

Psychology and Personal Finance

Prospect Theory

First, a Video

What is this class about?

<http://befi.allianzgi.com/en/Topics/Pages/save-more-tomorrow.aspx#>

Course Overview

- Prospect Theory
- Heuristics and Biases
- Sub-Optimal Spending
- Investment Mistakes
- Retirement
- Money and Happiness
- Behavioral Finance in Action
- Team Presentations

Overview: Today's Lecture

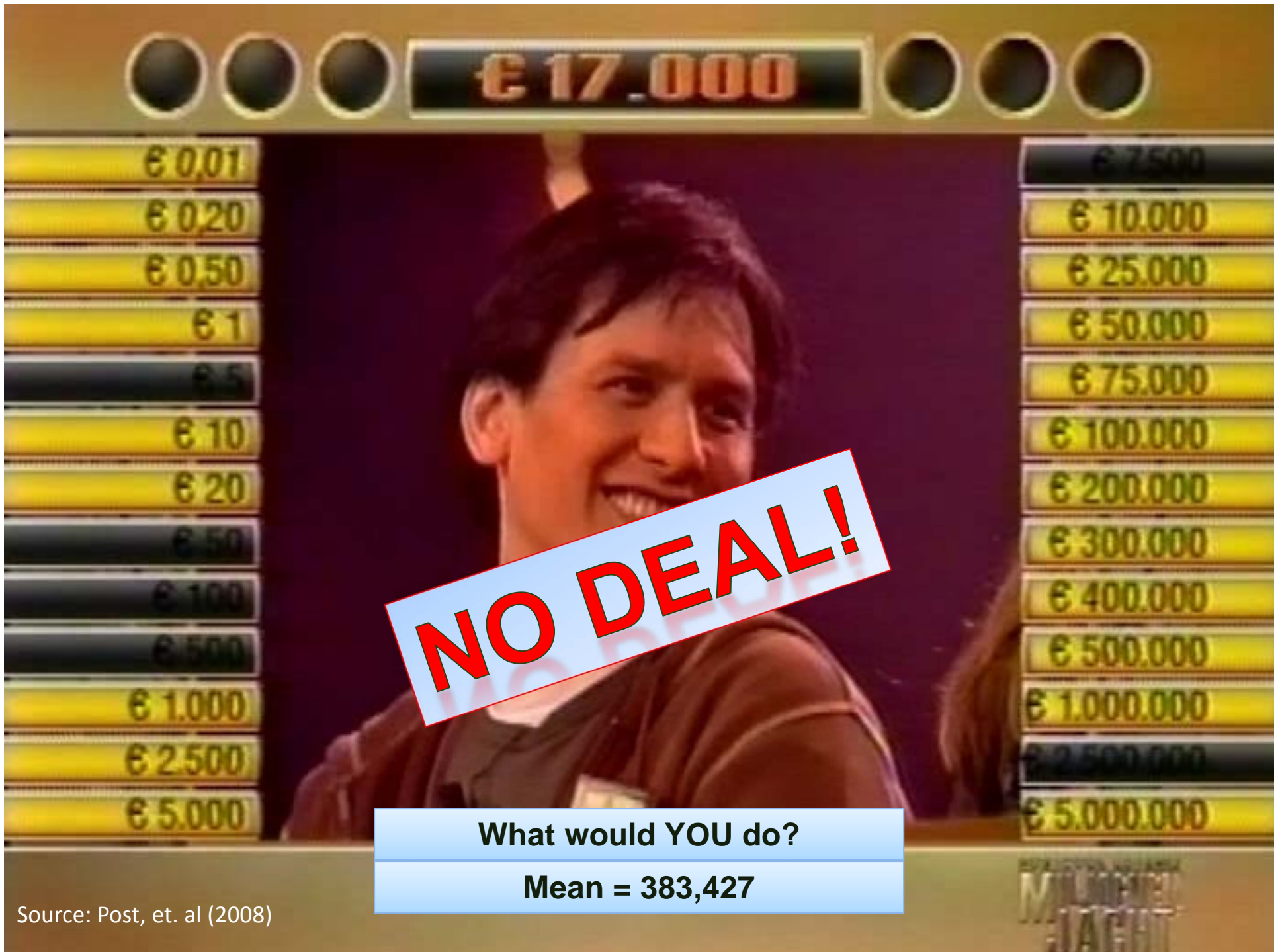
Prospect Theory:
How do we evaluate risky prospects?

First, Let's Play A Game...



Let's Review A Real Episode

Case – “Frank”, Netherlands, 1/1/05

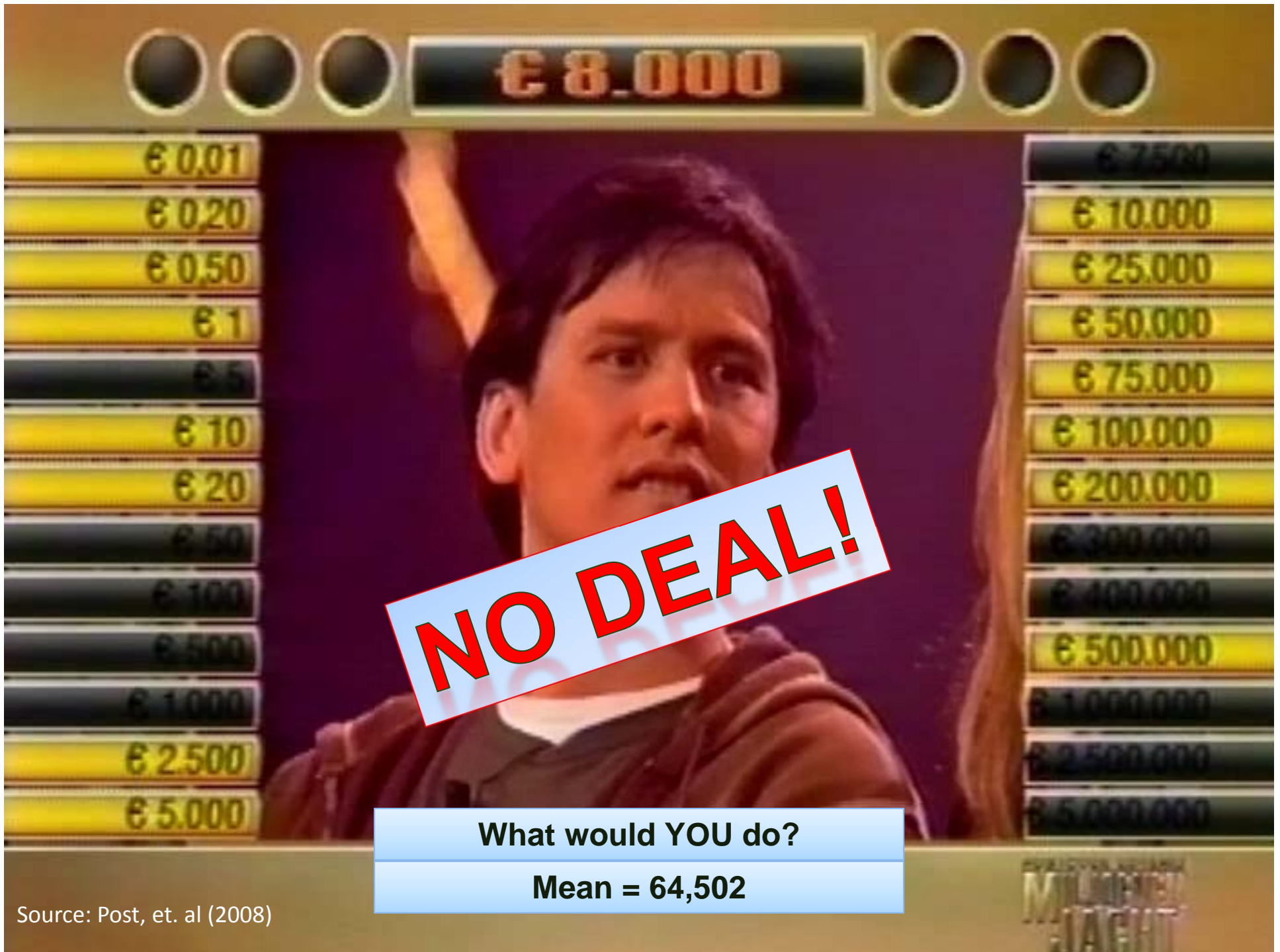


NO DEAL!

What would YOU do?

Mean = 383,427

Source: Post, et. al (2008)

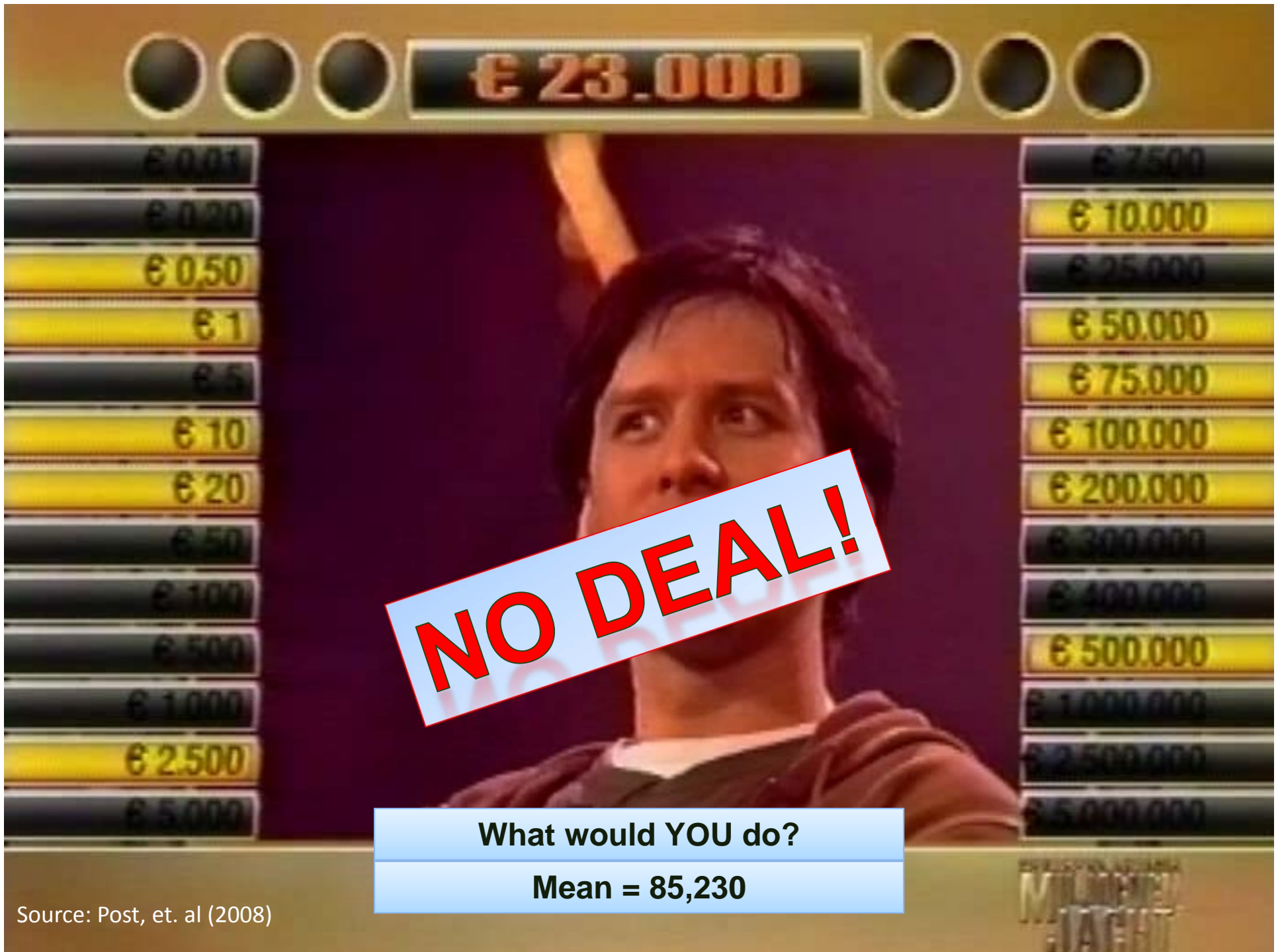


NO DEAL!

What would YOU do?

Mean = 64,502

Source: Post, et. al (2008)

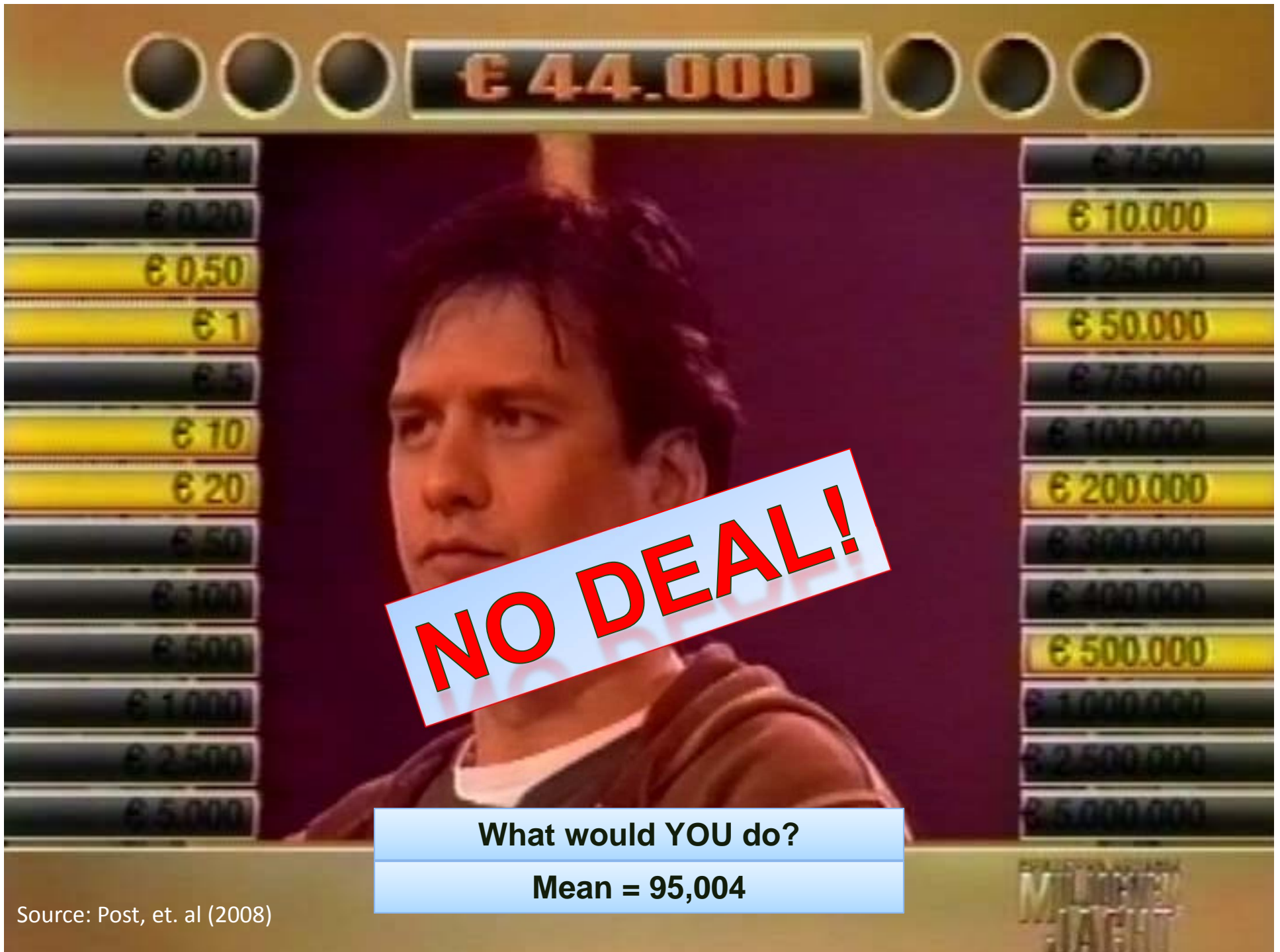


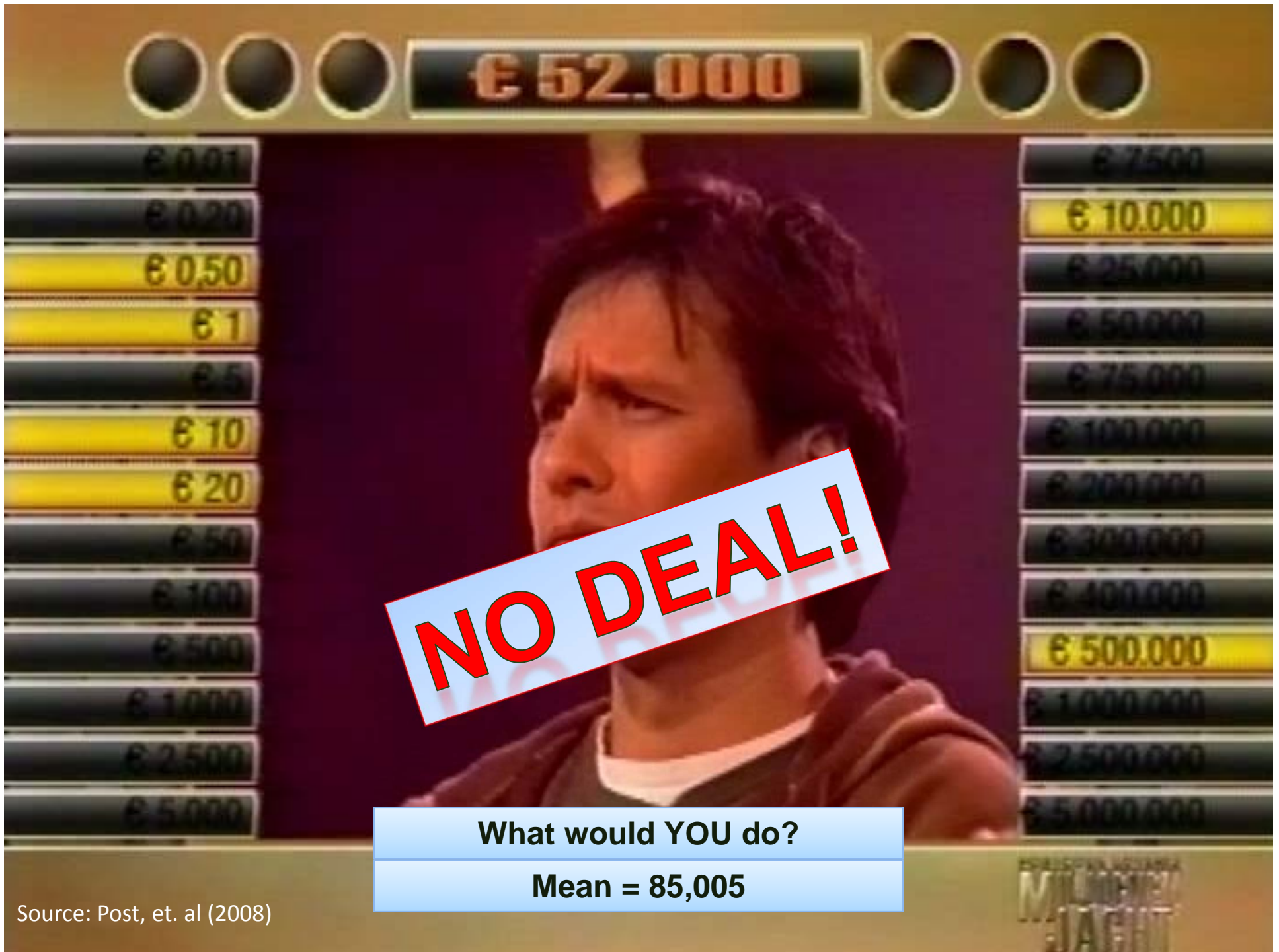
NO DEAL!

What would YOU do?

Mean = 85,230

Source: Post, et. al (2008)



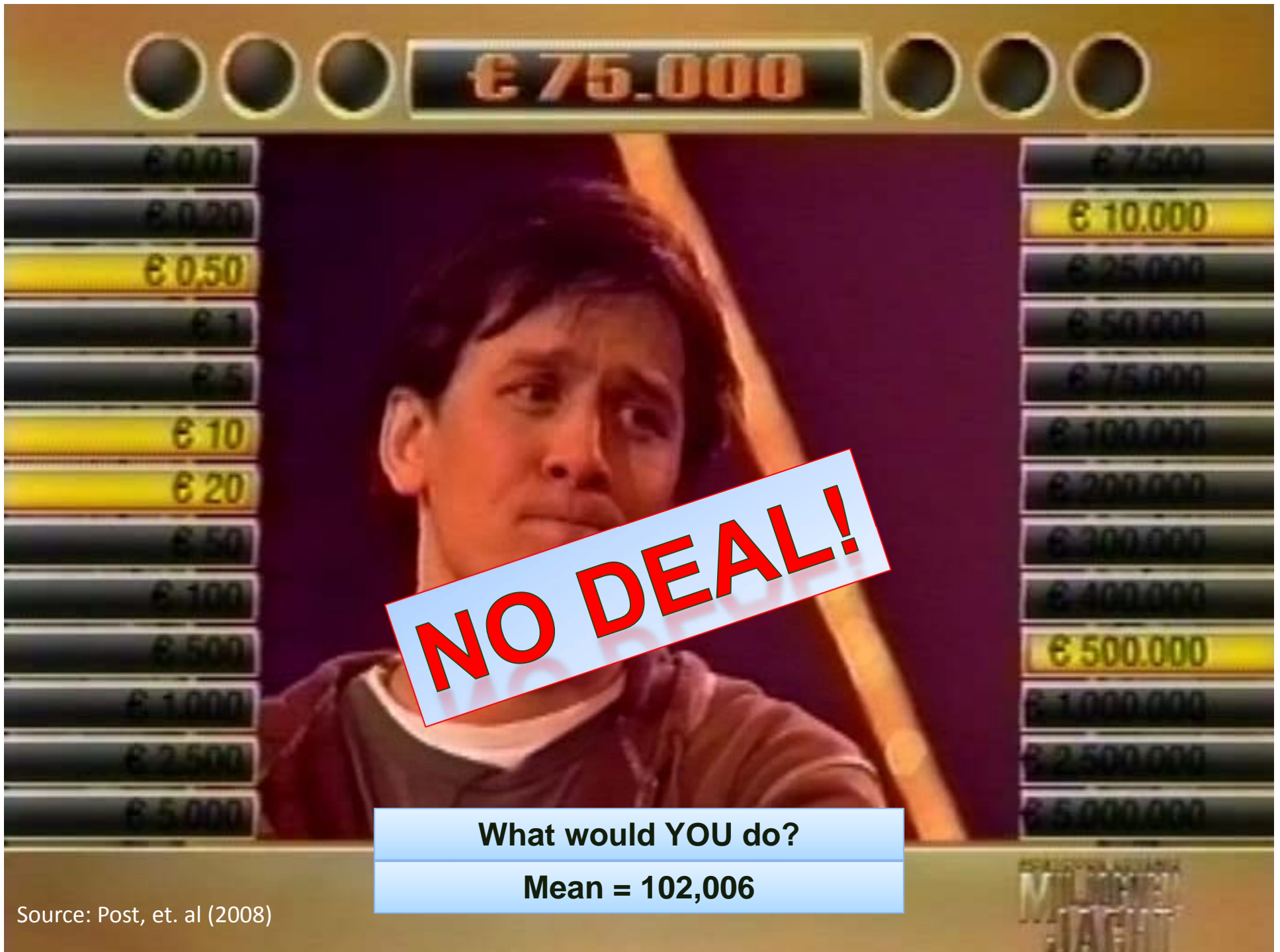


NO DEAL!

What would YOU do?

Mean = 85,005

Source: Post, et. al (2008)



NO DEAL!

What would YOU do?

Mean = 102,006

Source: Post, et. al (2008)



NO DEAL!

What would YOU do?

Mean = 2,508

Source: Post, et. al (2008)

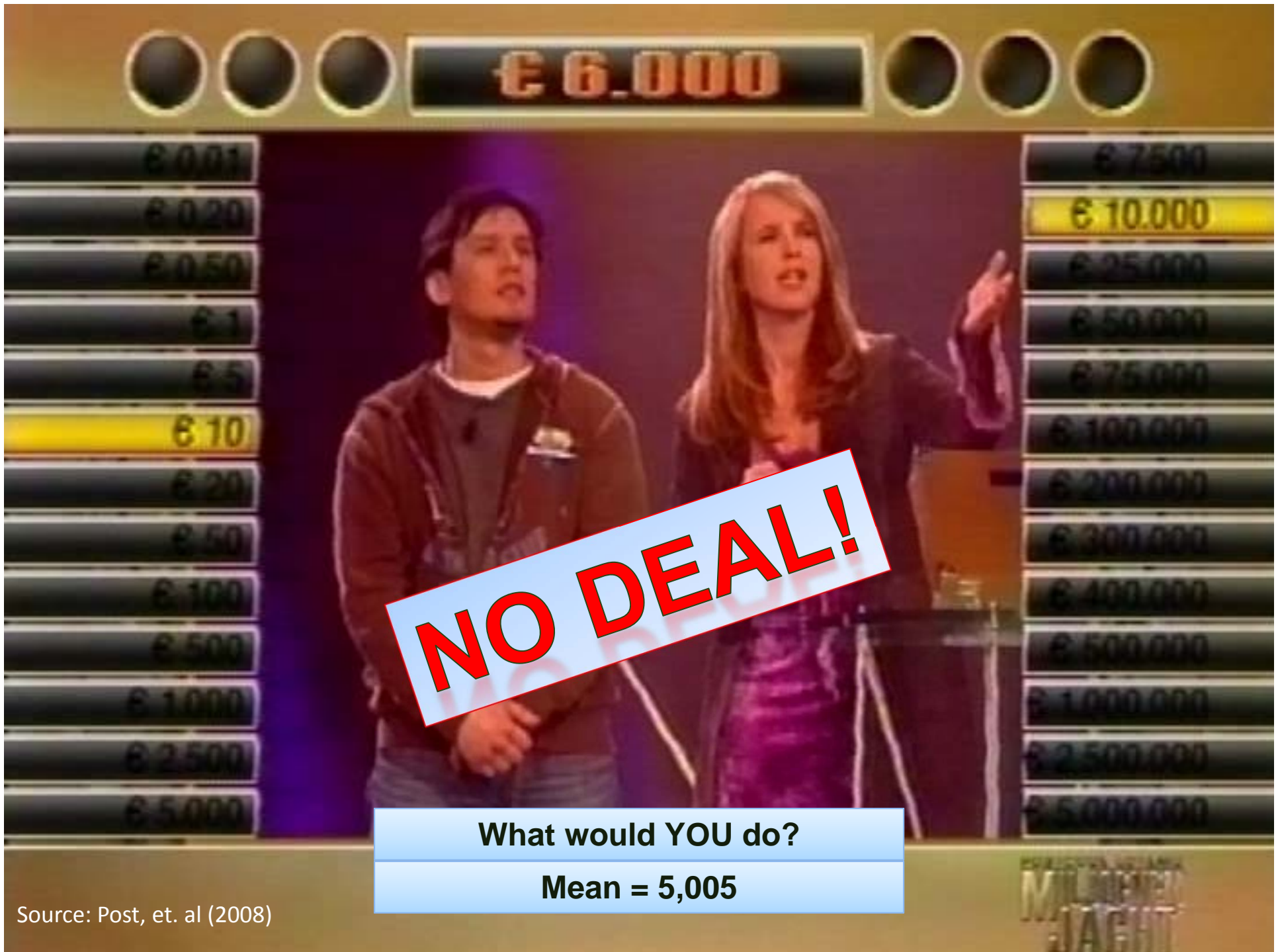


NO DEAL!

What would YOU do?

Mean = 3,343

Source: Post, et. al (2008)



NO DEAL!

What would YOU do?

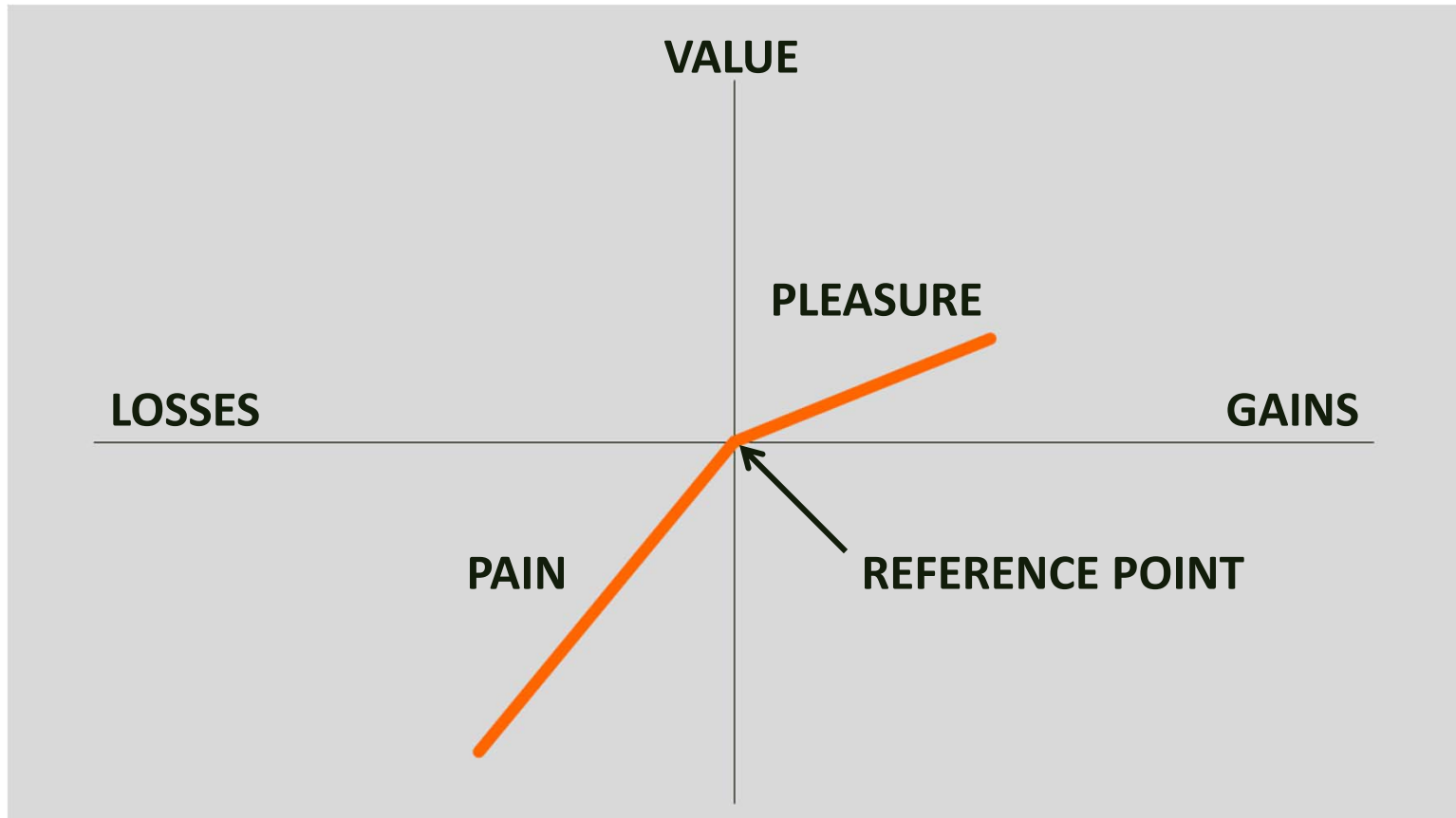
Mean = 5,005

Source: Post, et. al (2008)

Deal or No Deal?

Why did Frank play they way he did?

Prospect Theory – Value Function



Source: Kahneman and Tversky (1979, 1991)

Question:

Which of these two people is happier right now?

- Judy has \$1,000,000 in her 401(k) and lost \$100 bill
- Dave has \$100,000 in his 401(k) and found \$100 bill

Deal or No Deal Reference Point

The Deal or No Deal player makes decisions based on a reference point:

- The \$1,000,000 Case?
- The banker's offer?
- \$0 (Everything is a gain)?



Prospect Theory Recap

1. Reference Point

- Decisions are made based on the reference point, which can change with time

Question:

Consider the following bet: I flip a coin –either you win \$200 or you lose \$100. Are you willing to play it for real money right now?

Why Do People Reject The Bet?

- Samuelson's bet is a great investment, since you "invest" \$100 and you either lose it or get \$300 back.
- There is really no "risk" in losing \$100 (other than looking foolish in front of the class).
- Yet, most people reject the bet. Why?

Loss Aversion

- Losses loom larger than gains
- The pain of a loss is twice as great as the pleasure of a gain
- We simply hate to lose – even small amounts

Prospect Theory Recap

1. Reference Point
2. Loss Aversion
 - The pain of a loss is greater than the pleasure of an equal gain

Question:

You purchase a stock at \$32 and it is now selling at \$40. In the next period, it is equally likely that it will increase or decrease by \$10. Would you:

(A) Sell and realize an \$8 gain OR

(B) Hold on for a 50/50 shot at another gain or a loss?

Question:

You purchased stock for \$50 and it is now selling at \$40. In the next period, it is equally likely that it will increase or decrease by \$10. Would you:

(A) Sell and realize a \$10 loss? OR

(B) Hold on for a 50/50 shot at another loss or breaking even?

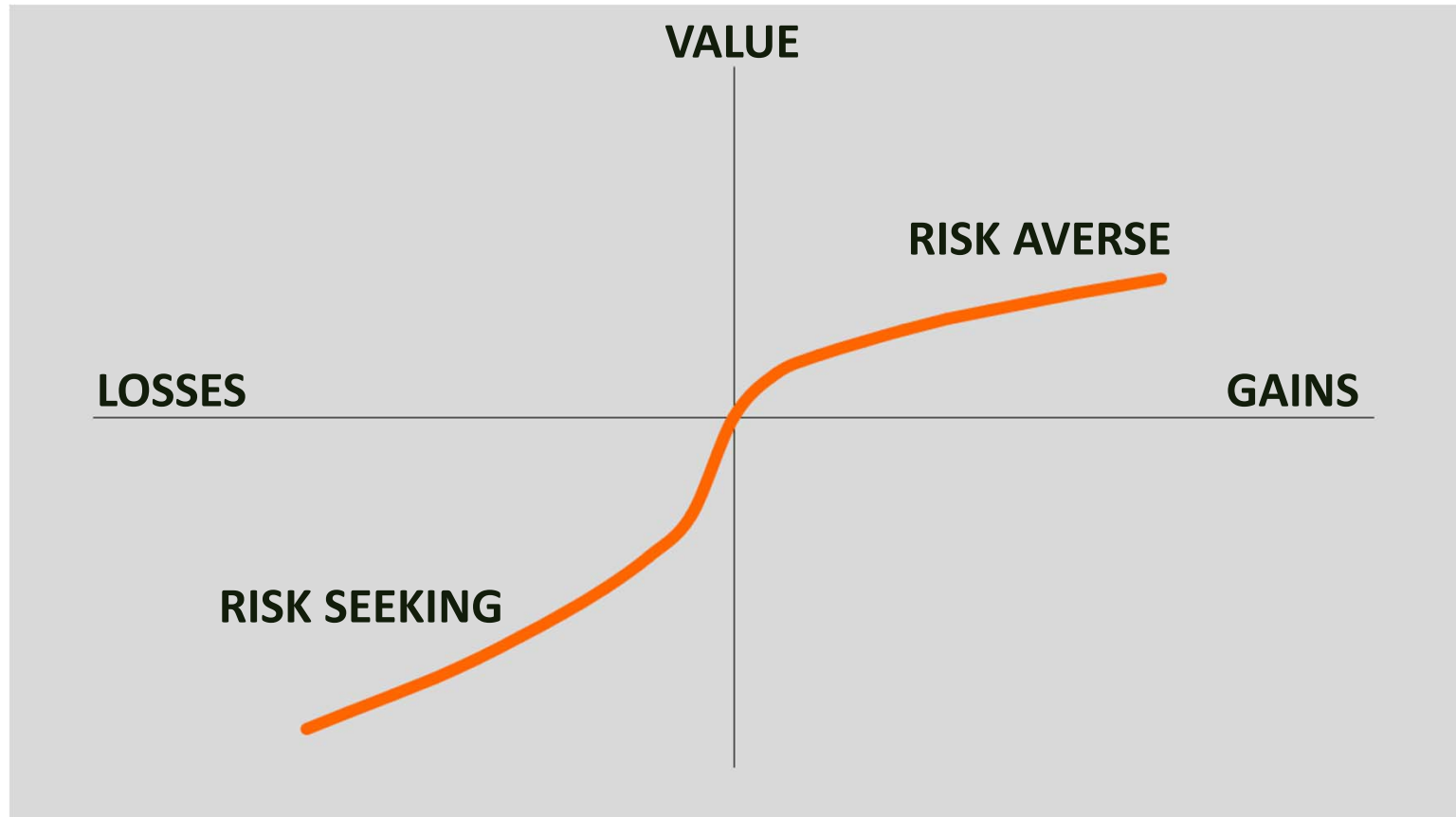
Stock Performance

Why does the historical performance of the stock affect your decision?

Break Even Effect

- Losers become more willing to take on risk in an attempt to break even
- On Deal or No Deal, 56% reject any given “deal”
- After bad fortune, rejection increases to 79%

Prospect Theory Continued

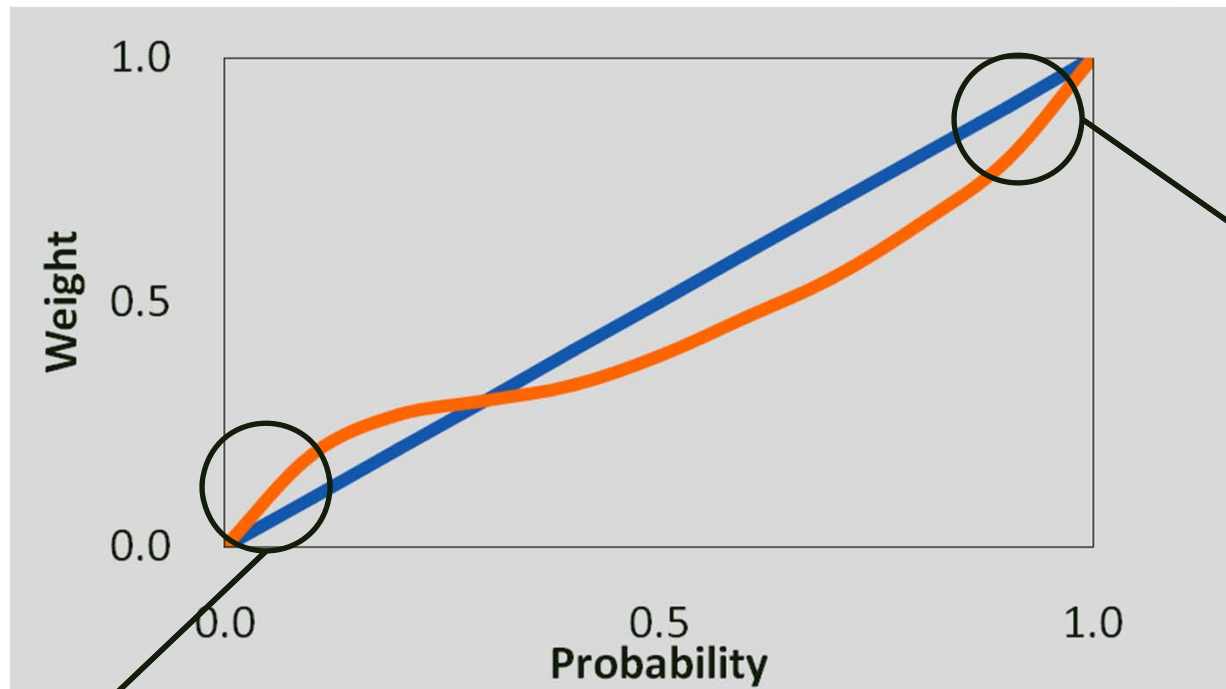


Source: Kahneman and Tversky (1979, 1991)

Prospect Theory Recap

1. Reference Point
2. Loss Aversion
3. Break Even Effect
 - When experiencing losses, people tend to exhibit risk seeking behavior to “break even”

Prospect Theory – Weighting Function



The Lottery



I-Pod
Extended
Warranty

Source: Kahneman and Tversky (1979, 1991)

Weighting Extremes

You are less likely to win a lottery than to die by:



Source: <http://saneok.org/files/Facts&Stats/LottoFacts.pdf>

Weighting Extremes

- Most iPods don't fail within warranty period
- Would you really want to use the warranty after 3 years – why not get a new iPod?



Prospect Theory Recap

1. Reference Point
2. Loss Aversion
3. Break Even Effect
4. Overweighting Small Probabilities
 - I can win the lottery!
5. Underweighting Large Probabilities
 - Almost guarantee is not enough!

Prospect Theory has even broader implications...

The Endowment Effect

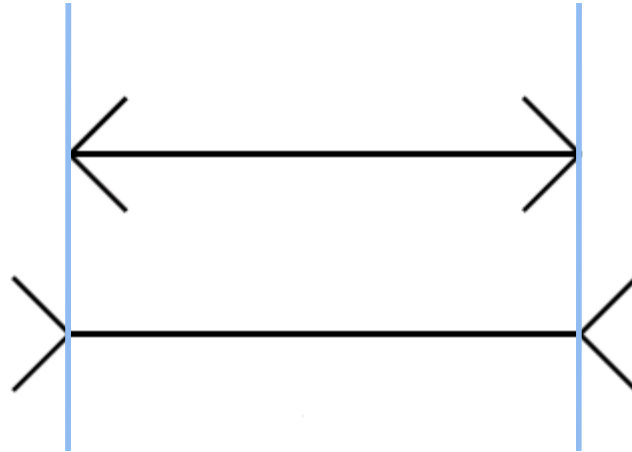
People often demand much more to give up an item than they would pay to acquire it

- When asked to choose between an iPod and \$100, subjects were more likely to choose \$100
- When given an iPod and asked to trade for \$100, most turned down the offer



Source: <http://www.livescience.com/health/080701-saving-stuff.html>

Which Line is Longer?



The way in which things are framed can influence judgment.

Which Steak is More Appealing?



Source: Levin and Gaeth (1988)

Reframing Retirement

75% Rule

How much of
current spending
you will maintain
in retirement

Exercise One

Write down three expenditures
you will **maintain** in retirement.

1. _____
2. _____
3. _____

Reframing Retirement

25% Rule

How much of
current spending
you will eliminate
in retirement

Exercise Two

Write down three expenditures
you will **eliminate** in retirement.

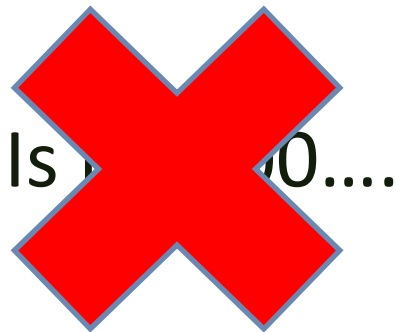
1. _____
2. _____
3. _____

Prospect Theory Recap

1. Reference Point
2. Loss Aversion
3. Break Even Effect
4. Overweighting Small Probabilities
5. Underweighting Large Probabilities
6. Endowment Effect
7. Framing

And Next Class...

Sum These Numbers OUT LOUD:



1000

10

1000

20

1000

30

1000

40

...or 4100?

Sometimes, heuristics can lead to the wrong answer!