JOINT SELECT COMMITTEE ON GAMBLING – PRE-COMMITMENT

ADDITIONAL FURTHER SUBMISSION

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Impacts of lowered prize limits on poker machines

Introduction

This submission addresses some further aspects of the characteristics of poker machines as they might be adjusted to present low-risk poker machine games in a two-stream (high-risk – low-risk) model of pre-commitment. In an earlier submission the present authors discussed the results of lowering maximum bets on poker machines, particularly in relation to the volatility of game outcomes.

This further submission addresses issues related to the lowering of maximum bet limits and the extent to which this would affect game volatility and assist in reducing the risks associated with poker machine use.

Description of modelling

As discussed in our earlier submission, we accessed game data for a popular Australian poker machine game. As before, we were able to simulate game outcomes. For the present exercise, we selected the same set of 100,000 spins utilised in our previous submission.

To remind, the purpose of estimating session duration is to determine the relative entertainment time afforded to users under various parameter settings, and thus to determine bet and/or prize limits which are focused on providing entertainment at reasonable cost focussed on the needs of 'recreational', intermittent, or, as we prefer to call them, 'entertainment' players. As the Productivity Commission reported, a significant number of users experience a shorter than anticipated duration of play, which results in high average hourly expenditure.

In this simulation, which we undertook to demonstrate the effect of reducing maximum prizes, we modified the game output data in two ways: firstly, to provide a low volatility game with a maximum prize of no more than 500 credits, and, secondly to produce a more volatile game with a maximum prize of 27,000 credits.

In the case of the first (low volatility) game, credits won in excess of 500 were redistributed across all game outcomes, save that no outcome resulted in a prize of greater than 500 credits. The purpose of this was to simulate a prize structure capped at a modest level.

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In the case of the second modification, we tripled maximum prizes above 500 credits and reduced the game outcomes below 500 proportionately, provided that no game outcome was reduced to less than zero.

As this is a 9-line game, a max bet of $0.90 is realistic and within the bounds of the $1.00 maximum bet proposed by the Productivity Commission. For comparative purposes we also simulated a maximum bet of $0.45.

It must also be noted that the game we used as the basis of these simulations is already a relatively low volatility game, by Australian standards. Thus, the effects we are attempting to elucidate would be greater if applied to a higher volatility base game.

Results

Table 1 sets out the mean and median session duration for each of the two bet limits we modelled. The mean session duration is the average of all sessions and is skewed (i.e., biased towards an unrealistically high average figure) by a small number of relatively large sessions times associated with quite irregular large rewards. The median session duration is the mid-point of all outcomes, such that 50% of users would experience a shorter duration, and 50% a longer session duration. The closer the median and mean are, the less skew is demonstrated. However, poker machine game outcomes will always be skewed to some extent by the existence of a small number of larger rewards, even if those rewards are limited to a relatively low level. Skew would increase with larger maximum prizes.

Table 1: Mean and median session duration at various prize and bet levels – average 12 spins/minute - $40 stake

Max Bet	Max prize (credits)	Mean session duration	Median session duration	Median as % of mean	Mean cost per hour	Median cost per hour
$0.90	27,000	21.6 mins	6.8 mins	31.5%	$111.11	$352.94
$0.90	9,000	27.5 min	10.9 min	39.6%	$87.27	$220.18
$0.90	500	25.9 min	13.5 min	52.1%	$92.66	$177.78
$0.45	27,000	43.4 mins	16.3 min	37.6%	$55.30	$147.24
$0.45	9,000	55.3 min	27.0 min	48.8%	$43.40	$88.89
$0.45	500	51.9 min	33.5 min	64.5%	$46.24	$71.64

Source: Game simulation by the authors

It will be noted that although both mean and median game duration change significantly across the three prize limits, median session duration changes are much greater as a proportion than are changes to the mean session duration. Although both reduced bet levels and reduced maximum prizes reduce the median and mean hourly cost of play, greater reductions are associated with reductions in maximum bet.

We do caution that these simulations have been undertaken on a game which is already of relatively low intensity. Similar simulations utilising a more volatile

base game may produce different results, which we believe would be of greater magnitude

Discussion

We believe these and earlier simulations demonstrate that increased entertainment value is afforded poker machine users via a reduction in maximum bet – both in terms of reduced hourly cost and the concomitant increase in median and mean time on the game for a fixed stake. Similar benefits are also demonstrated via a reduction in maximum prize, although these appear to be less significant.

In these circumstances we believe that low impact games would provide considerable value to users who did not wish to enrol in a pre-commitment system. We would urge maximum bets and prizes to be set at quite moderate levels, and would encourage broader community discussion on what level that should be.

Further, they appear very likely to reduce the harm associated with poker machine use, via significant reduction of costs of use. The public benefits of adopting a low-risk high-risk pre-commitment system would therefore be considerable.