# How do bonus cap and malus affect risk and effort choices: Insight from a lab experiment

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## Abstract

We conducted a lab experiment to examine how bonus caps and malus affect individuals' choices of risk and effort. We find that a bonus structure that rewards individuals proportionally to realised investment returns, but does not penalise negative returns, encourages risk-taking; while a bonus cap and malus mitigate risk-taking. However, the difference in risk-taking between the bonus cap and malus treatment groups and the proportional bonus group weakened significantly when the participants' bonus was conditional on hitting an absolute or relative performance target. We also find some evidence that the bonus cap discourages project search effort relative to the proportional bonus, whereas the difference in the levels of effort between the malus treatment group and the proportional bonus group was not statistically significant.

## Experiment Setup

**Bonus group allocation**

Participants were randomly allocated into one of the bonus groups:

- Proportional bonus: bonus proportional to the asset return as long as the return is positive.
- Bonus cap: bonus proportional to the asset return, but subject to a cap.
- Malus: bonus proportional to the (positive) asset return, but conditional on the return being non-negative for the next time period.

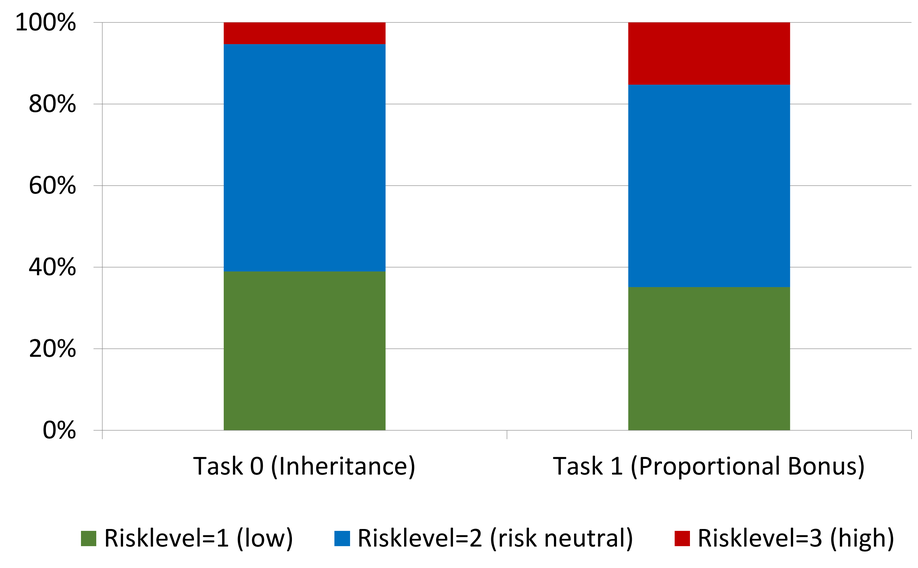
**Tasks**

All participants were asked to perform the following tasks:

- Task 0 (unpaid): Participants were asked to choose one asset from a list of six assets with different risk and return profiles to invest a hypothetical inheritance.
- Task 1: Participants were asked to choose from the same list of six assets to invest on behalf of the ABC bank. Cash bonus paid if asset return was positive. The bonus amount depended on bonus group and realised return. Participants were not penalised for negative returns.
- Task 3: Same as Task 1, except cash bonus paid if asset return > a pre-set earnings target.
- Task 2A (effort task): Participants were shown the same list of six assets, and were given the option to reveal up to twenty-four additional assets by manually performing some five-digit additions and subtractions correctly. Each correct answer revealed an additional asset available for selection. Effort was measured by the number of calculations attempted.

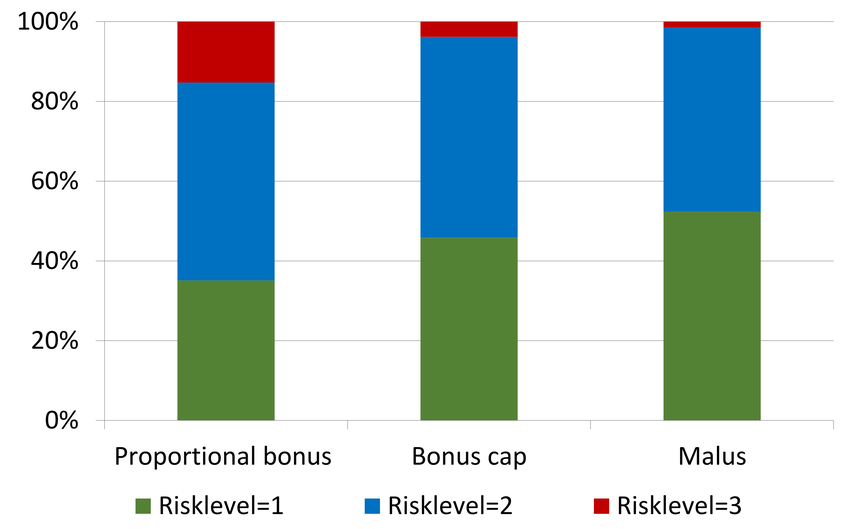
## Results

1. **Proportional bonus incentivises greater risk-taking**
   (Task 0 and 1, proportional bonus group)

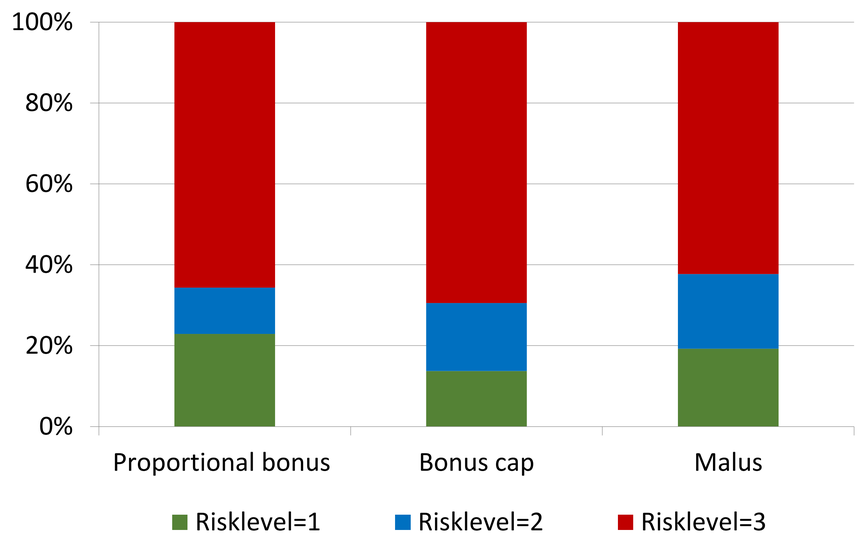



## Results (cont.)

2. **Bonus cap and malus mitigate risk-taking, relative to proportional bonus**
   (Task 1, all bonus groups)




3. **High performance targets weaken the risk-mitigating effect of bonus regulations** (Task 3, all bonus groups)




4. **Bonus cap reduces project search effort**
   (Task 2A, all bonus groups)

| | Number of questions attempted | | % that attempted zero question (no effort) |
|---|---|---|---|
| | Mean | Median | |
| **Proportional** | 11.5 | 9 | 8.8 |
| **Bonus cap** | 8.8 | 6 | 19.3 |
| **Malus** | 10.3 | 9 | 6.8 |

## Conclusions

- Proportional bonus incentivises risk-taking; and that *other things equal*, bonus cap and malus mitigate these incentives.
- But the risk-mitigating effects of bonus cap and malus disappear when bonus is made conditional on absolute (or relative) performance targets. These are commonly used by banks!
- Some evidence that bonus cap reduces effort.

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Link to the Bank of England Staff Working Paper No. 736:
https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2018/how-do-bonus-cap-and-malus-affect-risk-and-effort-choice-insight-from-a-lab-experiment.pdf