Behavioral and Experimental Economics

Eliciting risk attitudes: Lab session

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Menu

- A look at yesterday's risk elicitation session
- A look at the raw data
- Data cleaning (pre-coded)
- **choices**: a look at your results
- Translating data to the r parameter (pre-coded)
- r: a look at your results
- Demographics: gender effect

Remember yesterday's tasks?

The tasks you ran

Questionnaires: SOEP

How likely are you to take risks in general, one a scale from 0 (not taking any risks) to 10 (taking many risks)?

Questionnaires: DOSPERT

Domain **Spe**cific **R**isk **T**aking Scale

- 6 domains: investing, gambling, health/safety, recreational, ethical, and social
- 1 to 7 scale: *how likely are you to engage in X?*

Examples:

- Riding a motorcycle without a helmet.
- Engaging in unprotected sex.
- Investing 10% of your annual income in a moderate growth diversified fund.

RETs, I: Holt and Laury

Ten binary lottery choices – risk attitude as switching point

	Option A				Option B			
1	1/10	4 €	9/10	3.2 €	1/10	7.7 €	9/10	0.2 €
2	2/10	4 €	8/10	3.2 €	2/10	7.7 €	8/10	0.2 €
3	3/10	4 €	7/10	3.2 €	3/10	7.7 €	7/10	0.2 €
4	4/10	4 €	6/10	3.2 €	4/10	7.7 €	6/10	0.2 €
5	5/10	4 €	5/10	3.2 €	5/10	7.7 €	5/10	0.2 €
6	6/10	4 €	4/10	3.2 €	6/10	7.7 €	4/10	0.2 €
7	7/10	4 €	3/10	3.2 €	7/10	7.7 €	3/10	0.2 €
8	8/10	4 €	2/10	3.2 €	8/10	7.7 €	2/10	0.2 €
9	9/10	4 €	1/10	3.2 €	9/10	7.7 €	1/10	0.2 €
10	10/10	4 €	0/10	3.2 €	10/10	7.7 €	0/10	0.2 €

Risk neutral should switch after 5 choices. $>$ 5 safe $\rightarrow$ risk averse

RETs, II: Binswanger

A single choice among 50-50 lotteries – chosen lottery is played.

	Event	Probability	Outcome
1	A	50%	4 €
	B	50%	4 €
2	A	50%	6 €
	B	50%	3 €
3	A	50%	8 €
	B	50%	2 €
4	A	50%	10 €
	B	50%	1 €
5	A	50%	12 €
	B	50%	0 €

Risk neutral should choose lottery 5. Extreme risk aversion to choose lottery 1.

Endowment X

How much would you like to invest?

Safe account
1 : 1

Risky investment
1 : {1/2: 2.5; 1/2: 0}

Risk-neutral should invest all, as $E(\text{risky}) = 1.25 > 1$.

RETs, VI: BRET

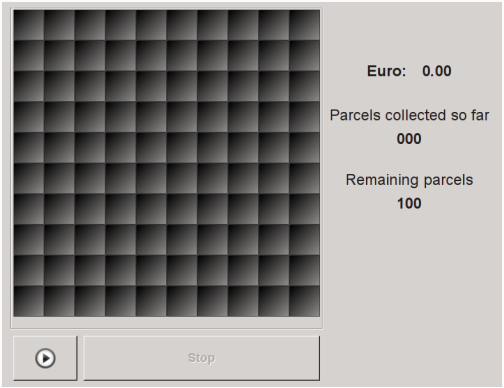
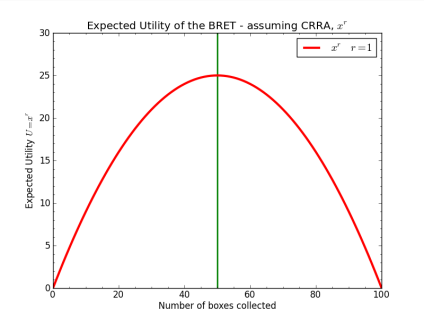


Figure: The BRET interface at the start of the experiment

BRET: solution for the expected value maximizer

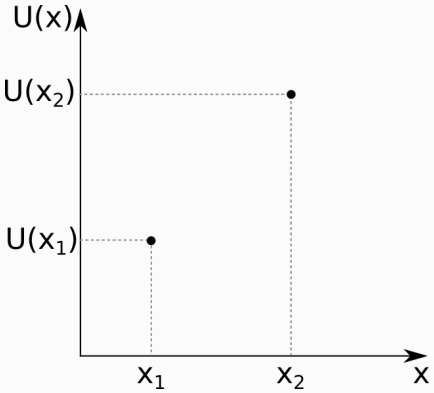


The expected value is maximized at $k^* = 50$.
Assuming a power CRRA utility function x^r, the optimal stopping point is:

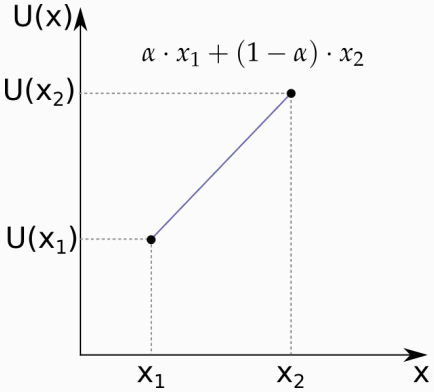
$$k^* = 100\frac{r}{1+r}.$$

But how do we compare across methods?

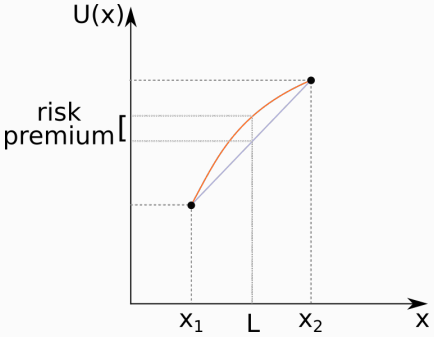
Risk: expected utility framework



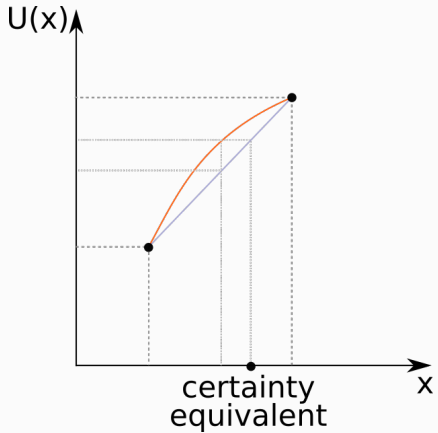
Risk: expected utility framework



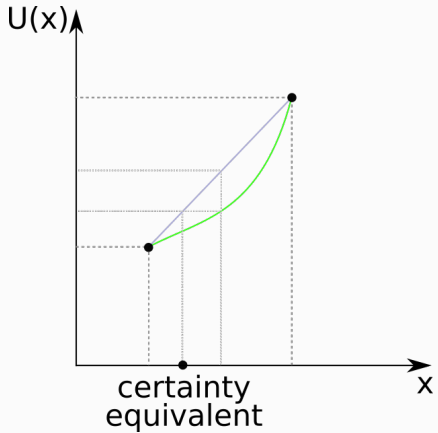
Risk: expected utility framework



Risk: expected utility framework



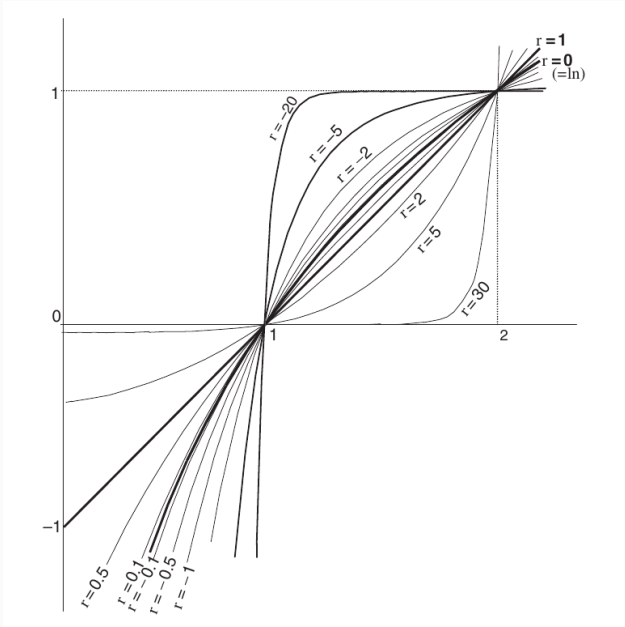
Risk: expected utility framework



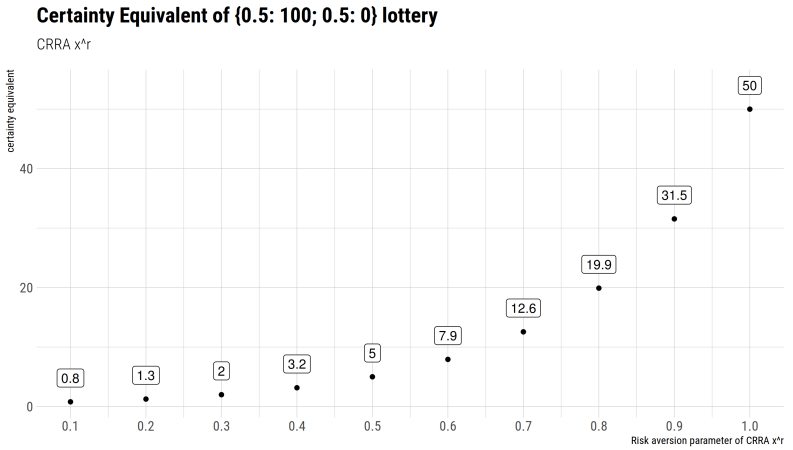
CRRA (à la Wakker)

$$u(x) = x^r$$

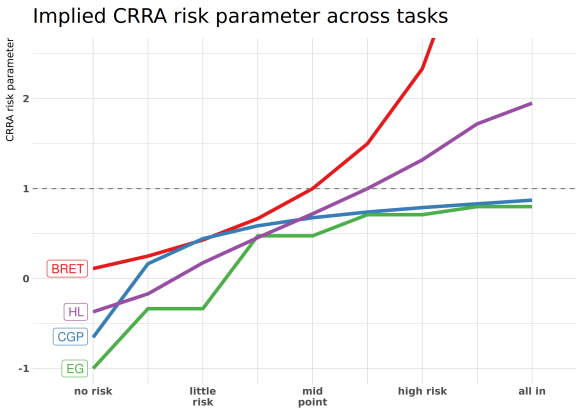
- simple
- captures risk aversion
- makes different tasks comparable


r = 1
r = 0
(=ln)
r=-20
r=-5
r=-2
r=2
r=5
r=30
r=0.5
r=0.1
r=-0.1
r=-0.5
r=-1
1
0
−1
1
2

How big are these differences?



Mapping choices to r: risk levels



Gender effects

Are women more risk averse than men?

yes, *of course*

statistical significance $\Rightarrow$ stylized fact $\Rightarrow$ fact

Are evolution and biology dictating that women are more risk averse than men? Or is the gender gap in risk aversion an outcome of child-rearing practices? (Bertrand 2011)

Our subject pool is atypical in the sense that the female subjects were generally less risk averse than the male subjects.
(Anderson and Mellor, 2009)

Are women more risk averse than men?

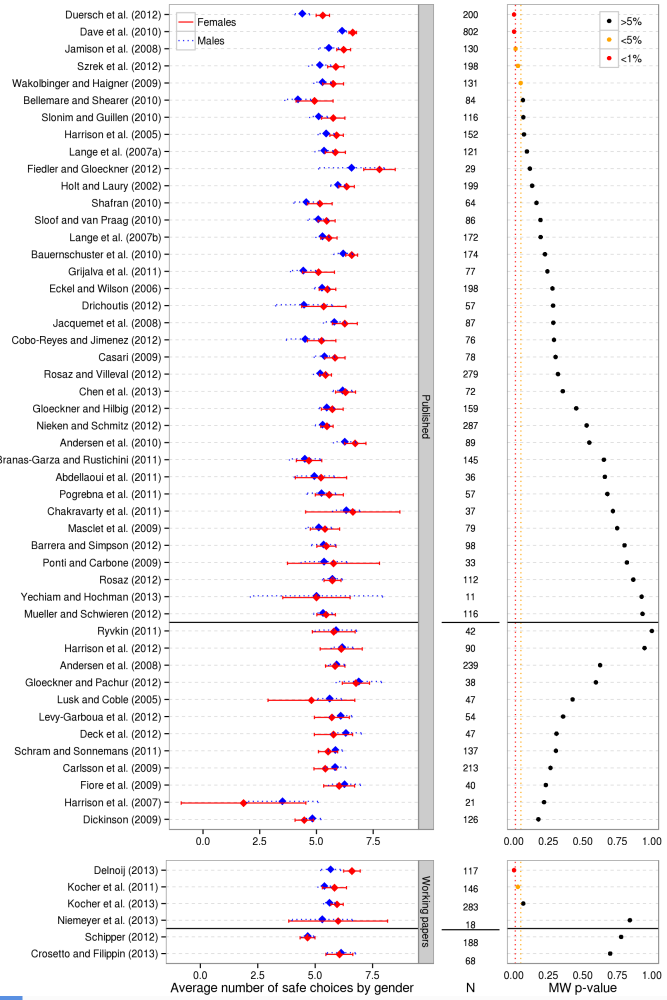
yes *but...*

Are women more risk averse than men?

yes *but...*

...it depends on the **task** used.

Eckel & Grossmann	always
Gneezy & Potters Investment Game	$\sim$always
Bomb Risk Elicitation Task	never
$\sim$ 100 experiments in psychology	about 50%
Holt & Laury	???

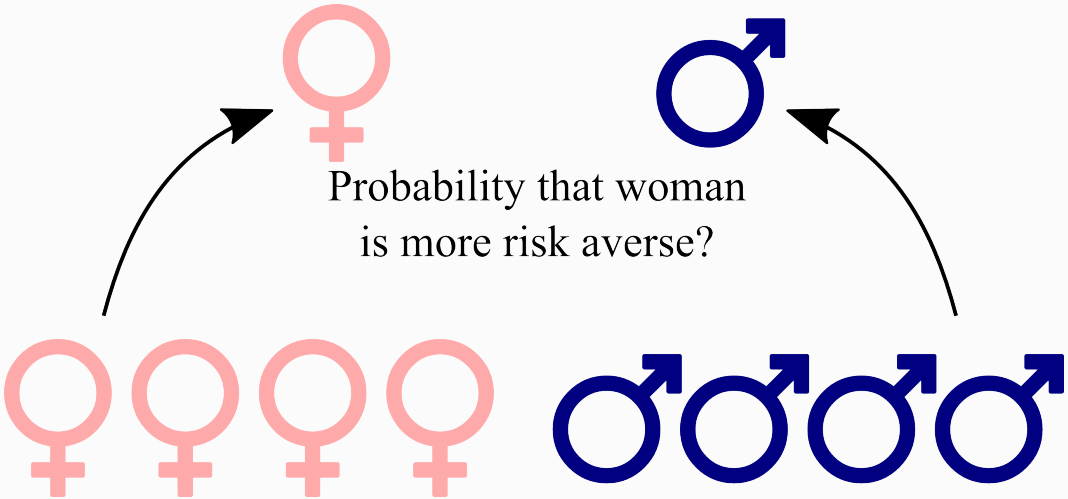

Females
Males
Duersch et al. (2012)
Dave et al. (2010)
Jamison et al. (2008)
Szrek et al. (2012)
Wakolbinger and Haigner (2009)
Bellemare and Shearer (2010)
Slonim and Guillen (2010)
Harrison et al. (2005)
Lange et al. (2007a)
Fiedler and Gloeckner (2012)
Holt and Laury (2002)
Shafran (2010)
Sloof and van Praag (2010)
Lange et al. (2007b)
Bauernschuster et al. (2010)
Grijalva et al. (2011)
Eckel and Wilson (2006)
Drichoutis (2012)
Jacquemet et al. (2008)
Cobo-Reyes and Jimenez (2012)
Casari (2009)
Rosaz and Villeval (2012)
Chen et al. (2013)
Gloeckner and Hilbig (2012)
Nieken and Schmitz (2012)
Andersen et al. (2010)
Branas-Garza and Rustichini (2011)
Abdellaoui et al. (2011)
Pogrebna et al. (2011)
Chakravarty et al. (2011)
Masclet et al. (2009)
Barrera and Simpson (2012)
Ponti and Carbone (2009)
Rosaz (2012)
Yechiam and Hochman (2013)
Mueller and Schwieren (2012)
Ryvkin (2011)
Harrison et al. (2012)
Andersen et al. (2008)
Gloeckner and Pachur (2012)
Lusk and Coble (2005)
Levy-Garboua et al. (2012)
Deck et al. (2012)
Schram and Sonnemans (2011)
Carlsson et al. (2009)
Fiore et al. (2009)
Harrison et al. (2007)
Dickinson (2009)
Published
0.0
2.5
5.0
7.5
200
802
130
198
131
84
116
152
121
29
199
64
86
172
174
77
198
57
87
76
78
279
72
159
287
89
145
36
57
37
79
98
33
112
11
116
42
90
239
38
47
54
47
137
213
40
21
126
>5%
<5%
<1%
0.00
0.25
0.50
0.75
1.00
Delnoij (2013)
Kocher et al. (2011)
Kocher et al. (2013)
Niemeyer et al. (2013)
Schipper (2012)
Crosetto and Filippin (2013)
Working papers
117
146
283
18
188
68
Average number of safe choices by gender
N
MW p-value

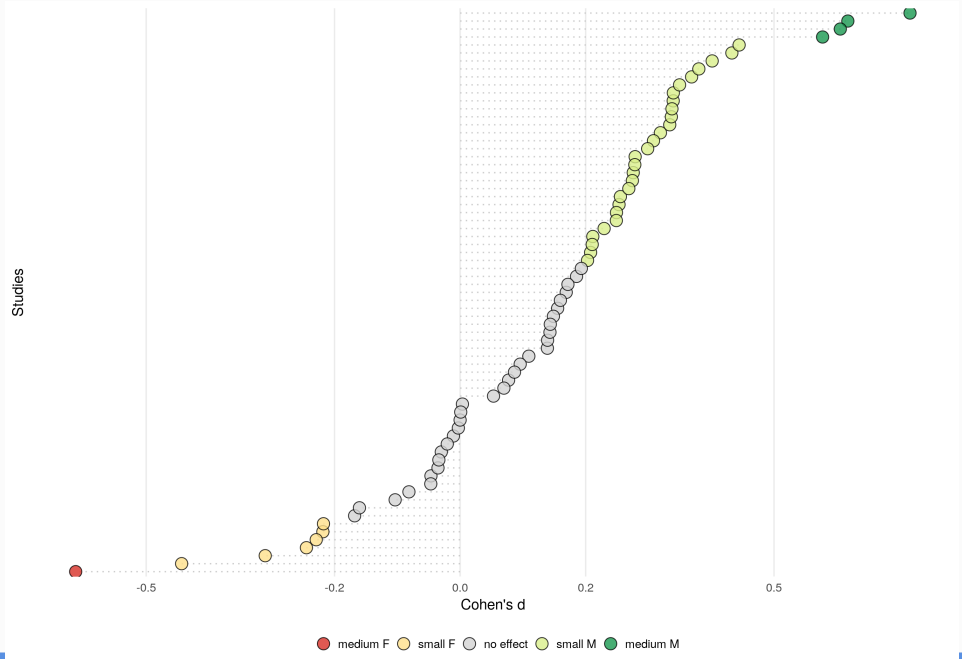
Only **8** out of 63 papers show significant differences

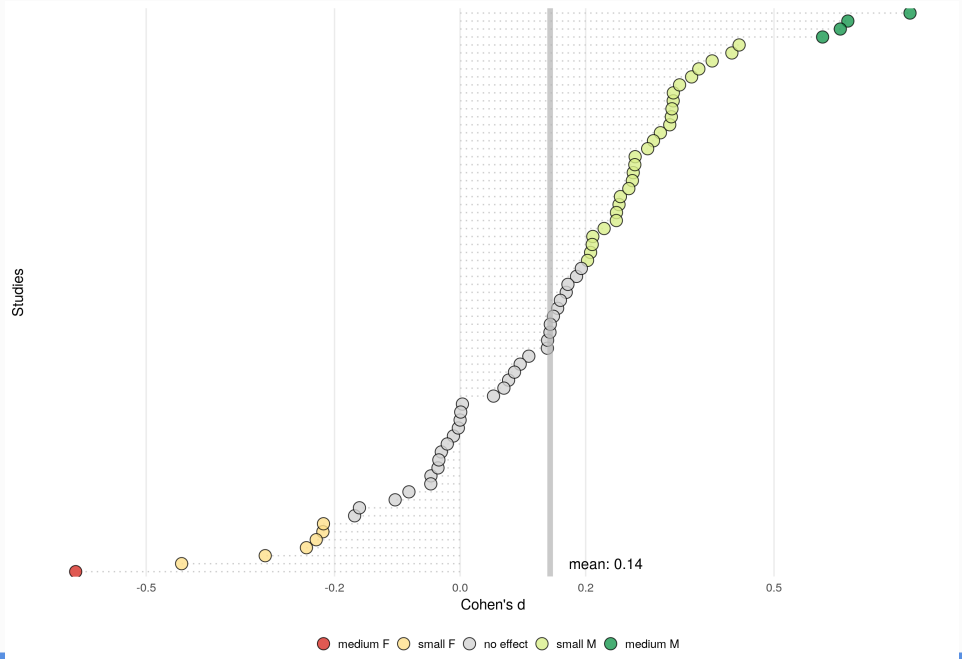
Only **5** out of 54 for published studies

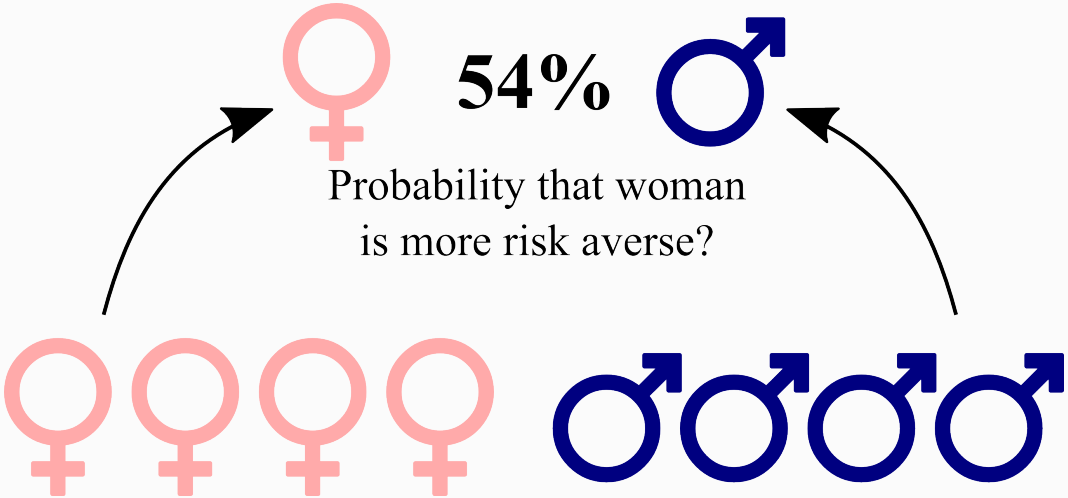
Cohen's **d**

$$d = \frac{\bar{X}_f - \bar{X}_m}{s}$$


Probability that woman
is more risk averse?


Studies
-0.5
-0.2
0.0
0.2
0.5
Cohen's d
medium F
small F
no effect
small M
medium M


Studies
mean: 0.14
-0.5
-0.2
0.0
0.2
0.5
Cohen's d
medium F
small F
no effect
small M
medium M


54%
Probability that woman
is more risk averse?