The influence of compensation interdependence on excessive risk taking – the role of mutual monitoring

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Agenda

1) Motivation
2) Hypotheses
3) Research design
4) Results
5) Conclusion

Compensation interdependence

Can compensation interdependence be considered advantageous?

- Compensation is dependent on group-based instead of individual-based performance or results [Nalbantian and Schotter 1997]
- Positive effects on cooperation and coordination [FitzRoy and Kraft 1987]
- To evaluate the advantageousness of compensation interdependence (CI) possible dysfunctional effects have to be considered

- Does CI involve hidden costs of higher excessive risk taking?

Compensation interdependence

Are groups more or less prone to take (excessive) risks than individuals?

- Research: Does a group shift in risk taking exist?
  - Start: Risky shift in groups [Stoner 1961]
  - Subsequent research: Risky and cautious shifts → Choice shift [Davis 1992]
  - Mixed results remain after taking different decision rules into account

- Many decisions in daily business are made on individual-basis but influence the compensation of other employees or departments if compensation is dependent e.g. on divisional or firm performance
- Hence, we focus on compensation interdependence (CI)
  - CI absent → Individual payoff
  - CI present → Individual payoff = Group payoff/# of group members

Mutual monitoring

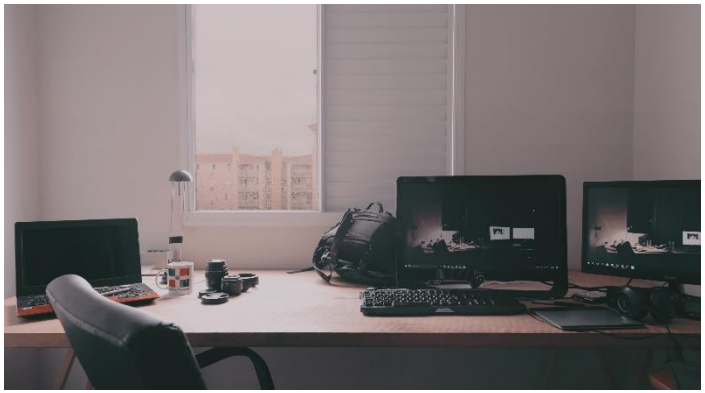
- Mutual monitoring: Ability of individuals to observe each other's actions [Towry 2003]
- Mutual monitoring can:
  - increase productivity [Mas & Moretti 2009],
  - influence effort positively and negatively depending on inclination to compete or collude [Hannan et al. 2013],
  - be utilized in contract design [Towry 2003],
  - mitigate the creation of budgetary slack [Chong & Khudzir 2018]

- Mutual monitoring can be considered a versatile instrument of management control

Mutual monitoring

- Changing work environment: **Telecommuting** and workspaces without fixed workplaces (**hot-desking**)

Potential benefits	Potential downsides
• Increased productivity • Increased job satisfaction • Cost reductions	• Lower employer-employee interactions • Lower employee-employee interactions

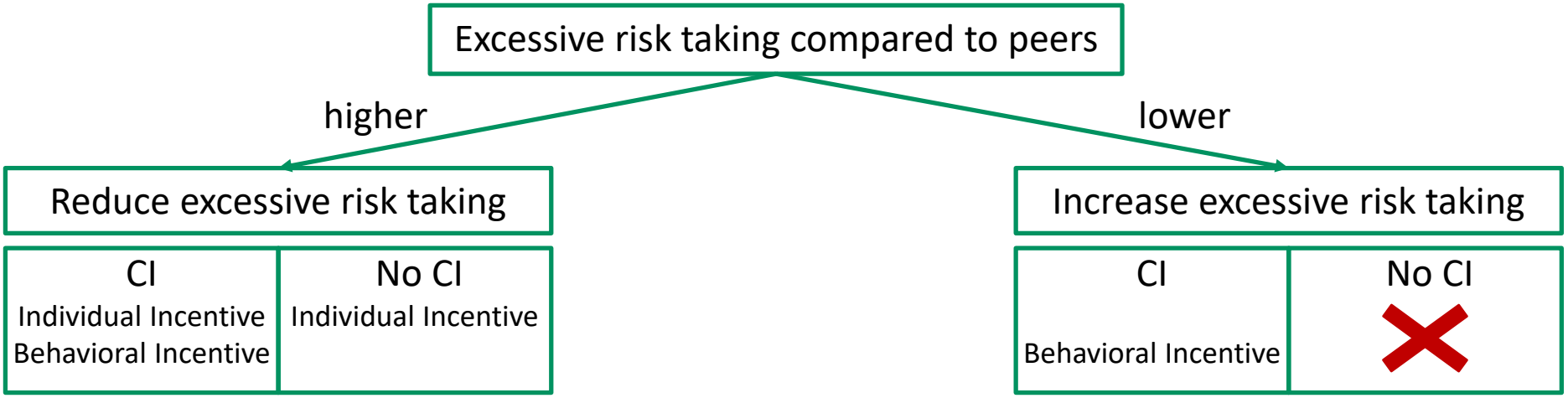


Hypotheses development

- Theory on **impression management**: individuals care about how others see them and try to affect the impression others form of them [Goffman 1959; Jones & Pittman 1982]
  - Within work dimension: Perception of being a responsible decision maker
  - **Under mutual monitoring:** Individuals get an impression of others' preferences and can evaluate if their prior decisions differ
    - Individuals **under CI** develop a desire to take into account peers' preferences
    - Why? They strive to be perceived as responsible decision makers who **incorporate affected peers' preferences in** their own **decision** making (**Behavioral Incentive**)
    - Individual **took more risk** compared to peers → **Lower excessive risk taking** (reinforces the individual rationale to avoid excessive risk taking in order to raise expected value)
    - Individual took less risk compared to peers → **Increase excessive risk taking**
    - **Individuals without CI do not** have any incentive to **adjust** excessive risk taking **upwards** as their decisions do not affect peers (**No Behavioral Incentive**)

Hypotheses development

- **Under mutual monitoring**: Reasoning for changing excessive risk taking if one took more or less excessive risk than peers in previous rounds



- **Under absence of mutual monitoring:**
  - Observation of peers' preferences as well as possibility that peers form an impression toward decision maker become impossible as decisions become invisible to others

    → Impression management based motivation (behavioral incentive) to adjust decisions is missing without mutual monitoring → **no effect of CI**

H1a: *The influence of compensation interdependence on the amount invested in the alternative containing excessive risk depends on the existence of mutual monitoring.*

H1b: *Under the presence of mutual monitoring, excessive risk taking is higher if compensation interdependence is present rather than absent.*

Research Design: Basics

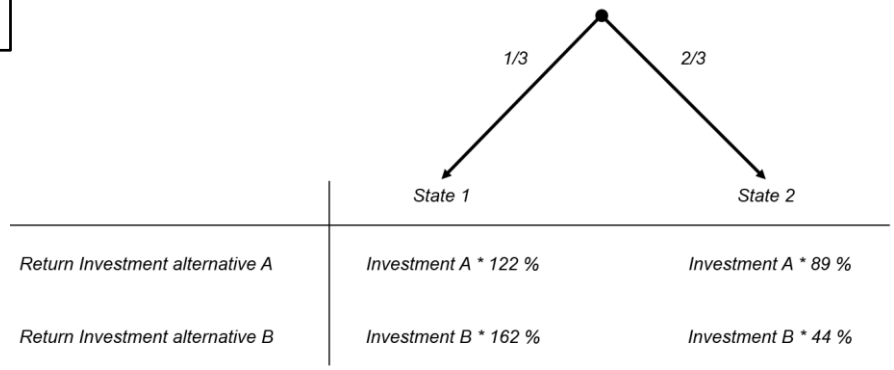
Basic parameter:

- 2 × 2 × 10 mixed experimental design (10 rounds)
- Task: Modification of the investment task [Gneezy and Potters 1997]
- Dependent variable: Amount invested in the excessively risky alternative
- Compensation: One of 10 decisions will be randomly picked for compensation
- Subjects are recognizeable (not anonymous) through numbers and introduction

Research Design: Task

- Task: Variation of Investment task by Gneezy and Potters (1997)
  - Split endowment of 1,000 Lira (per round) between two investment alternatives
  - States of the investment alternatives are determined by the same lottery
  - EV: L (=1) > H (=5/6)
    σ: L < H
    Payout in low-paying state: L > H
    } Alternative H is **excessive** in risk
  - EV remain constant, state probabilities and investment payout multipliers vary over rounds
  - Realized state for each participant and round is independent from realized states of other participants and rounds

Example:



Research Design: Independent Variables

Compensation interdependence

- CI absent:
  - Financial returns = Sum of the amount invested in Alternative A multiplied with multiplier (A) that is determined by the state of nature + the amount invested in Alternative B multiplied with the multiplier (B) that is determined by the state of nature.
- CI present
  - Equal pay for all group members (groups of 5)
  - Sum of the financial returns of group members = Financial return of the group
  - Financial return of the group is equally shared between group members

Mutual monitoring

Observing and being observed

- Manipulation through information about others‘ amounts invested and information that others receive information about own amount invested (for t_{n-1}); No outcome information
- Treatment conditions: Mutual monitoring absent, mutual monitoring present

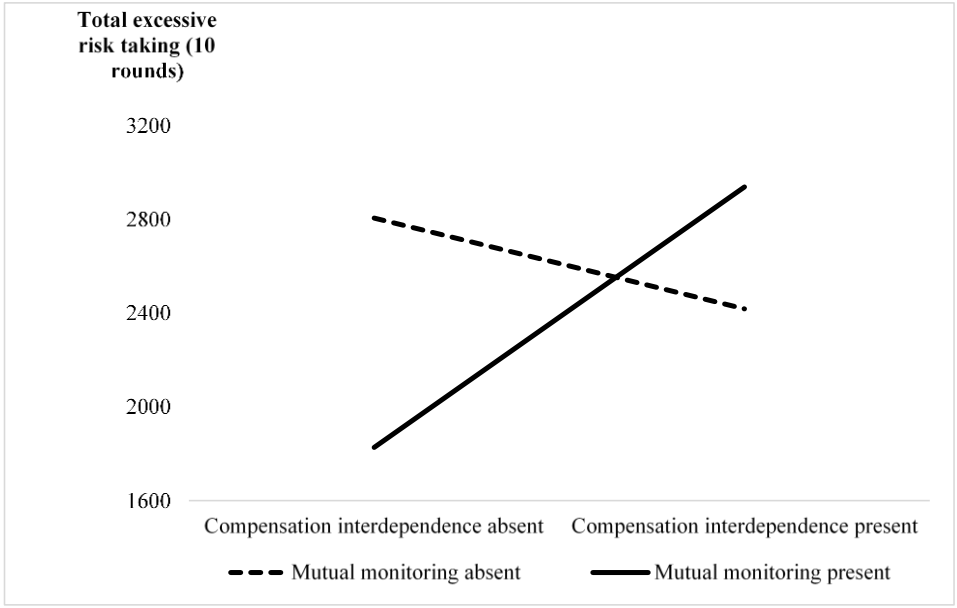
Results: Test of hypotheses

Descriptive statistics (all rounds) by treatment (Mean [Standard deviation])

		Compensation interdependence		
		Absent	Present	Total
Mutual monitoring	Absent	2,804.76 [1,702.72]	2,417.41 [1,606.15]	2,618.00 [1,653.37]
	Present	1,826.93 [1,216.90]	2,938.07 [1,416.64]	2.372,40 [1,421.61]
	Total	2,324.42 [1,551.40]	2,677.74 [1,522.85]	2,496.31 [1,540.83]

[a] *Excessive risk taking* is the dependent variable and measures the amount invested in the investment alternative containing excessive risk (in the experimental currency "Lira", 65 Lira/€).

Total excessive risk taking (in Lira)



Hypothesis Test

Panel A: Repeated measures ANOVA results (n = 111)
Dependent variable = Excessive risk taking per round through rounds 1 to 10

Source	Df	Type 3 SS	F-value	p-value
Between subjects				
CI (absent, present)	1	338,148.89	1.51	0.222
Mutual monitoring (absent, present)	1	169,860.40	0.76	0.386
CI × Mutual monitoring	1	1,654,173.60	7.37	0.008 ***
Risk Preference	2	236,428.55	1.05	0.352
Within subjects				
Round	9	78,940.29	3.36	0.001 ***
Round × CI	9	15,876.76	0.68	0.703
Round × Mutual monitoring	9	40,937.87	1.74	0.091 *
Round × CI × Mutual monitoring	9	37,311.35	1.59	0.131

Panel B: Simple effects tests for CI (contrasts following pooled ANOVA)
Dependent variable = Excessive risk taking through rounds 1 to 10

Source	Df	Mean difference	F-value	p-value
CI under Mutual monitoring present	1	1,111.15	7.71	0.007 ***
CI under Mutual monitoring absent	1	-387.35	1.12	0.293

[a] All p-values are reported on a two-tailed basis.
[b] p-values within subjects are calculated based on the Huynh-Feldt correction to account for sphericity.
[c] Panel B reports contrast testing following a pooled ANOVA containing the between-subjects factors CI, mutual monitoring, and CI × mutual monitoring. Ex-ante risk preferences are included in the pooled ANOVA to rule out that subject's risk preferences drive the results.

Results: Additional Analysis

H1b: Under the presence of mutual monitoring, excessive risk taking is higher if compensation interdependence is present rather than absent.

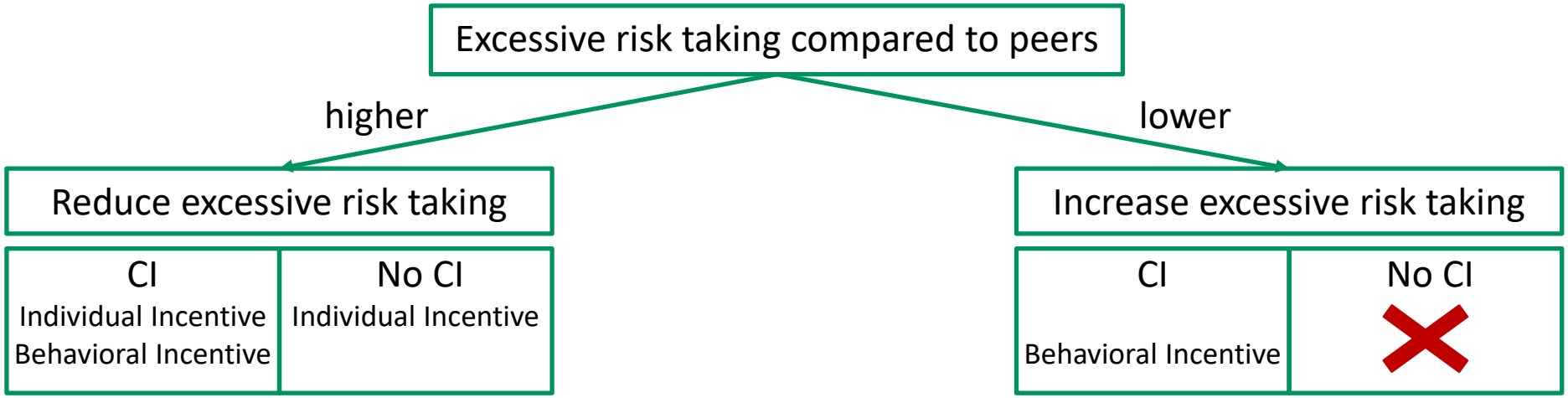
- Psychological mechanisms:
  - Given mutual monitoring, individuals with CI have a behavioral incentive for adjusting their investment in excessive risks
  - Comparison of PEQ-Items between CI and No CI under mutual monitoring:

PEQ-Item (7-point-Likert)	CI absent	CI present	p-value (two-tailed)
Impression management concerns	2.68	4.37	< 0.01
Thoughts about decisions of other participants	2.86	3.78	0.064
Importance to consider what other likely regard as correct decision	2.43	3.33	0.058
Incorporation of other participants‘ preferences	2.32	3.33	0.047

Results: Additional Analysis

H1b: Under the presence of mutual monitoring, excessive risk taking is higher if compensation interdependence is present rather than absent.

- Test if intentions led to changes in decision-making process:



Pooled ANOVA:
- DV: Change in excessive risk taking compared to previous round
- IV: Mutual monitoring, CI, interaction of mutual monitoring and CI, dummy variable [1 (0) if individual took less or equal (more) risk compared to average of peers' risk taking in previous round]

<u>Higher excessive risk:</u>
-108.78 (CI) vs. -77.28 (No CI)
$F = 1.39$, $p = 0.238$, two-tailed

<u>Lower or equal excessive risk:</u>
79.99 (CI) vs. 29.63 (No CI)
$F = 4.71$, $p = 0.030$, two-tailed

Conclusion

- Contribution
  - Identification of compensation interdependence as an important determinant for detrimental behavior such as excessive risk taking
  - Separating the effect of a particular characteristic of decision-making in groups on excessive risk taking, compensation interdependence
  - Inform firms about hidden costs of using compensation systems that include compensation interdependence between employees

- Limitations
  - Focus on mutual monitoring of decisions rather than the outcomes of decisions
  - No test of mechanisms that potentially reduce excessive risk taking under compensation interdependence

Thank you for your attention!