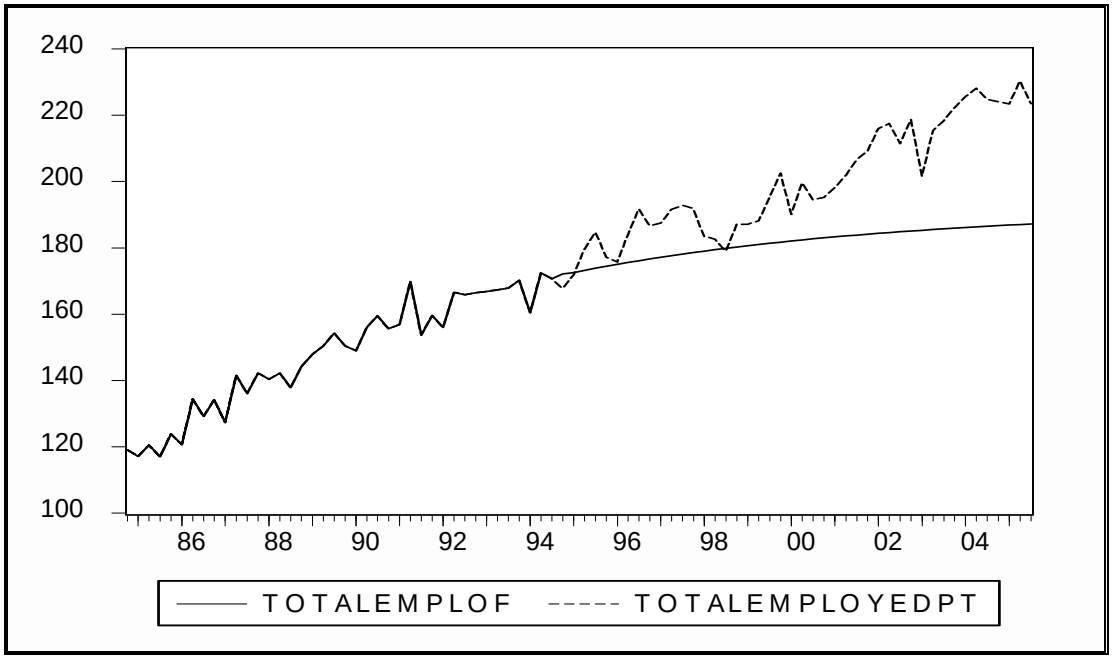


Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.2
Actual & Forecast Full-time Employment – South Aust. ('000 persons)

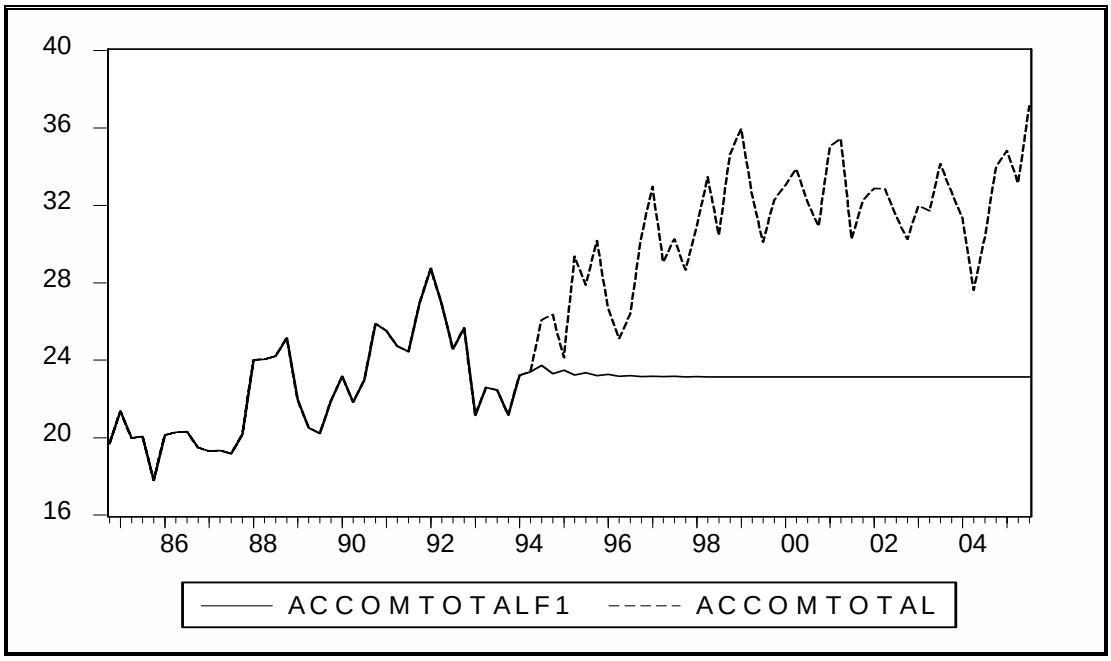
Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.3
Actual & Forecast Part-time Employment – South Aust. ('000 persons)



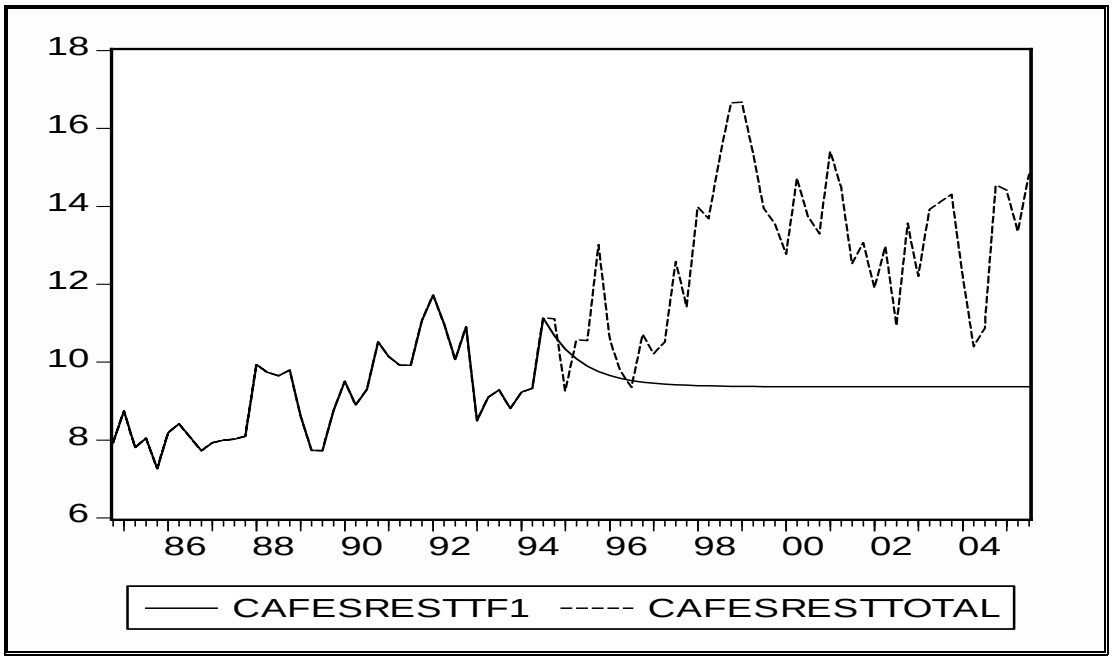
Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.4
Actual & Forecast Employment in Accommodation – South Aust. ('000 persons)



Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.5
Actual & Forecast Employment in Cafes & Restaurants – South Aust. ('000 persons)

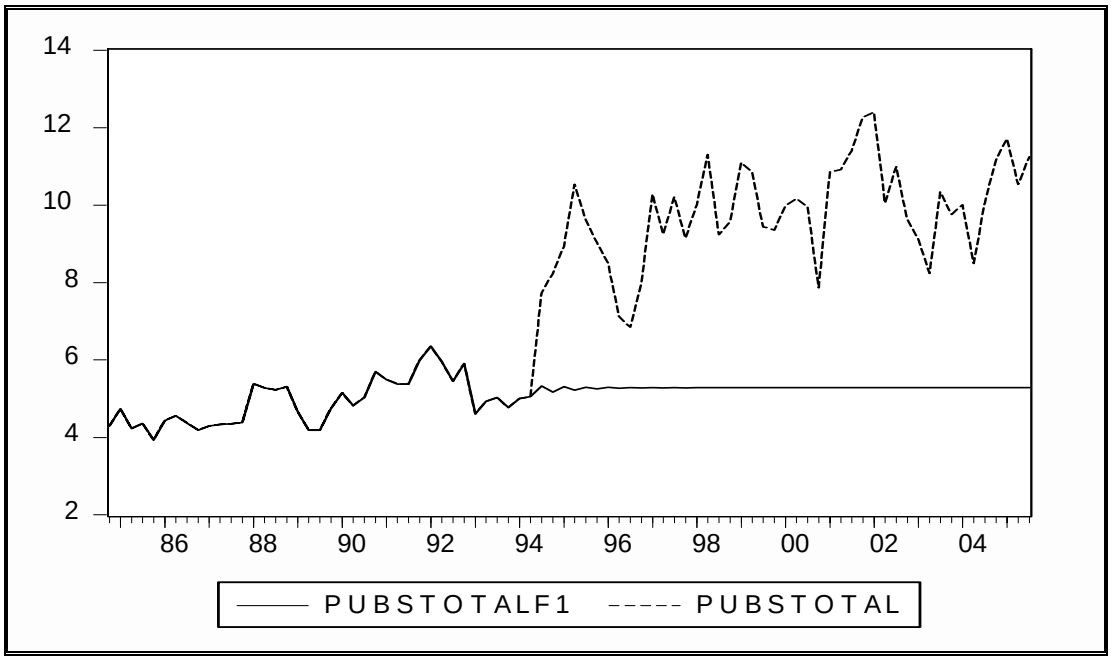


Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.6
Actual & Forecast Employment in Clubs (Hospitality) – South Aust. ('000 persons)

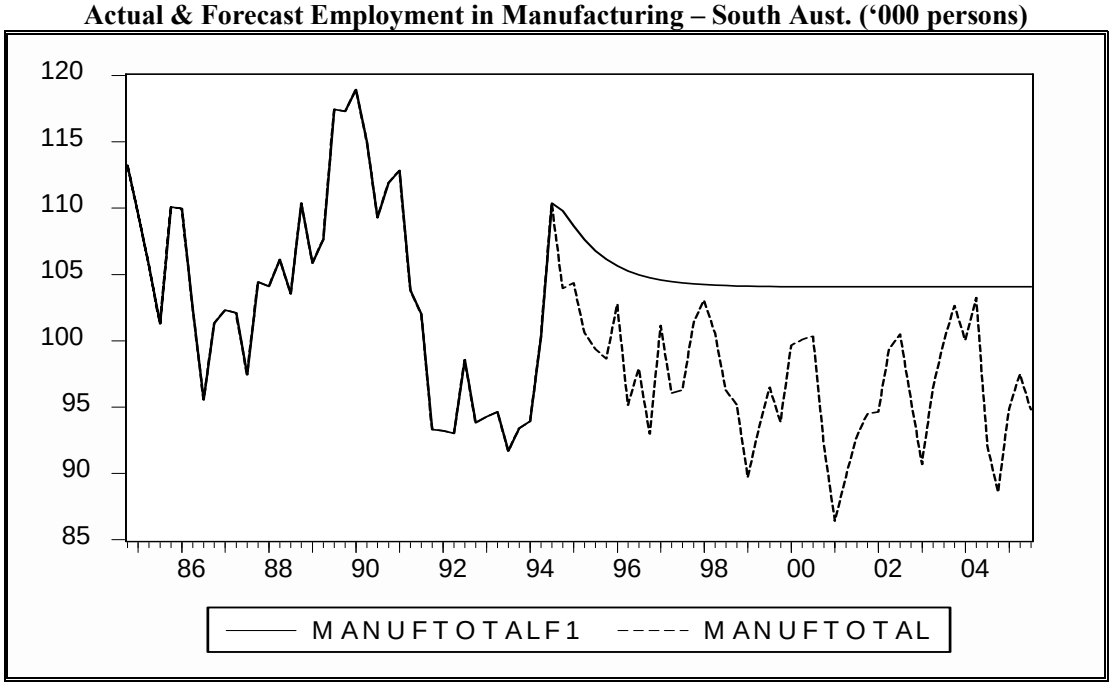
Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.7
Actual & Forecast Employment in Pubs – South Aust. ('000 persons)



Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.8
Actual & Forecast Employment in Manufacturing – South Aust. ('000 persons)



Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.9
Actual & Forecast Employment in Construction – South Aust. ('000 persons)

Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

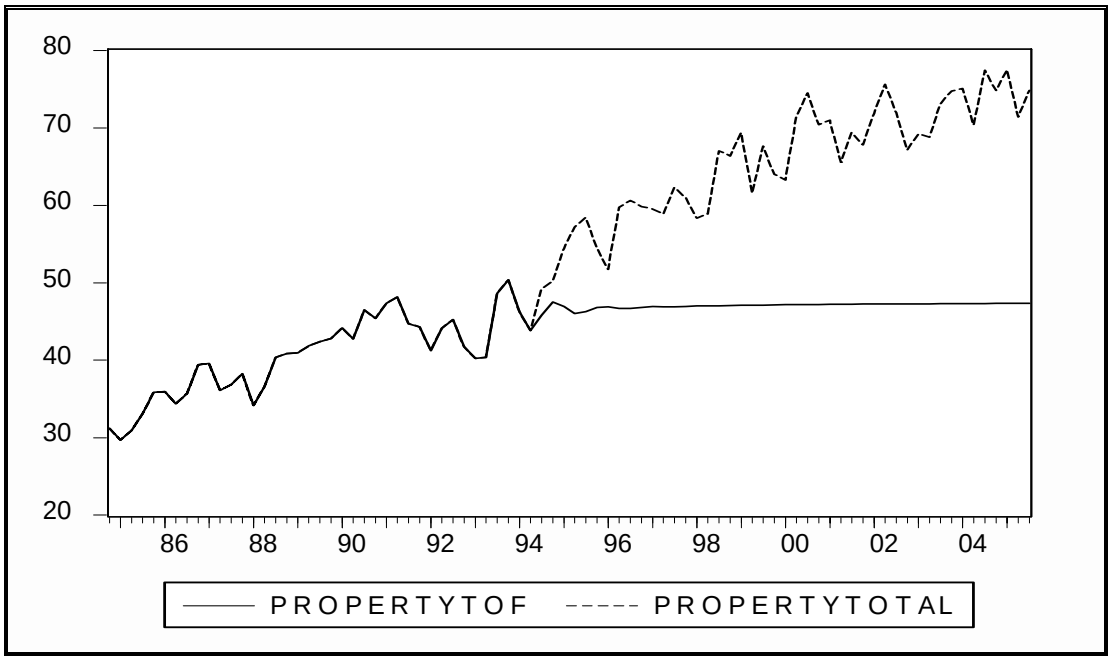
Figure D.10
Actual & Forecast Employment in Wholesale Trade – South Aust. ('000 persons)

Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.11
Actual & Forecast Employment in Retail Trade – South Aust. ('000 persons)

Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.12
Actual & Forecast Employment in Property & Business Services – SA ('000 persons)

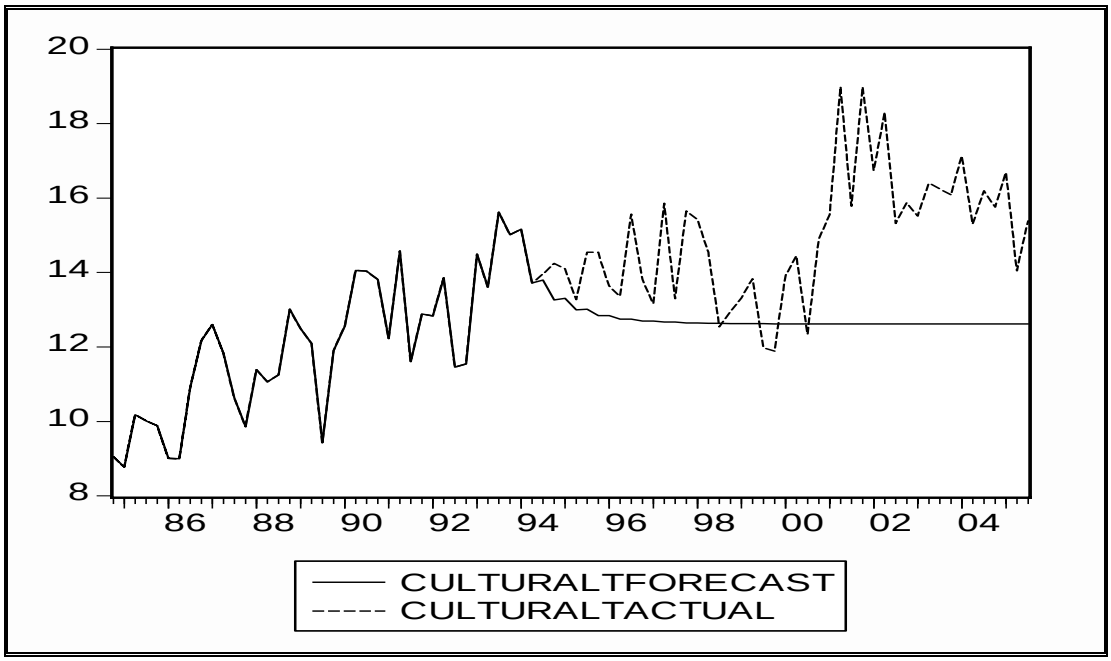


Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.13
Actual & Forecast Employment in Health & Community Services – SA ('000 persons)

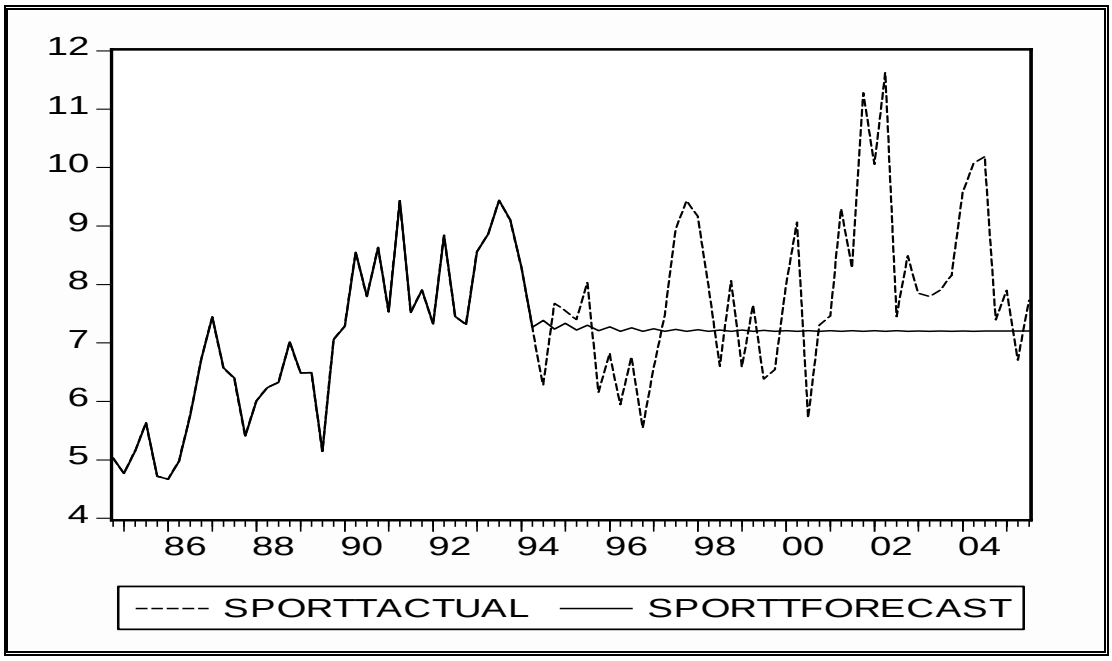
Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.14
Actual & Forecast Employment in Cultural & Recreational Services – SA ('000 persons)



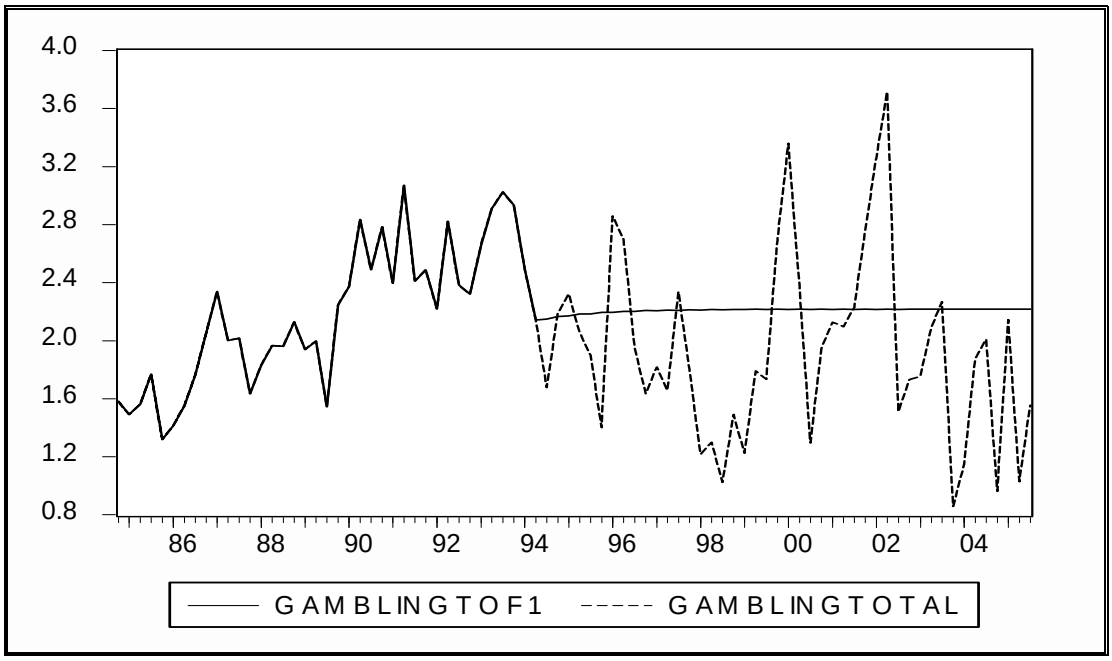
Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.15
Actual & Forecast Employment in Sport & Recreation – SA ('000 persons)



Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.16
Actual & Forecast Employment in Gambling Services – SA ('000 persons)



Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Figure D.17
Actual & Forecast Employment in Personal & Other Services – SA ('000 persons)

Source: ABS, AusStats, Labour Force (Cat. No. 6291.0). Forecasts by the researchers.

Appendix E

South Australian Statistical Local Areas by Number of Break Even Services Clients (Gamblers) per 1,000 adults (2004), EGM Expenditure per Adult (2004-05), Number of EGMs per 1,000 adults (30 June 2005), and Index of Relative Socio-Economic Disadvantage (2001)

Statistical Local Area	BES clients (gamblers) per 1,000 adults[a]	EGM expenditure per adult (2004-05)[a]	EGMS per 1,000 adults (30 June 2005)[a]	Index of Relative Socio-Economic Disadvantage
Adelaide (C)	3.58	3,202	101.5	1,072
Salisbury (C) Bal	2.77	2,296	29.5	920
Port Adel. Enfield (C) - Port	2.67	1,200	28.2	799
Salisbury (C) - South-East	2.06	604	5.9	973
Onkaparinga (C) - North Coast	2.04	1,343	14.2	903
Charles Sturt (C) - North-East	2.02	865	12.6	929
Port Adel. Enfield (C) - Inner	2.00	1,130	15.4	886
Salisbury (C) - Inner North	1.94	481	4.5	891
Onkaparinga (C) - Hackham	1.87	619	9.2	925
Playford (C) - Elizabeth	1.75	1,079	10.5	807
Playford (C) - West	1.67	439	6.9	948
Salisbury (C) - Central	1.56	1,123	10.7	897
Mount Gambier (C)	1.49	972	21.8	962
Prospect (C)	1.47	606	7.5	1,066
Port Pirie C, Dists (M) - City	1.37	819	21.3	925
Peterborough (DC)	1.35	684	34.4	895
Campbelltown (C) - West	1.35	246	2.1	999
Port Adel. Enfield (C) - Coast	1.25	827	19.1	981
Gawler (M)	1.25	939	16.1	990
Marion (C) - North	1.25	509	5.7	978
Port Adel. Enfield (C) - East	1.22	404	5.8	972
Salisbury (C) - North-East	1.19	439	4.4	980
Charles Sturt (C) - Inner East	1.18	1,238	16.2	974
West Torrens (C) - East	1.15	910	11.9	990
Playford (C) - East Central	1.14	0	0.0	992
Playford (C) - West Central	1.14	947	8.3	762
Copper Coast (DC)	1.11	894	25.4	971
Tea Tree Gully (C) - North	1.11	471	3.6	1,061
Wattle Range (DC) - East	1.10	252	9.1	998
Onkaparinga (C) - Morphett	1.10	282	3.3	958
Charles Sturt (C) - Inner West	1.10	496	5.6	965
Charles Sturt (C) - Coastal	1.08	596	9.3	1,051
Tea Tree Gully (C) - Central	1.07	411	5.4	1,049
Marion (C) - Central	1.04	602	7.7	999
Burnside (C) - North-East	1.04	209	1.8	1,117
Yorke Peninsula (DC) - South	1.01	755	28.6	990
Walkerville (M)	1.00	1,083	19.1	1,114
Murray Bridge (RC)	0.98	725	12.1	921
Campbelltown (C) - East	0.97	419	4.8	1,046
Norw. P'ham St Ptrs (C) - West	0.95	1,486	36.5	1,083
Berri & Barmera (DC) - Barmera	0.90	876	22.8	952
West Torrens (C) - West	0.90	440	5.1	1,022
Mallala (DC)	0.89	311	8.5	980
Berri & Barmera (DC) - Berri	0.87	1,003	21.3	975
Victor Harbor (DC)	0.87	697	11.1	1,016
Onkaparinga (C) - Woodcroft	0.87	466	4.2	1,043
Onkaparinga (C) - Reservoir	0.85	715	9.3	1,091
Holdfast Bay (C) - North	0.85	1,155	18.5	1,066
Norw. P'ham St Ptrs (C) - East	0.83	713	6.8	1,033
Mitcham (C) - West	0.82	214	4.2	1,064
Whyalla (C)	0.82	840	15.2	916
Tea Tree Gully (C) - Hills	0.82	809	9.4	1,078
Mount Barker (DC) - Central	0.81	637	17.8	1,019
Wattle Range (DC) - West	0.79	488	19.0	963
Playford (C) - Hills	0.79	86	4.3	1,089
Mid Murray (DC)	0.79	425	21.0	961
Tea Tree Gully (C) - South	0.78	458	4.0	1,037
Unley (C) - West	0.77	349	5.8	1,091

Statistical Local Area	BES clients (gamblers) per 1,000 adults[a]	EGM expenditure per adult (2004-05)[a]	EGMs per 1,000 adults (30 June 2005)[a]	Index of Relative Socio-Economic Disadvantage
Barossa (DC) - Tanunda	0.76	447	16.4	1,043
Light (DC)	0.73	221	8.0	1,026
Loxton Waikerie (DC) - East	0.71	438	15.0	992
Port Lincoln (C)	0.68	861	19.9	962
Onkaparinga (C) - Hills	0.67	465	14.3	1,068
Renmark Paringa (DC) - Renmark	0.66	802	20.5	946
Grant (DC)	0.65	109	5.1	1,026
Holdfast Bay (C) - South	0.64	663	9.2	1,074
Roxby Downs (M)	0.63	1,333	25.1	1,035
Marion (C) - South	0.62	198	2.0	1,070
Port Pirie C, Dists (M) Bal	0.62	73	5.0	1,005
Southern Mallee (DC)	0.61	207	9.7	1,040
Port Augusta (C)	0.59	922	27.6	948
Mount Barker (DC) Bal	0.58	310	11.8	1,057
Barossa (DC) - Angaston	0.57	671	22.2	1,012
Adelaide Hills (DC) Bal	0.56	202	10.1	1,052
Onkaparinga (C) - South Coast	0.55	286	3.9	975
Adelaide Hills (DC) - Ranges	0.48	47	6.4	1,120
Barunga West (DC)	0.48	442	14.9	1,012
Mitcham (C) - Hills	0.46	150	2.6	1,107
Yorke Peninsula (DC) - North	0.46	549	20.5	1,015
Barossa (DC) - Barossa	0.42	168	10.1	1,046
Adelaide Hills (DC) - North	0.42	89	8.6	1,079
Renmark Paringa (DC) - Paringa	0.42	533	28.9	980
Unley (C) - East	0.40	675	13.7	1,102
Adelaide Hills (DC) - Central	0.39	290	11.5	1,118
Burnside (C) - South-West	0.37	8	0.0	1,122
Alexandrina (DC) - Coastal	0.35	660	20.4	996
Clare and Gilbert Valleys (DC)	0.31	346	14.8	1,024
Naracoorte and Lucindale (DC)	0.31	579	20.8	1,013
Lower Eyre Peninsula (DC)	0.24	165	9.9	1,034
The Coorong (DC)	0.23	462	15.6	980
Alexandrina (DC) - Strathalbyn	0.23	343	13.5	1,027
Wakefield (DC)	0.20	274	11.7	981
Unincorp. Far North	0.13	147	14.7	816
Mitcham (C) - North-East	0.08	357	6.1	1,116
Yankalilla (DC)	0.06	525	31.6	1,013
Tatiara (DC)	0.02	470	13.5	1,012
Ceduna (DC)	0.00	1,141	23.6	984
Cleve (DC)	0.00	274	11.0	1,040
Coober Pedy (DC)	0.00	1,177	31.5	942
Elliston (DC)	0.00	145	13.0	1,014
Flinders Ranges (DC)	0.00	324	33.0	979
Franklin Harbour (DC)	0.00	536	22.9	1,028
Goyder (DC)	0.00	158	7.5	989
Kangaroo Island (DC)	0.00	349	11.8	1,006
Karoonda East Murray (DC)	0.00	45	5.4	1,010
Kimba (DC)	0.00	380	13.6	1,049
Kingston (DC)	0.00	515	19.6	1,008
Le Hunte (DC)	0.00	322	17.8	1,045
Loxton Waikerie (DC) - West	0.00	504	16.7	967
Mount Remarkable (DC)	0.00	159	10.0	1,009
Northern Areas (DC)	0.00	162	10.9	1,009
Robe (DC)	0.00	747	20.0	1,027
Streaky Bay (DC)	0.00	504	19.9	1,010
Tumby Bay (DC)	0.00	272	12.4	1,038
Unincorp. West Coast	0.00	527	22.7	881

Note: [a] Based on adult population at 30 June 2004.
Source: FaCS, OLGC and ABS. Calculations by the researchers.