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The Elusive Linkage Between CEO Pay and Corporate Performance

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No society can provide its members with a high quality of life unless it has effective organizations.

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STRUCTURED ABSTRACT

Purpose: We comment on Aguinis, Martin, Gomez-Mejia, O'Boyle, and Joo (in press). We believe that their hypotheses probably are true, but their methodology is flawed and their data do not support their conclusions.

Design/Methodology: We review and comment on Aguinis et al (in press).

Findings: The data do not adequately demonstrate a power law distribution for CEO performance because the analysis is confounded external conditions affecting performance and the authors use inappropriate dependent variables. The analysis does not demonstrate a power law distribution for CEO pay because the analysis does not take into account changes in pay level and mix over time. The analysis does not show a lack of overlap between the two distributions because it does not take into account the way that CEOs are paid for performance and because it uses CEO pay averaged over CEO tenure.

Research limitations/implications: A more convincing analysis of the authors' hypothesis would require the use of total shareholder return (TSR) as the dependent variable for organizational performance and would require a number of much more specific controls.

Practical implications: The authors call for greater use of power law thinking by practitioners in setting CEO pay. Their analysis indicates that practitioners already think in power law terms and allocate CEO pay accordingly. Moreover, power law theory and findings could be misused as an excuse for paying average CEOs much more than they are already paid.

Social implications: We add another perspective on CEO pay.

Originality/value: Our perspective is informed both by research and by consulting experience on CEO pay projects.

The Elusive Linkage Between CEO Pay and Corporate Performance

We read the paper by Aguinis, Martin, Gomez-Mejia, O'Boyle, and Joo (in press) with great interest. We have researched employee rewards for many years. In addition, the first author of this commentary has been a consultant on a number of executive compensation projects, so he has first-hand experience with the sometimes unpleasant process by which this sausage is made. We want to accept the findings of the paper because they fit our views of executive pay, but we cannot. The previous studies on power law distributions of performance (Aguinis & O'Boyle, 2014; Aguinis, O'Boyle, Gonzalez-Mule, & Joo, 2016) are among the most impressive, convincing, and important findings of recent years in the field of Industrial / Organizational Psychology. We believe that CEO performance follows a power law distribution, that CEO pay fits a power law distribution, and that there is far too little overlap between the distributions. However, our beliefs are not science, and the researcher in us cannot accept the findings of the present study as proof of the conclusions. The methodology of the study is seriously flawed, and the authors' conclusions are not supported by their data. The authors have run afoul of the deep and maddening methodological challenges that are part of doing research on executive pay.

It is important to be clear about what the authors are testing in their paper. Hypothesis 1 states that CEO performance will follow a power law distribution. The researchers focus on CEO performance and firm performance as measured by Tobin's Q and Return on Assets (ROA). Both measures are based on the average performance during the CEO's tenure, excluding the first year in office, and controlling for capital expenditure, R&D expenditure, firm size, and slack (cash and short-term investments), plus length of CEO tenure. Hypothesis 2 is that CEO pay fits a power law distribution better than a normal distribution. They operationalize CEO pay as what compensation professionals would term "total direct compensation" (the value of all salary, bonuses, restricted stock, and stock options exercised),

controlling for firm size, and averaged annually over the CEO's tenure. The authors ignore the value of benefits (indirect compensation), which can be very substantial for executives, but which are more difficult to value and compare; therefore, we consider this to be a reasonable choice. Hypothesis 3 is that there will be substantial overlap between CEOs at the top of the two distributions, examining the top 1, 5, 10, and 20% of CEOs in each distribution. The remaining hypotheses concern specific pay elements. Hypothesis 4 indicates that the power law will better fit distributions of options exercised and bonuses than salary distribution, and Hypothesis 5 suggests that the connection in the power law distributions between options exercised and bonuses and CEO performance will be greater than the connection between salary and CEO performance. All data are for the two-decade period 1992 to 2012. We will consider the hypotheses in turn.

H1: CEO PERFORMANCE FOLLOWS A POWER LAW DISTRIBUTION

CEO Performance Versus Corporate Performance

There is a problem in the definition of terms in this study that is common in executive pay studies. As is customary among researchers, executive compensation consultants, and CEOs themselves, Aguinis et al. equate corporate performance with CEO performance. Of course, a CEO's decisions and behavior are not the only factors that influence corporate performance. The dominance of a CEO's decisions and behavior over corporate performance is a convenient fiction. All other employees of the company, including other executives, have something to do with the performance of the company. In addition, macro factors (most notably the state of the economy, as well as changes in regulation and legislation, market dynamics, and so on) and micro factors (competitor behavior, changes in technology, new business models, and so on) mean that typically CEOs affect corporate performance to a limited extent. Some companies do well in bad times and some companies do poorly in good times,

in part because of CEO choices, but in general external forces are a large tide that lifts or sinks all boats, independent of the choices of CEOs.

CEOs justify the wealth that their term in office brings them by taking credit for the wealth created for shareholders during periods of positive corporate performance. While CEOs are good at taking credit for corporate successes, they are excellent at reminding others of the overwhelming challenges the corporation faces when it is less successful and how they are not responsible for poor performance in tough times. The reality is complicated. Losing less money than competitors may constitute heroic CEO performance in bad times, while making a profit when most competitors are doing better may represent underperformance, not success.

The analysis by Aguinis et al. makes an implicit assumption that external conditions are constant over two decades. If not, it makes no sense to compare the performance of CEOs who served during good times with those who served during bad times without controlling for stock market performance or changes in corporate profitability, at the macro level if not at the industry level. The period of study includes two of the longest economic expansions in U.S. history (1992 – March 2001 and July 2009 through the present) as well as two serious recessions (March 2001 to November 2001 and December 2007 to June 2009) (National Bureau of Economic Research, 2017). The numerators for both measures of CEO performance that Aguinis et al. use are highly dependent on economic conditions. Market value (the numerator in Tobin's Q) and net income (the numerator in ROA) change drastically over time, independent of the actions of any CEO. Surely some CEOs served in only in good times, others only in bad times, and still others in a mixture of both. As a result, we cannot determine whether variations in corporate performance found in the analysis are due to external conditions or to CEO behavior.

Limitations of Tobin's Q and ROA

There are several problems with using Tobin's Q and ROA as measures of corporate performance for all corporations in the sample. Because they are inappropriate for large segments of the economy, these performance measures yield results that are impossible to interpret.

Tobin's Q, originally proposed by economist James Tobin, is the market price of the company / replacement cost of assets. There is a subtle but important methodological issue in its calculation. The book value of assets (a line in the balance sheet) is readily available from public databases such as Compustat, but replacement cost is not and is difficult or impossible to determine for a large sample of companies. Therefore, it is typical in management studies to use a variable for the denominator that is available, and in most researchers use Total Assets.

Tobin's Q has achieved a peculiar status in organizational research. A huge number of researchers have used it as a dependent variable, with almost no discussion of its appropriateness or limitations compared to other measures of organizational performance. Challenges to the use of Tobin's Q have been much more rare than its usage (although see Dybvig and Warachka, 2015; Epstein, 2000; Shepherd, 1986; Stevens, 1990; Wright 2006). What can be more comforting to scholars than using a measure that was developed by a Nobel Prize-winning economist and has been used in scores, perhaps hundreds, of prior studies for decades with little criticism?

It is high time to reconsider the relevance of Tobin's Q as a key measure of corporate performance. Although we would not say that this Emperor has no clothes, he *is* walking down the street in his underwear. In general, only physical assets are included in the denominator of Tobin's Q. The denominator does not include intangible assets unless purchased in an acquisition or elsewhere. Intangible assets include the values of brands, intellectual capital such as patents and proprietary technology, goodwill, software, and customer relationships. The problem is that intangible assets dwarf

the value of tangible assets for most companies in the modern economy, which is dominated by services, brand value, and intellectual capital.

The most pointed criticism of Q that we have found comes from Jeff Miller, an investment advisor and former University of Wisconsin faculty member: “Tobin's Q was invented in the 50s by a great economist. It emphasized the replacement cost of major companies. If he were alive today, this brilliant man would be revising his methods to explain modern technology companies, as well as stocks like Amazon (NASDAQ:AMZN), Google (NASDAQ:GOOG) (NASDAQ:GOOGL), and Facebook (NASDAQ:FB). It is not fair to apply methods designed for a world with more manufacturing to one so different. No one uses this method for individual stock analysis. Only a few people profit from writing about this aged and obsolete indicator.” (Miller, 2016).

Tobin's Q is relevant to companies that are dominated by physical assets, such as manufacturers and utilities. However, the replacement value of physical assets has little relevance to software companies, professional service firms, most financial service firms, and even many retail establishments. Controlling for capital expenditures and industry does not solve the problem. Tobin's Q is a relevant measure of corporate or executive performance for a minority of modern corporations, but it is not relevant to most.

Aguinis et al. suggest that Return on Assets (ROA) is a different type of measure, namely an accounting measure as contrasted with the market-based measure that is Tobin's Q. However, ROA has the same flaw as Q because it has the same denominator (Total Assets). The flaws of Q apply equally to ROA. Neither is a good measure of contemporary corporate performance for corporations in general.

Is There a Better Alternative Measure of Performance?

Most measures of corporate performance are more relevant to some types of organizations and some industries than others. However, total return to shareholders (TRS) currently is regarded as the

most important general measure of corporate performance for publicly traded companies, especially for assessing CEO performance. This measure is strongly advocated as a component of executive compensation by proxy advisory services, such as Institutional Shareholder Services (ISS), which have had enormous influence on executive compensation in recent years. All publicly traded companies are concerned with TRS. If used for studies of executive compensation, it would be necessary to control for overall market performance and probably industry. This is because the TRS opportunities for an internet software firm and an auto manufacturer are very different, and the level of market performance affects companies in every industry. TRS is not a perfect measure of corporate performance; no single measure is. But it is a better measure of corporate performance across the economy than Tobin's Q or ROA.

In summary, there is so much noise in the performance measures used by Aguinis et al. that we do not know what the results tell us. Clearly, there is a large dispersion in corporate performance, and we accept that it fits a power curve distribution. What we cannot know is whether the observed distribution is an artifact of the measurement process or actual variation in corporate performance.

H2: CEO PAY FOLLOWS A POWER LAW DISTRIBUTION

Clearly there is tremendous variation in the amount of pay received by different CEOs. Numerous articles in the popular and business press report the level of CEO pay and the differences among CEOs every year. We have no doubt that CEO pay fits a power law distribution. However, the methodology used by the present study to demonstrate a power law distribution is flawed.

The goal of the analysis is to show that some *individual* CEOs receive far more pay than other CEOs. Instead, they may be demonstrating that different CEO *cohorts* receive far more pay than others. Comparing the pay received by different CEOs over a period of two decades is meaningful only if the level and mix of pay is relatively constant over the period. Otherwise, any power law distribution may simply be a consequence of changes in pay levels and practices over time. Indeed, it is clear that the

level and mix of CEO pay has shifted wildly in recent decades. A Harvard Business Review article (2014) displays compensation level and mix for precisely the period covered in the Aguinis et al. study. In 1992, median direct compensation for CEOs was \$3.0 million. By 2001, the median was \$9.8 million. Contrary to popular mythology, CEO pay has not continued to rise inexorably, and in fact never reached the 2001 peak again during the period analyzed, bouncing as low as \$7.5 million (2009) and as high as \$9.1 million (2012).

This is a critical problem for the Aguinis et al. study. What the authors need to show is that, at any given point in time, there is a power law distribution in CEO pay. However, they do not analyze the data in a way that can show this. Each case in their data is a CEO whose pay has been averaged for his or her period of tenure. We would automatically expect CEOs who served in the early 1990s to have received a fraction of pay of CEOs who were fortunate enough to have served in the 2000s, especially around the year 2000. That tells us nothing about the distribution of CEO pay at any point in time. How much of the observed dispersion in CEO pay is a result of the time period of their tenure compared to differences in pay among CEOs at the same point in time? We do not know, but need to in order to understand the relationship between CEO pay and performance.

As the HBR article shows, pay mix also changed drastically during the period of study. CEOs showed an impressive ability to maintain a high rate of pay via an ever-shifting mix that responded rapidly to changes in tax codes, market conditions, accounting standards, and laws. In 1992, salary was the biggest component of CEO pay, followed by bonuses. The boom in stock options during the 1990s was a consequence of a 1992 tax code change. By the year 2000, the mix had permanently shifted so that most compensation was delivered as equity, greatly increasing total compensation. The form of equity also shifted rapidly. After the dot com crash and recession of 2001, stock options were less attractive because payoffs were less likely. Bonuses increased and restricted stock, which had less upside than options but a much more certain payout, began to replace stock options. The move to

restricted stock was enhanced by a 2005 change in accounting standards that favored restricted stock, as well as by the recession of 2008. By 2012, restricted stock replaced stock options as the biggest component of CEO pay, while salary remained the smallest component. One is reminded of a game of whack-a-mole: as soon as one form of pay is pushed down by external forces, another pops up to replace the lost income.

Changes in pay mix are important because they create dispersion in pay. In particular, stock options have an extremely variable payout that is caused by changes in the value of the company's stock price. How much of the observed dispersion in CEO pay is the result of different CEOs that have a very different pay mix receiving different amounts of pay, rather than to differences in CEO pay at any given point in time? We do not know. The authors may be able to address concerns about the effects of changes in pay level and pay mix over time through additional analyses. We believe such analyses would be very worthwhile.

H3: THERE WILL BE A SUBSTANTIAL OVERLAP BETWEEN THE CEOS AT THE TOP OF THE TWO DISTRIBUTIONS

Do the Authors Fairly Test the Relationship Between Pay and Performance?

The authors test the relationship between CEO pay and performance by looking at the overlap in the power curves between the average compensation of CEOs during their tenure and two measures of performance, Tobin's Q and RONA. It is difficult to consider this a meaningful test of whether top performing CEOs are paid appropriately, for multiple reasons.

First, the authors measure performance by two outcomes that are rarely, if ever, among the performance criteria in the pay packages of CEOs. We have never heard of a CEO's pay package that included Tobin's Q, and we have only seen ROA used rarely (and then usually as its cousin Return on Net Assets, which subtracts net working capital from total assets in the denominator). We have only seen

ROA or RONA used in a capital-intensive industrial companies. The first author polled several professional executive pay consultants, each of whom agreed with these statements. This means that the study finds that there is no relationship between CEO pay and CEO performance on two metrics that are not on the radar of most CEOs, and were not criteria for their rewards.

Second, the authors measure the pay and performance of all CEOs against all other CEOs of a large group of publicly traded firms. This is not how CEOs, Boards of Directors, and compensation consultants manage CEO pay for performance. CEO pay is determined by comparison to a specific peer group that is relevant to the company, not all publicly traded companies and all other CEOs. Peer groups include business competitors and other companies that are part of the labor market for executive talent for the company. Peer groups often are imperfectly selected and have been subject to criticism (e.g., Faulkender & Yang, 2010), but they are the basis for setting executive pay levels, mix, and opportunities in the U.S. The standard is not the performance of all other firms in the economy. Peer groups can be determined by referring to proxy statements that are filed annually with the Securities and Exchange Commission (SEC), although collecting such data for a large sample over a multi-year period would be extremely tedious and labor-intensive. Still, using only macro data may disguise the degree to which CEOs actually are rigorously rewarded for performance against peer groups and in ways that are consistent with the practices of their peer groups. The industry subgroup analyses performed by the authors partially address this concern. However, peer groups almost always overlap imperfectly with the set of all competitors in the industry.

Third, CEOs typically are rewarded for meeting a set of performance goals that include quantitative performance criteria, not for meeting some absolute standard of performance on a performance metric that applies to all companies at all times. Performance criteria are selected for their relevance to the business needs and strategy of a specific company, and may include, for example, TSR, earnings growth, earnings per share, rates of return such as ROI, ROE, ROA, ROS, and many others. This

allows the Board to set performance criteria and calibrate pay for performance to the degree of difficulty involved in hitting outcomes that matter to the company. For example, it is not a challenge for the CEO of a fast growing technology company to grow sales and earnings at a rate faster than most other companies in the economy; therefore, the CEO's performance goals may require achieving an exceptional rate of growth. Conversely, growing sales rapidly may be impossible for many consumer-oriented companies during a recession; as a result, the CEO might be rewarded for maintaining stable sales or for minimizing lost sales.

In short, there are stark differences between the practice of executive compensation and the implicitly universalistic and absolute standards of the authors. As a result, it is possible that CEO pay systems are far more successful in achieving their actual intent of paying for performance than is apparent from the results of their research. For purposes of public policy and social commentary, the universalistic test they use may be appropriate. That does not mean, however, that CEO pay plans do not deliver pay for performance.

Should CEO Pay Received Be Averaged?

Averaging the pay that a CEO receives during his or her tenure avoids some problems and it creates others. It is helpful in analyzing the compensation from stock options and grants. Options typically have vesting requirements, meaning that options cannot be exercised for a period of time (four years is common, but vesting varies considerably) and they must be exercised at the end of the term (generally ten years or when the CEO leaves the company). The CEO will exercise the options when it is most advantageous to do so, and therefore may hold them for several years for stock price appreciation and for tax reasons. Several years' worth of vested options may be exercised at one time, leading to peaks and valleys in CEO pay. This creates serious lead-lag issues in assessing pay for performance. The advantage of averaging CEO pay is that it overcomes the variation. As the authors note, averaging

allows them to use the value of options when they are actually exercised, giving a real value to the options. The value of options is unknowable when they are issued; value can only be estimated at the time of issuance by using the Black-Scholes formula or some other procedure.

Averaging pay attenuates the relationship between CEO rewards and performance. Consider three CEOs who received the same average amount of pay over five years for roughly similar performance. In case 1, the CEO was a steady performer and both rewards received and corporate performance were similar in all five years. In case 2, the CEO was a poor performer who inherited a high performing company in year one and saw steady declines in corporate performance and compensation over the five-year period, before being replaced after year 5. In case 3, the CEO engineered a turnaround of a company that was performing poorly, and by year 5 it was a stellar performer with high performance for which the CEO was well rewarded. As the data are averaged, all three CEOs would appear to be average performers and to have received average pay, yet their actual performance was very different. A year by year analysis would need to be more complex to account for the value of stock options, but could show that in fact a strong pattern of pay for performance.

HYPOTHESES 4 AND 5

Hypothesis 4, which concerns the applicability of a power law for specific pay components, is a derivation of Hypothesis 2. Our reservations about Hypothesis 2 apply here as well. Hypothesis 5, which concerns the overlap at the top of the pay and performance distributions for stock options and bonuses compared to salary, is a derivation of Hypotheses 3. Our reservations about Hypothesis 3 apply here too.

IMPLICATIONS AND CONCLUSIONS

The authors' recommendations for practice are troubling. They argue that practitioners should adopt a power law perspective in paying CEOs. We think that they already do. Indeed, it is confusing for the authors to argue that CEOs are already paid according to a power curve, as their tests of Hypothesis 2 purport to show, and then to argue that more power law thinking is needed. CEOs, Boards, and compensation consultants already are skillful at adapting social science theory and research to justify increases in CEO pay. For example, the reasoning behind agency theory and the work of scholars such as Michael Jensen was explicitly used to support the explosion of executive pay through stock options in the 1990s. What is to prevent the same thing from happening here? We are concerned that power law reasoning may provide a "scientific" pretext for paying most CEOs even more than they already receive, on the grounds that "our CEO is a performance outlier." One does not need to sit in very many Compensation Committee meetings to know how common that argument already is. How confident are the authors, based on their analyses for Hypotheses 3 and 5, that any additional compensation would go to truly deserving CEOs? We certainly have our doubts.

It is extremely difficult to do research about the relationship between CEO pay and CEO performance. The methodological challenges are enormous. The paper by Aguinis et al. shows just how true this is, even for first-rate scholars. The theoretical foundation they propose is important and we suspect that all of authors' hypotheses are correct. Future studies may provide strong confirmation of them. However, we cannot accept the analyses of this paper as appropriate tests of the authors' hypotheses.

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