

Play it again Sam!

(Gamblers or Investors? An Experiment on the Almost-Winning outcomes)

Christine Choirat,
Daniela Di Cagno,
Arianna Galliera

Our starting point

It is not the thrill of winning, but the thrill of almost winning that sets a problem gambler apart from those who just fancy a flutter. A strong reaction in the brain in response to "near misses" is correlated with a greater tendency to compulsive gambling, [...].

For instance, gamblers believe that games like roulette or picking lottery numbers, involve some degree of skill, even though they do not. In games where skill does matter, such as football, a near miss like kicking a ball into the goalpost can rightly be associated with almost scoring a goal. So assigning value to an almost-goal makes some sense. But in games of chance, near misses are meaningless.

They say nothing about the future likelihood of winning."

(The Economist, The almost winning addiction, May 6th 2010)

The almost winning bias

The Almost Winning outcome in a Chance Game has no relation with future outcomes.

The Almost Winning outcome in a Skill Game could be actually a signal of player's ability.



Figure 1: Near-Miss outcome in a chance game



Figure 2: Near-Miss outcome in a skill game

Related literature

Near-miss outcomes have been analyzed in psychology and neuroeconomics:

- Neurological studies (Camerer et al. 2004, van Holst et al. 2010 and Chase and Clark 2010) focus on the brain response during gambling. Chase and Clark (2010) experimentally showed that near-miss outcomes may elicit a dopamine response similar to winnings
- Near wins and prolong gambling: Cote et al. 2003.
- Almost winning and slot machines: Coventry and Hudson 2001 (gender differences), Griffiths 1994, Dixon et al. 2010.
- Erroneous perception in gambling: Benhasain et al. 2003, Ladouceur et al. 1991 (framing issue), Langer 1975, Schull 2005.
- Empirical evidences show how near-miss outcomes in gambling increase gamblers willingness to play even though they keep losing.

Our ENLABS trial

- Real slot machines versus darts
- Understanding if ordinary people (not professional gamblers) were able to distinguish between skill and chance game and/or behave differently in the two different settings
- Sample: 27 subjects students of Luiss university and Enlabs
- 2 separated tasks presented in a random order plus a risk elicitation task (Holt and Laury with real urn extraction)
- Task 1 (chance game: slot machines)
- Task 2 (skill game: darts)
- 10 tokens to invest plus the winning

Some observations

Number of rounds by Task (left table), and round played by Subjects and Task (right table)

Round Played=Tokens Invested	Slot machine	Darts
0	2	5
1	4	5
2	5	4
3	4	7
4	4	2
5	1	1
6	4	1
10	3	1
12		1
Total	27	27
Average	3,74	2,78

Subject	Slot Machine	Darts	AW
1	10*	1	
2	6*	0	
3	10	10	x
4	6*	3	x
5	10	5*	x
6	3	3	
7	2	12*	x
8	4	3	x
9	0	3	x
10	4	3	x
11	2*	2	x
12	3	3*	x
13	6	6	x
14	4	4	
15	1*	1	x
16	1	2	x
17	0	0	
18	3*	1	
19	1*	1	
20	3*	0	
21	2	2	
22	1	1	
23	5	0	
24	4	3	x
25	2	2*	
26	6	4	x
27	2	0	

* At least one winning round occurred

Positive outcomes probability

Dependent: Winning (dummy)	Task 1	Task 2
Round	-0.204 (0.15)	0.041 (0.09)
L.WinningDummy	0.069 (0.84)	1.738** (0.79)
L.AW		0.483 (0.59)
N	76	54

What did we observe...

- Average tokens invested (average of rounds played)
 - Task 1 (chance) = 3.7
 - Task 2 (skill) = 2.8
- Participants tend to play more on the chance game respect to the skill one (12 times)
- Willingness to play a further round depending:
 - *Task 2 (skill)* overall winning amounts in the previous rounds. The awareness of being skilled is confirmed by the fact that AW occurs for those subject who played longer.
- It seems that they put more attention when taking decisions respect to the skill game
- Only 10% of the population asked the experimenters about winning probabilities in the slot machine

... what the others observe

(Journal of Gambling Studies, 2012)

- Following some recent research of the American Psychiatric Association (2002) even if world-wide gambling activities are very popular, very few subjects become compulsive gamblers and lot of them are able to recover without special assistance.
- In Australia recent estimations score the adult percentage affected by serious problems is not greater than the 1% (Productivity Commission, 2010)
- We think that making people (especially youngs) aware of what they are really playing is important to avoid compulsiveness caused by not correct gambling' presentation by main operators (William Hills versus Lottomatica) in order to induce people to play more than their preferences on gambling will address.

... what the others observe

(Europe and Italy, Decreto Balduzzi)

- In most of industrialized countries the demand for better quantification and regulation of the field is increasingly assessed and many research centers devoted to gambling have arisen (for example in Europe: *Gambling Research Group* in Glasgow and Nottingham, *Swedish research program* in Stockholm).
- In Italy, Decreto Balduzzi regulates the use of slot machines imposing that only +18 can play, machines must show a warning about the potential danger from compulsiveness in gambling, and machines should be placed at least 500mt from schools, churches and hospitals.

The «Gratta e Quasi Vinci» case



<http://www.corriere.it/inchieste/reportime/economia/gratta-quasi-vinci/1c2044c4-eca8-11e2-b462-40c7a026889e.shtml>

Our Research Question

Assuming the existence of the almost-winning addiction in gambling:

- Is the almost-winning bias affecting compulsive gamblers only?
- Does it affect gamblers or also different types of decision makers (Investors, Savers...)?
- Does the almost-winning bias is framing dependent?
- The almost-winning effect has same magnitude when people are aware of the actual probability of winning (risk versus ambiguity)
- Is it possible to warn individuals effectively on this potential cognitive bias?
- And moreover can we induce them to be less impatient?

Our focus: player's awareness

- We are not interested in pathological gambling since we believe that such behaviors stem from very delicate (psychological) equilibria that only medicians are allowed to cope with.
- Our focus is to «protect» non pathological gamblers from being «induced» through specific sequences of play and near misses to become «addicted» by teaching them to recognize what is really relevant in their decision to play again.

Planned Treatments

- TR1- A chance game framed as a skill game (Investment Game)
- TR2- A pure chance game (our slot machine)
- TR3- A pure skill game framed as a chance game (to be carefully selected)

Phases

- Each Treatment will be played in two different sequences allowing for different combinations of risk, uncertainty and warning.
- Each phase includes 20 rounds
- 24 participants per session

Treatments	Game types	Ambiguity	Probabilities	Warning	Pilot
TR 1	Investment game	x	x		(2 sessions)
	Investment game	x		x	(1 session)
TR 2	Slot machine	x	x		
	Slot machine	x		x	
TR 3	?	x (?)	x (?)		

The Investment Framing

- Given an initial endowment, participants decide how much of it they want to allocate in a risky asset.
- The risky asset is an exchange-traded fund (ETF) that tracks a basket of assets related to three different (independent) markets.
- There are 2 possible State of Nature: The Good State, SG, is verified when the 3 markets (M1,M2,M3) have a bullish trend.
- The Bad State (SB) occurs when the outcome has at least one bear market.
- For each round players are aware in which State they ended up.
- The Game is repeated for 20 rounds (per phase), every time they have full endowment.
- At the end of the experiment we run the standard Holt and Laury's (2002) risk elicitation task and subjects filled a questionnaire in which we ask, among other questions, if they were usual (or occasional) slot machine gamblers/ financial traders.

The financial framing

RISULTATO - Periodo 9 di 10 0

La tua dotazione iniziale era di 10 ECU e tu hai deciso di investire 6 nel portafoglio rischioso.

Attendi che venga visualizzato l'andamento dei 3 mercati...

		
Microlift	Chip Corporation	Dolltech
		

Hai investito 6 ECU nel portafoglio rischioso.
Il risultato del tuo investimento è pari a 0.6 ECU.

All'inizio del round avevi 10.0 ECU.
Alla fine del round hai 4.6 ECU.

“Strong” Almost Winning Definition

- We define the Strong Almost Winning effect the case where the first two markets bullish and the third is a bear market.
- Also weaker forms of almost winning can occur.
- Moreover we are planning to force this happening in next sessions to compare the robustness of our results (which are not forced).

The chance framing

RISULTATO - Periodo 2 di 10 0

La tua dotazione iniziale era di 10 ECU e tu hai deciso di investire 6 nel portafoglio rischioso.

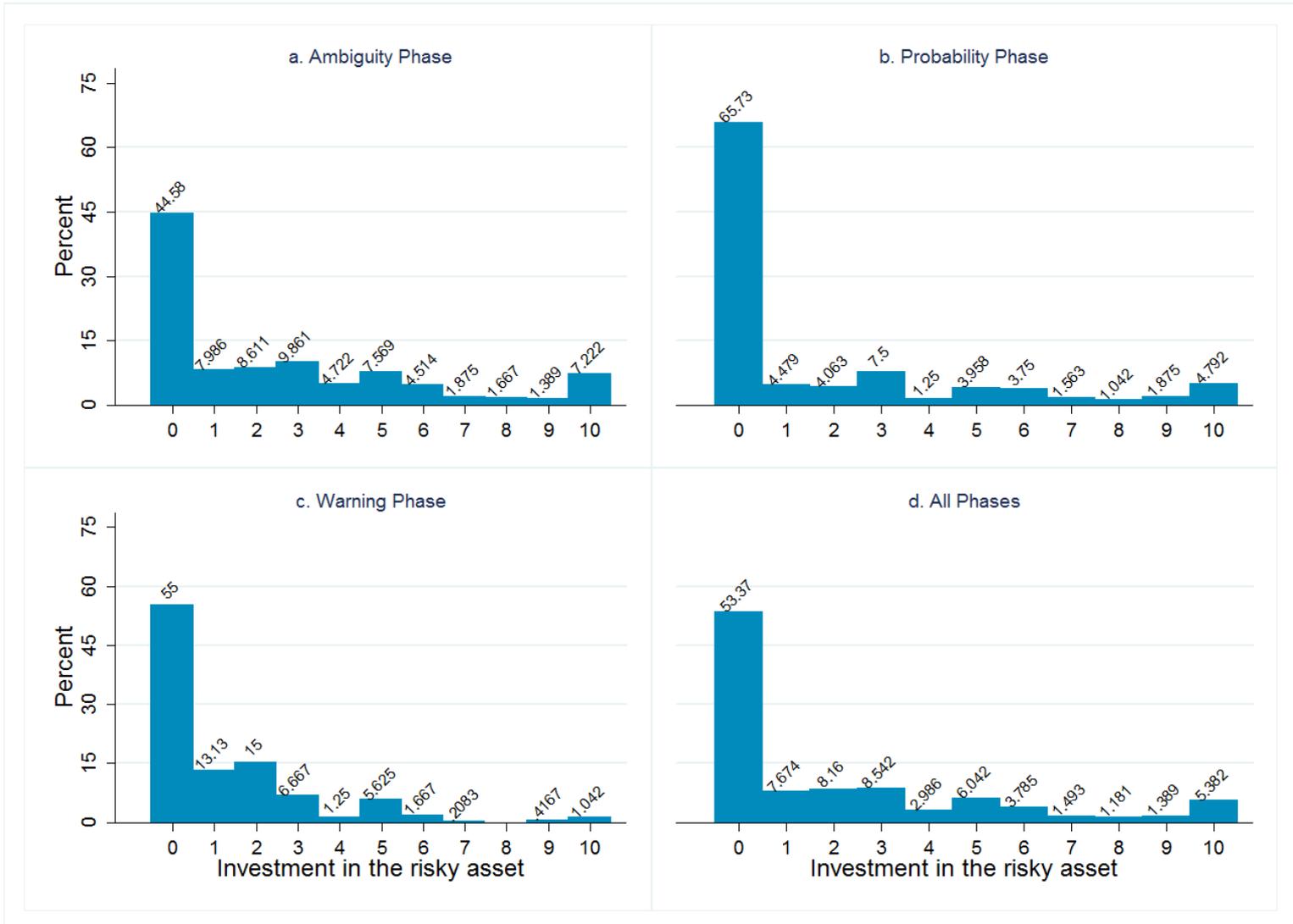
Attendi che venga visualizzato l'andamento dei 3 mercati...

		
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The results from Investment framing



Statistics from Investing Framing

Investment differences by Phase

	Mean	Std.Err.	Obs
Phase Ambiguity	2.407	0.103	960
Phase Prob	1.665	0.094	960
P-value	0.000		
Phase Ambiguity	2.679	0.134	480
Phase Warning	1.219	0.086	480
P-value	0.000		

Investment differences by Player's type

	Mean	Std.Err.	Obs
Low Investor (Average Investment below median value)	0.369	0.032	1400
High Investor (Average Investment above median value)	3.556	0.083	1480
P-value	0.000		
Not usual Player	2.025	0.057	2520
“Strong” Player (Individuals who plays with Slot Machines at least few times per year)	1.881	0.170	360
P-value	0.000		
No Market Investor	2.125	0.058	2520
Market Investor (Individuals who invest on Stock Market at least few times per year)	1.181	0.148	360
P-value	0.000		

Final remarks

- On the basis of these preliminary results we are planning to further investigating the AW effect.
- We are going to change the framing considering the pure chance game with Slot Machine.

RISULTATO - Periodo 2 di 8

0

La tua dotazione iniziale era di 10 ECU e hai deciso di scommettere 6 ECU sulla slot machine.

Attendi il risultato...



Hai scommesso 6 ECU sulla slot machine.
Il risultato della tua giocata è pari a 0.6 ECU.

All'inizio del round avevi 10.0 ECU.
Alla fine del round hai 4.6 ECU.

OK >>

RISULTATO - Periodo 2 di 10

0

La tua dotazione iniziale era di 10 ECU e tu hai deciso di investire 6 nel portafoglio rischioso.

Attendi che venga visualizzato l'andamento dei 3 mercati...



Hai investito 6 ECU nel portafoglio rischioso.

Il risultato del tuo investimento è pari a 0.6 ECU.

All'inizio del round avevi 10.0 ECU.

Alla fine del round hai 4.6 ECU.

OK >>

RISULTATO - Periodo 2 di 10

0

La tua dotazione iniziale era di 10 ECU e tu hai deciso di investire 6 nel portafoglio rischioso.

Attendi che venga visualizzato l'andamento dei 3 mercati...

		
Microlift	Chip Corporation	Dolltech

Hai investito 6 ECU nel portafoglio rischioso.

Il risultato del tuo investimento è pari a 18.0 ECU.

All'inizio del round avevi 10.0 ECU.

Alla fine del round hai 22.0 ECU.

OK >>

RISULTATO - Periodo 9 di 10

0

La tua dotazione iniziale era di 10 ECU e tu hai deciso di investire 6 nel portafoglio rischioso.

Attendi che venga visualizzato l'andamento dei 3 mercati...



Hai investito 6 ECU nel portafoglio rischioso.
Il risultato del tuo investimento è pari a 0.6 ECU.

All'inizio del round avevi 10.0 ECU.
Alla fine del round hai 4.6 ECU.

OK >>

RISULTATO - Periodo 1 di 1

0

La tua dotazione iniziale era di 10 ECU e hai deciso di scommettere 6 ECU sulla slot machine.

Attendi il risultato...



Hai scommesso 6 ECU sulla slot machine.

Il risultato della tua giocata è pari a 0.6 ECU.

All'inizio del round avevi 10.0 ECU.

Alla fine del round hai 4.6 ECU.

OK >>

RISULTATO - Periodo 3 di 8

0

La tua dotazione iniziale era di 10 ECU e hai deciso di scommettere 3 ECU sulla slot machine.

Attendi il risultato...



Hai scommesso 3 ECU sulla slot machine.

Il risultato della tua giocata è pari a 9.0 ECU.

All'inizio del round avevi 10.0 ECU.

Alla fine del round hai 16.0 ECU.

OK >>