

# A MATHEMATICAL MODEL THAT CAN BE USED BY THE GAMBLERS TO OBTAIN GAINS IN THE INDUSTRY OF SPORTS BETTING

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## Abstract

*The industry of sports betting has been very criticized by a lot of studies in the last period of time, the authors of some of these studies being focused on the strategies used during some sports events by the firms implied in the industry of sports betting. In our article we will focus not on the strategies used by different firms that are implied in the industry of sports betting and also not on the personality problems that the sport bettors might have, but on a mathematical model that can be used by the people that are trapped by the strategies used by the sports betting industry, and not only by them. Our paper suggests a sequence inspired by the Fibonacci sequence that can be used by the sports bettors when they play in the sports betting industry.*

**Key words:** sports betting; Fibonacci sequence; betting strategy; rational betting; mathematical model that can be used to bet

**JEL classification:** C65

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## 1. Introduction

Some studies written by the researchers in the field in the past years are focused on the effects that the industry of sports betting have on the people on which they concentrate on, regarding the technologies used by the sports betting industry (Thomas, S., Lewis, S., Duong, J. and McLeod, C., 2012) and the “skills” of the sports bettors considered, by some authors, cognitive distortions (Cantinotti, M., Ladouceur, R., & Jacques, C., 2004).

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In our study, we will focus on a mathematical model that we have developed, that, in our opinion, can help anyone (sport bettor or not sport bettor) to obtain big gains from the industry of sports betting. We have never been passionate of a sports team of any kind. We practiced a lot of sports, but we consider that if somebody becomes very passionate by a sports team, that sports team takes control of a part of that somebody's brain, and that is not something to be desired, because of the fact that that characteristic of somebody makes that person to become vulnerable. We think that a sports bettor passionate by a sports team or a player can become addicted to everything that can be linked to that player/team. Our strategy of betting, described in the following pages, eliminates all of the weaknesses of the sports bettors: the passion for a player, the passion for a team of sports, the passion to risk a lot of money, etc. Of course that our paper, being written in an economic journal, will focus on obtaining financial gains as big as they can be. The only industry that, in our opinion, will be affected in the long term will be that of sports betting, this fact not being a very bad factor, even if some authors consider that "legalizing sports betting in the United States and allowing the government to regulate the industry will benefit the country" (Vacca A., 2014). We do agree with the author cited before, but, from our point of view, would be better to give to anyone who wants to read about it, a solution to bet and to bet well in an industry regulated by the country and, in the long term, to eliminate the addiction that we think now affects a big part of the sports bettors. Authors have sustained; a long time ago, in their studies, the idea of rational betting (Lehman R., 1955). We are taking into consideration the fact that sports betting generates a multitude of personality problems between a lot of people being implied as bettors (Dell L., Ruzicka M., Palisi A., 2009) and we consider that, in the long term, the elimination of that industry would generate a lot of benefits for the human kind and, in the short term would generate big benefits for the sport bettors.

We developed our mathematical model starting from the Fibonacci sequence that has been used, until now, in a lot of domains, including the stock and derivative markets, in its transformed form of the theory of Elliott waves (see also Tai-Liang Chen, Ching-Hsue Cheng, Hia Jong Teoh, 2007 and George S. Atsalakis, Emmanouil M. Dimitrakakis, Constantinos D. Zopounidis, 2011). We studied in some of our papers

written before some ways of growing the chances that we have to financially win on the stock/derivatives market (Țăran-Moroșan A., 2011), but now we think that obtaining financial gains from the sports betting is much easier than the stock/derivatives market because a bet depends on less factors than a title traded on a capital market does. According to a study realized on the adolescents from Quebec by Ladouceur R, Mireault C. (1988) 24% gambled at least once a week and 76% had gambled once in their lifetime. Almost the same desire to gamble was observed in a study that was focused on the teenagers from Romania (Lupu V., Todirita I. R., 2012) so, if betting is an international problem, we will try through our study to transform betting into a stable international source of revenue.

The Fibonacci sequence, presented by Horadam (1961), is defined by the relation:

$$F(n) = F(n-1) + F(n-2) \text{ where } n \geq 3 \quad (1)$$

and has the following form:

1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, ...,

## **2. Our sequence**

In our strategy of sports betting, as we said before, we use a sequence, inspired as idea from the Fibonacci sequence presented before. Our sequence has the following form:

1, 6, 20, 56, 144, 352, 832, 1920, 4352, 9728, ...,

and can be defined by the relation:

$$M(n) = 2^{n-1} \times (2n-1) \text{ where } n \geq 1 \quad (2)$$

## **3. Our strategy of sports betting**

We will present our strategy of sports betting on a practical example because it is, in our opinion, the easiest way to understand it. We will suppose that we have 10000 monetary units that we can use to bet. We will start betting with one monetary unit and we will follow the M sequence described before. We will apply another golden rule: we will bet

only on favourite teams/players with the winning quota of 2 (around 2, the highest value that we recommend being 2). We can obtain the following results if we will bet only on teams/players who have the quota of 2.

First, we will suppose that the favorite team/player will win from the first match:

**Table 1. The favorite team/player will win from the first match**

Team/Player	Money bet	Quota of the favorite that we have bet on	Wins the favourite	Another quota	Wins other than the favourite	Gains/Looses
A	1	2	x	Y	-	1
TOTAL						1

Source: own source

On the second time we will suppose that the favourite teams/players will win from the second match:

**Table 2. The favorite teams/players will win from the second match**

Teams/Players	Money bet	Quota of the favorite that we have bet on	Wins the favourite	Another quota	Wins other than the favourite	Gains/Looses
A	1	2	-	Y	x	-1
B	6	2	x	Y	-	6
			TOTAL			5

Source: own source

On the third time we will suppose that the favourite teams/players will win from the third match:

**Table 3. The favorite teams/players will win from the third match**

Teams/Players	Money bet	Quota of the favorite that we have bet on	Wins the favourite	Another quota	Wins other than the favourite	Gains/ Looses
A	1	2	-	Y	x	-1
B	6	2	-	Y	x	-6
C	20	2	x	Y	-	20
TOTAL						13

Source: own source

On the fourth time we will suppose that the favourite teams/players will win from the fourth match:

**Table 4. The favorite teams/players will win from the fourth match**

Teams/Players	Money bet	Quota of the favorite that we have bet on	Wins the favourite	Another quota	Wins other than the favourite	Gains/ Looses
A	1	2	-	Y	x	-1
B	6	2	-	Y	x	-6
C	20	2	-	Y	x	-20
D	56	2	x	Y	-	56
TOTAL						29

Source: own source

On the fifth time we will suppose that the favourite teams/players will win from the fifth match:

**Table 5. The favorite teams/players will win from the fifth match**

Teams/Players	Money bet	Quota of the favorite that we have bet on	Wins the favourite	Another quota	Wins other than the favourite	Gains/ Looses
A	1	2	-	Y	x	-1
B	6	2	-	Y	x	-6
C	20	2	-	Y	x	-20
D	56	2	-	Y	x	-56
E	144	2	x	Y	-	144
TOTAL						61

Source: own source

On the sixth time we will suppose that the favourite teams/players will win from the sixth match:

**Table 6. The favorite teams/players will win from the sixth match**

Teams/Players	Money bet	Quota of the favorite that we have bet on	Wins the favourite	Another quota	Wins other than the favourite	Gains/ Looses
A	1	2	-	Y	x	-1
B	6	2	-	Y	x	-6
C	20	2	-	Y	x	-20
D	56	2	-	Y	x	-56
E	144	2	-	Y	x	-144
F	352	2	x	Y	-	352
TOTAL						125

Source: own source

On the seventh time we will suppose that the favourite teams/players will win from the seventh match:

**Table 7. The favorite teams/players will win from the seventh match**

Teams/Players	Money bet	Quota of the favorite that we have bet on	Wins the favourite	Another quota	Wins other than the favourite	Gains/ Looses
A	1	2	-	Y	x	-1
B	6	2	-	Y	x	-6
C	20	2	-	Y	x	-20
D	56	2	-	Y	x	-56
E	144	2	-	Y	x	-144
E	352	2	-	Y	x	-352
F	832	2	x	Y	-	832
TOTAL						253

Source: own source

On the eighth time we will suppose that the favourite teams/players will win from the eighth match:

**Table 8. The favorite teams/players will win from the eighth match**

Teams/Players	Money bet	Quota of the favorite that we have bet on	Wins the favourite	Another quota	Wins other than the favourite	Gains/ Looses
A	1	2	-	Y	x	-1
B	6	2	-	Y	x	-6
C	20	2	-	Y	x	-20
D	56	2	-	Y	x	-56
E	144	2	-	Y	x	-144
E	352	2	-	Y	x	-352
F	832	2	-	Y	x	-832
G	1920	2	x	Y	-	1920

TOTAL	509
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Source: own source

On the ninth time we will suppose that the favourite teams/players will win from the ninth match:

**Table 9. The favorite teams/players will win from the ninth match**

Teams/Players	Money bet	Quota of the favorite that we have bet on	Wins the favourite	Another quota	Wins other than the favourite	Gains/Looses
A	1	2	-	Y	x	-1
B	6	2	-	Y	x	-6
C	20	2	-	Y	x	-20
D	56	2	-	Y	x	-56
E	144	2	-	Y	x	-144
E	352	2	-	Y	x	-352
F	832	2	-	Y	x	-832
G	1920	2	-	Y	x	-1920
H	4352	2	X	Y	-	4352
TOTAL						1021

Source: own source

On the tenth time we will suppose that the favourite teams/players will win from the tenth match:

**Table 10. The favorite teams/players will win from the tenth match**

Teams/Players	Money bet	Quota of the favorite that we have bet on	Wins the favourite	Another quota	Wins other than the favourite	Gains/Looses
A	1	2	-	Y	x	-1
B	6	2	-	Y	x	-6
C	20	2	-	Y	x	-20
D	56	2	-	Y	x	-56

E	144	2	-	Y	x	-144
E	352	2	-	Y	x	-352
F	832	2	-	Y	x	-832
G	1920	2	-	Y	x	-1920
H	4352	2	-	Y	x	-4352
I	9728	2	x	Y	-	9728
			TOTAL			2045

Source: own source

#### **4. The opposite use of our strategy**

Of course that the strategy presented by us before can be applied exactly in the opposite way than the one described in the first chapters written in the pages of this article. We mean by that that we can bet on the player/team expected to lose, understanding by that that we choose the player/team that has the biggest betting quota in the match. For example, in a match that has the following quotas: 1,95 (for the player/team expected to win), 3,1 (for equality) and 4,3 (for the player/team expected to lose), we will choose the player/team with the quota of 4,3. We say that because we saw practicing the part of the strategy described before that sometimes (not very often, but also not very rare), it happens that the player/team expected to lose wins. So, if we chose to apply this part of our strategy and we have the same amount of money that we can bet as before, we can start, for example, with the numbers described in our sequence divided by two, obtaining the following sequence:

0,5, 3, 10, 28, 77, 176, 416, 960, 2176, 4864, ...,

We say that we can start, for example, because we have never tried to practice that part of our strategy, but we observed from practicing the first part of it that sometimes the player/team expected to lose wins. Before the betors try to apply that part of our strategy, I recommend that they try, without betting any money, to theoretically apply the part of our strategy described now and to see what's the average of the matches chosen by them with the biggest quota and won from the total matches chosen. We recommend them to be prudent and to lower that average, at least, with

25%, but we would say that it would be better to lower that average with 50% (to be prudent).

## **5. Conclusions**

In the example taken into consideration by us before we have always chosen the quota of the favorite team/player meaning that the probability that that team/player wins is much higher than that team/player loses. Even if the two probabilities would be equal (of winning or losing a match) the probability that we successively extract ten games with results different than the ones chosen would be very, very low. When we choose a match, we have to apply the following rules:

1. We will wait until we find the result of the match, and, only after that, we will choose another match.
2. If the match chosen by us was won, we will start again from  $n=1$ .
3. We will bet on the same team/player only if the quota of that team/player is, again, around 2, but not bigger than 2.
4. If we have to choose between two matches, and both of them has the same quota for the winning team/player, we will choose the match which will have the highest value of the report between the losing quota and the winning quota. For example, if there are two matches with the winning quota of 1.9 but the losing quota are for the first match 4 and for the second match 5, we will choose the second match.
5. We will never rush for the gains because we have to take into consideration that almost nobody gives anybody 0.5 monetary units for free and surely nobody gives anybody 2045 monetary units.

Even if we take into consideration all the rules presented before still exists a small risk to lose money, but the strategy presented before can be adapted by people to reduce the probability of losing. Since we were born we are exposed to different risks and the only fact that we can obtain by living healthy (according to the actual - but not eternal - definition of "living healthy") is to reduce the risks (considered now risks) that we are exposed to.

So, in our opinion, our strategy offers to us the optimal way of always winning in the end. Of course, we do not consider that what we presented before might be the best strategy used in sports betting, but we think that our strategy could be used by anyone who desires to win money from the sports bets, with only one condition that has to be always taken into consideration: patience.

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