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How Does the Stage of a Contract Affect Performance: Evidence from Professional Basketball

Agata Mirowska

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Abstract

This study uses theories of motivation to analyze how performance changes over the life of a contract. Utilizing performance data for professional basketball players in the NBA for three seasons, the results show that performance does change over the life of a contract. Factors affecting how much control a player has over his performance are found to be important in how the players' performance changes as the contract completion nears.

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How Does the Stage of a Contract Affect Performance: Evidence from Professional Basketball

Introduction

Fixed term contracts are becoming more prevalent in many occupations. They allow the employer to secure the services of a given employee for a fixed period of time and provide job security for the employee. However, given the recent examples of companies who have signed lucrative contracts with executives, only to pay large sums to terminate those contracts (Burns, 2007), the effects on performance of such job security warrant further attention. Namely, it is important to understand how the signing of a fixed term contract affects the performance of an employee, especially in the case of asymmetrical information. Arguably, such a condition characterizes the majority of employment relationships, thereby highlighting the importance of this issue.

As Cantor (1988) states, "a common feature of contracts is that they state explicit, deterministic termination dates at which contractual obligations and rights cease" (p. 343). Such a contract provides an employee with a guaranteed payout for a minimum level of performance, thereby offering little or no immediate incentive to perform above such a minimum[1]. On the other hand, the employee is well aware of when the contract term ends and, therefore, when he will be forced to renegotiate, either with the current employer or a new one. The important question is whether the incentive to shirk his/her responsibilities will outweigh the control offered by the known contract end date (Cantor 1988). Specifically, will this renegotiation, which would presumably be based on past performance, encourage above-minimum performance, or will the employee simply adjust his/her performance over the life of the contract in order to maximize the net benefit in both the present and future? The answer to this question will have a bearing on how fixed term contracts should be designed and implemented.

The next section will discuss some of the theoretical conceptions of fixed term contracts, followed by a detailed discussion of the motivational theories leading to the proposed hypothesis. Finally, an empirical study of professional basketball players will be outlined, and results discussed. Professional basketball players in the National Basketball Association (NBA) were chosen for a variety of reasons. First, the public availability of various statistics for professional sports in general makes it uniquely suited to empirical research. Second, professional sports extensively utilize fixed term contracts, where players are tied to one team for a given period of time and where both parties are well aware of the contract end date. Furthermore, because so much of an athlete's performance depends on his off-field behaviours (i.e., diet, training, avoidance of unhealthy substances) but the employer (coach, manager) can only observe the on-

[1] Of course some contracts may have incentive clauses built in which would offer additional rewards for performance above a specific level (Berri and Krautmann, 2006), and these would be expected to act as a powerful motivational tool. However, in this paper we will be concerned only with straight fixed-term contracts without any additional incentive clauses. This decision is partly due to the inherent complication of such incentive contracts. Also, as will be discussed further on, the current data set has inadvertently focused on younger, relatively inexperienced players so they would be less likely to be offered contracts with incentive clauses built in.

field performance, there is a clear asymmetry of information. Lastly, the NBA was specifically chosen because it reports both offensive and defensive performance statistics for all players, therefore minimizing the effect that a given players position would have on the performance statistics.

Contracts

This paper is mainly concerned with fixed term contracts as defined by Cantor (1988). Such agreements allow the contracting organization to be able to plan and budget labour costs, as well as future projects. Since the organization knows exactly how much it will be paying a given employee for how long, the labour costs are known barring any incentive clauses. At the same time, because the employee has agreed to the contract, the organization does not have to face the problems of an employee being recruited away at a crucial point. Finally, the organization can plan any projects involving the employee around his contract to ensure projects are completed with the necessary staff.

However, contracts also have certain advantages for the employee. The employee enjoys job security, as he knows exactly how long he will be employed and how much he will earn. This enables the employee to plan his finances and time around his contractual obligations and, by knowing exactly when his contract ends, the employee can take pre-emptive steps to ensure ongoing employment. At the same time, the job security created by the contract may create an opportunity for shirking, as the employee has no incentive to increase his effort level although the knowledge of a specific end date may serve to partially control the employee since he knows exactly when he will be forced to re-negotiate his employment (Cantor 1988).

One important aspect of all employment relationships, and especially contracts, is the asymmetry of information. The employee will always have better information regarding his ability and effort levels than the employer (Baker, 1992). Therefore, although the employer can observe the employee's performance, he cannot determine whether the employee is performing at his maximum capacity or shirking. The employer is forced to use incentives in an attempt to align the interests of the employee with those of the organization, thereby hoping to benefit from the employee's maximum effort (Baker, 1992). The employee, however, experiences a cost associated with his effort level (Sherstyuk, 2000). We must assume that there is some cost associated with any given level of employee effort, possibly in the form of foregone leisure time, money, stress or other factors, which discourage the employee from putting forth effort that costs more than the benefits he receives. Alternatively, an employee experiences some disutility from performing the action (Sherstyuk, 2000), which offsets the increase in utility received from the benefit or reward. Furthermore, because the employee has better information, he can better evaluate the net utility he receives from a contract and, therefore, has an incentive to maximize his utility by decreasing his effort. This pattern will continue as long as his effort does not fall below the minimum expected level or result in a corresponding decrease in the expected rewards.

Another important feature is the length of the contract. As contract length increases, the negotiating costs for both parties decrease since these costs are spread out over a longer time period (Cantor, 1988). However, since the terms of a contract are based on the information possessed by both parties at the negotiation date, the contract must be periodically adjusted to incorporate any new information, which may appear during the performance of the contract

(Cantor 1988). Due to the asymmetrical nature of the information, either party may realize that their original assumptions were wrong and therefore want to change some of the contract terms. If the contract is too long, the parties may not want to take this risk as they could be locked into an unfavorable contract for a long period of time. If the contract is too short, however, the often-recurring negotiation costs may make the contract less appealing (Cantor 1988). Therefore, some optimal contract level must be chosen which will offset these factors. Cantor (1988) argues that if an agent will only exert effort during the last k periods of a contract, in order to maximize his chances of re-negotiating a favorable contract, the optimal contract length is k. Since the employee is assumed to discount his future wages, a contract that is too long will cause the employee to perceive his future, re-negotiated wages as too low to warrant any effort in the present. However, as these future wages get closer, the employee values them more and is willing to work harder for them (Cantor 1998). Therefore, it is the employer's responsibility to ensure an ideal contract length so that the employee is willing to work throughout the entire contract (i.e. the employee assigns a positive value to his future earnings throughout the contracting period).

Motivation

One important factor to consider is the employee's motivation to perform at a given level. Expectancy theory posits that an employee evaluates two issues: the expected outcome given a level of effort or performance, and the expected value of the award resulting from that outcome (Behling and Starke, 1973; Reinharth and Wahba, 1975; Steel and Konig, 2006)). Therefore, we can write the employee's problem as

$\max u=E(V|\, E(O|\, e))$, where:
u=utility
V=valence of reward
O=outcome
e=effort
E(.)=expected value

The employee considers the expected value of the reward he is to receive[2], given the expected outcome of a particular level of effort. The theory relies on an assumption regarding the cost of the effort. Although it is not implicitly stated where the cost is incurred, Sherstyuk (2000) does assume that the agent does not intrinsically enjoy the action (or effort) in and of itself, therefore, experiencing some disutility associated with performing the action. The cost can either be treated as incurred when the effort is exerted or as a reduction in reward valence. To use an example related to the present study, we would argue that professional athletes should incur the cost when the effort is exerted (i.e. when the athlete is training, or practicing) rather than when the reward is received. All professional athletes have presumably trained and practiced extensively in the early stages of their careers without receiving a reward for it at the time, except for any intrinsic rewards the athlete experiences from participating in the sport itself. In the language of expectancy theory, the player must believe that the effort he was putting forth would lead to a desired outcome (i.e. being good enough to get drafted), which would then lead to a

[2] Admittedly, this result can be either positive or negative. However, negative rewards are not equivalent to the cost of effort because of the time lag which will be further discussed below.

valuable reward (i.e. a lucrative contract). If we assume that there is no cost until the reward is received, everyone would have an incentive to exert effort as long as the difference between the value of the reward and the cost in the future was positive. However, if the cost and valence are calculated at the same point in time, expectancy theory does not discount for the time lag.

> As an example let's consider a player, P who exerts a given level of effort, E, at point t_o because he expects to earn a contract for amount V, at time t_1. We must treat the cost of the effort, C, as being incurred at the same time as the E, so that when the player receives his contract, he will subtract the current value, that is the value at t_1, of C. In this case, as the difference between t_0 and t_1 increases, C will increase thereby reducing the overall value of the future contract. Alternatively, as the time lag increases the present value of V decreases and will at some point become negligible. When this happens, the player no longer has an incentive to work to become a professional basketball player and abandons the effort. However, if we only take C into account at t_1, then V-C would be much higher, prompting more players to exert maximum E. Since the time lag is not playing a role, the player would not be forced to evaluate if it is feasible to become a professional basketball player (i.e. possibly due to talent, physical attributes, etc.) and would be missing the signal telling him to move on to a new career choice. Although we surely see individuals who have a hard time abandoning dreams of playing professional sports, most do realize quite early on that the effort that would be required now to reach the level of professional sports is too high and the payoff will be too low to justify that effort.

In a recent article, Steel and Konig (2006) attempted to integrate four theories of motivation, including expectancy and equity theory, into what they refer to as "temporal motivation theory" (Steel and Konig, 2006). This theory emphasizes time as a prime factor in motivation and recognizes that positive and negative outcomes must be treated differently. Their final model is (Steel and Konig 2006, pg. 897):

$$\text{Utility} = \sum_{j=1}^{k} \frac{E_{CPT}^{+} \times V_{CPT}^{+}}{Z + \Gamma^{+}(T-t)} + \sum_{i=k+1}^{n} \frac{E_{CPT}^{-} \times V_{CPT}^{-}}{Z + \Gamma^{-}(T-t)} \qquad (5)$$

E_{CPT}=events capacity to contribute to overall outcome value (p. 895)
V_{CPT}=incremental increase in valence of each outcome
Z=constant which represents value at time lag=0
T-t=difference between time decision made and time reward expected
Γ=temporal discount rate
+ or – represents positive or negative outcomes

This theory assumes that individuals categorize all outcomes into k positive and n-k negative outcomes and sum up their contributions to utility. Another important feature of this model is that the discount rate for gains and losses is different. This captures the fact that

although people generally prefer to get rewards in the present, they prefer to defer punishments or losses into the future (Steel and Konig, 2006).

This theory is uniquely suited to our discussion of NBA players' motivation. Positive outcomes are the dollar value of the contract, both current and future possible ones. The negative outcomes are the cost of effort. Using the framework outlined above, we can make several observations.

i) The longer a player has to renegotiate his contract, or as (T-t) increases, the less the future contract amount will contribute to the player's current utility.
ii) Any other potential sources of income, such as endorsement contracts, would be treated in the same manner as future contracts with their own specific time lags.
iii) The effort must be exerted now, thereby incurring the effort cost now[3] and decreasing the player's overall utility. As the amount of effort needed to secure a future contract or endorsement increases, current utility will decrease.
iv) If the player has some contract already in place, the earnings from that contract should not affect his utility, or if they do they would be represented by a "constant" term so that they would not be a factor in the consideration of effort.

Therefore, we can conclude that the further off the potential future earnings are, the lower the effort that will be put forth since the cost of that effort will decrease utility more than the present value of the future contract will increase it.

Another way to treat losses in future income is as a negative outcome. In this case, the decrease in future earnings will be subtracted from utility, but since it will be calculated as a present value (discounted because of the time lag), the magnitude of their effect will depend on how far in the future these earnings are. When a player first signs a contract, the losses in future income are far away but the benefits of shirking, in the form of lower effort and therefore higher current utility, are immediate. This brings us to our first hypothesis:

H1: When a new contract is signed, performance will decrease.

However, as the end of the contract draws nearer, the expected decrease in future income will become larger as its present value increases, therefore having a larger effect on utility. At the point where the loss of income decreases utility more than the effort required to secure that income, the player will put forth more effort. This brings us to our second hypothesis:

H2: As the time of contract completion nears, performance will increase.

Finally, the point where the loss from future earnings equals benefits form shirking, the player is indifferent. However, as the losses overtake the benefits, the player will put forth more effort. Therefore, contracts should be designed so that the equality point of losses and benefits comes as early as possible in the contract so that the majority of the contract time the player is

[3] This ties in nicely with our previous discussion in regards to where costs should be calculated in expectancy theory. Again, we see that costs must be recognized at the same time as the effort.

exerting effort. Ideally, we would want this period of losses=benefits to occur when the contract is signed. This brings us to our final hypothesis:

H3: As contract length increases, performance will decrease.

Data

The data used in this study span three seasons of the NBA: 2003-2004, 2004-2005, 2005-2006. The NBA season normally runs from October until April, with teams playing 82 games per season. There are currently 30 teams in 6 divisions, 29 of them in the United States with one team located in Toronto, Canada. The players used in this study where the five starters for each of the thirty teams during the 2005-2006 season. Although I originally intended to collect data on all 15 players on all 30 teams, there were several problems encountered. Namely, players who where not starters tended to be either rookies with no previous performance data, more experienced players with more complicated contracts, or players who were traded more often. Players with complicated contracts involving incentive clauses were removed to simplify the analysis. In collecting the data, players who had been traded during their contract were removed. This was done for several reasons. First, it is quite difficult to determine if the acquiring team will be keeping the original contract exactly as it is. Therefore, any changes made could reflect the player's poor performance, thereby risking inaccurate observations. Also, there may be specific team characteristics, such as geographic location, fans, or stadium, which may affect a player's performance separately from the stage of the players contract. In fact, Nicholson, McTeer and White (1998) did find some evidence that changing teams can affect the performance of major league baseball players. Finally, since part of the analysis involved comparing the players salary to that of his teammates, it was necessary to have players who had been with a team throughout the season, therefore any players traded mid-season were not used.

Furthermore, any players who had options on their contracts (i.e. some later part of their contract, such as the last year, is optional based on their performance) were considered to have two contracts: the multiple year contract of the first part, and the one-year extension was treated separately. This was done because the optional year is not guaranteed to the player upon signing and the player should not treat it as a given. Also, the team's choice to exercise an option represents a new, one-year contract being formed. Another issue was the free-agency problem. Free agents are allowed to choose the teams they negotiate with, whereas non-free agency players are "owned" by the teams that drafted them (Kahn, 1993). Henry (1994) shows that participants are more likely to overestimate their performance if they believe have a choice in some detail of the task to be performed. This may imply that players who are free agents (i.e. have choice in where they play and under what conditions) may have a tendency to overestimate their performance. When they do not perform to the levels promised, they may be more likely to be traded. Also, Kahn, (1993) shows that contract length may be affected by a player's free-agency status. Although this was not accounted for in our sample, I believe that this omission should not significantly affect our results, as we are interested in the effect of contract length, regardless of how that length is determined.

The total sample consisted of 202 observations[4]. All player statistics were collected from www.NBA.com, while contract information was found on www.realgm.com. Finally, all team salary information was found in the www.usatoday.com salary database. Much of the player performance data was collected on a per game basis (assists, points, rebounds, blocks, steals and turnovers). This was done to minimize the effect of the differences in games played. Other performance outcomes, such as the percentage of field goals and free throws[5] successfully made are calculated over the entire season. However, since they are calculated as percentage of attempts, not a raw number, they should be unaffected by the number of games played.

The year of contract variable represents the year that the current season represents of the players overall contract. For example, a player who signed a contract at the beginning of the 2002-2003 season would be coded as YROFK=2 in the 2003-2004 season, YROFK=3 in the 2004-2005 season, and so on. The percentage of contract completed, KCOMP (contract completion) variable was computed by dividing the YROFK (year of contract) variable by the KLENGTH (contract length) variable. This was deemed useful since the YROFK variable was a raw number, but KCOMP provides a completion rate relative to total contract length. If a player was in the first year of a new contract, DVFYR=1, and 0 otherwise. Similarly, if a player was in the last year of his contract, DVLYR=1, and 0 otherwise. The DVINT variable was a multiplication of these two dummy variables to account for players who had only one-year contracts or had contract options exercised.

The last two groups of variables are age and team related. The AGE variable represents a player's age at season's end. The NBAEXP (NBA experience) variable is the player's age divided by his YRSNBA (years in the NBA). This was necessary because age and experience can have different and sometimes opposing effects. We would expect that as a player ages, his performance would drop off due to natural causes. However, increased experience may help his performance, as he is more comfortable in the professional sports atmosphere. Furthermore, the raw number of years spent in the NBA would be expected to have different effects relative to the player's age. Therefore, the NBA experience variable is a measure of the percentage of a player's life spent in the NBA. The team variables looked at the percentage of team salary (PCTTEAMP) that a player's individual salary represents and the difference from the median salary (MEDIFF). These were used to capture a player's "star" quality, which may account for a part of performance. Lastly, the player;s annual salary (ANNUALSA) was also included to measure whether a large annual salary was in fact related to performance.

One problem was finding a measure of "health". Unfortunately, there doesn't appear to be a disabled or injured list for players in the NBA. To complicate matters further, teams are often reluctant to report specific injuries in case other teams attempt to exploit such injuries in subsequent games. Berri and Krautmann (2006) get around this problem by using games played as a proxy for injury. However, there may be a few problems with this measure. First, players can miss games for multiple reasons, including injury, suspensions, or on the coach's discretion.

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[4] The original sample was 203 observations, however it was found that one player, Shaquille O'Neal, acted as an outlier since there was only one observation (out of a possible 3) available for him. Given that Mr. O'Neal has played a long time in the NBA and earns quite a large salary, this observation was found to lead to inaccurate results and was subsequently removed.

[5] A free throw is an un-contested attempt at a basket resulting from a fowl committed against the shooting player. A field goal is any attempt to get the basketball in the basket during regular or overtime game play.

The concern here is that if a player is not performing well, he may be "benched" by the coach, but that lack of playing time may lead to lower performance and even less playing time, creating a cyclical effect. Also, in the past teams have been limited in the amount of players that were allowed on their roster. Players on a reserved or disabled list did not count towards this total, so teams could place players on the list, even if they were not injured, in order to have more players available. Both of these issues call into question the validity of using games missed as a measure of health. Finally, because our sample consists of starting players, the variance in games played would be expected to be so low as to be meaningless.

Ordinary least squares regressions were run using two primary performance measures as the dependant variables: SUM and ACC. The first measure is a summation of all the per game variables (points+ assists+ rebounds+ blocks+steals-turnovers). Since these are the most reported player statistics and should be directly related to a team's wins, they are important in analyzing a player's performance. The second variable, ACC, is a summation of the player's free throw and field goal percentages This gives us a number out of 200, which was converted to a number out of 100 for simplicity. The measure of accuracy does not include three-pointer percentages[6] because this variable was found to not be relevant to all players. Given that some players may only make a few attempts at three-point shots in a season, their statistics were unusually high. As a result, the accuracy measure is restrained to the two percentages, which apply to all players. This total percentage provides a good representation of a player's accuracy and scoring potential since these it represent actual points earned, irrespective of the opponents' performance.

Results

We are expecting to see the following relationships:

i) A positive relationship between performance and YROFK (H2),

ii) A negative relationship between performance and KLENGTH (H3),

iii) A negative relationship between performance and DVFYR (H1)

iv) A positive relationship between performance and DVLYR (H2).

v) We are also expecting that AGE will have an overall negative relationship with performance, while NBAEXP will be positive.

vi) Finally, we expect that the more a player's salary differs from that of the team as a whole, or the greater a percentage of team payroll he represents, the higher his performance would be.

The first regression was run using SUM as the dependant variable. The independent variables and regression results are shown in Table 1. Only two variables proved to be significant, age and minutes played per game. The positive coefficient on the MINPG variable is not surprising since the dependant measure is also measured per game, and the negative coefficient on the age variable indicates that younger players will have better per game statistics. An interesting result is the absence of a significant coefficient on any of the contract variables. A joint significance test yielded an F-statistic of 0.754 with a p-value of 0.607, implying that these

[6] A three-pointer is an attempt at a basket during regular overtime or game play, which is taken from a point 22 or more feet away from the basket.

variables are not jointly significant. Although this finding is contrary to the our hypothesis, it is possible that the level of control a player may or may not have over their per game averages explains this finding.

Table 1

Dep Var: SUM R-Squared: 0.8625	**Degrees of freedom: 184**	**# of Obs: 202**
Variable	Coefficient	T-stat
FG	0.062	1.245
FT	0.029	0.8996
YROFK	0.931	0.8058
KLENGTH	-0.305	-0.359
KAMT	0.059	1.158
AGE	-0.779	-3.141**
YRSNBA	0.724	0.6717
NBAEXP	-5.817	-0.2041
MINPG	0.817	20.42**
KCOMP	0.647	0.0956
TEAMPAY	0.008	0.2077
MEDIFF	0.0396	0.1307
ANNUALSA	-0.0377	-0.0899
PCTTEAMP	9.638	0.7516
DVFYR	0.702	0.5862
DVLRY	0.268	0.1567
DVINT	0.538	0.2740
** = p-value <.05		

The second regression used ACC as the dependant variable, with the independent variables and regression results displayed in Table 2. In this case, quite a few variables were significant, including the year of contract the player is in, the length of the contract, age, seasons played in the NBA, percentage of life spent in the NBA, minutes played per game, and percentage of contract completed.

Table 2

Dep Var: ACC R-Squared: 0.35	Degrees of freedom: 184	# of Obs: 202
Variable	**Coefficient**	**T-stat**
YROFK	3.7495	3.853**
KLENGTH	-1.8113	-2.466**
KAMT	0.017863	0.3991
AGE	0.60843	2.890**
YRSNBA	-2.522	-2.732**
NBAEXP	61.191	2.494**
MINPG	0.19915	6.288**
KCOMP	-23.694	-4.172**
TEAMPAY	0.0095077	0.2859
MEDIFF	0.23130	0.8678
ANNUALSA	-0.42544	-1.158
PCTTEAMP	-1.0575	-0.09372
DVFYR	-2.7495	-2.657**
DVLRY	4.5681	3.121**
DVINT	5.361	3.190**
** = p-value <.05		

Furthermore, a player being in his first, last or in a one-year contract has significant results, all in the expected direction. This result is consistent with Berri and Krautmann's (2006) finding that performance does in fact drop off in the first year after contract signing.

Some of the other variables, however, do not show the expected direction of effect. For example, these results imply that as age increases, accuracy actually increases. On the other hand, years spent in the NBA has a negative relationship with accuracy, implying that the longer a player is in the NBA, the lower his accuracy is. Since the age increase along with years in the NBA, it is hard to say why these variables show opposing effects, and contrary to those expected. Another problematic finding is that the coefficient on the year of contract variable is positive, while the contract completion variable shows a much larger, and negative, effect. These two contradictory results will be discussed at length in the next section. A last observation that warrants mention is the R-squared values of the two regressions. Although in our summation measure, over 86% of the variance is explained, this number drops down to only 35% in the second equation. Finally, in neither regression were the "star" (MEDDIFF and PCCTTEAMP) or salary measures significant. This is most likely due to the simplicity of measuring a player's star quality in this method, since salary can represent other aspects, such as ability to draw fans, which may be quite unrelated to actual on-court performance.

Finally, two other regressions were performed. These used offensive (points per game + assists per game + rebounds per game) and defensive (blocks per game) statistics, respectively. However, the results of these regressions were inconclusive and explained less variance than when the summation measure was used as the dependant variable, so they will not be discussed at length here.

Discussion

Our regression analyses supports all three hypotheses. However, since H2 was stated only in terms of the year of player's contract without taking into account the percentage of contract-completed variable, we can say that this is only partly supported. The strong support for hypothesis one indicates that players do in fact decrease their performance immediately after signing a new contract, and the partial support for hypothesis two suggests that players do increase their performance as time goes on. Finally, hypothesis 3, predicting increased contract length to correlate with lower performance is also supported. However, the contradiction between the year of contract and contract completion warrants further discussion.

The contract completion variable indicates that performance decreases by a large and marginally significant amount as the end of the contract nears. In this case, the difference in raw contract years versus percentage completed must be explored. Since the percentage measure gives us a measure relative to contract length, we would expect it to be a better measure of the effect of contract stage on performance. That the coefficient on this variable is negative poses a problem in terms of our conclusions. Is it possible that players reduce their performance as their contract re-negotiation period increases? One would tend to argue no, as this would violate any assumption of rationality on the part of the player. One possible explanation is that the player is unable to control his performance exactly the way he wants when he wants (Berri and Krautmann, 2006). Also, as Krautmann (1990) noted, player performance includes a random component, where a player's performance may be exceptionally good or bad in individual years, but overall it will tend towards the average.

In our sample, it is possible that players received lucrative contracts and were placed in starter positions because they had exceptional performance in the years preceding the contract and therefore their subsequent performance was simply tending towards the average. The young age of our sample (average = 24.9 years old) would also help to explain this result, as they are still inexperienced and may not be capable of manipulating their performance at will. Alternatively, it is possible that once receiving a lucrative contract, players feel the need to "prove themselves" and therefore over-perform, with their performance decreasing over time. However, this is also problematic, as it is inconsistent with the finding that performance decreases in the first year after a contract is signed. In fact, by just looking at the percentage of contract completed variable, our results would suggest that performance decreases upon contract signing and continues to decrease throughout the contract, regardless of the nearing completion date. This could reflect the effect of age or health as the player matures, however more detailed measurements of these variables would be needed to explore this possibility. A last point is that agents who represent younger players may build up their self-confidence and image, based on their previous performance against lesser talented players (i.e. classmates who did not go on to play professionally) to the point where it is detrimental when the player actually starts playing in a professional setting. Basketball is probably the one major league sport that makes younger players richer and more popular, particularly because players can be drafted out of high school and the game attracts much attention in large U.S. markets. Also, the emphasis on individual performance leads to pressure on individual players, which may be more difficult for younger players to handle. A last possibility is that, since much of the results support the theory that

performance increases over contract time, there is a problem with the percentage of contract completed variable in itself.

The inconclusive results in our first regression may be due to the skewing of the data. Because only players who were not traded and were starters with uncomplicated contracts were considered, the data is generally skewed towards younger players. The average age of a player in our sample was almost 25 years old, with an average of 4.6 years in the NBA. This heavy representativeness of younger player may mean that players are still trying to prove themselves and are looking toward endorsement contracts and other sources of income. Older, more established players would be able to re-negotiate a contract based on their names and reputations, where relatively unknown players are still building up that reputation. Furthermore, the averages in our sample indicate that the average player was drafted around the age of 20, meaning that he has not even completed college. It would be expected that younger players would be used to being the best of the best, in high school and college. Therefore, their exposure to professional sports with more experienced players may hurt their confidence, as well as making their performance less malleable and more subject to opposing players' actions. The very young players may also experience some adverse reactions from the older players who may attempt to affect their performance with verbal and/or physical abuse.

All of these factors would work to confound the effects of the variables measured and complicate the matter. We would expect that a sample that had a more equal balance of older and younger players and spanned more seasons would show different results as any fluctuations would even themselves out. Unfortunately, more experienced players tend to have more complicated contract structures which complicate the analysis. Admittedly, the performance measures and independent variables were quite simplistic and represent only a crude estimation of true talent and motivation. It may be that there are intrinsic motivators at play, which are unaccounted for both in the motivational theories and variables considered.

One question that begs attention is why the contract variables were significant in the latter regression but not in the former? It is believed that the difference lies in the performance measure. Although the summation of per game variables is an indicator of performance, it is subject to many outside influences. Rebounds, steals and block, as well as turnovers, are all interactions with other players from both teams. Additionally, the points and assists per game can be thwarted by another team's good defense regardless of the player's accuracy. Therefore, the accuracy variable may be a better measure of ability and performance, while the summation measure is clouded by the abilities and efforts of other players.

Finally, the difference in the r-squared reported for the two regressions warrants a discussion. In the regression with SUM as the dependant variable, the R-squared was around 0.86, while the regression using ACC as the dependant variable reported an R-squared of only 0.35. Obviously, the first model did a better job of explaining the variance in performance. The performance variable ACC was meant to measure a player's ability and accuracy. However, the "ability" measure is absent from the variable list. In future research, a variable depicting an interaction of draft round and position may help to isolate this aspect of performance. Furthermore, it is possible that the large, negative effect of contract percentage completed is capturing some of this effect. Unfortunately, it will be hard to tell if this is the case without collecting further data.

It is harder to explain why the SUM performance measure regression reported an R-squared almost double that of the ACC performance variable. It could be that when a performance variable is affected by factors outside of the player's control, the omitted ability measure isn't as important and the variance is well explained by the included variables. However, this issue would require further research, as it is hard to imagine why variables, which do not explain an "unpolluted" performance measure, do a better job of explaining a more "polluted" one.

There are several obvious limitations of this study. For one, measures of health and ability are clearly missing, which could serve to change the results. Also, the skewed age and experience distribution surely affects our results. Finally, although professional sports provide an interesting venue for analysis, it is difficult to say how generalizable such results would be to other professionals working on fixed-term contracts. Another issue is the relatively small sample size. Although 202 observations is substantial, it was noticed that this data was quite sensitive to even one or two outlying values. Therefore, further research utilizing a larger data set with some additional measures would be warranted.

Conclusion

As the "Shirking or Stochastic productivity in Major League Baseball" debate (Krautmann, 1990; Scoggins, 1993; Krautmann, 1993) shows, the performance measure used can have a large influence on the results obtained. In this study, when we considered outcomes that can potentially be heavily influenced by factors outside of the individual's control (i.e. other players) we saw no significant effect of contract life. However, when a measure closer approximating the player's actual ability is used, there is a significant change in performance observed over the contract life, although some of these effects are contrary to our hypothesized results.

Since we would not expect to see young, inexperienced executives being offered fixed-term contracts, our results may not easily generalize to other contract variations. Namely, we would expect that executives being offered fixed-term contracts would have a proven track record behind them, unlike the new players in our sample who may have experienced a year of outlier statistics and then negotiated based on these data. Similarly, reputation would play a larger role for executives, so that they would have an advantage over young basketball players in initial negotiations, but they would also have an incentive to keep their image up to capitalize on further negotiations. On the other hand, senior executives may be more vulnerable to factors outside of their control. Industry environment, economic variables, and company specific factors can all detract from the control that an executive can exert over his job, and by extension his performance. In this case, we would see an ambiguous relationship between the contract length, stage of contract and performance, which may be due to other factors. Finally, measuring performance is much more complicated than simple sports statistics. Given that the definition of performance can produce different results even in a relatively easily quantifiable field like professional basketball, the choice of performance measurement in more complex jobs would be an important consideration.

In general, the preceding discussion highlights the importance of considering variables within and outside of the control of the person of interest. In extending fixed-term contracts, organizations must carefully consider the other parties motivations and past performance record. Negotiating parties cannot allow their judgment to be clouded by reputation, or recent performance, at the detriment of considering possible future outcomes. Contract lengths must be negotiated and set so as to allow both parties the security inherent in fixed-term contracts, but also to allow periodic incorporation of new information and performance results. It would be interesting to continue a longitudinal study to see where the players whose performance appeared to decrease over the life of their contract find themselves upon re-negotiation.

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