

Firm Interactions and Top Management Incentives

Miguel Antón[†]

Florian Ederer[‡]

Mireia Giné[†]

Martin Schmalz[§]

[†]IESE [‡]Yale SOM [§]Oxford SBS

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- Disaster! What would you do if you were the owner of United?

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But they declined to comment..Because they were happy?

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With this event Buffett won overall \$105m.

And Vanguard won over \$78m...

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Because they also own Uniteds' competitors!

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Virgin America	[%]
Richard Branson	30.77
Cyrus Capital	23.52
Virgin Group Holdings	15.34
Vanguard	2.89
BlackRock	2.25
Alpine Associates Advisors	2.11
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Other examples: Tesla, Amazon, Facebook, Uber, Ryanair, ...

But what if no self-interested owner is left?

<u>Delta Air Lines</u>	[%]	<u>Southwest Airlines Co.</u>	[%]	<u>American Airlines</u>	[%]
Berkshire Hathaway	8.25	PRIMECAP	11.78	T. Rowe Price	13.99
BlackRock	6.84	Berkshire Hathaway	7.02	PRIMECAP	8.97
Vanguard	6.31	Vanguard	6.21	Berkshire Hathaway	7.75
State Street Global Advisors	4.28	BlackRock	5.96	Vanguard	6.02
J.P. Morgan Asset Mgt.	3.79	Fidelity	5.53	BlackRock	5.82
Lansdowne Partners Limited	3.60	State Street Global Advisors	3.76	State Street Global Advisors	3.71
PRIMECAP	2.85	J.P. Morgan Asset Mgt.	1.31	Fidelity	3.30

<u>United Continental Holdings</u>	[%]	<u>Alaska Air</u>	[%]	<u>JetBlue Airways</u>	[%]
Berkshire Hathaway	9.20	T. Rowe Price	10.14	Vanguard	7.96
BlackRock	7.11	Vanguard	9.73	Fidelity	7.58
Vanguard	6.88	BlackRock	5.60	BlackRock	7.33
PRIMECAP	6.27	PRIMECAP	4.95	PRIMECAP	5.91
PAR Capital Mgt.	5.18	PAR Capital Mgt.	3.65	Goldman Sachs Asset Mgt.	2.94
State Street Global Advisors	3.45	State Street Global Advisors	3.52	Dimensional Fund Advisors	2.42
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The assumption may not hold. (Strategy, IO ... exist.) What then?

"To what extent will the conduct of firms be different from the assumed profit maximization behavior in classical theory..."

(Hart & Holmstrom, 1987)

Our research questions

Is it true that the way shareholders incentivize managers does not depend on shareholder identities / preferences / composition?

If managerial incentives systematically vary with shareholder preferences, then what alternative theories can help us organize the patterns in the data?

What do we do? What do we find? (Empirics)

Shareholder preferences may differ across many dimensions: horizon / intertemporal agency problems (pension funds, mutual fund, hedge fund, conglomerate, SWF...), portfolio selection (active/passive), governance activity

We focus on one objectively measurable source of heterogeneity: portfolio composition. Does investor α have economic interests also in other firms?

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Which measure most robustly predicts variation in incentive slopes?

Top-5 shareholders' holdings in other firms

Anon & Polk (2012)

O'Brien & Salop (2000) "MHID" (based on Cournot model)

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Consistent with the premise of Fisch et al. 2018, Bebchuk & Hirst, 2019, etc.
What is good (bad) for an individual firm can be bad (good) for a portfolio, when firms interact.

Why is that important?

Provides evidence & theory emphasizing a Vickers (1982)-style paradox: delegation to an agent with different preferences can be beneficial to the principal, when firms interact (and therefore can't be analyzed independently).

Responding to an agency conflict in ways suboptimal from the perspective of the firm can be beneficial to shareholders with stakes in related firms.

Empirical evidence emphasizing a general insight with potential implications throughout corporate finance.

Empirics

Data

ExecuComp (S&P1500 + 500)

Main results using WPS (Edmans et al. 2009)

Auxiliary results on relative performance evaluation

Compustat

Sales! market shares

CRSP

Industry definition (4-digit SIC)

Performance= market cap increase

Rival performance= VW market cap increase (Aggarwal & Samwick 1999)

13Fs: ownership, MHHI Delta; rm-level measures

Large institutions have become many firms' largest owners

Common ownership concentration is rising

Common ownership concentration is driven by "Big-3"

WPS baseline regression

$$\text{WPS}_{ijzt} = k_{ij} + b \text{ MHHID}_{zt} + g X_{ijzt} + h_z + h_t + \#_{ijzt}$$

WPS baseline panel regressions

Robustness to alternative WPS measures

Robustness to alternative (rm-level!) CO measures

All executives & alternative CO measure

More robustness

All results seen are qualitative similar with

- Non-logged WPS as outcome variable

- Not rank-transformed Common Ownership variables

- Coarser industry definitions (3-digit)

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Open question: do these correlations have a "causal" interpretation?

Difference-in-differences

Treat: implied change in CO due to BLK-BGI (2009); top-vs-bottom-tercile

Theory

Is there a model that can help organize the patterns in the data?

Model objectives and ingredients

Objective: incentivize manager, in the cheapest possible way, such that she sets the desired product market strategy

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Ingredients

Imperfect competition: managers can affect industry profits

Strategic complements (differentiated Bertrand)

Strategic substitutes (differentiated Cournot)

Diversified shareholders: incentivize managers to maximize shareholder value, not own-firm profits in isolation

Setup

2 firms

Inverse demand: $P_i(q_i, q_j) = A - bq_i - aq_j$

Marginal cost: $c_i = \bar{c} + e_i$

Pre-wage profit: $\pi_i = (A - bq_i - aq_j - c_i)q_i + e_i$

2 stages. At $t = 1$: 2 shareholders set (public) incentive contracts

Linear contract: $w_i = s_i + a_i p_i$

A owns x of firm 1 and $1 - x$ of firm 2

B owns $1 - x$ of firm 1 and x of firm 2

What is the optimal s_i, a_i as a function of ownership?

At $t = 2$: 2 risk-averse managers exert costly private effort and set q_i (or p_i) in accordance with incentives given by contracts

Incentive slope a_i determines managerial behavior

Managers

Exponential utility: $\exp[-r(w_i - kq_i e^2/2)]$

$e_i \sim N(0, s^2)$ so rewrite in certainty equivalent form

Higher output makes it more costly for the manager to reduce marginal cost

Manager i chooses e_i and sets q_i (or p_i) to maximize

$$\max_{e_i, q_i} s_i + a_i [A - bq_i - aq_i (\bar{c} - e_i)] q_i - \frac{r}{2} a_i^2 s^2 - \frac{k}{2} q_i e_i^2$$

Shareholders

Shareholder A's maximization problem is given by

$$\max_{s_i, a_i} (p_i w_i) + I(p_j w_j)$$

$$\text{subject to } w_i = w_i^0$$

$$\text{and } (e_i, q_i) \in \arg \max_{e_i, q_i} w_i \quad \text{or} \quad (e_i, p_i) \in \arg \max_{e_i, p_i} w_i$$

Managerial Effort and Product Market Choices

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$$e_i = \frac{a_i}{k}$$

$$q_i = \frac{A - (\bar{c} - e_i) a_i}{2b}$$

Higher a_i leads to higher e_i

Higher a_i leads to higher q_i (lower p_i)

Higher e_i means lower c_i which encourages higher production

Stronger incentives lead to more competitive product market behavior

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Product market equilibrium $i = 2$: solve system of managerial best response functions $e_i(a_1, a_2), q_i(a_1, a_2)$ for $i = 1, 2$

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Solve for symmetric equilibrium incentive slope $a = a$

$$a = \frac{2k(A - \bar{c})(8b^2 - a^2 - 2lab)}{1 - a(4b + a) + a^2 - 2ab - 12b^2 + 4(4b^2 - a^2)(2b + a)(1 + krs^2)k}$$

Predictions

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Higher ϕ means owner cares less for aggressive competition

Lower a_i induce less competitive firm behavior because lower a_i means higher c^0 and lower q_i (& higher p_i)

"Direct evidence"

Is there anecdotal evidence that "common" shareholders engage on manager incentive structure? With the objective of affecting firm interactions?

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Anecdotally, investors indeed engage on pay to affect production decisions

Interpretation and conclusions

Interpretation of results

Fact: common ownership associated with "attractive" management incentives

Association likely has a "causal" interpretation (in the sense used in reduced-form CF)

Can be rationalized with a model based on competition

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) (Optimally) "lazy" ownership can cause higher industry profits

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Does not propose this is the correct model (it's just better than ignoring variation in ownership & firm interactions at organizing the data). Instead, invitation to reject & develop better alternatives!

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Huge research potential in defining and testing alternative objective functions of the firm & re-examining many questions in corporate finance & governance

Open questions include...

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- Role of other sources of heterogeneity across investors:

- Agency problems (incentives flatter for mutual funds than hedge funds?) (Theory?)

- Size (increases optimal size of governance team?) (Anecdotes)

- Optimal attention to firm (decreases in portfolio size?), e.g. Gilje et al. (2018)

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- Those are great questions future research is encouraged to address – we merely intend to start a debate by showing such research is likely fruitful!

Thank you!