Incentives in Managerial Pay and Voluntary Turnover

Jayant R. Kale
J. Mack Robinson College of Business, Georgia State University
Atlanta, GA, 30303
email: jkale@gsu.edu; Phone: 404- 413 7345

Ebru Reis
Bentley University
Waltham, MA, 02452
email: ereis@bentley.edu: Phone: 781- 891 2078

Anand Venkateswaran
College of Business, Northeastern University
Boston, MA, 02421
email: anand@neu.edu; Phone: 617- 373 7873

JEL Classification: G34, J33, L14, M51, M52

Keywords: *Managerial Incentives, Tournaments, Executive Compensation, Turnover*

This version: March, 2010

Kale acknowledges support from the H. Talmage Dobbs, Jr. Chair at Georgia State University. We have benefited from discussions with Vikas Agarwal, Glenn Boyle, Kelly Brunarski, Mark Chen, Bunmi Faleye, Lixin Huang, Simi Kedia, Omesh Kini, Reza Mahani, Vikram Nanda, Alexandra Niessen, Chip Ryan, Antoinette Schoar, Husayn Shahrur, and seminar participants at Bentley University, Cairo University (Egypt), Georgia State University, Rutgers University, Seton Hall University, University of Alexandria (Egypt), University of Cambridge (UK), University of Canterbury (New Zealand), University of Rhode Island, Boston Area Finance Symposium (2009), the Financial Management Association (2008), Financial Management Association- European meetings (2009), and the European Financial Management Association (2009). We thank Edward Lubaswki, Dalia Roberto, Kaushal Soparkar, and Katrina Zell for excellent research assistance. The usual disclaimer applies.

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Abstract

We study the retention and allocation of managerial talent by examining the effect of equity-based compensation and promotion- based tournament incentives on voluntary turnover among non-CEO managers. We use a unique hand-collected dataset of over 3,000 managerial turnovers in which about a third are voluntary resignations and find that higher stock-based alignment incentives aid in retaining managers, whereas higher tournament incentives appear to increase turnover. We also find that firms with greater inequality in their compensation schemes are more likely to experience higher resignations, and that managers take into account their compensation relative to their peers in the firm and outside the firm in making their resignation decisions. Our results indicate that pay inequity aversion on the part of managers is an important consideration for retaining managers. Finally, we find that higher-paid managers are more likely to resign and present evidence that the higher pay likely indicates higher managerial ability.

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"Do firms keep their best workers or do they lose them to the competition?"

Lazear (1999, p. 226)

1. Introduction

Several empirical studies show that both alignment and tournament incentives in managerial compensation contracts induce higher managerial effort levels leading to better firm performance. For example, Aggarwal and Samwick (2003, and 2006) show a positive relation between equity-based incentives and firm performance; and Kale, Reis, Venkateswaran (2009) show a similar positive relation for tournament incentives.[1] The effect of incentives on managerial retention, however, has received scant attention from academics.[2] As researchers Prendergast (1999) and Lazear (1999, 2005) note, the allocation and retention of managerial talent, in particular, the role of incentives therein, is an important yet relatively unexplored area. Further, a recent global survey of over 800 Chief Executive Officers (CEOs) by *The Conference Board* reveals that managerial talent retention is one of the top ten challenges faced by CEOs; it was the top issue facing Asian CEO's and ranked sixth and seventh among European and U.S. CEOs, respectively. Our study attempts to bridge this gap in the empirical literature on managerial incentives by examining the effect of compensation-based incentives on the retention of top executives using a unique dataset consisting of over 1,000 *voluntary* resignations by *non*-CEO managers.

Typical managerial compensation programs encompass two classes of incentives; (i) performance-based incentives in the form of equity and/or option grants and (ii) promotion-based

[1] There is considerable debate regarding the positive relation between equity-based incentives and firm performance; see the survey by Core, Guay, and Larcker (2003) for an excellent discussion of the issues involved in this debate.

[2] Chang, Dasgupta, and Hilary (2007) examine the relation between CEO pay relative to other managers and stock price effects around CEO turnover announcements.

or tournament incentives. A firm can provide equity-based incentives to both CEO and non-CEO managers; promotion-based incentives are however relevant only to non-CEO executives who can be promoted. Therefore, in order to examine the effects of both equity- and promotion- based incentives on managerial retention; we focus our analysis on the turnover of a firm's *non-CEO* managers. Managerial turnover may be due to several reasons such as retirement, death, acquisitions, etc. To ensure that we isolate the effect of incentives-related turnovers, we focus our analyses on *voluntary* departures.

It is easy to see that equity-based compensation plans are designed to align managerial incentives with shareholders' interests and to retain employees (Murphy (1999)). In most firms managers usually forfeit unvested options and restricted stock grants on departure from the firm and prospective employers may not always be willing (or able) to compensate resigning managers for this loss (Balsam and Miharjo (2007)). Ittner, Lambert, and Larcker (2003) note that departing employees in new economy firms face an additional implicit "penalty" because they may be compelled to prematurely exercise their vested options. Thus, a manager's own equity holdings in her firm, accumulated through prior and current equity compensation grants may constrain them from voluntarily leaving the firm. Consequently, higher equity incentives are likely to be associated with lower voluntary departures.

There is however, another side to the effect of equity-based incentives on managerial retention. Using the argument above, higher CEO alignment should be associated with a lower likelihood of voluntary CEO resignations. A lower likelihood of CEO departure reduces the incumbent VPs' possibility for a promotion or alternatively, increases their likelihood of seeking alternative positions in other firms. Therefore, higher CEO alignment is likely to be associated with higher voluntary VP resignations.

The effect of promotion-based incentives on managerial resignations is more complicated because it involves two potentially opposing effects. First, higher tournament incentives imply promises of larger compensation increases (or prizes) on promotion, which should help retain managers. However, higher tournament incentives, by design, also create greater pay inequalities among managers. Theoretical literature (Fehr and Schmidt (1999, 2003), Demougin and Fluet (2003) and Bolton and Ockenfels (2000)) suggests that managers may be averse to pay inequalities and may also leave the firm if the inequalities are sufficiently large. *Biomet Inc.*, a successful medical-device manufacturing company, is an interesting example of how inequity aversion affects managerial retention. *Biomet* maintains a very narrow pay differential among its top management team; in 2005, the annual cash compensation among the top twenty managers in the firm ranged from $517,200 to $575,800. Further, in the last several years, only one member of the *Biomet*'s top management team left the firm—he retired. In an interview with the *Wall Street Journal* (April 11, 2005) the CEO of *Biomet Inc*. contends that the negligible pay disparity among members of its top management team is the main reason why the firm has been able to retain almost all of its top executives for over twenty years.

The relation between tournament incentives and managerial retention is, therefore, ambiguous; potentially higher rewards on promotion encourage managerial retention, whereas the resulting higher pay inequalities inherent in tournament incentives discourage (inequity averse) managers from remaining with the firm. Consequently, the empirical relation between the level of tournament incentives and managerial retention will depend on the relative strengths of these two effects.

In this paper, we examine the effects of equity-based alignment incentives and promotion-based tournament incentives on the voluntary turnover of non-CEO managers (or VPs) for a

sample of non-financial and non-utility S&P 500 firms over the period 1993-2004. We hand-collect information on the reasons associated with VP departures and classify each turnover as either voluntary or non-voluntary. We identify 2,956 executive turnovers, and can clearly classify 1,007 (34%) of these as voluntary resignations. We then examine three specific research questions; (i) how do tournament incentives (as measured by pay disparities / inequality) affect a firm's likelihood of retaining its top executives, (ii) what is the effect of these incentives for an individual executive on her likelihood of resignation, and (iii) does greater equity-based compensation result in lower managerial turnover? We attempt to answer these research questions from the point of view of the firm as at the level of the individual manager. The analyses at the firm level focuses on issues arising from *how many managers* leave the firm voluntarily, whereas, the individual VP-level analyses relate to *which manager* leaves the firm.

At the firm level, we find that firms with larger tournament incentives or pay disparities are associated with higher VP resignations. These findings are corroborated by our results at the individual VP level; VPs are more likely to resign as their pay gap with the CEO increases relative to the CEO-VP pay gap of their peers. Thus, in the tradeoff between remaining with the firm with the expectation of a higher promotion prize vis-à-vis leaving the firm due to higher pay inequalities, the latter effect appears to dominate.[3] Next, at both the firm and VP levels, we find that higher firm-specific equity ownership decreases the likelihood of VP resignation, consistent with the idea that equity-based compensation aids in retention by constraining managers from voluntarily leaving a firm. Our results thus support and extend the findings in Balsam and Miharjo (2007). Further, we find that higher CEO alignment is associated with a significantly higher likelihood of (individual) VP resignations. This finding is consistent with the hypothesis

[3] Since we control for the relative level of the typical VP's compensation in all our empirical tests, a relatively higher CEO-VP pay gap in a firm implies a higher tournament prize as compared to similar firms, and not underpaid VPs.

that a CEO with high alignment incentives is less likely to leave the firm and, therefore, reduces the promotion probability for the VP who then is more likely to leave the firm.

We also find that VPs are more likely to resign if the average pay (among VPs) in their own firm is lower. In other words, if the firm underpays its managers on average, they are more likely to leave. Finally, as a VP's rank in the compensation hierarchy increases (relative to either firm peers or external peers) they are more likely to resign, consistent with the result documented in Lazear (1999); workers at higher levels in a firm's compensation hierarchy are most likely to separate. If the relative compensation of a manager in her own firm is an indication of her ability then this finding implies that higher ability managers are more likely to separate from their firm. We are able to collect information on the employment obtained by approximately 30% of the resigning VPs. We find that the VPs that were more highly paid in the previous job are more likely to become CEOs in the next job. Therefore, we are able to offer some evidence that supports the job allocation role played by managerial labor markets. Taken together these analyses offer a general insight into the role of a firm's compensation policy in retaining managerial talent and more specifically on the role of promotion-based tournament incentives therein.

Our analysis and findings contribute to the literature in several ways. First, we present several novel insights into the effects of tournament incentives. Relatively high tournament incentives appear to discourage employees from participating (or continuing) in rank-order tournaments adversely affecting a firm from retaining their top executives. Thus, managers appear more likely to separate from firms with higher pay inequalities. This could either be attributed to inequity aversion, i.e. they are discouraged by larger pay disparities, or because smaller pay disparities create a more cooperative environment than a competitive environment (Lazear (1999)). Our study underscores the importance of considering the managers' relative compensation (and not just their own compensation) and its effect in managerial retention. To

this end, our study is the first to empirically examine the notion of inequity aversion in a non-experimental setting.

Our finding that higher tournament incentives lead to more resignations, combined with the previously documented finding of a positive relation between tournament incentives and firm performance (Kale, Reis, Venkateswaran (2009)) suggests that firms may design their promotion incentives based on the tradeoff between increasing effort and lowering retention.[4] Indeed, as noted by Lazear and Oyer (2007), one of the three important principals of tournament theory is that there is "an optimal (wage) spread".[5] Finally, a typical weakness often associated with tournament incentives is the possibility of collusion among employees or actions that could sabotage or disrupt the effort of more productive employees (e.g., Milgrom and Roberts (1992)). In finding a positive relation between tournament incentives and resignations of top managers, we offer another facet of "disincentives" potentially created by tournaments.

We also contribute to the literature on managerial turnover. Most prior studies in this literature focus either on CEO turnovers (e.g., Parrino (1997)) or on forced resignations (e.g., Fee and Hadlock (2004)). As opposed to research that examines forced managerial turnover, our analysis of voluntary resignations allows us to investigate aspects related to managerial retention. Our focus on executives other than the CEO underscores the significance of top management teams, rather than just the CEO.

The remainder of the study is organized as follows. In the next section, we discuss related literature and develop our main hypotheses. Section 3 contains a description of our data, sample,

[4] A recent study by Kale, Reis, and Venkateswaran (2009) provides evidence that a higher CEO-VP pay gap is indeed associated with higher firm performance.

[5] Their explanation for an optimal wage spread or tournament incentives is that beyond a threshold level, any additional compensation necessary compensate lower level employees to expend higher effort is greater than additional output thus generated. Our explanation for optimal spread is based on the tradeoff between increasing effort and decreasing resignations.

and empirical methodology. Section 4 contains a discussion of the results at the firm and individual executive levels. We discuss endogeneity corrections and other robustness tests in Section 5, followed by concluding remarks in the Section 6.

2. Background and Hypotheses Development

Output-based compensation is contingent on the value of the firm's equity and serves to align the interests of managers and shareholders (e.g., Jensen and Murphy (1990), Holmstrom (1979)). We call these equity-based incentives in a manager's compensation "alignment incentives." The case that equity-based compensation (or alignment incentives) aids in the retention of high-quality employees is easy to make.

While the expected relation between alignment incentives and managerial retention is relatively straightforward, the relation between tournament incentives and voluntary turnover is more subtle (Lazear (1999)). In a rank order tournament, managers below the CEO compete with each other for promotion to CEO (e.g., Lazear and Rosen (1981)) in which the best relative performer is promoted to the next level in the hierarchy, while the others are passed over. Tournament incentives are created in a firm by implicitly promising lower level managers a reward on promotion (Lazear and Rosen (1981)). The reward is typically measured using the compensation differentials between two successive levels in a firm and is meant to induce employees at the lower level of the corporate hierarchy to exert higher effort, and consequently improve firm performance.

These compensation differentials bring into play several aspects of a managers' incentives such as; (a) their pay gap in relation to the firm's CEO, and (b) the firm's CEO-VP pay gap relative to CEO-VP pay gaps in peer firms (c) the level of their compensation relative to other VPs in the firm (internal peers), and (d) the level of their compensation relative to VPs

outside the firm (external peers). The first two aspects ((a) and (b)) pertain to (relative) tournament incentives and enable us to examine the two competing hypotheses that relate tournament incentives and resignations; the expected future prize hypothesis vis-à-vis the inequity aversion hypothesis. The CEO-VP pay gap represents the promotion prize for the "winner" of the tournament and is an indication of the magnitude of additional compensation that a VP can expect to receive if promoted to CEO. The pay gap also provides a measure of the compensation disparity/inequality that exists among the top management. The two other aspects ((c) and (d)) serve two purposes; (i) they allow us to account for a VP's current compensation (mentioned above) and (ii) provide us with a measure of VP ability to address the question, "who leaves". Since the market has limited information regarding individual executives' effort (or ability), the relative compensation of a manager which is public information, is a credible signal of her ability (e.g., Bertrand and Schoar (2003), Lazear (1989)).

A different perspective on the relation between pay disparities and voluntary turnovers is based on research (e.g., Fehr and Schmidt (1999, 2003), Demougin and Fluet (2003) and Bolton and Ockenfels (2000)) which argues that economic agents are influenced by their payoff relative to other agents in a comparable group. In their theoretical framework Fehr and Schmidt (1999), introduce the notion of inequity aversion which suggests that if the wage spread is too high an agent may choose not to participate in a tournament or may require higher compensation to compensate for her disutility from the possibility of losing the promotion tournament. As a result, a very high wage spread may prompt the agent to pursue an alternate tournament by joining another firm with a lower wage spread. Essentially, inequity aversion implies that people resist inequitable outcomes; i.e., they are willing to give up some material payoff to move in the direction of more equitable outcomes.

Bolton and Ockenfels (2000) further assert that *own relative payoff*, a measure of how much a person's own pecuniary payoff compares with that of others motivates people. Thus, an executive's utility is influenced by how much they are paid relative to their competitors within their firm and/or within their industry. Moreover, agents may differ in the weights they place on their peers' compensation. For instance, all agents may take into account how much their peers are paid, but each agent may assign a different weight to this component in their utility function. At a general level, these theories of inequity aversion suggest that employees are discouraged by large pay disparities, a notion that is borne out by experimental evidence documented by Bartling, Fehr, Marechal, and Schunk (2009). At the very least these theories offer us a compelling argument to incorporate measures of relative managerial incentives in our analyses of their resignation decisions.

The extant literature described above leads to the following testable hypotheses. First, higher VP alignment should lead to lower VP resignations, while higher CEO alignment should be associated with higher VP resignations. Second, the relation between tournament incentives and resignations is ambiguous; the expected future compensation hypothesis predicts that higher CEO-VP pay gaps should lead to lower resignations whereas the inequity aversion hypothesis posits a positive relation between tournament incentives and VP resignations.

3. Data Sources, Sample Selection and Methodology

3.1. Data Sources and Turnover Sample Selection

Our sample contains all executives of S&P 500 firms in the ExecuComp database from 1993 to 2004 excluding financials and regulated utilities. We obtain about 3,000 observations for our main variable of interest, VP resignation, for these firms. As in Fee and Hadlock (2004), we

limit our analysis to S&P 500 firms, since we need to hand-collect information on the reasons associated with each of these resignations. For each firm-year in the sample, we classify the person identified as the Chief Executive Officer of the firm in ExecuComp (CEOANN = CEO) as the CEO, and classify all other executives as VPs. ExecuComp provides information on CEO- and VP-related variables necessary for our analysis for a relatively small fraction of executives. Therefore, we supplement information on these variables from several other sources that include firm proxy statements, *The International Directory of Company Histories, Marquis Who's Who Publication, Forbes Surveys*, newswires from the *Lexis-Nexis* database, and the *Standard and Poor's Register of Corporations, Directors, and Executives*. Our final sample has complete information on CEO/VP age, number and designation of VPs, and the reasons associated with VP departures.

If ExecuComp reports that a VP is with the same firm in the year following the sample year, we classify the VP-year as a non-turnover year (*VP Turnover* = 0).[6] If the VP does not appear with the firm in the subsequent year, *and* appears as an executive in another firm, we classify the VP-year as a turnover (*VP Turnover* = 1). If the VP appears neither with the firm nor with another firm in the subsequent year, it is likely that she either (i) stayed with the firm but her compensation details did not appear in the firm's proxy statement or, (ii) she left the firm.[7] For these VPs, we again use the sources described above as well as a broader search of the firm's website and other news articles to determine if there was a VP turnover. After this exercise, we assign each VP-year into a turnover or non-turnover with the indicator variable *VP Turnover*. Next, in all instances, where *VP Turnover* = 1, we classify the reasons for each turnover into one of eight categories as in Fee and Hadlock (2004), namely; (i) *Resign*, (ii) *Retirement*, (iii)

[6] A firm VP can appear either a VP or as the CEO in the following year. We classify either case as a non-turnover.
[7] Note that firms are required to disclose the compensation details only for the top 5 highest paid executives in any year.

Forced, (iv) *Merger/Acquisition*, (v) *Pursue Other Goals*, (vi) *Deceased*, (vii) *Planned*, and (viii) *Unknown*. Of these categories, *Resign* represents voluntary resignations.

Our final sample consists of 19,598 VP-year observations, which also aggregates into our firm-level sample of 3,919 firm-year observations. Table 1 reports summary statistics for VP turnover data. There are 2,956 VP turnovers of which 1,007 or 34% are voluntary resignations. The other significant category is "retirements", which has 1,162 observations constituting 39% of all turnovers. We are unable to classify 484 turnovers or 16% of the sample, for lack of information.

3.2 Voluntary Resignations

We conduct our analyses using a panel dataset at the firm-year level as well as at the VP-year level. For the firm-level analyses, we use two measures of voluntary resignations; (i) *MnRes* which is the fraction of VPs in a firm-year who left voluntarily (or the mean value of *Resign* for each firm-year, computed using the VP-level sample), and (ii) *DRes*, a dummy variable equal to one if the firm experiences at least one resignation during the year (if *Resign*=1 for *any* VP in the firm-year), and zero otherwise. For the VP-level analyses, we use the variable *Resign*; which equals one if the VP is classified as having resigned voluntarily and equals zero if there is no turnover (*VP Turnover* = 0).

3.3 Measures of Compensation-Based Incentives

An executive's total compensation is the sum of (i) short-term compensation in the form of salary, bonus, and other fixed annual payments, and (ii) long-term compensation in the form of stock and option grants, and other long-term incentive payouts. From the VP-level database, for each year in the sample we first compute, *VP ST Comp*, *VP LT Comp*, and *VP Tot Comp*, which is the short-term, long-term and total compensation, respectively, for each VP. We then

compute the median values of *VP ST Comp*, *VP LT Comp*, and *VP Tot Comp*, for each firm-year, and define these median values as *MDVP ST Comp*, *MDVP LT Comp,* and *MDVP Tot Comp*, respectively, for the firm-level database. Hereafter, we refer to *MDVP Comp* as a general term to represent the median values of VPs' *ST*, *LT*, and *Tot Comp* at the firm level. We also compute *CEO ST Comp*, *CEO LT Comp,* and *CEO Tot Comp*, which represent the three components of each CEO's compensation. In addition to annual compensation, many executives also have ownership in their firm's equity in the form of stocks and options. We follow the extant literature (e.g., Aggarwal and Samwick (2003) and Kale, Reis, and Venkateswaran (2009)) and define *Alignment* as the sum of stock and option sensitivities to a $100 change in shareholders' wealth, where;

Alignment = ((Number of shares held by the manager + delta of options * number of options held by the manager) / total number of shares outstanding) X 100.[8]

For each individual VP and CEO in our sample, we compute *VP Alignment* and *CEO Alignment* as described above. At the firm level we then define *MDVP Alignment* as the median value of *VP Alignment* for each firm-year. Note that the value of *CEO Alignment* is the same in the VP- and firm-level data.

We report summary statistics for all the above variables in Table 2; Panel A presents summary statistics for the CEO and Panel B for the median VP's compensation. The mean value of a CEO's total compensation is $7.43 million which is considerably higher than the average VP who is paid just over $2.0 million. Nearly 75% of a CEO's total compensation is in the form of

[8] We use the percentage of stock ownership at the beginning of the year to obtain the stock-based sensitivity of an executive's equity portfolio. For option holdings, we follow Murphy (1999), and determine an average exercise price for all previously granted options based on their year-end intrinsic value. We treat all option holdings as a single grant with a five-year time to maturity and obtain the risk-free rate from the five-year treasury bills constant maturity series. We compute the average delta of prior option grants using the modified Black-Scholes formula. For complete details of the procedure we use, see Kale, Reis, and Venkateswaran (2009).

long-term component, while the proportion of long-term compensation for VPs is about 60% of their total compensation. The mean (median) value for *CEO Alignment* is $2.22 ($0.67) per $100 of shareholders' equity, while the corresponding value for *MDVP Alignment* is considerably lower and equal to $0.14 (0.09).

3.4. Measures of Compensation and Tournament Incentives

We construct variables to capture the four aspects of VPs' incentives mentioned previously in Section 2; the CEO-VP pay gap, the pay gap with respect to external peers, and their compensation relative to internal and external peers. First, we compute the difference between the compensation of the CEO and VPs' in any sample year (e.g., Bognanno (2001) and Kale, Reis, and Venkateswaran (2009)). We compute three versions of this gap variable; *Tot Gap* based on total compensation, *ST Gap* based only on short-term compensation, and *LT Gap* based only on long-term compensation. The firm-level variable, *MDVP Tot Gap* equals *CEO Tot Comp* minus *MDVP Tot Comp*; *MDVP ST Gap* and *MDVP LT Gap* are defined in an analogous manner. For use as an external benchmark, we compute *MD SizeQ Tot Gap* which is the median value of *MDVP Tot Gap* for all firms in the same size quartile (by sales) for each year; the benchmarks for *ST* and *LT* are computed in a similar manner.

We then construct *relative* variables that measure how a firm's (or VPs') incentives stack up against other benchmark firms. At the firm level, the relative incentive measures for firm *j* in year *t* are defined as follows;

$$Relative\ \{X_{jt}\} = [X_{jt} - Minimum\ \{X_{jt}\}] \,/\, [Maximum\ \{X_{jt}\} - Minimum\ \{X_{jt}\}],$$

where X_{jt} is one of the incentive variables. The *Maximum* and *Minimum* values for X_{jt} are computed over all firms in the same size quartile and sample year.[9] For example,

[9] Since our attention is limited to S&P 500 firms, we treat all firms in our sample as if they belong to one industry, namely the S&P 500. Our external peer group therefore consists of all firms of similar size.

Relative MDVP Tot Gap$_{jt}$ = [*MDVP Tot Gap*$_{jt}$ – *Minimum* {*MDVP Tot Gap*$_{jt}$}] / [*Maximum* {*MDVP Tot Gap*$_{jt}$} – *Minimum* {*MDVP Tot Gap*$_{jt}$}]

Note that the highest value of *Relative* {X_{jt}} is equal to 1 and the lowest equal to 0. The *Relative variables* allows us to (i) normalize the incentive measures between 0 and 1, (ii) preserve information on the relative magnitude of each firm's incentives, and (iii) include the incentives of VPs in peer firms.

The data on individual VP compensation (e.g., *VP Tot Comp*) and individual CEO-VP pay gaps (e.g., *Tot Gap*) enable us to compute two measures of relative compensation for the VP-level analysis; (i) *Relative Int Comp* which measures the VP's compensation relative to other VPs in the her own firm, and (ii) *Relative Ext Comp* which measures the VP's compensation relative to VPs in other firms of similar size. For example, *Relative Int Comp* for VP *i* in firm *j* and year *t* is:

Relative Int {X_{ijt}} = [X_{ijt} – *Minimum* {X_{ijt}}] / [*Maximum* {X_{ijt}} – *Minimum* {X_{ijt}}],

where *Maximum* {X_{ijt}} and *Minimum* {X_{ijt}} are the maximum and minimum values of compensation variable X_{ijt} for all VPs *within the same* firm-year. We compute *Relative Ext* {X_{ijt}} for VP *i* in firm *j* and year *t* in a similar manner; however, *Maximum* {X_{ijt}} and *Minimum* {X_{ijt}} are based on the maximum and minimum values of variable X_{ijt} for all VPs *across all firms* in the same size quartile and sample year.[10]

The pay gaps between the CEO and firm VPs represent one aspect of tournament incentives. In addition, we compute the *Gini coefficient*, an overall measure of pay disparity among the top management in a firm (including the CEO).[11] We present the formal definition of

[10] Note, that since we have a measure of relative internal compensation, we only need the relative external measure of the pay-gap. A measure of the relative internal pay gap would be perfectly negatively related to the relative internal compensation measure.

[11] See Kale, Reis, and Venkateswaran (2009) for a discussion of the *Gini coefficient.*

the *Gini coefficient* in the *Data Appendix*. The *Gini coefficient* is a firm-level variable that is bounded between zero and one and its higher values correspond to greater pay inequalities. As with pay gaps, we compute *Relative Gini Tot*, a measure of the relative level of pay disparity between firms in the same size quartile and year.

We present summary statistics for the tournament variables in Panel C of Table 2. The mean (median) value for the gap in long-term compensation is $4.13 ($1.83) million, which is considerably higher than the gap in short-term compensation which has a mean (median) value of $1.23 ($0.93) million.[12] The average CEO-VP gap in total compensation is $5.37 million. As reported in Panel C, the mean (median) value of the *Gini coefficient Total Comp* is 0.35 (0.34).

3.5 Relation among the Incentive Measures

We present pair wise correlations for our incentive measures in Table 3. The correlations among all the measures of pay disparity, i.e., *Gini coefficients* and the relative measures of pay gap are positive. Thus the data support the notion that that higher tournament incentives generally lead to higher pay inequalities. The correlation between CEO and VP alignment is positive and equal to 0.1296. Almost all reported correlations are significant at the five percent or better.

3.6 Other Variables

We include several variables at the firm-, industry-, CEO-, and VP- levels to account for factors that may also influence our main variable of interest – resignations. Summary statistics for these variables are reported in Table 4. *CEO Age* is the age of the CEO as of the sample year. The median CEO is our sample is 56 years old and has been the CEO of the firm for five years.

[12] These figures are based on the median gaps, i.e. the gap between the CEO's and the median VP's compensation.

The average value for *Median VP age* is 52 years.[13] We construct a dummy variable *Chair*, which equals one if the CEO is also Chair of the board, and zero otherwise. The indicator variable *CEO Turnover* equals one if the firm has a new CEO in the sample year, and zero otherwise. Seventy eight percent of all CEOs in our sample also hold the position Chair of the board and 11% of all firm-years have a CEO turnover.

As in Kale, Reis, and Venkateswaran (2009), we define *Succession Plan* at the firm level as a dummy variable that equals one if either of the following two conditions is satisfied: (i) the firm has a VP whose title is either President or Chief Operating Officer and who is not the Chair, (ii) the difference in short-term compensation between the CEO and the next-highest paid VP is less than 10% *and* the compensation of the highest paid VP is at least 20% greater than the second highest paid VP. Fifty four percent of all firms-years have a designated successor. In the VP-level analysis, we use *VP Succession*, which is a discrete variable that can take three values; one if the VP is the designated successor, two if the VP is in a firm with no succession plan, and three if the VP is *not* the designated successor in a firm that has a succession plan as defined above. We conjecture that the likelihood of VP resignation is the least for a designated successor and the most for a non-successor in a firm with a designated successor. Thus, the variable *VP Succession* measures a VP's resignation probability monotonically. The mean (median) value for *VP succession* is 2.37 (2.00), indicating that most VPs in the sample are non-successors.

To account for firm performance and risk, we use the return on assets (*ROA*) defined as the ratio of the firm's net income to total assets and *Stk. Return Volatility* which is the variance of the firm's monthly stock returns over the 60-month period prior to the sample year. *Firm Size* is the natural log of the firm's total assets. . We follow Parrino (1997) and construct the variable

[13] In our sample, *CEO Age* is available for all CEOs but information on age is missing for about 25% of the VP sample. In these cases, we replace the VP's age with the median age of other VPs in the sample for that year.

Industry Homogeneity, to measure the similarity between firms within an industry after isolating market effects.[14] Finally, we control for competition among firms in an industry and define *Concentration* which is the sales-based herfindahl index for each 2-digit SIC industry. The variable *Number of VPs* is a count of all non-CEO executives for each firm-year in the sample.

4. Discussion of Results

We estimate the following general regression specification in our firm-level analysis;

$$Resign_{it} = \beta_0 + \beta_1 Tournament + \beta_2 Relative Compensation + \beta_3 CEO\ Alignment + \beta_4 Median VP\ Alignment + \beta_5 CEO\ Turnover + \beta_6 Succession Plan + \beta_7 Log\ (CEO\ Age) + \beta_8 Log\ (Median VP\ Age) + \beta_9 Chair + \beta_{10} Lag\ ROA + \beta_{11} Firm\ Size + \beta_{12} Stk.Ret.\ Volatility + \beta_{13} Industry Homogeneity + \beta_{14} Concentration + year\ dummies + \varepsilon_{it}$$

The choice of dependent variables for the firm-level regressions depends on the estimation model we use. In the probit specification, we use *DRes*, a dummy variable that equals one in the year when there is any VP resignation in the firm and zero otherwise. As a robustness check we also use a fixed-effects logit model and a poisson specification with *DRes* and *NRes* as the dependent variables, respectively, where *NRes* is the total number of VP resignations in any firm-year. We discuss unreported results pertaining to these specifications in the robustness section. Both *DRes* and *NRes* have limitations. While *DRes* treats all firms with one or more resignations as identical, *NRes* may be influenced by the varying number of executives for each firm as reported in ExecuComp.

[14] First, we assign firms in the *CRSP* monthly returns file to their respective 4-digit historical SIC industry code (obtained from Compustat data item 324 or DNUM if data 324 is missing) and then regress each firm's prior 60 monthly returns on an equally weighted monthly industry index and the market return. For each firm, we then compute the partial correlation coefficient between the firm's returns and the industry index while holding market returns constant. *Industry Homogeneity* is the average partial correlation coefficient for all firms within an industry. We use a 5-year rolling estimation period for each year in the sample.

To mitigate the limitations of *DRes* and obtain an additional perspective on firm level resignations we compute the variable *MnRes*; the number of resignations as a fraction of the total number of VPs in the firm and use this as an additional dependent variable. Since the dependent variable *MnRes* is a discrete fraction between zero and one, we estimate a *fractional logit* model. The common practice when the response variable is a fraction is to transform the dependent variable using a log odds transformation where the dependent variable, y, is transformed to log(y/(1-y)). However, this transformation is ad hoc and does not allow extreme values of zero and one. Papke and Wooldridge (1996, 2008) show that when the response variable is a discrete fraction between zero and one (such as *MnRes*), linear models cannot guarantee the predicted values to lie in the unit interval (0,1) and the fractional logit model is the appropriate model. In addition to being robust and efficient, the fractional logit model allows for estimation even in the presence of extreme values.[15] The standard errors in all our analyses are fully robust and bootstrapped using 100 replications.[16] All our specifications contain year dummies.

4.1 Firm-level Results with Total Incentive Measures

Table 5 presents results from the effect of incentives on resignations at the firm-level. The first two columns report results based on relative CEO-VP pay gaps followed by the relative *Gini coefficient* in the last two columns. In each of these specifications we also include the incentive measures for CEO and VPs' alignment. The first column in each set use a probit specification with *DRes* as the dependent variable while the second column uses *MnRes* as the dependent variable and employs a fractional logit specification.

First, the coefficient estimate on *Relative MDVP Tot Gap* is positive and statistically

[15] See Loudermilk (2007) for another application of the fractional logit model to firm dividend payouts.
[16] Papke and Wooldridge (2008) note that it is appropriate to bootstrap standard errors in binary and fractional response models.

significant coefficient in both specifications. Recall that we have two competing hypotheses on the relation between tournament incentives and resignations; the expected future compensation hypothesis which predicts a negative relation and the inequity aversion hypothesis which predicts a positive relation. A higher value of *Relative* CEO-VP pay gap implies that the firm offers a larger tournament prize for the CEO's job but also creates greater pay disparity. Thus, the positive and statistically significant coefficient on the variable *Relative MDVP Tot Gap* implies that managers' likelihood of resigning increases with higher pay disparities. We interpret this as evidence consistent with the effect of inequity aversion dominating the effect due to a larger promotion prize. The dominance of the inequity aversion hypothesis is further supported by the positive and statistically significant (*t*-values = 8.02 and 5.97) coefficient estimates on *Relative Tot Gini* in the last two specifications. Since the *Gini coefficient* is a more direct measure of pay inequality among the top management team which includes the CEO and the VPs, these results reinforce the finding that higher compensation inequalities lead to higher voluntary departures.[17]

Next, the sign on *Relative MDVP Tot Comp* is significantly negative, implying that firms which underpay their managers (or poor paymasters) relative to the benchmark are more likely to lose managers. Consistent with the findings of Balsam and Miharjo (2007), the coefficient on *VP Alignment* is negative and statistically significant at the one percent level in all six specifications, which supports the argument that a higher level of ownership in firm-specific equity essentially "ties" the manager to a firm. The effect of *CEO Alignment* on resignations is positive but statistically significant at conventional levels in only one out of the four specifications, which offers some support for the idea that higher CEO alignment is associated with lower promotion probabilities and therefore higher VP resignations. These findings are significantly stronger in

[17] Since the *Gini coefficient* is scale (or level of compensation) invariant, we do not need to control for the level of compensation in the last two specifications.

our VP level analysis, discussed in the next section.

We also find that firms with older VPs or older CEOs are less likely to experience a high voluntary turnover among VPs; the coefficient on *Log* (*CEO Age*) and *Log* (*MDVP Age*) is negative and statistically significant at the five percent level or better in all models. One possible explanation is that older VPs are more risk-averse and less likely to leave voluntarily. CEO turnover years are associated with higher resignation of VPs, consistent with top management moving as a team (Hayes, Oyer, Schaefer (2005)). We find weak evidence for a positive association between firms with a succession plan and higher voluntary departures. Better performing firms (higher *ROA*) tend to have lower levels of resignations, while riskier firms are associated with higher resignations. The negative coefficient on *Industry Homogeneity* indicates that industries with higher commonality among their firms have lower levels of VP resignations. This result contrasts with the finding for CEOs; CEO turnover is more likely in homogenous industries (Parrino (1997)).

4.2 Results from VP-Level Analysis of Managerial Turnover

We next conduct analysis at the VP level that allows us to account for heterogeneity among firm VP incentives. We capture heterogeneity among firm VPs by the variable *Relative Int Tot Comp*, which is the VP's compensation relative to the compensation of other VPs *within* the firm. Thus, when *Relative Int Tot Comp* equals one (zero), it indicates that the VP is the highest (lowest) paid VP in the firm. The dependent variable in all these specifications is *Resign*, which equals one if the VP voluntarily resigned from the firm during the year and zero for those who remained with the firm. Our sample at the individual VP- level analyses consists of 19,598 VP-year observations.

Table 6 presents our results on the relation between total incentives and *Resign*. The first

model in the table reports results with *Log* (*Tot Gap*), the individual CEO-VP pay gap and *Log* (*MD Size Q Tot Gap*) which measures the benchmark pay gap. The variable *Log* (*Tot Comp*) measures each VP's total compensation. In the next three specifications we use *Relative Tot Gap*, the individual CEO-VP pay gap relative to all other VPs in firms of the same size quartile, to measure tournament incentives. In these specifications we include combinations of *Relative Ext Tot Comp and Relative Int Tot Comp*. In all specifications, we include a control for the level of average VP pay in the firm (*Log* (*MDVP Tot Comp*) to indicate how well the firm pays its VPs on average. We estimate all specifications using a logit model.[18]

First, we find that the likelihood of resignation increases with the CEO-VP pay gap, but decreases with the benchmark CEO-VP pay gap. The positive estimate on *Log* (*Tot Gap*) (=0.104) is statistically significant at the one percent level and the estimate on *Log* (*MD SizeQ Tot Gap*) is negative (-0.354) and significant at the five percent level. This result is consistent with the firm-level result; higher individual (or firm) pay gaps lead to higher resignations, while higher pay gaps for peers lead to lower resignations. The findings are supported by the results from the next three models. The coefficient estimate on *Relative Tot Gap* is positive and statistically significant at the five percent level or better in all three models.

We also find that higher paid VPs are more likely to resign, as indicated by the estimate on *Log* (*Tot Comp*) which is equal to 0.615 (Model 1) and significant at the one percent level.[19] The equivalent relative variables, *Relative Int Tot Comp* and *Relative Ext Tot Comp*, are also positive and significant at the one percent level in the next three specifications. Thus, managers who are higher up in the internal or external compensation hierarchy are more likely to resign. If

[18] We also use a probit model in robustness tests and find similar results.
[19] Note that in these analyses, we control for the level of VP pay. Therefore, any increase in the gap is possible only from higher CEO compensation. This implies that higher gaps clearly imply higher tournament prizes and not underpaid VPs.

compensation serves as a signal of one's ability then higher ability managers are more likely to resign possibly because they have better outside opportunities, consistent with the "Play me or trade me" explanation in Lazear (1999). Thus, better managers may prefer to exit the tournament in favor of "greener pastures". Since the pay gap (and the level of average pay in the firm) is held constant, these findings do not contradict the dominance of the inequity aversion findings. Further inequity aversion does not suggest that *only* those who are disadvantaged by pay inequalities will be candidates for resignation.[20] As in the firm-level analysis, *VP Alignment* is negative and statistically significant at the one percent level, suggesting that equity ownership acts a deterrent for resignations. Further, as hypothesized, we find a positive and significant relation between *CEO Alignment* and likelihood of resignation for individual VPs. We interpret this as a support for the argument that higher CEO alignment is associated with a lower likelihood of an imminent promotion for incumbent VPs, which makes the tournament prize less valuable.

In summary, these results suggest that higher pay disparities lead to higher resignations and higher paid (or more able) managers are more likely to resign. Based on our evidence, the disincentive from greater pay inequality dominates the benefit of a higher promotion prize; managers appear to be inequity averse and are more likely to separate from firms with lower "equitable" compensation among its management team.

The remaining results by and large corroborate our findings at the firm level. There is a higher likelihood of a VP's resignation in any year when there is a CEO turnover which is consistent with top management moving as a team (e.g., Hayes, Oyer and Schaefer (2005)). The positive and statistically significant coefficient of *VP Succession* is consistent with the likelihood

[20] See Bartling, Fehr, Marechal, and Schunk (2009) for a discussion of "aheadness aversion" (aversion to positive payoff inequality) and "behindness aversion" (aversion to negative payoff inequality).

of resignation being positively related to an increased probability of winning the promotion tournament for the CEO's position. Thus, designated successors (*VP Succession* = 1) are least likely to leave and non-successors in a firm with a designated successor (*VP Succession* = 3) are most likely to leave. VPs in better performing firms are less likely to resign, while those in riskier firms are more likely to resign. Finally, VPs in more homogeneous and more competitive industries (less concentrated) are less likely to voluntarily leave.

5. Additional Tests and Robustness Checks

In this section we discuss some addition tests and robustness checks including corrections for potential endogeneity between incentive measures and resignations.

5.1. Firm-level Results with Short-term and Long-Term Incentive Measures

We re-estimate the specifications in Table 5 but replace incentive measures based on total compensation with their short-term (ST) and long-term (LT) components, and report results in Table 7. The results from these tests are in line with the observed high correlation between total and long-term tournament incentives (see Table 3). With relative ST and LT pay gap measures, reported in the first two specifications, the expected positive association between relative long-term pay gaps and resignations is statistically significant at the five percent level. The estimates on relative short-term pay gaps are positive in both models, but statistically significant with *DRes* as the dependent variable. As with total compensation, larger pay disparities increases the resignation probabilities of top executives. These results offer additional support for the dominance of the inequity aversion effect over the expected future prize hypothesis; especially for inequality in long-term compensation. These findings are further substantiated in the next two models, with pay disparities measured using relative *Gini coefficient* (ST and LT). Again, compensation inequality is generally positively associated with resignations but appears to be

driven more by inequality in long-term compensation; the coefficient estimates on *Relative LT Gini* in both specifications are larger in magnitude than the estimates on *Relative ST Gini*. As with total incentives, firms that underpay their managers relative to the benchmark are more likely to experience resignations.

Consistent with our hypothesis and earlier findings, the coefficient on *Median VP Alignment* is significantly negative in all specifications. The signs on the other variables are generally similar to those we find in the earlier analysis. Resignations are generally positively associated with CEO turnover events and higher in firms with a succession plan. Firms with Older CEOs and older VPs are associated with lower voluntary VP turnovers. The likelihood of resignations is lower in well performance firms and is higher in riskier firms.

5.2 VP-level Results with Short-term and Long-Term Incentive Measures

Next, we re-examine the results in Table 6, by replacing all the total compensation and tournament incentive measures with their long-term and short-term components and present our findings in Table 8. As before, the relation between pay disparities in total compensation and *Resign* appear to be largely driven by the long-term component of tournament incentives. Thus, the coefficient estimates on *Log* (*LT Gap*) and *Relative LT Gap* are positive and statistically significant. The estimates on *Log (LT Comp)* (Model 1) and its corresponding relative measure, *Relative Int ST Comp* (Models 3 and 4) are significantly positive. Likewise, *Relative Ext LT Comp* is positive and significant in both models 2 and 4. The relation between all the other variables and resignation is generally consistent with the findings using measures of total incentives. *VP Alignment* continues to be negative and statistically significant in all specifications. The results for the other variables are generally consistent with those documented earlier.

5.3 Addressing Endogeneity

It is possible that our model specifications do not take into account the effect of a time-varying omitted variable which affects VP compensation as well as the propensity to resign. For instance, managerial ability is unknown and may change over time. As the board learns more about managerial ability, it may adjust their compensation. On the other hand, as managerial ability increases it could lead to improved prospects for finding better outside employment, and influence resignation probabilities. To account for the endogeneity resulting from such variation we use a two-stage analysis. For the firm-level analysis, we use a two-stage methodology and replicate all our results with *MnRes* as the dependent variable. The methodology is based on Papke and Wooldridge (2008) and uses OLS estimations in the first stage and a fractional probit model in the second stage. Another potential source of endogeneity is reverse causality whereby firms may "set" a pay gap based on an anticipated/acceptable level of turnover. However, by using instruments for the endogenous variables (we treat all incentive measures as endogenous) in the two-stage analysis, we eliminate any potential effects of turnover on incentive variables. We present the results in Tables 9 for firm-level and in Table 10 for the VP-level.

Our list of endogenous variables at the firm level include *Log (MDVP Tot Gap)*, *Relative MDVP Tot Gap*, *Relative MDVP Tot Comp*, *Log (MDVP Tot Comp)*, *Relative Tot Gini*, *CEO Alignment*, and *MDVP Alignment*. We also treat the short-term and long-term components of these variables as endogenous. The set of instruments we use in the first stage is drawn from a set of variables which include the lagged value of each of the pay gap, compensation, relative pay gap, and relative compensation measures. The set also includes variables for the median value by size quartile for *CEO Alignment*, *VP Alignment*, and the Gini coefficient measures.

The first two columns in Table 9 present results with pay gaps, relative pay gaps, and the

Gini coefficient as measures of tournament incentives, respectively. For each of these three measures, we report results from the second stage for total incentives, followed by a combination of short-term and long-term incentives. The coefficients on the benchmark firm's total gap, remains negative and significant as before and the estimates on relative total gap as well as the relative total gini remain positive and statistically significant. The results with the short-term and long-term components also reflect our earlier findings. *Relative MDVP Tot Comp* is negative and significant indicating that firms that underpay their managers are more likely to lose them.

Table 10 presents results from a similar analysis using VP level data for four specifications. In the first two models, we report the second stage of a two-stage probit least squares with pay gaps as the measure of tournament incentives and in the next two models, we use relative pay gaps. All the results are generally identical to the specifications with the earlier specifications, reported in Table 7. Higher CEO-VP pay gaps and higher relative pay gaps lead to higher resignations. Higher compensation and higher relative internal compensation lead to greater resignations.

5.4 Other Robustness Checks

In addition to endogeneity corrections, we conduct several other robustness tests. For space considerations, we do not report the findings from these tests in a table. First, we replace the relative pay gap with the dollar value of the difference in the pay gap between the firm's pay gap and the median pay gap of all firms in the same size quartile. Thus, the relative pay gap in this case is a dollar amount where the median firm in the same size quartile has a value equal to zero. All our results are qualitatively similar at the firm level as well as at the VP level. Second, we re-estimate all our probit regressions at the firm level using a fixed-effects logit regression. We also used a poisson specification with *NRes* as the dependent variable, where *NRes* is the

total number of VP resignations in any firm-year. We find that the results are generally robust to these two specifications as well. We also use the actual compensation less the benchmark compensation in the analysis instead of relative compensation measures and find that the results are generally consistent with the earlier findings. Third, we replace *Relative* gap and compensation variables with *CDF* gap and compensation respectively, where the *CDF* is the normalized rank of the respective variable among a set of peers. For instance, the equivalent for *Relative Tot Gap* is *CDF Tot Gap*, which is the cumulative density function or the rank of each VP's total compensation among all VPs in the same size quartile divided by the number of VPs in the same size quartile. Our results are generally robust to this alternate measure of incentives. Finally, we include all observations where there is a VP turnover for reasons other than resignations (1,949 obs.) and find that all our results remain almost identical.

5.5 *Some Findings on where VPs go after Resigning*

We are able to locate many of the resigning VPs in our sample in their subsequent jobs. We search for the firm that the resigning VPs in our sample may have subsequently joined using all the data sources described previously and searching news articles in the *LexisNexis* database. Of the 1,007 VP resignations in our original sample, we are able to locate 416 VPs in publicly traded firms. The remaining 591 resigning VPs either joined private firms (approximately 50%) or do not appear in our sources and; in either case, we are unable to obtain the necessary data for these VPs or their firms. Of the 416 identifiable moves to public firms, we obtain reliable data on their first full year of service in the new firm for 300 VPs, since data for the remaining 116 firms is unavailable in Compustat.[21] We conduct univariate analysis of pre- and post- resignation

[21] Compustat data on the firm-year is available for 222 out of the 300 VPs. For the remaining 78, we assume that the first full year is within two years from the actual joining date and obtained from news articles. The assumption is

variables for these 300 executives and present the findings in Table 11.

In Panel A of Table 11, we find that 120 (40%) VPs assume the position of CEO in their new firm. Of these, approximately 20% (25) move to firms in the same 2-digit SIC industry, while the remaining 80% (95) move to firms outside their main industry. The split between moves within and outside the industry is similar for the 180 VPs who do not become the CEO. A comparison of moves to smaller firms versus larger firms (based on book value of total assets pre- and post- resignations) indicates that nearly 75% of the VPs move to smaller firms. The proportion of moves to smaller firms is greater for those who become CEOs; with 109 out of the 120 moving to a smaller firm. Only a small fraction (11 moves or 3.7%) of resigning VPs become the CEO in a larger firm. Of the 300 Moves, nearly 20% held the title of *President* in their pre-turnover firm. In the post turnover analysis, we find that this number nearly doubled with about 37% of VPs who held the title of *President*. Since, the *President* title largely determines who is a designated successor these findings imply that many non-successors possibly become successors. For the more relevant sub-sample of non-CEOs, the increase is similar.

Next, we examine the compensation rank of these 300 VPs in their *previous firm* to better understand "who moves". A compensation rank of 1 (2) indicates that the VP is the highest (second highest) paid in her firm during her last year with the firm. The mean (median) compensation ranks for each category are reported in the column next to the respective number of moves in Panel A of Table 11. The last column represents $t(z)$ statistics for the difference between the mean (median) compensation rank between those who become the CEO and those who do not. Overall, we find that the mean (median) compensation rank for those who become

made since Compustat data is unavailable for the actual first year. Our results are almost identical when we use only the 222 firms instead of 300.

the CEO is 2.78 (2.00) while the corresponding rank for those who continue as VPs is 3.34 (4.00). Thus, on average, the second highest paid VPs assume CEO positions, while the fourth highest paid continue as VPs. These differences are statistically significant at the one percent level. The finding that higher paid VPs become CEOs bears out our earlier conjecture that "more able" managers are more likely to resign, because they have better employment prospects. We also find that VPs who move within the industry are higher up in the compensation rank (mean = 2.78 median =2.50) than those who move to firms outside the industry (mean=3.2 median=3.00); this pattern exists whether the VP becomes the CEO or remains a VP in the new firm. A managers who revealed to be of higher ability in the present job, should be more valuable to other firms in the same industry. Therefore, the finding that higher compensation ranks are associated with moves within the industry supports the view that compensation is a signal of ability. There is no statistically significant difference in the pre-move compensation rank between moves to smaller or larger firms. However the few (11 out of 120) VPs who become CEOs in larger firms are more highly paid in their previous jobs.

We also examine the 352 VPs in our sample who became CEOs in their own firm (internal promotions). The mean (median) compensation rank for these VPs in the year prior their promotion to CEO is 1.9 (1.0). This finding is consistent with our argument above that higher pay indicates higher ability. Further, it also confirms that the best relative performer is promoted in a rank order tournament setting. Finally, about 60% of these internal promotions were classified as designated successors which validate the construction of our succession variable.

In Panel B of Table 11, we examine a further breakup of larger versus smaller firms by dividing the firms in four quartiles for each of the two categories. For smaller firms, we denote

the four quartiles from quartile -4 through quartile -1. Here, quartile -4 represents firms which are at least less that 75% in size of the pre-turnover firm. Likewise, quartile 4 represents firms which are at least 75% larger in size than the pre-turnover firm. Nearly half (140 moves) of all moves are to firms that are no greater than 25% of the size (Quartile -4) of the pre-turnover firm and another 17% (47 moves) are to firms that are at least 75% larger than the pre-turnover firm (Quartile 4). Thus, nearly two-thirds of all moves are either to a significantly smaller or significantly larger firm. The highest number of moves is to firms that are in quartile -4 and in a different industry as the CEO and accounts for 21% (63 moves) of all moves. The next highest number of moves is 51 (17%) and represents those who move to quartile 4 in a different industry and continue as a VP. Since smaller firms potentially represent lower tournament incentives, these results are consistent with inequity aversion and support our earlier findings which document a positive relation between relative pay gap / pay disparity and resignation.

6. Conclusion

While prior research has documented the effort enhancing role of incentives, an important aspect of managerial incentives, their effect on managerial retention has received scant attention from researchers. Oftentimes practitioners and the popular press weigh in on the importance of managerial talent retention. We examine the effect of managerial incentives on voluntary managerial turnover. Our analyses is based on a unique dataset that comprises details on the turnover of approximately 3,000 executives other the CEO in S&P 500 firms, a third of whom voluntarily resigned from their firms.

We find that after accounting for the level of managerial pay, firms that have a higher inequality in their managerial compensation are more likely to experience higher resignations. Alternately, after controlling for the pay inequality, managers who are relatively higher up in the

compensation hierarchy (relative either to firm- or external- peers) are more likely to resign. These findings suggest that managers are less likely to retain their managers if; (i) the pay inequality in their firm is high or (ii) if some managers of higher ability leave, possibly seeking greener pastures (although we do not verify that claim). Further, managers who have a higher equity ownership in the firm are less likely to resign, suggesting that higher equity ownership may constrain managers from resigning. Finally, we find that designated successors, managers in well performing firms, older managers, or those in homogeneous and more competitive industries, are less likely to resign. Managerial resignation is more likely in years where the firm has a change of CEO.

Our study has several important implications. Providing long-term incentive based compensation aligns managerial incentives and precludes managers from resigning but is costly for shareholders. Promotion based incentives on the other hand provide incentives for effort enhancement by creating competition among peers. Firms can use some of our findings to design executive compensation policies keeping in view the tradeoff between the effort enhancing role vis-à-vis the retention role of incentive compensation.

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Appendix: Data Sources and Definitions

This Appendix defines the variables used in the study.

Variable	Source	Definition
Compensation and Alignment		
Short-term Comp (ST Comp)	ExecuComp	Salary + Bonus + Other annual payments
Long-term Compensation (LT Comp)	ExecuComp	Restricted stock grants + Options granted + Long-term incentive payouts + Total other annual payments
Total Compensation (Tot Comp)	ExecuComp	Short-term compensation + Long-term compensation
MDVP Tot Comp	ExecuComp	Tot Comp of median VP in firm.
MD SizeQ Tot Comp	ExecuComp	MDVP Tot Comp of median firm in same size quartile and year.
Relative MDVP Tot Comp (Firm level)	ExecuComp	(MDVP Tot Comp - Minimum value of MDVP Tot Comp in same size quartile and year) / (Maximum value of MDVP Tot Comp - Minimum value of MDVP Tot Comp in same size quartile and year)
CEO Alignment (per $100)	ExecuComp	(Shares owned at the beginning of the year + Average delta of prior option grants * # of options) / Number of shares outstanding *100.
VP Alignment (per $100 of SH equity)	ExecuComp	(Shares owned at the beginning of the year + Average delta of prior option grants * # of options) / Number of shares outstanding *100 (median Value for all VPs in a firm-year)
Note: For ST and LT versions of all variables, replace Tot with ST or LT respectively.		
Tournament Variables		
MDVP Tot Gap (Firm level)	ExecuComp	CEO's Total Comp – Median VP's Total Comp
Relative MDVP Tot Gap (Firm level)	ExecuComp	(MDVP Tot Gap - Minimum value of MDVP Tot Gap in same size quartile and year) / (Maximum value of MDVP Tot Gap - Minimum value of MDVP Tot Gap in same size quartile and year)
Gini Coefficient (Tot)	ExecuComp	$1+\frac{1}{n}-\frac{2}{n^2\bar{y}}\left(y_1+2y_2+....ny_n\right)$ where y_i is the Total Comp (ST Comp., LT Comp) of all managers in decreasing order of amount
Relative Tot Gini (Firm level)		(Gini coefficient (Tot) - Minimum value of Gini coefficient in same size quartile and year) / (Maximum value of Gini coefficient - Minimum value of Gini coefficient in same size quartile and year)
CDF Tot Gap	ExecuComp	(Rank of firm's MDVP Tot Gap (by year and size quartile) minus 1) / (Number of firms minus 1) in same size quartile and year.
Note: For ST and LT versions of all variables, replace Tot with ST or LT respectively.		

Continued

Data Appendix (Continued)

Other Variables		
ROA	ExecuComp	Return on assets
Industry Homogeneity	CRSP	Mean Partial correlation between firm's returns and an equally weighted industry index, for all firms in the same 2-digit SIC industry code, holding market return constant (see Kale, Reis, and Venkateswaran (2009). Estimated based on 60 monthly returns prior to sample year
Chair	ExecuComp	Dummy = 1 if CEO is also Chair, 0 otherwise
Succession Plan	ExecuComp	Dummy = 1 if any VP is either President or COO but not Chair, *or* (CEO's ST Comp is at most 10% more than highest paid VP *and* highest paid VP's ST Comp is at least 20% more than next highest paid VP), 0 otherwise
VP Succession	ExecuComp	Value=1 if VP is successor, 2 if firm does not have a *Succession Plan*, and 3 if VP is non successor in a firm with *Succession Plan*
No. of VPs	ExecuComp	Number of VPs in a firm-year as reported in ExecuComp
CEO Age (VP Age)	ExecuComp, Proxies, Other	Age of CEO (VP) in sample year
Firm Size	COMPUSTAT	Log (Sales)
Stk. Return Volatility	CRSP	Variance of 60 monthly returns preceding sample year
Concentration	Compustat	Herfindahl Index computed using all firms in the same 2-digit SIC.

Table 1: Summary Statistics for VP Turnover

The table presents details on voluntary VP turnover. There are 2,956 VP turnovers in our sample period which is from 1993 to 2004. Data sources include *Proxy statements, the International Directory of Company Histories, Marquis Who's Who publication, Forbes Surveys*, and the *Standard and Poor's Register of Corporations, Directors, and Executives.* All reasons are classified based on information obtained from reading the relevant reason for departure described in one or more of the above sources.

VP Turnover Reasons	*Number*	*Mean*	*% of VP Turnover*
Total VP Turnovers	2,956	0.136	100.00%
Resignation	*1,007*	*0.046*	*34.07%*
Retirement	*1,162*	*0.053*	*39.31%*
Forced	*112*	*0.005*	*3.79%*
Merger/Acquisition	*121*	*0.006*	*4.09%*
Pursue Other goals	*34*	*0.002*	*1.15%*
Deceased	*28*	*0.001*	*0.95%*
Planned	*8*	*0.000*	*0.27%*
Unknown	*484*	*0.022*	*16.37%*

Table 2: Summary Statistics for Compensation and Incentive Measures

Panels A and B in the table presents summary statistics for compensation of the Chief Executive Officer (CEO) and VPs in the firm-year as listed by ExecuComp. The sample period is from 1993 through 2004 and contains 3,919 firm-year observations. S*hort-term compensation* is the sum of salary, bonus, and other annual payments in any given year. *Long-term compensation* is the sum of restricted stock grants, option grants, long-term incentive payouts and all other total payments made during the year. *Total compensation* is the sum of S*hort-term Compensation* and *Long-term Compensation. CEO (VP) Alignment* represents the sum of stock and option sensitivity of the CEO's (VP's) equity portfolio to a $100 change in shareholders' equity. Panel C presents tournament incentives. *MDVP Tot Gap*, *ST Gap*, and *LT Gap* are the difference between the CEO's *Total compensation*, *Short-term compensation*, *Long-term compensation*, and the Median VP's *Total compensation*, *Short-term compensation*, *Long-term compensation. Relative MDVP Tot Gap* is computed as (*MDVP Tot Comp* – minimum value of *MDVP Tot Comp*) / (Maximum value of *MDVP Tot comp* – Minimum value of *MDVP Tot Comp*), for all firms in the same size quartile and year. *Relative MDVP ST Comp* and *Relative MDVP LT Comp* are computed in an analogous manner using ST and LT compensations respectively. *Gini coefficient* is computed as $1+\frac{1}{n}-\frac{2}{n^2\bar{y}}\left(y_1+2y_2+....ny_n\right)$ where n is the number of executives including the CEO and $y_1, y_2 ... y_n$ represent the compensation paid to each of the n executives, in decreasing order of size. All variables are winsorized at the 1 and 99 percentile levels.

Compensation, Incentives, and Turnover	Mean	Median	Lower Quartile	Upper Quartile
Panel A: CEO Compensation and Alignment				
Short-term compensation ($ 000)	1,967.87	1,590.00	1,000.00	2,454.00
Long-term compensation ($ 000)	5,421.23	2,647.66	874.31	6,418.65
Total compensation ($ 000)	7,427.23	4,571.81	2,255.09	8,838.97
CEO Alignment ($ per $100 of SH wealth)	2.22	0.67	0.28	1.76
Panel B: Median VP Compensation and Alignment				
Short-term compensation ($ 000) (MDVP ST Comp)	727.66	623.44	448.63	890.93
Long-term compensation ($ 000) (MDVP LT Comp)	1,244.18	698.48	273.90	1,504.07
Total compensation ($ 000) (MDVP Tot Comp)	2,016.11	1,410.56	837.05	2,383.07
VP Alignment ($ per $100 of SH wealth)	0.14	0.09	0.04	0.17
Panel C: Tournament Incentives				
ST Gap based on Median VP Comp (MDVP ST Gap) ($ 000)	1,230.43	929.10	517.85	1,571.99
LT Gap based on Median VP Comp (MDVP LT Gap) ($ 000)	4,134.12	1,833.98	455.32	4,689.00
Total Gap based on Median VP Comp (MDVP Tot Gap) ($ 000)	5,373.35	2,948.71	1,255.50	6,257.50
Relative MDVP ST Gap	0.29	0.25	0.17	0.36
Relative MDVP LT Gap	0.18	0.12	0.07	0.21
Relative MDVP Tot Gap	0.19	0.13	0.08	0.23
Gini coefficient of ST Compensation	0.25	0.25	0.20	0.30
Gini coefficient of LT Compensation	0.45	0.44	0.34	0.55
Gini coefficient of Total Comp.	0.35	0.34	0.26	0.42

Table 3: Spearman's Rank Correlations among Incentive Measures

The table presents Spearman's rank correlation matrix for the alignment and tournament variables. The sample period is from 1993 through 2004 and contains 3,919 firm-year observations. *MDVP Tot Gap, ST Gap*, and *LT Gap* are the difference between the CEO's *Total compensation, Short-term compensation, Long-term compensation,* and the median VP's *Total compensation, Short-term compensation, Long-term compensation. Relative MDVP Tot Gap* is computed as (*MDVP Tot Comp* – minimum value of *MDVP Tot Comp*) / (Maximum value of *MDVP Tot comp* – Minimum value of *MDVP Tot Comp*), for all firms in the same size quartile and year. *Relative MDVP ST Comp, Relative MDVP LT Comp, and Relative Tot Gini* are computed in an analogous manner using *MDVP ST Comp, MDVP LT Comp,* and *Gini coefficient* respectively. All variables are winsorized at the 1 and 99 percentile levels. * indicates significance at the 5% level of significance or better.

Incentive Measure	MDVP Tot Gap	MDVP ST Gap	MDVP LT Gap	Relative MDVP Tot Gap	Relative MDVP ST Gap	Relative MDVP LT Gap	Relative Tot Gini	Relative ST Gini	Relative LT Gini	CEO Alignment	MDVP Alignment
MDVP Tot Gap	1										
MDVP ST Gap	0.4407*	1									
MDVP LT Gap	0.9846*	0.2946*	1								
Relative MDVP Tot Gap	0.8707*	0.3908*	0.8569*	1							
Relative MDVP ST Gap	0.3459*	0.8589*	0.2193*	0.3677*	1						
Relative MDVP LT Gap	0.8690*	0.2655*	0.8821*	0.9734*	0.2295*	1.00					
Relative Tot Gini	0.5162*	0.2560*	0.5072*	0.5343*	0.2823*	0.5325*	1				
Relative ST Gini	0.2760*	0.5470*	0.2005*	0.3054*	0.5795*	0.2196*	0.4859*	1			
Relative LT Gini	0.2541*	0.0501*	0.2666*	0.2801*	0.0928*	0.2894*	0.7413*	0.2406*	1		
CEO Alignment	-0.0696*	-0.1172*	-0.0570*	-0.0533*	-0.0718*	-0.0513*	-0.0226	-0.0099	0.0427*	1	
MDVP Alignment	-0.0611*	-0.1529*	-0.0395*	-0.0280	-0.0682*	-0.0212	-0.1407*	-0.1383*	-0.1443*	0.1296*	1

Table 4: Summary Statistics for Controls

The table presents summary statistics on all independent variables. The sample period is from 1993 through 2004 and contains 3,919 firm-year observations. *CEO (MD VP) Age* is the age of the CEO (median VP) as of the sample year. The following dummy variables are set equal to 1 if the respective condition holds and 0 otherwise. *Chair* is 1 if the CEO also holds the position of Chairperson. *CEO Turnover* is 1 if there is a new CEO in the firm in the sample year. *Succession Plan* and *VP Succession* are as defined in the *Appendix A*. *ROA* is the ratio of Net income to Total assets. *Industry Homogeneity* is the average partial correlation coefficient of all firms in the same 2-digit SIC code with the industry return, holding market return constant. *Concentration* is the Herfindahl index in the firm's 2-digit SIC industry. *Stk. Return Volatility is* the variance of 60 monthly returns prior to the sample year. *Firm Size* is Log (Sales). All variables are winsorized at the 1 and 99 percentile levels. Number of VPs is the number of non-CEO executives reported by ExecuComp for each firm-year.

Control Variables	**Mean**	**Median**	**Lower Quartile**	**Upper Quartile**
CEO Age	55.41	56.00	51.00	60.00
MDVP Age	51.77	52.00	50.50	53.50
Chair	0.78	1.00	1.00	1.00
CEO Turnover	0.11	0.00	0.00	0.00
Succession Plan	0.54	1.00	0.00	1.00
VP Succession	2.37	2	2	3
ROA	6.52	6.45	3.14	10.06
Industry Homogeneity	0.34	0.33	0.24	0.41
Concentration	0.07	0.05	0.04	0.08
Stk. Ret. Volatility	1.39%	0.92%	0.50%	1.59%
Firm Size (Sales $ billion)	10.71	4.48	1.77	10.69
Number of VPs	6.00	5.00	5.00	6

Table 5: Firm-Level Analysis of Incentives and Turnover (Total Incentives)

The table presents firm-level tests for the effect of incentives based on total compensation, on resignations. The sample period is from 1993 through 2004. In the first two columns, the measure of tournament incentives is Relative pay gaps and the *Relative Gini* coefficient in the last two columns. The first specification is a population averaged probit estimation and the second is a fractional logit estimation. The dependent variables are *DRes* and *MnRes*, respectively *DRes* is 1 if there are one or more voluntary VP departures in a year for a given firm, and 0 otherwise. *MnRes* is the average of the number of voluntary VP departures in a year for a given firm. *MD SizeQ Tot Comp* is the median value of *MDVP Tot Comp* for all firms in the same size quartile, each year. *CEO (VP) Alignment* represents the sum of stock and option sensitivity of the CEO's (VP's) equity portfolio. All variables X_{jt} with the prefix *Relative* are computed as {*Relative* $X_{jt} = ((X_{jt} - \text{Min}(X_{jt})) / (\text{Max}(X_{jt}) - \text{Min}(X_{jt}))$}, where the Max and Min values for X_{jt}, are the maximum and minimum values of X_{jt} for all firms in the same size quartile for each year. *Gini coefficient* is defined in the *Data Appendix*. All variables are winsorized at the 1 and 99 percentile levels. All standard errors are robust and computed using 100 bootstrapped replications. *t*-values are in parentheses. All specifications have year dummies. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% respectively.

Tournament Measure	***Relative Pay Gaps and Comp***		***Gini Coefficient***	
Specification	*PROBIT*	*FLOGIT*	*PROBIT*	*FLOGIT*
Dependent Variable	*DRes*	*MnRes*	*DRes*	*MnRes*
Relative MDVP Tot Gap	0.353**	0.411**		
	(2.44)	(2.53)		
Relative MDVP Tot Comp	-0.454***	-0.529**		
	(-3.46)	(-2.55)		
Relative Tot Gini			0.950***	0.953***
			(8.02)	(5.97)
CEO Alignment	0.009	0.015*	0.007	0.011
	(1.24)	(1.95)	(1.09)	(1.09)
MDVP Alignment	-1.537***	-2.014***	-1.443***	-1.864***
	(-7.13)	(-5.28)	(-5.88)	(-5.27)
Log (MD SizeQ Tot Comp)	0.046	0.222	-0.006	0.125
	(0.23)	(0.98)	(-0.037)	(0.52)
Control Variables				
New CEO	0.160*	0.237**	0.127*	0.212**
	(1.95)	(2.19)	(1.76)	(1.99)
Succession Plan	0.106**	0.051	0.070	0.018
	(2.35)	(0.69)	(1.34)	(0.26)
Log (CEO Age)	-0.464**	-0.814***	-0.448**	-0.769***
	(-2.31)	(-2.79)	(-2.25)	(-2.85)
Log (MDVP Age)	-1.413***	-1.584***	-1.243***	-1.320**
	(-3.89)	(-3.05)	(-2.71)	(-2.11)
Chair	0.077	0.112	0.062	0.099
	(1.15)	(1.14)	(0.86)	(0.94)
ROA	-0.010***	-0.017***	-0.010***	-0.014***
	(-2.69)	(-3.16)	(-2.80)	(-3.05)
Size	-0.044	-0.123*	-0.053	-0.120**
	(-0.86)	(-1.83)	(-1.14)	(-2.02)
Risk	8.955***	6.646***	6.867***	5.557**
	(4.78)	(3.40)	(3.65)	(2.50)
Ind. Homogeneity	-0.835***	-1.408***	-0.764***	-1.282***
	(-3.60)	(-3.95)	(-3.32)	(-4.32)
Ind. Concentration	0.862**	0.996*	0.977**	1.141**
	(2.20)	(1.95)	(2.47)	(2.10)
Constant	6.833***	3.222	6.150***	2.191
	(4.05)	(1.36)	(3.06)	(0.78)
Num. of obs.	3,919	3,919	3,919	3,919
Num. of firms	367	367	367	367

Table 6: VP-Level Analysis of Incentives and Turnover (Total Incentives)

The table presents VP-level logit tests for the effect of incentives based on total compensation, on resignations. The sample period is from 1993 through 2004. In the 1st two columns, the measure of tournament incentives is Pay gaps, followed by Relative pay gaps in the next three models. The dependent variable for all specifications is *Resign*, set equal to 1 if the VP voluntarily resigned and 0 otherwise. *Tot Gap* is the difference between the CEO's *Total compensation* and each VP's *Total compensation (Tot Comp). MD SizeQ Tot Gap* is the median value of *MDVP Tot Gap* for all firms in the same size quartile, each year. *CEO (VP) Alignment* represents the sum of stock and option sensitivity of the CEO's (VP's) equity portfolio. All variables X_{jt} with the prefix *Relative* are computed as {*Relative* $X_{jt} = ((X_{jt} - \text{Min}(X_{jt})) / (\text{Max}(X_{jt}) - \text{Min}(X_{jt}))$}, where the Max and Min values for X_{jt}, are the maximum and minimum values of X_{jt} for all VPs in the benchmark sample. The benchmark sample for *Relative Ext (Int)* X_{jt} are all VPs in firms of the same size quartile (within the firm) each year. *MDVP Tot Comp* is the median value of VPs' *Total compensation* within each firm-year. All control variables are defined in the *Data Appendix.* All variables are winsorized at the 1 and 99 percentile levels. All standard errors are robust and computed using 100 bootstrapped replications. *t*-values are in parentheses. All specifications have year dummies. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% respectively.

Tournament Measure	***Pay Gaps***	***Relative Pay Gap & Ext. Comp.***	***Relative Pay Gap & Int. Comp.***	***Relative Pay Gap &Ext. & Int. Comp.***
Dependent Variable	*Resign*	*Resign*	*Resign*	*Resign*
Log (Tot Gap)	0.104***			
	(3.30)			
Log (MD SizeQ Tot Gap)	-0.354**			
	(-1.99)			
Log (Tot Comp)	0.615***			
	(11.3)			
Relative Tot Gap		0.425**	0.575***	0.561***
		(2.16)	(2.86)	(2.83)
Relative Int Tot Comp			0.614***	0.483***
			(6.44)	(4.49)
Relative Ext Tot Comp		1.207***		0.696***
		(5.54)		(2.74)
Log (MDVP Tot Comp)	-0.668***	-0.336***	-0.219***	-0.306***
	(-9.44)	(-5.51)	(-4.09)	(-4.92)
CEO Alignment	0.019***	0.016**	0.018***	0.017**
	(2.78)	(2.32)	(2.73)	(2.50)
VP Alignment	-0.551***	-0.364***	-0.414***	-0.422***
	(-4.83)	(-3.85)	(-4.13)	(-4.18)
Control Variables				
New CEO	0.283***	0.315***	0.324***	0.317***
	(2.84)	(3.19)	(3.28)	(3.20)
VP Succession	0.212***	0.108**	0.192***	0.191***
	(3.97)	(2.01)	(3.37)	(3.38)
Log (CEO Age)	-1.081***	-1.020***	-1.054***	-1.040***
	(-4.50)	(-4.25)	(-4.38)	(-4.33)
Log (VP Age)	-0.164	0.119	-0.050	-0.008
	(-0.57)	(0.42)	(-0.17)	(-0.028)
Chair	0.055	0.097	0.086	0.088
	(0.65)	(1.14)	(1.01)	(1.03)

Continued

Table 6 (Continued)

Tournament Measure	***Pay Gaps***	***Relative Pay Gap & Ext. Comp.***	***Relative Pay Gap & Int. Comp.***	***Relative Pay Gap &Ext. & Int. Comp.***
Dependent Variable	*Resign*	*Resign*	*Resign*	*Resign*
ROA	-0.019***	-0.017***	-0.018***	-0.018***
	(-4.56)	(-4.14)	(-4.37)	(-4.20)
Size	0.066	0.008	0.016	0.013
	(1.08)	(0.25)	(0.49)	(0.41)
Risk	8.877***	8.205***	8.610***	8.339***
	(4.90)	(4.61)	(4.88)	(4.70)
Ind. Homogeneity	-1.692***	-1.661***	-1.745***	-1.690***
	(-5.60)	(-5.51)	(-5.79)	(-5.60)
Ind. Concentration	1.022*	0.872	1.013*	0.908
	(1.84)	(1.58)	(1.83)	(1.64)
Constant	3.290**	2.641*	2.237	2.597*
	(2.01)	(1.86)	(1.58)	(1.83)
Num. of Obs.	19,598	19,598	19,593	19,593
Pseudo R-squared	0.044	0.035	0.034	0.033

Table 7: Firm-Level Analysis of Incentives and Turnover (Short-term and Long-term Incentives)

The table presents firm-level tests for the effect of incentives based on ST and LT compensation, on resignations. The sample period is from 1993 through 2004. In the 1st two columns, the measure of tournament incentives is Pay gaps, followed by Relative pay gaps in the next two models, and the Relative *Gini* coefficient in the last two columns. The first specification each of the three groups is a population averaged probit estimation and the second is a fractional logit estimation. The dependent variables for each of the three groups are *DRes* and *MnRes*, respectively. *DRes* is 1 if there are one or more voluntary VP departures in a year for a given firm, and 0 otherwise. *MnRes* is the average of the number of voluntary VP departures in a year for a given firm. *MDVP ST Gap* is the difference between the CEO's *ST compensation* and the median VP's *ST compensation (MDVP ST Comp). MD SizeQ ST Gap* is the median value of *MDVP ST Gap* for all firms in the same size quartile, each year. *MD SizeQ LT Comp* is the median value of *MDVP LT Comp* for all firms in the same size quartile, each year. *CEO (VP) Alignment* represents the sum of stock and option sensitivity of the CEO's (VP's) equity portfolio. All variables X_{jt} with the prefix *Relative* are computed as {*Relative* X_{jt} = $((X_{jt} - \text{Min}(X_{jt})) / (\text{Max}(X_{jt}) - \text{Min}(X_{jt}))$}, where the Max and Min values for X_{jt}, are the maximum and minimum values of X_{jt} for all firms in the same size quartile for each year. *Gini coefficient* is defined in the *Data Appendix*. All variables with LT are computed in an analogous manner and use the respective LT values instead of ST values. All control variables are defined in the *Data Appendix.* All variables are winsorized at the 1 and 99 percentile levels. All standard errors are robust and computed using 100 bootstrapped replications. *t*-values are in parentheses. All specifications have year dummies. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% respectively.

	Relative Pay Gaps and Comp		***Gini Coefficient***	
COEFFICIENT	*PROBIT*	*FLOGIT*	*PROBIT*	*FLOGIT*
Dependent Variable	*DRes*	*MnRes*	*DRes*	*MnRes*
Relative MDVP ST Gap	0.297**	0.156		
	(2.02)	(0.69)		
Relative MDVP LT Gap	0.307**	0.414**		
	(2.22)	(2.32)		
Relative MDVP ST Comp	-0.652***	-0.922***		
	(-4.20)	(-3.04)		
Relative MDVP LT Comp	-0.191	-0.169		
	(-1.40)	(-0.82)		
Relative ST Gini			0.255**	0.083
			(1.99)	(0.40)
Relative LT Gini			0.884***	0.894***
			(8.48)	(5.65)
CEO Alignment	0.010	0.017**	0.005	0.010
	(1.39)	(2.01)	(0.68)	(1.04)
MDVP Alignment	-1.474***	-1.921***	-1.355***	-1.784***
	(-6.55)	(-5.02)	(-6.03)	(-5.00)
Log (MD SizeQ ST Comp)	-0.424	-0.536	-0.272	-0.321
	(-1.52)	(-1.32)	(-0.97)	(-0.78)
Log (MD SizeQ LT Comp)	0.141	0.282	0.083	0.208
	(1.05)	(1.54)	(0.64)	(1.12)
Control Variables				
New CEO	0.168**	0.227**	0.125	0.221*
	(2.40)	(2.17)	(1.44)	(1.92)
Succession Plan	0.111**	0.050	0.070	0.017
	(2.03)	(0.65)	(1.44)	(0.22)
Log (CEO Age)	-0.453**	-0.777***	-0.456**	-0.760**
	(-2.04)	(-2.83)	(-2.05)	(-2.48)
Log (MDVP Age)	-1.243***	-1.420**	-1.274***	-1.493***
	(-2.86)	(-2.32)	(-3.11)	(-2.64)

Continued

Table 7 (Continued)

	Relative Pay Gaps and Comp		***Gini Coefficient***	
	PROBIT	*FLOGIT*	*PROBIT*	*FLOGIT*
Dependent Variable	*DRES*	*MnRes*	*DRES*	*MnRes*
Chair	0.076	0.108	0.076	0.122
	(1.07)	(1.09)	(1.22)	(1.17)
ROA	-0.009***	-0.015***	-0.010***	-0.015***
	(-2.65)	(-3.22)	(-2.77)	(-2.71)
Size	0.030	-0.016	-0.005	-0.061
	(0.54)	(-0.17)	(-0.093)	(-0.74)
Risk	8.774***	6.173***	7.601***	6.083***
	(4.19)	(2.64)	(3.39)	(2.78)
Ind. Homogeneity	-0.864***	-1.483***	-0.747***	-1.271***
	(-4.11)	(-3.97)	(-3.41)	(-4.35)
Ind. Concentration	0.977**	1.173*	0.788**	0.971**
	(2.55)	(1.93)	(2.33)	(2.17)
Constant	7.680***	4.887*	6.923***	3.911
	(4.19)	(1.77)	(3.61)	(1.44)
Num. of Obs.	3,919	3,919	3,919	3,919
Num. of firms	367	367	367	367

Table 8: VP-Level Analysis of Incentives and Turnover (ST and LT Incentives)

The table presents VP-level logit tests for the effect of incentives based on ST and LT compensation, on resignations. The sample period is from 1993 through 2004. In the 1st column, the measure of tournament incentives is pay gaps , followed by relative pay gaps in the next three models. The dependent variable for all specifications is *Resign*, set equal to 1 if the VP voluntarily resigned, and 0 otherwise. *ST (LT) Gap* is the difference between the CEO's *ST(LT) compensation* and each VP's *ST(LT) compensation (ST(LT) Comp). MD SizeQ ST(LT) Gap* is the median value of *MDVP ST(LT) Gap* for all firms in the same size quartile, each year. *MD SizeQ ST(LT) Comp* is the median value of *MDVP ST(LT) Comp* for all firms in the same size quartile, each year. *CEO (VP) Alignment* represents the sum of stock and option sensitivity of the CEO's (VP's) equity portfolio. All variables X_{jt} with the prefix *Relative* are computed as {*Relative* $X_{jt} = ((X_{jt} - \text{Min}(X_{jt})) / (\text{Max}(X_{jt}) - \text{Min}(X_{jt}))$}, where the Max and Min values for X_{jt}, are the maximum and minimum values of X_{jt} for all VPs in the benchmark sample. The benchmark sample for *Relative External(Internal)* X_{jt} are all VPs in firms of the same size quartile (within the firm) each year. *MDVP ST(LT) Comp* is the median value of VPs' *ST(LT) compensation* within each firm-year. All control variables are defined in the *Data Appendix*. All variables are winsorized at the 1 and 99 percentile levels. All standard errors are robust and computed using 100 bootstrapped replications. *t*-values are in parentheses. All specifications have year dummies. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% respectively.

Tournament Measure	***Pay Gaps***	***Relative Pay Gap & Ext. Comp.***	***Relative Pay Gap & Int. Comp.***	***Relative Pay Gap &Ext. & Int. Comp.***
Dependent Variable	*Resign*	*Resign*	*Resign*	*Resign*
Log (ST Gap)	-0.028			
	(-0.74)			
Log (LT Gap)	0.053*			
	(1.67)			
Log (MD SizeQ ST Gap)	-0.424			
	(-1.29)			
Log (MD SizeQ LT Gap)	-0.013			
	(-0.079)			
Log (ST Comp)	0.011			
	(0.14)			
Log (LT Comp)	0.225***			
	(9.32)			
Relative ST Gap		-0.179	0.052	0.219
		(-0.84)	(0.25)	(1.02)
Relative LT Gap		0.479**	0.519**	0.459**
		(2.39)	(2.50)	(2.24)
Relative Int. ST Comp			0.802***	0.998***
			(7.20)	(8.14)
Relative Int. LT Comp			0.131	-0.062
			(1.31)	(-0.57)
Relative Ext. ST Comp		-0.081		-1.101***
		(-0.32)		(-3.70)
Relative Ext. LT Comp		1.248***		1.119***
		(5.91)		(4.68)
Log (MDVP Tot Comp)	-0.486***	-0.327***	-0.205***	-0.256***
	(-7.21)	(-5.27)	(-3.79)	(-4.01)
CEO Alignment	0.019**	0.015**	0.018***	0.018***
	(2.55)	(2.23)	(2.66)	(2.61)
VP Alignment	-0.491***	-0.359***	-0.473***	-0.457***
	(-4.24)	(-3.76)	(-4.54)	(-4.35)

Continued

Table 8 (Continued)

Tournament Measure	***Pay Gaps***	***Relative Pay Gap & Ext. Comp.***	***Relative Pay Gap & Int. Comp.***	***Relative Pay Gap &Ext. & Int. Comp.***
Dependent Variable	*Resign*	*Resign*	*Resign*	*Resign*
Control Variables				
New CEO	0.295***	0.309***	0.313***	0.318***
	(2.92)	(3.12)	(3.15)	(3.20)
VP Succession	0.177***	0.101*	0.266***	0.268***
	(3.21)	(1.87)	(4.57)	(4.58)
Log (CEO Age)	-1.167***	-0.981***	-1.068***	-0.989***
	(-4.72)	(-4.08)	(-4.41)	(-4.08)
Log (VP Age)	-0.275	0.139	-0.199	-0.051
	(-0.93)	(0.48)	(-0.69)	(-0.17)
Chair	0.075	0.106	0.074	0.079
	(0.86)	(1.24)	(0.87)	(0.93)
ROA	-0.019***	-0.016***	-0.018***	-0.016***
	(-4.26)	(-3.91)	(-4.22)	(-3.77)
Size	0.132	0.016	0.014	0.043
	(1.64)	(0.49)	(0.44)	(1.27)
Risk	9.440***	7.872***	8.440***	7.486***
	(5.04)	(4.38)	(4.74)	(4.14)
Ind. Homogeneity	-1.847***	-1.652***	-1.697***	-1.647***
	(-6.03)	(-5.47)	(-5.64)	(-5.45)
Ind. Concentration	1.275**	0.998*	1.052*	1.175**
	(2.26)	(1.80)	(1.88)	(2.08)
Constant	6.272***	2.366	2.474*	1.726
	(3.27)	(1.64)	(1.74)	(1.19)
Observations	18,928	19,598	19,449	19,449
Pseudo R-squared	0.043	0.032	0.037	0.041

Table 9: Managerial Incentives and Voluntary Turnover: Firm Level 2SPLS Regressions

The table presents the results from the second stage of a firm-level 2-stage fractional probit least squares tests for the effect of incentives based on total, ST, and LT compensation, on resignations. The sample period is from 1993 through 2004. In the 1st two columns, the measure of tournament incentives is Pay gaps, followed by Relative pay gaps in the next two models, and the Relative *Gini* coefficient in the last two columns. The dependent variable is *MnRes* which is the average of the number of voluntary VP departures in a year for a given firm. *MDVP Tot Gap* is the difference between the CEO's *Total compensation* and the median VP's *Total compensation (MDVP Tot Comp). MD SizeQ Tot Gap* is the median value of *MDVP Tot Gap* for all firms in the same size quartile, each year. *MD SizeQ Tot Comp* is the median value of *MDVP Tot Comp* for all firms in the same size quartile, each year. *CEO (VP) Alignment* represents the sum of stock and option sensitivity of the CEO's (VP's) equity portfolio. All variables X_{jt} with the prefix *Relative* are computed as {*Relative* $X_{jt} = ((X_{jt} - \text{Min}(X_{jt})) / (\text{Max}(X_{jt}) - \text{Min}(X_{jt}))$}, where the Max and Min values for X_{jt}, are the maximum and minimum values of X_{jt} for all firms in the same size quartile for each year. All variables based on ST and LT compensation are computed in an analogous manner using *ST Comp* and *LT Comp* instead of *Tot comp*, respectively. Computation of the *Gini coefficient* is defined in the *Data Appendix*. All control variables are defined in the *Data Appendix.* All variables are winsorized at the 1 and 99 percentile levels. All standard errors are robust and computed using 100 bootstrapped replications. *t*-values are in parentheses. All specifications have year dummies. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% respectively.

Tournament Variable	***Relative Pay Gaps and Comp***		***Gini Coefficient***	
	Total	*ST and LT*	*Total*	*ST and LT*
Dependent variable	*MnRes*	*MnRes*	*MnRes*	*MnRes*
Relative MDVP Tot Gap	1.609***			
	(4.10)			
Relative MDVP Tot Comp	-0.886*			
	(-1.89)			
Relative MDVP ST Gap		-0.346		
		(-1.07)		
Relative MDVP LT Gap		1.870***		
		(4.19)		
Relative MDVP ST Comp		-0.515		
		(-1.46)		
Relative MDVP LT Comp		-0.704		
		(-1.53)		

Continued

Table 9 (Continued)

Tournament Variable	***Relative Pay Gaps and Comp***		***Gini Coefficient***	
	Total	*ST and LT*	*Total*	*ST and LT*
Dependent variable	*MnRes*	*MnRes*	*MnRes*	*MnRes*
Relative Tot Gini			1.297***	
			(5.15)	
Relative ST Gini				0.249
				(1.13)
Relative LT Gini				0.904***
				(3.75)
Log (MD SizeQ Tot Comp)	0.309		0.125	
	(1.09)		(0.51)	
Log (MD SizeQ ST Comp)		-0.521		-0.252
		(-1.26)		(-0.61)
Log (MD SizeQ LT Comp)		0.213		0.197
		(1.14)		(1.16)
CEO Alignment	0.021**	0.020**	0.011	0.011
	(2.23)	(2.49)	(1.05)	(1.10)
MDVP Alignment	-1.773***	-1.766***	-1.468***	-1.489***
	(-4.16)	(-4.19)	(-4.02)	(-3.78)
Control Variables				
New CEO	0.212*	0.180	0.185*	0.204*
	(1.76)	(1.59)	(1.77)	(1.89)
Succession Plan	0.084	0.054	0.004	0.012
	(1.23)	(0.84)	(0.06)	(0.15)
Log (CEO Age)	-0.567**	-0.446*	-0.709***	-0.708**
	(-2.04)	(-1.79)	(-2.66)	(-2.18)
Log (MDVP Age)	-1.758***	-1.832***	-1.126**	-1.260**
	(-2.75)	(-2.74)	(-1.99)	(-2.11)
Chair	0.058	0.072	0.080	0.101
	(0.52)	(0.76)	(0.87)	(1.11)
ROA	-0.016***	-0.014**	-0.015***	-0.016***
	(-2.82)	(-2.54)	(-2.97)	(-2.95)
Size	-0.166**	-0.030	-0.118*	-0.075
	(-2.39)	(-0.35)	(-1.77)	(-0.96)
Risk	6.548***	5.758***	5.090***	5.938***
	(2.79)	(3.05)	(2.66)	(2.94)
Ind. Homogeneity	-1.311***	-1.314***	-1.284***	-1.320***
	(-3.66)	(-3.86)	(-4.10)	(-4.74)
Ind. Concentration	0.998**	1.105**	1.079*	0.948
	(2.03)	(2.13)	(1.94)	(1.61)
Constant	2.511	5.441*	1.062	2.512
	(0.88)	(1.86)	(0.42)	(0.82)
Num. of obs.	3,570	3,570	3,919	3,919
Num. of Firms.	366	366	367	367

Table 10: Managerial Incentives and Voluntary Turnover: VP Level 2SPLS Regressions

The table presents the results from the second stage of a VP-level 2-stage probit least squares tests for the effect of incentives based on total, ST, and LT compensation, on resignations. The sample period is from 1993 through 2004. In the 1st two columns, the measure of tournament incentives is Pay gaps, followed by Relative pay gaps in the next two models. The dependent variable for all specifications is *Resign*, set equal to 1 if the VP voluntarily resigned and 0 otherwise. *Tot Gap* is the difference between the CEO's *Total compensation* and each VP's *Total compensation (Tot Comp). MD SizeQ Tot Gap* is the median value of *MDVP Tot Gap* for all firms in the same size quartile, each year. *MD SizeQ Tot Comp* is the median value of *MDVP Tot Comp* for all firms in the same size quartile, each year. *CEO (VP) Alignment* represents the sum of stock and option sensitivity of the CEO's (VP's) equity portfolio. All variables X_{jt} with the prefix *Relative* are computed as {*Relative* X_{jt} = ((X_{jt} – Min (X_{jt})) / (Max (X_{jt}) – Min (X_{jt}))}, where the Max and Min values for X_{jt}, are the maximum and minimum values of X_{jt} for all VPs in the benchmark sample. The benchmark sample for *Relative External(Internal)* X_{jt} are all VPs in firms of the same size quartile (within the firm) each year. *MDVP Tot Comp* is the median value of VPs' *Total compensation* within each firm-year. All variables based on ST and LT compensation are computed in an analogous manner using *ST Comp* and *LT Comp* instead of *Tot comp*, respectively. Computation of the *Gini coefficient* is defined in the *Data Appendix*. All control variables are defined in the *Data Appendix.* All variables are winsorized at the 1 and 99 percentile levels. All standard errors are robust and computed using 100 bootstrapped replications. *t*-values are in parentheses. All specifications have year dummies. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% respectively.

Tournament Variable	***Pay Gaps and Comp***		***Relative Pay Gaps and Comp***	
	Total	*ST and LT*	*Total*	*ST and LT*
Dependent variable	*Resign*	*Resign*	*Resign*	*Resign*
Log (Tot Gap)	0.174*			
	(1.81)			
Log (Tot Comp)	0.689***			
	(4.85)			
Log (MD SizeQ Tot Gap)	-0.657***			
	(-3.62)			
Log (MD SizeQ Tot Comp)	0.563**			
	(2.23)			
Log (ST Gap)		-0.038		
		(-1.42)		
Log (LT Gap)		0.308***		
		(2.78)		
Log (ST Comp)		0.364**		
		(2.29)		
Log (LT Comp)		0.191***		
		(4.23)		
Log (MD SizeQ ST Gap)		-0.100		
		(-0.50)		
Log (MD SizeQ LT Gap)		-0.196**		
		(-2.07)		
Relative Tot Gap			0.678	
			(1.23)	
Relative Ext Tot Comp			0.579	
			(0.98)	
Relative Int Tot Comp			0.866***	
			(4.50)	
Relative ST Gap				-0.328
				(-1.14)
Relative LT Gap				0.857
				(1.01)

Continued

Table 10 (Continued)

Tournament Variable	***Pay Gaps and Comp***		***Relative Pay Gaps and Comp***	
	Total	*ST and LT*	*Total*	*ST and LT*
Dependent variable	*Resign*	*Resign*	*Resign*	*Resign*
Relative Ext ST Comp				0.136
				(0.32)
Relative Ext LT Comp				0.029
				(0.047)
Relative Int ST Comp				1.160***
				(3.87)
Relative Int LT Comp				-0.352
				(-1.12)
Log (MDVP Tot Comp)	-0.669***	-0.500***	-0.239***	-0.106
	(-5.55)	(-5.76)	(-2.89)	(-1.10)
CEO Alignment	0.031**	0.032**	0.023**	0.024**
	(2.52)	(2.52)	(2.15)	(2.32)
MDVP Alignment	-0.889***	-0.743**	-0.738**	-0.770**
	(-2.63)	(-2.06)	(-2.18)	(-2.18)
Control Variables				
New CEO	0.016	-0.013	0.077	0.055
	(0.24)	(-0.18)	(1.18)	(0.80)
VP Succession	0.205***	0.181***	0.272***	0.267***
	(5.20)	(4.89)	(6.75)	(6.66)
Log (CEO Age)	-0.536***	-0.592***	-0.479***	-0.449***
	(-3.52)	(-3.32)	(-3.14)	(-2.61)
Log (VP Age)	-0.044	-0.173	-0.096	-0.168
	(-0.18)	(-0.70)	(-0.38)	(-0.75)
Chair	-0.156*	-0.175**	-0.108	-0.108
	(-1.84)	(-2.00)	(-1.30)	(-1.28)
ROA	-0.011***	-0.011***	-0.009***	-0.009***
	(-3.52)	(-3.11)	(-2.97)	(-2.81)
Size	-0.027	0.018	-0.030	-0.042
	(-0.55)	(0.24)	(-0.78)	(-0.93)
Risk	4.634***	6.377***	4.165***	3.295**
	(2.83)	(3.66)	(2.71)	(2.15)
Ind. Homogeneity	-0.775***	-0.865***	-0.760***	-0.677***
	(-4.54)	(-4.83)	(-4.30)	(-3.91)
Ind. Concentration	0.607**	0.620**	0.535**	0.526**
	(2.46)	(2.41)	(2.06)	(2.12)
Constant	0.223	0.897	1.698*	1.193
	(0.18)	(0.62)	(1.90)	(1.31)
Observations	14,861	14,285	14,857	14,746
R-squared	0.035	0.035	0.034	0.035

Table 11: Univariate Comparisons between Pre- and Post- Resignation Employments

The table provides summary statistics on VP moves before and after turnover. Panel A provides the number of moves categorized by those who become (do not become) the CEO in the new firm and moves within and across the 2-digit SIC code industries. Panel B provides the number of moves further categorized by the percentage change in asset quartiles. The difference between groups appears in the last row with *t*-(*z*-) statistics denoting the difference in mean (median) values for the compensation rank of the executives prior to turnover. There are 4 quartiles for decreases and increases in the total assets based on the last year in the old firm and the first full year in the new firm. *, **, and *** denote statistical significance at the 1, 5, and 10% levels respectively.

Panel A: Overall statistics on comparisons pre- and post- turnover

Description	**All Moves**		**Become CEO**		**Do Not Become CEO**		**Difference**
Total Resignations	***1,007***						
Moves to public firms	*416 (100%)*		*153 (36.8%)*		*263 (63.2%)*		
	No. (%)	*Mean (Median) Comp. rank*	*No. (%)*	*Mean (Median) Comp. rank*	*No. (%)*	*Mean (Median) Comp. rank*	*t(z) stat. (CEO vs. Not CEO)*
Moves to public firms with Compustat data	**300 (100%)**	**3.11 (3.00)**	**120 (40%)**	**2.78 (2.00)**	**180 (60%)**	**3.34 (4.00)**	***-3.20*** *** ***(-3.42*** *** ***)***
President pre-turnover	57 (19.0%)		38 (12.7%)		19 (6.3%)		
President post-turnover	111 (36.7%)		73 (24.3%)		38 (12.7%)		

Panel B: Univariate comparisons pre- and post- turnover between size and industry relatedness

	All Moves		**Become CEO**		**Do Not Become CEO**		**Difference**
	No. (%)	*Mean (Median) Comp. rank*	*No. (%)*	*Mean (Median) Comp. rank*	*No. (%)*	*Mean (Median) Comp. rank*	*t(z) stat. (CEO vs. Not CEO)*
Moves within industry	65 (21.7%)	2.78 (2.50)	25 (8.3%)	2.52 (2.00)	40 (13.3 %)	2.94 (3.00)	*-1.08 (-1.66* * *)*
Moves outside industry	235 (78.3%)	3.20 (3.00)	95 (31.7%)	2.84 (3.00)	140 (46.7%)	3.45 (4.00)	*-3.10* *** *(-3.20* $^{***)}$
t(z)-stat. (within vs. outside industry)		*-2.03* ** *(-2.17)* **		*-0.95 (-1.49)*		*-1.95* * *(-2.01)* **	
Moves to smaller firms	226 (75.3%)	3.09 (3.00)	109 (36.3%)	2.83 (3.00)	117 (39.0%)	3.33 (4.00)	*-2.57* ** *(-2.81* *** *)*
Moves to larger firms	74 (24.7%)	3.18 (3.00)	11 (3.7%)	2.18 (2.00)	63 (21.0%)	3.35 (4.00)	*-2.21* ** *(2.15* ** *)*
t(*z*)-statistic (smaller vs. larger firms)		*-0.42 (-0.38)*		*1.37(1.75* * *)*		*-0.09 (-0.09)*	

Panel C: Number of moves by changes in firm size quartile, industry relatedness, and CEO title in new firm

	Become CEO			**Do Not Become CEO**			**Row Total**
Percentage Change in Assets Quartile	*Within Industry no. of move (%)*	*Different Industry no. of moves (%)*	*Total no. of moves (%)*	*Within Industry no. of moves (%)*	*Different Industry no. of moves (%)*	*Total no. of moves (%)*	*no. of moves, (%)*
-4 (< -75%)	14 (4.7%)	63 (21.0%)	*77* (25.7%)	12 (4.0%)	51 (17.0%)	*63* (21.0%)	*140* (46.7%)
-3 (-50% to -75%)	6 (2.0%)	17 (5.7%)	*23* (7.7%)	11 (3.7%)	18 (6.0%)	*29* (9.7%)	*52* (17.3%)
-2 (-25% to -50%)	1 (0.3%)	3 (1.0%)	*4* (1.3%)	4 (1.3%)	9 (3.0%)	*13* (4.3%)	*17* (5.7%)
-1 (0 to -25%)	1 (0.3%)	4 (1.3%)	*5* (1.7%)	3 (1.0%)	9 (3.0%)	*12* (4.0%)	*17* (5.7%)
Total (for smaller)	*22 (7.3%)*	*87 (29.0%)*	*109 (36.3%)*	*30 (10.0%)*	*87 (29.0%)*	*117 (39.0%)*	*226 (75.3%)*
1 (0 to 25%)	0 (0.0%)	0 (0.0%)	*0* (0.0%)	1 (0.3%)	10 (3.3%)	*11* (3.7%)	*11* (2.7%)
2 (25% to 50%)	1 (0.3%)	1 (0.3%)	*2* (0.6%)	1 (0.3%)	5 (1.7%)	*6* (2.0%)	*8* (2.7%)
3 (50% to 75%)	2 (0.6%)	0 (0.0%)	*2* (0.6%)	1 (0.3%)	5 (1.7%)	*6* (2.0%)	*8* (2.3%)
4 (> 75%)	0 (0.0%)	7 (2.3%)	*7* (2.3%)	7 (2.3%)	33 (11.0%)	*40* (13.3%)	*47* (16.7%)
Total (for larger)	*3 (1.0%)*	*8 (2.7%)*	*11 (3.7%)*	*10 (3.3%)*	*53 (17.7%)*	*63 (21.0%)*	*74 (24.7%)*
Overall Total	**25 (8.3%)**	**95 (31.7%)**	**120 (40%)**	**40 (13.3%)**	**140 (46.7%)**	**180 (60%)**	**300 (100%)**