Labor Market Competition, Executive Job-hopping, and Compensation*

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Abstract: Although various optimal contracting models predict that competition for managerial talents explains the growth of executive compensation, there is little empirical evidence. We examine this prediction from the perspective of executive job-hopping. Companies dramatically raise their incumbent executives' pay, especially equity-based pay, after losing executives to other firms. The pay raise is more pronounced when the incumbent executives have better employment mobility in the labor market, when the companies have strong corporate governance, and when the companies lose high-ranking executives to nearby industry rivals. Overall, this paper provides supporting evidence that competition for top executives drives up executive compensation.

Keywords: Labor Market Competition; Executive Compensation; Job-hopping; Pay Growth

JEL classification: G30; J33

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1. Introduction

The dramatic growth of executive compensation over the past two decades has triggered a large amount of public controversy and academic research.[1] Several theoretical models predict that labor market competition for corporate executives is one of the driving forces for the growth of executive compensation (see, for example, Gabaix and Landier (2008), Giannetti (2011), Murphy and Zábojník (2004), and Terviö (2008)). More specifically, as long as firms keep competing for highly skilled managers, executive compensation will be driven up for better recruitment and retention purposes.[2] Despite an intuitive explanation on managerial pay growth, empirical evidence is scarce, possibly because executive recruiting details are confidential, and thus it is difficult, if not impossible, to estimate the degree to which firms compete for a manager in the labor market.

In this paper, we examine empirically whether labor market competition drives up executive compensation from the perspective of executive job-hopping. Executive job-hopping refers to the case in which one executive leaves his current firm and subsequently takes an executive position in another firm next year (in most cases, for greater pay and/or higher position). Using the job-hopping events as an *ex post* measure of labor market competition, we examine how firms adjust their compensation scheme for the incumbent executives accordingly.

Based on 838 executive job-hopping events from 1993 to 2011, we find that companies that experienced executive job-hopping events subsequently raise pay to their incumbent executives more than companies experiencing no job-hopping events do. The pay raise is mainly

[1] Bebchuk and Grinstein (2005) document that the average compensation for top-five executives among S&P 500 firms increased from $9.5 million in 1993 to $21.4 million in 2003 (an increase of 125%). In our sample period, the average compensation for top-five executives among S&P 1500 firms increased from $0.97 million in 1993 to $3.03 million in 2011 (an increase of 212%).

[2] Practitioners also suggest that the potential threats of losing star talents push firms to raise executive pay (see, for example, Smith (2009) and Tett (2009)).

in the form of equity-based compensation. To the extent that the vesting period associated with restricted stock and option grants can help to retain managers (Balsam and Miharjo (2007)), this evidence suggests that after losing top executives, firms not only pay their remaining managers more generously, but also structure the compensation package for the purpose of better retention.

Next, the magnitude of the pay raise is not uniform across all the remaining executives, but varies positively with each executive's employment mobility in the labor market. To the extent that it is more difficult for an incumbent CEO to find an equivalent or higher-ranking job in another firm, we find that the pay growth for incumbent CEOs is smaller than that for incumbent non-CEO executives. In addition, consistent with the view that high stock ownership helps to retain managerial talents (Balsam and Miharjo (2007)), we also find that executives with higher stock ownership receive lower pay raise. To the extent that managers whose incumbent compensation is already excessive are less likely to leave their current positions voluntarily, we find that these managers receive less pay growth. Furthermore, since it is easier for a manager to move to a new firm if there are a large number of same-industry companies (Deng and Gao (2013)), we find that the magnitude of pay growth is positively associated with the number of industry peer firms. Given that managers usually have better outside opportunities in industries that have more outside hiring (Cremers and Grinstein (2013)), firms in these industries are found to have a greater pay raise after a job-hopping event. Moreover, Oyer (2004) shows that managers have more outside employment opportunities when the overall market condition is favorable. Consistent with this view, we find that, in response to losing executives, firms raise pay more dramatically during the market booming period than during other periods. Finally, when managers are approaching retirement or have already stayed in the firm for long, they are less likely to look for new jobs and thus have less mobility in the labor market (Balsam and

Miharjo (2007) and Gibbons and Murphy (1992)). Supporting this implication, we find that the pay growth is less pronounced for retiring executives and long-tenure executives.

Furthermore, we examine the role of corporate governance in the relation between job-hopping and the subsequent pay growth to the remaining executives. Firms with strong corporate governance are more likely to design their compensation scheme based on competitive market forces (Core, Holthausen, and Larcker (1999) and Hartzell and Starks (2003)). If the pay raise to the incumbent managers following job-hopping events is driven by the competition in the labor market, we expect the pay raise to be more prominent in well-governed firms than in poorly-governed firms. Based on various corporate governance measures, we find evidence supporting this prediction. Given that managers have less discretion to extract excessive pay in well-governed firms, this finding is against the alternative explanation that the incumbent managers receive pay raise because they become more entrenched after other executives leave for new jobs.

The characteristics of the job-hopping executive (hereafter referred to as the job-hopper) also play important roles in explaining the magnitude of pay growth for the remaining managers. We find that firms raise pay more aggressively for the incumbent executives when losing higher-ranking executives to other firms, when losing executives to industry competitors, when losing executives to nearby companies, and when losing executives to companies that offer higher compensation. To the extent that the above job-hopping events are more reflective of intense competition for managerial talents, these results further support the view that labor market competition drives up executive pay.

Finally, we conduct various robustness checks and additional analyses to strengthen the validity of our results. First, some executive job-hopping may be associated with the forced

turnover, rather than an indication of incoming competition for talents in the labor market. To address this possibility, we employ a number of alternative measures of executive job-hopping events that are unlikely to be forced turnover. Our results remain unchanged. Second, the pay raise to the remaining executives may come as a compensation for the additional workload they need to provide after one executive position becomes vacant. To address this concern, we examine a subsample of firms that find a replacing executive right after the job-hopping event, and find that the pay growth for the remaining executives is still robust. Third, after losing executives, firms are likely to promote some of their incumbent managers internally to fill in the vacant positions. Thus, the growth of compensation for the incumbent managers may be due to internal promotions. To investigate this issue, we focus on a subsample of incumbent managers with no changes in positions and still find a dramatic increase in compensation for these managers after their firms experience a job-hopping event.

Overall, our results support the view that labor market competition for managerial talents drives up executive pay. As pointed out by Oyer and Schaefer (2011), the detailed firm-level executive hiring process is largely a black box. The existing empirical studies on executive pay have under-explored the role of the labor market for corporate executives and many features of managerial mobility in the labor market are not well examined. This paper contributes to the literature by shedding new insights on how managerial labor market influences executive compensation.

The rest of this paper is organized as follows. Section 2 discusses related literature and illustrates the theoretical framework. Section 3 describes the data collection process and the construction of the main variables. Section 4 presents the empirical results. We conduct robustness checks in Section 5. Finally, Section 6 concludes.

2. Related Literature and Theoretical Framework

There are a few explanations on the dramatic growth of executive compensation. The first explanation attributes the increase in executive pay to the widespread adoption of equity-based compensation, especially stock options (Hall and Liebman (1998), and Holmstrom and Kaplan (2001, 2003)).[3]

The second explanation focuses on the limits of the corporate governance system and suggests that the rise of executive compensation is due to weak board monitoring as powerful managers extract excessive pay at the cost of shareholders (see, for example, Bebchuk and Fried (2003) and Bebchuk and Grinstein (2005)).

The third explanation argues that the increase in executive compensation is mainly due to the change in the nature of the executive job itself. For example, Garicano and Rossi-Hansberg (2006) predict that new communication technologies change managerial job functions and the improvement on knowledge communication helps to increase executive pay. Frydman (2005) proposes a shift in the importance of skills from firm-specific to more general managerial skills for top executives and theorizes that this shift leads to higher manager pay and higher mobility of executives. Cremers and Grinstein (2013) find empirical evidence in favor of this explanation.

This paper is inspired mostly by the fourth explanation, which attributes executive pay growth to the market force and the competition for top managers. As highly skilled managers are scarce resources in the labor market, competition for talents makes recruitment and retention more difficult, which pushes up executive pay. As indicated in Kaplan and Rauh (2010), the pay increase has been dramatic not only for corporate executives but also for investment bankers,

[3] Our study complements this explanation by showing that the increase in both equity-based compensation and total compensation can be driven by competition for managerial talents in the labor market.

VC/PE investors, corporate lawyers, and professional athletes. Such a trend increases the outside employment options for corporate executives and therefore puts upward pressure on executive compensation. In the same spirit, Gabaix and Landier (2008) suggest that as long as other firms are comparably large and keep competing for talented managers, market force will drive up wages. Other theoretical models, including Giannetti (2011), Murphy and Zábojník (2004) and Terviö (2008), also make similar predictions. However, while these optimal contracting models have provided insightful theoretical frameworks, existing empirical research offers little evidence on whether or how a firm's compensation scheme is related to its managers' potential job offers from other rival firms.[4]

Following the framework of Gabaix and Landier (2008), Giannetti (2011), Murphy and Zábojník (2004), and Terviö (2008), we hypothesize that a firm pays its manager *i* based on the estimated probability of him receiving a competing job offer from other firms (denoted as p_i), and in equilibrium (*ex ante*), manager *i*'s compensation is positively associated with p_i.[5] Although difficult to estimate p_i empirically, it is expected to be positively correlated with the external employment opportunities of other managers in the same firm: for example, p_j of manager *j* who is in the same firm as manager *i*. *Ex post*, when manager *j* receives a better job offer and voluntarily switches to the new job, the posterior p_j is revised up to 1. Given the positive association between p_i and p_j, this job-hopping event could also signal better outside opportunities for manager *i*, and thus the firm will revise up the posterior p_i and raise pay for manager *i* accordingly.

[4] Based on a survey data of law school graduates in the financial industry and the legal sector, Giannetti and Metzger (2013) find that individuals with jobs that make them more visible and easier to switch employers receive more long-term compensation.

[5] See Giannetti (2011) for a formal model about this hypothesis. In particular, Implication 1 of Giannetti (2011) predicts that managers receive higher compensation when they are more likely to receive outside offers.

We expect that an executive's outside employment opportunities are positively correlated with those of other executives in the same firm for three reasons. First, executives in the same firm are more likely to have shared social networks, and these social ties between individuals, such as friends, former colleagues, and employee referrals, facilitate the executive hiring process (Montgomery (1991) and Rees (1966)). Second, executives in the same firm are likely subject to the same firm-level compensation policy. When an executive finds the competing job offer more attractive and leaves for the new firm, other executives probably also find that the pay package from potential outside opportunities is appealing. Third, executives in the same firm are likely to have similar institutional knowledge and thus be subject to the same demand from the labor market. For example, when an executive realizes his institutional knowledge highly valued by competing firms in the labor market and accepts the new job offer, other executives in the same firm are likely to face the same demand.

Based on the discussions above, if firms are found to raise pay for their incumbent executives in response to a job-hopping event, we will interpret this as the evidence of labor market competition driving up executive compensation. Moreover, given that corporate governance and managerial skills are fairly stable within a short time horizon, the job-hopping activity of one executive is less likely to be associated with dramatic changes in the firm's corporate governance or with the shift of managerial skills of the remaining executives. Thus, our empirical design provides a relatively clean setting to disentangle the effect of the labor market competition from other factors such as corporate governance and the nature of managerial job functions. In addition, examining the effect of manager *j*'s job-hopping on manager *i*'s compensation can avoid the difficulty of estimating p_i empirically and better identify the relation between competition for managers and managerial compensation.

3. Sample Formation

Our primary data source is the Standard & Poor's (S&P's) ExecuComp database from 1993 to 2011. ExecuComp records compensation data on corporate executives (typically the top five executives) reported in proxy statements for the firms comprising the S&P 1500 index. To capture the pay growth of executives, we use the growth of total compensation as the main dependent variable. An executive's total compensation in a given year (ExecuComp variable TDC1) includes the executive's salary, bonus, the grant-date value of restricted stock awards, the Black–Scholes value of granted options, and other compensation.[6] To measure the possible change in the structure of executive pay, following standard procedure, we break down the total compensation into cash and equity components and measure the growth of cash compensation and the growth of equity compensation, respectively.

ExecuComp assigns a unique identifier (EXECID) to each executive in the database. We track those EXECIDs to locate each executive's position across different firms over the sample period. We define an executive job-hopping event as the case that one executive leaves his current firm and subsequently takes an executive position in another firm next year. Firms with at least one job-hopping executive in a given year are defined as job-hopping firms hereafter. If a firm experiences some executive departures but we cannot identify the new employer of the departing executive in the ExecuComp database, we exclude it from our sample.

[Insert Table 1 Here]

[6] Starting in 2006, there is slight change in the definition of TDC1. Following Walker (2011), we reconcile the TDC1 definition between the 1993–2005 period and the 2006–2011 period, although these specifications do not change our results.

Further, we collect accounting information from Compustat and stock price information from CRSP. We include a set of standard control variables in the executive compensation literature, including firm size, firm age, ROA, cash holding, capital expenditure, R&D expenditure, stock return, and stock volatility. All monetary variables are measured in 2011 dollars and all continuous variables are winsorized at the 1st and 99th percentiles. The final sample consists of 4,192 executive-year observations (838 firm-year observations) in job-hopping firms and 84,017 executive-year observations (16,122 firm-year observations) in non-job-hopping firms. Table 1 presents the annual frequency of job-hopping events. We find that the numbers of job-hopping events are distributed in a fairly even way over time.

4. Job-hopping and Growth of Executive Compensation

4.1. Descriptive Statistics

[Insert Table 2 Here]

Table 2 provides the descriptive statistics for job-hopping executives and firms. As shown in Panel A, for incumbent executives in the job-hopping firms, the average (median) growth rate in total compensation is 17.28% (13.09%), while executives in non-job-hopping firms experience an average (median) 8.06% (6.33%) growth rate. Furthermore, we find that most of the pay growth comes from the increase of restricted stock and options. In job-hopping firms, the average (median) growth rate of cash pay for the remaining executives is 9.49% (6.10%), while the average (median) growth rate of equity pay is 46.24% (1.97%). In contrast, in non-job-hopping firms, the average (median) growth rate is 2.73% (2.76%) in cash pay, and

16.85% (0%) in equity pay. Moreover, both *t*-test and Wilcoxon *z*-test indicate that the differences in the growth rates of pay (either cash pay or equity pay) across the two groups of firms are significant at the 1% level. This univariate comparison indicates that job-hopping firms raise incumbent executives' pay (especially equity-based pay) more dramatically than non-job-hopping firms do.

As shown in Panel B of Table 2, job-hopping firms, on average, are more than two times bigger in sales than the non-job-hopping firms, consistent with the view that managers in larger firms tend to have better outside opportunities (Gabaix and Landier (2008)). Moreover, compared with non-job-hopping firms, job-hopping firms are generally older and have slightly lower growth of sales, higher growth of cash holding, lower stock return, lower ROA, and lower stock volatility.

Table 2 Panel C reports the characteristics of job-hoppers' new firms versus their former firms. The average (median) relative sales of the new firm to the former firm is 0.98 (1.00), indicating that a job-hopper's new firm is as large as his former firm is. However, the job-hopper's pay is increased by more than 200% (72%) on average (at median) after joining the new firm. Moreover, about 22% of job-hoppers are non-CEOs in the former firms but promoted to the CEO position in the new firms, while less than 1.8% of job-hoppers are CEOs in the former firms but obtain non-CEO jobs in the new firms. Overall, these job-hoppers are clearly better off in the new firms, typically with greater pay and/or higher positions. This panel also suggests that the job-hopping firms fail to prevent the job-hopper from leaving because the competing job offers are too attractive to match (i.e., it is difficult for the job-hopping firms to double the pay or give the CEO position to the job-hopper).

It is worth mentioning that Fee and Hadlock (2004) examine the new employment of executives after they are fired by their former employers and find that the dismissed executives suffer greatly in the labor market. Only about one-third of fired executives obtain top management positions afterwards and their new firms are, on average, one-tenth as large as their former firms. The findings in Panel C indicate that our job-hopping measure is not likely to be driven by forced turnover. As a robustness check later, we also try alternative definitions of job-hopping events that are unlikely to be consequences of forced turnover, and our results still hold.

4.2. Executive Job-hopping and Pay Raise

Our main hypothesis is that job-hopping firms have greater pay raise for incumbent executives than non-job-hopping firms do. We test this hypothesis through a multivariate regression of the growth of executive pay against the *Job-hopping* indicator, as well as various firm and executive characteristics. In particular, we estimate the following model:

$$\begin{aligned} Pay\ growth_{it+1} = {} & \alpha + \beta_1 (Job\text{-}hopping)_{it} + \beta_2 (Stock\ return)_{it+1} + \beta_3\, Volatility_{it+1} + \beta_4 ROA_{it+1} \\ & + \beta_5 \Delta Ln(Sales)_{it+1} + \beta_6 \Delta(Cash\ ratio)_{it+1} + \beta_7 \Delta(Capital\ expenditure)_{it+1} + \beta_8 \Delta(R\&D\ intensity)_{it+1} \\ & + \beta_9 Ln(Firm\ age)_{it} + \beta_{10} (Industry\ pay\ growth)_{it+1} + \beta_{11} (CEO\ indicator)_{it} \\ & + \beta_{12} (Executive\ ownership)_{it} + Year\ fixed\ effects + Industry\ fixed\ effects + \varepsilon. \end{aligned} \quad (1)$$

The dependent variable is the pay growth for each incumbent executive. The key independent variable is the *Job-hopping* indicator, which takes the value of 1 if the firm experiences an executive job-hopping event in that year, and 0 otherwise. We also add a set of conventional control variables, including firm size, firm age, firm performance, growth opportunity, stock return volatility, availability of cash, investment, industry median growth rate

in executive total pay, CEO indicator, and executive ownership. Industry fixed effects based on a 2-digit SIC code and year fixed effects are included to control for industry and time variation in executive compensation. Following Jayaraman and Milbourn (2012) and Petersen (2009), *p*-values are based on robust standard errors clustered at the executive level.[7]

[Insert Table 3 Here]

Table 3 shows a positive and significant association between the *Job-hopping* indicator and pay growth rate, indicating that companies raise pay dramatically for their remaining executives in response to losing executives to other firms. In Column (1), we only include the *Job-hopping* indicator as the independent variable and control for industry and year fixed effects. The coefficient on the *Job-hopping* indicator is 0.090 and is significant at the 1% level, indicating that the growth of total pay in job-hopping firms is 9% higher than that in non-job-hopping firms. In Column (2), we add a set of commonly used firm characteristics, including firm performance, stock return volatility, firm age, and the growth in sales, the growth in cash holding, the growth in investment, and the growth in R&D expenditure. The coefficient on the *Job-hopping* indicator is 0.120, and its significance still remains at the 1% level, implying a 12% higher pay growth in job-hopping firms than in non-job-hopping firms, even after controlling for firm characteristics. This result is also economically significant given that the median growth of total pay in the ExecuComp population is 8.6%.

In Column (3), we additionally control for the industry median growth rate in executive total compensation (*Industry pay growth*), as existing literature finds that executive compensation is usually benchmarked against industry peer groups (Bizjak, Lemmon, and

[7] In untabulated tests, we also compute the robust standard errors clustered at the firm level and our inferences are unchanged.

Naveen (2008) and Faulkender and Yang (2010)). We find that the coefficient on the *Job-hopping* indicator remains positive and significant at the 1% level, suggesting that the effect of job-hopping on pay growth is beyond the industry norm of benchmarking.[8]

We further control for CEO indicator and executive ownership in Column (4) and the coefficient on *Job-hopping* is again positive and significant at the 1% level, indicating that the effect of job-hopping on executive compensation is robust after controlling for various firm and executive characteristics. Moreover, the negative and significant coefficient on the CEO indicator suggests that remaining CEOs experience lower pay raise than non-CEO executives do. The coefficient on executive ownership is also negative and significant, consistent with the view that higher ownership substitutes for higher annual compensation for the purpose of retention (Core, Holthausen, and Larcker (1999)).

To mitigate the concern that some time-invariant unobservable firm characteristics drive our results, we include firm fixed effects in Column (5). The coefficient on the *Job-hopping* indicator is 0.137 and is significant at the 1% level. This result indicates that within the same firm, the growth of executive pay in the year subsequent to losing an executive is 13.7% higher than in other periods.

Overall, the results in Table 3 show that firms raise pay greatly for their incumbent executives in response to a job-hopping event. The effect of job-hopping on pay growth is significant both statistically and economically.

[Insert Table 4 Here]

[8] In untabulated analysis, we also control for the two-year accumulative industry median growth rate in compensation, instead of the contemporaneous industry median growth rate. Our inferences are unchanged.

In Table 4, we break the total compensation further into different components. The dependent variable is *Growth of cash pay* in Column (1), and the coefficient on the *Job-hopping* indicator is 0.091 and is significant at the 1% level. This result indicates that after experiencing a job-hopping event, the firm's incumbent executives have a 9.1% higher growth in cash pay (salary and bonus) than other companies' executives do. Using *Growth of equity pay* as the dependent variable in Column (2), we find a significant coefficient of 0.335 on the *Job-hopping* indicator, indicating a 33.5% higher growth of equity pay for remaining executives in job-hopping firms. It is worth pointing out that this coefficient is more than three times in magnitude of that in Column (1), indicating that firms raise equity-based compensation more aggressively than salary and bonus to retain executives.[9] This is consistent with the view that the vesting period associated with restricted stock and option grants can better retain executives than salary and bonus can (Balsam and Miharjo (2007) and Core and Guay (1999)).

Moreover, the greater growth of equity pay relative to cash pay suggests that the structure of executive compensation changes after the job-hopping event. To further examine the structure of compensation, we include *Δ(Equity pay/ total pay)* as the dependent variable in Column (3). The positive and significant coefficient on the *Job-hopping* indicator suggests that firms increase the proportion of equity-based compensation for their incumbent executives in response to a job-hopping event.

In addition to annual compensation, an executive's total equity portfolio can also influence his retention incentive. We further investigate the change in the value of the executive's total holding of restricted stock and unvested stock option in Column (4) and change in the number of shares of restricted stock and unvested option in Column (5), respectively. The

[9] The Chow test on the equality of these two coefficients indicates that they are significantly different at the 1% level.

coefficients on the *Job-hopping* indicator are positive and significant in both columns, indicating that there is a significant increase in restricted stock and unvested options held by the incumbent executives after their firms experienced job-hopping events. Our results are broadly consistent with Balsam and Miharjo (2007), who show that unvested equity holdings can help to reduce voluntary executive turnover.

4.3. The Effect of Employment Mobility

[Insert Table 5 Here]

If labor market competition is the driving force for the positive relation between job-hopping activity and pay growth, we should expect that the incumbent executives with better employment mobility receive greater pay raise than the ones with poorer employment mobility. In this subsection, we carry out additional tests to examine this prediction. The model specification in Table 5 is the same as that in Column (4) of Table 3, except that we further include the interaction terms between the *Job-hopping* indicator and executive employment mobility. In particular, we use eight different proxies to measure the mobility of an executive in the labor market.

First, it is possible for a non-CEO executive to join another firm as CEO, but it is less likely for a CEO to voluntarily join another firm as a non-CEO executive.[10] Therefore, a CEO should have lower mobility in the labor market than non-CEO executives do and thus the firm does not need to raise as much pay to the incumbent CEO after a job-hopping event as to

[10] Out of 838 job-hopping cases in our sample, there are only 15 cases in which a CEO joins another firm as a non-CEO executive.

incumbent non-CEO executives. To test this view empirically, we include the interaction term, *Job-hopping* × *CEO indicator*, in Column (1) of Table 5 and find a negative and significant coefficient on this interaction. This result indicates that while the job-hopping firm raises pay for all incumbent executives, the magnitude of pay raise is larger for non-CEO executives than for CEOs.

Second, high stock ownership can help to retain managers (Balsam and Miharjo (2007)). Thus, a top manager is less likely to leave the firm for another one when he owns a large stake of the firm's stock. Therefore, the pay raise for the executives with higher ownership is expected to be relatively lower. Consistent with this prediction, we find a negative and significant coefficient on the interaction, *Job-hopping* × *Ownership*, in Column (2).

Third, Balsam and Miharjo (2007) show that excessive pay helps to prevent voluntary executive turnover. Thus, the pay growth for overpaid executives should be lower than that for other remaining executives. To define "overpaid" executives, we first run the following pooled OLS regression to estimate the predicted level of compensation:

$$Ln(\text{Total pay}) = \alpha + \beta_1 Ln(\text{Sales}) + \beta_2 ROA + \beta_3 \text{Stock return} + \beta_4 \text{Stock return volatility} + \beta_5 \text{CEO indicator} + \beta_6 \text{CFO indicator} + \beta_7 \text{COO indicator} + \text{Year fixed effects} + \text{Industry fixed effects.} \quad (2)$$

Then, we define *excess pay* as the difference between the executive's actual pay and his predicted pay. To mitigate the concern that we do not know the true regression model of fair-market executive pay, we flag a manager as "being overpaid" if his *excess pay* is in the top quartile of the population. In this way, our definition of "overpaid" is less sensitive to errors in the predicted pay level, as we are only selecting managers in the high extremes of the compensation distribution. In Column (3), the interaction, *Job-hopping* × *Overpaid*, has a negative and significant coefficient, supporting the prediction that the positive association

between job-hopping and pay growth is less pronounced for an incumbent executive who is already paid excessively.

Next, the external hiring opportunity for executives is expected to increase with the number of industry peer firms: managers have more outside opportunities when there are a large number of industry peer firms around (Deng and Gao (2013)). In Column (4), we define the *Many industrial rivals* indicator based on the sample median of the number of firms in an industry and then include the interaction *Job-hopping* × *Many industrial rivals*. We find a positive and significant coefficient on this interaction term, implying that the pay growth for incumbent executives in a job-hopping firm is more pronounced when there are a large number of potential industry competitors for managerial talents.

Moreover, executives may have better employment mobility in industries with more external hiring (Cremers and Grinstein (2013)), and thus the positive association between job-hopping and pay growth is expected to be stronger in these industries. To test this prediction, we first define an external CEO as the one who takes the CEO position within the one-year period since he joins the firm, and then compute the variable *Industry outside hiring* as the number of firms managed by external CEOs in an industry normalized by the total number of firms in the industry.[11] In Column (5), the interaction, *Job-hopping* × *Industry outside hiring*, attracts a significantly positive coefficient. This result is consistent with our prediction that in an industry with greater external executive hiring (better employment mobility), firms raise pay more substantially in response to losing executives.

In addition, Oyer (2004) argues that a manager's outside opportunity is positively associated with the overall market condition. Managers would have better outside employment

[11] We only compute the number of external CEOs because of the data limitation in the ExecuComp database. The date of joining the firm and the date of taking the executive position are poorly recorded for non-CEO executives.

opportunity and thus are more mobile in the labor market during the market booming period. Based on this view, we flag the *Good market condition* as the years in which the CRSP value-weighted returns are higher than sample median, and include the interaction term, *Job-hopping* × *Good market condition*, in Column (6). The coefficient on this interaction is positive and significant, indicating that the effect of job-hopping on executive pay growth is stronger during the economic booming period.

Finally, managerial career concern may also influence a manager's employment mobility, as near-retirement managers and long-tenure managers are less likely to leave for a new company (Balsam and Miharjo (2007) and Gibbons and Murphy (1992)). In Column (7), we define the *Retirement* indicator, using the age 60 as the cutoff, and include its interaction with *Job-hopping* in the regression. The coefficient on *Job-hopping* × *Retirement* is negative and significant, indicating that the positive association between job-hopping and executive pay growth is less pronounced for retiring managers. In Column (8), we further define the *Long tenure* indicator based on the sample median of executive tenure and include its interaction with *Job-hopping*. The coefficient on *Job-hopping* × *Long tenure* is also negative and significant, indicating that the pay raise is less pronounced if the incumbent managers have stayed in office for long.[12]

In summary, the positive association between job-hopping and pay growth is more pronounced when the incumbent executives have greater employment mobility in labor market. These results imply that the purpose for the job-hopping firms to raise pay for their incumbent top managers is to retain these managers against potential competing job offers.

[12] The age (tenure) information is missing for about 21% (45%) of executives in the ExecuComp database; for this reason, the numbers of observations in Columns (7) and (8) are smaller than those in other columns.

4.4. The Effect of Corporate Governance

[Insert Table 6 Here]

The positive relation between job-hopping and pay growth of incumbent managers may be subject to an alternative explanation: after the job-hopping, the remaining executives become more entrenched and subsequently extract more rents. Given that managers are more likely to extract rents in firms with weak governance, this explanation would predict that the positive association between job-hopping and incumbent managers' pay growth is more pronounced in poorly-governed firms than in well-governed firms. To the contrary, if the pay growth following the job-hopping events reflects an efficient response of the firm's compensation scheme to the incoming competition in the labor market, one would expect the pay growth to be more pronounced in well-governed firms, because well-governed firms are more likely to provide efficient compensation contracts (Core, Holthausen, and Larcker (1999)). To differentiate between those two views, we further examine the role of corporate governance in Table 6. In particular, we use four different measures of corporate governance, including product market competition, anti-takeover provisions, institutional investor ownership, and board independence. The first two measure the firm's external governance, while the last two measure the firm's internal governance.

The regression specification in Table 6 is similar to that in Table 5, except that we include the corporate governance variables and their interaction terms with the *Job-hopping* indicator in the regression. In Column (1), we follow the Economic Census approach to compute the industry concentration ratio as the sum of the market share of the four biggest firms in sales among all firms in Compustat in the same industry and same year. A lower industry

concentration ratio indicates greater competitive pressure from product markets and thus stronger external governance (Kim and Lu (2011)). We then define the *High market competition* indicator as 1 if the industry concentration ratio is below the sample median, and 0 otherwise. We find a positive and significant coefficient on the interaction term *Job-hopping* × *High market competition*, implying that the pay growth for incumbent executives in a job-hopping firm is more pronounced when the firm faces greater competition in the product market.

In Column (2), following Bebchuk, Cohen, and Ferrell (2009), we use entrenchment index (E-index) to measure the firm's corporate governance. The *Low E-index* indicator takes the value of 1 when the firm's E-index is lower than the sample median, and 0 otherwise. Given that low E-index implies better shareholder protection (or less managerial entrenchment) from the takeover market, the positive and significant coefficient on *Job-hopping* × *Low E-index* indicates that well-governed firms are more likely to raise pay for incumbent managers in response to losing the job-hopper.

Using institutional ownership and board independence as governance measures in Columns (3) and (4), respectively, we continue to find that the positive association between job-hopping and incumbent managers' pay growth is more pronounced in firms with good governance than in firms with poor governance. Overall, these results suggest that the pay growth of incumbent managers is not due to their enhanced opportunity of extracting rents, but due to an efficient response of the firm to the labor market competition for managerial talents.

4.5. The Effect of the Job-hopper

[Insert Table 7 Here]

The pay growth of the remaining executives may also depend on the characteristics of the job-hopper, as certain characteristics of the job-hopper may indicate the intensity of incoming competition. We further examine this possibility in Table 7 by exploring four job-hopper's characteristics that are likely related to labor market competition. Since the characteristics of job-hoppers are only available in job-hopping firms, the sample in Table 7 only consists of the job-hopping firms.

First, we expect that the pay growth of the incumbent executives depends on the importance of the job-hopper. Compared with the move of a lower-ranking job-hopper, the job-hopping of a higher-ranking manager may indicate a more severe competition for managerial talents and may trigger a more pronounced pay raise in the job-hopping firm as an attempt to retain the remaining executives. In Column (1), we use the job-hopper's rank of compensation prior to the job-hopping (*Former pay rank*) to proxy for the relative importance of this executive in the firm. The variable, *Former pay rank*, ranges from one (lowest paid among the top five executives) to five (highest paid among the top five executives). The coefficient on *Former pay rank* is positive and significant at the 1% level, consistent with our prediction that the pay raise is more pronounced for incumbent executives when a more important executive leaves for a new job.

Second, a firm is more likely to compete with other firms in closer proximity for managerial talents. Thus, in Column (2), we include the *Nearby rival* indicator that takes the value of 1 if the geographical distance between the job-hopper's new company and his former

company is smaller than the sample median, and 0 otherwise. We find a positive and significant coefficient on the *Nearby rival* indicator, consistent with the view that losing executives to a nearby company triggers a more pronounced pay growth for the incumbent executives.

Third, if the job-hopper receives higher compensation in the new firm than in his former firm, it may clearly signal that the job-hopping firm's compensation is not competitive and thus, as a response, this firm should have a greater pay raise for remaining executives to compete against potential outside rivals. In Column (3), we flag the *Higher pay* indicator as 1 if the job-hopper's first-year total compensation in the new firm is larger than his last-year total compensation in the former firm, and 0 otherwise. Consistent with the argument above, we find that the increase in pay of remaining executives is larger when the job-hopper receives a higher pay in his new company.

Lastly, a firm is most likely to face competition for managerial talents from its industry rivals. Thus, losing executives to industry rival firms should be a stronger signal of incoming competition and lead to a more pronounced pay growth for the remaining executives. In Column (4), we define the *Industry rival* indicator as 1 if the job-hopper's new firm is in the same industry as his former firm and the new firm's sales is between 80% and 120% of that in the former firm, and 0 otherwise. The coefficient on *Industry rival* is positive and significant, supporting the prediction that fiercer labor market competition between industry peers helps to explain the pronounced pay growth for executives.

In summary, Table 7 shows that the pay growth for incumbent executives in response to a job-hopping event is more evident when the firm loses a more important executive, when the firm loses an executive to a nearby firm, when the job-hopper receives higher compensation in the new firm, and when the firm loses an executive to its industry competitors. Overall, these

results further support the view that the pay raise subsequent to a job-hopping event is driven by the competition for managerial talents.

5. Robustness Check and Additional Investigation

5.1. Alternative Ways of Defining Job-hopping

[Insert Table 8 Here]

Our job-hopping events might be confounded with forced executive turnover, which is unrelated to labor market competition. To mitigate this concern, in Column (1) of Table 8, we define the *New Job-hopping1* indicator as 1 if the firm experiences a job-hopping event as defined in Table 2 and the job-hopping executive is promoted from a non-CEO position in his former firm to the CEO position in the new firm, and 0 otherwise. In Column (2), we define the *New Job-hopping2* indicator as 1 if the firm experiences a job-hopping event as defined in Table 2 and the job-hopping executive's first-year pay in the new firm is larger than his last-year pay in the former firm, and 0 otherwise. Also, in Column (3) we define the *New Job-hopping3* indicator as 1 if the firm experiences a job-hopping event as defined in Table 2 and the firm's stock return prior to the job-hopping is above the industry median, and 0 otherwise. These three types of job-hopping events are more likely to be driven by the better job offer in the new firm rather than forced dismissal by the former firm. The coefficients on all *New Job-hopping* indicators remain positive and significant at the 1% level.

It is also possible that the incumbent executives in job-hopping firms have to share some workload left by the job-hopper and thus require a higher pay. To address this possibility, in Column (4) we define the *New Job-hopping4* indicator as 1 if the firm experiences a job-hopping

event as defined in Table 2 and immediately finds replacement next year, and 0 otherwise. The incumbent executives in this type of job-hopping firms are less likely to be compensated for increased workload. The coefficient on *New Job-hopping4* is also positive and significant at the 1% level.[13]

Overall, our results are robust to various alternative definitions of job-hopping events.

5.2. Propensity Score Matching

As another robustness check, we also employ a matching technique to examine differences in pay growth between the executives in firms with and without job-hopping events. The matching procedure controls for selection based on the observable firm characteristics. Our data are well suited to the matching approach given that we have a much larger pool of control group (the non-job-hopping firms) compared with the treatment group (the job-hopping firms), which increases the likelihood of finding close matches for the job-hopping firms.

We first estimate the propensity scores using a probit model in which the dependent variable is an indicator that takes the value of 1 for the executives in a job-hopping firm, and 0 otherwise. The independent variables are the full set of firm and executive characteristics as defined in Column (4) of Table 3.[14] We then use the predicted probabilities (propensity scores) from the probit regression to match each executive-year observation in a job-hopping firm to the

[13] After a CEO leaves, the executives who lose the horse race of becoming the new CEO may leave the firm because the promotion perspective no longer exists. To retain them, a large pay raise may be needed. To account for this possibility, in untabulated tests, we exclude the 15 job-hopping events, in which the CEO left for a new job; our results are largely the same.

[14] Lower prior level of compensation may lead mechanically to a higher growth rate of pay for incumbent executives in job-hopping firms. To address this concern, in untabulated analysis, we also include the executive's total compensation in the year prior to the job-hopping event to estimate the propensity scores, and the results are similar.

executive-year observation in a non-job-hopping firm that minimizes the absolute value of the difference between the propensity scores. To find optimal matches, three different matching techniques are employed respectively: nearest neighborhood, Gaussian kernel, and local linear regression. All matches are conducted with replacement. Bootstrapped standard errors based on 50 replications are used to conduct statistical inferences. Bias-corrected 95% confidence intervals are also reported.

[Insert Table 9 Here]

Table 9 presents differences in pay growth between the executives in job-hopping firms and their matched peers in non-job-hoping firms under three different matching criteria. We find that incumbent executives in job-hopping firms have significantly larger pay growth than their matched peers in non-job-hopping firms and the pay growth mainly comes from the increase in equity-based compensation.

5.3. Addressing Internal Promotion

[Insert Table 10 Here]

When losing one executive to other firms, it is possible that the job-hopping firm promotes some of its incumbent executives internally to fill in the vacant position, and then the growth of pay for incumbent executives is, at least partially, a reflection of compensation to job promotion, rather than a response to incoming competition for remaining managerial talents.[15] To examine this possibility, we exclude all incumbent executives with a change in job title from

[15] For example, after the CEO leaves, the incumbent COO is promoted to be CEO, then an incumbent senior manager is promoted to be COO, and consequently a series of internal promotions follow.

the year of the job-hopping event to the year afterwards, and re-examine the growth of pay for the remaining executives. As shown in Table 10, we continue to find that after experiencing a job-hopping event, firms raise pay dramatically for their remaining executives who resume the same job responsibility, and the pay increase is mainly in the form of equity-based compensation. This result indicates that the possibility of internal promotions after a job-hopping event is not driving our results.

5.4. Determinants of Job-hopping

[Insert Table 11 Here]

It would be useful to understand which types of firms are more likely to experience job-hopping. Do they have low performance? Do they have poor growth potential? Do they set pay too low in the first place? To answer these questions, we run logit regressions to examine the determinants of job-hopping in Table 11. The dependent variable takes the value of 1 if the executive leaves his current firm and takes an executive position in another firm next year, and 0 otherwise. The independent variables include firm size, firm performance, stock return volatility, sales growth over the last five years, CEO indicator, executive ownership, and the executive's total pay. All the independent variables are measured in the year prior to the job-hopping events. Table 11 reveals some interesting findings.

The coefficients on *Ln(sales)* and *Ln(total pay)* are significantly positive while the coefficients on *ROA*, *Stock return* and *Five-year sales growth* are significantly negative. To the extent that managers in large firms and managers with high compensation are usually more talented (Gabaix and Landier (2008)), these results suggest that job-hopping is likely to be associated with talented managers leaving their poorly performing and low-growth firms for new

employments. Moreover, the significant and negative coefficients on *Ownership* indicate that high stock ownership helps to prevent managers from job-hopping, consistent with Balsam and Miharjo (2007). Not surprisingly, we also find that CEOs are less likely to switch to new jobs, as compared with other executives.

Overall, job-hopping is more likely to occur in declining large firms and there is no evidence that job-hopping firms pay their managers too low in the first place.

5.5. Further Discussions

There could be an alternative explanation of the positive relation between job-hopping and pay raise: one executive's job-hopping can increase the marginal value of remaining executives, leading to their pay raise. For example, when one executive leaves, the remaining executives' institutional knowledge can be, on the margin, more valuable, and therefore the firm raises pay in response to the increased marginal value of the remaining executives.

If this explanation is true, we should expect the pay raise to be more pronounced for the remaining executives who are senior and/or have more institutional knowledge. To the extent that the CEO, executives with high ownership, and long-tenure executives are likely to know more institutional details about the firm than other remaining executives, under this explanation, these three types of executives should have greater pay raise after the job-hopping. However, opposite to this prediction, Columns (1), (2) and (8) of Table 5 show that these executives actually have smaller pay raise due to their poorer employment mobility. For this reason, the pay raise of remaining executives after job-hopping is not a reflection of increased marginal value of the remaining executives.

6. Conclusions

An extensive literature on executive compensation argues that competition for top executives is one of the driving forces for the rising executive pay (for example, Gabaix and Landier (2008), Giannetti (2011), Kaplan (2008), Murphy and Zábojník (2004), and Terviö (2008)). Despite a very intuitive explanation, little empirical evidence is provided to identify the relation between labor market competition and executive compensation. This is probably because the detailed information on executive recruiting is largely confidential, and thus it is challenging to measure empirically the competing job offers that an executive receives from outside.

In this paper, we employ job-hopping events as an *ex post* measure of labor market competition and examine empirically whether labor market competition for top managers contributes to the rise of executive compensation. We find that companies raise pay (especially equity-based pay) dramatically for their incumbent executives after losing executives to other firms. The growth of pay is more pronounced when the incumbent executives have better employment mobility in the labor market, when the companies have better corporate governance mechanisms, and when the companies lose high-ranking executives to nearby industry rival firms. Overall, our paper provides empirical evidence supporting that competition for managerial talents drives up executive compensation.

Finally, although our paper focuses on the competition for managerial talents within public firms, such competition could also be prevalent across public firms and large private firms, non-US firms, hedge funds, and private equity funds. Examining the job-hopping events between public firms and other types of firms and institutions could be an interesting area for future research.

Appendix. Variable Definitions

Variable	*Definition*
ΔCash	Cash $_{t+1}$ – Cash $_t$.
ΔCapex	Capex $_{t+1}$ – Capex $_t$.
ΔLn (sales)	Ln(sales $_{t+1}$) – Ln(sales $_t$).
ΔR&D	R&D $_{t+1}$ – R&D $_t$.
CEO indicator	Indicator variable that equals to 1 if the executive is the CEO, and 0 otherwise.
Capex	Capital expenditures normalized by book value of total assets.
Cash	Cash plus short-term investments normalized by book value of total assets.
Cash pay	The sum of salary and bonus.
Equity pay	The sum of the grant-date value of restricted stock awards and the Black–Scholes value of granted options.
Firm age	The number of years since the firm first shows up in CRSP.
Five-year sales growth	Five-year average sales growth rate
Former pay rank	Job-hopping executive's pay rank among all the top executives in the former company. Higher rank indicates higher compensation relative to other executives.
Good market condition	Indicator variable that equals to 1 if the CRSP value-weighted return is above the sample median, and 0 otherwise.
Growth of cash pay	Ln(cash pay $_{t+1}$) – Ln(cash pay $_t$).
Growth of equity pay	Ln(equity pay $_{t+1}$) – Ln(equity pay $_t$).
Growth of total pay	Ln(total pay $_{t+1}$) – Ln(total pay $_t$).
High board independence	Indicator variable that equals to 1 if the percentage of independent directors is above the sample median, and 0 otherwise.
High market competition	Indicator variable that equals to 1 if the industry concentration ratio is below the sample median, and 0 otherwise. Industry concentration ratio is defined as the sum of the market share of the four biggest firms in sales among all the firms in Compustat in the same industry and same year.
High institutional ownership	Indicator variable that equals to 1 if the total institutional ownership is above the sample median, and 0 otherwise.
Higher pay	Indicator variable that equals to 1 if the job-hopping executive's first-year total compensation in the new company is higher than his last-year total compensation in the former firm, and 0 otherwise.
Industry pay growth	The median value of growth of total pay for all the top executives in an industry.
Industry outside hiring	The percentage of outside-hired CEOs relative to all CEO appointments in firm's industry, where an outside-hired CEO is the one who takes the CEO position within one year since he joins the firm.
Industry rival	Indicator variable that equals to 1 if the new company's sales is between 80% and 120% of former company's sales and both firms are in the same industry, and 0 otherwise.
Job-hopping	Indicator variable that equals to 1 if one of the firm's executives leaves the firm in a given year and subsequently takes an executive position in another firm next year, and 0 otherwise.
Long tenure	Indicator variable that equals to 1 if the executive's tenure is above the sample median, and 0 otherwise.
Low E-index	Indicator variable that equals to 1 if the E-index (Bebchuk, Cohen, and Ferrell (2009)) is below the sample median, and 0 otherwise.
Many industrial rivals	Indicator variable that equals to 1 if the number of firms in the same industry is larger than the sample median, and 0 otherwise.
Nearby rival	Indicator variable that equals to 1 if the geographical distance between the job-hopping executive's new company and his former company is smaller than the sample median, and 0 otherwise.
Overpaid	Indicator variable that equals to 1 if the residual of a pooled OLS regression of executive's total compensation (Ln(Total pay) =a + β_1Ln(Sales) +β_2ROA +β_3Stock return+ β_4Stock return volatility + β_5CEO indicator + β_6CFO indicator + β_7COO indicator + Year fixed effects + Industry fixed effects) is in the top quartile of the population, and 0 otherwise.
Ownership	The number of shares owned by the executives over total shares outstanding.
R&D	R&D expenditures normalized by book value of total assets.
Retirement	Indicator variable that equals to 1 if the executive is aged 60 or above, and 0 otherwise.
ROA	Net income normalized by book value of total assets.

Share number of restricted stock	The number of shares of unvested restricted stock .
Share number of unvested option	The number of shares of unvested options.
Stock return	The yearly stock return.
Total pay	The variable TDC1 in Execucomp, which is the sum of salary, bonus, the grant-date value of restricted stock awards, and the Black–Scholes value of granted options, and other compensation.
Value of restricted stock	The market value of unvested restricted shares.
Value of unvested option	The market value of in-the-money unvested options.
Volatility	The standard deviation of monthly stock return for the prior 60 months.

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Table 1. Sample Distribution of Job-hopping Events by Year

This table reports the annual frequency of the 838 firm-year observations with executive job-hopping events from 1993 to 2011, obtained from the ExecuComp database. An executive job-hopping event refers to the case that one of the firm's executives leaves the firm in a given year and subsequently takes an executive position in another firm next year.

Year	# of Job-hopping Events	Percentage of Job-hopping Events
1993	29	3.46%
1994	38	4.53%
1995	49	5.85%
1996	59	7.04%
1997	46	5.49%
1998	43	5.13%
1999	52	6.21%
2000	53	6.32%
2001	46	5.49%
2002	31	3.70%
2003	39	4.65%
2004	33	3.94%
2005	34	4.06%
2006	49	5.85%
2007	69	8.23%
2008	54	6.44%
2009	43	5.13%
2010	34	4.06%
2011	37	4.42%
Total	838	100%

Table 2. Sample Descriptive Statistics

The sample consists of 4,192 executive-year observations in job-hopping firms (838 unique job-hopping events), and 84,017 executive-year observations in non-job-hopping firms from 1993 to 2011. Job-hopping is an indicator variable, taking the value of 1 if one of the firm's executives leaves the firm in a given year and subsequently takes an executive position in another firm next year, and 0 otherwise. Variable definitions are provided in the appendix. All monetary variables are measured in 2011 dollars, and all continuous variables are winsorized at the 1st and 99th percentiles. The last two columns of Panels A and B present, respectively, the *p*-values in the *t*-test and the Wilcoxon *z*-test on the executive and firm characteristics between the job-hopping and non-job-hopping firms. In Panel C, Non-CEO to CEO indicator takes the value of 1 if the job-hopper is not the CEO in his former firm but obtains the CEO position in the new firm, and 0 otherwise. CEO to CEO indicator takes the value of 1 if the job-hopper is the CEO in his former firm and again obtains the CEO position in the new firm, and 0 otherwise. CEO to non-CEO indicator takes the value of 1 if the job-hopper is the CEO in his former firm but resumes a non-CEO position in the new firm, and 0 otherwise. Non-CEO to non-CEO indicator takes the value of 1 if the job-hopper is not the CEO in either his former firm or the new firm, and 0 otherwise. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Executive Characteristics

	Job-hopping firms		Non-job-hopping firms		Test of differences	
	Mean (1)	Median (2)	Mean (3)	Median (4)	*t*-test (1) – (3)	Wilcoxon *z*-test (2) – (4)
Growth of total pay	17.28%	13.09%	8.06%	6.33%	0.000***	0.000***
Growth of cash pay	9.49%	6.10%	2.73%	2.76%	0.000***	0.000***
Growth of equity pay	46.24%	1.97%	16.85%	0.00%	0.000***	0.000***
CEO indicator	0.22	0	0.18	0	0.000***	0.000***
Ownership	0.39%	0.02%	0.83%	0.05%	0.000***	0.000***

Panel B: Firm Characteristics

	Job-hopping firms		Non-job-hopping firms		Test of differences	
	Mean (1)	Median (2)	Mean (3)	Median (4)	*t*-test (1) – (3)	Wilcoxon *z*-test (2) – (4)
Sales($M)	9113	3600	3931	1105	0.000***	0.000***
Sales growth	1.05	1.05	1.16	1.10	0.000***	0.000***
ΔCash	0.16%	0.03%	-0.31%	-0.01%	0.057*	0.000***
ΔCapex	-0.28%	-0.03%	-0.06%	0.00%	0.019**	0.002**
ΔR&D	0.07%	0.00%	-0.03%	0.00%	0.083*	0.000***
Stock return	11.58%	4.90%	18.14%	11.08%	0.001***	0.000***
Stock volatility	11.56%	10.09%	12.22%	10.82%	0.001***	0.000***
ROA	2.63%	3.73%	4.45%	4.67%	0.000***	0.000***
Firm age	29	23	21	16	0.000***	0.000***

Panel C: Job-hoppers' New Firms versus Former Firms

	Mean	Median
Sales of new firm / sales of former firm (at the year following the job-hopping)	0.98	1.00
Total pay of first year in new firm / total pay of last year in former firm	3.90	1.72
Total pay of 2nd year in new firm / total pay of 2nd last year in former firm	2.25	1.44
Non-CEO to CEO indicator	21.96%	0
CEO to CEO indicator	9.31%	0
CEO to non-CEO indicator	1.79%	0
Non-CEO to non-CEO indicator	66.95%	1

Table 3. Pay Growth and Executive Job-hopping

The sample consists of 4,192 executive-year observations in job-hopping firms, and 84,017 executive-year observations in non-job-hopping firms from 1993 to 2011. The dependent variable is the growth of total pay. Job-hopping is an indicator variable, taking the value of 1 if one of the firm's executives leaves the firm in a given year and subsequently takes an executive position in another firm next year, and 0 otherwise. Variable definitions are provided in the appendix. All monetary variables are measured in 2011 dollars, and all continuous variables are winsorized at the 1st and 99th percentiles. Year fixed effects, industry fixed effects and the constant term are included but unreported for brevity. Industry is classified using the first 2-digit of SIC code. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *p*-values based on robust standard errors clustered at the executive level are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)
Job-hopping	0.090***	0.120***	0.118***	0.119***	0.137***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Stock return		0.176***	0.156***	0.155***	0.150***
		(0.000)	(0.000)	(0.000)	(0.000)
Volatility		-0.002	0.006	0.007	0.052
		(0.971)	(0.891)	(0.876)	(0.670)
ROA		-0.014	-0.039	-0.037	0.027
		(0.641)	(0.188)	(0.202)	(0.676)
ΔLn (sales)		0.310***	0.259***	0.258***	0.246***
		(0.000)	(0.000)	(0.000)	(0.000)
ΔCash		0.211***	0.201***	0.202***	0.275***
		(0.000)	(0.000)	(0.000)	(0.000)
ΔCapex		0.199**	0.042	0.041	0.032
		(0.017)	(0.610)	(0.619)	(0.828)
ΔR&D		-0.895***	-0.919***	-0.911***	-0.852**
		(0.000)	(0.000)	(0.000)	(0.015)
Ln (firm age)		0.007**	0.004	0.004*	-0.000
		(0.014)	(0.170)	(0.094)	(0.984)
Industry pay growth			0.918***	0.917***	0.933***
			(0.000)	(0.000)	(0.000)
CEO indicator				-0.058***	-0.055***
				(0.000)	(0.000)
Ownership				-0.284***	-0.274***
				(0.000)	(0.000)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	No	Yes
Adjusted R2	1.9%	5.6%	7.6%	7.8%	6.8%
No. of observations	88,209	83,349	83,349	83,349	83,349

Table 4. Pay Structure and Executive Job-hopping

The sample consists of 4,192 executive-year observations in job-hopping firms, and 84,017 executive-year observations in non-job-hopping firms from 1993 to 2011. The dependent variable is the growth of cash pay in Column (1), the growth of equity pay in Column (2), the change in the percentage of equity pay in total pay in Column (3), the growth of the value of restricted stock and unvested stock option in Column (4), and the growth of the share number of restricted stock and unvested stock option in Column (5), respectively. Job-hopping is an indicator variable, taking the value of 1 if one of the firm's executives leaves the firm in a given year and subsequently takes an executive position in another firm next year, and 0 otherwise. Variable definitions are provided in the appendix. All monetary variables are measured in 2011 dollars, and all continuous variables are winsorized at the 1st and 99th percentiles. Year fixed effects, industry fixed effects and the constant term are included but unreported for brevity. Industry is classified using the first 2-digit of SIC code. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *p*-values based on robust standard errors clustered at the executive level are reported in parentheses.

	(1) Growth of cash pay	(2) Growth of equity pay	(3) Δ(Equity pay/ total pay)	(4) Growth of value of (restricted stock+ unvested option)	(5) Growth of share number of (restricted stock+ unvested option)
Job-hopping	0.091***	0.335***	0.012**	0.797***	0.533***
	(0.000)	(0.000)	(0.021)	(0.000)	(0.000)
Stock return	0.095***	0.192***	0.009***	1.864***	0.163***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Volatility	0.056**	0.470**	0.028	-1.476***	-0.129
	(0.022)	(0.022)	(0.152)	(0.000)	(0.275)
ROA	0.001	0.120	0.014	-0.329***	0.170**
	(0.950)	(0.361)	(0.282)	(0.005)	(0.029)
ΔLn (sales)	0.187***	0.212***	0.014**	-0.127**	0.135***
	(0.000)	(0.001)	(0.016)	(0.015)	(0.000)
ΔCash	0.131***	-0.070	-0.029	-0.065	-0.184*
	(0.000)	(0.710)	(0.105)	(0.674)	(0.058)
ΔCapex	-0.121***	-0.543	0.044	-1.450***	-0.311
	(0.004)	(0.174)	(0.244)	(0.000)	(0.124)
ΔR&D	-0.235**	-2.387***	-0.353***	-1.533**	-0.915*
	(0.010)	(0.005)	(0.000)	(0.039)	(0.058)
Ln (firm age)	-0.001	-0.084***	-0.005***	-0.088***	-0.075***
	(0.635)	(0.000)	(0.000)	(0.000)	(0.000)
Industry pay growth	0.161***	3.397***	0.289***	0.661***	0.577***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CEO indicator	-0.049***	-0.277***	-0.021***	-0.370***	-0.289***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ownership	-0.223***	-0.394	-0.008	-0.292	-0.250*
	(0.000)	(0.166)	(0.732)	(0.235)	(0.092)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Adjusted R2	12.4%	3.3%	2.6%	15%	3.7%
No. of observations	83,349	83,349	83,349	83,349	83,349

Table 5. Employment Mobility, Pay Growth, and Executive Job-hopping

The sample consists of 4,192 executive-year observations in job-hopping firms, and 84,017 executive-year observations in non-job-hopping firms from 1993 to 2011. The dependent variable is the growth of total pay. Job-hopping is an indicator variable, taking the value of 1 if one of the firm's executives leaves the firm in a given year and subsequently takes an executive position in another firm next year, and 0 otherwise. Variable definitions are provided in the appendix. All monetary variables are measured in 2011 dollars, and all continuous variables are winsorized at the 1st and 99th percentiles. Year fixed effects, industry fixed effects and the constant term are included but unreported for brevity. Industry is classified using the first 2-digit of SIC code. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *p*-values based on robust standard errors clustered at the executive level are reported in parentheses.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Job-hopping	0.165***	0.125***	0.214***	0.083***	0.099***	0.086***	0.099***	0.196***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Job-hopping × CEO indicator	-0.210***							
	(0.000)							
Job-hopping × Ownership		-1.498**						
		(0.019)						
Job-hopping × Overpaid			-0.323***					
			(0.000)					
Job-hopping × Many industrial rivals				0.068***				
				(0.005)				
Job-hopping × Industry outside hiring					0.124**			
					(0.049)			
Job-hopping × Good market condition						0.060**		
						(0.015)		
Job-hopping × Retirement							-0.079**	
							(0.050)	
Job-hopping × Long tenure								-0.148***
								(0.000)
Overpaid			-0.442***					
			(0.000)					
Many industrial rivals				-0.012				
				(0.315)				
Industry outside hiring					0.006			
					(0.586)			
Good market condition						0.061***		
						(0.000)		
Retirement							-0.059***	
							(0.000)	

Long tenure								-0.091***
								(0.000)
Stock return	0.155***	0.155***	0.152***	0.155***	0.155***	0.155***	0.163***	0.140***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Volatility	0.008	0.008	0.026	0.009	0.009	0.005	-0.056	-0.213***
	(0.853)	(0.869)	(0.555)	(0.840)	(0.844)	(0.919)	(0.249)	(0.001)
ROA	-0.037	-0.037	-0.049*	-0.037	-0.036	-0.039	-0.023	0.027
	(0.205)	(0.201)	(0.080)	(0.208)	(0.215)	(0.185)	(0.474)	(0.505)
ΔLn (sales)	0.259***	0.258***	0.331***	0.258***	0.258***	0.259***	0.252***	0.199***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔCash	0.202***	0.202***	0.151***	0.201***	0.201***	0.203***	0.229***	0.212***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔCapex	0.039	0.042	0.026	0.038	0.038	0.039	0.052	0.103
	(0.636)	(0.613)	(0.734)	(0.648)	(0.642)	(0.634)	(0.576)	(0.431)
ΔR&D	-0.909***	-0.910***	-0.723***	-0.915***	-0.907***	-0.911***	-0.897***	-0.673**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.020)
Ln (firm age)	0.004	0.004*	-0.009***	0.004*	0.005*	0.004	0.010***	0.005
	(0.112)	(0.096)	(0.001)	(0.093)	(0.088)	(0.102)	(0.001)	(0.224)
Industry pay growth	0.918***	0.918***	0.801***	0.919***	0.915***	0.917***	0.923***	0.907***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CEO indicator	-0.046***	-0.057***	-0.042***	-0.058***	-0.058***	-0.058***	-0.051***	-0.067***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ownership	-0.301***	-0.252***	-0.191***	-0.285***	-0.284***	-0.284***	-0.156**	-0.887**
	(0.000)	(0.000)	(0.010)	(0.000)	(0.000)	(0.000)	(0.019)	(0.011)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R2	7.8%	7.9%	17.6%	7.8%	7.8%	7.8%	7.9%	8.1%
No. of observations	83,349	83,349	83,349	83,349	83,349	83,349	68,679	39,969

Table 6. Corporate Governance, Pay Growth, and Executive Job-hopping

The sample consists of 4,192 executive-year observations in job-hopping firms, and 84,017 executive-year observations in non-job-hopping firms from 1993 to 2011. The dependent variable is the growth of total pay. Job-hopping is an indicator variable, taking the value of 1 if one of the firm's executives leaves the firm in a given year and subsequently takes an executive position in another firm next year, and 0 otherwise. Variable definitions are provided in the appendix. All monetary variables are measured in 2011 dollars, and all continuous variables are winsorized at the 1st and 99th percentiles. Year fixed effects, industry fixed effects and the constant term are included but unreported for brevity. Industry is classified using the first 2-digit of SIC code. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *p*-values based on robust standard errors clustered at the executive level are reported in parentheses.

	(1)	(2)	(3)	(4)
Job-hopping	0.092***	0.092***	0.086***	0.061**
	(0.000)	(0.000)	(0.000)	(0.012)
Job-hopping × High market competition	0.051**			
	(0.036)			
Job-hopping × Low E-index		0.048*		
		(0.084)		
Job-hopping × High institutional ownership			0.059**	
			(0.019)	
Job-hopping × High board independence				0.051*
				(0.090)
High market competition	0.006			
	(0.415)			
Low E-index		-0.011**		
		(0.027)		
High institutional ownership			-0.015***	
			(0.000)	
High board independence				-0.000
				(0.956)
Stock return	0.155***	0.156***	0.154***	0.145***
	(0.000)	(0.000)	(0.000)	(0.000)
Volatility	0.010	-0.104*	-0.003	-0.277***
	(0.829)	(0.093)	(0.952)	(0.000)
ROA	-0.037	-0.086**	-0.035	-0.090**
	(0.199)	(0.019)	(0.227)	(0.022)
ΔLn (sales)	0.259***	0.212***	0.259***	0.224***
	(0.000)	(0.000)	(0.000)	(0.000)
ΔCash	0.202***	0.320***	0.201***	0.349***
	(0.000)	(0.000)	(0.000)	(0.000)
ΔCapex	0.041	0.305***	0.041	0.412***
	(0.623)	(0.003)	(0.621)	(0.000)
ΔR&D	-0.906***	-0.773***	-0.910***	-1.323***
	(0.000)	(0.002)	(0.000)	(0.000)
Ln (firm age)	0.005*	0.009***	0.004	0.002
	(0.089)	(0.007)	(0.105)	(0.562)
Industry pay growth	0.921***	0.916***	0.918***	0.862***
	(0.000)	(0.000)	(0.000)	(0.000)
CEO indicator	-0.058***	-0.057***	-0.057***	-0.052***
	(0.000)	(0.000)	(0.000)	(0.000)
Ownership	-0.284***	-0.184**	-0.314***	-0.087
	(0.000)	(0.023)	(0.000)	(0.322)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Adjusted R2	7.8%	7%	7.8%	6.9%
No. of observations	83,349	59,709	83,349	48,551

Table 7. The Effect of Job-hopper's Characteristics

The sample consists of 4,192 executive-year observations in job-hopping firms over the period from 1993 to 2011. The dependent variable is the growth of total pay. *Former pay rank* measures the job-hopping executive's pay rank in his former company (the rank of one indicates the lowest paid executive). *Nearby rival* is an indicator variable, which takes the value of 1 if the geographical distance between the job-hopping executive's new company and his former company is smaller than the sample median, and 0 otherwise. *Higher pay* is an indicator variable, which takes the value of 1 if the job-hopping executive's first-year total pay in the new company is larger than his last-year total pay in the former company, and 0 otherwise. *Industry rival* is an indicator variable, which takes the value of 1 if the job-hopping executive's new company is in the same industry as his former firm and the new firm's sales is between 80% and 120% of that in the former firm, and 0 otherwise. Definitions of other variables are provided in the appendix. All monetary variables are measured in 2011 dollars, and all continuous variables are winsorized at the 1st and 99th percentiles. Year fixed effects, industry fixed effects and the constant term are included but unreported for brevity. Industry is classified using the first 2-digit of SIC code. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *p*-values based on robust standard errors clustered at the executive level are reported in parentheses.

	(1)	(2)	(3)	(4)
Former pay rank	0.037***			
	(0.000)			
Nearby rival		0.053*		
		(0.055)		
Higher pay			0.086***	
			(0.003)	
Industry rival				0.112**
				(0.017)
Stock return	0.254***	0.243***	0.232***	0.238***
	(0.000)	(0.000)	(0.000)	(0.000)
Volatility	0.627*	0.671*	0.678*	0.696*
	(0.083)	(0.064)	(0.061)	(0.055)
ROA	0.150	0.236	0.236	0.235
	(0.436)	(0.218)	(0.218)	(0.218)
ΔLn (sales)	-0.188**	-0.210***	-0.210***	-0.219***
	(0.020)	(0.010)	(0.010)	(0.007)
ΔCash	0.585***	0.722***	0.720***	0.703***
	(0.010)	(0.002)	(0.002)	(0.002)
ΔCapex	1.564**	1.538**	1.535**	1.668***
	(0.014)	(0.016)	(0.016)	(0.010)
ΔR&D	0.256	0.341	0.446	0.282
	(0.806)	(0.745)	(0.670)	(0.788)
Ln (firm age)	-0.012	-0.007	-0.008	-0.005
	(0.524)	(0.720)	(0.671)	(0.777)
Industry pay growth	1.147***	1.167***	1.156***	1.156***
	(0.000)	(0.000)	(0.000)	(0.000)
CEO indicator	-0.250***	-0.263***	-0.261***	-0.261***
	(0.000)	(0.000)	(0.000)	(0.000)
Ownership	-2.144*	-2.050*	-2.112*	-2.098*
	(0.061)	(0.073)	(0.065)	(0.066)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Adjusted R2	11.7%	11.1%	11.2%	11.1%
No. of observations	4,079	4,079	4,079	4,079

Table 8. Alternative Ways of Defining Job-hopping

This table presents the results under alternative definitions of executive job-hopping events. The dependent variable is the growth of total pay. In Column (1), *New Job-hopping1* is an indicator variable, taking the value of 1 if the firm experiences a job-hopping event as defined in Table 2 and the job-hopping executive is promoted from a non-CEO position in his former firm to the CEO position in the new firm, and 0 otherwise. In Column (2), *New Job-hopping2* is an indicator variable, taking the value of 1 if the firm experiences a job-hopping event as defined in Table 2 and the job-hopping executive's first-year pay in the new firm is larger than his last-year pay in the former firm, and 0 otherwise. In Column (3), *New Job-hopping3* is an indicator variable, taking the value of 1 if the firm experiences a job-hopping event as defined in Table 2 and the firm's stock return prior to the job-hopping is above the industry median, and 0 otherwise. In Column (4), *New Job-hopping4* is an indicator variable, taking the value of 1 if the firm experiences a job-hopping event as defined in Table 2, and immediately finds replacement next year, and 0 otherwise. Definitions of other variables are provided in the appendix. All monetary variables are measured in 2011 dollars, and all continuous variables are winsorized at the 1st and 99th percentiles. Year fixed effects, industry fixed effects and the constant term are included but unreported for brevity. Industry is classified using the first 2-digit of SIC code. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *p*-values based on robust standard errors clustered at the executive level are reported in parentheses.

	(1)	(2)	(3)	(4)
New Job-hopping1	0.083***			
	(0.002)			
New Job-hopping2		0.144***		
		(0.000)		
New Job-hopping3			0.098***	
			(0.000)	
New Job-hopping4				0.135***
				(0.000)
Stock return	0.155***	0.155***	0.156***	0.155***
	(0.000)	(0.000)	(0.000)	(0.000)
Volatility	0.008	0.009	0.004	0.007
	(0.863)	(0.837)	(0.923)	(0.878)
ROA	-0.045	-0.040	-0.049*	-0.043
	(0.123)	(0.175)	(0.093)	(0.140)
ΔLn (sales)	0.250***	0.257***	0.252***	0.257***
	(0.000)	(0.000)	(0.000)	(0.000)
ΔCash	0.201***	0.204***	0.204***	0.201***
	(0.000)	(0.000)	(0.000)	(0.000)
ΔCapex	0.039	0.040	0.037	0.038
	(0.635)	(0.626)	(0.651)	(0.649)
ΔR&D	-0.922***	-0.897***	-0.923***	-0.914***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln (firm age)	0.006**	0.005*	0.005**	0.005*
	(0.024)	(0.068)	(0.042)	(0.057)
Industry pay growth	0.920***	0.919***	0.918***	0.919***
	(0.000)	(0.000)	(0.000)	(0.000)
CEO indicator	-0.056***	-0.058***	-0.057***	-0.058***
	(0.000)	(0.000)	(0.000)	(0.000)
Ownership	-0.306***	-0.288***	-0.298***	-0.291***
	(0.000)	(0.000)	(0.000)	(0.000)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Adjusted R2	7.6%	7.8%	7.7%	7.7%
No. of observations	83,349	83,349	83,349	83,349

Table 9. Propensity Score Matching

This table presents differences in pay growth between the executives in job-hopping firms and their matched peers in non-job-hopping firms under three different matching criteria: nearest neighborhood, Gaussian kernel, and local linear regression. In the first step, we run a probit regression, in which the dependent variable is the job-hopping indicator and the independent variables are the firm and executive characteristics used in Column (4) of Table 3. In the second step, we use the predicted probabilities (propensity scores) from the probit regression to match each executive-year observation in a job-hopping firm to the executive-year observation in a non-job-hopping firm that minimizes the absolute value of the difference between the propensity scores. To test pairwise differences in means between the two samples, we use bootstrapped standard errors based on 50 replications with replacement. The *p*-values are reported in parentheses. Bias-corrected 95% confidence intervals are reported in brackets.

Variables	Nearest neighborhood	Gaussian kernel	Local linear regression
Growth of total pay	12.93%	9.48%	12.27%
	(0.00)	(0.00)	(0.00)
	[9.02%, 16.85%]	[7.29%, 11.67%]	[9.48%, 15.06%]
Growth of equity pay	38.30%	29.52%	35.35%
	(0.00)	(0.00)	(0.00)
	[17.93%, 58.68%]	[17.16%, 41.89%]	[23.68%, 47.02%]
Growth of cash pay	10.14%	7.35%	9.10%
	(0.00)	(0.00)	(0.00)
	[7.74%, 12.54%]	[5.80%, 8.91%]	[7.93%, 10.26%]

Table 10. Robustness Check of Excluding Executives with Job Title Changes

In this table, we exclude all incumbent executives with a change in the job title from the year of the job-hopping event to the year afterwards. The dependent variable is the growth of cash pay in Column (1), the growth of equity pay in Column (2), the growth of total pay in Columns (3) and (4), respectively. Job-hopping is an indicator variable, taking the value of 1 if one of the firm's executives leaves the firm in a given year and subsequently takes an executive position in another firm next year, and 0 otherwise. Variable definitions are provided in the appendix. All monetary variables are measured in 2011 dollars, and all continuous variables are winsorized at the 1st and 99th percentiles. Year fixed effects, industry fixed effects and the constant term are included but unreported for brevity. Industry is classified using the first 2-digit of SIC code. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *p*-values based on robust standard errors clustered at the executive level are reported in parentheses.

	(1)	(2)	(3)	(4)
	Growth of cash pay	Growth of equity pay	Growth of total pay	Growth of total pay
Job-hopping	0.100***	0.612***	0.168***	0.185***
	(0.000)	(0.000)	(0.000)	(0.000)
Stock return	0.095***	0.183***	0.156***	0.154***
	(0.000)	(0.000)	(0.000)	(0.000)
Volatility	0.107***	0.605**	0.069	0.052
	(0.000)	(0.014)	(0.204)	(0.700)
ROA	0.007	-0.092	-0.069**	-0.066
	(0.698)	(0.561)	(0.049)	(0.366)
ΔLn (sales)	0.189***	0.215***	0.266***	0.258***
	(0.000)	(0.003)	(0.000)	(0.000)
ΔCash	0.146***	-0.172	0.203***	0.281***
	(0.000)	(0.420)	(0.000)	(0.000)
ΔCapex	-0.107**	-1.003**	-0.003	0.029
	(0.023)	(0.028)	(0.977)	(0.859)
ΔR&D	-0.305***	-1.857*	-0.742***	-0.744*
	(0.003)	(0.056)	(0.001)	(0.050)
Ln (firm age)	0.000	-0.080***	0.005	0.005
	(0.930)	(0.000)	(0.103)	(0.799)
Industry pay growth	0.164***	3.540***	0.898***	0.916***
	(0.000)	(0.000)	(0.000)	(0.000)
CEO indicator	-0.042***	-0.303***	-0.056***	-0.050***
	(0.000)	(0.000)	(0.000)	(0.000)
Ownership	-0.247***	-0.736**	-0.338***	-0.327***
	(0.000)	(0.029)	(0.000)	(0.000)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	No
Firm fixed effects	No	No	No	Yes
Adjusted R2	12.6%	3.6%	7.8%	6.7%
No. of observations	63,211	63,211	63,211	63,211

Table 11. Determinants of Job-hopping

In this table, we report the marginal effects of logit regressions, in which the dependent variable takes the value of 1 if the executive leaves his current firm and join another firm (a job-hopping event) in a given year, and 0 otherwise. All the independent variables are measured in the year prior to the job-hopping event. The marginal effects are estimated when all the independent variables are at their mean values. All monetary variables are measured in 2011 dollars, and all continuous variables are winsorized at the 1st and 99th percentiles. Industry is classified using the first 2-digit of SIC code. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *p*-values based on robust standard errors clustered at the firm level are reported in parentheses.

	(1)	(2)	(3)
Ln (sales)	0.004***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)
Stock return	-0.004***	-0.003***	-0.003***
	(0.000)	(0.000)	(0.000)
Volatility	0.032***	0.021***	0.017***
	(0.000)	(0.000)	(0.000)
ROA	-0.016***	-0.010***	-0.010***
	(0.000)	(0.000)	(0.000)
Five-year sales growth	-0.006**	-0.003**	-0.003**
	(0.018)	(0.041)	(0.013)
CEO indicator		-0.001**	-0.002***
		(0.018)	(0.000)
Ownership		-0.431***	-0.446***
		(0.001)	(0.001)
Ln(total pay)			0.001***
			(0.000)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Pseudo R2	6.1%	7.5%	7.8%
No. of observations	65,372	65,372	65,372