



*Bet*

*to*

*win*

# Bet to win

A guide for people who want to learn calculate “win-win” combination for sports betting.

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*Thank you to my family for constructive and really helpful feedback on the first draft of this manuscript.*

*Thanks to my friends for helpful discussions about sports betting.*

# Bet to win

## manual

*Calculation of win-win combination  
(odds and bets) for sports betting*

# Contents

	Page
<i>Chapter 1 - Introduction</i>	
Introduction Sports betting: Simplicity and ambiguity. Main statements.	7
<i>Chapter 2 - Description of the problem</i>	
How determinate value of odds and bets for 'win-win' combinations? What limits are the place to be? What need to know?	11
<i>Chapter 3 - Realization in Visual Basic programming environment</i>	
Creation of special VBA-application. Listing of 'winning' macro.	15
<i>Chapter 4 - Usability of usage</i>	
At home, on way and on work...anywhere you want	19
<i>Chapter 5 - Practice: How to use</i>	
Real examples of usage 'Bet to win'	21

# Preface

Here we shall talk about bets, which has following properties:

- **Kind of sports.** We shall consider matches, which complied with formula 'match - winner' (for example: tennis; volleyball etc.) - in other words, those matches where probability of ending (a game) in a draw are excluded
- **Decimal odds** are also known as 'continental odds' as they are preferred in Europe and Canada and are considered the most popular odds currently in use. The decimal odds are expressed in the following ways – 1.9 , 2.00, 3.75 etc.
- **Live or On-line bets.** For minimizing of possible risks, we shall consider just on-line bets

## Goal of this book

This book is for beginners, and the goal is to get you started.

Sports betting is known to have a steep learning curve, but I really think it has three separate curves:

- (1) risk management
- (2) programming on Visual Basic for Application (VBA)
- (3) creating application

Many books and courses combine those three things, thus forming one long, painful learning curve that discourages many. Likewise, I have seen many people try to run before they crawl by jumping to creating application without understanding what is bet's risk, thus leading to frustration.

The core focus of this book will be on risk management: how automate calculation of bets with minimal risk

# Chapter 1

## Introduction

### **Sports betting: Simplicity and ambiguity**

What can be a simpler than bets: choose one team (player) and make a bet on it. However, your choice will be based on your assumptions and desire to snatch a jackpot, and you don't care about possible risks and chances for the winning. How do you think: "Is it correct?"

Perhaps this assumption has place to be, but in this book, we shall try to do our choice, based on calculations.

In the second chapter we'll be able to determine ours' risks and chances for the winning for each our bet.

After that we'll try to create application for calculation of this one.

In last chapter we'll view the real examples of usage that application.

Okay, let's begin.

# The main simple table of sports betting and equilibrium

## First step from simple to difficult

This is main simple table of sports betting, which used for estimating of necessary value and volume for odd and bet resp.:

Odd		Bet		Winning
A	x	C	=	E
B	x	D	=	F

## What is an equilibrium?

Under equilibrium we shall understand such values, which as a result will give us the same sum of winnings (i.e. cases where  $E = F$ ):

Odd		Bet		Winning
2.73	x	20.00\$	=	54.60\$
1.58	x	34.60\$	=	54.60\$

# Interrelations between odds and bets

## How to calculate an equilibrium?

For calculation of equilibrium, we need to determine interrelations between odds and bets.

B and D we are expressing through A and C:

Odd	Bet	Winning
More on this in the full version		

## And for what?

Knowing these relationships we can calculate the equilibrium in one second. For example, we bet 10\$ on 'Dragons' with odd equal 1.57 . Respectively for equilibrium, we have bet 5.70\$ with odd equal 2.75 on second command ('Knights'):

Odd	Bet	Winning
1,57	10,00	15,70
2,75	5,70	15,70

# VBA and VBA editor

## in MS Excel

### Step-by-step instructions:

### How to write an equilibrium calculations on VBA?

In Excel there is built-in programming language (VBA). Using this language, we can describe the system of equations for finding the equilibrium values. For that we need to do following steps:

1. Open new Excel workbook / Open your workbook in Excel
2. Press Alt+F11 to open Visual Basic Editor (VBE)
3. Right-click on your workbook name in the "Project" pane (at the top left corner of the editor window) and select Insert -> Module from the context menu
4. Copy the VBA code (from next page) and paste it to the right pane of the VBA editor ("Module1" window).
5. Save your workbook as "Bet to win". Press Ctrl+S, then click the "No" button in the "The following features cannot be saved in macro-free workbook" warning dialog.
6. The "Save as" dialog will open. Choose "Excel macro-enabled workbook" from the "Save as type" drop-down list and click the Save button.
7. Press Alt+Q to close the Editor window and switch back to your workbook.

**The main small simple table.**

*It will be necessary for recording our macro "winning" (see below).*

	A	B	C	D
5	Case	Odd	Bet	Winning
6	I			
7	II			

---

```
Sub winning()                                ' let's name our procedure will be "winning"
Dim A As Variant                            ' odd #1
Dim B As Variant                            ' odd #2
Dim C As Variant                            ' bet #1
Dim D As Variant                            ' bet #2
Dim E As Variant                            ' winning in case #1
Dim F As Variant                            ' winning in case #2

A = Range("B6").Value                       ' determine value of odd #1
C = Range("C6").Value                       ' determine value of bet #1
E = Round(A * C, 2)                         ' calculating of E like as result of multiplying A and C
Range("D6").Value = E                      ' indicating of value of E in cell 'C2'
```

**More on this in the full version**

End Sub

# Chapter 2

## *A possible risk or description of the problem*

### **Possible risk**

In the previous chapter, we learned about main simple table and wrote macro for calculation of equilibrium of bets and winnings.

Now, it help us to find necessary value of bet with minimal risk.

In practice, our calculated value (for second bet) is differ from real bet. For example:

Case	Odd	Bet	Winning	Risk	Risk, %
I	2,14	10	21,4	<b>0,45</b>	<b>-31,5%</b>
II	1,88	11,4	21,43		
Real	1,43				

We bet 10 \$ on the first team, with odd equal 2.14. For equilibration of this one, we need to make the second bet 11.4\$, with odd equal 1.88. This give us equilibration with minimal risk. But betting shop system suggests us odd equal 1.43.

Usually, betting shop suggests a value for second team odd, less than required for equilibration. And now, difference in 0.45 this is our risk.

How do you think, how we can reduce the volume of the risk?

# The main table of sports betting

## Comparing of value at risk (VaR)

In general conversation the terms 'risk' and 'odds' are used interchangeably (as are the terms 'chance', 'probability' and 'likelihood') as if they describe the same quantity. In statistics, however, risk and odds have particular meanings and are calculated in different ways. When the difference between them is ignored, the results of a systematic review may be misinterpreted.

Under risk we are going to understand difference between:

$$\text{Real odd} - \text{Calculated odd}$$

where 'Calculated odd' is *More on this in the full version*, where 'A' is real odd for the first team.

And now, we can compare risk between matches. For example:

### First match

Case	Odd	Bet	Winning	Risk	Risk, %
I	2,14	10	21,4	<b>0,45</b>	<b>-31,5%</b>
II	1,88	11,4	21,43		
Real	1,43				

### Second match

Case	Odd	Bet	Winning	Risk	Risk, %
I	1,25	10	12,5	<b>0,35</b>	<b>-7,5%</b>
II	5,00	2,5	12,5		
Real	4,65				

## How to select the best option?

For reducing of the risk we have to do:

1) Compare possible value at risk in the list of matches:

For example, we have five matches (see table below). How we can to compare the possible risk?

For this one, we have to automate of calculating the risk for each one. And compare between them:

Match	Team	Odd	Risk	Risk, %
1	a	1,25	<b>-2,84</b>	<b>36,2%</b>
	b - real	7,84		
2	a	5,21	<b>-1,92</b>	<b>60,8%</b>
	b - real	3,16		
3	a	8,21	<b>-1,31</b>	<b>53,5%</b>
	b - real	2,45		
4	a	3,25	<b>-1,71</b>	<b>54,1%</b>
	b - real	3,15		
5	a	2,25	<b>-0,35</b>	<b>16,3%</b>
	b - real	2,15		

2) Select match with minimal value at risk. In example this is match number #5, with risk equal 16.3%

3) Bet on team 'a', in game #5

4) Keep score of the match

5) If it will be necessary, correct our bets (for equilibrium).

# Chapter 3

## Realization in Visual Basic programming environment

Now, we have enough knowledge for creating application for automatic calculation of the bets. For this one, we are using Visual Basic

Minimal betting:	10	<input type="button" value="Calculate"/>	<input type="button" value="Clear"/>	<input type="button" value="S"/>	Match	5	Risk, %	16,3%			
Case	Odd	Bet	Winning	Risk	Risk, %	Match	Team	Odd	Risk	Risk, %	Match
I	2,25	10	22,5	-0,35	16,3%	1	A	1,25	-2,84	36,2%	1
II	1,80	12,5	22,5				B	7,84			
Real	2,15					A	5,21	2	B	3,16	-1,92
The best option is match # 5						3	A		8,21	-1,31	
						4	A	3,25	-1,71		54,3%
						5	A	2,25		-0,35	
							B	2,15			

## Listing of 'winning' macro

Let's describe our macro in diagram form:



## Listing of 'winning' macro

Sub calculation()

Dim C As Variant ' bet #1

Dim D As Variant ' bet #2

Dim E As Variant ' winning #1

Dim F As Variant ' winning #1

Dim bet\_A As Variant ' odd #1

Dim bet\_B As Variant ' odd #2 (calculated)

Dim bet\_B\_real As Variant ' odd #2 (real)

Dim risk\_value As Variant

Dim risk\_volume As Variant

Dim i As Variant

Dim match As Variant

Dim match\_row As Variant

' 'For...Next...' cycle for substitution odds and bets

### More on this in the full version

' minimal bet equal

C = Range("C3").Value

Range("C6").Value = C

' continuation of 'For...Next...' cycle

**More on this in the full version**

## ' Selection of match with minimal value at risk

```
match = Range("I1").Value
bet_A = Cells(4 + match * 2, 10)
Range("B6").Value = bet_A
C = Range("C3").Value
Range("C6").Value = C
E = Round(bet_A * C, 2)
Range("D6").Value = E
```

### **More on this in the full version**

```
Range("B7").Value = bet_B
Range("C7").Value = D
Range("D7").Value = F
```

### **More on this in the full version**

```
Range("B8").Value = bet_B_real
risk_value = bet_B - bet_B_real
Range("E6").Value = risk_value
risk_volume = 1 - bet_B / bet_B_real
Range("F6").Value = risk_volume
End Sub
```

# Chapter 4

## **Usability of usage**

Apart from the fact that we have Excel-application for calculation bets with minimal value at risk, also we can use this VBA-code for others programming environment, for example:

**More on this in the full version**

# Chapter 5

**More on this in the full version**

