

AGENCY FRICTIONS, MANAGERIAL COMPENSATION, AND DISRUPTIVE INNOVATIONS

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WHAT THE PAPER DOES

Empirical: US public firms via Compustat, Execucomp, patent data

- ▶ Corporate governance \approx institutional ownership
- ▶ Disruptive innovation \approx highly cited or original patents
- ▶ Find positive associations among governance, innovation, & options

Theoretical: GE endogenous growth, endogenous manager compensation

- ▶ Managers control innovation at a personal cost, & owners want them to innovate more
- ▶ Endogenous compensation contract, with convex options payoffs incentivizing more innovation
- ▶ After counterfactual improvement in corporate governance, get more micro options, innovation + more macro growth, welfare

Quantitative: Structural estimation + counterfactuals

- ▶ Shut down board capture, i.e., remove agency frictions
- ▶ More innovation (+26%), growth (2 \rightarrow 2.5%), welfare (+7.3%)

WHAT I LOVE ABOUT THE PAPER

They're pursuing "big money" empirically

- ▶ Public firms perform a sizable amount of R&D
- ▶ CEO's are highly incentivized with options
- ▶ Focusing sharply on impactful, cited patenting

They're pursuing "big money" theoretically

- ▶ A wide theoretical literature on executive compensation in corporate finance is often short on macro implications.
- ▶ This model links options convexity to an extremely powerful macro growth mechanism, with large quantitative implications.

They're displaying considerable talent & craftsmanship

- ▶ *Data*: Care with measurement, e.g. for disruptive innovations
- ▶ *Model*: Rich endogenous contract, yet careful tractability
- ▶ Rich structural estimation, pairing the two

WHAT I WANT TO LEARN MORE ABOUT

1. Does the timing of options grant vs innovation line up in the data?
2. Could options manipulation through R&D cuts matter here?
3. Could other sources of manager agency conflict matter here?

The authors are well placed to help answer each of these three questions.

DOES THE TIMING OF OPTIONS GRANTS VS INNOVATION LINE UP?

The cross section drives most of the empirical variation. One might worry about unobserved drivers of manager compensation and innovation lying outside of this paper's theoretical mechanism.

- ▶ The authors take this concern seriously, with several IV approaches, firm FE's in various checks.
- ▶ But room for further analysis remains. Does the timing of vesting of options grants line up with the timing of innovation, exploiting only within-firm or within-CEO variation?

Edmans, Fang, & Lewellen (RFS, 2017)

Managers with high options compensation cut R&D precisely when the options vest. Appears, at least on its face, to push against this paper's theory linking options to more innovation. But R&D \neq innovative patent output, so there's still room to explore with the current innovation dataset.

COULD OPTIONS MANIPULATION THROUGH R&D CUTS MATTER HERE?

Consider a distinct environment with the following features:

- ▶ Investors know less than managers and price firms based on this restricted, asymmetric information.
- ▶ Managers face multiple shocks, e.g., persistent vs transitory or demand vs idea quality, so true value isn't perfectly invertible.
- ▶ Investor pricing of firms slopes up in reported profits.

Options incentivize managers to manipulate, with opportunistic cuts to R&D to boost profits, stock prices, & hence the value of their options.

Terry, Whited, & Zakolyukina (2019)

We offer empirical & theoretical support for the information manipulation mechanism. Such options manipulation could quantitatively dampen the results of the current paper, although it's highly unlikely to overturn them.

COULD OTHER SOURCES OF MANAGER MISBEHAVIOR MATTER?

Managers and owners conflict because managers must exert effort for R&D and - at estimated parameters - want to provide **less** R&D than owners.

- ▶ Options compensation corrects this by increasing risky innovation incentives through inherent convexity in payoffs.
- ▶ Since desired $R\&D^*_{manager} < R\&D^*_{firm} < R\&D^*_{social}$, the result is benefit for society from better corporate governance.

Consider an alternative source of conflict, e.g. empire building or prestige concerns causing managers to invest **more** in R&D than owners wish.

- ▶ Could get desired $R\&D^*_{firm} < R\&D^*_{manager} < R\&D^*_{social}$.
- ▶ Better governance, pulling equilibrium R&D down from $R\&D^*_{manager}$ towards $R\&D^*_{firm}$, could harm social welfare.

Worth exploring some alternative sources of agency conflict here, since it seems better corporate governance could be destructive in some cases.

WRAPPING UP

- ▶ This is a great paper skillfully targeting a big question.
- ▶ These authors ooze talent for model craftsmanship, estimation, and empirical measurement. I learned a lot.
- ▶ I'd love to see them explore my three questions above a bit more, a goal they're quite well placed to achieve.