
Investigating the Role of Efficiency Gains in Sporting Performance: Evidence from the FA Premier League 1996 – 2006

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Synopsis:

This study identifies teams using David strategies to achieve transactional and/or transformational efficiency gains in order to compete more effectively against resource-richer rivals.

Abstract:

Introduction and Literature Review

The economic analysis of pro sports teams shows that sporting performance depends on the financial resource available to spend on playing talent (Szymanski & Kuypers, 1999; Kuper & Szymanski, 2012) and the efficiency of the sporting production performance. The available financial resource, in turn, depends on the economic size of the team as well as its corporate objectives. But irrespective of whether teams are profit or utility maximisers, sporting efficiency is a necessary optimising condition for all teams. However, the search for innovative sources of efficiency gains can be a priority for teams seeking to develop a “David” strategy to compete with resource-richer rivals. The Moneyball story provides a case study of how the Oakland Athletics in the MLB used sabermetrics as a David strategy (Lewis, 2003). Sporting efficiency is often measured by the cost-per-win ratio but, given the crucial role of efficiency gains for many teams, further refinement of this metric can help give a better understanding of why some teams operate at higher efficiency levels than others. The aim of this present study is to: (i) propose a method of decomposing sporting efficiency into two components – transactional and transformational efficiency; and (ii) apply this decomposition to identify effective David strategies in the FA Premier League.

Theoretical Framework

Let WIN = sporting performance, RESOURCE = player costs, and TALENT = playing talent. It follows that a team’s sporting performance can be expressed as:

$$(1) \text{ WIN} = \text{RESOURCE} \times (\text{WIN}/\text{RESOURCE})$$

where $\text{WIN}/\text{RESOURCE}$ = sporting efficiency (i.e. output-input ratio)

It can be shown that, by introducing a measure of playing talent, sporting efficiency can be decomposed into the product of two ratios:

$$(2) \text{ WIN}/\text{RESOURCE} = (\text{TALENT}/\text{RESOURCE}) \times (\text{WIN}/\text{TALENT})$$

$\text{TALENT}/\text{RESOURCE}$ represents transactional efficiency since it measures the amount of playing talent per dollar spent on player salaries. WIN/TALENT represents transformational efficiency, providing a measure of the number of wins achieved per unit of playing talent. Transactional efficiency depends on scouting to identify potential recruits as well as assessing the team's own current squad and the "graduates" from their youth development programme. It also requires the capability to value playing talent to determine the optimal allocation of the team's available financial resources. Transformational efficiency relates to the coaching of players - training, team selection and choice of game tactics – and depends on the capabilities of the coaching staff to transform individual playing talents into an effective team. The key empirical issue in operationalising this decomposition is the development of an appropriate measure of playing talent.

Data and Methods

The dataset used in this study consists of a panel of ten seasons, 1996/97 – 2005/06, of the FA Premier League in England, the leading domestic soccer league based on revenues and global TV audience. Sporting performance is measured by total league points gained (LEAGPTS). The measure of costs is relative wages costs (RELWAGES) defined as total staff costs divided by the league average for the season. The use of relative wage costs controls for inflation of player wages. The stock of playing talent is measured by a team quality index (TQI) using a hedonic-pricing analysis of player transfer fees to identify the components and weightings of the TQI (Gerrard, 2001).

A two-stage analysis is undertaken. The first stage is ratio analysis in which efficiency ratios are calculated for all teams for all seasons. Teams are categorised as high/medium/low resource and high/medium/low efficiency based on deviations from the mean (with medium efficiency defined as within two standard deviations). Teams with medium/low resource and high efficiency are categorised as transactional and/or transformational "David" teams depending on the specific source of their efficiency gains. The second stage is regression analysis in which the two component efficiency ratios - transactional efficiency (Model 1) and transformational efficiency (Model 2) - are estimated as multivariate relationships in order to identify factors affecting efficiency levels.

Results and Discussion

There are four key findings:

1. There is evidence that transactional efficiency is non-linear possibly due to superstar effects on salary costs.
2. Transactional efficiency is positively associated with the average age of the team but negatively related to national team experience, suggesting that there may be efficiency gains by avoiding the salary premium attached to younger/mid-career players and full internationals.
3. Transformational efficiency is significantly affected by shared team experience (Berman et al., 2002), utilisation rates and performance dynamics.

4. Bolton Wanderers is identified as a David team. The elements of the David strategy employed by Bolton Wanderers under their manager, Sam Allardyce, will be discussed in the presentation.

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