Obscured Transparency?

Compensation Benchmarking and the Biasing of Executive Pay[1]

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[1]*Management Science.* Published Online: 29 Mar 2019 https://doi.org/10.1287/mnsc.2018.3151.

Does Inequality Create Barriers to Mobility?

- Absolute mobility is inversely related to top income share (e.g., Chetty et al. 2017), but is this relationship causal?
- Rising top incomes as pay for performance might promote economic growth and not create barriers to mobility.
- Rising top incomes as rent capture might instead create barriers to earnings growth for the bottom 90% of Americans.
- "In praise of the 1%" (Mankiw)? or "The Price of Inequality" (Stiglitz)?
- We explore the issue of rent capture via a study of the process of executive compensation.

CEOs make up a large chunk of the top 1% of income earners

- Median compensation of CEOs in the S&P 1500 increased by 40% between 2007 and 2014 (while market capitalization increased by 22% and median household income decreased by 6%).
- Ratio of CEO compensation to compensation of the average worker is 335 in the United States.

Is the allocation of these resources efficient?

In other words, do shareholders benefit from compensating their CEOs generously?

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Some argue that they do and that high compensation levels is the result of matching the best CEOs to the firms in which the marginal return to their labor is highest, i.e., pay for performance in a world where large firms are growing (Gabaix and Landier 2008).

Is the allocation of these resources efficient?

Others argue that the high compensation levels are the result of rent extraction (e.g. negative relationship between corporate governance and pay).

Peer benchmarking and CEO compensation

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In 2006, the SEC started requiring firms to disclose the compensation peers they used in the pay setting process.

The rationale for this policy was that the disclosure of peer groups allowed shareholders and stakeholders to scrutinize pay. This could force firms to pay at the market rate or, if they didn't, it would provide shareholders with information allowing them to correct pay levels.

Peer benchmarking and CEO compensation: Two (maybe competing) predictions

Prediction 1:
Peer benchmarking increases transparency and forces CEO compensation to conform with the market.

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Prediction 2:
Peer benchmarking provides a pathway to make biased comparisons salient and serves to legitimize pay that is above the market rate.

The theoretical underpinning of prediction 1

If the correct peer group is selected, disclosure allows for an accurate evaluation of CEO pay.

And corporate governance and market forces pressure firms to report appropriate peer groups.

The theoretical underpinning of prediction 2

Selecting an appropriate peer group is not straightforward and evaluating whether the peer group is appropriate is not straightforward (see Zuckerman's (2004) concept of structural incoherence, for example).

One result of this ambiguity could be that it introduces random noise to the selection of peer groups, the other is that it introduces bias.

Are those who select peer groups incentivized to introduce bias in the compensation peer group?

The theoretical underpinning of prediction 2

The CEO:

- Non-financial incentive: overconfidence (an average CEO who claims he's as good as the CEO at the 75th pct of the quality distribution).
- Financial incentive: upwardly biased peer groups legitimize higher pay.

The theoretical underpinning of prediction 2

The compensation committee:

- Non-financial incentives: pressure to maintain the image that they hired a CEO who is better than average.
- Non-financial incentives: social ties to the CEO make committee members more willing to accept a biased peer group.
- Financial incentive: pay is indirectly tied to the pay of the focal CEO, so higher pay will indirectly benefit committee members.

What would upward bias look like?

Firms select peer firms that are slightly larger (and have well paid CEOs) and compensate at the 50th pct.

Firms have N "natural peers", cherry pick N-K peers with well compensated CEOs and compensate at the 50th pct.

...and with what consequences?

- Some CEOs would directly benefit from biased compensation setting at their own firms.
- Other CEOs would benefit by having overpaid CEOs in their peer group, leading to a ratcheting up of CEO pay.
- A few "bad apples" affect compensation for the entire population: See DiPrete et al. "Compensation Benchmarking, Leapfrogs, and the Surge in Executive Pay" (AJS 2010).

Prior research on compensation peer groups

Faulkender and Yang (2010, 2013): Yes, the average firm upwardly biases its peer group and it affects pay.

Albuquerque et al. (2013): No, bias is really just a reward for talent.

Cadman and Carter (2014): No, prior work used the incorrect natural peer groups.

Faulkender and Yang (2010, 2013)

Strategy

- Constructing counterfactual peer groups by using "tie-formation" in a propensity score matching framework.
- Regressing peer group bias on CEO compensation.

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Findings

- Peer groups are upwardly biased.
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BUT... Counterfactual peers are selected based on similarity to the named peer, not similarity to the focal firm.

Albuquerque et al. (2013)

Strategy

- Predicting peer group bias with talent measures and self-serving measures.

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Findings

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BUT... If so, why not reward talented CEOs transparently by benchmarking them in the right tail of their natural peer group?

Also, their talent measures account only for about 5% of the variation in peer group bias, and do not account for the predictive power of peer group bias on CEO compensation in their own data (we checked!).

Cadman and Carter (2014)

Strategy

- Define counterfactual peers as the union of a focal firm's actual peers, the firms listed as peers of the focal firm's peers (i.e. peers of the peer firms), and any firms in the full sample of firms that list the focal firm as a peer.

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BUT... If there is bias in the observables of the named peer group, the counterfactual peer group will be biased too.

Also, they actually do find effects of bias in peer groups on compensation.

The data

- Compensation peer group data from DEF-14 forms.
- Financial data from Compustat.
- Total compensation and board membership data from Morningstar.
- Thomson Reuters data on institutional ownership.

Data from DEF-14 forms: Peer groups

We attempt to compensate our executive officers competitively relative to industry peers. Both peer group and broader industry compensation survey data is used by our Compensation Committee when setting Logitech's executive compensation, as well as to assist the Compensation Committee in the evaluation of the design of bonus plan and equity compensation programs.

The companies in Logitech's peer group were selected in March 2008 based on (i) involvement in the PC-based consumer electronics industry, or (ii) revenues approximately equal to Logitech's and a presence near Silicon Valley in the San Francisco Bay Area. Although Logitech is a Swiss company, Logitech primarily competes for executive management talent with technology companies in the United States, and particularly in the high-technology area of Silicon Valley. As a result, the peer group consists primarily of U.S. public technology companies.

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Fred Cook reviewed the peer group composition in March 2010 and recommended, and the Committee approved, that the list remained appropriate for Logitech for fiscal year 2011 executive compensation. For fiscal year 2011, the peer companies consisted of:

3Com Corporation	Cypress Semiconductor Corporation	NVIDIA Corporation
Activision Blizzard, Inc.	Electronic Arts, Inc.	Polycom, Inc.
Agilent Technologies, Inc.	Intuit Inc.	SanDisk Corporation
Advanced Micro Devices, Inc.	Lexmark International, Inc.	Sybase, Inc.
Autodesk, Inc.	McAfee, Inc.	Symantec Corporation
BMC Software, Inc.	NCR Corporation	Teradata Corporation
Brocade Communications Systems, Inc.	NetApp, Inc.	Verisign, Inc.
Cadence Design Systems, Inc.	Novell, Inc.	Western Digital Corporation

At the time the fiscal year 2011 executive compensation review was performed, in March 2010, Logitech ranked at approximately the 25th percentile among the peer group for revenues and market capitalization and below the 25th percentile for operating income.

Figure 1: Example of DEF 14 section in which peers are reported.

Data from DEF-14 forms: Peer groups

Table 1. Observations by Year

Year	Harvested	Harvested: S&P 1500	Count	Count: S&P 1500	Mean	Median	Peer group changed, %
2006	1,321	603	1,035	571	17.15	15.00	
2007	1,869	867	1,587	838	18.99	16.00	46
2008	1,955	952	1,748	926	19.84	16.00	60
2009	1,993	992	1,810	974	19.86	16.00	62
2010	2,082	1,011	1,867	985	20.23	16.00	61
2011	2,106	1,052	1,943	1,038	19.62	16.00	62
2012	2,085	1,081	1,945	1,066	19.81	16.00	66
2013	2,091	1,084	1,936	1,061	19.70	17.00	66
2014	2,113	1,071	1,977	1,054	19.85	17.00	63
2015	2,020	1,041	1,914	1,022	20.18	17.00	64
2016	1,951	1,023	1,765	988	19.48	17.00	68
All	21,586		19,527		19.63	16.00	62
Unique firms	4,290		3,426				

Notes. Column (1) ("Harvested") shows the number of firms for which the algorithm identified a peer group, and column (2) ("Harvested: S&P 1500") shows the number of firms from column (1) that are also in the S&P 1500. Columns (3) and (4) show the number of firms that remain once cases with missing data are removed. The final three columns show the mean and median number of firms in the compensation peer groups and the fraction of all firms that changes its peer group from one year to the next.

Empirical strategy

1. Determine whether there is bias: construct counterfactual peer groups.
2. Predict bias with two main factors: firm performance provides an *incentive* and structural ambiguity provides an *opportunity.*
3. Predict CEO compensation with bias.
4. Examine whether bias and variance in bias has changed over time and whether the association between bias and pay changes.

Computing the peer pay gap (PPG) (or bias)

We measure the PPG as the ratio of the median pay of the named and counterfactual peer groups.

Computing the peer pay gap (PPG) (or bias)

How to construct a natural peer group?

Computing the peer pay gap (PPG) (or bias)

1. Estimate a logistic regression where Pr(Reciprocated selection = 1) = f(Revenue, Market Cap., # of employees, Assets, State, Industry, IBES coverage).
2. Use model from 1. to select N peers where N equals the number of named peers.
   - Split sample of potential peers in two based on Revenue, Market Cap., # of employees, or Assets (randomly selected).
   - From each of the two sets of potential peers, randomly draw $N/2$ peers, using the predicted probabilities of reciprocation as weights. We do this over and over again (e.g., 500 simulations).
3. Compare named and natural peer group at 50th pct.

Balance

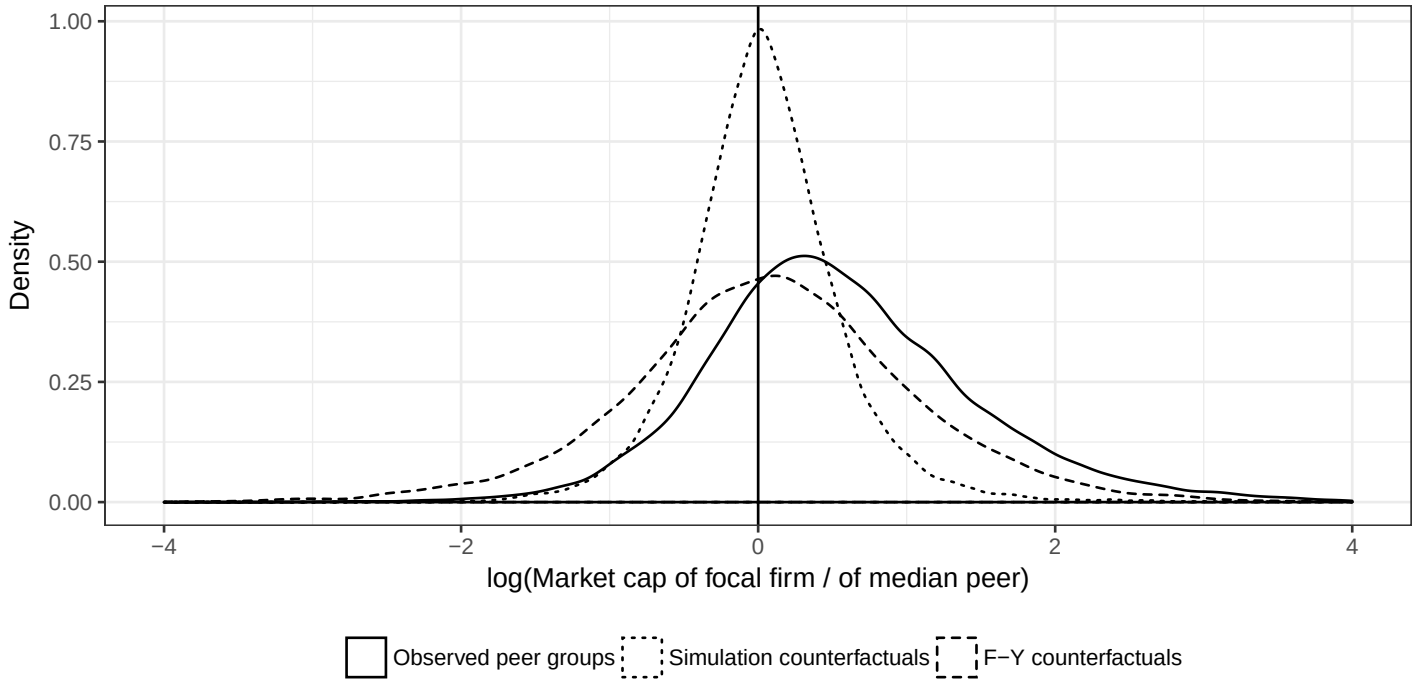


Figure 1: Logged balance ratios comparing observed peer groups to counterfactual methods.

Pay percentiles

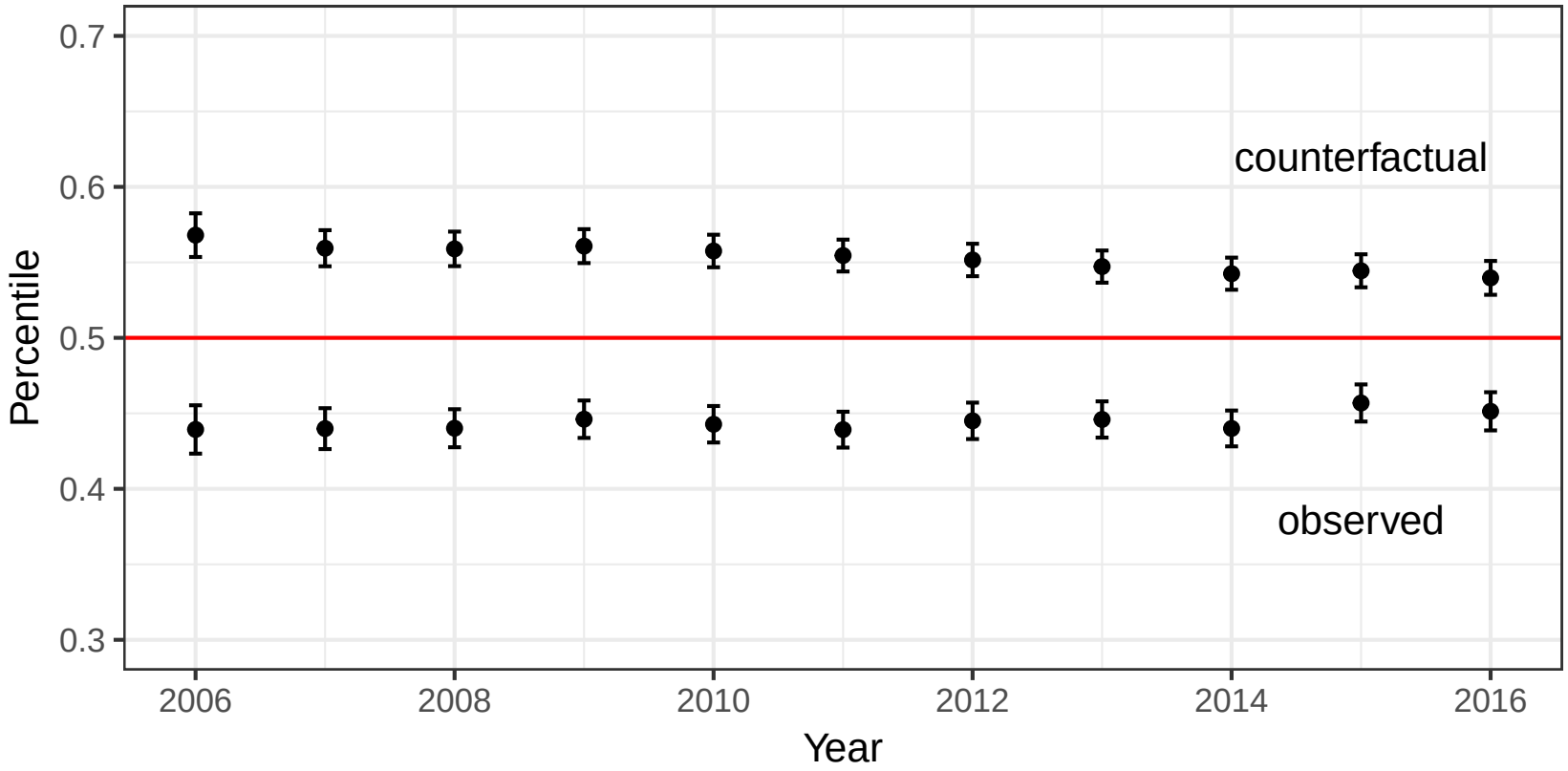


Figure 2: Percentile in counterfactual peer group at which the CEO is compensated.

PPG summary

- Building on reciprocated ties and using simulation we computed the PPG, with excellent balance.
- The simulation also allows us to capture **structural ambiguity** (the variation in median pay across hundreds of simulations).
- and also **peer group constraint** (the extent to which the group of most probable potential peers have high probability of being selected).

Structural ambiguity and bias

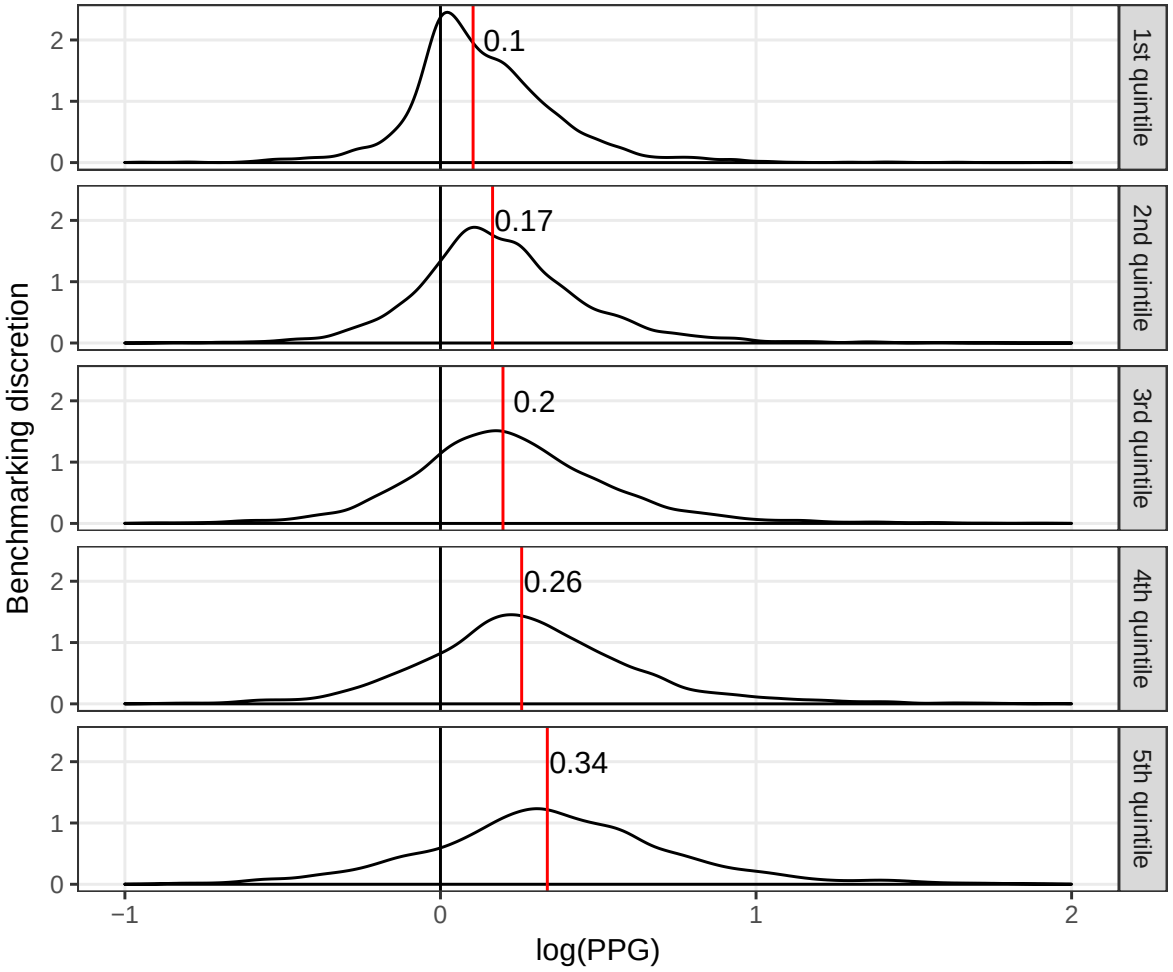


Figure 3: The distribution of PPG across Quintiles of Variance in the Simulated Median of the Median Counterfactual Peer.

Predicting the PPG

Table 4. Models for the PPG

	Dependent variable: log(PPG)					
	(1)	(2)	(3)	(4)	(5)	(6)
Institutional ownership	–0.051**	–0.044	0.038	0.012	0.036	0.021
	(0.023)	(0.031)	(0.023)	(0.031)	(0.022)	(0.031)
Board mean PPG	0.147***	0.111*	0.312***	0.118**	0.265***	0.105*
	(0.057)	(0.058)	(0.058)	(0.057)	(0.056)	(0.057)
ROA			–0.147***	–0.055*	–0.152***	–0.054*
			(0.024)	(0.030)	(0.023)	(0.030)
log(Market cap)			–0.032***	–0.081***	–0.023***	–0.076***
			(0.003)	(0.008)	(0.003)	(0.008)
log(Benchmarking discretion)					0.119***	0.049***
					(0.010)	(0.009)
log(Peer group constraint)					–0.039***	–0.034***
					(0.006)	(0.009)
Firm fixed effects	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Compensation consultant dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of simulations	500	500	500	500	500	500
R^2	0.016	0.017	0.044	0.038	0.074	0.043
Adjusted R^2	0.015	–0.194	0.042	–0.169	0.073	–0.163
Observations	19,527	19,527	19,527	19,527	19,527	19,527

Note. Standard errors are in parentheses.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

PPG prediction summary

- Significant effects that are consistent with our hypotheses.
- Moreover, bias is not limited to structurally ambiguous firms that perform poorly.
- Being one standard deviation less structurally ambiguous and performing at the 75th percentile (instead of at the median) reduces predicted bias of about 1.3 to about 1.15.

Predicting compensation

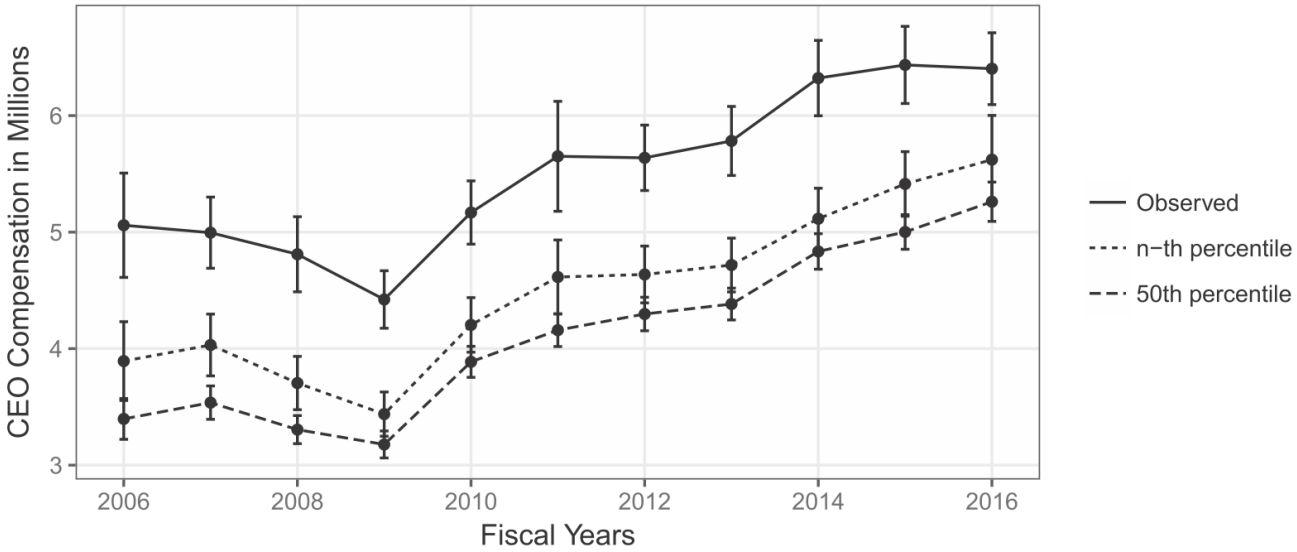
Table 5. Models for Executive Compensation

	Dependent variable: log(Compensation)					
	(1)	(2)	(3)	(4)	(5)	(6)
log(Counterfactual compensation)	1.034***	0.473***	0.960***	0.415***	0.614***	0.213***
	(0.009)	(0.023)	(0.011)	(0.024)	(0.020)	(0.026)
log(PPG)	0.536***	0.257***	0.513***	0.230***	0.427***	0.145***
	(0.019)	(0.019)	(0.019)	(0.018)	(0.019)	(0.018)
Book value per share			0.003***	0.007***	–0.001*	0.0004
			(0.001)	(0.001)	(0.001)	(0.001)
Market-to-book ratio			0.027***	0.005	–0.008	–0.004
			(0.006)	(0.003)	(0.005)	(0.003)
Return on assets			0.022	0.239***	–0.219***	0.009
			(0.033)	(0.039)	(0.036)	(0.039)
Institutional ownership			0.349***	0.315***	0.384***	0.189***
			(0.038)	(0.050)	(0.039)	(0.049)
log(Revenue)					–0.002	0.013
					(0.007)	(0.013)
log(Market cap)					0.180***	0.175***
					(0.009)	(0.011)
log(Employees)					0.009	0.066***
					(0.006)	(0.022)
log(Assets)					0.030***	0.084***
					(0.008)	(0.023)
Firm fixed effects	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of simulations	500	500	500	500	500	500
R^2	0.664	0.167	0.67	0.18	0.693	0.215
Adjusted R^2	0.664	–0.012	0.67	0.004	0.693	0.046
Observations	19,527	19,527	19,527	19,527	19,527	19,527

Note. Standard errors are in parentheses.
*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Predicting compensation, more

Figure 4. Compensation Under Two Alternative Scenarios



Notes. The graph shows the yearly trends of observed CEO compensation and CEO compensation under two alternative scenarios. The bars show the 95% confidence intervals around the mean.

Trends

Did bias and variance in bias change over time and did the association between bias and pay change?

Trends

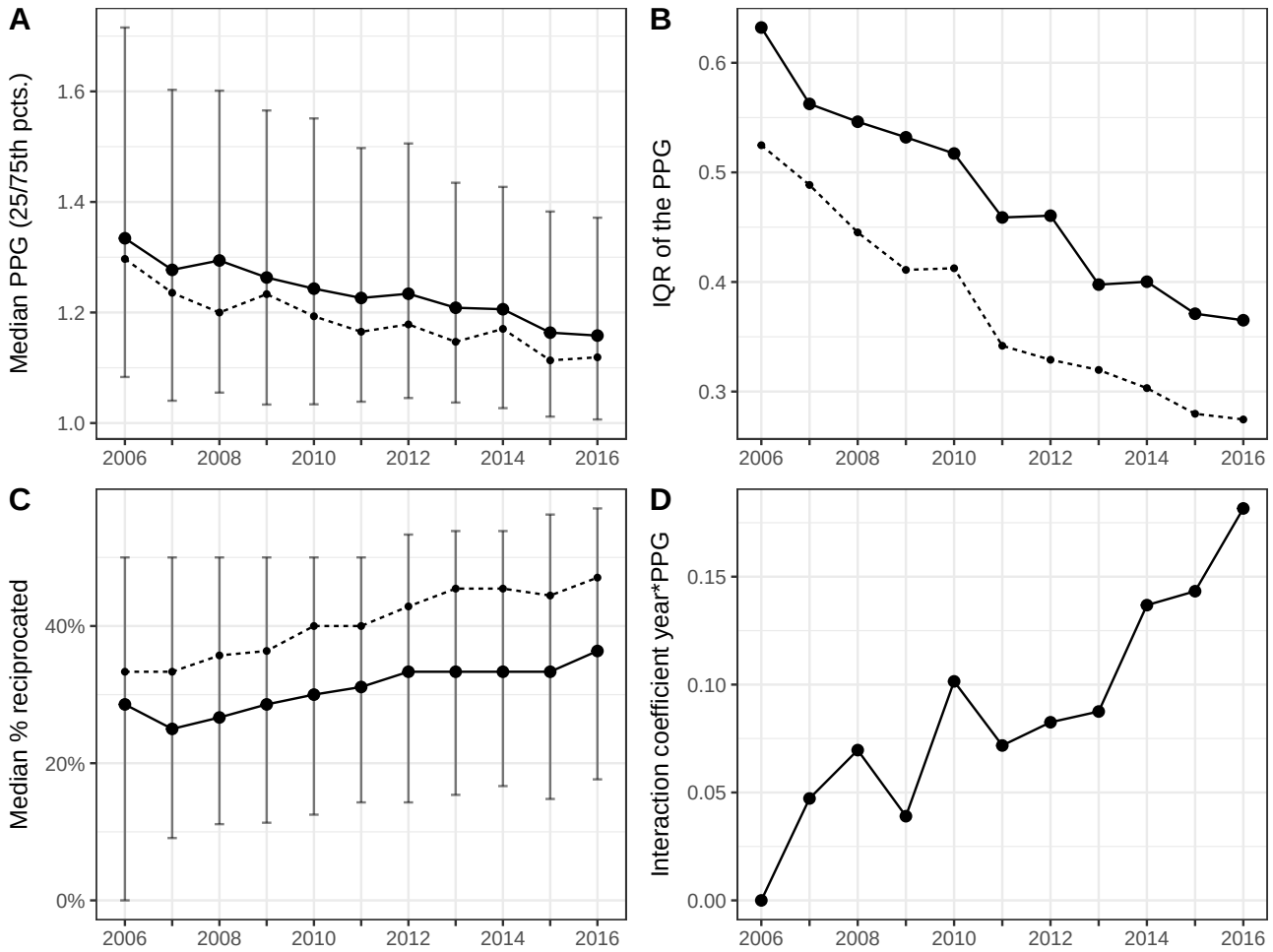


Figure 4: The Evolution of Bias Norms

Solid lines: all firms. Dashed lines: the 327 firms for which we have data for all 11 years.

Network effects

The effects estimated in this paper are the direct effects of bias in compensation peer group, but the networked nature of benchmarking sets a diffusion process in motion.

Takeaways

On average, firms report compensation peer groups that are upwardly biased.

Upward bias is associated with structural ambiguity and poor performance.

Compensation is strongly associated with upward bias.

Norms are starting to emerge (reduction in mean bias and variance of bias) but the returns to bias have increased.

Thank you!