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경영학석사 학위논문

Performance Feedback and Risk Taking:
The Effects of Deadline Proximity, CEO
Contract, and Audience

2018년 8월

서울대학교 대학원

경영학과 경영학 전공

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The Effects of Deadline Proximity, CEO
Contract, and Audience

지도 교수 이 경 목

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Abstract

Performance Feedback and Risk Taking: The Effects of Deadline Proximity, CEO Contract, and Audience

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We contribute to the performance feedback model by developing a theoretical framework that predicts the moderating effects of evaluation deadline proximity, remaining contract duration of CEO, and audience pressure between performance feedback and risk taking behaviors. We contend that in a negative attainment discrepancy context, deadline-proximity adjusted performance-aspiration gaps will increase the risk taking propensity of CEOs and remaining contract duration of CEOs and audience pressure will intensify the effects of deadline-proximity adjusted performance-aspiration gaps on risk taking behaviors. The analysis of the Major League Baseball games from 2007 to 2016 yields the following results. First of all, deadline-proximity adjusted performance-aspiration gaps showed predicted positive effects on risk taking behaviors. Second, the remaining contract duration of CEOs intensified the positive effect of the deadline-proximity adjusted performance-social aspiration gap on risk

taking behaviors. Contrary to our predictions, however, the positive effect of the deadline-proximity adjusted performance-historical aspiration gap on risk taking behaviors decreased by audience pressure.

Keyword : performance feedback; agency theory; risk taking; deadline proximity; contract duration; audience pressure

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I. Introduction

The literature on performance feedback has developed extensively in an attempt to explain how organizations make decisions and take risks in response to divergent environmental demands (Greve, 1998, 2003a). Performance feedback model (PFM hereafter) predicts that performance above aspiration level (positive attainment discrepancy) triggers slack search whereas performance below the aspiration level (negative attainment discrepancy) ignites problemistic search and increase risk taking behaviors (Cyert & March, 1963; Greve, 2003a; Levinthal & March, 1981). An extensive body of testing the prediction accumulates across various contexts such as market position changes in radio satellite industry (Greve, 1998), curriculum changes in universities (Kraatz & Zajac, 1996; Manns & March, 1978), new market entrance in manufacturing industry (Shapira, 2017), and route changes in airline industry (Audia, Locke, & Smith, 2000).

Risky behavior in the PFM may resonate with the dichotomy of exploitation and exploration in organizational learning (Greve, 2003b; March, 1991). Exploitation concerns introducing minor changes in extant ways of doing things, targeting market segment, or utilizing capabilities, whereas exploration is about experimenting alternatives that are very different from extant ways of doing things, targeting market, product/services, and utilizing capabilities (Raisch, Birkinshaw, Probst, & Tushman, 2009). In a similar vein, local search may lead to exploitation, whereas distant search may result in exploration. Local search will be a low risk and low return strategy, while distant search will be a high risk and high return strategy (Levinthal & March, 1981)

One important twist in the recent PFM literature is to bring in the agency behavior of the executives when examining the role of performance

feedback (Wiseman & Gomez-Mejia, 1998), namely, behavioral agency model (BAM hereafter). For example, the study by Lim and McCann (2013) suggested that a governance structure such as stock option grants of the executives may moderate the effects of performance feedbacks on risk taking behaviors.

We seek to examine the interplay of PFM and BAM by drawing attention to the temporal aspect of performance feedback. Even though CEOs are usually evaluated annually, they also receive feedback from the market daily, monthly, or quarterly. When the interval of performance feedback is shorter than that of performance evaluation, agents are likely to switch among various alternatives in a way that maximize their interests.

When CEO is evaluated on a calendar year basis, discovering attainment discrepancy at different period of the year will lead to different behaviors (Humphrey, Moon, Conlon, & Hofmann, 2004). For example, substantially negative attainment discrepancy found in January may not immediately trigger risk taking behaviors as the CEO has 11 more months to fill the performance-aspiration gap, whereas substantially negative attainment discrepancy found in October is very likely to trigger risk taking behaviors as adhering to extant strategy may not fill the gap and increases his/her compensation and employment risks. This temporal aspect of performance feedback may or may not aggravate a firm's propensity to take risky behaviors.

To capture this temporal aspect of performance feedback, we construct two variables—deadline proximity adjusted performance-social aspiration gap (DPSG hereafter) and deadline proximity adjusted performance-historical aspiration gap (DPHG hereafter)—and investigate their effects on risk taking behaviors. In particular, we propose that the effects of the two deadline proximity adjusted performance-aspiration gaps (DPGs hereafter)

on risk taking behaviors are moderated by remaining contract duration of CEOs and audience pressure to achieve aspiration level: in response to negative attainment discrepancy proximate to the evaluation deadline, a CEO with short contract duration is motivated not to choose risk taking behaviors for improving long-term performance and a CEO perceiving weak audience pressure are less motivated to choose risk taking behaviors.

Followings are the contributions of our study to the PFM. First, we contribute to the PFM by extending prior work that has largely ignored the temporal aspect of performance feedback. In particular, we demonstrate that the negative attainment discrepancy may trigger risk taking behaviors when the discrepancy is found near the end of evaluation period. Though the timing of evaluation during observation period has shown significant influence on individual or group behaviors in performance evaluation literature (Labianca, Moon, & Watt, 2005; Maruping, Venkatesh, Thatcher, & Patel, 2015; Robertson, 2007; Waller, Zellmer-Bruhn, & Giambatista, 2002), we are unaware of prior PFM literature that has examined how the timing moderates the relationship between the performance-aspiration gap and the risk taking behaviors in the organizational setting.

Second, our study contributes to the PFM by introducing time horizon of decision makers as an important moderating variable in explaining the relationship between the DPGs and the risk taking behaviors. Even though agency theory literature has consistently contended that time horizon of decision makers influenced by the duration of employment contract and monetary incentive scheme affects risk taking behavior for improving long term performance (Ju, Leland, & Senbet, 2014; Manso, 2011; Zhao, 2013), the literature on PFM has largely ignored the importance of the time horizon of managers. Our theoretical framework and empirical findings on the remaining contract duration of CEOs confirm that the time horizon of

decision makers matters in explaining the relationship between the DPGs and the risk taking behaviors. Accordingly, we add value to the PFM and agency theory by advancing our understanding of how incentives of decision makers may moderate the relationship.

Third, we also add the role of the audience to the PFM. Although a growing body of literature has suggested that satisfying internal or external audience is crucial in enhancing organizational legitimacy (Elsbach, 1994; Elsbach & Sutton, 1992; Suchman, 1995), the literature on the PFM has not explicitly considered the audience pressure in explaining organizational behaviors. We suggest that the audience pressure influences incentives of CEOs which in turn moderate the relationship between the DPGs and the risk taking behaviors. Accordingly, we add value to the PFM and literature on audience by advancing our understanding of how the audience pressure moderates the relationship.

II. Research Context: The Major League Baseball

We examined the American League of the Major League Baseball (MLB hereafter) from 2007 to 2016, which presented a relevant context for hypothesis testing. The following characteristics of the research setting are the strengths of our data in advancing our knowledge on the PFM. First, the performance of each actor is directly observable. Second, each rival faced a common time constraint, i.e., a season. Lastly, the performance of rivals is visible, thus comparable.

At the beginning of each season, the teams propose their target standing to the media and fans in the Media Day. Because almost all teams aim for the World Series championship and winning their division guarantees their advance to the post-season, teams usually suggest winning their division as

their intermediate goal in the regular season. This performance target refers to each team's social aspiration level. Also, as managers want to perform at least better in comparison to past years, average winning percentage of past years of their teams can also be an implicit goal of managers. Thus, the average winning percentage refers to each team's historical aspiration level.

Competition in the MLB context is structured as follows. There are two leagues in the MLB—American League and National League—and each league has three divisions—east, central, and west. Each team competes for a higher rank in a regular season, which determines whether or not a team will be invited for a post season. Up to 2011, three division winners and another highest winning percentage team in each league in the regular season were allowed to advance to the post season. From 2012, three division winners and the other two highest winning percentage teams in each league were invited to the post season. In the post season, each league champion is decided by tournament. The two league champions are able to advance to the World Series. Besides advancing to the World Series, the regular season standing is important for each team because it determines the pecking order of drafting subsequent year's rookie players. The lower the winning percentage of a team, the earlier the team drafts first-year players.

For the testing of risk taking at the organizational level, we focused on the use of rookie batters in starting lineup. As the season passes by, each team observes the gap between its current standing and aspiration level and seeks to fill the gap by taking various measures such as replacing low performing players with better ones, trading players with other teams, and changing batting orders. In this context, using rookie players has two implications for the team. First, it is viewed as risk taking behavior because of the ability of rookie players has yet been proven. Second, it is viewed as a long term investment as their experiences at bat will help enhancing their batting skills

afterwards. Opting for rookies is similar to R&D investments in business organizations, which may lower short term performance but enhance long term competitiveness. From the learning perspective, playing non-rookies is exploitative, whereas playing rookies is explorative.

The incentive structure of each team would be the following. When a team performs better than its aspiration level, its manager will be satisfied with his current lineup and thus will not replace current starting players with alternative ones. However, when a team's current standing is lower than its aspiration level, the manager would contemplate whether or not he should change the starting lineup. Risk averse alternative would be replacing low-performing players with non-rookies, while risk taking one would be replacing them with rookies.

Our prediction is that the wider the gap between a team's current performance and its aspiration level, the more likely the manager will use the rookies. However, the decision could be influenced by the timing of performance feedback, a manager's time horizon in decision making, and the audience's pressure for lineup changes.

In the earlier part of the season, low-performing teams will not change their starting lineup drastically as there are many games left to fill negative performance-aspiration gap. They would consider using rookie players as their last resort. When a team becomes very unlikely to achieve aspiration level and there are many years left in the manager's contract with the team (i.e., a longer time horizon in decision making), the manager becomes able to sacrifice the performance of current year for the next seasons. He would more likely use rookie players as a method of investment for the future. The decision would be also moderated by the audience's pressure to replace underperforming players. Managers are usually reluctant to replace underperforming highly paid veteran players with rookie players because it

can mean admitting failure in contracting those players. The pressure that a manager felt would be stronger as the size of loyal home fans became larger. Such pressure will be much stronger when the performance of the team is further below the aspiration level at the later stage of a regular season.

III. Theory and Hypotheses

Literature on performance feedback has long stated that organizations change their behaviors according to their aspiration levels (Bromiley, 1991; Greve, 2003a, b; Shinkle, 2012). Aspiration level is defined as “the smallest outcome that would be deemed satisfactory by the decision maker” (Schneider, 1992: 1053) and it is thus a threshold of determining success and failure. Researchers suggest that aspiration level is the starting point of a radical decision making including organizational change (Lopes, 1987; Schneider, 1992). There are basically two types of aspiration levels, historical and social aspiration level. Historical aspiration level is set by the past performance of the organization itself, whereas social aspiration level is determined by the performance of its competitors (Cyert & March, 1963; Festinger, 1954; Levinthal & March, 1981).

Organization compares its recent performance against its historical and social aspiration levels (Baum, Rowley, Shipilov, & Chuang, 2005). In the context of positive attainment discrepancy where its performance is above its aspiration levels, its CEO is satisfied with the performance and thus is not likely to initiate changes (Greve, 1998). When aspiration levels are achieved and thus slack resources are accumulated, the CEO may search ways to improve performance by using the slack resources (Cyert & March, 1963; Levinthal & March, 1981; Milliken & Lant, 1990). Among alternatives found by the slack search, however, the CEO may not choose alternatives that would reduce his performance below the aspiration levels

as decision makers are usually risk averse in positive attainment discrepancy context (Kahneman & Tversky, 1979). In the context of negative attainment discrepancy where its performance is below its aspiration levels, CEO is not satisfied with the performance and thus try to find alternatives to improve his/her performance (Chen & Miller, 2007; Greve, 1998). This problemistic search is likely to start from local search, finding alternatives near the current ways of doing things. In a substantially negative attainment discrepancy context, however, the local search may not produce alternatives that would fill the performance-aspiration gap and then organization initiate distant search, finding alternatives distant from the current way to doing things (Rosenkopf & Nerkar, 2001). Since organizations may not have capabilities to implement alternatives found by the distant search, they are likely to be riskier than the alternatives found by the local search (Afuah & Tucci, 2012; Katila & Ahuja, 2002). As the decision maker faces loss situations in the substantially negative attainment discrepancy context, he or she will become willing to employ risk taking alternatives found by the distant search (Kahneman & Tversky, 1979).

These stylized arguments on performance feedback however do not explicitly consider incentives and motivation of decision makers. As agency theory suggests, decision makers may or may not follow predictions of the PFM depending on how their monetary incentive schemes and employment contracts are structured (Ballinger & Marcel, 2010; Ju et al., 2014; Manso, 2011; Zhao, 2013). For instance, the magnitude of stock options or employment security can moderate the effect of performance feedback on risk taking behaviors (Lim & McCann, 2013).

Indeed, the prior test of PFM presumes that the feedback effect of performance below the aspiration level is constant within a performance evaluation episode (Baum et al., 2005; Greve, 1998, 2003a; Shapira, 2017).

However, managers may react differently to negative attainment discrepancy depending on when the performance is evaluated within a performance evaluation episode (Chen, 2008; Humphrey et al., 2004). When negative attainment discrepancy is found early within a performance evaluation episode, i.e., the deadline is not tight, decision makers may not initiate risk taking behaviors but stick to the behavioral strategies formulated at the beginning of the episode as there remains much time to fill the performance-aspiration gap. In contrast, when the discrepancy is found near to the end of the evaluation episode, i.e., the deadline is around the corner, they may engage in a riskier action as the gap cannot be filled by following behavioral strategies formulated at the beginning of the episode.

To import the effects of agency related factors into the PFM, we provide the following research framework (See Figure 1).

Insert Figure 1 about here

Our principal argument is that the agency related factors moderate the relationship between the performance feedback and risk taking behaviors. Among a variety of such factors that include the magnitude of stock options (Lim & McCann, 2013), the length of employment contract (Zhao, 2013), career concerns of decision makers (Matta & Beamish, 2008; McClelland, Barker, & Oh, 2012), and stock ownership (Saunders, Strock, & Travlos, 1990), we pay attention to the temporal aspect of performance feedback, namely, deadline proximity, which should interact with CEO's contract duration and audience pressure.

1. Deadline Proximity Adjusted Performance–Aspiration Gap

The temporal proximity to the deadline has been shown to shape perceptions of current performance and expectations of the future performance (Humphrey et al., 2004; Waller et al., 2002; Chen, 2008). To capture this temporal aspect of performance feedback, we examine the extent to which the timing of performance feedback is near the end of the production cycle, i.e., deadline proximity. The above discussion of temporal aspect in performance feedback suggests that the negative performance feedback effect would vary depending on when managers receive their performance feedback and when their evaluation period will end. In sum, the deadline proximity moderates the relationship between performance feedback and risk taking behaviors.

In the MLB context, a team facing negative attainment discrepancy may not initiate substantial changes in its starting lineup when the discrepancy is found in an earlier season. It is because its manager is likely to construct his starting line of the very first game of the regular season with the best players available and thus may not change his perceptions about players based on failures in a small number of matches. This confirmation bias will be attenuated by repeated losses in additional games and thus the manager will change his starting lineup by replacing underperforming players with promising ones in a later season (Klayman, 1995; Nickerson, 1998). The lineup change decision will increase the use of rookie players who were not listed in the starting lineup of the very first of the regular season.

To capture these moderating effects of deadline proximity, we construct deadline proximity adjusted performance-aspiration gap in which performance-aspiration gap is a numerator and the deadline proximity (the number of games to be played in the regular season in this study) is a denominator. Accordingly, if the performance-aspiration gap is held constant, the value of deadline proximity adjusted performance-aspiration

gap become larger as the focal match is held nearer to the end of the regular season. The measures are analogous to the probability to achieve the aspiration levels.

Hypothesis 1A. The larger the DPSG (deadline proximity adjusted performance-social aspiration gap), the more likely the organization will engage in risk taking behaviors.

Hypothesis 1B. The larger the DPHG (deadline proximity adjusted performance-historical aspiration gap), the more likely the organization will engage in risk taking behaviors.

2. CEO' s Remaining Contract Duration

The effect of performance feedback on risk taking behaviors may depend on CEO's remaining contract duration. A CEO is typically characterized as a risk-averse agent, who forgoes positive net present value projects that are risky and costly (Zhao, 2013) in return for a lower future uncertainty in investments (Ju et al., 2014). However, the literature on CEO compensation suggests that this myopic loss aversion can be alleviated when the CEO is able to retain their control within the organization by a long term employment contract (Stein, 1988). For example, a job security may help managers to pursue long term, risky, and positive net present value projects. Manso (2011) found that long-term employment contract are highly associated with risk taking behaviors. Similarly, Chrisman and Patel (2012) showed that owner-managers take more risks than professional managers as the owner-managers do not have to worry about their employment. This implies that CEOs with longer contract duration are more capable of, and are more willing to engage in future investments that can sacrifice short term performance but can enhance long term performance. They have a 'safety net' to engage in the risk taking behavior.

In the context of MLB, managers normally negotiate with the general managers of their organization for their contracts. With the exception of interim managers, their contracts vary from one year to ten or more years. When managers are guaranteed with more job security, they may have capability and motivation to run the team with a longer time horizon. Because they have less career concern, they are less susceptible to the current season's success or failure and are motivated to manage the team future-oriented. Accordingly, those managers become more likely to use rookie players in their lineup to develop their skills and to enhance long term competitiveness of the team.

Hypothesis 2. The longer the CEO has remaining duration in his contract, the more likely the organization will engage in risk taking behaviors.

3. Audience Pressure

According to the stakeholder management perspective, external audiences have a dual role both as the source of pressure and support (Berman, Wicks, Kotha, & Jones, 1999; Hillman & Keim, 2001). While CEOs tend to have short-term vision and risk-averse propensity, external audiences such as customers, clients and investors tend to have long-term vision. In the study of environmental sustainability of organizations, Hart (1995) viewed external audiences as playing a crucial role in impending pressures on corporations to move toward more future-oriented vision.

Sports industry has two major characteristics. First, it is an intensely competitive context where there is not only competition among different kinds of sports leagues but also with other leisure-seeking industries such as television, radio, and other entertainment activities. Second, there are external audiences such as media, public and fans, all of which are very

critical to a team's revenue in the form of ticket power. Accordingly, sports teams seek to build and retain positive and long term relationship with external audiences (Tsiotsou, 2013).

In the context of MLB, the intensity of audience pressure is in parallel to the size of loyal home fans. Because the financial success of baseball teams depends mostly on the ticket revenue from the attendances of each game, spectators of matches are important external audiences that teams need to satisfy. Since fans usually desire to observe the long-term success of their teams, they also have a dual role as the pressure and support for the organizations to engage in using promising rookies in the lineup.

Hypothesis 3. The more intensive the audience pressure to long-term success, the more likely the organization will engage in risk taking behaviors.

4. Performance–Aspiration Gap and Managerial Contracts

The effects of the DPGs on risk taking behaviors will be moderated by the length of remaining contract duration of CEOs. Facing negative attainment discrepancy at an earlier part of a performance evaluation episode, the length of remaining contract duration of CEOs may not affect their risk taking behaviors. As they have more time to fill the performance-aspiration gap, they may keep strategies formulated beforehand due to confirmation bias. Facing substantially negative attainment discrepancy at a later part of a performance evaluation episode, however, a CEO with longer remaining contract duration can choose both risk taking behaviors for improving short term performance and risk-taking behaviors for improving long-term performance. In contrast, a CEO with shorter remaining contract duration would not be motivated to choose risk taking behaviors for improving long-

term performance (Chrisman & Patel, 2012; Zhao, 2013). He or she may not run the risk of unemployment by sacrificing short-term performance to improve the long-term competitiveness of his organization (Xu, 2009).

In the MLB context, a manager of underperforming team at an earlier regular season will keep using the starting lineup constructed at the beginning of the regular season or at least introduce minor changes in the lineup to improve short term performance. The duration of contract however may influence risk taking behaviors of the manager when he faces negative attainment discrepancy at a later regular season. A manager with longer remaining contract duration will consider various ways of preparing for next seasons while seeking to improve current season performance. When it is not possible to achieve aspiration level, the manager with longer remaining contract duration may give up the current season and give more playing experiences to rookie players to prepare for the next seasons. In contrast, a manager whose employment contract expires after the season cannot enjoy such extravagance. As his performance in the current season affects his chances of being reemployed, he will focus on improving his team's winning percentage in this season and thus will be reluctant to use promising but unproved rookie players in his starting lineup.

Hypothesis 4A. The relationship between the DPSG and risk taking behaviors will be positively moderated by CEO remaining contract duration.

Hypothesis 4B. The relationship between the DPHG and risk taking behaviors will be positively moderated by CEO remaining contract duration.

5. Performance–Aspiration Gap and Audience Pressure

The effects of the DPGs on risk taking behaviors will be moderated by the audience pressure to improve organizational performance. When

organizational performance is below aspiration level, audiences ask CEOs to take actions. The pressure that CEOs get from the audiences may depend on the size of the audience and the intensity of their requests (H. Tsiotsou, 2013; Marcum & Greenstein, 1985). In the earlier part of a performance evaluation episode, however, CEOs facing negative attainment discrepancy may not readily respond to the pressure. They are likely to stick to the strategies implemented at the beginning of the evaluation episode, a case that is typical of confirmation bias. Moreover, substantial changes in the strategies incur significant costs, an outcome that they seek to avoid. In the later part of the episode, however, CEOs facing negative attainment discrepancy may react to audience pressure differently depending on the strength of audience pressure. A CEO perceiving weak audience pressure may try to satisfy audience by minor changes in strategies for quick and easy improvements whereas a CEO perceiving strong audience pressure may feel pressure to initiate major changes in strategies for improving long term performance (Theodorakis, Alexandris, Tsigilis, & Karvounis, 2013).

In the MLB context, spectators usually demand replacing underperforming players with other players when the team's performance is below their expectation. A manager of underperforming team at an earlier regular season may not initiate major changes in his starting lineup constructed at the beginning of the season. The strength of audience pressure however will influence risk taking behaviors of the manager when they face negative attainment discrepancy at a later regular season. A manager perceiving weak audience pressure may try to soothe spectators by initiating minor changes in his starting lineup since major changes mean admitting his decision errors in constructing the starting lineup constructed at the beginning of the season. A manager perceiving strong audience pressure may initiate major changes in his starting lineup since he cannot soothe spectators with minor changes.

Especially when the performance of the team is far below its aspiration levels at a later regular season, spectators demand not only the major changes in starting lineup but also firing the manager. Facing with the risk of future unemployment, the manager will give more chances to rookie players to signal to the spectators that he is investing for the future and the team will perform better in the next season.

Hypothesis 5A. The relationship between the DPSG and risk taking behaviors will be positively moderated by the size of external audiences.

Hypothesis 5B. The relationship between the DPHG and risk taking behaviors will be positively moderated by the size of external audiences.

III. Methods

1. Sample and Data Collection

We test our hypotheses using a comprehensive dataset of the American League of the MLB from 2007 to 2016. From 2007 to 2012, there were 14 American League teams: 5 teams in east division, 5 teams in central division, and 4 teams in western division. As Houston Astros moved from National League to the western division of the American League in 2013, there were 15 American League teams from 2013 to 2016. As a result of the change, five teams belong to each division. In a one-year season, each team played 162 matches from April to October. Our unit of analysis is a match by a team. Our finalized sample was an unbalanced panel of 22,550 observations.

We collected observations from MLB.com(<http://www.mlb.com>), the official MLB website, and Baseball-reference.com(<http://www.baseball-reference.com>), which provided statistical data of the MLB. We collected standings data of each team (current rankings, wins, loses, winning percentage, number of games behind division leader up to each date) from the MLB.com website. We obtained statistics of each player (at bat, rookie status), statistics for each manager (age, manager team career) and attendance data from the Baseball-reference.com. We used Python 3.6.1 to extract relevant data from the two databases.

2. Measures

2.1. Dependent Variable

Use of rookie batters. Our dependent variable was the number of rookie batters in the starting lineup of a team at a match, which reflects the degree of risk taking at the team level. The rookie status was determined by the MLB official rules. According to the rule, “a player shall be considered a rookie unless, during a previous season or seasons, he has (a) exceeded 130 at-bats or 50 innings pitched in the Major Leagues; or (b) accumulated more than 45 days on the active roster of a Major League club or clubs during the period of 25-player limit (excluding time in the military service and time on the disabled list).” The rookie status of a player was determined at the beginning of each season and thus did not change during the season. Based on each batter’s whole career statistical data recorded in the Baseball-reference.com database, we flagged whether a batter was a rookie batter. The maximum number of our dependent variable was 9 for American League games since pitchers do not have to be at bat in the American

League games.

2.2. Independent Variables

DPSG (deadline proximity adjusted performance-social aspiration gap).

The measure consisted of two parts: a numerator (social aspiration gap) and a denominator (games left). The numerator was the performance-social aspiration gap accounting for the discrepancies between the 1st ranked team of the division and the focal team. This measure was based on the assumption that every team sought to rank the 1st in the regular season. This measure differed from the previous approach where a spline function was employed to measure the failure to satisfy an aspiration level. The rationale behind this measure was to incorporate the timing of performance feedback so that the impact of performance feedback should vary during a season.

It was operationalized as the number of games of a focal team behind the division leader. In particular it was calculated by $[(\text{Win-loss of the 1st ranked team in the focal team's division}) - (\text{Win-loss of the focal team})] / 2$. If a division leader had a record of 20 wins and 10 losses and a focal team had a record of 16 wins and 14 losses, then the gap will be 4 ($= [(20-10) - (16-14)] / 2$). It was the number of games that a focal team should win against the division leader to tie the leader in divisional standings. The larger the number, the more seriously the focal team underperformed relative to the division leader. For a division leader, it was calculated by $[(\text{Win-loss of the 2nd ranked team in the focal team's division}) - (\text{Win-loss of the division leader})] / 2$. As the larger the negative value of the performance-social aspiration gap of a division leader, the farther the division leader were ahead of the 2nd ranked team.

The denominator, games left, is the number of matches that the focal team should play in the remaining regular season including the focal match. If a focal team played 20 games in a regular season before a focal match, games left should be 142(=162-20). We used the denominator to consider deadline proximity. Standing in five games behind a division leader for instance had very different decision making implications for the manager depending on games left. When 100 games were left in the regular season, for instance, the manager would not initiate dramatic lineup changes as there were many games left to catch up. When 4 games were left, however, the focal team did not have any chance to win the division. The manager would choose whether to increase his team's winning percentage in the current regular season or to invest for the next season by giving more playing experiences to rookie batters.

DPHG (deadline proximity based historical aspiration gap). The variable also had a numerator (performance-historical aspiration gap) and a denominator(games left). The numerator accounted for the discrepancies in performance between the past three seasons and a given time in the current season. To calculate the performance-historical aspiration gap, we first identified the difference between weighted average winning percentage of the past three years of the focal team and the current winning percentage of the team. We subtracted the latter number from the former number. And then we multiplied the difference by the number of games the focal team already played in the regular season. To give more weight to the records of more recent years, we used weights of 0.2, 0.3, and 0.5 for winning percentages of three years ago, two years ago, and the last year respectively. The larger the value of the gap, the more seriously the focal team underperformed compared to its historical performance. The denominator games left were used to consider deadline proximity.

Remaining contract duration of manager. We measured the variable as the number of remaining years that the manager of a focal team was contracted to manage the team at the beginning of the focal season. If a manager signed a five-year contract with a focal team and managed the team for two years, for instance, we flagged 3 for the remaining contract duration of the manager. When a new manager was appointed in the middle of a regular season, we reset the variable according to new contracts. To measure the variable, we first identified managers of each team during our observation period from the Baseball-reference.com and then searched the contract duration information of them via the Wikipedia.com, press release of each team, and newspaper articles.

Audience pressure. We operationalized the variable as the sum of the attendance of each home game of a focal team in the prior regular season. We divided the aggregated attendance by one million. We obtained the attendance data from the Baseball-reference.com website. The number indicated the potential size of home fans.

2.3. Control Variables

We included several control variables that could potentially influence the use of rookie batters. We included two binary variables related to the DPSG. When the value of the variable exceeded 1, the team could not be a division leader even though the focal team wins all remaining games. When a team was 5 games behind its division leader and the team would play 4 additional matches in the remaining regular season, for instance, the team could not have a higher winning percentage than the current division leader. When a team could not be a division leader, the team would use more rookie batters in its remaining matches to invest for the future. To control for the effect, a variable failed to achieve social aspiration level is coded 1 if the value of the

DPSG exceeds 1 and 0 if it does not.

When the value of the DPSG is below -1, then the team was determined to be a division leader. When a team was 5 games ahead of the 2nd ranked team in its division and the focal team would play 4 additional matches in the remaining regular season, for example, the focal team secured its division leader position even though the team would lose all 4 remaining matches. When a team succeeded in being a division leader, the team would rest non-rookie batters and test rookie batters in its remaining regular season games to prepare for the post season. To control for the effect, a variable social aspiration level achieved was coded 1 if the value of the DPSG was below -1 and 0 if it is not.

In a similar fashion, we included two binary variables related to the DPHG. When the value of the variable exceeded 1, the team cannot have a winning percentage higher than past years even though the focal team win all remaining games. Since the historical aspiration level could be a minimum performance target of a manager, he would rely on proven non-rookie batters to fill the performance-aspiration gap. To control for the effect, a variable failed to achieve historical aspiration level was coded 1 if the value of the DPHG exceeded 1 and 0 otherwise. When the value of the DPHG was below -1, then the team was determined to perform better than past years. When a team succeeded in achieving historical aspiration level, the team would be more focused on developing rookie batters for the future than on winning more games in its current regular season. To control for the effect, a variable historical aspiration level achieved was coded 1 if the value of the DPHG was below -1 and 0 otherwise.

We controlled for the age of manager—manager age. As older managers are less likely to be obsessed with their future career concerns, they are more likely to sacrifice short term performance for long term

competitiveness of their teams and thus more likely to use rookie batters. On the contrary, older managers may prefer veterans over rookies as they feel veterans more comfortable due to age similarity. We also controlled for manager team career, the number of years that a manager has managed the focal team in his whole career at the beginning of the focal season. Since the manager will be more powerful in the team as he has managed the focal team longer, he will be less sensitive to the short term performance and more likely to invest for the future and thus use rookie batters. On the contrary, managers with longer manager team career are less likely to use rookie batters as they might have involved in contracting more non-rookie batters in his team career and they have built trust relationship with veteran batters.

We controlled for streak, the number of games that a focal team won or lose matches in a row. If a team won 5 games in a row before a focal game, for instance, the variable had a value of 5. If a team lost 3 games in a row before a focal game, the variable had a value of -3. The larger of the number of streak, the less likely the manager of the focal team changes its starting lineup. When a team lost many games in a row, its manager was very likely to initiate substantial changes in its starting lineup and thus more likely to use rookie batters. We also controlled for Home that indicated whether the game was held at the home stadium of a focal team or the away stadium. Because managers would feel more pressure to win in the home stadium, they would likely use proven non-rookie batters in the home field. We flagged 1 for a home field match and 0 for an away field match.

3. Analysis and Estimation

Since the number of rookie batters in the starting lineup was a non-negative discrete variable, we used Poisson regressions with cluster robust

standard errors. We chose this type of regression over a negative binomial model, because cluster robust Poisson regression was based on weaker distributional assumptions and was able to deal with the data with some outliers (Cameron and Trivedi, 2009). To choose between Poisson regression models and negative binomial regression models, we executed a model comparison analysis by carrying out the countfit function in STATA 13, which provides a graph that draws the residuals from the Poisson and negative binomial models in association to count outcome. In the graph, the model with smaller residuals that is closest to zero proves to have higher fit for data analysis, because the smaller size of residuals is the indication of better model fit. Since Poisson specification has smaller size of residuals, we chose Poisson regression models. Team fixed effects were included to control for unobserved heterogeneity among teams and years (Beck, Brüderl, and Woywode, 2008).

IV. Results

Table 1 provides the means, standard deviations, and correlations of the variables that were used in this study. These statistics were based on 22,550 team-matches. A positive correlation between DPSG and DPHG was observed, hinting that poor performing teams are likely to underperform relative to their historical records.

Insert Table 1 about here

Table 2 presents the results from Poisson regression. Model 1 is a baseline. We add main independent variables in Model 2, add interactions between DPGs and remaining contract duration of manager in Model 3, and add interactions between DPGs and audience pressure in Model 4, and include

all four interactions in Model 5. The chi-square tests at the bottom of Table 2 show that the addition of interaction terms significantly improved the goodness of fit.

Insert Table 2 about here

The analysis provides strong support for Hypothesis 1A and Hypothesis 1B, which suggested that DPGs will have positive associations with the use of rookie batters. The coefficients in Model 2 imply that underperforming managers are more likely to use rookie batters as timing of the focal game approaches to the regular season deadline.

The results provide strong support for Hypothesis 2, which predicted that managers with longer remaining contract duration will be more likely to use rookie batters. Also strongly supported is Hypothesis 3, which suggested that managers with a larger size of home audience will more likely to use rookie batters as loyal home fans put pressures on the managers to replace underperforming batters with rookie batters.

The results provide support for Hypothesis 4A, which predicted that remaining contract duration of manager intensifies the positive effect of the DPSG on the use of rookie batters. The results imply that underperforming managers are more likely to use rookie batters as the focal match is held near the regular season deadline when they have more years to act as managers.

However, there is no support for Hypothesis 4B, which suggested that remaining contract duration of manager intensifies the positive effect of the DPHG on the use of rookie batters. Contrary to our prediction, the coefficient of the interaction term is a negative and statistically significant at

$p < 0.1$ level. When a team performs far below the historical aspiration level near the regular season deadline, the manager would worry about being fired by the team and thus would be eager to increase the team's winning percentage. Managers with a longer remaining contract duration will have stronger career concern on being fired in the middle of his contract duration. This career concern would result in using more proven non-rookie batters.

Hypothesis 5A and 5B suggest that audience pressure intensifies the positive effects of the DPGs on the use of rookie batters. As the statistically non-significant coefficient of interaction of audience pressure and the DPSG in Model 3 indicates, there is no support for Hypothesis 5A. The results provide no support for Hypothesis 5B, which suggests that audience pressure diminishes the positive effect of the DPHG on the use of rookie batters. Contrary to our prediction, the coefficient of the interaction term is negative and statistically significant at $p < 0.01$ level. The career concern of being fired in the middle of his contract duration would be applied here as in Hypothesis 4B.

Besides our main independent variables, all of eight control variables had statistically significant effects on the use of rookie batters in Model 2. As expected, teams that failed to be division leaders or succeeded in achieving social aspiration level used more rookie batters in the remaining regular season games. Teams that achieved historical aspiration level also used more rookie batters in the remaining regular season games. Teams that failed to achieve historical aspiration level used less rookie batters in the remaining regular season games. Manager age and manager team career had positive and statistically significant effects on the use of rookie batters. The results indicate that older managers and managers with a longer tenure at the focal team are less likely to use rookie batters. Streak had a positive and statistically significant effect on the use of rookie batters, suggesting that

teams underperforming in recent matches are more likely to use rookie batters.

V. DISCUSSION AND CONCLUSIONS

By using 2007 to 2016 game-by-game data of the MLB as a research context, this paper empirically showed that agency related factors influence performance feedback in risk taking behaviors. As predicted, below-aspiration baseball teams respond differently to performance feedback depending on the early and the later stages in a season. Contrary to our predictions, the effects of deadline proximity adjusted performance-historical aspiration gap on risk taking behaviors are negatively moderated by the CEO's remaining contract duration and audience pressure. Our conjecture is that the historical aspiration level, i.e., performing as good as past performance, works as a minimum performance target whereas the social aspiration level, i.e. being a division leader, works as a maximum performance target in our research setting. Accordingly, a manager may not be fired by failing to be a division leader whereas he can be fired or not be hired elsewhere by failing to achieve the historical aspiration level. This career concern renders managers not to take risks by using rookie players when the current performance is below historical aspiration level at a later regular season.

Key contributions of our study are to import agency related factors to performance feedback model. Depending on the interests of decision makers, they respond very differently to the same performance feedback. First, our study showed that the effects of performance-aspiration gap on risk taking behaviors would vary depending on when the gap is found during a performance evaluation episode. Second, our study showed that the job

security of managers and audience pressure would moderate the effects of performance feedback on risk taking behaviors.

While this paper has managed to reveal the temporal aspect of performance feedback, this paper is not without limitation. First, because it has been conducted in a rather unique setting, it may have some generalizability issue. Second, our test presumes the continuity of the feedback effects, whereas a conventional spline-function model presumes discontinuity in such effects. A further test is needed to compare our time-discounted aspiration gap with the reference-point splitting aspiration gap. Third, our test is not perfectly free from the endogeneity issue when the choice of lineups is subject to the type of the opponent in a given match. Again the future research may fruitfully examine the dyadic nature of competition in our empirical context.

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VI. 국문초록

본 연구는 기존 성과 피드백 모델(Performance Feedback Model)의 이론을 남은 기간(Deadline Proximity), 관리자의 남은 계약 연수(Remaining Contract Duration), 외부 이해관계자의 압박(Audience Pressure)의 3가지 조절 효과를 추가적으로 고려하여 발전시킨 논문이다. 본 연구는 2007년부터 2016년 사이의 메이저리그 저성과 프로야구 팀의 위험 감수 행동을 분석하였는데, 남은 기간이 적을수록 팀이 위험 감수 행동, 즉 신인 선수를 스타팅 라인업에 많이 중용하는 것을 밝혔다. 또한, 이러한 위험 감수 경향이 CEO의 계약연수가 많이 남아있을수록, 경기를 참관한 관중이 적을수록 강화될 것이라 예측하였다. 대부분의 가설은 지지되었으나, 분석 결과 관중이 적을수록 위험 감수 행동이 많이 나타나지는 않았으며, 오히려 위험 감수 행동을 약화시키는 것으로 나타났다.

주제어: 성과 피드백, 위험 감수 경향, 남은 계약 연수

학번: 2016-20576

FIGURE 1
Theoretical Framework

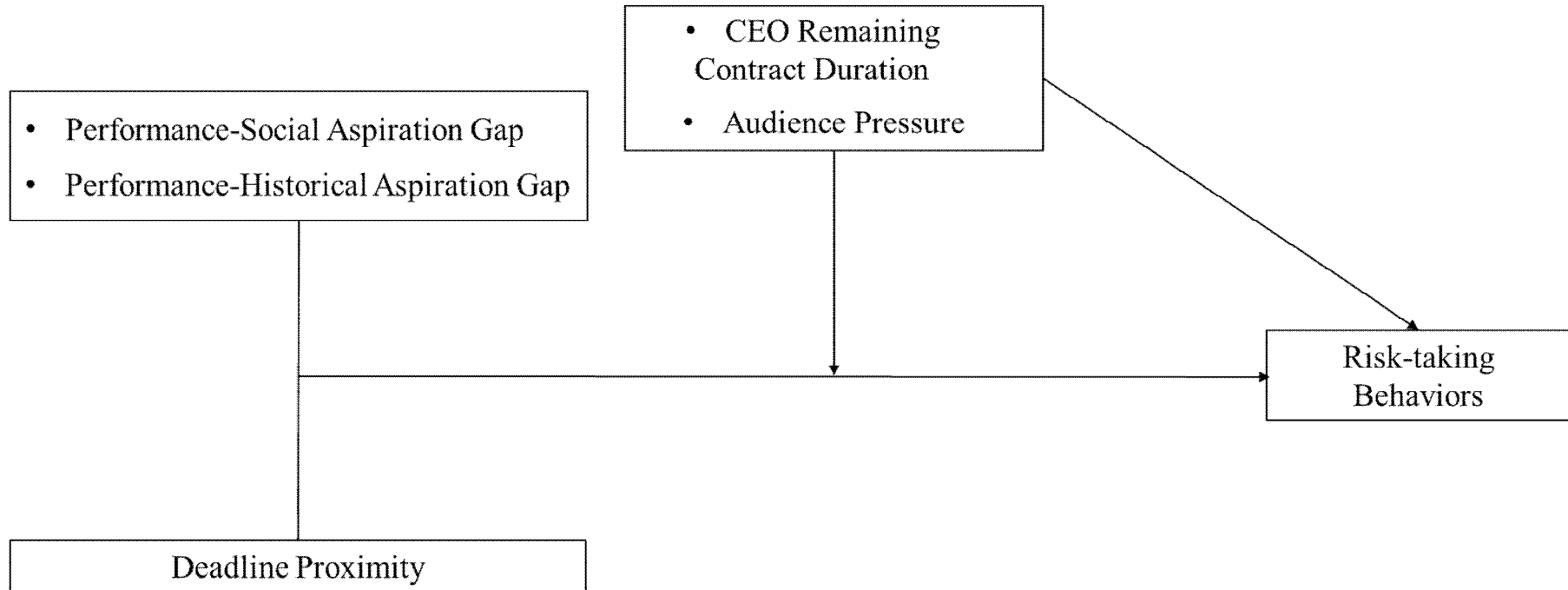


TABLE 1 Descriptive Statistics ^a

| Variable | Mean | S.D. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|--|-------------|-------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|
| 1. Number of rookie batters in the starting lineup | 0.59 | 0.76 | | | | | | | | | | | | |
| 2. Deadline proximity adjusted social aspiration gap | 0.25 | 0.92 | 0.17 | | | | | | | | | | | |
| 3. Deadline proximity adjusted historical aspiration gap | 0.00 | 0.60 | 0.17 | 0.32 | | | | | | | | | | |
| 4. Remaining contract duration of manager | 2.32 | 1.57 | 0.06 | -0.09 | -0.02 | | | | | | | | | |
| 5. Audience pressure | 2.39 | 0.68 | 0.04 | -0.09 | 0.08 | 0.21 | | | | | | | | |
| 6. Failed to achieve social aspiration level | 0.06 | 0.24 | 15 | 0.71 | 0.18 | -0.05 | -0.06 | | | | | | | |
| 7. Social aspiration level achieved | 0.01 | 0.08 | -0.01 | -0.21 | -0.20 | 0.07 | 0.05 | -0.02 | | | | | | |
| 8. Failed to achieve historical aspiration level | 0.02 | 0.13 | 0.14 | 0.43 | 0.56 | -0.01 | 0.04 | 0.36 | -0.01 | | | | | |
| 9. Historical aspiration level achieved | 0.02 | 0.13 | -0.02 | -0.02 | -0.53 | 0.00 | -0.04 | 0.09 | 0.34 | -0.02 | | | | |
| 10. Manager age | 51.67 | 6.55 | -0.10 | -0.03 | -0.05 | -0.19 | 0.06 | -0.02 | 0.01 | -0.03 | 0.02 | | | |
| 11. Manager team career | 4.74 | 3.64 | -0.01 | -0.06 | 0.04 | 0.17 | 0.41 | -0.05 | 0.03 | 0.01 | -0.02 | 0.24 | | |
| 12. streaks | 0.04 | 2.56 | -0.06 | -0.08 | -0.08 | 0.05 | 0.07 | -0.07 | 0.02 | -0.05 | 0.04 | 0.03 | 0.05 | |
| 13. home | 0.50 | 0.50 | -0.04 | 0.01 | 0.01 | 0.00 | 0.00 | 0.01 | -0.02 | 0.00 | -0.01 | 0.00 | 0.00 | 0.09 |

TABLE 2 Fixed Effects Poisson Regression Analysis for the Use of Rookie Hitters in the initial Batting Order^a

| Variables | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|--|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Deadline proximity adjusted social aspiration gap (DPSG) | | 0.0436*** (0.00892) | 0.0156 (0.0130) | 0.0221 (0.0278) | -0.0223 (0.0305) |
| Deadline proximity adjusted historical aspiration gap (DPHG) | | 0.182*** (0.0145) | 0.219*** (0.0188) | 0.347*** (0.0493) | 0.407*** (0.0533) |
| Remaining contract duration of manager | | 0.0384*** (0.00544) | 0.0379*** (0.00552) | 0.0384*** (0.00545) | 0.0377*** (0.00553) |
| Audience pressure | | 0.0877*** (0.0139) | 0.0883*** (0.0139) | 0.0896*** (0.0143) | 0.0894*** (0.0143) |
| Deadline proximity based social aspiration gap × Remaining contract duration of manager | | | 0.0144*** (0.00497) | | 0.0169*** (0.00507) |
| Deadline proximity based historical aspiration gap × Remaining contract duration of manager | | | -0.0182** (0.00707) | | -0.0208*** (0.00778) |
| Deadline proximity based social aspiration gap × Audience pressure | | | | 0.00804 (0.0111) | 0.0126 (0.0110) |
| Deadline proximity based historical aspiration gap × Audience pressure | | | | -0.0605*** (0.0177) | -0.0667*** (0.0178) |
| Failed to achieve social aspiration level | 0.482*** (0.0323) | 0.393*** (0.0401) | 0.393*** (0.0403) | 0.398*** (0.0403) | 0.399*** (0.0404) |
| Social aspiration level achieved | -0.0421 (0.133) | 9.51e-06 (0.134) | 0.0419 (0.136) | -0.0336 (0.135) | 0.0176 (0.138) |
| Failed to achieve historical aspiration level | 0.500*** (0.0492) | -0.106 (0.0686) | -0.105 (0.0690) | -0.126* (0.0694) | -0.132* (0.0702) |
| Historical aspiration level achieved | -0.253*** (0.0768) | 0.143* (0.0815) | 0.132 (0.0817) | 0.211** (0.0834) | 0.208** (0.0837) |
| Manager age | -0.0204*** (0.00137) | -0.0175*** (0.00141) | -0.0174*** (0.00141) | -0.0172*** (0.00141) | -0.0171*** (0.00141) |
| Manager team career | 0.00677*** (0.00245) | -0.00425 (0.00270) | -0.00401 (0.00270) | -0.00428 (0.00270) | -0.00407 (0.00270) |
| Streaks | -0.0208*** (0.00336) | -0.0221*** (0.00337) | -0.0221*** (0.00337) | -0.0219*** (0.00337) | -0.0218*** (0.00338) |
| Home | -0.0964*** (0.0174) | -0.100*** (0.0174) | -0.1000*** (0.0175) | -0.0997*** (0.0174) | -0.0993*** (0.0175) |
| Wald Chi-square | 853.01*** | 1129.84*** | 1139.98*** | 1141.62*** | 1153.96*** |
| Degrees of Freedom | 8 | 12 | 14 | 14 | 16 |
| $\Delta\chi^2$ compared with model 2 (<i>df</i>) | | | 10.14 (2) | 11.78 (2) | 24.12 (4) |

^a Data are based on 22,550 team-matches data representing 15 teams. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1, Two-tailed tests.