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## Australian Local Government and Electronic Gaming Machines: A Conceptual Critique of the Productivity Commission's Methodology

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**Abstract:** In its Final Report Australia's Gambling Industries, the Productivity Commission (1999) developed a methodology for quantifying the social benefits and costs associated with legal gambling. In essence, this novel methodology departed from previous evaluation approaches by (a) assessing both the benefits and costs of gambling and (b) using the concept of consumer surplus rather investment, employment and other directly observable consequences of gambling to gauge its economic effects. The Productivity Commission methodology has subsequently become extremely influential in the regulation of gaming in Australia, particularly in New South Wales, where it now forms the basis for the Social Impact Assessment statements presented to the state Gaming Board on the desirability or otherwise of new Electronic Gaming Machines. However, despite the broad acceptance of this methodology, it nevertheless contains several fatal conceptual flaws which have hitherto been ignored. This paper seeks to remedy this neglect by providing a theoretical critique of the Productivity Commission's approach.

**Keywords:** Consumer surplus; gambling; Productivity Commission methodology

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## Introduction

Gaming has long been an important aspect of Australian society as perhaps best exemplified by the celebrated role played by horse racing in the annual Australian social calendar. Over the past few decades, technological change has witnessed new forms of gaming, ranging from Electronic Gaming Machines (EGM) to internet gambling. These developments have seen a sharp increase in the economic significance of gambling, with expenditure on gambling more than doubling in real terms in the final decade of the twentieth century (Productivity Commission 1999), although this upward trend appears to have slowed in recent years (Banks 2007). Apart from technological advances, the primary reason for the increase in outlays on gambling seems to lie in the liberalisation of EGM, which induced both a rapid rise in the absolute number of machines and a broader dispersion of these machines across the country and into a wider range of venues within many state jurisdictions (Banks 2002; 2003). As a consequence, more people are now exposed more frequently to more EGMs than before gaming liberalisation.

The spread of EGM gambling across Australian society has raised widespread alarm in many circles and led to a veritable chorus of voices calling for federal and state governments to reconsider the regulatory apparatus controlling EGM use. Concern has especially been focused on the undesirable social effects of EGM deployment in terms of economic deprivation, family breakdown, crime, and a host of other negative consequences that have come to be associated with EGM usage. On the other hand, commercial interests have argued that EGM use has numerous positive attributes, not least in generating employment, investment, and entertainment, but also tax revenue for the public purse. In addition, philosophical arguments derived primarily from the exercise of individual liberty have also been advanced in favour of EGM availability. In short, the regulation of EGM usage has become the centre of a heated and ongoing public controversy that shows few signs of abating.

Against this background, there is a clear and obvious need to try to assess the net effects of EGM use in an intellectually rigorous and quantitatively sound manner. Prior to the pioneering Final Report of the Productivity Commission (1999), entitled *Australia's Gambling Industries*, most assessments of the social impact of EGM use focused on the economic benefits that purportedly flowed from gambling, such as increased employment, investment, and government income, and typically ignored the social costs of EGM gambling, presumably because of the difficulties involved in measuring these costs with any degree of precision.

*Australia's Gambling Industries* thus represents a seminal document since it broke with this traditional approach to the evaluation of gaming and presented a much more nuanced and intellectually defensible method of assessing the social merits of EGM use. In essence, the methodology developed by the Productivity Commission (1999) represented a quantum leap in the Australian debate on gambling in at least three respects. In the first place, it drew on the finely-honed theoretical framework of modern welfare economics and its market failure paradigm that can be traced as far back as Arthur Pigou's (1920) famous *Economics of Welfare*. This facilitated the Productivity Commission's (1999) second innovation of simultaneously considering both the costs and benefits of gambling rather than its economic benefits alone. Finally, on the benefit side of the equation, the Productivity Commission (1999) computed the benefits accruing to consumers through the application of the abstract concept of consumer surplus, rather than the direct benefits from increased economic activity derived by producers through profit, employment and investment, on grounds that additional revenue spent on gambling meant reduced expenditure elsewhere in the economic system. Moreover, the Productivity Commission (1999) also differentiated between consumption gains accruing to 'recreational' gamblers and 'problem' gamblers in its method of calculating consumer surplus.

The innovative methodology pioneered by the Productivity Commission has had decisive effects on public policy making on EGM use in Australia. For

instance, in New South Wales, in its hearings the state Gaming Board is explicitly directed by the Gaming Machines Act 2001 and the Gaming Machines Regulation 2002 to evaluate the impact of EGM deployment. In practice, this has meant that private organizations wishing to introduce EGM into their premises, or to acquire additional EGMs, must present Social Impact Assessment statements (SIAs) that gauge whether the local community is indeed better off, both socially and economically, as a consequence of these machines. Under this regulatory regime, the Productivity Commission (1999) approach has become the accepted methodological for presenting findings in SIAs in that state. These developments have led the Productivity Commission Chair himself to observe that 'the Commission's methodology has been broadly endorsed by most (though not all) of those professional economists who have acquainted themselves with it' and that it has formed the basis for 'a number of studies on the regional impact of poker machines' (Banks 2003, 6).

In this paper, we argue that the widespread acceptance of the Productivity Commission's (1999) methodology in the Australian debate over EGM use is most unfortunate. Our argument centres on conceptual and theoretical flaws in this methodology. While we think that both the quality and weight of available empirical evidence also casts a pall over the general conclusions drawn by the Productivity Commission its Final Report, we leave this line of inquiry to other scholars of Australian EGM use.

The paper is divided into three main parts. Section 2 provides a synoptic outline of the general approach adopted by the Productivity Commission (1999) in its methodological framework. Section 3 attacks this methodology on four main grounds: The Pigouvian approach adopted by the Productivity Commission (1999) is not suited to EGM markets; it is not possible to calculate consumer surplus with a sufficient degree of precision; it is not feasible to provide accurate estimates of the price elasticities of demand for the three categories of gamblers identified by the Productivity Commission (1999); and the Productivity Commission (1999) erred in summarily dismissing

the 'rational addiction' approach to EGM use. The paper ends with some brief concluding comments in section 4.

## **The Productivity Commission's Methodological Approach**

Part C of Volume 1 of *Australia's Gambling Industries* sets out the methodology developed by the Productivity Commission (1999) to determine the net impact of gambling. Discussion is divided into eight separate chapters that essentially provide methods of computing the benefits and costs associated with gambling and consider some thorny problems involved in these calculations, most notably 'problem gambling' and the effects of the 'accessibility' of EGMs.

Chapter 5: Assessing the Benefits considers the benefits derived by consumers from gaming. The Commission (section 5.2) argues that previous efforts aimed at evaluating the benefits flowing from gambling have been plagued by two 'basic misunderstandings'. In the first place, while 'many regard the main benefits as being the jobs and economic activity associated with the gaming industries' this is misplaced since expenditure on gaming is simply displaced from other recreational industries. Secondly, the view that gambling amounts to a financial transfer away from gamblers and thus represents a zero-sum game is fallacious because it ignores the intrinsic entertainment value of gambling.

By contrast, the Commission (section 5.2) contends that three aspects of gambling must be considered as derivative from gambling: (a) The 'benefits accruing to the majority of recreational gamblers', which can be calculated by means of consumer surplus; (b) the tax revenue accruing to governments, which represents a transfer of part of the overall consumer surplus; and (c) the 'estimated shortfall in value-for-money for problem gamblers as a consequence of their 'excessive spending', where 'problem gamblers' are split into two discrete categories; 'moderate problem gamblers' with some degree of 'price sensitivity' and 'severe problem gamblers' who are 'the least

sensitive' to price changes. As we shall see, these ostensibly straightforward propositions are fraught with conceptual problems.

If we strip away the complexities in the Productivity Commission's (1999) method of calculating the putative benefits flowing from gambling, then the proposed methodology is deceptively simple. Details of its approach are contained in Appendix C in Volume 3 of the Final Report. In essence, the Productivity Commission employed consumer surplus as a measure of the benefit consumers purportedly obtained from using EGM.

For an individual consumer, consumer surplus is defined as the difference between what the consumer is willing to pay for EGM use and the 'price' actually paid by that consumer for EGM use. For the market as a whole, consumer surplus is defined as the difference between the market demand by all consumers for EGM use and the market 'price'. Consumer surplus for an entire market aggregates all individual preferences and averages all market 'prices' actually paid (if 'prices' in fact differ between different sellers). Aggregate consumer surplus in a given jurisdiction therefore represents part of the total economic wellbeing derived from EGM use in that jurisdiction. Consumer surplus is thus used as a proxy for the more general concept of economic satisfaction or wellbeing received by consumers in the analysis of EGM (commonly known in the economics literature as part of 'social welfare').

In its Report, the Productivity Commission employs a Marshallian or nominal demand curve to illustrate its approach which ignores the effects of price changes in goods and services on consumer income. It thus considers only the substitution effects of price changes and disregards possible income effects. More sophisticated demand curves, known as compensated demand curves, incorporate the impact of price changes on real income and allow us to distinguish between the income effects and substitution effects of price changes. Compensated demand curves are important where a change in price has significant effects on real incomes; in practice, this occurs where a

substantial portion of a consumer's budget is spent on the good in question<sup>1</sup>. One would thus anticipate that both 'moderate problem gamblers' and 'severe problem gamblers' both fall into this category and the Commission indeed recognised this problem and produced separate estimates for these kinds of 'problem gamblers' (see Appendix C).

Two sets of information are required to calculate the magnitude of consumer surplus: (a) An estimated market demand curve at a given point in time; and (b) an 'average' market price for the good at the same time period. As we shall see, both of these requirements are very difficult, if not impossible, to meet in Australian EGM markets.

## **Conceptual Problems with Commission's Methodology**

While at first sight, the methodology employed by the Productivity Commission to calculate the purported benefits derived the consumption of gaming with EGMs seems persuasive, but upon closer scrutiny several fundamental problems become apparent. For instance, the concept of consumer surplus has a long and somewhat chequered history in economic analysis and its empirical application to real-world problems, like gambling markets, is thus unsurprising liable to be controversial<sup>2</sup>. In the present context, we consider four basic problems.

### ***Inappropriate Economic Approach***

In the first place, the conventional normative economic analysis of specific markets follows the standard Pigouvian partial equilibrium technique which

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<sup>1</sup> The Commission (C.2) was aware of this problem and stated that it used the method developed by Willig (1976) to ameliorate the problem. Precisely how this was done is left to the imagination of the reader!

<sup>2</sup> Ezra Mishan (1981) has provided a masterful survey of the difficulties besetting the application of consumer surplus, not least the symmetries between consumer surplus resulting from a change in the prices of goods and services and economic rent resulting from a change in the prices of input factors.

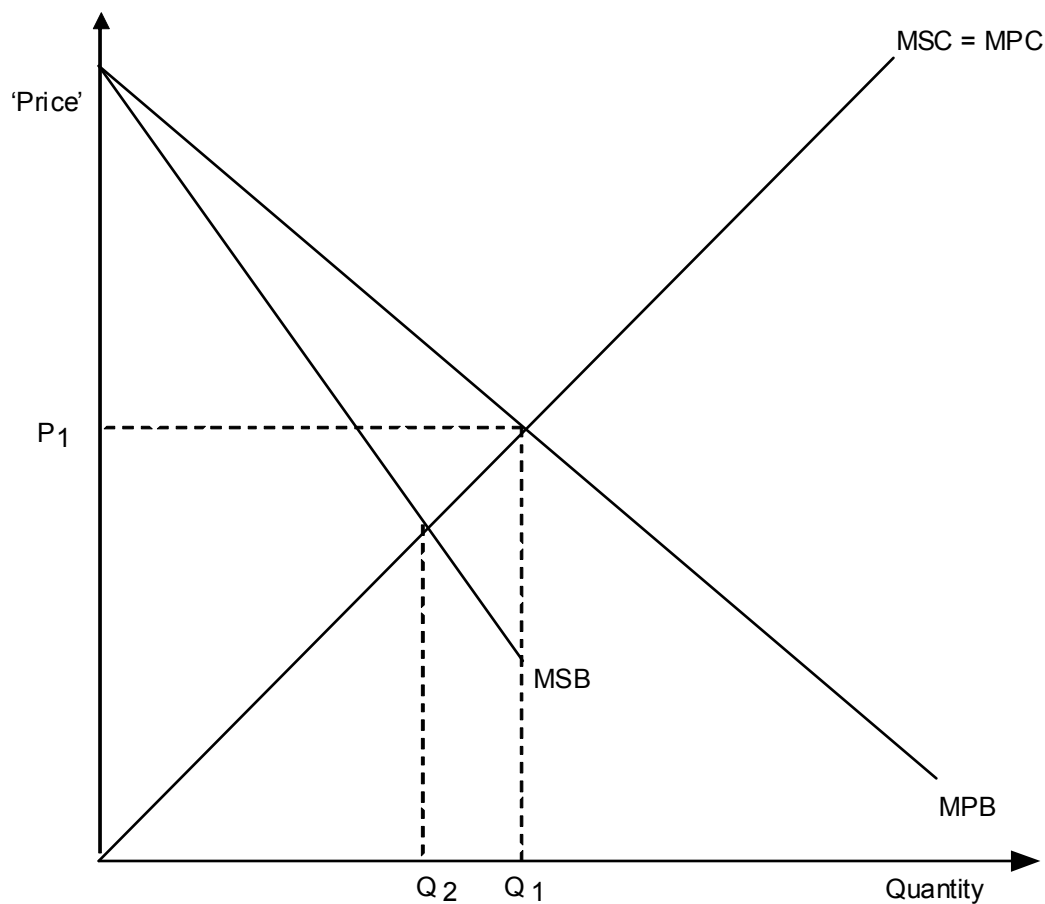
determines whether markets ‘fail’ by comparing the marginal social cost of the last unit consumed with the marginal social benefit of the last unit consumed. Social optimality occurs where marginal social costs exactly equal marginal social benefits; that is, where the consumption benefits derived from an activity equate with production costs associated with that activity. This rule ensures that the social surplus from any activity, measured by consumer surplus plus producer surplus, is maximised, where the yardstick of welfare evaluation consists of the total amount of social surplus. At the margin, if the marginal social cost does not equate with the marginal social benefit, then a case exists of public policy intervention in the market in question on efficiency grounds. For example, if marginal social cost is greater than marginal social benefit, then ‘excessive’ activity has occurred which calls for measures designed to reduce the level of activity. In the EGM industry, this kind of intervention could take the form of reducing the level of EGM use. By contrast, if the marginal social benefit is greater than marginal social benefit, then ‘under-consumption’ is a feature of the market and steps should be taken to stimulate consumption, like subsidies to consumers.

This Pigouvian approach rests on a distinction between the marginal social costs and marginal private costs. If (negative or positive) marginal ‘external’ costs exist, forcing a divergence between the two, then the source of market failure resides on the production side of the market. An analogous distinction is drawn between marginal social benefits and marginal private benefits, with any (positive or negative) marginal external benefits driving a wedge between the two, denoting market failure on the consumption side of the market.

Figure 1 illustrates the case where marginal private benefits (MPB) exceed marginal social benefits (MSB) in a given market by the magnitude of a negative marginal external benefit (MEB), with no equivalent external cost operating on the production side of the market, so that marginal social costs (MSC) exactly coincide with marginal private costs (MPC), thereby implying that marginal external costs (MEC) equal zero. In the present context, Figure 1 could represent EGM use, where private benefits to the individual gambler



create negative marginal external benefits in the form of the social harm that is inflicted on others as a consequence of their gambling. In concrete terms, the negative marginal external benefit could take the form of domestic violence, family deprivation, individual destitution, crime and suicide, all of which are well-documented consequences of gambling that are cited frequently in the Final Report of the Productivity Commission (1999). It should be emphasised that it is appropriate to show the divergence between marginal social benefits and marginal private benefits as aptly illustrating the case of negative externalities from EGM use since gambling is, after all, a consumption activity by individual consumers.



**Figure 1: Negative Consumption Effects of Gambling**

The implications of Figure 1 for public policy are obvious. At the market 'price'  $P_1$ , EGM consumption  $Q_1$  exceeds the socially optimal level  $Q_2$  by the

distance Q1-Q2. This implies that public policy should aim to reduce consumption to the socially optimal level Q1 with appropriate measures; potential policy instruments aimed at shifting the MPB schedule to exactly coincide with the MSB curve include regulation to ensure fewer EGMs, fewer EGM venues, or both; greater betting taxes levied on gamblers; education programs designed to reduce gambling, etc.

This Pigouvian approach to the normative economic analysis of consumer markets forms the basis of the Productivity Commission's (1999) approach, although this is never explicitly acknowledged. For example, the diagram in Box 11.4 (p.11.6) of the Final Report uses this approach, but without overtly employing the distinction between private and social costs and benefits, despite the fact that the Productivity Commission (1999) uses terms like 'social costs' and 'personal costs' frequently throughout its Final Report<sup>3</sup>.

In general, the Pigouvian approach works very well in the normative analysis of consumer markets. However, it rests on numerous assumptions, including rational behaviour by market participants, knowledge of both the price and quality of the goods and services traded, and, for policy purposes, reasonably accurate information on the shape and slope of the relevant marginal social benefit, marginal private benefit, marginal social cost and marginal private cost functions. If these assumptions are not approximated in the specific market under review, then the efficacy of the Pigouvian approach as an engine of inquiry falls away.

It is thus most unfortunate since gambling markets generally, and EGM markets in particular, contain several unusual features that substantially

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<sup>3</sup> An interesting feature of the diagram in Box 11.4 is the horizontal or perfectly elastic marginal cost schedule. While the Productivity Commission (1999, p.11.6) implies that this is done for pedagogical convenience, in fact conceptual problems in distinguishing between 'economic rent' and 'producer surplus' oblige it to construct the marginal cost schedule as a straight line horizontal to the quantity axis (see, for instance, Mishan (1981)). This is done despite the obvious implausibility that constant costs are a characteristic of EGM supply.

violate the assumptions of this method and thereby render the Pigouvian approach impotent. This represents perhaps the most serious flaw in the Productivity Commission's (1999) Final Report since it serves to nullify the basic approach adopted by the Commission.

A few examples will suffice to demonstrate the validity of this argument. Firstly, as the Productivity Commission (1999, Chapter 1, 23) itself readily admits, 'there are also features of the activity which can lead to poorly informed decisions by many consumers, including the opacity of the odds and ignorance or misunderstandings about what determines gambling machine payouts'. In other words, gamblers are not only in considerable doubt as to the characteristics of the service they purchase, but do not even have certainty over the price of the product. It need hardly be added that this precludes a rational assessment of the product and an accurate computation of the marginal private benefits and marginal private costs that fall on gamblers.

If we focus on the 'price' of gambling with EGMs, then this further underlines the inadmissibility of the Pigouvian approach. The market 'price' for EGM use in Australia is problematic since machines take various amounts of money and pay odds in a fixed proportion to the dollar amount inserted into a machine at any given moment. There is thus no market 'price' in the normal sense of the term. In its Final Report, the Productivity Commission (1999) calculated 'price' as the 'cost' of gambling relative to the prospects of winning (or 1 - cost of gambling) as a proxy for market price.

This approach can be questioned on several grounds. Firstly, the computed price is not a market price in the sense that it has not resulted from competition between vendors but rather through the direct regulation of payout odds<sup>4</sup>. It is thus set by regulation and not by market competition.

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<sup>4</sup> The Productivity Commission (1999, Chapter 1, 35) is at pains to emphasise the constraints on competition in Australian gambling markets, including the exclusive allocation of 'the rights to own, distribute, and/or monitor gaming machines to a limited number of operators'.

Secondly, for 'recreational gamblers' EGM use is seen as 'just one of a range of recreational activities' by the Productivity Commission (p.5.17). However, apart from gambling, almost all other recreational activities have market prices that can be directly measured and not simply assumed. Moreover, for many other analogous recreational activities, like sports matches, movies, etc., enjoyment through time is consumed and thus if EGM is comparable to these activities, then its price should be measured taking into account dollars per unit of time rather than simply gaming odds. Finally, if price is to play its usual informational role in consumption activity, then it must be readily accessible to consumers. Despite acknowledging the considerable uncertainties involved, as we have seen, under the Productivity Commission methodology consumers are heroically presumed to have a detailed knowledge of the odds available at EGM machines. This is unlikely in normal circumstances and extremely implausible when EGM use typically takes place on licensed premises.

### ***The Calculation of Consumer Surplus***

Secondly, the notion of consumer surplus must be considered in the broader context of contemporary economic analysis. The Productivity Commission (1999) employs a series of conventional demand and supply diagrams to illustrate how it has calculated consumer surplus in Appendix C in Volume 3. This serves to lend spurious credibility to the accuracy of the estimates it derives.

In economic analysis, Marshallian and even compensated demand curves for specific goods and services are estimated by three main methods: (a) Interviews and surveys of consumers that yield hypothetical information on their perspectives on the relationship between price and quantity and allow for informed conjectures on the shape of a market demand curve; (b) market experiments that modify prices and observe actual changes in the quantity demanded; and (c) observations of the relationship between prices and quantities in consumer markets when market prices fluctuate.

It is important to note that method (a) provides only hypothetical estimates and these may be skewed when the good in question is controversial, as it surely is for gaming, since (as the Productivity Commission itself repeatedly acknowledges), respondents have strong incentives to falsify the information they provide in survey instruments or to people who interview them directly. Moreover, it follows that ‘problem gamblers’ have even greater incentives to understate the degree of their problem, both to social scientists seeking information and to themselves, and thus the difficulties of obtaining accurate information on ‘problem’ gamblers are greatly exacerbated. In addition, there is no way of determining the extent of the inaccuracy of accrued information. All this has been publicly acknowledged by the Chair of the Productivity Commission three years after the fact (Banks 2003, 5). Accordingly, information obtained by means of surveys is simply not worth considering.

Method (b) is very expensive in the real-world (outside of experiments with ‘captive’ university students using fake money so beloved by academic researchers). It is thus seldom employed in the real-world and has never been employed in Australian EGM markets. In any event, the sheer artificiality of people gambling under surveillance would render the results meaningless. Finally, method (c) cannot be used in New South Wales, by far the biggest EGM market in Australia, since no market price for EGM exists in the normal sense and the inferred ‘price’ (i.e. derived from odds) has not changed.

The main consequence of these difficulties is that it is simply not possible to provide estimates of the consumer surplus that are sufficiently accurate to guide informed public policy. The fact that the Productivity Commission at least admits that its estimates are not definitive does not thereby somehow make them sufficiently robust to use in practice.

### ***Estimated Demand Elasticities for the Classes of Gamblers***

Thirdly, the problems besetting the estimation of consumer surplus that derive from these difficulties do not only mean that the methodology employed by the Productivity Commission (1999) to determine the benefits accruing from EGM

use is invalid, but it also implies that the use of three different demand elasticities to denote the three categories of EGM gambler is unfounded.

We have demonstrated that the Australian EGM market is so highly regulated and so little can be established about relationships between ‘price’ and ‘quantity’ that it is simply impossible to develop reasonably accurate demand schedules that approximate real-world consumer behaviour. If it is not practicable to estimate even a market demand curve, then it follows that no sensible estimates of the price elasticity or income elasticity of demand can be made. It also follows that a method of categorising gamblers in terms of their behavioural proclivities as ‘recreational gamblers’, ‘moderate problem gamblers’ and ‘severe problem gamblers’ on the basis of their different price elasticities of demand is invalid. Yet this is precisely how the Productivity Commission (1999) has decided to tackle the question of ‘problem gamblers’.

This means that estimates of the market demand for EGM use in Australia can, at best, only roughly approximate actual demand. Indeed, the Productivity Commission itself acknowledges this argument and in Table 5.8 uses ‘low demand elasticity’ and ‘high demand elasticity’ for three assumed classes of gambler (‘recreational gamblers’, ‘moderate problem gamblers’ and ‘severe problem gamblers’). No justification is given for the ranges of price elasticities in Table 5.8 apart from ‘stylized facts’ about the three classes of gambler, purportedly derived from earlier empirical work. It need hardly be added that this approach is very far from precise.

### ***Rational Addiction***

In a path-breaking approach to the problem of addiction in various consumption activities, like alcohol, gambling, narcotics and tobacco, Murphy and Becker (1988) applied the rational choice approach used in economics to addictive consumption. In essence, the model they developed addicts operate under complete certainty and full information with respect to consumption and factor into their calculations the effects of current consumption on the future satisfaction derived from consumption. In other words, addicts develop

'forward-looking' consumption in the knowledge that past consumption increases the pleasure obtained from current consumption, given their individual preferences, incomes and market prices. In effect, addicts rationally evaluate the gains from consumption relative to the costs of consumption, including any personal harm that may befall them as a consequence of consumption. The consumption of potentially addictive products is thus no different from the consumption of non-addictive products, in the sense that consumers weigh up the expected costs and benefits in the same way.

From a policy perspective, the theory of rational addiction generates predictions in line with the standard economic approach to consumer markets. For instance, if the market price of the addictive good in question were to rise, then market demand will fall, other things remaining constant. Put differently, in common with non-addictive goods, the usual remedies employed for reducing consumption, like an increased tax on consumption, will serve to reduce consumption since addicted consumers respond rationally to changes in the costs and benefits associated with consumption of addictive goods. In addition, policy makers should employ the demand curves for addicts, based on marginal private benefit schedules and the associated consumer surplus that come with these demand curves, and only intervene on public policy grounds where marginal private benefit diverges from marginal social benefit, unless explicit value judgements are made on the ethical content of the addict's consumption activities, a proposition accepted by the Productivity Commission (1999).

The theory of rational addiction has attracted a substantial empirical literature, especially on cigarette smoking, although few, if any, specific studies have been undertaken on gambling *per se*. A feature of this literature is that most work provides solid support for the predictions of the theory of rational addiction (see, for example, Gruber and Koszegi 2001). The model cannot thus be readily dismissed on empirical grounds.

To its credit, the Productivity Commission (1999, 6-11) did consider the applicability of the theory of rational addiction in its Final Report. However, it rejected the rational addiction model on four main grounds: No empirical tests have been previously conducted on gambling; 'pre-commitment' to future consumption patterns may conflict with underlying preferences; the model 'does not fit with the lived experience of people with gambling problems'; and it ignores 'impaired control'. Apart from the third objection, which misunderstands the instrumental (and not descriptive) nature of economic models, these caveats are not unreasonable in themselves. However, the problem resides in the consistency of the reasoning in the Productivity Commission's (1999) Final Report. By rejecting the rational addiction model, the Commission gainsays consumer rationality for problem gamblers in EGM use, but still counts part of the consumer surplus accruing to these people in its calculation of consumer surplus for problem gamblers. In common with the old adage that a person 'cannot be half-pregnant', it is hard to square logic that holds that problem gamblers can be 'half-rational'.

## **Concluding Remarks**

This paper has sought to develop a critique of the approach adopted by the Productivity Commission (1999) in its Final Report *Australia's Gambling Industries* on conceptual and theoretical grounds and not on the basis of empirical argumentation. In so doing, we have provided a synoptic outline of the methodology presented in the Final Report, and then offered four separate strands of critical commentary.

The purpose of this exercise derives from a concern at the uncritical acceptance of the methodology developed by the Productivity Commission (1999) by public policy makers across Australia. In particular, policy makers seem to have given tacit approval to the method of calculating of consumer surplus advanced by the Commission and the empirical estimates derived by the Commission. Given the thorny conceptual and empirical problems associated with this approach, some of which have been outlined in this



paper, this is most unfortunate. For instance, in New South Wales, the state Gaming Board now routinely accepts these and other estimates of consumer surplus as part of the Social Impact Statements required by the law in seeking approval for additional or new EGMs. Cynical business interests and financially-biased consultants have made full use of this aspect of the approvals process to advance the case for ever more EGM outlets in New South Wales.

The critical arguments presented in this paper damage the conceptual integrity of the Productivity Commission's (1999) methodology by demonstrating that it does not represent an uncontested extension of the standard normative economic approach to the evaluation of a consumer market. The concept of consumer surplus is by no means straight-forward and its empirical application must be accompanied by a great deal of caution. At the very least, we hope the paper will give public policy makers pause to reflect on the desirability of using this methodology to guide a crucial area of policy formulation and allow tribunals charged with oversight of implementing public policy to treat consumer surplus estimates with sceptical caution. In the New South Wales milieu, we hope this translates into change in the content of Social Impact Statements.

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