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ABSTRACT

This paper sets out to show that a risk-averse sport fanatic could hedge his happiness by betting on the opposition. The literature surrounding happiness, risk- and loss aversion is explored and a model is developed to explain the happiness a fan derives from a match. It is shown that expectation as to what the result may be plays a vital role in the emotions awakened. An upset victory is much sweeter than one where one's team is the outright favourite. Expectations determine the odds offered by bookies. Here lies the beauty of this strategy. Suffering an unexpected loss is more painful than an anticipated beating. That being said, the payout from betting on the underdog opposition (which subsequently won) would be larger the more unexpected the result was. To bet on the opposition to hedge one's happiness appears to be a plausible strategy for an economically risk-averse sports fan – especially if one supports the odds-on favourite.

Keywords: Happiness, Sports betting, Risk aversion, Loss aversion
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Hedging one's Happiness

1. Introduction

It may have lasted only a day or two, but the pain had some bite. South Africa was the odds-on favourites to win their quarter-final against New Zealand in the 2011 ICC Cricket World Cup which was played in India and Sri Lanka. Unfortunately it did not turn out as planned and South Africa was bowled out for a mere 172 runs, 50 short of the target. South Africa was knocked out of the tournament and a country's hopes were left in tatters. Would it have been smart if I had placed R200 on the Black Caps to win? The odds were 11 to 5. Would the R440 I could have won have eased the pain of losing the match?

The aim of this paper is to determine whether it is rational for a risk-averse sport fanatic to hedge his happiness by betting on the opposition. The paper will show that sport fans conform to the set-point theory of happiness and that expectations play a major role in the joy derived from watching sport. Section 2 will briefly review the pertinent literature on happiness, risk and loss aversion. A model for happiness is developed in section 3. The element of gambling is added in section 4 before the paper is concluded in section 5.

2. Risk and happiness

The question posed by this paper is whether a sports fan could hedge his happiness by betting on the opposition. This section investigates why a hypothetical sports fan would want to do this. This requires reviewing the literature on happiness to search for clues as to how agents perceive winning, losing and financial gains. Risk aversion seems an obvious starting point for exploring the rationale behind hedging. Loss aversion and consumption smoothing, or in this case happiness smoothing, could also contribute to the answer.

2.1. Happiness

There is a huge body of research with respect to happiness and the causes thereof. During the last number of decades economists have thrown in their two pennies worth on this issue, an

issue psychologists have been pondering on for centuries. (Like Richard Easterlin (2003), this paper uses the terms happiness, utility, joy, entertainment and satisfaction interchangeably.)

There are many theories surrounding general happiness. Set-point theory has risen to prominence during the latter part of the previous century. Set-point theory states that one always reverts to a certain level of happiness over time and that increased income, marriage, divorce, etc. only bring temporary variation from the mean level of happiness (Easterlin: 2003). Many claim that this set-point is determined mainly by genetic factors and that life experiences contribute only momentary changes in happiness. As Easterlin (2003) points out, the set-point theory of happiness is not without its sceptics. Major life events, such as serious disability, are likely to have a lasting impact on a person's happiness.

As to the causes of happiness, theories are similarly abundant. Apart from the joy derived from watching and winning matches, this paper is interested in income as source of utility. Here hedonic behaviour, comparison and aspiration theory, as well as diminishing marginal utility of income all come into play. The last refers to the phenomenon that the effect on happiness of a R100 rise in real income becomes progressively less with higher levels of initial wealth (Easterlin: 2005).

There is a paradox in the literature that increased income does not translate into increased average happiness over samples (Easterlin: 2005). The consensus among authors is that relative considerations hold the key to Easterlin's paradox (Clark et al.: 2008). In short, it boils down to keeping up with the Joneses. As one's income rises, one becomes surrounded by new peers and is left aspiring to higher levels of wealth. The evidence points to the fact that if income does affect happiness, it is relative and not absolute levels of income that is important (Frank: 2004). Clark et al. (2008) states that this comparison of income can be to others, but also to oneself in the past.

2.2. Risk and loss aversion

The idea of hedging one's happiness should be seen in the same light as buying insurance. The behavioural tendency to insure is known as risk aversion. People would rather buy insurance at predefined prices than be exposed to the risk of larger, uncertain financial losses (Cather:

2010). Risk-averse individuals would choose a certain payoff over an uncertain one, even if the payoff for the sure bet is less. A risk-averse agent would thus prefer an assured payoff of something less than R50, rather than a 50:50 shot at winning R100, irrespective of the fact that the expected value of the gamble is higher.

Rabin and Thaler (2007) point out that should an agent reject a 50:50 gamble to win R110 or lose R100 (a gamble with a positive expected value), he would reject a R100 gamble to win R111 as well, in fact he would reject any gamble where he could lose R100. This is because of diminishing marginal utility with respect to wealth (Cather: 2010). Under this logic the agent would choose not to take the gamble even if he stood the chance to win outrageous amounts of money. Turning down a 50:50 gamble to win R10 million seems all but rational. Risk aversion does thus not relate the same way to small stakes as it does to larger stakes (Rabin: 2000).

The answer to this phenomenon lies with loss aversion. This element of risk preferences shies away from expected-utility theory and explains medium scale risk aversion (Rabin: 2000). The theory of loss aversion states that agents are more sensitive to losses than to gains relative to a reference point (Abdellaoui et al.: 2007). Kahneman and Tversky (1979) believed agents are up to twice as sensitive to losses as they are to gains of similar magnitude.

Harinck et al. (2007) challenged the consensus that “losses loom larger than gains” by stating that loss aversion is reversed when the stakes are small. They use the hedonic principle as basis for their argument. Hedonism entails maximizing pleasure and minimizing pain. Harinck et al. (2007) comments that people endeavour to discount negative experiences in order to minimize their pain. People would want to erase sadness from memory and put it behind them, as it were. Harinck et al. (2007) claimed that people anticipate losses to be worse than they turn out to be. People underestimate their own capacity to discount negative experiences. They also learn that they can easily overcome small losses. Thus, by gaining experience and discounting, negative emotions can be greatly reduced to the point where “gains (may) loom larger than losses”. This is only plausible for small losses, since major negative experiences are more difficult to discount.

2.3. Risk and happiness in the context of this paper

In the context of sport supporting, one would derive joy from a match in many different ways. Besides the understandable satisfaction winning brings, watching a tightly contested spectacle also has great entertainment value. Set-point theory offers an explanation as to the emotional variance a sports fan experiences over the course of a season. There are question marks surrounding the set-point theory of happiness, but they may be disregarded for the purposes of this paper. The reason for this is that, in the bigger scheme of things and compared to divorce or disability – issues that the critique of set point theory deal with –, losing a rugby match is trivial. The time frame is also scaled down from one or two years, in the case of major life events, to merely days. Set-point theory is thus plausible in the context of this paper.

It is widely accepted that people show preference to a stable path of consumption over time. If agents derive utility from consumption smoothing, is it irrational that sport fans would want to smooth their happiness? One can of course argue that this would take the fun out of watching sport, but this paper entertains the thought that a risk-averse sports fan would want to hedge his happiness.

Loss aversion seems exceedingly relevant to a sports fan, especially since beating a much weaker side would not be experienced as vividly as losing to them. In the context of this paper loss aversion points to the fact that a fan that would be content after a victory, but morbid after a loss. In essence it boils down to expectations. Losing a match one had expected to win would be more painful than losing a match where the outcome could not be predicted or where a loss was anticipated.

3. The model

There are many factors that contribute to the enjoyment people experience from watching sport. Many people watch the Olympics or other tournaments without necessarily having the proverbial horse in the race. This points to the fact that winning is not everything. Thus, pleasure derived from sport goes further than just the result.

If we consider some of the factors in the sport fan's happiness function, the result is the obvious place to start. Then there is the quality of the game. Many people watch sport for its "beauty". A game of running rugby, for example, is a far greater spectacle than 30 men wrestling in the mud for control of the ball. The quality of the game is of course a function of countless variables: the weather; game plan; injuries; talent; opposition; tournament situation along with pressure, etc. The result is to a large extent a function of the opposition and current form, with home ground advantage also playing a part. Enjoyment derived from victory is increased if the game is in a tournament as supposed to a friendly or a dead rubber. Matches between fierce rivals also bring extra emotions to the surface.

The joy sports fans draw from a match is thus the quality of the contest added to the result. The latter is made exponentially larger the more important the match is. With "importance" this paper alludes to the impact that stronger opposition, rivalry, location and tournament situation makes. Much of the enjoyment derived from the result of the match is correlated to whether said result was anticipated.

The following model depicts a sports fan's happiness function $(\mathcal{H})$ for a specific match:

$$\mathcal{H} = \Re(\Theta\Delta\mathrm{T})^{\Sigma} + \mathbb{Q}$$

In this model the result is denoted by $\Re$, and is merely positive or negative. $\Re$ would equal (1) for a win and (-1) for a loss. Later on the possibility of wins and losses not treated equally will be discussed. The strength of the opponents are represented by Θ. It is in the form of a scale, with a stronger team receiving a higher value. As the purpose of this paper is not calibration this scale will stay hypothetical, say 1 to 10, with the strongest side in the world receiving a 10. Δ represents the rivalry between the two participating teams, this too can be represented by a scale. The fiercer the rivalry, the higher value Δ will be. T is used to indicate tournament situations. As mentioned, enjoyment derived from victory is increased if the game is in a tournament (semi-finals or finals even more so) as opposed to a friendly or a dead rubber. The opposition, rivalry and tournament conditions $(\Theta\Delta\mathrm{T})$ can thus be seen as a measure of the

match's importance. The more important the game, the higher value $(\Theta\Delta T)$ will receive in the model.

As indicated, expectations can be presumed to play a vital role in the enjoyment derived from the result of a match. A win is much more enjoyable if the result was unexpected. The same is true for a loss. More unexpected results evoke greater emotion. In the model expectation is represented by Σ. The impact of expectation is felt exponentially. Expectation is measured on a scale from zero to one. If the result was expected, Σ is closer to zero and if the result was unexpected, Σ is closer to one.

As explained earlier, winning is not everything. People derive joy from the quality of the contest as well. The quality of the game is represented by $\mathbb{Q}$ in the model. This can also be represented by a scale from zero upwards. One might even argue that $\mathbb{Q}$ could drop below zero for a particularly poor spectacle. Calibration is not the aim of this paper and thus for our purpose $\mathbb{Q}$ will be measured from zero, increasing as the contest becomes more entertaining.

Table 1 illustrates some results from the model to show how it works. In this table the quality of the game, opposition, rivalry and tournament conditions are kept stable[2]. One should remember that the expectation before a match is a function of relative strength. Therefore one cannot hold the expectation variable (Σ) constant and compare the utility derived from beating a strong team to beating a weaker team. The value of $\mathcal{H}$ in this paper is merely an indication of happiness. Higher values point to greater joy.

Results from Happiness Model	
Result	$\mathcal{H}$
Unexpected win	3.6
Expected win	1.4
Expected loss	-1.4
Unexpected loss	-3.6

Table 1

[2] $\Theta = 5; \Delta = 1; T = 1; \Sigma = 0.2$ for expected and 0.8 for unexpected; $\mathbb{Q} = 0$

4. Add the element of gambling

Gambling on sport is a multibillion Rand industry. There is a huge body of research on betting strategies, ways to beat the system and how bookmakers stay solvent. This paper is more interested in the role expectations plays in both betting odds and happiness with respect to sport. As explained earlier, expectations prior to a match plays a big role in a sport fan's joy derived from the result.

There are different ways bookmakers set sport betting odds. It is normally expressed as "α to σ" with the payout being "α" profit for every bet of "σ" placed. Odds represent the probability that an event will occur. The probability of the event occurring is equal to $\frac{\sigma}{\alpha+\sigma}$. A 6-4 bet would thus represent a 40% probability that the event would occur. In this case a winning bet of R40 would pay out R100, R60 profit and the original bet of R40. Bookmakers adjust the odds to ensure that they make a profit. If the probability that an event would occur is 40%, bookmakers would normally set the odds at 6-5 instead of 6-4 to guarantee that a profit is made. In the context of this paper, this vigorish (or bookmaker's fee) is not of particular importance. Odds are set either by bookmakers or by systems where the bets placed influence the odds. Odds are thus an indication of what bookmakers or the public in general believe will happen in the match. Betting companies have a high rate of forecasting accuracy (Spann & Skiera: 2009). This is to be expected as betting companies offering inefficient odds would soon be out of business. It is thus rational to believe that the expectation of betting companies and our hypothetical sports fan would be more or less the same.

The aim of this paper it to see whether it would be rational for a risk-averse sports fan to bet on the opposition in order to hedge his happiness. Betting odds will now be added to the model explained in the previous section.

$$\mathcal{H} = \Re(\Theta\Delta\mathrm{T})^{\Sigma} + \mathbb{Q} + \frac{\omega\{\emptyset\frac{\Sigma}{1-\Sigma} - \Re\}}{(Co\mathcal{H})}$$

In this new model, ω represents the wager placed in monetary terms. $\emptyset$ is a similar term to the result variable, but where $\Re$ receives a value of (+1) if the supported team wins and (-1) otherwise, $\emptyset$ is given the value of (+1) if the opposition wins and (0) if that is not the case. $\emptyset$ is thus named the "opposition win" variable. If the result of the match was a near certainty beforehand (say probability = 0.9) then the odds would have been 1 to 9 (a payout of R1 for every R9 wagered). Therefore, if the fan had placed a R90 wager, he would have got R100 in return, R10 of which would have been profit. Remember that Σ represents a scale of zero to one. If the result was expected, Σ is closer to zero. For this very predictable result (90% certainty), Σ would receive a value of (0.1). This can be transformed into probability by subtracting Σ from one (it is an expected result, therefore Σ=0.1 and probability = (1- Σ) = 0.9). The winnings in this case can be calculated by multiplying $\frac{\Sigma}{1-\Sigma}$ by the amount wagered ($R90\ x\ \frac{0.1}{1-0.1} = R10$). As one can see this produces the same winnings as those calculated earlier. CoH is the variable for the monetary cost of one "unit" of happiness. This will vary from person to person and will influence how big the winnings must be before a fan is indifferent to the result of the match. What would our hypothetical supporter pay to see the Springboks win? What price does he put on the result?

The new component of the model can be simplified as follows:

Should the supported team be victorious[3]:

$$\frac{(-1)wager}{Cost\ of\ one\ unit\ of\ happiness}$$

Should the supported team lose[4]:

$$\frac{\left(wager\ x\ \frac{\text{expectation}}{1-\text{expectation}}\right) + wager}{Cost\ of\ one\ unit\ of\ happiness}$$

[3] This means that the opposing team loses, therefore $\emptyset$=0 and $\Re$=(+1). This also means that the fan does not win the bet.

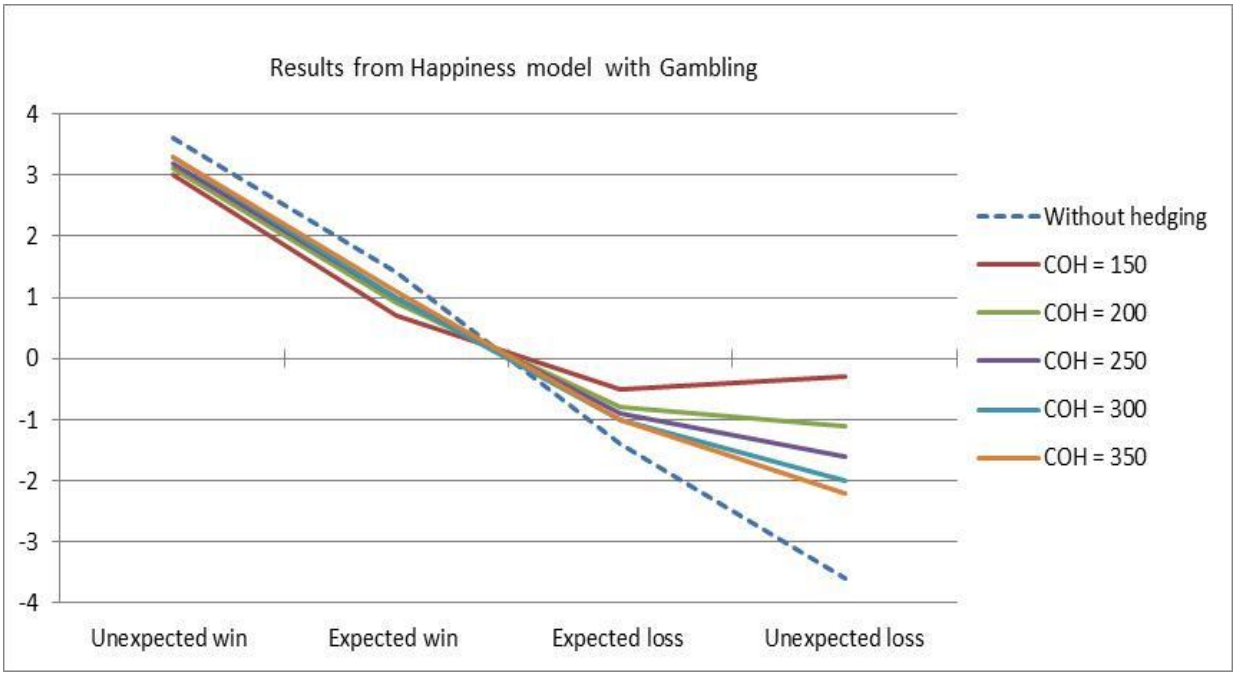
[4] This means that the opposing team wins, therefore $\emptyset$=1, $\Re$=(-1) and the fan wins the bet.

One can see that should the supported team win, the fan will get the satisfaction of winning but lose the wager he placed. Should the opposition win, he will suffer the pain of losing but win the bet.

Table 2 illustrates some results from the new model to show how it works. In this table the quality of the game, opposition, rivalry, wager, and tournament conditions are kept stable[5].

Results from the Happiness Model with Gambling						
Result	Without Hedging	CoH=150	CoH=200	CoH=250	CoH=300	CoH =350
Unexpected win	3.6	3	3.1	3.2	3.3	3.3
Expected win	1.4	0.7	0.9	1	1	1.1
Expected loss	-1.4	-0.5	-0.8	-0.9	-1	-1
Unexpected loss	-3.6	-0.3	-1.1	-1.6	-2	-2.2

Table 2



Graph 1

I want to stress again that the aim of this paper is not calibration and that the monetary cost of one "unit" of happiness will vary from person to person. Although all the variables in the model will vary from person to person and the bets they would be willing to place would not be the

[5] $\Theta = 5; \Delta = 1; T = 1; \Sigma = 0.2$ for expected and 0.8 for unexpected; $\mathbb{Q} = 0; \omega = R100$

same, the model would still work because the CoH variable should equalize it over samples. Loss aversion is also not factored into the model in this paper. Here positive and negative feelings are assumed to be of equal magnitude. In reality, the literature tells us that this is not true. The possibility of loss aversion reversal is also not covered here for it would take empirical testing to prove. What Table 2 does show is that happiness hedging for sport fanatics is very plausible. It is especially true for unexpected losses. The bottom row of Table 2 shows that the pain from unexpected losses can be greatly reduced by betting on the opposing team. Both ends of the spectrum are shortened, but the lower end more so; this is clearly visible in Graph 1.

5. Concluding remarks

This paper set out to show that a risk-averse sport fanatic could hedge his happiness. A model is developed to explain the happiness a fan derives from a match. It is shown that expectation as to what the result may be plays a vital role in the emotions awakened. An upset victory is much sweeter than one where one's team is the outright favourite. Expectations determine the odds offered by bookies. Here lies the beauty of this strategy. Suffering an unexpected loss is more painful than an anticipated beating. That being said, the payout from betting on the underdog opposition (which subsequently won) would be larger the more unexpected the result was.

Calibration and refinement of this model would probably be far too complex, but the underlying theory cannot be disregarded. To bet on the opposition to hedge one's happiness appears to be a plausible strategy for an economically risk-averse sports fan – especially if one supports the odds-on favourite.

References

Abdellaoui, M., Bleichrodt, H. & Paraschiv, C. 2007, "Loss Aversion Under Prospect Theory: A Parameter-Free Measurement", *Management Science,* vol. 53, no. 10, pp. 1659-1674.

Cather, D.A. 2010, "A Gentle Introduction to Risk Aversion and Utility Theory", *Risk Management & Insurance Review,* vol. 13, no. 1, pp. 127-145.

Clark, A.E., Frijters, P. & Shields, M.A. 2008, "Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles", *Journal of Economic Literature,* vol. 46, no. 1, pp. 95-144.

Easterlin, R.A. 2003, "Explaining happiness", *Proceedings of the National Academy of Sciences of the United States of America,* vol. 100, no. 19, pp. 11176-83.

Easterlin, R.A. 2005, "Diminishing Marginal Utility of Income? Caveat Emptor", *Social Indicators Research,* vol. 70, no. 3, pp. 243-255.

Frank, R.H. 2004, "How not to buy happiness", *Daedalus,* vol. 133, no. 2, pp. 69-79.

Harinck, F., Van Dijk, E., Van Beest, I. & Mersmann, P. 2007, "When Gains Loom Larger Than Losses: Reversed Loss Aversion for Small Amounts of Money", *Psychological Science (Wiley-Blackwell),* vol. 18, no. 12, pp. 1099-1105.

Kahneman, D. & Tversky, A. 1979, "Prospect theory: An analysis of decision under risk", *Econometrica: Journal of the Econometric Society,* pp. 263-291.

Rabin, M. 2000. Risk aversion and expected-utility theory: A calibration theorem. *Econometrica* 68, pp. 1281–1292.

Rabin, M. & Thaler, R.H. 2007, "Anomalies: Risk Aversion" in *Recent Developments in Behavioral Economics*, ed. S. Maital, Elgar Reference Collection. International Library of Critical Writings in Economics, vol. 204. Cheltenham, U.K. and Northampton, Mass.: Elgar, pp. 181-194.

Spann, M. & Skiera, B. 2009, "Sports Forecasting: A Comparison of the Forecast Accuracy of Prediction Markets, Betting Odds and Tipsters", *Journal of Forecasting,* vol. 28, no. 1, pp. 55-72.