Soft Skills are DA Skills Too

Overview of Soft Skills Workshop

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Today's Purpose

- Give you an overview of the Soft Skills Workshop
- Get your feedback
- Promote participation at the next Soft Skills Workshop and track to be held at the 2012 INFORMS BA/OR conference

Need for the Soft Skills Workshop

Sodhi and Son (2008) found that the most mentioned skills in job ads for operations research (OR) professionals were communications related.

A third of the ads asked for team work skills and another third were looking for leadership skills.

They conclude, “Noticeable by its absence in many OR programs … is the development of “soft” skills. … Employers might find that newly hired or even somewhat experienced OR graduates might not meet all their skill requirements and might need in-house training.”

ManMohan S. Sodhi, Byung-Gak Son
Cass Business School, London
Interfaces, Vol. 38, No. 2, March–April 2008, pp. 140–146

Need for the Soft Skills Workshop

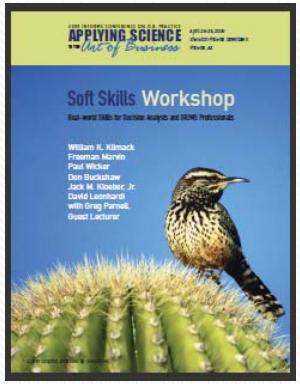
- The Industry Situation:
  - Great decision analysis (DA) educational programs
  - Hypothesis is that interpersonal requirements and risks are a barrier to use of DA
  - Many analysts are not aware of the many techniques developed and used by group facilitators
- Solution was to use a workshop to highlight and practice appropriate interpersonal skills
- INFORMS Conference on Practice was a natural fit

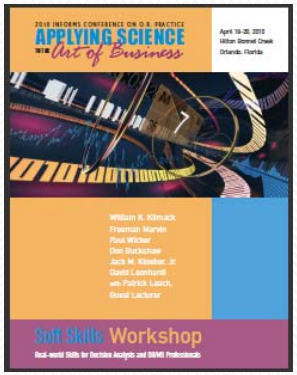
- The purpose of the workshop is to introduce and practice the basic interpersonal skills needed to apply decision analysis effectively

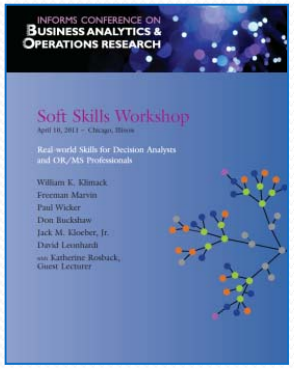
Four years
128 man days of contact hours

- Conducted at the 2008, 2009, 2010, & 2011 INFORMS Conference on Practice

	Attendance
2008	36
2009	24
2010	31
2011	50







SSW Developers



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- Jack Kloeber
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- David Leonhardi
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- Freeman Marvin
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- Paul Wicker
  Senior Consultant,
  Decision Strategies, Inc.

Acknowledgements

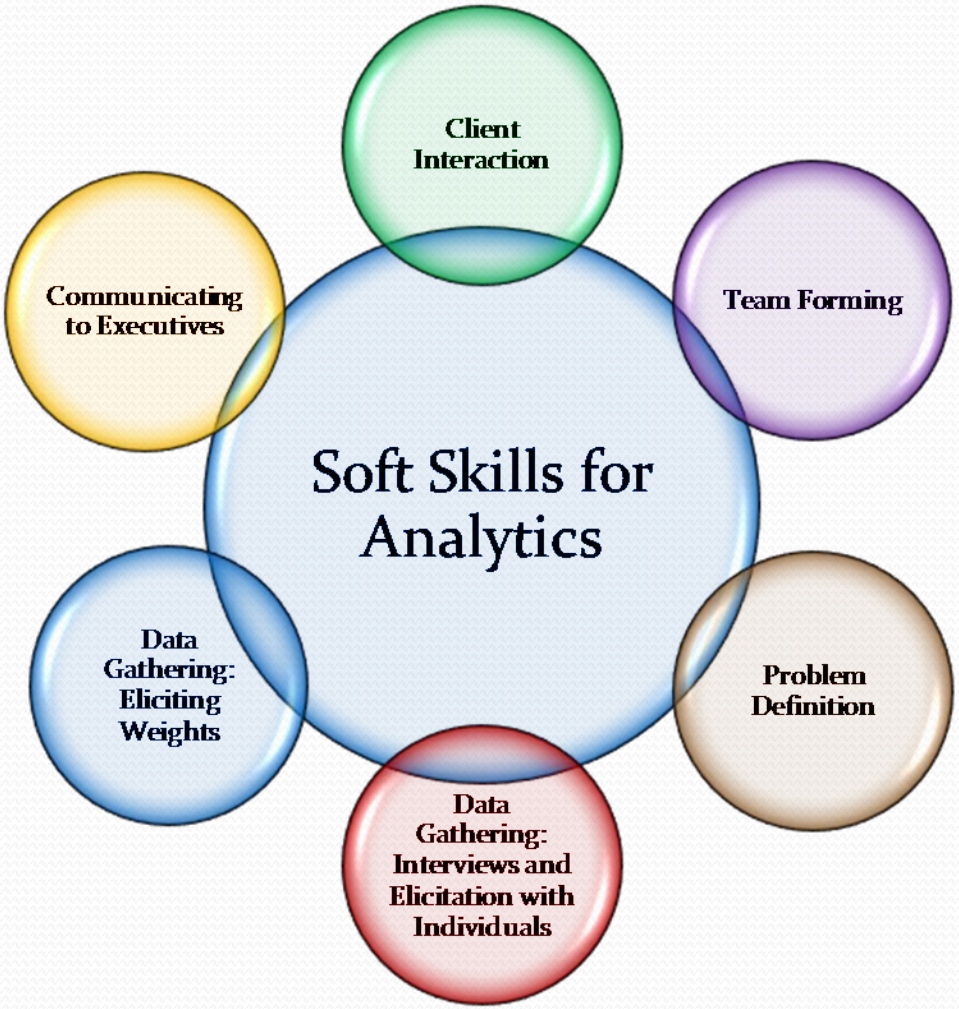
- Guest Lecturers
  - Greg Parnell, US Military Academy
  - Patrick Leach, Decision Strategies, Inc.
  - Katherine Rosback, KRE Inc.
- Guest Facilitators
  - Dan McCarthy, US Military Academy
  - Ellen Coopersmith, Decision Frameworks
  - Eric Johnson, Bristol-Myers Squibb
  - Frank Koch, Chevron (retired)

What are Soft Skills?
Wikipedia Examples

- Participate in a team (see team building)
- Lead a team (see leadership)
- Unite a team amidst cultural differences
- Defuse arguments with timing, instructions and polite, concise language
- Maintain meaningless conversation (small talk)
- Maintain meaningful conversation (discussion/debate)
- Feign interest and speak intelligently about any topic
- Teach others
- Provide services
- Negotiate
- Motivate others
- Make decisions
- Solve problems
- Observe forms of etiquette
- Interact with others
- Listening
- Coaching

We have divided Soft Skills into Six Sets of People-to-People Skills

- Partnering with Clients
- Framing Problems
- Working in Teams
- Interviewing Experts
- Eliciting from Groups
- Communicating Results



Lesson Structure

1 hour

- Lesson Outline
- Lesson Objectives
- Lesson Body
- Selected References

½ hour

- Practical Exercise

Uncovering the Risk Attitude of Senior Decision Makers

Purpose

Since risk and uncertainty are present in most industries, building a consistent approach to accounting for riskiness of alternatives in decision making should be part of good risk management.

Assessing risk attitudes and converting these attitudes into algorithms for consistent valuation and comparison is one approach.

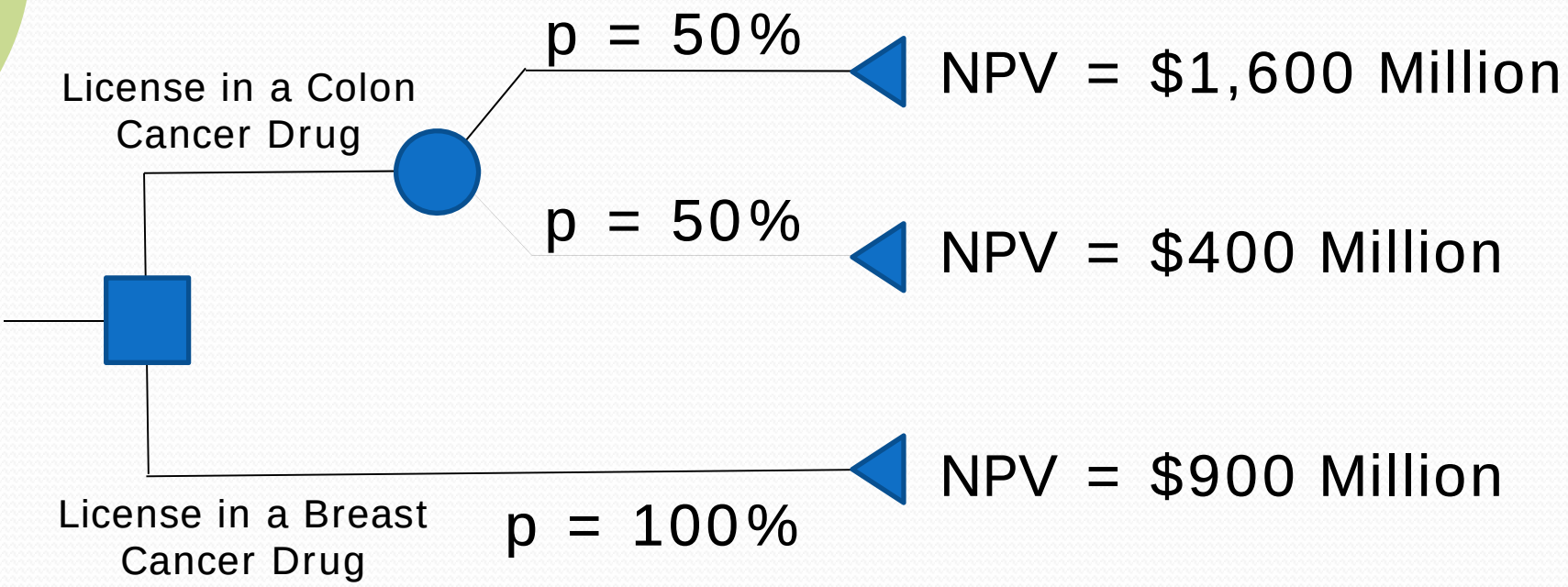
We will talk about an interview method for uncovering a leader's risk attitude.

Flow of Interview with Decision Maker (s)

- What is risk attitude?
- How does knowing our risk attitude help?
- Details behind a risk tolerance assessment
- Conditioning
- Elicitation
- Confirmation

What is a Risk Attitude? Suppose you were faced with a choice---

Which would you choose?

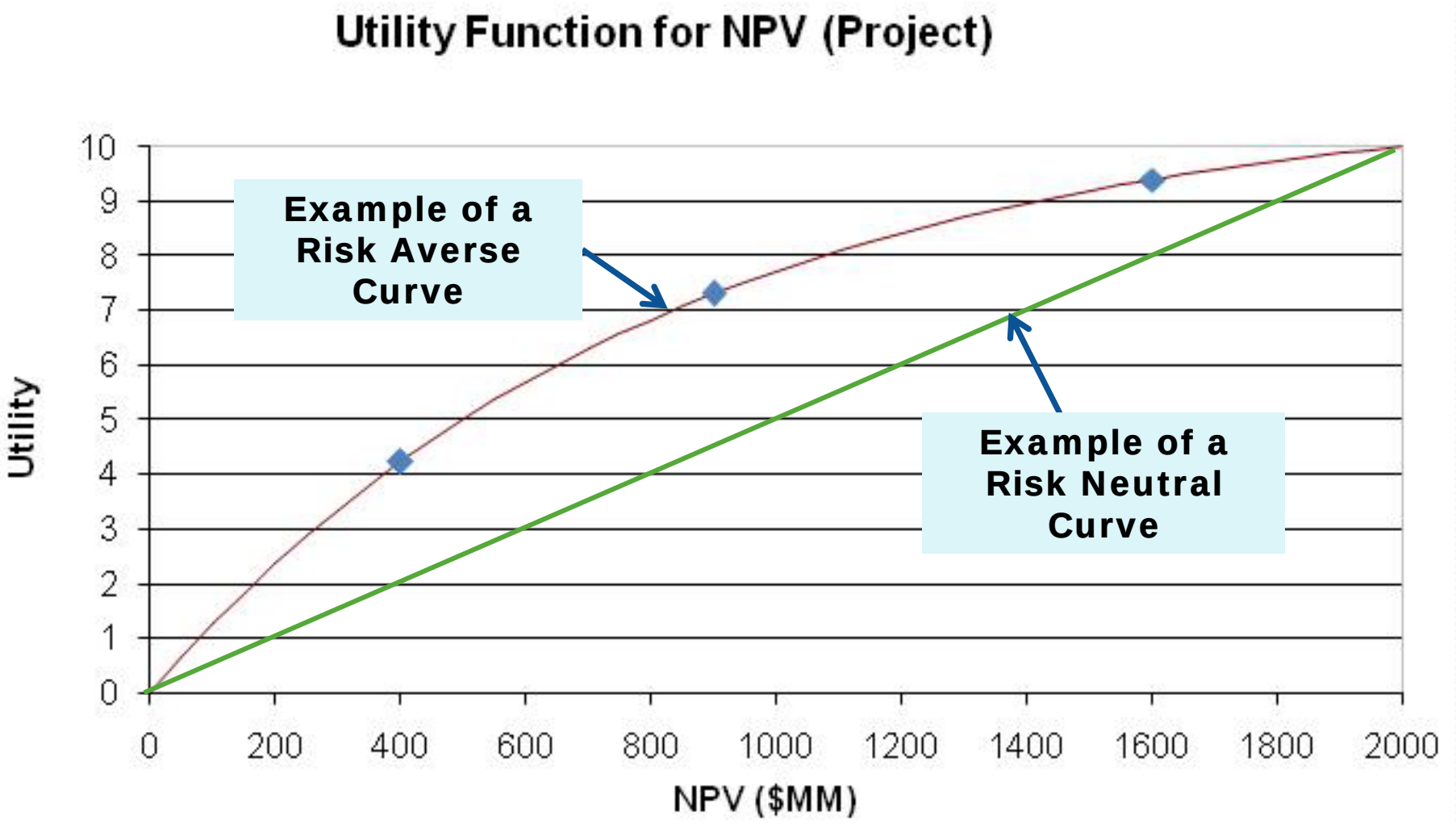


Both products are awaiting approval, both are equally likely to be approved, both are assumed to have a 10 year market life before patent expiry and have the same deal terms. The NPV assumes regulatory approval.

Your risk attitude would be revealed by your choice.

- *If you chose to fund the breast cancer drug, you exhibited risk averse attitudes.*
  - The riskiness of the colon cancer NPV outcomes drove your decision to fund the less risky breast cancer drug – even though the colon cancer drug has a higher *expected* NPV.
- *If you chose to fund the colon cancer drug, you exhibited a risk neutral or risk seeking attitude.*
  - The riskiness did not deter you from choosing the highest *expected* NPV drug.
- *Most DMs have either risk averse or risk neutral attitudes.*

Risk Attitude can be turned into a *conversion curve,* to adjust project value



One example shows the impact of using risk attitude to compare alternatives.

The risk averse DM would calculate Expected Utility using the utility of the uncertain outcomes.

Then calculate the Certain Equivalent

E(utility CC Drug) = 50%* 9.4 + 50%*4.2 = 6.8

Certain Equivalent of CC Drug = $800M

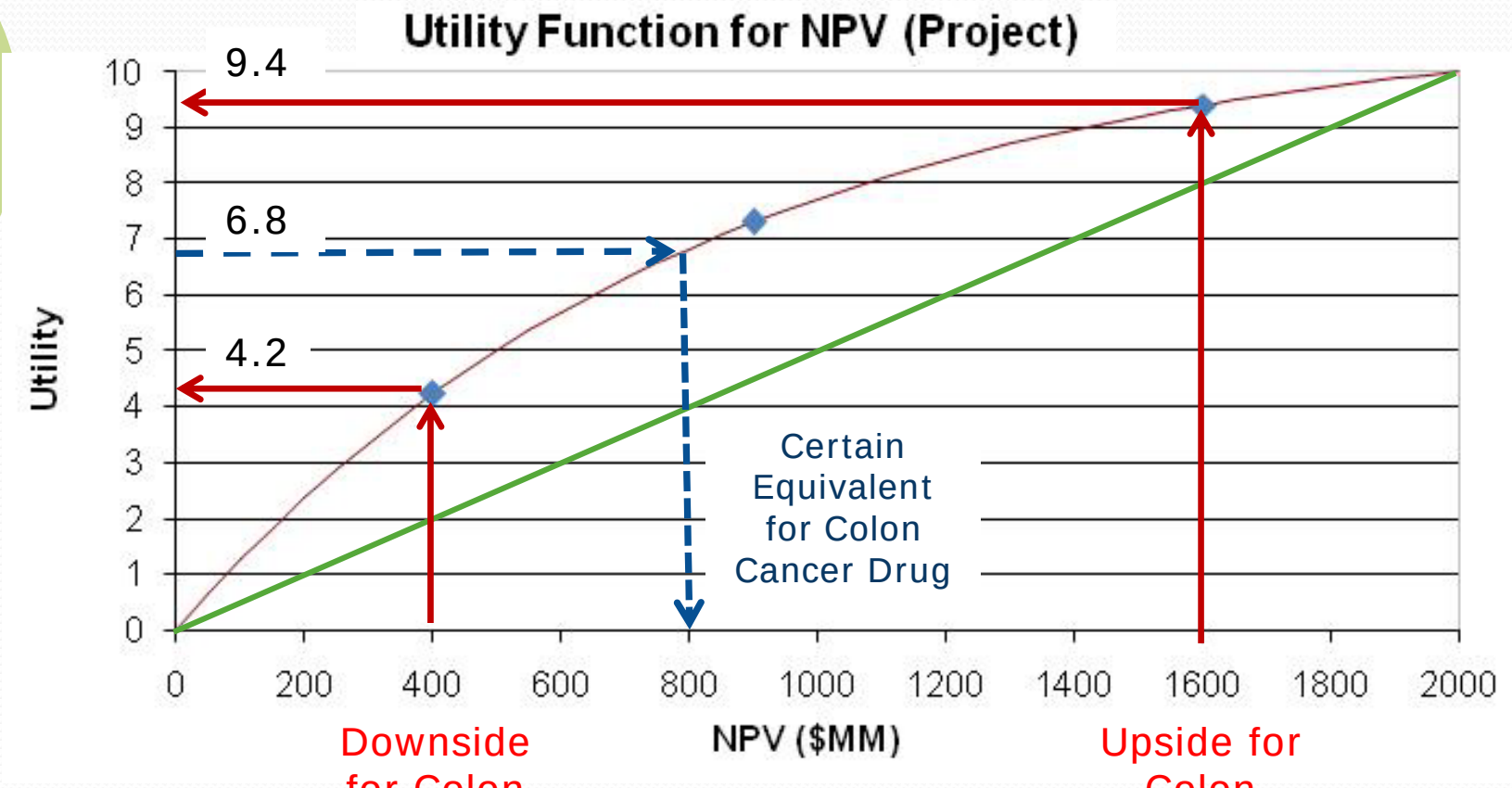
BC drug *is* certain = $900M

The risk neutral DM would just use Expected NPV(no risk impact)

E(NPV CC Drug) = 50%*1600+50%*400 = $1,000 M

E(NPV BC Drug) = $900 M

Risk Attitude can be turned into a *conversion curve,* to adjust project value



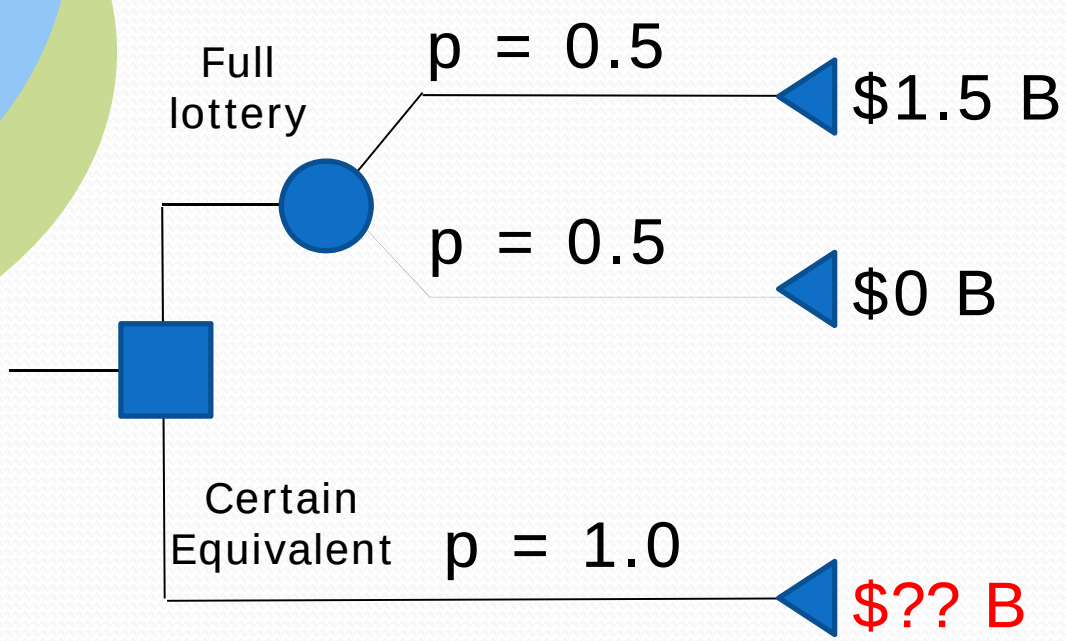
How does knowing our risk attitude help?

- If we know the utility (risk attitude) curve of the decision maker(s), we can help her/him be consistent in evaluations of risky alternatives.
- McNamee and Celona (1987: 94) suggest that an exponential utility function can be fit to elicited risk attitude data.

$$Utility(x) = a - be^{-x/R}$$

- They define R as the risk tolerance or (1/R) as the risk-aversion coefficient. Usually we know a and b due to the framing of the decision. One question can help us find the R.

One Example will demonstrate the method.



Lottery

We have a 50 / 50 chance of achieving either the $1.5B or $0B in NPV with a drug

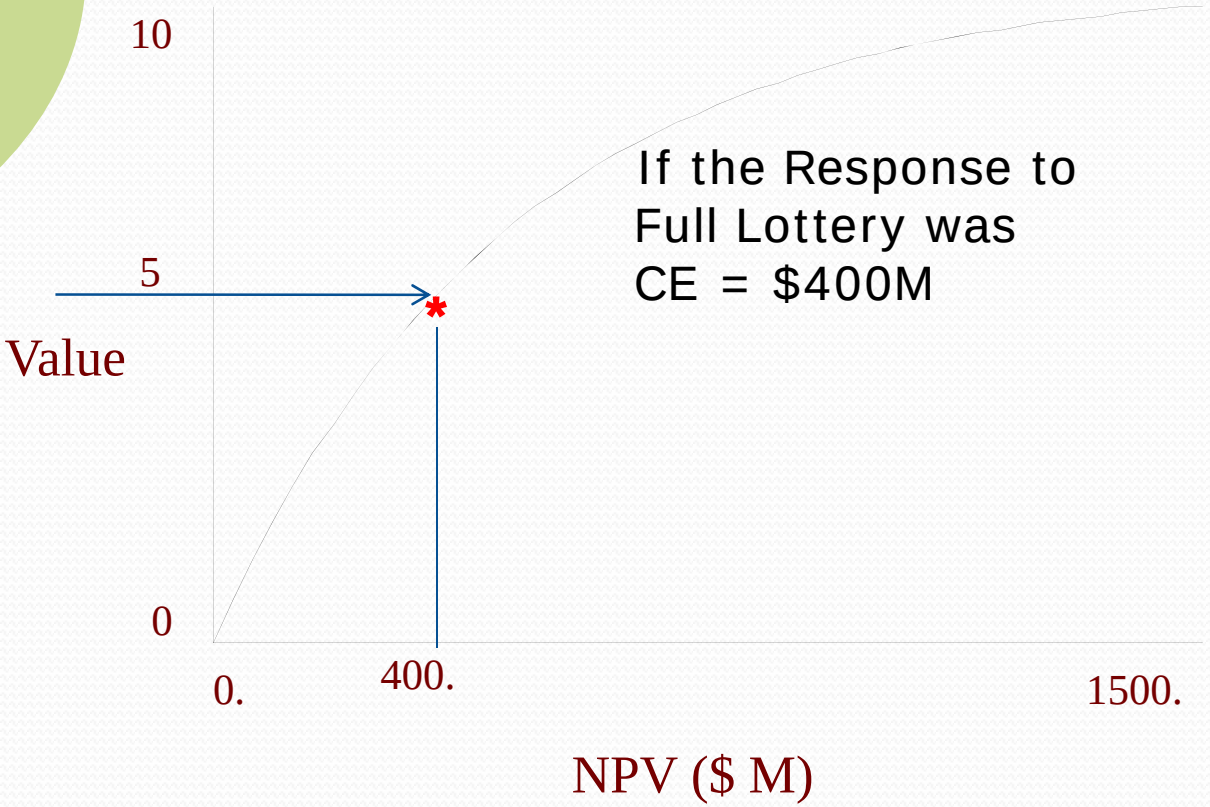
vs

Certain Outcome

We could choose to not play the lottery and achieve a certain level of NPV guaranteed.

Key Question:
What would the Certain Outcome be so that you would have a hard time choosing between it and the lottery?

Only one conversion curve (risk tolerance curve) fits the answer just elicited.



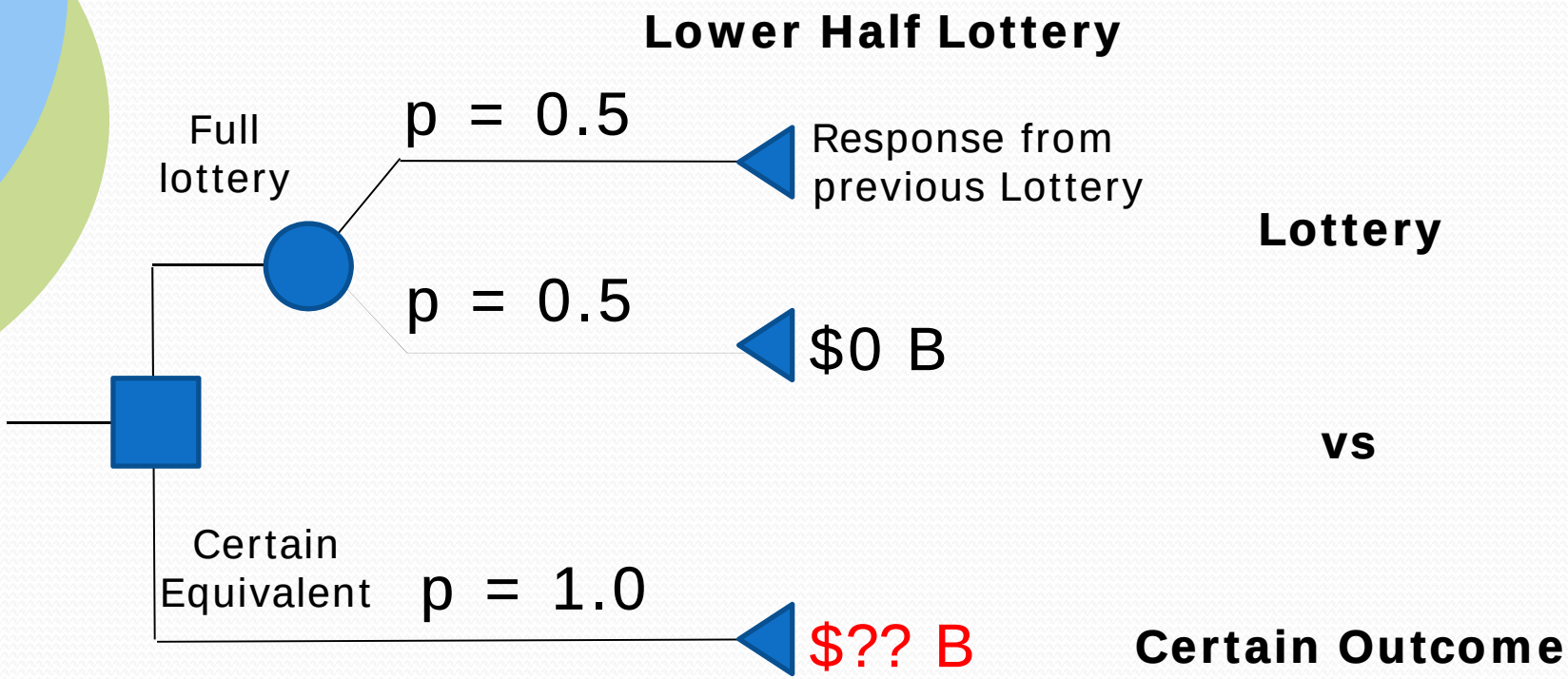
Question:

What if we have different attitudes for low NPV risks compared to high NPV risks?

Can just one elicitation capture that change in risk attitude?

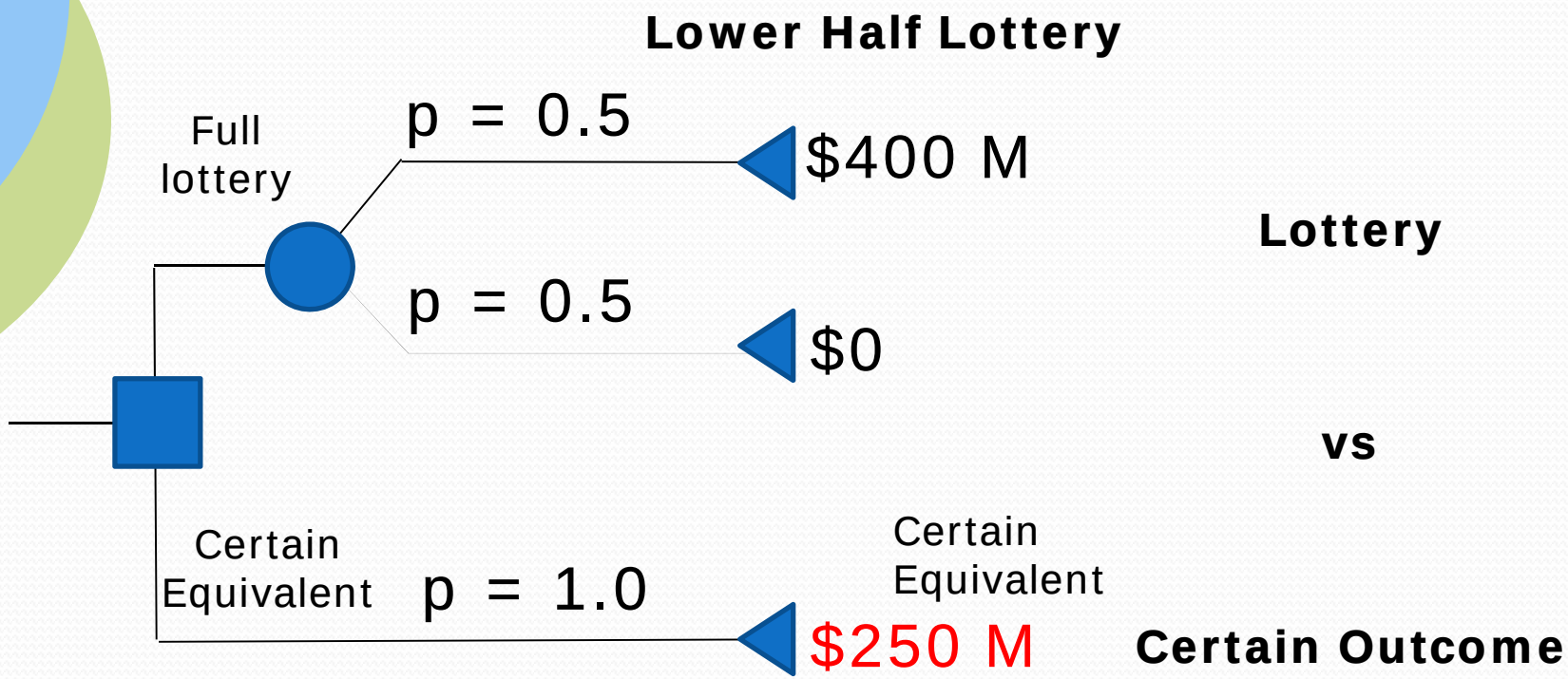
Ans: No.

Assessing Lower Level Risk tolerance related to Project Level NPV



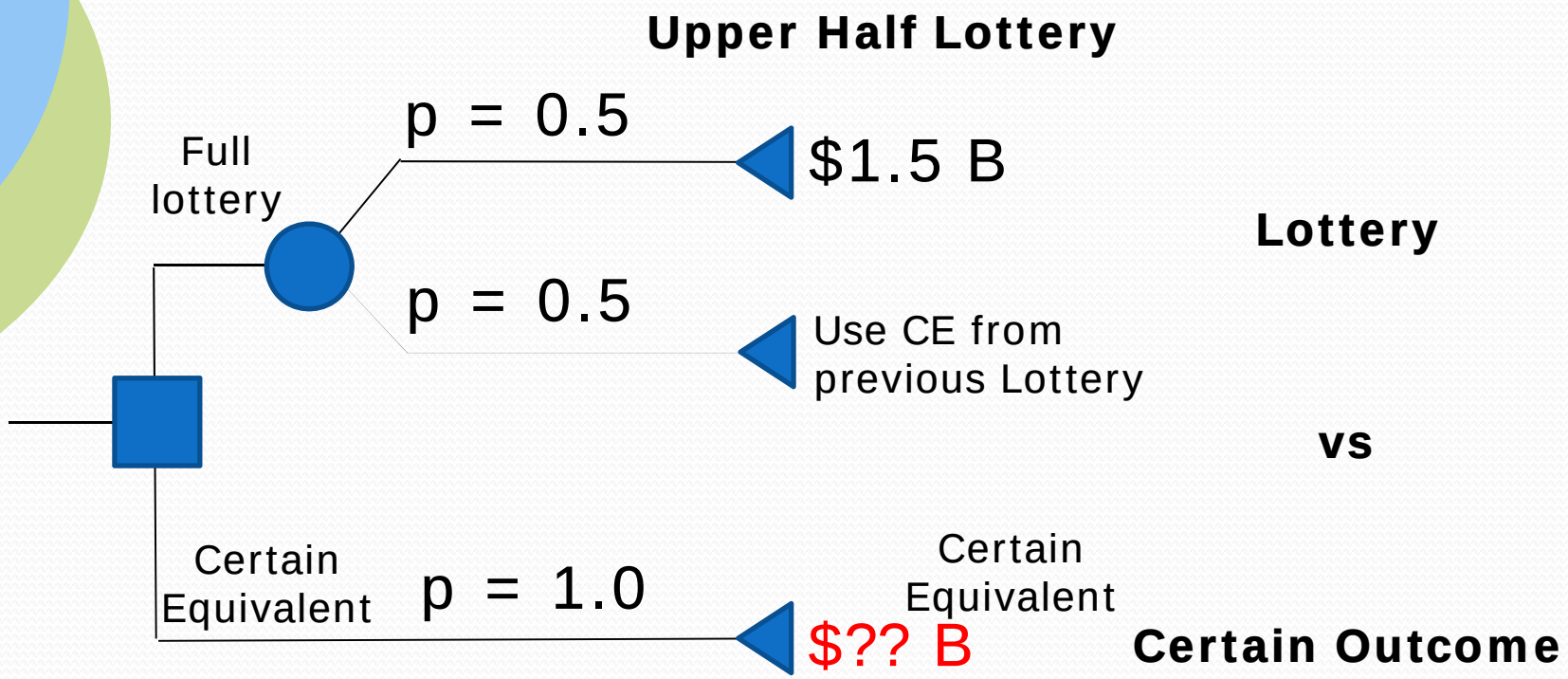
Key Question:
What would the Certain Outcome be so that you would have a hard time choosing between it and the lottery?

Results from lower level risk tolerance assessment



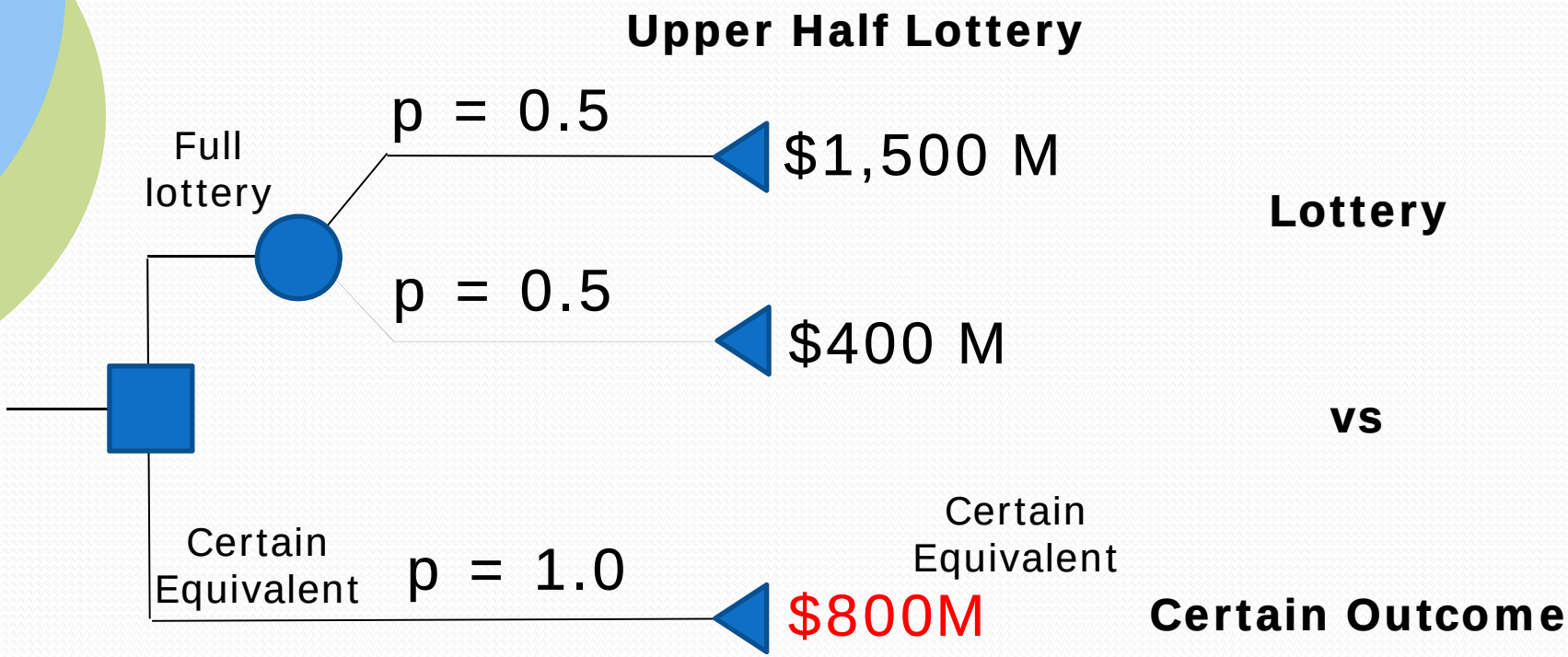
Key Question:
What would the Certain Outcome be so that you would have a hard time choosing between it and the lottery?

Assessing Lower Level Risk tolerance related to Project Level NPV



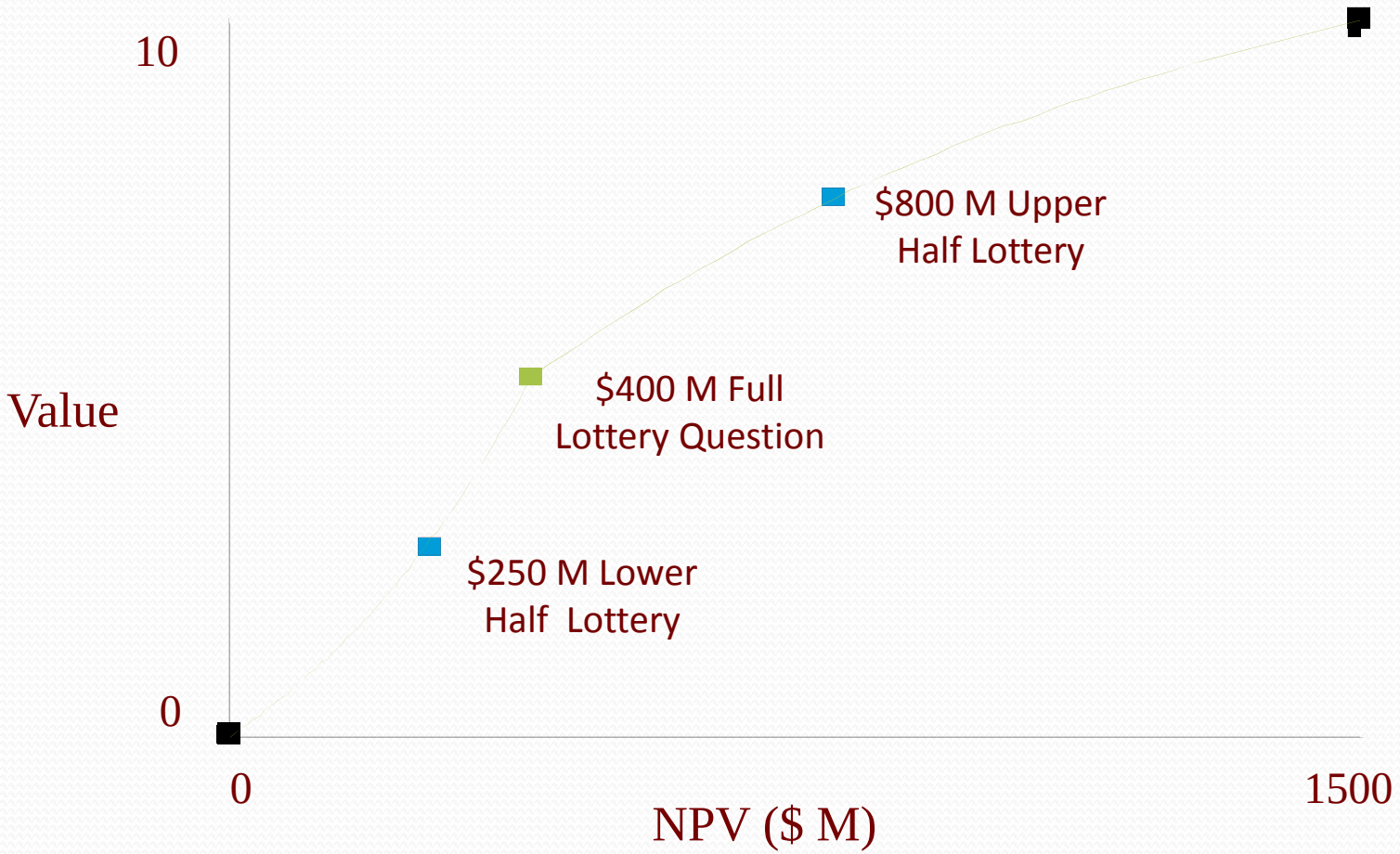
Key Question:
What would the Certain Outcome be so that you would have a hard time choosing between it and the lottery?

Assessing Lower Level Risk tolerance related to Project Level NPV



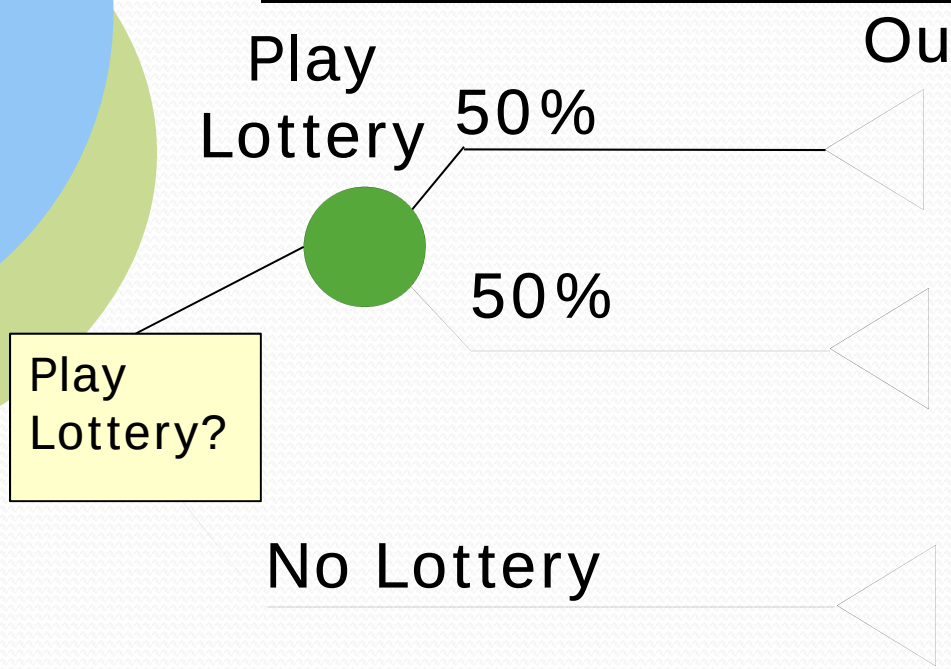
Key Question:
What would the Certain Outcome be so that you would have a hard time choosing between it and the lottery?

Using all three responses we can build a more tailored risk attitude curve.



Assessing risk tolerance for Total NPV

Note: technical risk and possible loss are included



Lottery

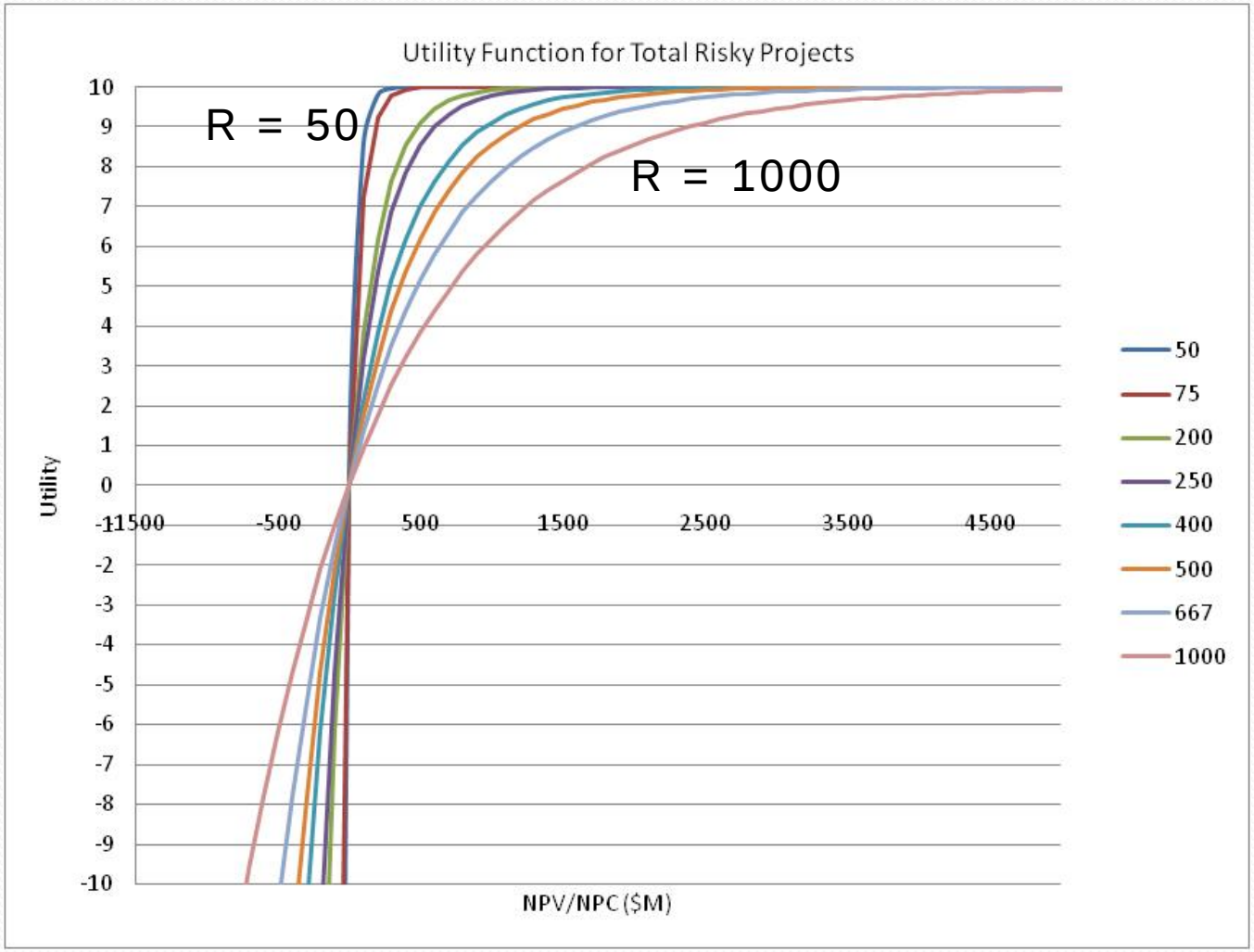
We have a 50 / 50 chance of either winning $R or losing $ R/2

What is the highest value of R for which you would choose the risky lottery?

R = $ 7 B?
R = $ 4 B?
R = $ 1 B?
R = $ 500M?
R = $ 100M?
R = $ 50M?

This method of determining R (risk tolerance) is helpful for consistently making decisions where **loss** as well as uncertainty in **winning** is possible (such as investing in a risky drug development project).

Answers to the lottery translate into dramatically different utility curves.



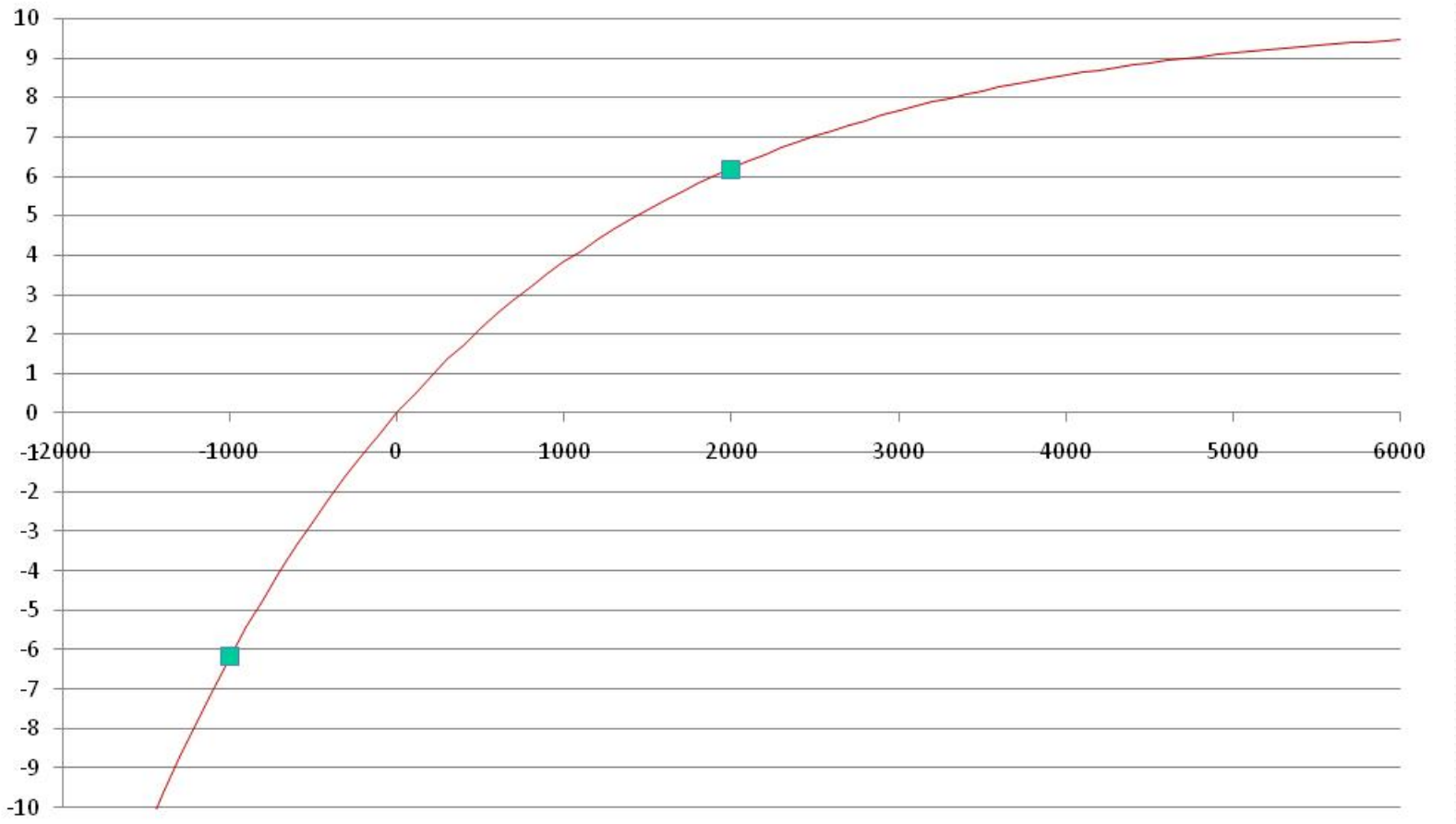
Maximum Acceptable R for the Total NPV Lottery

- A few benchmarks have been published regarding general risk tolerance levels in Corporate America (originally compiled in 1980's).
- Ron Howard's rules of thumb* for R (oil and chemical industry experience)
  - *6% of total sales*
  - *1/5th of market value*
  - *1-1.5 times net income*
  - *1/6th of equity*

Lottery	Interviewee	R Value at Indifference	Comments
Full R vs R/2 lottery	CEO, Commerical President	$2 B	Both leaders chose $2B independently

* Dr. Ron Howard is considered the founder of modern decision analysis and a thought leader around risky decision making. He is a full professor at Stanford University where he has taught for over 40 years.

The moderate risk averse Total Risk/Total NPV risk attitude curve.



What is the right risk attitude?

- Since a risk attitude is subjective, there is no wrong or right risk attitude. However, there are consequences of any risk attitude.

- In general, if the uncertainty of an outcome does not influence your preference, then generally you would be a risk neutral decision maker(DM). This type of DM, if rational, would make decisions based upon the expected value of the alternatives.

- *Any risk attitude other than risk neutral, while real, will lead to lower Expected NPVs in the long run, but may protect the company against unacceptable risks.*

Lessons Learned in conducting Risk Attitude elicitations

- Almost no one has ever had her/his risk attitude quantified
- Some find these lotteries hard if not tied to real decisions they may face.
- Reviewing the answers later (more than a day), about 20% change their responses.
- They want to know how it can affect decisions or prioritizations.
- Leaders at different levels have different risk attitudes. Very interesting to the President or top leader to see his/her organizational risk attitudes.

Future Plans for the SSW?

- Teach the course at MORS Conference in June
- Provide SSW at INFORMS Analytics Conference in 2012
- Possibly teach the course at other venues?
- How are soft skills taught/ developed at your company?
- Ideas? Suggestions?