
The Effect of Compensation Caps on Risk-Taking

Niklas Kreilkamp, Gießen University

Sascha Matanovic, Gießen University

Friedrich Sommer, University of Bayreuth, Germany

Arnt Wöhrmann, Gießen University, Germany

6th Annual Conference Risk Governance

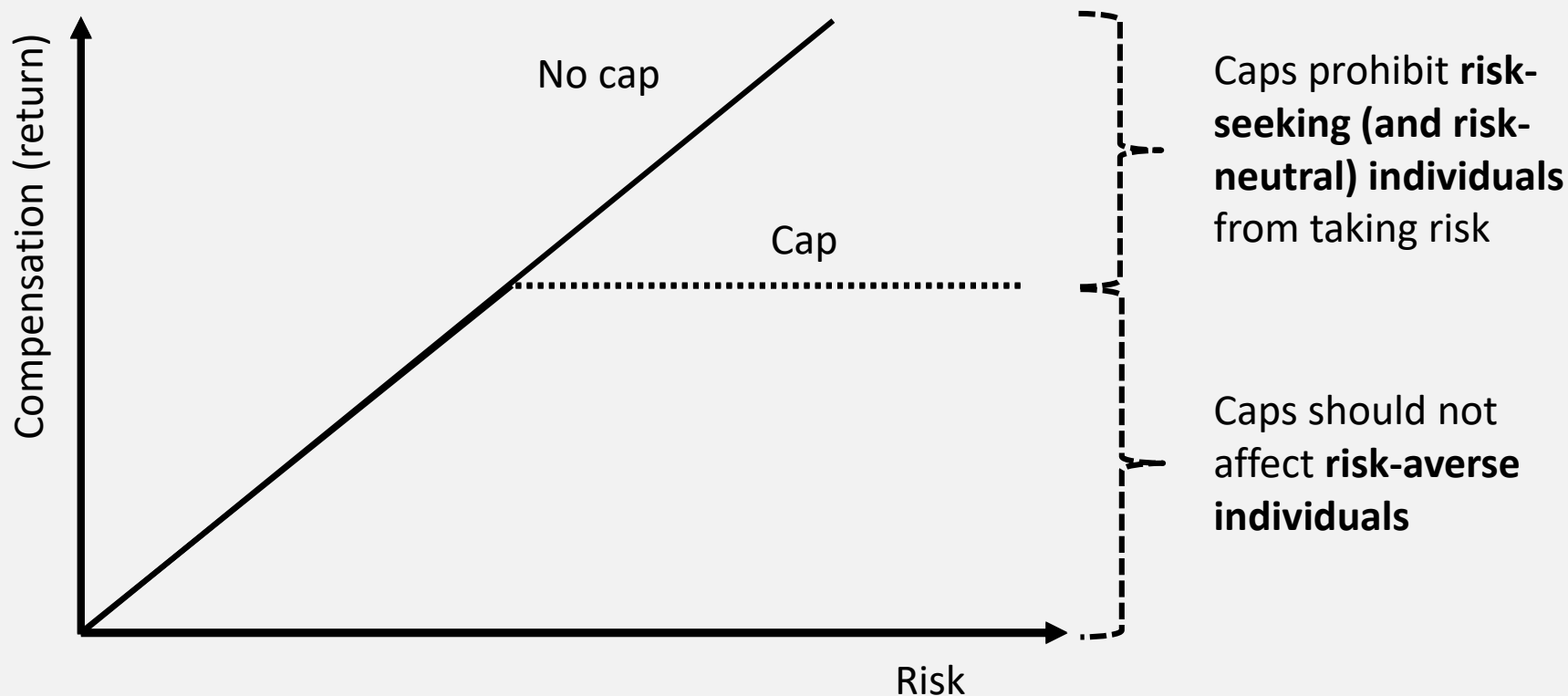
Presenter: Friedrich Sommer

Compensation Caps and Risk-Taking

- » In response to **excessive risk-taking** observed during the **financial crisis**, **lawmakers** from the U.S. and Europe focused on **compensation caps** as an effective means to manage risk-taking [Murphy 2013; Asai 2016]
 - The European Commission passed a law that caps performance-contingent compensation to a defined percentage of a manager's fixed compensation [Capital Requirements Directive IV—European Parliament and the Council 2013]
 - Firms in the U.S. that received government funding to prevent bankruptcy during the financial crises were required to implement caps [Garner and Kim 2010]

- » Prior studies provides evidence that **compensation caps** were **widespread in the business world** even before the financial crisis [Murphy 2001; Jansen, Merchant, and van der Stede 2009]
 - Murphy (2001) shows that more than 80% of the observed 177 large U.S. companies cap executive bonuses

Compensation Caps and Risk-Taking



- » **Position of the Cap:** Highest expected value for the firm
- » **Economic theory:** Preferences between decision alternatives do not depend on the presence or absence of other decision alternatives or labels (e.g. cap) [Neumann and Morgenstern 2007]
- » **Psychological theory** suggests deviation from economic prediction

Setting and research questions

» Research setting:

- Managers face a decision under risk
- The compensation is either capped or uncapped
- Mandatory justification is present or absent

Research questions

- » Do capped compensation systems decrease risk-taking overall?
- » Does the ex-ante risk preference of managers matter?
 - » Does a cap also affect risk-averse managers?
- » Does the use of accountability (justification) have an impact on risk-taking?
 - » Does the use of accountability lead to improved risk-taking behavior?
 - » Does the presence of a compensation cap matter?

Hypothesis 1: Presence of capped compensation system

H1 (replication): **Risk taking** (cap) < **Risk taking** (no cap)

Overall effect of caps on risk-taking

- While only scarce empirical research on the effectiveness on caps exists the following studies generally confirm that caps reduce risk-taking:
 - Archival Studies:
 - Asai (2016)
 - Jokivuolle, Keppo, and Yuan (2015)
 - Kleyменова and Tuna (2016)
 - Experimental Studies:
 - Hartmann and Slapničar (2015)
- These results are in line with rational expectations: When managers reach a compensation cap (or come close to it), taking more risk is irrational as there is no reward for more risk

Hypothesis 2: Risk preferences and level of justification pressure

H2a: **Risk taking – RA** (cap) < **Risk taking – RA** (no cap)

H2b: Δ **Risk taking – RA** (cap - no cap; low pressure) < Δ **Risk taking – RA** (cap - no cap; high pressure)

Why does the **cap** matter for risk averse managers?

- **Compromise effect** – “middle option” appears to be a good compromise between all relevant attributes [Simonson 1989; Tversky and Simonson 1992]
- **Extremeness aversion** – “middle option” appears advantageous [Tversky and Simonson 1992]
 - trade-off between disadvantages & advantages
 - loss aversion – disadvantages are overweighted
 - loss aversion, and therefore extremeness aversion, is stronger the stronger the risk aversion
- Low-risk decisions made without a cap **appear more risky** under a capped compensation contract since high-risk options are removed and the most extreme option available is a medium-risk option

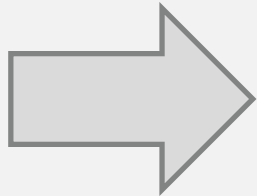
Hypothesis 2: Risk preferences and level of justification pressure

H2a: **Risk taking – RA** (cap) < **Risk taking – RA** (no cap)

H2b: Δ **Risk taking – RA** (cap - no cap; low pressure) < Δ **Risk taking – RA** (cap - no cap; high pressure)

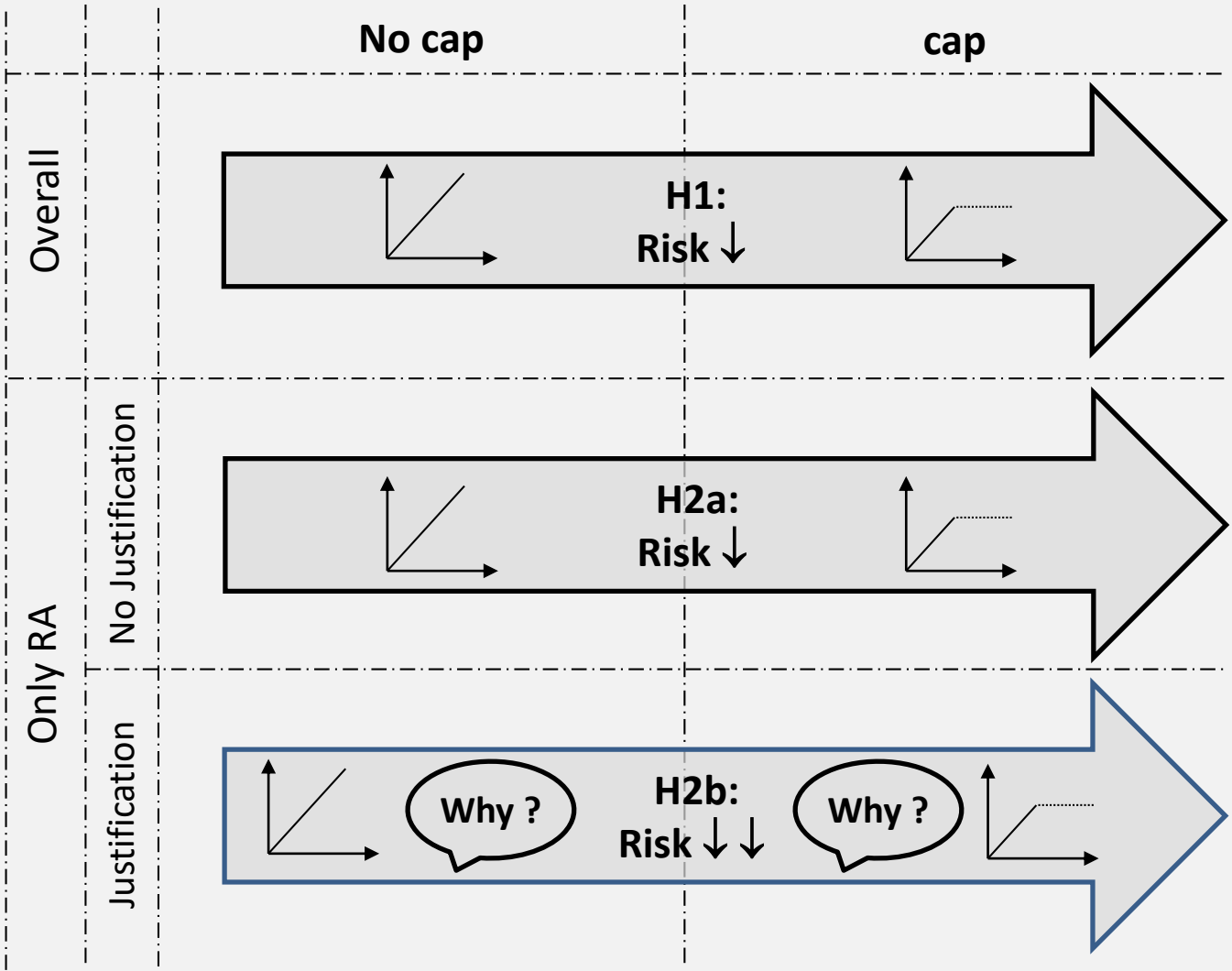
Why does the use of **accountability** matter?

- People strive to **avoid cognitive dissonance** [Festinger 1957], to maintain perceived competence (self-image and self-esteem) [Tetlock 1985] and to avoid regret [Kahneman and Tversky 1981; Samuelson and Zeckhauser 1988]
- **Compromise effect** [Simonson 1989]: middle option appears to be an acceptable compromise between all the advantages and disadvantages and is the most easily **justifiable** decision alternative

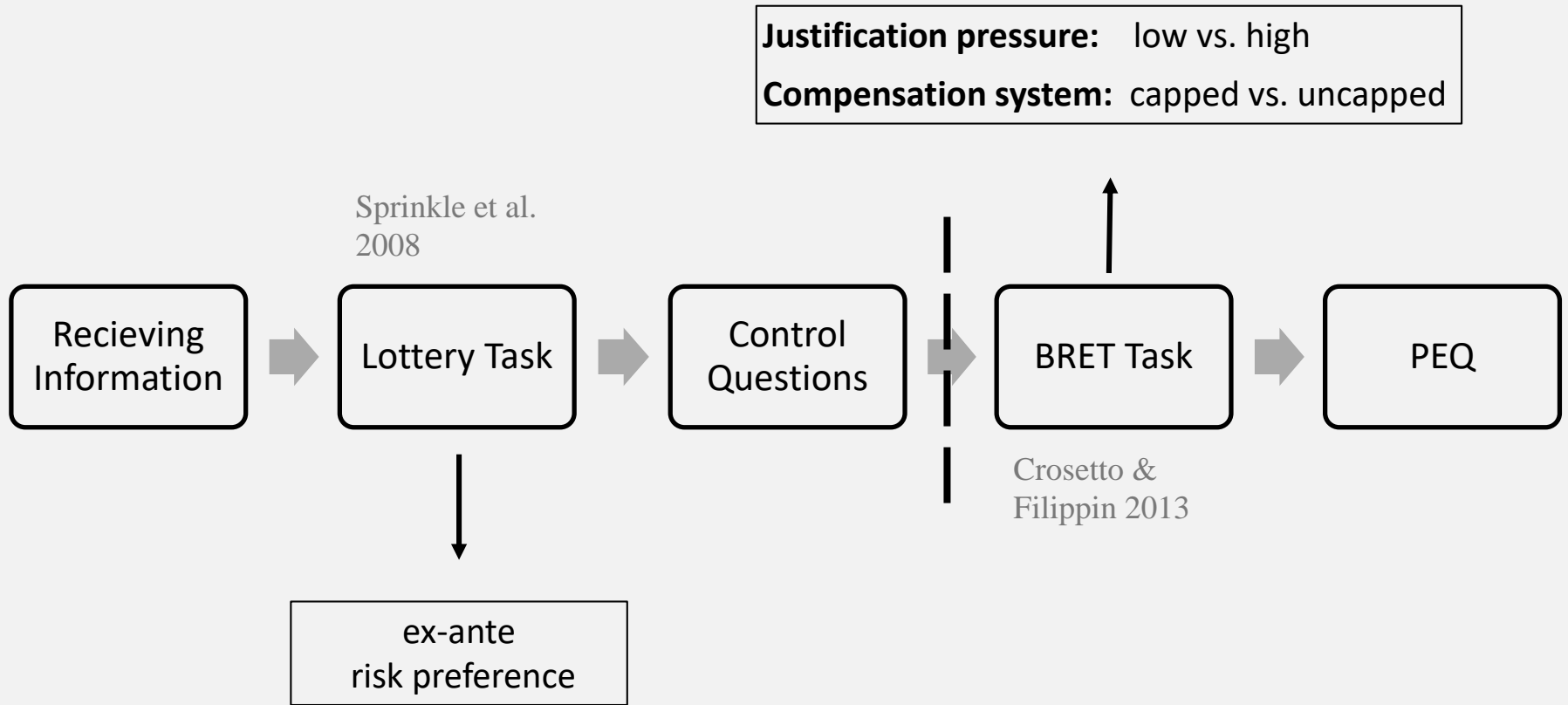


The use of accountability increases the compromise effect and thus leads to even less risk-taking of risk-averse managers

Summary of hypotheses



Experimental procedure



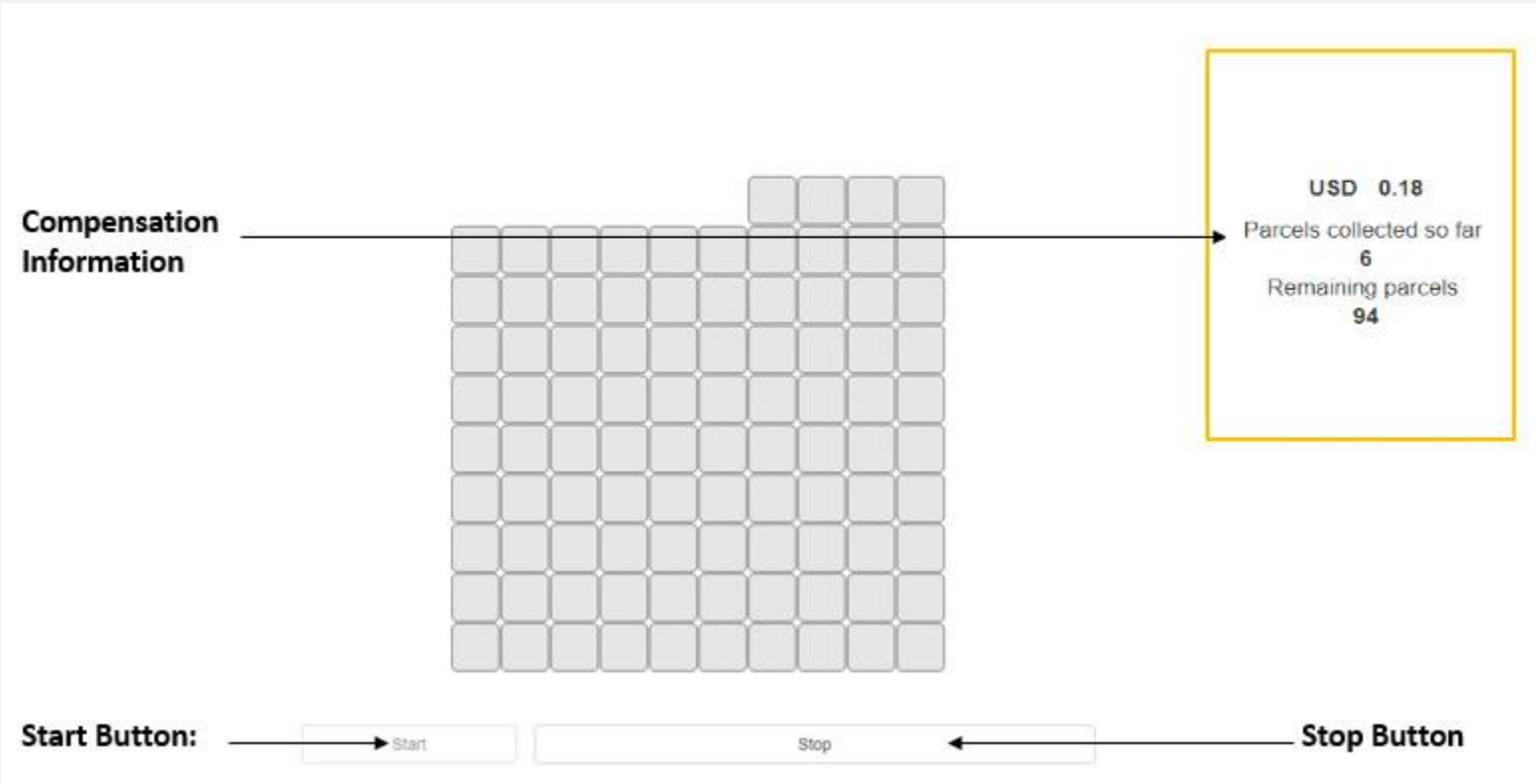
Task and treatments

- » **Experimental task: Bomb Risk Elicitation Task** [Crosetto & Filippin 2013]
- Online experiment, conducted on Amazon MTurk
 - Subjects can collect up to 100 boxes and earn 0.03 USD per box
 - Hidden time bomb in one of the 100 boxes that destroys everything that has been collected up to then (1% risk of getting the bomb per box , e.g. 15 boxes = 15%)
 - Subjects can stop the drawing process at any time
 - Manipulated variables
 - Compensation is **capped** or **uncapped** (no-cap vs. cap)
 - Mandatory decision justification is present or absent (low vs. high pressure)

| | ex-ante risk preference | uncapped compensation | capped compensation |
|--|------------------------------------|----------------------------------|--------------------------------|
| low justification pressure | low | n = 80 | n = 83 |
| | high | n = 34 | n = 25 |
| high justification pressure | low | n = 85 | n = 79 |
| | high | n = 34 | n = 27 |

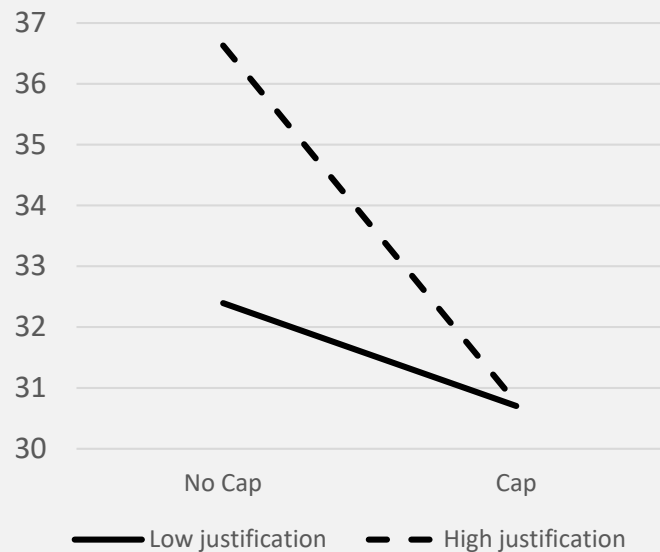
Task

» Task: Bomb Risk Elicitation Task [Crosetto & Filippin 2013]



Hypothesis 1: Effect of cap on risk-taking (all subjects)

boxes collected (all subjects)



H1 (replication): **Risk taking** (cap) < **Risk taking** (no cap)

Test H1: Results of capped compensation on risk-taking of all subjects (ANOVA)

Dependent variable: Number of boxes collected (n = 447)

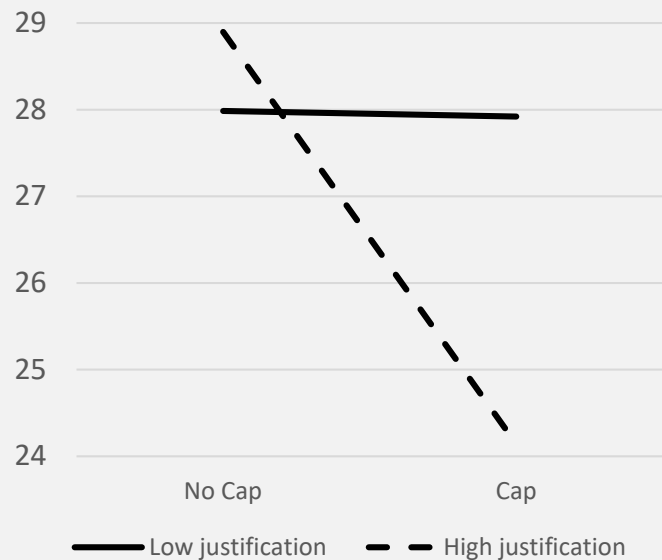
| Source | Df | MS | F-Statistic | p-value |
|---------------------|----|----------|-------------|----------------------------------|
| Cap | 1 | 1,596.19 | 8.37 | < 0.01 ^a H1: ✓ |
| Justification | 1 | 512.27 | 2.69 | 0.10 ^b |
| Cap x Justification | 1 | 488.17 | 2.56 | 0.11 ^b |

^a The p-value is reported on a one-tailed basis, due to the directional hypothesis for this effect.

^b The p-value is reported on a two-tailed basis, due to the lack of a directional hypothesis for this effect.

Hypothesis 2: Effect of cap on risk-taking (only low risk takers)

boxes collected (only low risk takers)



H2: Risk taking – RA (cap) < Risk taking – RA (no cap)

Test of H2: Results of capped compensation and justification on risk-taking of low risk-takers

Panel A: Effect of Type of compensation system and Justification on risk-taking

Dependent variable: Number of boxes collected (n = 275)

| Source | Df | MS | F-Statistic | p-value | |
|---------------------|----|--------|-------------|-------------------|---------------|
| Cap | 1 | 397.79 | 4.13 | 0.02 ^a | H2a: ✓ |
| Justification | 1 | 140.86 | 1.46 | 0.23 ^b | |
| Cap x Justification | 1 | 376.94 | 3.92 | 0.02 ^a | H2b: ✓ |

Panel B: Model contrast on risk-taking^c

Dependent variable: Number of boxes collected (n = 275)

| Source | Df | MS | F-Statistic | p-value | |
|----------------|----|--------|-------------|---------------------|---------------|
| Model contrast | 1 | 682.40 | 7.09 | < 0.01 ^a | H2b: ✓ |

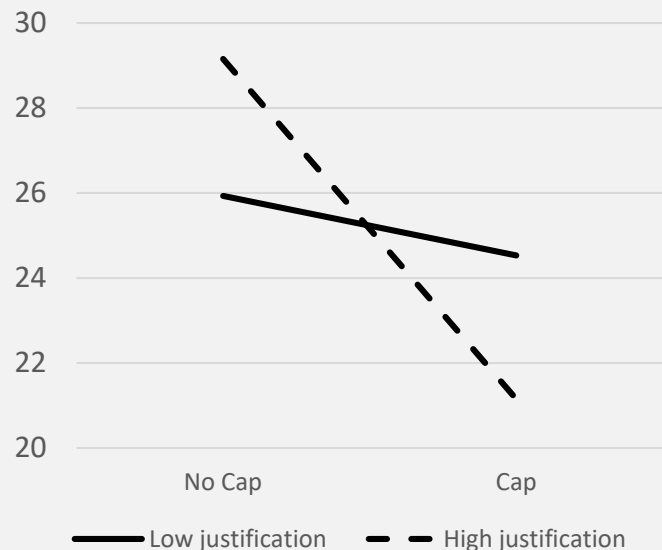
^a The p-value is reported on a one-tailed basis, due to the directional hypothesis for this effect.

^b The p-value is reported on a two-tailed basis, due to the lack of a directional hypothesis for this effect.

^c The contrast coefficients are +1 for no cap/low justification, +3 no cap/high justification, -1 for cap/low justification, and -3 for cap/high justification.

Hypothesis 2: Additional analysis – subjects without a target

boxes collected (only low risk takers)



“Both tradeoff contrast and extremeness aversion are expected to have less impact in situations in which consumers have well-established preferences.”

[Tversky and Simonson 1992, 292]

H2 (without target): **Risk taking – RA (cap) < Risk taking – RA (no cap)**

Test of H2: Results of capped compensation and justification on risk-taking of low risk-takers without target^d

Panel A: Effect of Type of compensation system and Justification on risk-taking

Dependent variable: Number of boxes collected (n = 275)

| Source | Df | MS | F-Statistic | p-value | |
|---------------------|----|----------|-------------|---------|---------------|
| Cap | 1 | 3,842.40 | 21.07 | < 0.01 | H2a: ✓ |
| Justification | 1 | 12.00 | 0.07 | 0.80 | |
| Cap x Justification | 1 | 530.96 | 2.91 | 0.05 | H2b: ✓ |

Panel B: Model contrast on risk-taking^c

Dependent variable: Number of boxes collected (n = 275)

| Source | Df | MS | F-Statistic | p-value | |
|----------------|----|----------|-------------|---------|---------------|
| Model contrast | 1 | 4,325.70 | 23.72 | < 0.01 | H2b: ✓ |

^a The p-value is reported on a one-tailed basis, due to the directional hypothesis for this effect.

^b The p-value is reported on a two-tailed basis, due to the lack of a directional hypothesis for this effect.

^c The contrast coefficients are +1 for no cap/low justification, +3 no cap/high justification, -1 for cap/low justification, and -3 for cap/high justification.

^d Low risk-takers without target only include participants who stated "No" when we asked them "Did you aim at earning a specific compensation from the bomb task?".

Wrap-up

- » We provide evidence that despite rational arguments individuals with a preference for low risk are influenced by the presence of a compensation cap and take less risk than without a compensation cap

- » Further, we are able to show that accountability is not a useful tool to improve risk taking behavior for individuals with a preference for risk in the context of a compensation cap

- » Limitations
 - Only one possible position of the cap considered

 - Effect of a compensation system change on risk-taking behavior could be different

Thank you for your attention!

Contact:

Prof. Dr. Friedrich Sommer

University of Bayreuth

Chair of Management Accounting and Control (BWL XII: Controlling)

Nürnberger Straße 38

D-95448 Bayreuth

Germany

Phone: +49 921-55 4681

E-Mail: Friedrich.Sommer@uni-bayreuth.de

References

- Asai, K. 2016. Is Capping Executive Bonuses Useful? *International Monetary Fund* 16/196.
- Crosetto, P., and A. Filippin. 2013. The “bomb” risk elicitation task. *Journal of Risk and Uncertainty* 47 (1): 31–65.
- Directive 2013/36/EU. CRD IV. European Parliament and the Council. Official Journal of the European Union. June 26. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:176:0338:0436:En:PDF>.
- Festinger, L. 1957. *A Theory of Cognitive Dissonance*. 1. publ. Stanford, Calif. Stanford Univ. Press.
- Garner, J. L., and W. Y. Kim. 2010. Does a Salary Cap Really Work? *SSRN Electronic Journal*.
- Hartmann, F., and S. Slapničar. 2015. An experimental study of the effects of negative, capped and deferred bonuses on risk taking in a multi-period setting. *Journal of Management & Governance* 19 (4): 875–896.
- Jansen, E. P., K. A. Merchant, and W. A. van der Stede. 2009. National differences in incentive compensation practices. The differing roles of financial performance measurement in the United States and the Netherlands. *Accounting, Organizations and Society* 34 (1): 58–84.
- Jokivuolle, E., J. Keppo, and X. Yuan. 2015. Bonus Caps, Deferrals and Bankers' Risk-Taking. *Bank of Finland Research Discussion Paper* (05): 1–75.
- Kahneman, D., and A. Tversky. 1981. The Psychology of Preferences. *Scientific American*: 160–173.
- Kleyменова, A., and A. I. Tuna. 2016. Regulation of Compensation. *SSRN Electronic Journal*.
- Murphy, K. J. 2001. Performance Standards in Incentive Contracts. *Journal of Accounting and Economics* 30: 245–278.
- Murphy, K. J. 2013. Regulating Banking Bonuses in the European Union. A Case Study in Unintended Consequences. *SSRN Electronic Journal*.
- Neumann, J. von, and O. Morgenstern. 2007. *Theory of games and economic behavior*. 60th anniversary ed. Princeton classic editions. Princeton: Princeton University Press.
- Samuelson, W., and R. Zeckhauser. 1988. Status quo bias in decision making. *Journal of Risk and Uncertainty* 1 (1): 7–59.
- Simonson, I. 1989. Choice Based on Reasons: The Case of Attraction and Compromise Effects. *Journal of Consumer Research* 16 (2): 158–174.

References

- Simonson, I. 2014. Vices and Virtues of Misguided Replications. The Case of Asymmetric Dominance. *Journal of Marketing Research* 51 (4): 514–519.
- Sprinkle, G. B., M. G. Williamson, and D. R. Upton. 2008. The effort and risk-taking effects of budget-based contracts. *Accounting, Organizations and Society* 33 (4-5): 436–452.
- Tetlock, P. E. 1985. Accountability. The neglected social context of judgment and choice. *Research in Organizational Behavior* (7): 297–332.
- Tversky, A., and I. Simonson. 1992. Choice in Context: Tradeoff Contrast and Extremeness Aversion. *Journal of Marketing Research* 29 (3): 281–295.