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Pay dispersion and team performance in the National Basketball Association

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Abstract

This study examines the relationship between player pay dispersion and team performance in the National Basketball Association (NBA) in North America. Specifically, the pay dispersion across teammates in each NBA team was analyzed according to four different models based on their playing time and team performance. Salary data for all NBA teams were collected over 23 consecutive seasons from between 1995-96 to 2017-18. Pay dispersion was measured using the Gini coefficient. Key findings are that the effects of the dispersion are positive for the model with all players in their teams, whereas the effects of pay dispersion on team performance are negative for the models with players who have more playing time, which indicates that greater pay dispersion among the most contributing players is associated with lower team performance. Teams should consider how they can more fairly allocate their capped payrolls among the highest contributing players on their teams based on the equity principle of distributive justice. Teams should consider how they prepare and incorporate other reward methods, such as signing bonuses, which may reduce injustice perceptions of underpaid players and eventually enhance team performance.

Key words: pay dispersion, team performance, Gini coefficient, NBA

Introduction

This article investigates the relationship between team pay dispersion and team performance in the National Basketball Association (NBA) according to different models based on players' contribution to their teams (e.g., playing time). Payrolls for major professional leagues, such as the NBA, Major League Baseball (MLB), Premier League, and La Liga, have drastically increased. For example, the salary cap of the NBA increased from 11.871 million dollars (1990/1991 season) to 109.140 million dollars (2019/2020 season).

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Certain teams such as the New York Yankees in the MLB and Chelsea in the Premier League possess considerable economic resources and have invested significant funds in order to recruit the most talented athletes in their leagues. Those teams with high payrolls were expected to perform well in the leagues, and empirical studies found a positive correlation between the amount of team payroll and team performance (Glasnapp, 2004; Hall & Zimbalist, 2002, Tao, Chuang, & Lin, 2016). However, as highlighted by Glasnapp (2004), a positive correlation does not necessarily infer causality between payroll and team performance. In fact, Berri and Schmidt (2010) claimed that team pay could explain less than 10 percent of the variation of team's win in the NBA and the National Football League (NFL) in the US. Indeed, this weak payroll-performance is easily noticed that many teams with relatively high payrolls in various professional leagues have experienced unsuccessful seasons, some even being excluded from the playoffs after a regular season. For instance, though the New York Yankees have routinely ranked among the top two baseball teams in payroll over the past 25 years, during a four year stretch from 2013-16, the team's performance did not allow for participation in postseason play. Nevertheless, given the positive relationship between payroll and team performance, professional teams must ensure financial efficiency is prioritized over misuse of money.

Against this backdrop (Berri & Schmidt, 2010), one method of examining this phenomenon more closely would be to explore the relationship between patterns of pay distributions on team performance to uncover successful strategies because teams that send an excessive proportion of their payroll to a handful of players are more likely to be unsuccessful due to a lack of resources to develop a balanced team (Annala & Winfree, 2011). Salary disparity among athletes on a team is, in essence, derived from the nature of sports. Even though a professional sports organization or team is not always analogous to a non-sport organization or company, the employment relationship between athletes and owners in sports teams is similar to the relationship between employees and employers in normal business companies. As an employer, an owner is motivated to provide a competitive reward system in order to stimulate its players' best performance on the field throughout a season. Different from ordinary business organizations or companies, the salaries of professional athletes heavily depend upon the equity principle, so "members or groups who have contributed the most to the organization should receive the greatest distributions and allocations of resources" (Kim, Andrew, Mahony, & Hums, 2008, p. 380). In other words, players' past or expected contributions with productivity, effort, ability, spectator appeal, and revenue generation (Hums & Chelladurai, 1994; Mahony, Hums, & Riemer, 2002; Tornblom & Johnson, 1985) toward their teams' success should receive the greatest reward. Given this context, the current study aims to examine the effects of pay dispersion on team performance among professional basketball teams of the NBA. Particularly, this research is designed to examine whether pay dispersion could potentially have different effects on team performance vertically among all players on a team and horizontally within groups based on players' playing time. Although players can contribute their team with their productivity, effort, ability, spectator appeal, and revenue generation in sports, we utilize playing times as a measure of contribution in developing four research models.

Theoretical Framework

Payroll Dispersion

Pay dispersion refers to "differences in pay levels between individuals within (i.e., horizontal or lateral dispersion) and across (i.e., vertical dispersion) jobs or organizational levels" (Shaw, 2014, p. 522). The dispersion allows relatively few levels, jobs, or individuals at the top management or special groups to receive a greater portion of money with a wider range of payroll across individuals, whereas a compressed distribution system pays more equally with a narrower

range across jobs or employees within organizations (Bloom, 1999).

In the literature, pay dispersion has been justified and understood based on various theoretical frames, such as motivation theory (Lawler, 1971), equity theory (Adams, 1963), the economics standpoint (Bishop, 1987), and tournament theory (Lazear & Rosen, 1981). According to the theories, pay dispersion with wide differentials within an organization is expected to increase employee efforts for higher pay (Lawler, 1971; Kepes, Delery, & Gupta, 2009; Shaw, Gupta, & Delery, 2002). The dispersion works as a tool for the organization and him/herself to determine whether who will stay with the organization or leave the organization given the competitive work environment (Lazear, 1999). However, there is considerable dispute over the reward allocation system in organizations and its effects as researchers have shown opposite views and inconsistent results regarding whether a wider range of payroll across employees are more beneficial than those with a narrower range of payroll to organizations (Kepes et al., 2009). For instance, Ding et al. (2009) argued that vertical dispersion would be positively related to performance in an organization because higher pay for managerial skills, which are more critical and valuable to the organization's success, could attract talented leaders with comparatively rarer skills and abilities, which eventually would have a positive association with an organization's performance in areas such as sales growth and product/service quality. In contrast, they also found that horizontal dispersion would be negatively associated with the performance. Hunnes (2009) found pay dispersion did not show significant associations with organizational productivity.

Researchers who supported a wider range of payrolls among employees, whether the differentials are from performance, seniority, or knowledge and skills, claimed that the pay allocation strategy should be beneficial to organizations. According to Livernash (1957), pay levels should be differentiated on the basis of an employee's contributions, human capital, and efforts toward their organizations. Hamilton and Macy (1923) classified the pay systems into "uniform" and "divergent" distributions and also insisted that reward for superior individuals should be compensated contingently on excess ability, knowledge, skills, training, or diligence over common labors. Empirical studies of the positive aspects of differentiated pay distributions also supports the claim that pay levels with different rewards tend to propel enhanced performance from employees in the future, and greater pay dispersion in the organization motivates employees who have shown poor performance to perform better in order to receive a higher compensation or bonus (Bishop, 1987; Leonard, 1990; Milgrom & Roberts, 1992; Shaw et al. 2002). For example, Mitchell, Lewin, and Lawler (1990) found that employees who were paid under differentiated incentive systems were more productive than the employees who were paid on an hourly basis. Shaw et al. (2002) proposed that a positive relationship between pay dispersion and organizational performance would be expected when the pay dispersions arise from individual incentives, which are normatively accepted sources within organizations, while a negative relationship would be expected for organizations which require more interdependent work from their members. Beaumont and Harris (2003) stated that "the hierarchical model will produce its hypothesized positive relationship with performance in organizational settings where work interdependencies are minimal, while the compressed model will be most effective in a situation requiring extensive collaboration" (p. 54).

On the other hand, researchers argued that a wider range of pay differentials could negatively affect organizational effectiveness and productivity (Bloom, 1999; Pfeffer & Langton, 1993). Researchers (Kohn, 1993; Lazear, 1995; Pfeffer, 1994) indicated that the negative impacts of a hierarchical pay distribution on teammates with low levels of pay are sources of jealousy, organizational disruption, dissatisfaction toward job and organization, poor performance, and feelings of inequality. Cowherd and Levine (1992)

examined 89 corporate business units and found that less dispersion in wages between lower level employees and upper management resulted in greater product quality. Pfeffer and Langton (1993) found that a greater degree of wage dispersion among faculty members had a negative impact on the level of satisfaction, research productivity, and collaborations on research with other faculty members. Researchers (Cowherd & Levine, 1992; Pfeffer, 1994) even proposed that compressed pay distributions with a narrow payroll range tend to be more desirable to increase group performance, such as team-oriented behaviors and common goals, because a strong perception of injustice from the differentiated compensation could negatively affect the comparatively lower paid employee's performance and eventually decrease the overall efficiency of the team. For instance, Deutsch (1985) insisted that pay compression utilized with the equality principle of distributive justice is instrumental in developing harmonious social relations, cooperation, effort, and commitment. Empirical evidence of positive effects of compressed pay distributions has largely corroborated previous theoretical research.

Outcomes of Pay Dispersion in Sports

Researchers often have utilized sport organizations or teams to examine the effects of payroll on team performances (Bloom, 1999; Glasnapp, 2004; Hall & Zimbalist, 2002; Mizak & Anthony, 2004; Sommers, 1998). Because of the public nature of sports, researchers can easily obtain players' data, such as salary and performance information, while researchers encounter greater challenges to collect similar information in non-sport organizations. Concerning pay dispersion, the contrastive effects of pay dispersion on performance were also noted in sports. For individual sports, Ehrenberg and Bognanno (1990) found that hierarchical prize distributions significantly induced better player performance on the European professional golf tour, and Becker and Huselid (1992) also found hierarchical distributions to be associated with results on automobile race competitions.

When it comes to team sports, many studies have shown inconsistent results regarding the effects of pay dispersion on team performance. Frick, Prinz, and Winkelmann (2003) examined the effects of the dispersion of four major sports (e.g., basketball, ice hockey, baseball, and soccer) in the US and reported that the effects of internal payment dispersion on sports teams could depend on the sport. According to Frick et al. (2003), inequality in sports with relatively few players, such as basketball and ice hockey, seemed to benefit their team's performance, whereas sports with more registered players, such as soccer and baseball, were affected by income inequality.

Mondello and Maxcy (2009) examined the impact of salary dispersion and team performance in the National Hockey League (NHL) and found a team's performance was inversely related to the degree of pay dispersion among the teams, which did not support Frick et al.'s (2003) study. In the MLB, several studies (Annala & Winfree, 2011; Similarly, Jewell, & Molina, 2004; Tao et al., 2016; Wiseman & Chatterjee, 2003) reported that salary inequality in the MLB had negative effects on team performance. In other words, pay distribution with a narrow range of dispersion positively affected team performance. However, Tao et al. (2016) found that the relationship became weaker as a payroll relative position (a team's payroll rank in the MLB) was included as a control variable because inter-team pay dispersion is more influential on team performance than intra-team pay dispersion in their study. Coates, Frick and Jewell (2016) revealed the productivity of major league soccer (MLS) teams in the US could be harmed by the salary inequality. Collectively, the findings from these studies support the negative effects of pay dispersion noted by Depken (2000). Levine's (1991) hypothesis insisted that pay dispersion should likely prompt jealousy and mistrust among teammates, and eventually reduce overall team performance. In other words, many underpaid athletes in a team perceive salary unfairness compared to relatively few highly compensated star

players, and the perceptions of injustice tend to affect their emotions, cognitions, and performances on the field. Eventually, when those injustice perceptions influence team performance, the pernicious effects become more evident in spite of higher-than-average team payroll.

However, the research also produced inconsistent results related to outcomes. For instance, Halevy, Chou, Galinsky and Murnighan (2012) found hierarchical differentiation in the NBA had a positive relationship with team performance via intragroup coordination and cooperation within teams and insisted that pay dispersion could improve team performance for procedurally interdependent sports like basketball (as opposed to procedurally independent sports like baseball). Berri and Jewell (2004) found no significant relationship between pay dispersion and team performance in the NBA. Franck and Nuesch (2011) reported that high- or low-degree pay dispersion strongly influenced team performance, while mid-level dispersion did not seem to be influential. Katayama and Nuch (2009) concluded that salary dispersion does not influence team performance regardless of the difference in measurement groups of income inequality in team.

Hypothesis Development

As discussed, inconsistent results regarding the effects of pay dispersion in various sports have been reported by many studies. However, given that equity theory (Adams, 1963) and expectation theory (Vroom, 1964) suggest that higher value rewards incentivize team member effort and work contribution, and Ding, Akhtar, and Ge (2009) argued that vertical pay disparity within an organization would enhance organizational performance, it is expected that higher pay dispersion among teams should enhance team performance. According to tournament theory (Lazear & Rosen, 1981) asserting that compensation should be based on each worker's relative productivity than their absolute productivity, high pay dispersion would be positively related to team performance. Frick et al. (2003) insisted that high pay dispersion in sports with relatively few players like basketball should be beneficial to team's performance and Halevy et al. (2012) found positive relationship between pay dispersion and team performance.

Hypothesis 1. Higher degrees of pay dispersion on basketball team members will be beneficial to team performance.

As the overall literature on pay dispersion highlights, the impact of income disparity on organizational outcomes may differ according to diverse circumstances. On one hand, payment discrimination according to the hierarchy in an organization or based on performance outcomes and task requirements would seemingly be beneficial for obtaining organizational efficiency (Hamilton & Macy, 1923; Livernash, 1957). On the other hand, income disparity among teammates could undermine critical teamwork behavior and lead to dissatisfaction (Kohn, 1993; Lazar, 1995; Pfeffer, 1994) based on team-cohesiveness hypothesis (Levine, 1991) suggesting that a low level of pay dispersion within an organization could decrease dissonance among its members in the organization, which can help team cohesiveness and performance. Notwithstanding case sensitivity, previous sport research dealt with rigid situations by focusing on the fragmentary point of view. Given these contradictory findings, the primary purpose of this study is to examine the relationship between pay dispersion and team performance according to four different groups of players based on their playing time.

Kulik, Lind, Ambrose and MacCoun (1996) argued that individual characteristics and backgrounds could impact each person's perception of justice because of their different self-interests or emphases. Therefore, individual differences should influence corresponding reactions to the perceived inequality (Beersma et al. 2003; Trever & Wazeter, 2006). In turn, the effects of pay dispersion on performance and attitudes toward the dispersion could be moderated by individual differences

(Frank, 1985; Martin, 1981). In other words, the status differences experienced by individual players in a team could prompt different perceptions of fairness regarding pay dispersion in the team, which may eventually influence individual or team performance. Hunnes (2009) insisted that horizontal disparity had a negative impact on organizational performance. According to Ding et al. (2009) and Hunnes (2009), the practice of paying higher wages to more experienced and talented players through vertical pay dispersion could be a natural outcome that is beneficial in professional sports. However, when it comes to a group of crucial athletes, like starting players, horizontal pay disparity could have a negative impact on team performance. Trevor and Wazeter (2006) stressed the perception of negative pay dispersion pervades individuals with low salaries within their payment system. Bucciol, Foss, and Piovesan (2014) examined effects of pay dispersion and team performance in Italian football league and revealed that the effects of pay dispersion on team performance could be positive and negative based on different definitions of team, although the same data were analyzed. In the study, the effect was negative when they only included the players who actually played in a given match and considered each player's actual playing time, but the effect disappeared and became positive as the definitions of team expanded. Accordingly, hypothesis 2 was proposed.

Hypothesis 2. Higher degrees of pay dispersion among the members who contribute the most in a basketball team will have negative impact on team performance.

Salary Policies in the NBA

The NBA has unique salary policies compare to other professional sports. According to the collective bargaining agreement between the NBA and National Basketball Player Association (NBAP), salary for rookie player are different from the status of draft. Once players were drafted in first round, they can get paid as followed by the rookie scale salary. The salary for the first pick is 8.131 million dollars in 2019/2020 season and 30th pick can get 1.613 million dollars. The player drafted in second or later rounds, or undrafted players can make a free contract that more than minimum salary ($582,180 in 2019/2020 season). Players become a restricted free agent (RFA) after they fulfill 4 years of service time. RFA players can get offered 1-year qualifying offer from their current team which is bigger than either 125% of current salary or minimum salary plus 20 million dollars. If a player does not accept qualifying offer, other teams can offer him 2 year or longer contract. After players played additional years under RFA, they become a free agent and there is no restriction to make a contract with any other teams (NBPA, 2017).

Method

Pay Dispersion Measurement

Pay dispersion can be measured from two different perspectives: concentration and dispersion (Cowell, 2011). The most widely used indicator, the Herfindahl-Hirschman Index (HHI), is based on the concentration approach and can be calculated by the sum of squares on ratio of individuals' income for overall payroll of an organization. However, since the HHI measures the income concentration of selected players with market structure perspectives such as a monopoly or oligopoly, the index does not clearly indicate inequality (Cowell, 2011). Relative Standard Deviation (RSD), the ratio of the standard deviation to the mean of data, is seen as a representative indicator for the dispersion among observations (Brown, 1998). RSD, which was derived from statistical theories, can be applied to a wide range of fields of study to measure dispersion among observations (Limpert, Stahel, & Abbt, 2001). A more specific indicator to measure dispersion from an economic sense is the Gini coefficient (Cowell, 2011). The Gini coefficient,

originally developed to assess income and wealth inequality of nations, has also been employed in various studies (e.g., income distribution among nations, or measure to compare income inequality for regions) to measure pay dispersion (Cowell, 2011, Schmidt & Berri, 2001, Coates, Frick & Jewell, 2014). In this study, the Gini coefficient is utilized to evaluate pay dispersion because it was originally developed to measure inequality in economic status. The values of Gini coefficient range between 0 and 1, and the result indicates more equal status as the value is closer to 0.

Empirical Framework

For the current empirical study, salary data from all teams in the NBA in North America were collected from basketball-reference.com over 23 consecutive seasons between 1995-96 and 2017-18 (see footnote). The NBA was selected because it is relatively easier to assess each individual player's impact on his team performance compared to other team sports with more participating players (e.g., baseball and soccer). A total of 681 observations were collected for nine seasons (1995-96 to 2003-04) with 29 teams, and 14 seasons (2004-05 to 2017-18 season) with 30 teams. For the same period, salary data for each individual player were also acquired. Players whose salary data were not available were excluded from our data set. Last, a total of 9,990 data points were collected for players' salary.

Based on the data collected, the following model was established:

$$wp_{it} = ORTG_{it} + DRTG_{it} + PD_{it} + \alpha_i + \lambda_t + \varepsilon_{it}$$

Wp represents a winning-percentage of team, *ORTG* refers to offensive ratings, *DRTG* shows defensive ratings, and *PD* represents pay dispersion of team *i* at season *t*. The winning percentage was calculated by dividing wins by the number of games. *ORTG* and *DRTG* were estimates of point scored (allowed) in 100 possessions of balls in games. We divided *ORTG* and *DRTG* into 100 to make our regression estimator easier to read. These indices indicated the efficiency of offense and defense of each team within the seasons. We used the Gini coefficient to measure pay dispersion for each team. Based on the dispersion measure, the current study proposed four empirical models. The first model, including all players, represents the dispersion for all players. For the second model, we excluded players whose average playing times in one season were less than 12 minutes (a quarter of a game) to eliminate less influential players in each team performance. The third model only measured the pay dispersion for the players with an average playing time of more than 24 minutes (half of a game) in one season. In the final model, only the five players who had the longest average playing times for each team were included in measuring pay dispersion.

To certify validity of the suggested models, the Hausmann test, Breusch-Pagan's Lagrange Multiplier (LM) test, and Pesaran's cross-sectional dependency (CD) test were performed. R version 3.3.3 was used for all statistical analyses.

Results

Validity of Models

Before estimating the effects of the pay dispersion on performance, several tests were conducted (e.g., Hausman test, Breusch-Pagan's LM test, and Pesaran's CD test) in order to verify our empirical models. The tests were conducted based on the first model, which included all players in measuring pay dispersion. First, a Hausman test was performed to verify a better model between a fixed effect and random effect model. The result showed that the null hypothesis (fixed effect) was rejected ($x2 = 4.620$, $p = .202$). Second, the results of Breusch-Pagan's LM test about time effect and individual effect of panel data indicated significant effects in time effect test ($x2 = 9.966$, $p = .002$) but insignificant effects in individual effect ($x2 = .055$, $p =$

.815). Last, the results of Pesaran's CD test to detect correlation within cross-sectional data supported cross-sectional dependence ($z = -3.317$, $p = .001$). All results are presented in Table 1. In conclusion, a random effect model with time effect was accepted for the research model in this study. For the estimation of relation between pay dispersion and performance outcomes, a feasible generalized least squares (FGLS) estimator was applied in this empirical study to control for cross-sectional dependency.

Table 1. *Results of Model Validity Tests.*

Test	Test Statistics	*p*
Hausman test	x^2 = 4620, df = 3	.202
BP LM test for time effect	x^2 = 9.966, df = 1	.002
BP LM test for individual effect	x^2 = 0.055, df = 1	.815
Pesaran CD test	z = -3.317	.001

Result of Estimation

The results of the FGLS estimator revealed the relationship between predictors (offensive rating, defensive rating, and pay dispersion) and team performances. As the R^2 for the respective models indicated, the independent variables explained the change of winning percentage around 94%. The offensive ratings and defensive ratings had significant impacts on winning percentage for all four models in positive and negative ways, respectively. Because offensive rating concerns points earned during the game and defensive rating involves points allowed, the signs of each variable showed opposite directions in significant magnitude. In all models, the coefficient of *ORTG* and *DRTG* were about 3 and -3, respectively, which implied the increase of one unit in *ORTG* led to 3 percentage points growth for winning percentage whereas *wp* declined 3 percentage points as *DRTG* increased in one unit.

The research question of the current study is addressed by observing relations between pay dispersion with winning percentage in the proposed empirical models. In the first model, pay dispersion positively influenced team performance ($\beta = .041$, $p < .05$). However, for the second model, the results showed that the impacts of pay dispersion among players who actively participated in more than 25% of each game on average were insignificant ($\beta = .005$, $p > .05$). Moreover, the magnitude of the impact also decreased *vis-à-vis* the first model. In the third model, the direction of the effect of the dispersion was changed from "positive" to "negative," which showed inconsistent results from the first and second models ($\beta = -.014$, $p < .05$). Last, concerning the fourth model, the results revealed more substantial negative effects of pay dispersion on team performance ($\beta = -.026$, $p < .05$). Therefore hypotheses 1 and 2 were supported.

Discussion

There is a widespread view amongst various professional teams in prominent sports leagues that a

Table 2. *Results of FGLS.*

	Model 1		Model 2		Model 3		Model 4	
Variables	Coeff.	std. err	Coeff.	std. err	Coeff.	std. err	Coeff.	std. err
(constant)	.464*	.024	.481*	.026	.490*	.026	.496*	.027
ORTG	3.036*	.018	3.049*	.019	3.042*	.019	3.040*	.020
DRTG	-3.022*	.019	-3.032*	.020	-3.029*	.020	-3.028*	.020
PD	.041*	.007	.005	.007	-.014*	.007	-.026*	.007
R^2	.942		.941		.941		.942	

ORTG = Offensive Ratings, DRTG = Defensive Ratings, PD = Pay Dispersion.
*: significant at 5% level

high expenditure on recruiting the most valuable players is the most effective way to achieve optimal sporting performance. However, such an investment should be well spent in an efficient and effective way to achieve satisfactory results. Therefore, the findings of this study provide insights on the potential relationship between a well-balanced pay distribution to athletes in a team sport and that team's performance.

The statistical estimation for the first model revealed that pay dispersion of all players was associated with positive effects on each team's performance, which was consistent with the finding of Halevy et al.'s (2012) NBA study. However, the finding of the current research was inconsistent with other existing studies (Depken, 2000; Mondello & Maxcy, 2009; Wiseman & Chatterjee, 2003) featuring data from the NHL and MLB, thus supporting Levine's (1991) hypothesis that greater pay dispersion across teammates could reduce overall team performance because of jealousy and mistrust among teammates. However, the most significant finding of this research was that the positive effects decreased as the number of players studied was reduced based on average playing time. Furthermore, the effects on team performance eventually became negative for the players with an average playing time of more than 24 minutes, and substantial negative effects on team performance were noticed for players who have the most playing time on their teams. In other words, the lower Gini coefficients across the team's most talented players resulted in greater team performance in the NBA. These findings were consistent with the results of Bucciol et al.'s (2014) Italian football league study since the negative effects of pay dispersion only existed among players with more playing time.

Berri and Jewell (2004) suggested that wage inequality and team performance were not related in the NBA. However, the result of the current study showed pay dispersion had both positive and negative impacts on the winning percentage of the NBA teams. When including all players in the model, pay dispersion is associated with better team winning percentages. This result supports the justification for vertical discrimination of wage in organizations (Ding et al., 2009; Livernash, 1957; Show et al, 2002) and can be explained by Lawler's (1971) motivation theory. Accordingly, rookie players who get paid only the minimum amount of salary should be motivated by superstars whose salaries are significantly higher in their league. Further, starting players often play more important roles on their teams, and their tasks are more essential than non-starters, which justifies higher salaries for starting players as noted by Ding et al. (2009). According to the sport economic theory, salary is determined by the marginal revenue productivity of employees (Quirk & Fort, 1997). Under such a paradigm, it would be fair to pay higher salaries to players with longer playing times who contribute more to the team's revenue generation as starting members.

The uncovered negative impact of pay dispersion among players with more playing time, particularly the starting five players, on team winning percentage supported the findings of Hunnes (2009), who proposed that income discrimination in a horizontal manner harmed organizational outcomes. Starting players in the NBA typically average over 36 minutes of playing time per game, which supports the potential for more points, assists, rebounds, steals, and other outcomes that impact overall team performance and, consequently, marginal revenue productivity. Therefore, one could hypothesize that the starting players would consider themselves as a group as equally contributing to the team's winning percentage. This result partially contradicts the findings of Halevy et al. (2012) in that the hierarchical discrimination in procedurally interdependent sports like basketball was determined to be beneficial for team performance. As Halevy and colleagues maintained, the pay dispersion among all players could be positively related to team performance, but among the top five starting players, the perceived inequality in their compensation could harm cooperation or coordination.

The findings of this study supported previous

research (Frank, 1985; Martin 1981), suggesting the impact of pay dispersion on organizational performance and the attitudes towards the dispersion could rely on characteristics of employees such as playing time. In this study, players who have a longer playing time can be perceived as making the most contributions to their team; however, when presented with greater pay dispersion among their team members, those valuable players could perceive injustice from the perspective of distributive justice, the perceptions of fairness toward outcomes [e.g., the perceived fairness of athletes toward their salaries within a team (Cohen-Charash & Spector, 2001)]. In other words, if a large percentage of a team's payroll is distributed to only a few superstar players, the perceived injustice of players who believe that their salary is incommensurate with their ability or performance can raise a sense of incongruity. According to Adams' equity theory (1965), employees compare the ratios of contributions and rewards of each person within an organization and experience unfairness when their resource distributions are not commensurate with their perceived contributions to the organization (Colquitt, Conlon, Wesson, Porter, & Ng, 2001). As a result, these individuals could be demotivated, distressed and ultimately elect to reduce their organizational inputs to restore equity, which would compromise both team and individual performance.

The findings provide important implications to managers and other key decision makers regarding pay distribution among teams in the NBA. First, given the competitive nature of professional sport, unequal pay for unequal contribution is expected. On the contrary, equal pay for unequal contribution is recognized as an inequitable practice (Trevor, Reilly, & Gerhart, 2012) because "whenever workers differ in their performance, horizontal wage equality violates the equity principle since a higher effort is not rewarded with a higher wage" (Abeler, Altmann, Kube, & Wibral, 2010, p. 1300). Therefore, team owners and managers should consider how they can more fairly allocate their capped payrolls among the highest contributing players on their teams based on the equity principle of distributive justice, knowing that inequitable distributions can lead to feelings of injustice and dissatisfaction among players and eventually negatively affect overall team performance. For example, team owners in NBA tried to adopt some exception rules, such as Bird rule, Rose rule or Durant rule, to secure higher salary caps for highly contributed players, say franchise stars. With these exception rules, teams can properly compensate their franchise stars as well as additional talents with hire salary. Teams that use exemptions wisely can get competitive advantage by securing high-profile players while keeping existing players from feeling distributional injustice. Second, even though high pay dispersion may exist among team members, if the players can work together to achieve their goals, the native effects of the high pay can be attenuated (Christie & Barling, 2010). Thus, team owners and managers should consider how they prepare and incorporate other reward methods, such as signing bonuses, which may reduce injustice perceptions of underpaid players and eventually enhance team performance.

This study contributed to the literature on pay dispersion in sport by investigating the distinctive impact of pay dispersion for players with different team contributions. However, this study has also limitations, which may offer important paths and, thus, advance this stream of research. First, this study only focused on professional basketball players in North America. The results of this study generally support findings from other studies on both organizational justice and pay dispersion; however, there may be differences between various sports and professional leagues because the sports and professional leagues have different salary structures (or salary range structure) and mechanisms for determining individual and team salaries. Indeed, Quirk and Port (1997) discussed many economic aspects for success in different professional sports, which make running professional sports very complicated. Therefore, cautions should be required in generalizing these findings. Second, the study only included formally

advertised annual salaries of the professional basketball players, which does not include signing bonuses, commercial benefits, personal sponsorship or extra incentive pay for individual and team achievements. Thus, future research is encouraged to include other types of compensation to facilitate a more accurate examination. Third, this study only focused on the overall trend of pay dispersion and organizational performance rather than individual salary levels and individual performance. Thus, future research should also employ comprehensive information of individual salary levels and individual performance to examine the impacts of salary difference on individual player's performance as well as team performance. For example, a future study should control each player's skill, talent, and ability, which may have fundamental impacts on their salaries, via an experimental research design. Finally, some players may be motivated by other factors (e.g., loyalty to a coach or team, player's hometown team, a high chance of championship etc.) other than just monetary compensation in choosing their teams. In these cases, salary or financial compensation may not be the most important factor when the players choose their teams. Therefore, future research could incorporate some of non-monetary factors in accurately examining the relationships between pay dispersion and team performance.

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Footnote

During this period, the Seattle Supersonics and Oklahoma City Thunder were treated as one team despite the location and name changes. In addition, the Charlotte Hornets moved its franchise to New Orleans and were renamed the New Orleans Hornets at the end of 2001-02 season. A new expansion franchise in Charlotte was launched for the 2004-05 season and initially named the Charlotte Bobcats. However, after the New Orleans Hornets changed their name to the New Orleans Pelicans in 2011, the Charlotte Bobcats then renamed themselves as the Charlotte Hornets. Therefore, the original Charlotte Hornets (1995-96 to 2001-02) and New Orleans Hornets (2002-03 to 2012-13) and Pelicans (2013-14 to present) counted as one team, and the Charlotte Bobcats (2004-05 to 2013-14) and the new Charlotte Hornets (2014-15 to present) were counted as another team.