

Abstract

The study of **managerial performance** is increasingly important in **people analytics**, especially the topic of **managerial foresight**. We developed insights into this topic using data from the **National Basketball Association (NBA)**, collecting detailed managerial and player performance data for all teams in the NBA between 1976 and 2015. By leveraging the **semi-random allocation of drafting positions** in the NBA draft, we developed **causal insights** into the factors that best inform a manager's ability to make effective long-term decisions. Our analysis suggests that while managers with **greater experience in drafts** is statistically strongly correlated with drafting of higher performing players, managers with **prior playing experience** are statistically no or weakly better than managers without playing experience. These results are robust to the inclusion of a battery of **fixed and random effects** to address potential **heterogeneities**. We discuss these results in the broader context of **people analytics** and **human resource management**.

Player Metrics

uPER is the unadjusted **Player Efficiency Rating (PER)**, used to provide a value for **players' positive and negative accomplishments**.

$$uPER = (1 / MP) * [3P + (2/3) * AST + (2 - factor * (team_AST / team_FG)) * FG + (FT * 0.5 * (1 + (1 - (team_AST / team_FG)) + (2/3) * (team_AST / team_FG))) - VOP * TOV - VOP * DRB * (FGA - FG) - VOP * 0.44 * (0.44 + (0.56 * DRB)) * (FTA - FT) + VOP * (1 - DRB) * (TRB - ORB) + VOP * DRB * ORB + VOP * STL + VOP * DRB * BLK - PF * ((lg_FT / lg_PF) - 0.44 * (lg_FTA / lg_PF) * VOP)]$$

The **finalized PER** is **adjusted for league pace** and **standardized** to an average of 15.0 each season.

$$PER = \left(uPER \times \frac{lgPace}{tmPace} \right) \times \frac{15}{lguPER}$$

Manager Metrics

Our **explanatory variables**:

- Draft Experience**: Number of drafts they've been manager.
- Tenure**: Total number of years spent as manager.
- Prior Player**: A Boolean variable that indicates if the manager was previously an NBA player.

Executive	Prior_Play	tenure_ye	Exec_draft
AlAttles	1	9.98	1
BernieBickl	0	3.62	9
RodThorn	1	6.88	7
ElginBaylor	1	22.5	19

- = Prior Playing Experience
- = Manager Tenure (in years)
- = Manager Draft Experience (in years)

Relation Between PER and Manager Draft Experience



This graph shows **more draft experience** can lead to a **higher PER rating** from drafted players, and it displays that managers both **with and without playing experience** are clustered **among each other** throughout the data.

Tale of Two Managers



- Elgin Baylor, Former GM of L.A. Clippers:
- Tenure**: 22.5 years
 - Draft Experience**: 15th Draft as GM
 - Prior Player**: Yes



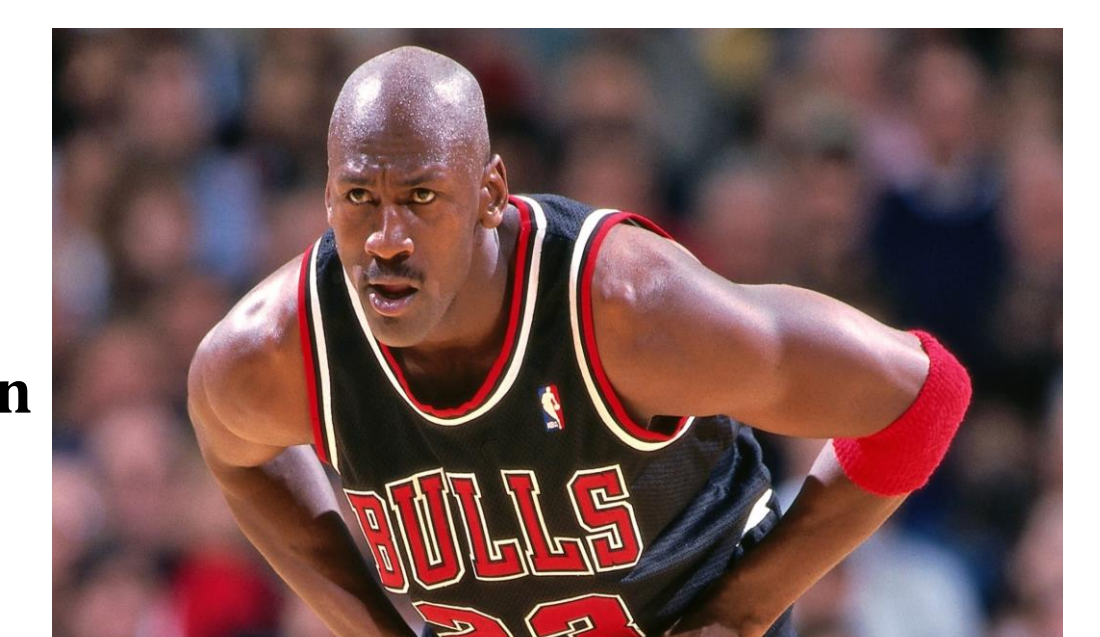
- Rod Thorn, Former GM of Chicago Bulls:
- Tenure**: Under 7 years
 - Draft Experience**: 7th Draft as GM
 - Prior Player**: Yes

- 2000 NBA Draft**
- Clippers have **3rd overall pick**.
 - This player played 7 total seasons; **3 seasons** have an **above-average PER**.
 - Missed two seasons and suffered **career-ending injury**.

- 1984 NBA Draft**
- Bulls have **3rd overall pick**.
 - This player had **15 seasons** with a **PER above the league average (15.0)**.
 - He is also the **career PER leader in NBA history (27.9 PER)**.



Darius Miles & Michael Jordan



Methodology

The first method of our analysis was a **multiple linear regression (MLR)** model. With player PER, we wanted to determine if the PER was a **direct correlation** of our explanatory managerial variables by following the standard MLR equation below.

$$y = b_0 + b_1x_1 + b_2x_2 + \dots + b_nx_n$$

A **fixed-effect model** was used to determine if there is a **significance** of the **managerial characteristics** in determining a player's PER. Fixed-effect, along with random-effect models, are used when analyzing **panel data**, data observed over time. Our fixed-effect model followed the equation below.

$$Y_{it} = \alpha + \beta X_{it} + u_{it}$$

Because our **managerial effects** are modeled as **time-invariant**, the **random-effects model** is the most appropriate model. We also wanted to determine the **effect of population's characteristics** based on our data, also making random-effects ideal. This was done following the equation below.

$$Y_{ij} = \mu + U_i + W_{ij}$$

Predictor	Coefficient	Impact on ln(PER)	P-value
Prior Player	0.007	3.38%	p<0.05
ln(Tenure)	-0.011	-3.43%	p<0.001
ln(Draft Experience)	0.008	5.05%	p<0.001

Conclusions

Based on our **random-effects model**, we were able to come to the following conclusions on each of our **managerial characteristics**:

- Draft Experience**: Managers with **more draft experience perform better**.
- Tenure**: Managers with a **shorter tenure excel** at predicting high-performing players.
- Prior Player**: There is **weak evidence** that a manager's **playing experience** is associated with **higher PER**.

Beyond Basketball

The pseudo **randomized NBA draft** is a unique empirical case that allows us to cleanly **disentangle the sorting effect** of employees joining the manager from the **treatment effect** of the manager's ability. The **objective and longitudinal nature of NBA data** further allows us to **develop unbiased estimates** for the antecedents of a manager's foresight and ability. Insights from this study have far reaching implications in **human resource management, labor economics and people analytics**.



References

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