Summary of: “A MODEL OF CASINO GAMBLING” (Author: N. Barberis)

The point of this note is to explain the ideas in the above research paper without using any mathematics or technical jargon (the original paper contains both). The intended reader is someone who is interested in economics and finance but who is not an academic researcher. I welcome your comments on the ideas below, whether you agree with them or not; and also on the write-up itself -- for example, please let me know if it is confusing, so that I can rework it.[1]

I’ll start with a short summary, and then give the longer version.

SHORT SUMMARY

I present a new model of why people go to casinos, and of how they behave once they get there. The model is based on a famous idea called *probability weighting*, which says that the brain weights probabilities in a nonlinear way – and, in particular, that it overweights low probability events. The model makes a rich set of predictions, many of which are consistent with anecdotal accounts of gambling behavior – for example, it predicts that, once they are in a casino, people will tend to gamble for longer than they originally planned to.

LONGER SUMMARY

A long-standing puzzle in economics is: Why are casino games so popular, given that their odds are actuarially unfair? One answer is that people don’t realize that the odds are unfair, but I’m not sure how plausible this is. Another answer – this is the one you usually hear from casino operators – is that casinos are *fun*, and that this compensates for the unfair odds. Under this view, the payment you make to a casino (by losing money when you gamble) is no different from the payment you make to the Walt Disney Company when you visit Disneyland. In both cases, you are paying for entertainment.

In this paper, I propose a new explanation for why people play casino games. The explanation is based on something called *probability weighting*. This is an idea due to two famous psychologists, Daniel Kahneman and Amos Tversky. (It is an element of a general theory they developed to describe how people think about risk; the theory, known as Prospect Theory, eventually won Kahneman a Nobel Prize). According to probability weighting, the brain weights probabilities in a *nonlinear* way. In particular, it overweights *low* probability events.

Researchers are already aware that probability weighting can explain the popularity of *some* kinds of casino games – specifically, casino games that offer long odds, i.e., a small chance of a large payout. If the brain overweights low probability outcomes, people are going to find a small chance of a big payoff very exciting, and will gamble even if the odds are unfair.

[1] This is a preliminary draft. Please do not quote or cite.

In this paper, I show that probability weighting can offer a much richer description of casino gambling than previously realized. I make two main points. First, I show that probability weighting can explain why people play casino games even when those games *do not* offer long odds. Second, I show that probability weighting predicts that gamblers will often act in ways that they did not originally intend. For example, it predicts that, while gamblers will often *plan* to stop gambling if their losses reach some specific level, if their losses *actually* reach that level, they will *keep gambling*, contrary to their initial plan. This prediction is consistent with many informal accounts of gambling behavior.

Let me explain each of these points more carefully.

Why do people like casino games?

First, how can probability weighting explain the popularity of a game like blackjack that does *not* offer long odds? (Under optimal play, the odds of winning a round of blackjack are close to 50:50). Here is the basic idea: while a *single* round of blackjack may not be a long-shot bet, a gambler can, over an evening of play, and through the use of particular strategy, convert his blackjack experience into one that *is*, effectively, a long-shot bet, and therefore one that, due to probability weighting, he finds very appealing.

Specifically, suppose that the gambler uses the following strategy: If his losses reach some fixed limit, like $100, he stops gambling. But if he is winning, he keeps gambling. Notice what this strategy does: it converts an evening of gambling into something that *is*, effectively, a long-shot bet. By stopping once his losses reach $100, the gambler limits his downside. But by continuing to gamble when he is winning, the gambler gives himself a chance – a small chance, admittedly – of ending the evening with a very large win. Under probability weighting, low probability outcomes are overweighted, which means that the small chance of a large payoff is very attractive. And so the gambler *does* find an evening of blackjack appealing, in spite of the unfair odds.

Planned vs. actual behavior in casinos

The second point I make in this paper is that the non-linear probability weighting postulated by Kahneman and Tversky leads to an interesting prediction, namely that gamblers will often behave in ways that they did not originally intend. Specifically, I show that, under probability weighting, a gambler will enter the casino with a *plan* to stop gambling should he lose a certain amount of money – $100 dollars, say. But that if he *actually* loses $100 dollars, he will *continue* gambling, contrary to his initial plan. One consequence of this is that people will typically gamble longer in a casino than they originally planned to.

I like this prediction because I think it has a good chance of describing actual behavior. Anecdotally, at least, many people do seem to enter casinos with the *intention* of stopping if they lose a specific amount of money; but if they actually lose that amount, they keep going, contrary to their initial plan.

Notice that this framework also predicts that, if gamblers are *aware* that they will be tempted to deviate from their initial strategy, they will search for ways of resisting that temptation. For example, if your plan is to stop gambling once you lose $100, and you are aware that you may find it hard to stick to this plan, you might do the following: you might bring $100 with you to the casino but also leave your ATM card at home. That way, if you lose $100, you will really want to continue gambling -- but you won't be able to, because you won't have your ATM card with you! Anecdotally, at least, some people do use techniques of this kind.

Other thoughts

A couple of final thoughts:

Earlier, I mentioned that, if you ask casino operators why people like to gamble, they usually give a simple answer: Gambling is fun! Note that the alternative view of gambling that I propose in this paper is a more negative one. It says that casinos are popular because they cater to the brain's tendency to overweight low probability events – a tendency that some psychologists think became wired into the brain in the early stage of human evolution. (I should emphasize that I don't disagree that gambling is fun – I'm just suggesting that it's not the only reason why people are drawn to casinos).

Finally, I think that the framework in this paper can help us understand how casinos are, or are not, related to the stock market. (Financial commentators often say that the stock market is "like a casino," but they rarely explain what they mean). In this paper, I argue that the popularity of casinos is driven by the tendency to overweight low probability outcomes. In another paper, Barberis and Huang (2008), Ming Huang and I argue that the same phenomenon, probability weighting, is responsible for a number of *stock market* patterns – for example, for the apparent overpricing of IPO stocks. Under this view, then, the fact that people like casinos is closely related to the fact that they seem to overpay for IPO stocks – both facts are driven by the same psychological principle.

References

Barberis N. and M. Huang (2008), "Stocks as Lotteries: The Implications of Probability Weighting for Security Prices," *American Economic Review* 98, 2066-2100.