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THE ECONOMIC IMPACT OF GAMBLING ON THE NORTHERN TERRITORY

Final Report to Charles Darwin University

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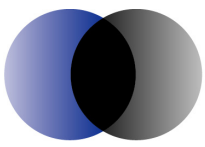

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Executive Summary

The past decade has seen a significant expansion in gambling in the Northern Territory but relatively little research into its impacts. Accordingly the NT Community Benefit Fund Committee has commissioned a consortium lead by Charles Darwin University (CDU) to undertake a series of research projects into the impacts of gambling in the Northern Territory, with particular reference to the impacts of electronic gaming machines on the Territory.

As part of this research program, CDU has engaged ACIL Tasman to undertake an assessment of the nature and the extent of the economic impacts. This report outlines the results that were obtained in the course of this work.

Nature of gambling in NT

In 2004-05 punters staked $4.0 billion on commercial gambling services that were produced in the Northern Territory.[1] Just over 93 per cent of the total was returned to successful punters in the form of winnings. The balance — termed the player expenditure — was used to meet the costs of supplying these services, including the profits earned by the producers. In 2004-05 the player expenditure in the Territory amounted to $272.4 million, which represented a slight decrease in real terms over the previous year.

Most modes of commercial gambling that are to be found elsewhere in Australia are available in the Territory. They include lotteries, casino table games, electronic gaming machines in casinos, hotels and clubs, as well as wagering on races and sports events. Most recently the Territory has seen the emergence of a thriving electronic gambling industry, which services customers worldwide over the telephone and internet. As elsewhere, informal gambling is also well-established in the Territory.

The composition of gambling activity in the Territory differs markedly from that in the rest of Australia. Two of the differences are particularly notable.

- Firstly, the proportion of the player expenditure on all gambling, which is spent on electronic gaming machines, is much lower in the Territory. Only 17 per cent of the total is spent on electronic gaming machines in the Territory compared to 60 per cent for Australia.
- Secondly the proportion of the player expenditure on all gambling, which is sourced from non-residents, is much higher in the Territory. ACIL

[1] Commercial gambling in the Territory are produced by five industries at the four-digit level of the Australia New Zealand Standard Industrial Classification developed by the Australian Bureau of Statistics (ABS). They are Pubs, taverns and bars, Hospitality clubs, Lotteries, Casinos and Gambling (not elsewhere classified). The latter includes wagering on totalisators and with bookmakers.

Tasman has estimated that around 47 per cent of all player expenditure in the Territory comes from overseas and interstate visitors, and from the overseas and interstate residents who access local gambling services electronically. As a consequence, the average expenditure by each local player is comparable with that for Australia.

Economic impact of gambling on NT

ACIL Tasman has estimated that the annual turnover on the gambling industries in the Territory approached $0.5 billion in 2003-04 and in 2004-05.[2] This included the turnover form non-gambling sources — such as the sale of meals, beverages and entertainment — but excluded the turnover of those organisations in the relevant industries which did not operate gambling facilities.

On this turnover the gambling industries in the Territory generated All Industry Value-Added of about $230 million a year. All Industry Value-Added is gambling's contribution to the Territory's Gross State Product (GSP) — the Territorian equivalent of national income. In 2003-04 and 2004-05 it was equivalent to 2 per cent of Territorian GSP. Measured on this basis, the gambling industries were more important to the Territory than many others. They included: Electricity, gas & water; Cultural & recreational services; Personal & other services; and Wholesale trade.

Within the gambling sector, the largest contributions to All Industry Value-Added came from casinos and wagering. These two industries accounted for some two-thirds of the All Industry Value-Added. The balance was more or less evenly divided between the Pubs, taverns and bars, and the Hospitality clubs, which between them operate the community gaming machines in the Territory.

Industry Value-Added is made up of Compensation for Employees — the factor income earned by the industry's labour — and Gross Operating Surplus — the factor income earned by its capital. In the case of Territorian gambling, around one-third of the All Industry Value-Added came from its labour and the remaining two-thirds from its capital. The labour income was concentrated in the Pubs, taverns and bars, Hospitality clubs and Casino industries.

In addition to the All Industry Value-Added, the gambling sector generated net tax revenue for the NT Government of $42 million in 2003-04 and $52 million in 2004-05. This income was due to the sector-specific taxes, fees and charges on gambling in the Territory, nearly half of which is paid by non-residents.

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[2] To facilitate comparability, the prices used in this report are based on the Consumer Price Index for the December quarter of 2005 except where otherwise indicated.

To generate these factor incomes and tax revenues, the gambling sector in the Territory spent about $174 million a year on Intermediate Inputs. These are the goods and services that are produced by other industries. Some of these inputs were also produced in the Territory and, as a consequence, the businesses in question would have made a contribution to Territorian GSP, which was additional to that of the gambling sector.

In the absence of gambling in the Territory, it is unclear what would have happened to Territorian GSP. Underutilised capital and labour would have tended to relocate to other sectors and locations, and the income losses in the contracting sectors would have been replaced, at least in part, by gains in the expanding sectors. For this reason, gambling's contribution to GSP does not measure its impact on the economic welfare of the residents of the Territory.

Evaluating the impacts of gambling

ACIL Tasman has evaluated the impact of gambling in the Territory on the welfare of those who live there using the concept of economic surplus. Economic surplus is a central plank of mainstream economic analysis and is the sum of the consumer surplus and the producer surplus. Consumer surplus, in turn, is the value that individuals place on a consumption opportunity over and above what it actually costs them to enjoy it. Producer surplus is the equivalent concept on the supply side.

Each of these concepts has the advantage of evaluating a change in terms of the opportunities the individual is prepared to forego to enjoy or to avoid it, as the case may be. Any attempt to measure the welfare implications in terms of Industry Value-Added, ignores these fundamental trade-offs.

This approach to the measurement of economic welfare presumes that each individual tries to maximise the difference between the personal benefits and costs of any decision, as revealed by their own assessment of those benefits and costs. The decisions that are based on such assessments are both individually and collectively rational. Each person's pursuit of their own self-interest, enlightened or otherwise, generates an optimal economic outcome for everyone else.

The major impediment to this optimising process is the presence of transactions costs. These are the costs of identifying, negotiating and enforcing a voluntary agreement between two or more parties. Such costs reflect the pervasive and fundamental ignorance which confronts all decision-making and are never absent from a decision.

Transaction costs can prevent the internalisation of any third party impacts, which may be created by an economic exchange between two parties. Such

third party impacts are known as spillovers or externalities. From an economic perspective, the failure to internalise them can breakdown the concordance between individual and community rationality. Provided the gains from internalisation exceed the transaction costs involved, all the relevant parties have the incentive to devise a way of sharing any net gains between them, even where the property rights to those gains may not be clear-cut.

This notion of rationality differs significantly, however, from that in common usage. The difference turns on the question as to whether the preferences of each individual are appropriate. The economist avoids such considerations as they involve value judgements, which can never be verified.

This difference in perspective is particularly important when analysing behaviour that has been shaped by habit or addiction, such as gambling. Some consider that such influences cast doubt on whether the individuals in question were able to make the considered choices which economic rationality presupposes.

Most economists, however, reject the idea that addicts are myopic consumers who totally or largely ignore the consequences of their actions. There is an impressive body of empirical evidence that people are generally forward looking, even when considering participation in activities they suspect to be habit-forming or addictive. This evidence shows that consumption of habit-forming and addictive activities responds to changes in their economic parameters just like normal behaviour does. Not only has the relationship between quantity consumed and price been shown to be negative, it has also been shown to be a particularly sensitive one over the longer term. Most significantly, consumers of such activities respond to *anticipated* price changes.

Farsightedness with respect to habit-forming activities does not mean that the individuals concerned have perfect foresight about the risks of becoming addicted or about the consequences if they do. As with normal activities, a prospective consumer's decision is based on the information they have at hand or can readily recall, and not what they might have liked to have had at a later time.

For most economists, the method developed by Gary Becker and Kevin Murphy is their preferred starting point in analysing habit-forming or addictive consumption such as gambling. Their approach was the basis for most of the research reported above.

Support for the Becker-Murphy method is evident even among economists who question whether addicts, including problem gamblers, are capable of making individually consistent decisions over time, as Becker and Murphy themselves assume. This preference reflects their model's consistently

impressive empirical record across all habit-forming activity and its ability to generate a rich vein of scientifically testable hypotheses.

The Becker-Murphy approach is firmly grounded in mainstream microeconomic theory and measures welfare in terms of economic surplus less any external costs on third parties. Its key innovation allows prior levels of consumption to have a positive influence on subsequent levels — other things being equal, the more you consume this time, the more you will want to consume next time.

The key issue is what modifications, if any, should be made to the Becker-Murphy approach to account for any inconsistency in the gambling choices which are made by problem gamblers at different times. There is, however no consensus on the nature of the modification required or of the systematic bias that causes the inter-temporal inconsistency in the first place. The bias could reflect a loss of self-control on the part of problem gamblers. Alternatively it could be due to variations in the discount rate they use to evaluate the consequences of their actions at different times.

Experimental research suggests that any inter-temporal inconsistency is not due to one bias but several and that they are likely to interact quite differently for different people in different circumstances. In other words, problem gamblers do not always experience a problem whenever they gamble. Rather they only do so in certain circumstances and over time they tend to teach themselves how to anticipate and avoid the adverse circumstances. This is probably why most problem gamblers tend to recover naturally and not to relapse after their recovery from their initial episode.

When they experience these biases, the sufferers tend to gamble to the extent that the personal benefit they receive is less than what it costs them. For the reasons outlined previously, however, it is very difficult to estimate the extent that they had gambled in excess of what they would have done were they free of their biases. Such excessive expenditure would be characterised by negative consumer surplus that reduced the overall net benefit that the gambler obtained from their gambling.

The Productivity Commission attempted to incorporate an allowance for this negative consumer surplus phenomenon in its formula for estimating the consumer surplus from all gambling expenditure. To do so the Commission used a complex specification that relied heavily on a series of assumptions, each of which were subject to considerable uncertainty. Although this component of the Commission's formula dominated its estimate of the net social benefit of gambling, there was little empirical support for the specification of this modification in the economic literature.

Although ACIL Tasman used the same basic method for estimating the consumer surplus from gambling in the Territory, ACIL Tasman concluded it was not defensible to modify the basic method in the way the Commission had done. Instead ACIL Tasman conducted a series of sensitivity tests on its estimates of the overall net economic benefit of gambling in the Territory, which were prepared without such a modification. The latter approach is more transparent as it allows the reader to make a judgement about the robustness of the final results.

Net economic benefit of gambling for NT

ACIL Tasman's analysis clearly indicates that gambling in the Territory generates a significant and substantial net economic benefit for residents of the Territory. It estimated the net economic benefit at between $70 million and $98 million in 2003-04, and between $81 million and $111 million in 2004-05.

The net economic benefit was composed of:

- Consumer surplus of between $40 million and $86 million in 2003-04, and between $42 million and $91 million in 2004-05. The high and low estimates for each year are based on different assumptions about the key economic variables. The large divergence between the estimates for each year reflect the extent of the uncertainty in measuring the sensitivity of changes in gambling consumption to changes in its price, and of changes in gambling consumption to changes in disposable income. The range of assumptions used included the values used by the Productivity Commission.
- *Plus* net tax revenue to the NT Government of $39 million in 2003-04 and $48 million in 2004-05. These net fiscal benefits reflect the gambling-specific taxes, fees and charges that were levied by the NT Government and which would be lost were the gambling in question not to be conducted in the Territory. Nearly half of these net benefits were contributed by non-residents of the Territory.
- *Less* external costs of problem gambling in the Territory of between $9 million and $28 million a year. These estimates reflect the range of unit costs of problem gambling that were previously estimated by the Productivity Commission. ACIL Tasman up-dated the Commission's unit cost estimate to present prices and applied them to the 1,520 problem gamblers in the Territory that were estimated by Charles Darwin University from its prevalence survey.

A similar result was obtained when ACIL Tasman disaggregated the overall results to determine the economic impact of electronic gaming machines (EGMs) on the Territory. These machines are operated in the Pubs, taverns and bars, the Hospitality clubs and the two Casinos in the Territory.

This disaggregation showed that EGMs in the Territory generated a net economic benefit for its residents of between $27 million and $36 million in 2003-04, and between $33 million and $44 million in 2004-05.. The breakdown of the net economic benefit was broadly similar to the estimates for all forms of gambling in the Territory.

Sensitivity tests of results

The sensitivity tests conducted by ACIL Tasman as part and parcel of the economic analysis showed that the original estimates were quite robust across a range of plausible assumptions. In other words, the results that ACIL Tasman obtained did not depend upon the particular values that were chosen for critical assumptions.

To begin with, the method used for estimating consumer surplus generally under-estimates the true level. This is due to the technical difficulties that are inherent in its application to gambling.

Estimation requires reliable observations as to how people behave in response to changes in price. Given the nature of gambling, its price never explicit and most economists infer it to be the expected net financial return on a dollar wager. Research, however, has shown that gamblers receive benefits in addition to the expected value of the financial returns.

- Firstly, gambling generates non-pecuniary benefits due to the enjoyment from participation.
- Secondly, gamblers are influenced by the *distribution* of the financial returns as well as the risk-weighted *average* of those returns. For a given average, the more skewed the returns, the more attractive the gamble tends to be.

Although the prevalence of problem gambling in the Territory is relatively low and is significantly lower than in rest of Australia, the external or third party costs that are generated by each problem gambler are substantial. Nevertheless, the aggregate external costs from problem gambling in the Territory were still substantially outweighed by the economic benefits that gambling generates in the form of consumer surplus and tax transfers. This conclusion held whether one looked at all modes of gambling in the Territory, or more narrowly at only electronic gaming machines.

There is a lively debate about whether gambling generates economic costs for problem gamblers over and above the money, time and effort they outlay on it. There is, nonetheless, little or no compelling empirical evidence for the common assumption that virtually all the gambling expenditure by problem gamblers is excessive — in the sense that, at the margin, the personal benefit they obtained was of less value to them than what they had outlaid.