Recognition rules and accounting based compensation (Jonathan Bonham)

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Contribution and ideas

- The paper explains the use of caps, floors and hurdle in accounting based compensation contracts.
- The author develops a model where the book value of a firm (accounting value) differs from its fundamental value (intrinsic value). The deviations are due to different types of recognition rules.
- The agent can control the stochastic process of the fundamental (by affecting the probability of each event) and as a result to affect the value of her compensation package.
- The principal can control the payoff function of the compensation (?)

Connecting between the dots

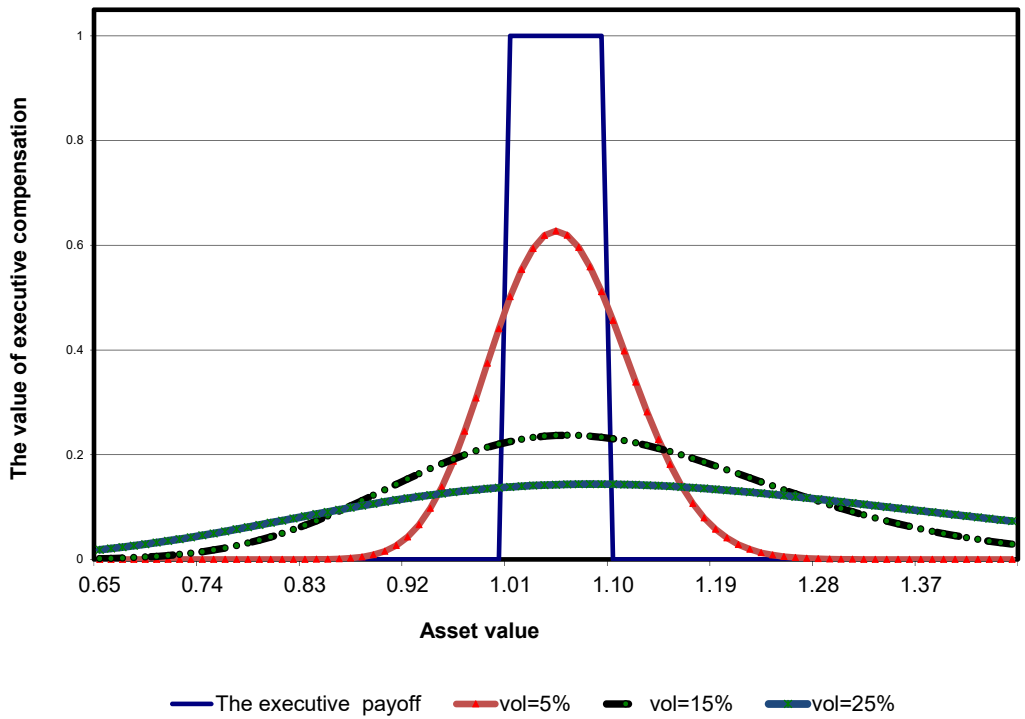
- Accounting based compensation.
- Nonlinear pay packages (bonus with caps, floors and hurdle)
- Deviations between book value and the fundamental value of the firm
- Intricate control of executives over the stochastic value of a firm's assets.

Using compensation to motivate executives' decisions - a contingent claim approach

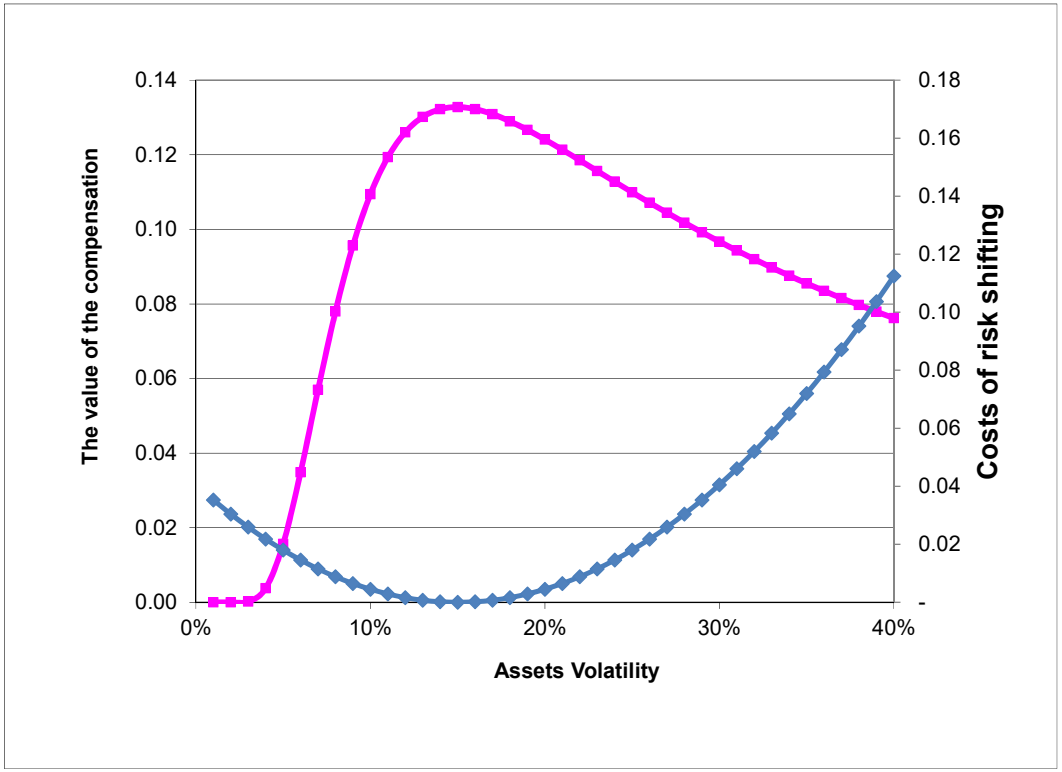
- There are several potential projects in the economy and the executive can recognize the project with the highest NPV.
- The principal (stockholder?) goal is to motivate the executive to take this level of risk and to avoid risk shifting to projects with a different risk level.
- In equilibrium, the agent (executive?) maximizes the value of its own position.
- Therefore the agent is compensated with a pay package that motivates her to take the optimal level of risk.

Hurdle bonus with a cap

- We assume that the project with the highest NPV has a volatility of 15% while the firm asset value is 0.90.
- A compensation that pays \$1 if asset value is between \$1 and \$1.1 at the end of the year motivates the executive to choose a risk of 15% since it maximizes the value of her holding.

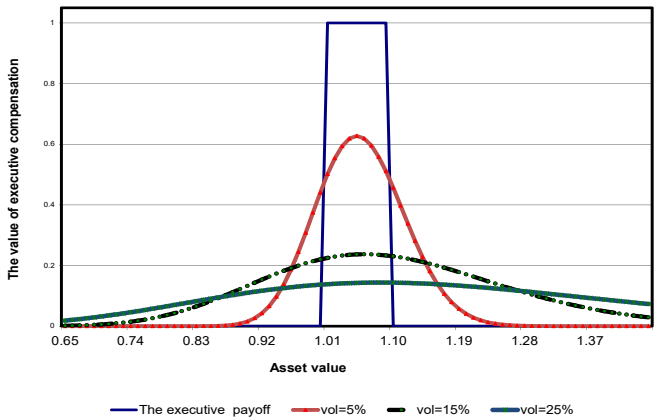


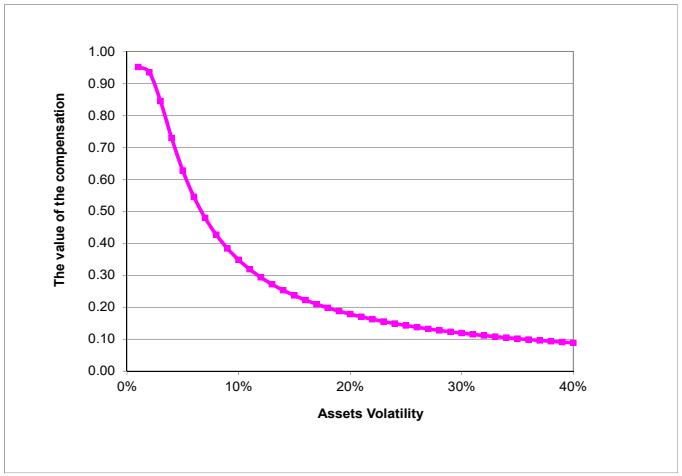
The optimal level of asset risk and costs of risk shifting



What can go wrong with bonus compensation? Murphy (2013)

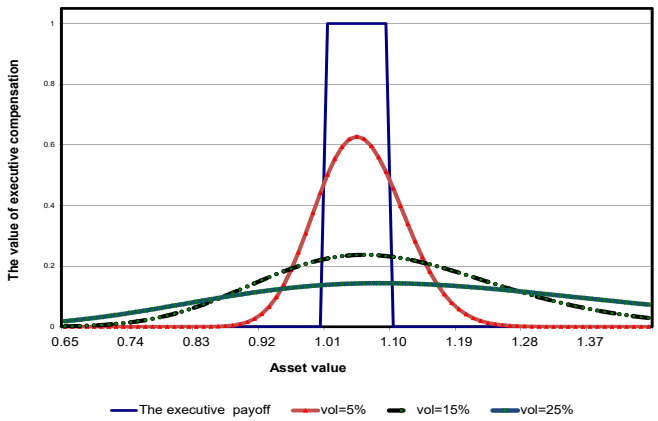
- **Productivity/Efforts**: "Bonus caps incentivize managers to stop producing once they achieve the maximum threshold or if they are far from attaining the minimum threshold, particularly if they are unable to transfer performance results to later periods via reporting"
- Implication: for asset value of 1.05 the value of the bonus compensation decreases with the level of asset risk

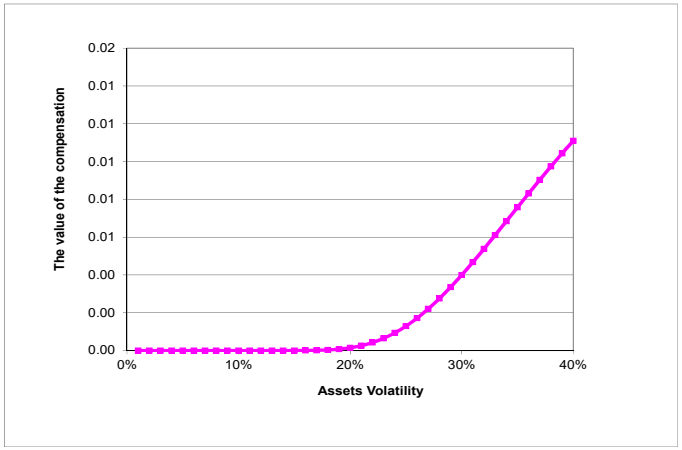




What else can go wrong with bonus compensation? Murphy (2013)

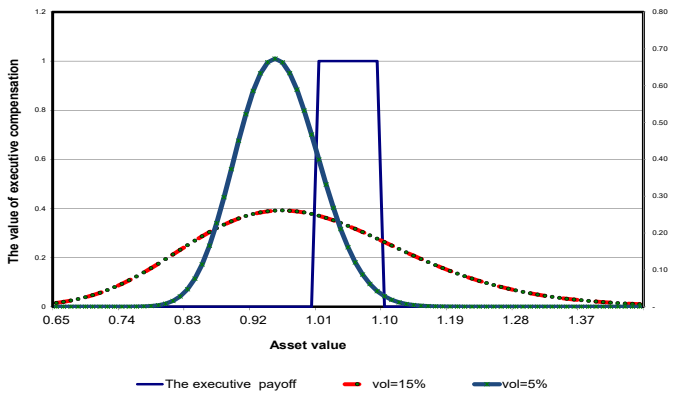
- **Risk taking**: "hurdle bonuses provide incentives to do whatever is necessary to achieve the minimum threshold, including sacrificing long term value to achieve short term performance"
- Implication: for asset value of 0.5 the value of the bonus compensation increases with the level of asset risk

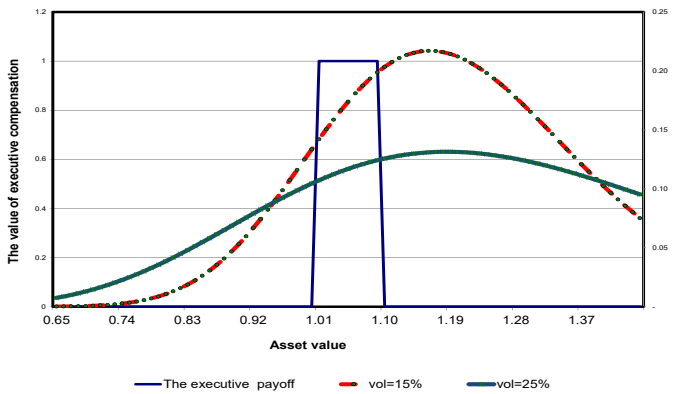




The effect of deviation between the intrinsic value and accounting recognition

- **Type I error - false positive**: rules that err on the side of recognition of fundamental gains and losses when the change in value is uncertain.
  An example is the usage of mark-to-market accounting for bonds which are held till maturity.
- **Type II error - false negative (Basu, 1997)**: rules that err on the recognition when the change in value is certain.
  "Historical cost accounting reflects a preference for type II errors"





Manipulation by the agent and fixing the compensation by the principal

- The work focuses on the case where the agent can manipulate the payoff for its own favor by changing the probability of the different events
- The work shows how to fix the compensation to avoid risk shifting and to reduce incentives that are not optimal.

Clarifying the implication of the model

- Agent and principal
- 'Optimal Solution'
- Robustness (from discrete to continuous time)
- 'Inside debt'
- The wedge between accounting errors and manipulation by the agent
- S-shaped Basu relation (convex for bad news and concave for good news?)= S-shaped earnings-return relation
- Asymmetric or symmetric information.
- Freeman and Tse (1992) versus Basu (1997)
- What can/should we do in existence of several types of errors?
- Type I and Type 2 errors.