Are CEOs paid extra for riskier pay packages?

Albuquerque-Albuquerque-Carter-Dong

Kevin J. Murphy
December 2019

Compensating Differentials for Risk

"Theory" predicts that risk-averse CEOs will demand compensating differentials for accepting risky pay packages

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Authors consider 3 approaches

Simulations based on performance metrics in incentive plans (Incentive Lab)

E[Pay]=Mean[TDC1], Var[Pay]=Var[TDC1]

E[Pay] and Var[Pay] based ARCH estimates using TDC1

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Apparently, our theories need updating . . .

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This paper shows that we've taken the risk-aversion story too seriously

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Does Agency Theory require the CEO's participation constraint to be binding?

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One way to model:

$MAX_{w(y)}$ (y-w(y)) subject to

MAX_a U(w(y),a)

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Another way to model:

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MAX_a U(w(y),a)

E[y-w(y)]=0

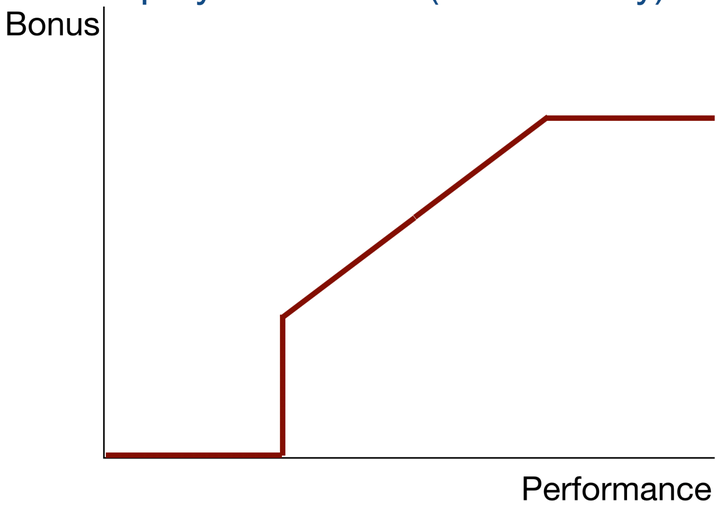
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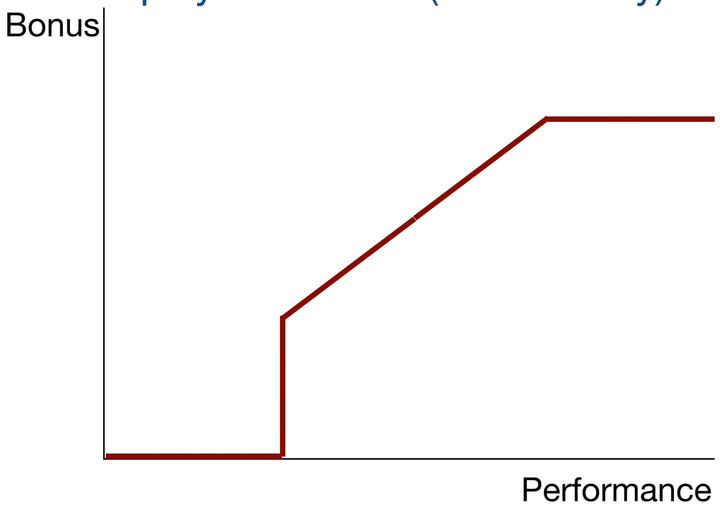
Approach 1: Simulations

Non-Equity Incentives (24% of Pay)

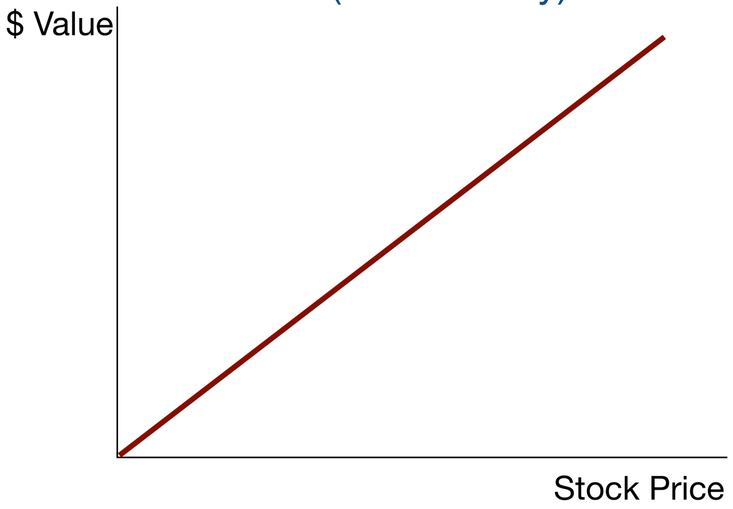


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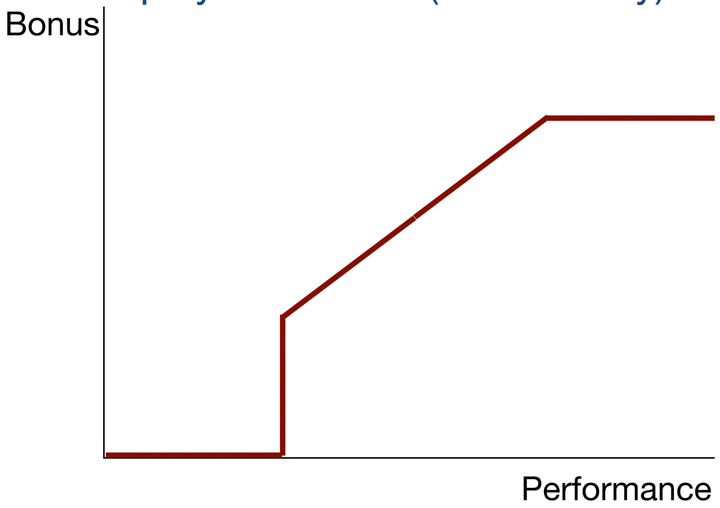


Restricted Stock (15% of Pay)

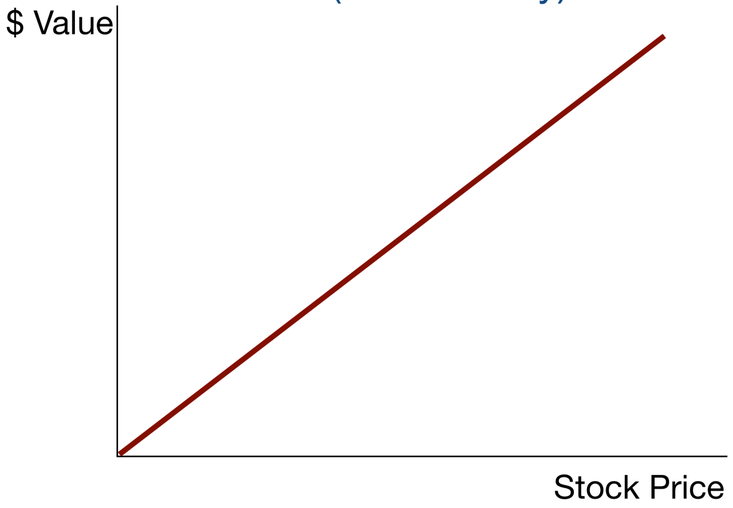


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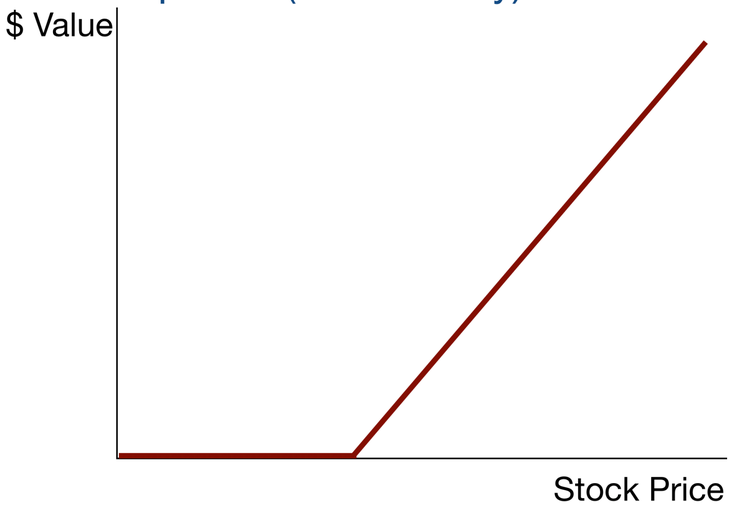
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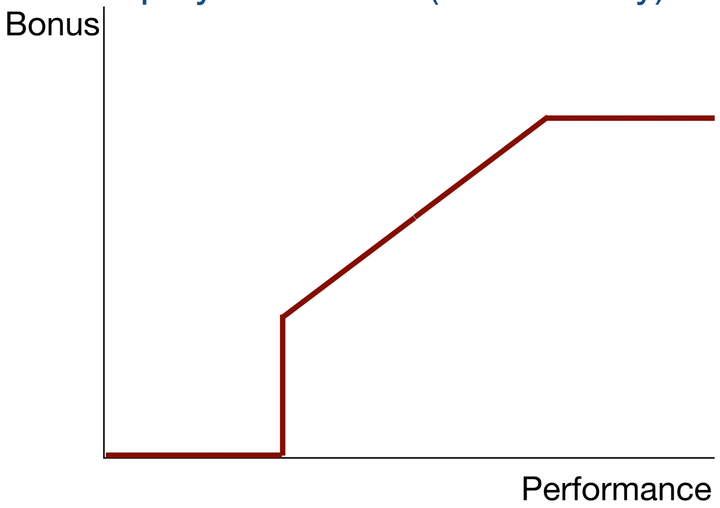


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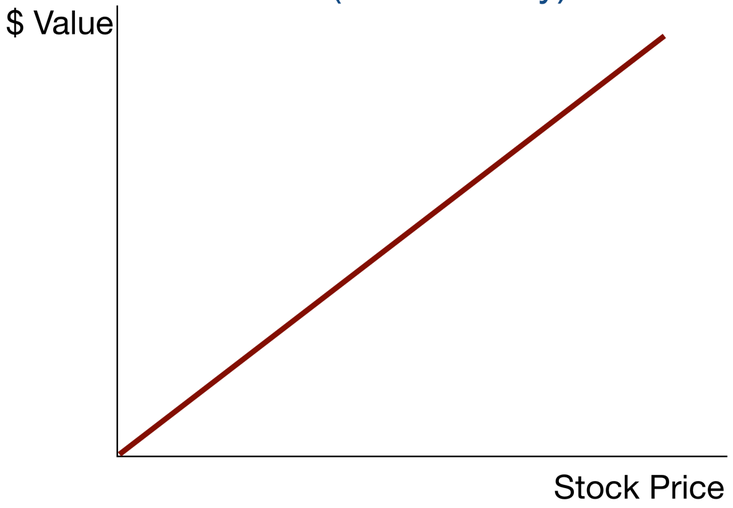


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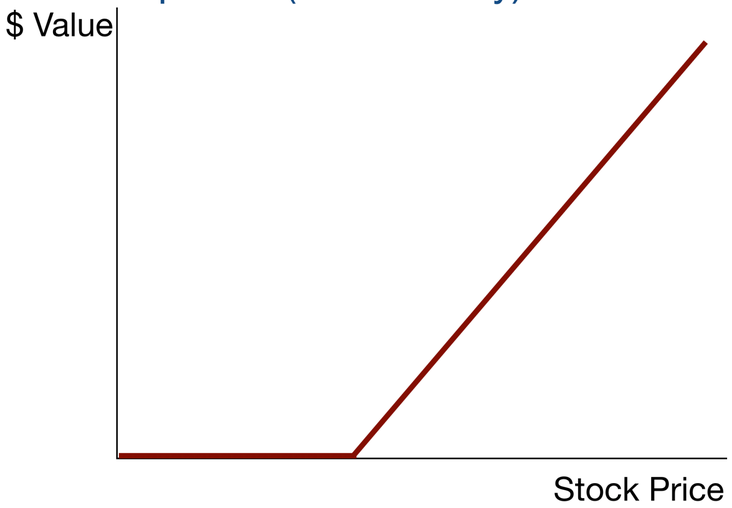
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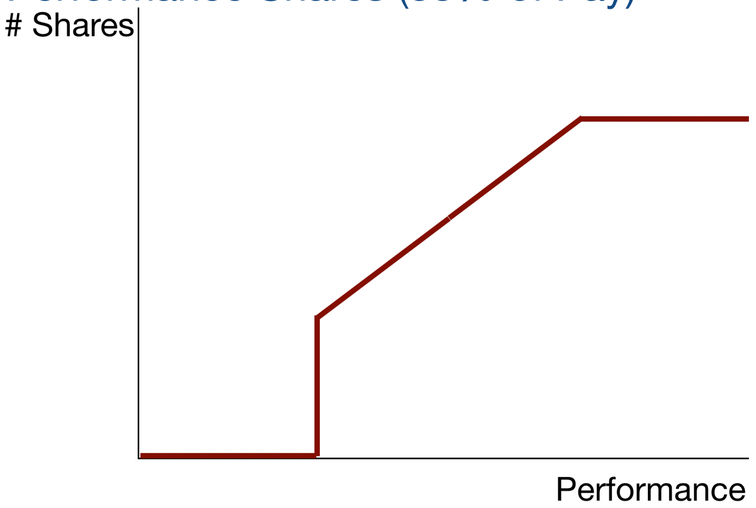
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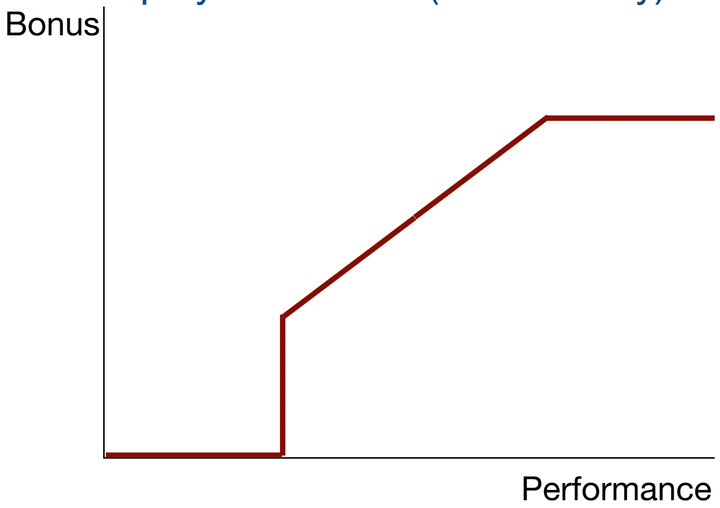


Performance Shares (33% of Pay)

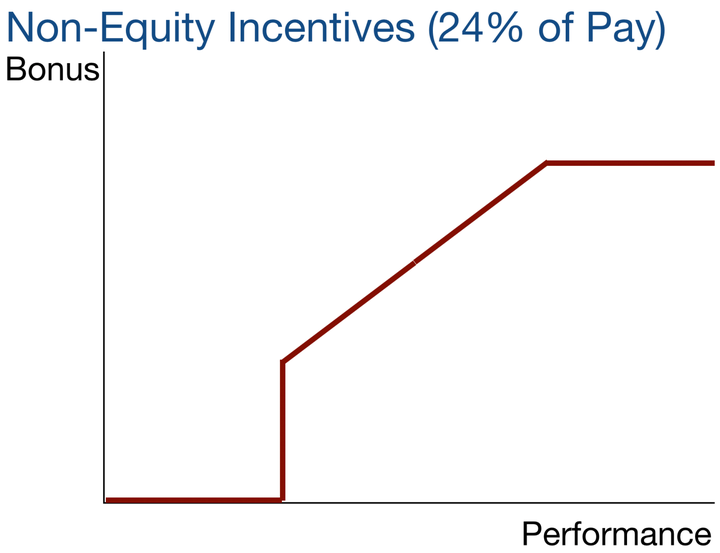


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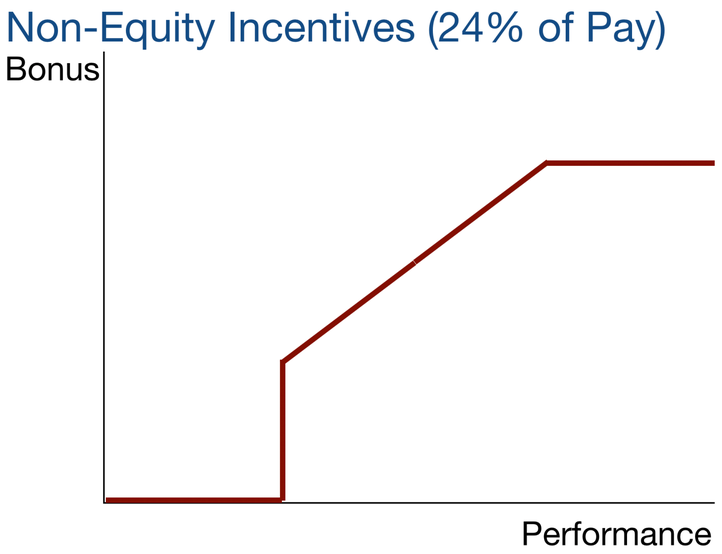


Approach 1: Simulations



Over 90% of firms use non-GAAP or adjusted measures. How does this affect Var(Bonus)?

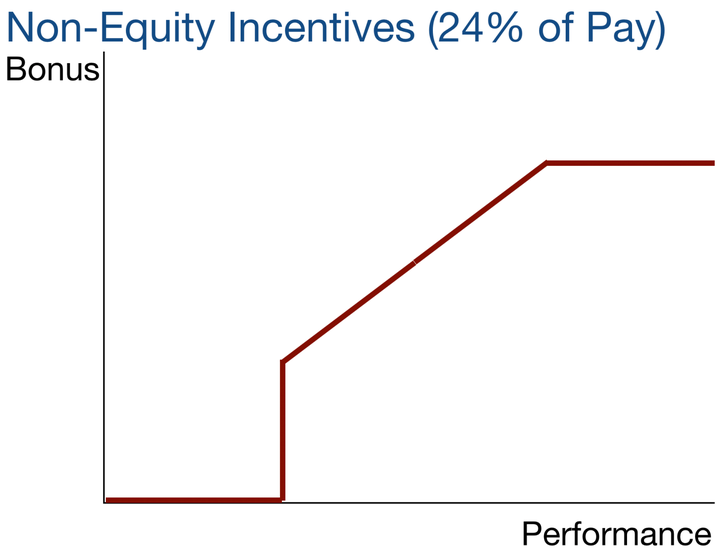
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Most firms have "Individual Performance Modifiers" that can increase or decrease bonuses. How does this affect Var(Bonus)?

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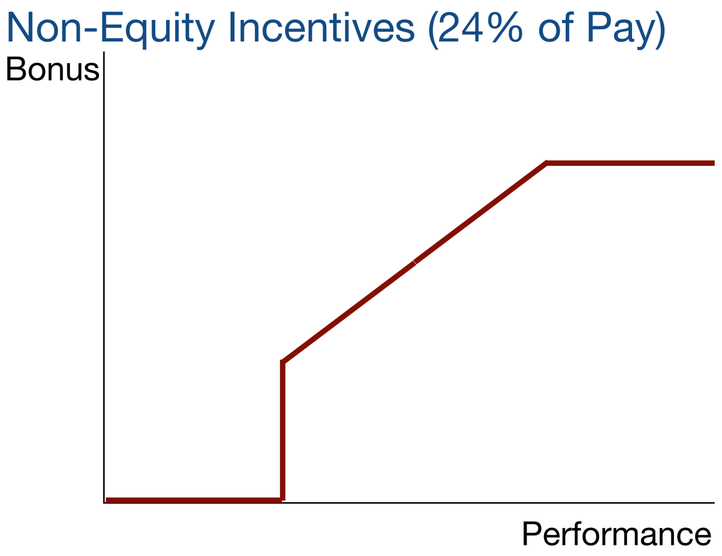


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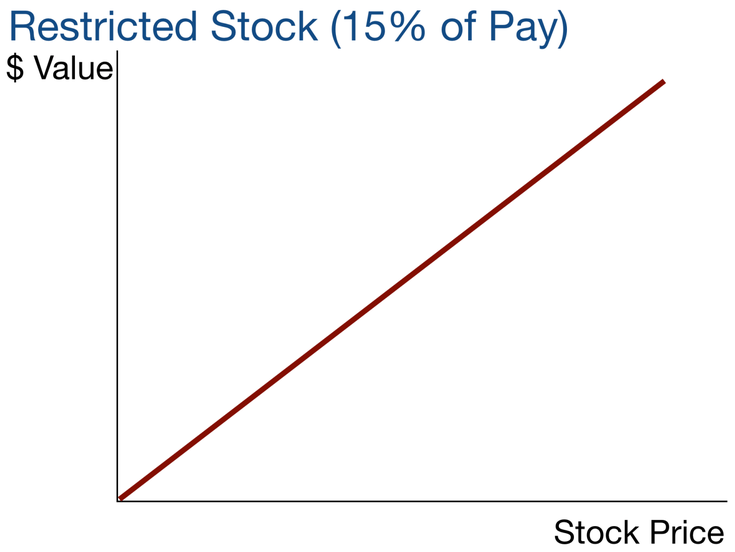
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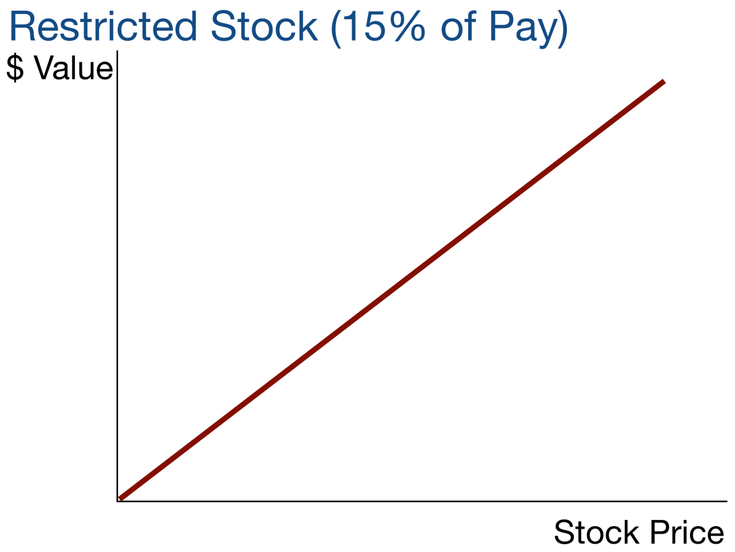
Missing values for goals may not be random

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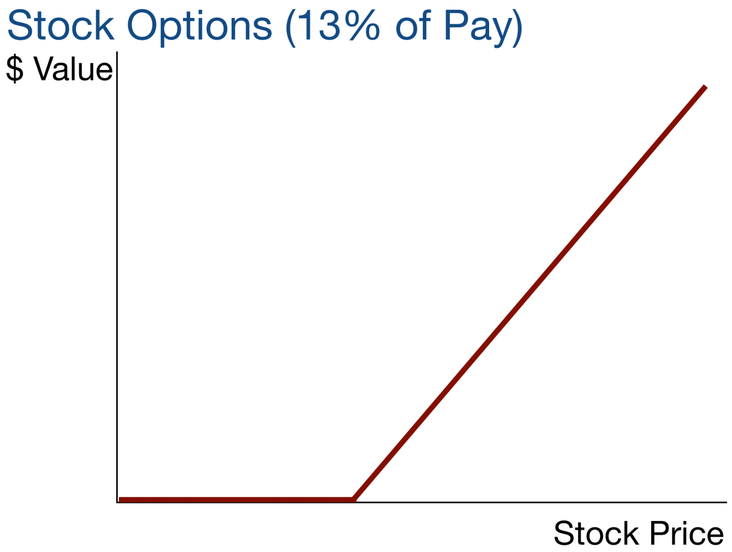


Approach 1: Simulations

Easiest to model how Var(Stock Price) translates to Var(RSUs) . . . but you seem to ignore time-lapse restricted shares

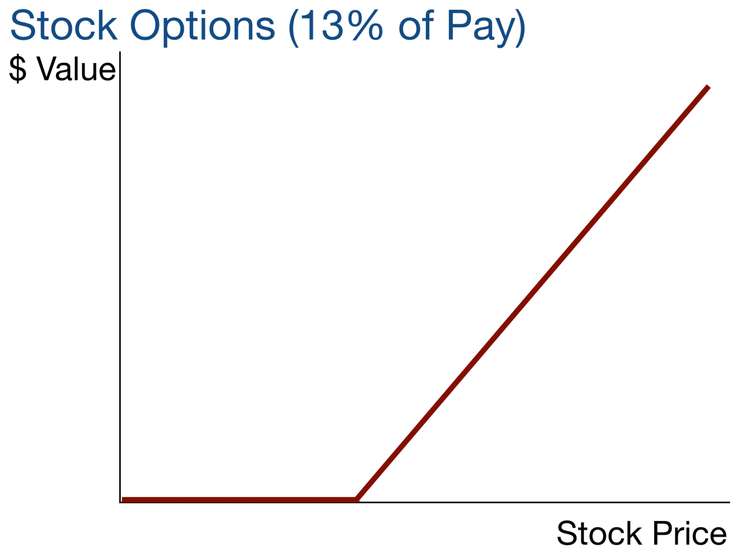


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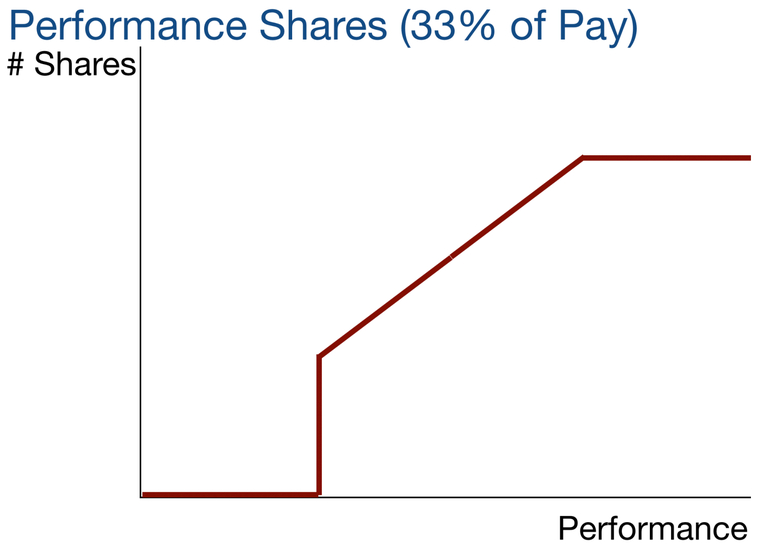


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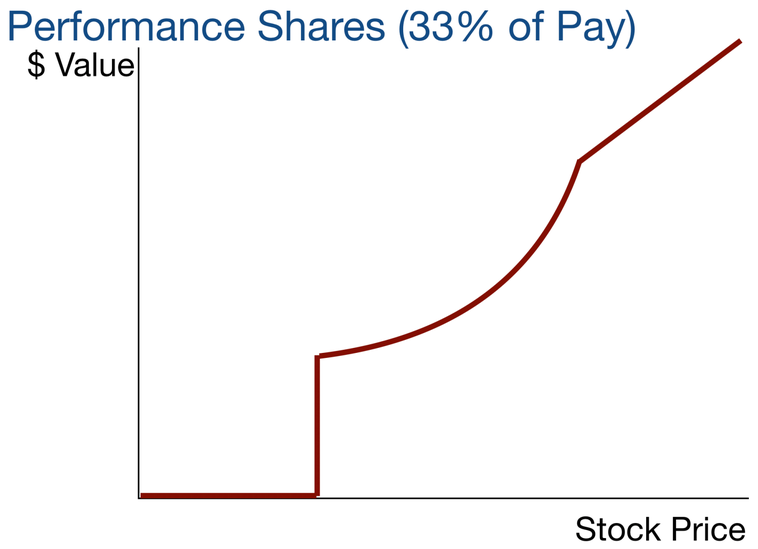
Straightforward to model how Var(Stock Price) translates to Var(Options) …
but is this what you are doing?

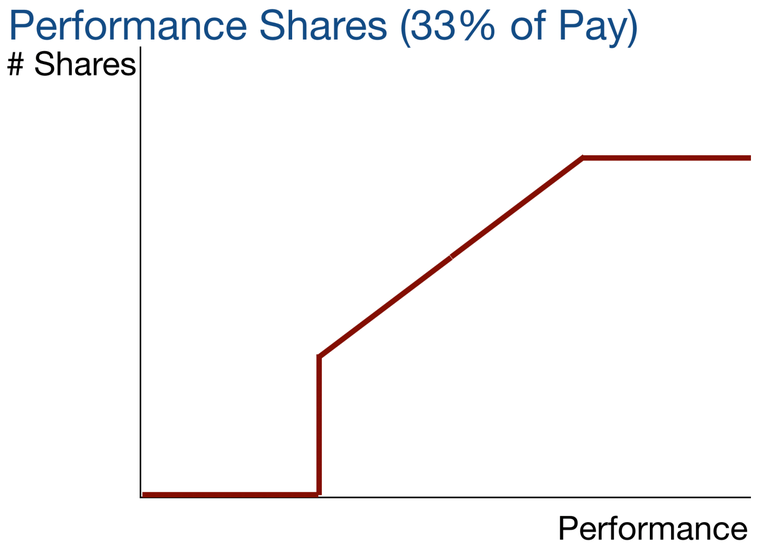


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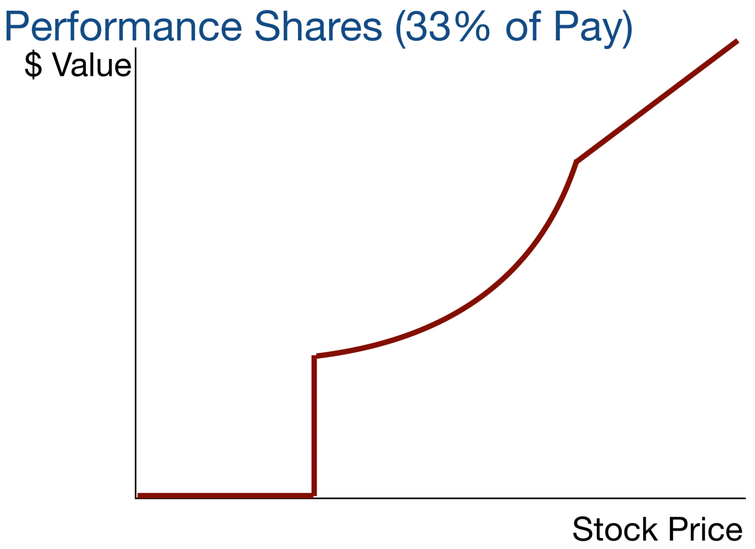
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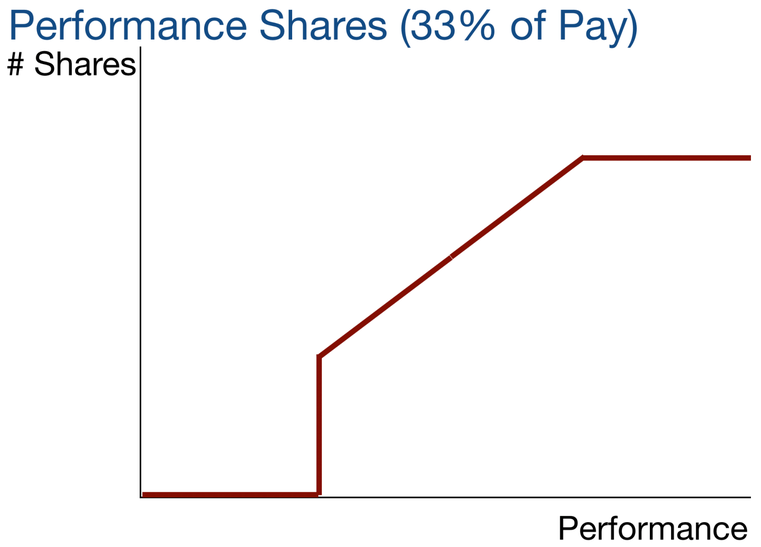




Approach 1: Simulations

Most of the action is in the stock price
and not in the metric that
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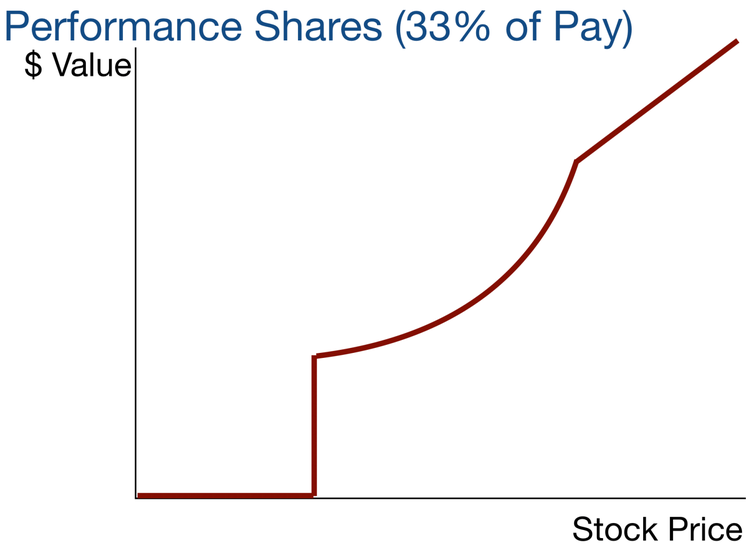


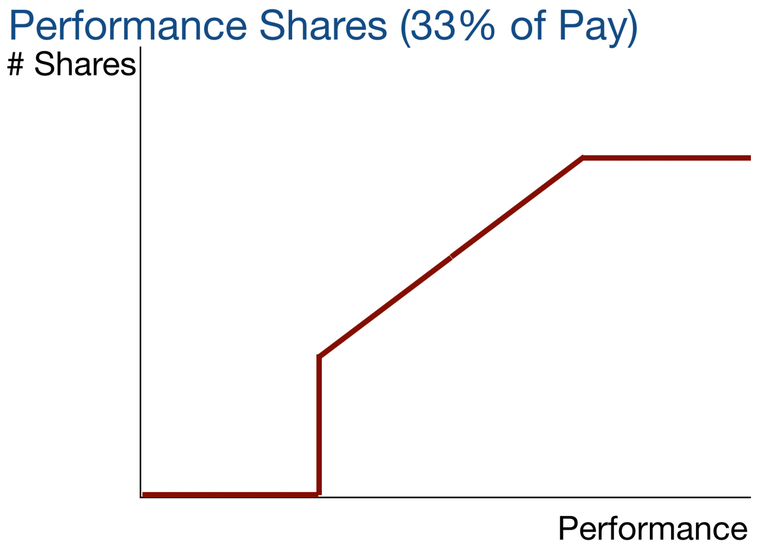


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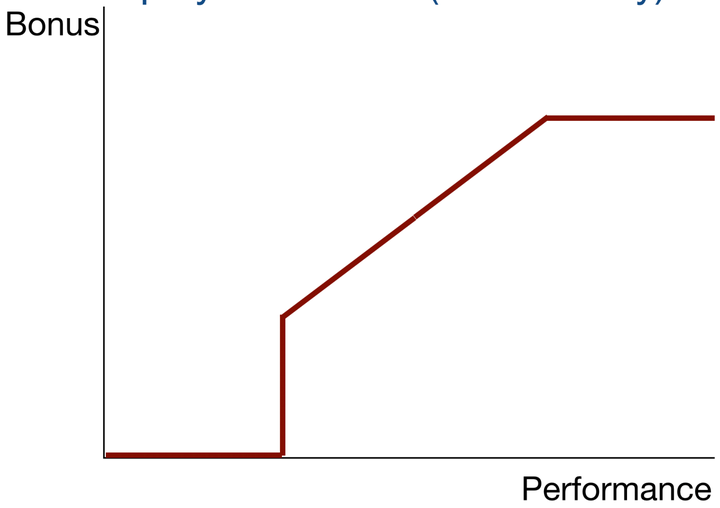
Why aren't you simulating stock prices directly (rather through a multiple of sales)?



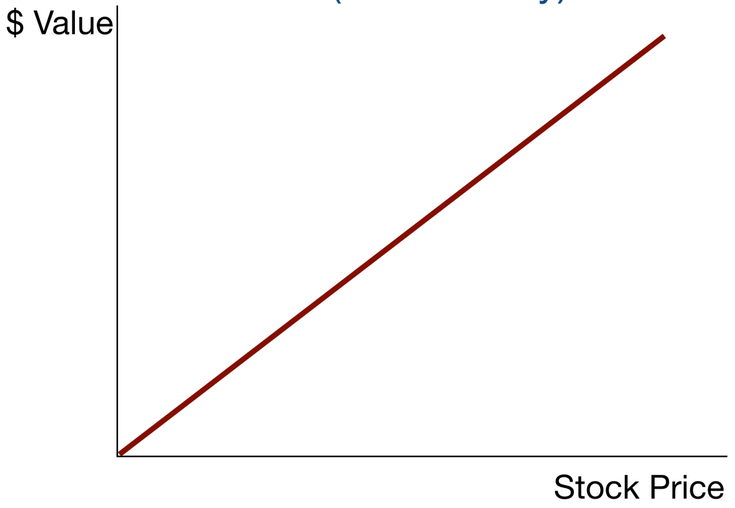


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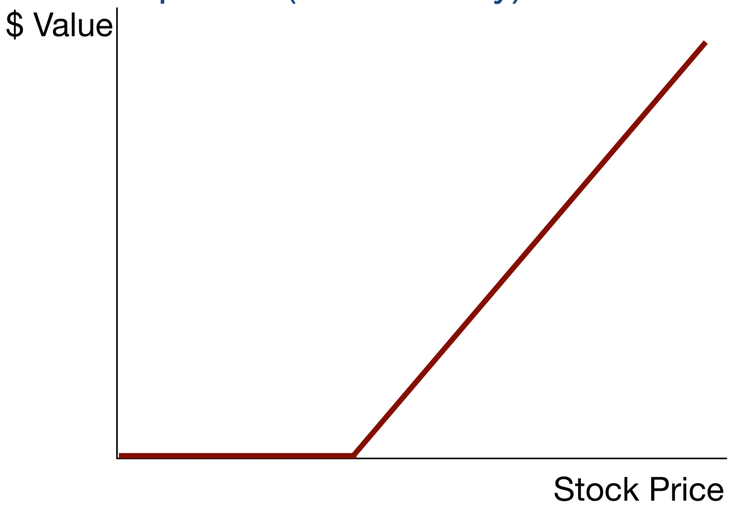
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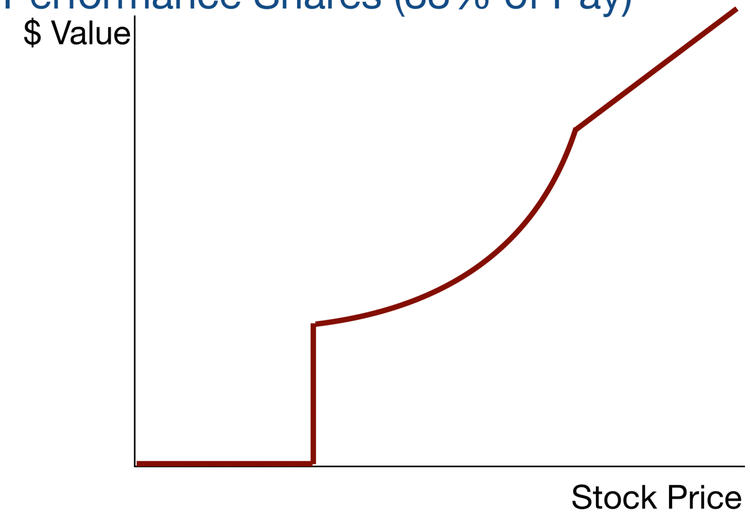
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Approach 2: Realized Var(TDC1)

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CEO #1: Base salary of $1,000,000, no other pay

CEO #2: Annual RSU grant of $1,000,000, no other pay

Both have Var[TDC1] = 0, but CEO #2's pay is riskier

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Mean[TDC1] is not expected pay

- Actual bonus rather than expected or target bonus
- Black-Scholes is not the "expected value" of options, etc.

Approach 3: ARCH

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Approach new to CEO pay, but not well described

Like approach #2, seems tied to TDC1 which is problematic

Is Estimated E[Pay]/Var[Pay] Elasticity too low?

What is γ?

I suspect you have underestimated Var[Pay]

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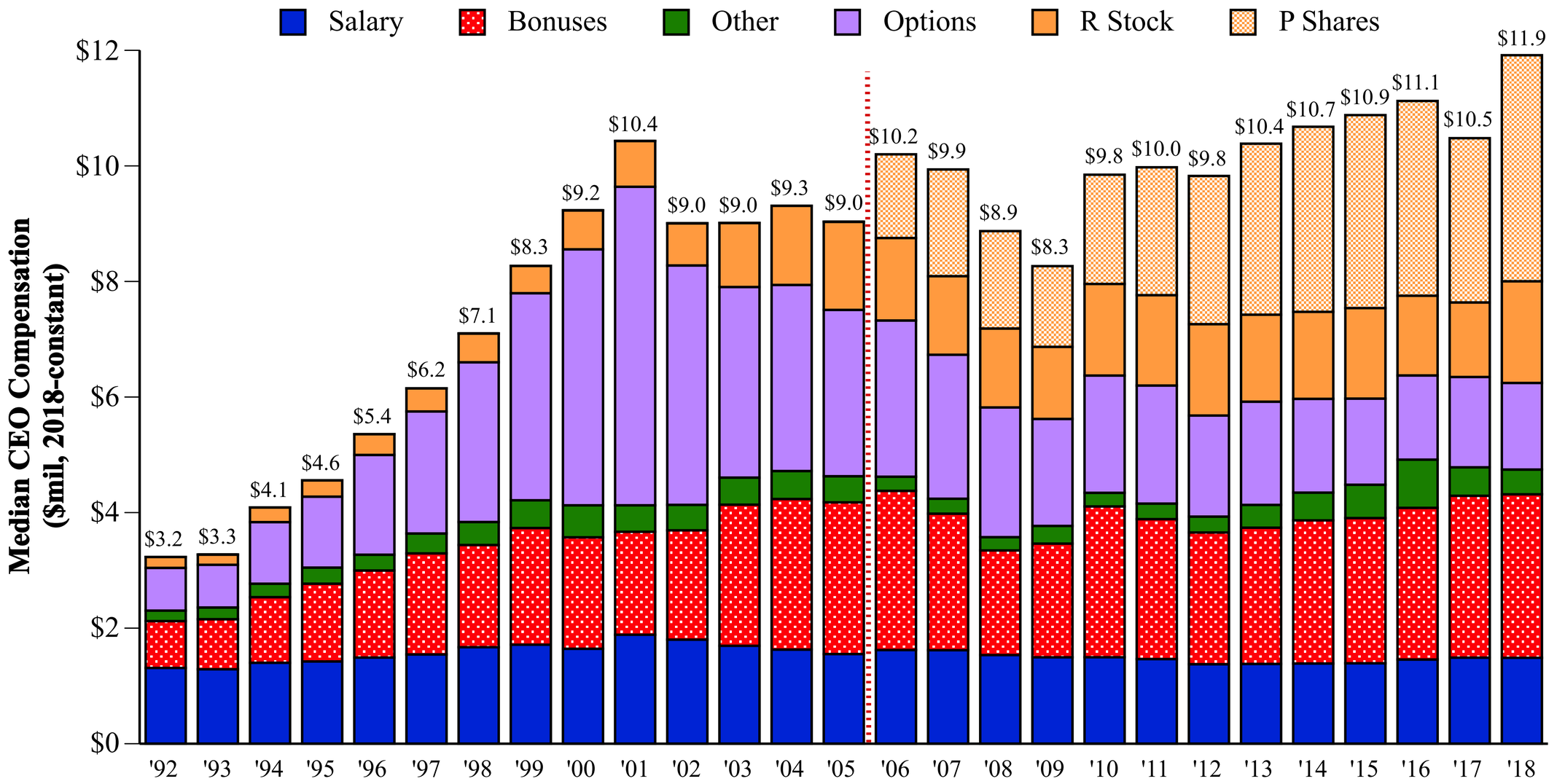
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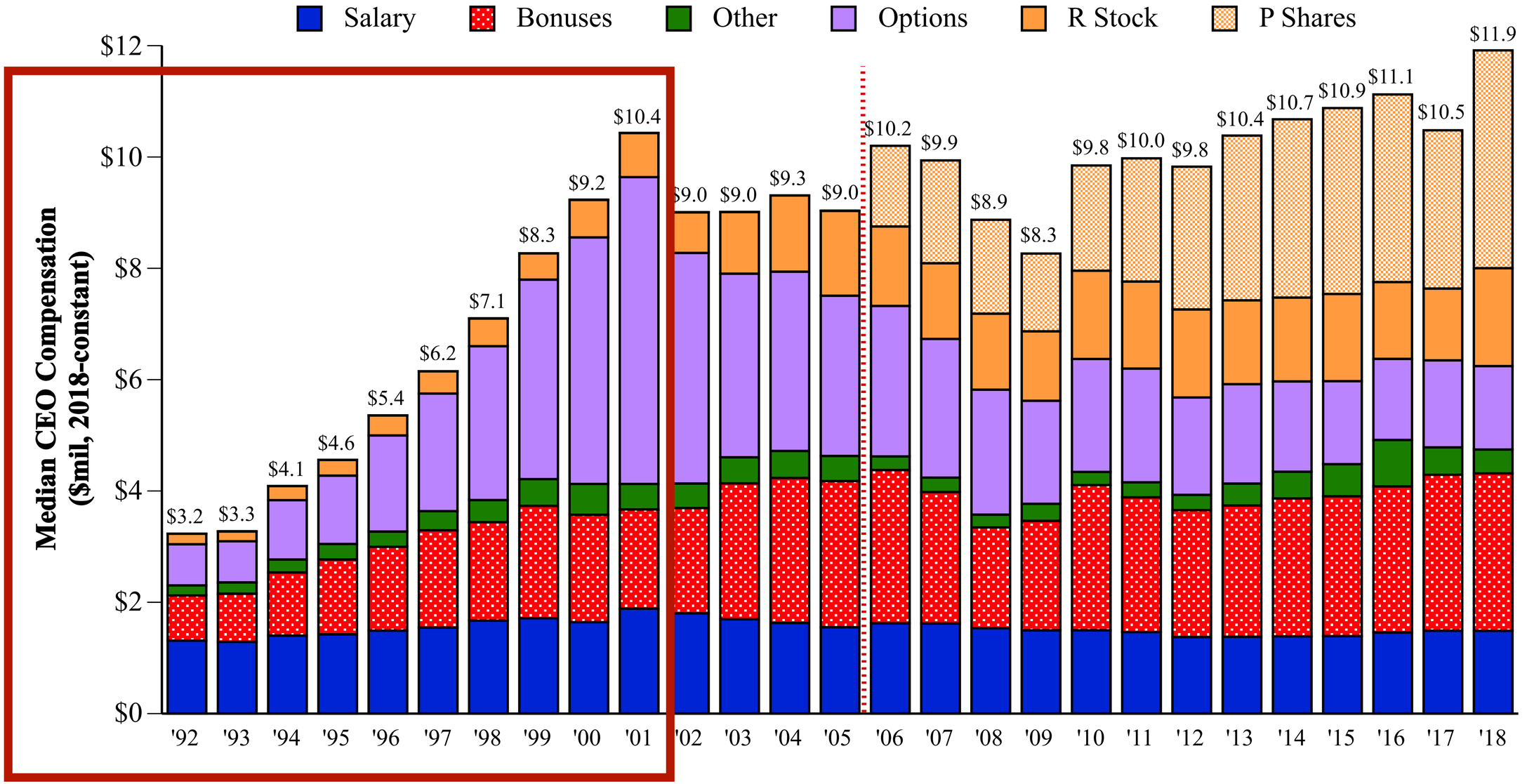
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- Which implies even lower elasticities than reported?
- But, would a higher elasticity "confirm" the fundamental hypothesis?

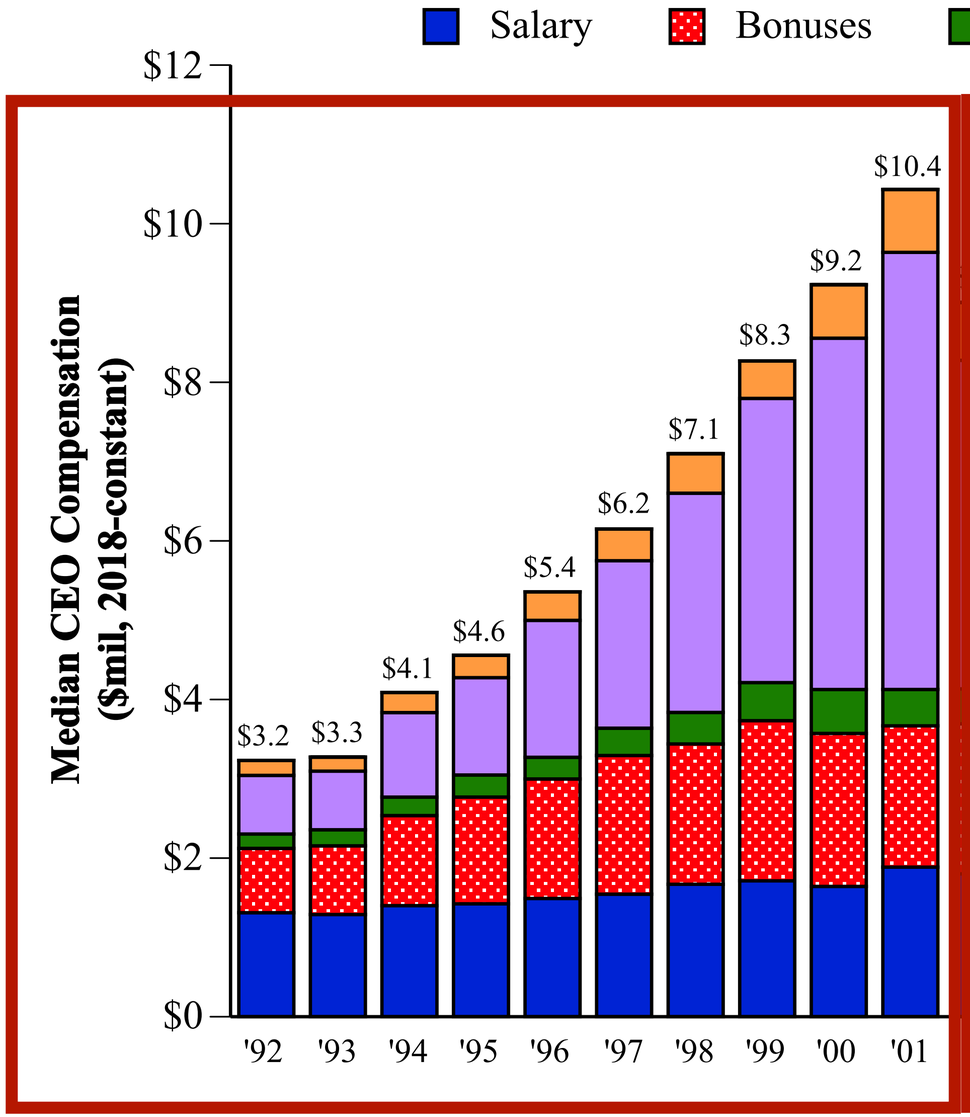
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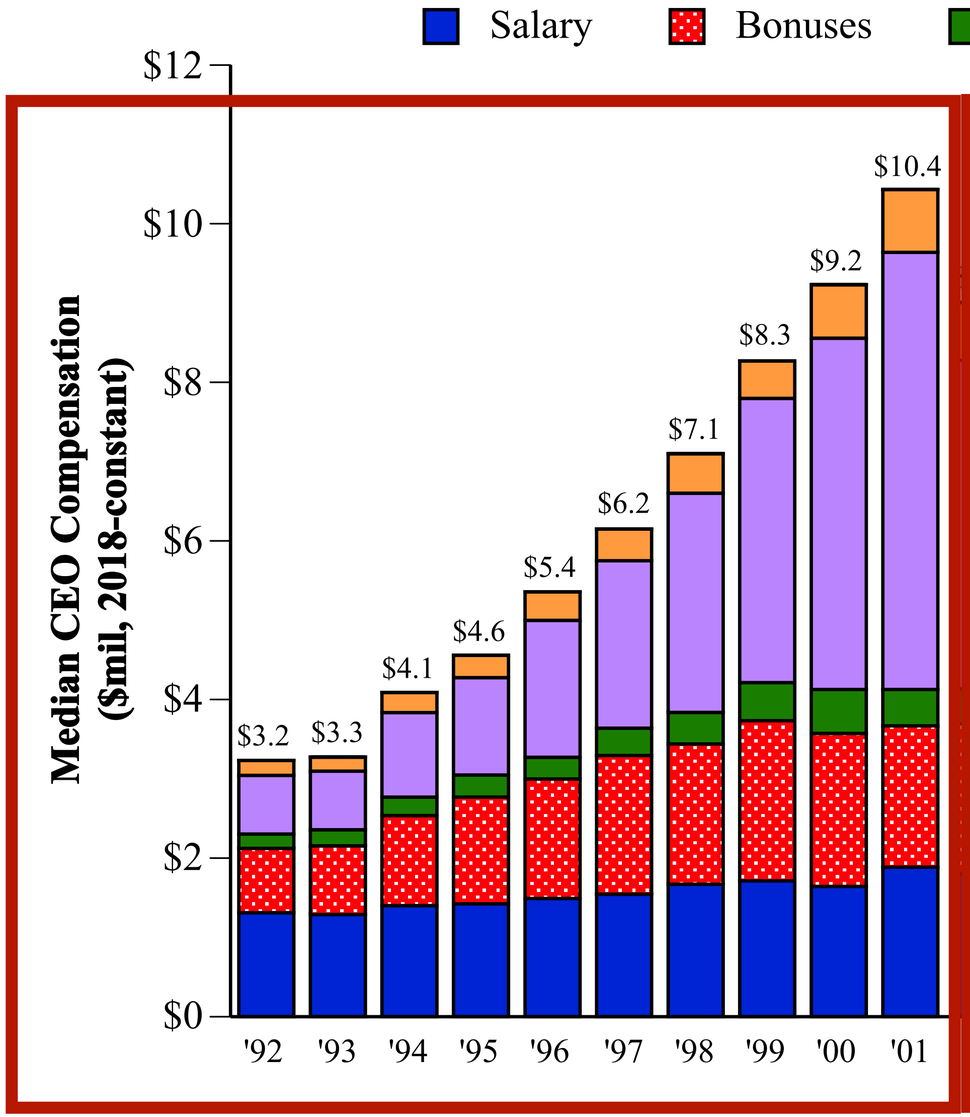


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Would a higher elasticity confirm theory?



Suppose risky pay was layered on top of competitive pay

E[Pay] and Var[Pay] both increase, but cannot reflect a compensating differential for increased risk

Evidence of Layering (Murphy-Sandino 2020)

$$\Delta E[\text{Total Pay}]_i = \alpha + \beta\Delta(\text{New Equity Grant})_i + \text{Controls}_i + \varepsilon_i$$

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Time-Lapse RSUs	$\beta = 1.476$
Stock Options	$\beta = 0.965$
Performance Shares	$\beta = 1.056$

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E[Pay] increases, but this cannot logically be a differential for increased risk

Conclusion: Debunking Risk Aversion

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I've suggested some "cleaning up", but I believe the results will hold and will be compelling