

# African Journal of Business Management

Volume 11 Number 10 28 May, 2017

ISSN 1993-8233



## ABOUT AJBM

The African Journal of Business Management (AJBM) is published twice monthly (one volume per year) by Academic Journals.

African Journal of Business Management (AJBM) is an open access journal that publishes research analysis and inquiry into issues of importance to the business community. Articles in AJBM examine emerging trends and concerns in the areas of general management, business law, public responsibility and ethics, marketing theory and applications, business finance and investment, general business research, business and economics education, production/operations management, organizational behaviour and theory, strategic management policy, social issues and public policy, management organization, statistics and econometrics, personnel and industrial relations, technology and innovation, case studies, and management information systems. The goal of AJBM is to broaden the knowledge of business professionals and academicians by promoting free access and providing valuable insight to business-related information, research and ideas. AJBM is a weekly publication and all articles are peer-reviewed.

### Contact Us

**Editorial Office:** [ajbm@academicjournals.org](mailto:ajbm@academicjournals.org)

**Help Desk:** [helpdesk@academicjournals.org](mailto:helpdesk@academicjournals.org)

**Website:** <http://www.academicjournals.org/journal/AJBM>

**Submit manuscript online** <http://ms.academicjournals.me/>

## Editor-in-Chief

### **Prof. Wilfred Isioma Ukpere**

*Department of Industrial Psychology and People Management,  
Faculty of Management,  
University of Johannesburg,  
South Africa.*

### **Editors**

#### **Dr. Amran Awang**

*Faculty of Business Management,  
02600 Arau, Perlis, Malaysia*

#### **Prof. Giurca Vasilescu Laura**

*University of Craiova, Romania  
13, A.I. Cuza, 200585, Craiova, Dolj,  
Romania.*

### **Associate Editors**

#### **Dr. Ilse Botha**

*University of Johannesburg  
APK Campus PO Box 524 Aucklandpark 2006  
South Africa.*

#### **Dr. Howard Qi**

*Michigan Technological University  
1400 Townsend Dr., Houghton, MI 49931,  
U.S.A.*

#### **Dr. Aktham AlMaghaireh**

*United Arab Emirates University  
Department of Economics & Finance  
United Arab Emirates.*

#### **Dr. Haretsebe Manwa**

*University of Botswana  
Faculty of Business  
University of Botswana  
P.O. Box UB 70478  
Gaborone Botswana.*

#### **Dr. Reza Gharoie Ahangar**

*Islamic Azad University of Babol,  
Iran.*

### **Dr. Sérgio Dominique Ferreira**

*Polytechnic Institute of Cavado and Ave  
Campus IPCA, Lugar does Aldão, 4750-810. Vila  
Frescainha,  
Portugal.*

### **Prof. Ravinder Rena**

*Department of Economics  
University of the Western Cape  
Private Bag: X17  
Modderdam Road  
Bellville 7535  
Cape town, South Africa*

### **Dr. Shun-Chung Lee**

*Taiwan Institute of Economic Research  
No. 16-8, Dehuei Street, Jhongshan District,  
Taipei City 104,  
Taiwan.*

### **Dr. Kuo-Chung Chu**

*National Taipei University of Nursing and Health  
Sciences No. 365, Min-Te Road, Taipei,  
Taiwan.*

### **Dr. Gregory J. Davids**

*University of the Western Cape  
Private Bag x17, Bellville 7535,  
South Africa.*

### **Prof. Victor Dragotă**

*Bucharest Academy of Economic Studies, Department  
of Finance  
Bucharest, Sector 1, Piata Romana no. 6, Room 1104,  
Romania*

### **Dr. Maurice Oscar Dassah**

*School of Management, IT and Governance  
University of KwaZulu-Natal  
Post Office Box X54001  
Durban  
4000  
South Africa.*

**Prof. Joseph Offiong Udoayang**

*University of Calabar  
P.M.B 1115, Calabar. Cross River State, Nigeria.*

**Prof. Robert Taylor**

*University of KwaZulu-Natal  
Varsity Drive, Westville  
South Africa.*

**Dr. Nazim Taskin**

*Massey University - Albany  
Quad Building A, Room 3.07  
Gate 1, Dairy Flat Highway (State Highway 17)Albany,  
New Zealand*

**Prof. João J. M. Ferreira**

*University of Beira Interior (UBI)  
Estrada do Sineiro, Pólo IV 6200 Covilhã,  
Portugal.*

**Dr. Izah Mohd Tahir**

*Universiti Sultan Zainal Abidin  
Gong Badak Campus, 21300 Kuala Terengganu,  
Terengganu, Malaysia.*

**Dr. V. Mahalakshmi**

*Panimalar Engineering College  
7-A,CID Quarters, Mandaveli,Chennai-600028,  
Tamilnadu,  
India.*

**Dr. Ata Allah Taleizadeh**

*Iran University of Science and Technology  
Faculty of Industrial Engineering,  
Iran University of Science and Technology,  
Narmak, Tehran, Iran.*

**Dr. P.S. Vohra**

*Chandigarh Group of Colleges, Landran, Mohali, India  
#3075, Sector 40 D  
Chandigarh, Pin code 160036*

**Dr. José M. Merigó**

*University of Barcelona  
Department of Business Administration, Av. Diagonal  
690, Spain.*

**Prof. Mornay Roberts-Lombard**

*Department of Marketing Management,  
C-Ring 607, Kingsway campus, University of  
Johannesburg, Auckland Park, Johannesburg, 2006,  
South Africa*

**Dr. Anton Sorin Gabriel**

*Carol I Boulevard, No. 11, 700506, Iasi,  
Alexandru Ioan Cuza University Iași,  
Romania.*

**Dr. Aura Emanuela Domil**

*31 Horia Creanga, zip code 300253, Timisoara,  
West University from Timisoara,  
Faculty of Economics and Business Administration, Romania.*

**Dr. Guowei Hua**

*NO. 3 Shangyuancun, Haidian District, Beijing 100044,  
School of Economics and Management,  
Beijing Jiaotong University, China.*

**Dr. Mehdi Toloo**

*Technical University of Ostrava,  
Ostrava, Czech Republic*

**Dr. Surendar Singh**

*Department of Management Studies, Invertis University  
Invertis village, Bareilly -  
Lucknow Highway, N.H.-24, Bareilly  
(U.P.) 243 123 India.*

**Dr. Nebojsa Pavlovic**

*High school "Djura Jaksic"  
Trska bb, 34210 Raca, Serbia.*

**Dr. Colin J. Butler**

*University of Greenwich  
Business School, University of Greenwich, Greenwich, SE10  
9LS,  
London, UK.*

**Prof. Dev Tewari**

*School of Economics and Finance  
Westville Campus University of Kwa-Zulu  
Natal (UKZN) Durban, 4001  
South Africa.*

**Dr. Paloma Bernal Turnes**

*Universidad Rey Juan Carlos  
Dpto. Economía de la Empresa  
Pº de los Artilleros s/n  
Edif. Departamental, Desp. 2101  
28032 Madrid, España*

**Dr. Jurandir Peinado**

*Universidade Positivo  
Rua Silveira Peixoto, 306  
Zip 80240-120 Curitiba – PR – Brazil*

**ARTICLES**

|  |            |
|--|------------|
| <b>Exploring human capital: Discrimination factors and group-specific performance in the football industry</b> | <b>194</b> |
| Raffaele Trequattrini, Alessandra Lardo, Federica Ricci and Rosa Lombardi                                      |            |
| <b>Does bank capital regulation affect bank value?</b>   | <b>206</b> |
| Lotto Josephat   |            |

*Full Length Research Paper*

## Exploring human capital: Discrimination factors and group-specific performance in the football industry

Raffaele Trequattrini<sup>1</sup>, Alessandra Lardo<sup>1\*</sup>, Federica Ricci<sup>2</sup> and Rosa Lombardi<sup>2</sup>

<sup>1</sup>University of Cassino and Southern Lazio, Italy.

<sup>2</sup>Sapienza University of Rome, Italy.

Received 3 March, 2017; Accepted May 8, 2017

The aim of the study is to investigate whether discrimination factors exist within professional football clubs, concerning the management of their human capital, by analysing the correlation between the footballers' wages and their performance. An analysis was conducted to show that discrimination, based both on nationality and race, can affect the strategies adopted by football club managers and in the professional footballer labour market, where players are considered to be the human capital of football enterprises. The research framework consists of an analysis of the existing literature on discrimination in sports and of a quantitative analysis based on an exploratory approach, where the wage differences among Italian Serie A league footballers are compared to the performance of each group of players (organised by race or nationality). The results of the analysis of data for all Italian Serie A clubs show that discrimination (in pay) exists against Italian and white players. In contrast, when small and big clubs are considered separately, the findings relating to small clubs highlight that foreign and black players face such discrimination. The results suggest that managers of professional football clubs apply a discrimination strategy. In addition, the results provide practical implications on the types of discrimination errors that are committed by the management of big and small football clubs. Big clubs tend to overrate the contributions of foreign and/or black players compared to those of Italian and white players, while small clubs tend to overrate the contributions of Italian and white players compared to those of foreign and black players. To reduce discrimination, clubs have to correlate how much players are paid with their performance. Further research is recommended to identify the impact of wage inequality on the football labour market and on professional team management.

**Key words:** Human capital, discrimination, wages differences, performance, team management, labour market, football clubs.

### INTRODUCTION

According to many studies on sports teams, leagues, and federations, the global sports industry is growing much

faster than gross domestic product (GDP) rates around the world, and football remains the main sports business

\*Corresponding author. Email: [a.lardo@unicas.it](mailto:a.lardo@unicas.it)

in terms of global revenues, with an annual income of more than 20 billion euros (Collignon et al., 2011).

Some researchers (Beech and Chadwick, 2004; Ššderman and Dolles, 2013) highlight that football, from being a simple sports competition, has become a sports-related environment (Shams and Lombardi, 2016) connected to a complex set of economic, social, and political structures and with huge cultural and financial impact.

In this context, the aim of the study is to investigate whether discrimination factors exist within professional football clubs, concerning the management of their human capital (Dana et al., 2005; Reisi et al., 2013; Shammot, 2014; Owor, 2016) by analysing the correlation between the footballers' wages and their performance (Makris et al., 2012).

Footballers represent the human capital in this type of enterprise (Tomé et al., 2014; Lardo et al., 2017), and, from this perspective, there are very few studies on management strategies that are based on conscious and/or unconscious discrimination on the part of professional football clubs in the pursuit of their aims, such as increase attendance, profitability, and chances of winning.

The issue of discrimination is of serious concern to the governing bodies of football movements at both the European and global levels. During the XXXVII Ordinary Union of European Football Associations (UEFA) Congress held in London in May 2013, the UEFA and its member associations adopted a resolution to achieve its objective of eliminating racial discrimination within football. This initiative brought significant financial support to Football Against Racism in Europe (FARE). The UEFA and FARE are working together to stage events and publish materials, and they have also sent out a message of zero tolerance against all forms of racism and discrimination, and have instead promoted respect for diversity during Europe's biggest football matches.

For this reason, one purpose of the research is to contribute to the debate arising in the international sports landscape (Dongfeng, 2013; Hrisanta et al., 2013; Ukpere and Slabbert, 2009). The research focused on analysing discrimination based on race or country of origin in the professional football players' labour market. The analysis was carried out on a group representing 90% of Italian Serie A football players over the 2010 to 2011, 2011 to 2012, and 2012 to 2013 seasons. The results of the research provide important implications in terms of the behaviour of professional football club managers, whose strategies can be influenced by systematic errors arising from discrimination at a conscious and/or unconscious level. In light of the arguments presented in this section, the research questions are:

RQ<sub>1</sub>: Does discrimination based on nationality and/or race affect management strategies concerning the human

capital of Italian football clubs?

RQ<sub>2</sub>: Does a relationship exist between discriminatory behaviour against football players and strategies implemented by football clubs?

## LITERATURE REVIEW

Studies on discrimination in sports can be organised according to the sports discipline and forms of discrimination (Eitzen and Sage, 1978). With regards to sports, numerous studies have been carried out on baseball and basketball in the USA, albeit they have produced mixed results.

Looking at baseball, Medoff (1975) and Raimondo (1983) found no statistically significant differences in the wage distribution of black and white players. However, in studying the salaries and premiums of 212 non-pitchers, Christiano (1986) noted that, in some cases, the premiums paid to older players were influenced by race. In a second study, however, Christiano (1988) concluded that the discrimination that was found from the analysis of the 1977 season was not found for the subsequent season.

Bellemore (2001) surveyed the years from 1960 to 1990, and found that while there were established forms of discrimination against black players, they diminished during the seasons when there was an increase in the number of teams taking part in the most important leagues. On the basis of Major League Baseball official data for black baseball batsmen between 1990 and 2004, Groothuis and Hill (2008) did not detect any significant correspondence between their race and the length of their careers.

On the other hand, several conflicting results have been detected in the sector of professional basketball. In various empirical studies, it has been shown that, given the same level of productivity, black players are paid less than white players (Kahn and Sherer, 1988). In this regard, Bodvarsson and Brastow (1999), in their empirical study based on Becker (1971) approach, concluded that the level of racial discrimination in the National Basketball League has lowered as a result of the loss of monopoly in 1988, when new teams joined the league.

In other studies (Kanazawa and Funk, 2001), the difference in wages for black players has been linked to the greater number of spectators who, apparently, attend matches with more white players. This tendency results in white players' wages marginally exceeding those of black players. Brown et al. (1991) found no empirical evidence to support the assumption that fan attendance is inversely proportional to the minutes of a game during which black basketball players play, reaching the conclusion that black players must perform better than white players in order to join the National Basketball Association. While the theme of racial discrimination has been widely investigated in



North American basketball and baseball leagues, only a small part of the literature has dealt with the impact of racial discrimination in American football and in football/soccer.

Mogull (1981) carried out several studies concerning wage discrimination in the National Football League (NFL) in the United States of America (USA), and found no empirical evidence supporting wage discrimination among NFL players. Kahn (1991) conducted a survey on a sample of over 1000 players for the 1989-90 season, and from the results of his statistical regression, he concluded that the wages of African-American football players are 4% lower than those of white players. Gius and Johnson (1998), in their analysis of the NFL, identified the first case of wage discrimination against white players. They used log-linear wage regression and the Chow test on a sample of 938 players for the 1995 to 1996 season and observed that white players were paid 10% less than African-American players.

Referring to racial discrimination in professional football in Europe and, particularly, within the English Premier League, Maguire (1988) noted that many black English players experienced explicit and/or implicit discrimination. In his analysis of data from the Rothmans Football League Directories, he concluded that, during the 1985 to 1986 season, there was discrimination within English football.

Based on his analysis of data from 39 football clubs over the seasons from 1978 to 1993, Szymanski (2000) confirmed that discrimination was present in English professional football, which the market was unable to avoid. He highlighted one important result—on average, a club without black players paid a premium of 5% compared to a club that did not discriminate. In other words, racial discrimination is more expensive for clubs at the top of the ranking, because the total expenditure for players is higher.

In a further study, Preston and Szymanski (2000) investigated the cause of racial discrimination in English football for the seasons between 1974 and 1993 and found no evidence of a link between selecting black players and match attendance, concluding that discrimination can be attributed to the prejudice of some club owners. Frick (2007) found a slight and insignificant form of wage discrimination against foreign footballers.

In another study, an innovative test was used to evaluate discrimination in English football and the effect of race on the probability of a player joining the market from 1968 to 2001 (Goddard and Wilson, 2009). The results of the test revealed that the most talented black players were likely to be hired in clubs belonging to the highest divisions, and that talented black players had less probability of becoming professional players than white players.

In a further study, Dobson and Goddard (2011) highlighted that racial discrimination has decreased in English professional football over the years, concluding that discrimination may have remained because of a

continuing distortion in the market for black footballers.

Other studies (Frick et al., 2003) have analysed the relation between pay inequality and economic outcomes in the North American team sports industry, and the results differed considerably between the four major leagues, suggesting that the relative importance of high-powered incentives and cooperation in football and hockey differed from that in basketball and baseball.

This review of previous studies shows that no results can emphatically support (or reject) the existence of discrimination in sports in general and in professional football in particular. Moreover, many studies do not investigate whether professional football clubs apply discriminatory strategies to achieve their objectives.

From this perspective, it is clear that there is a lack of research on the correlation between forms of discrimination against football players and the strategies implemented by football clubs. To help address this gap in the research and the absence of results in the international literature that can be interpreted univocally, in this study, we investigated discrimination's role in influencing wages of premier league Italian footballers for the 2010 to 2011, 2011 to 2012, and 2012 to 2013 seasons, and how discriminatory behaviour can be related to the strategies of football clubs.

## METHODOLOGY

The research used a quantitative method (Anderson et al., 2012; Waters, 2008), applying an exploratory approach (Hair et al. 2003) to answer the research questions identified in the previous section and, therefore, to fill the gap in literature. First, the analysis was based on the hypothesis that there is a positive linear correlation between the total wages paid in a professional football club and the team's performance. This is given by the formula:

$$P = f(W)$$

Where

W represents the total cost of salaries, and  
P is the team's annual performance.

The hypothesis, which has been supported in other works concerning British football (Szymanski, 2010), was verified for the Italian market. Figure 1 shows that this correlation exists to a moderate degree (Pearson's coefficient is equal to 0.71) for the seasons surveyed.

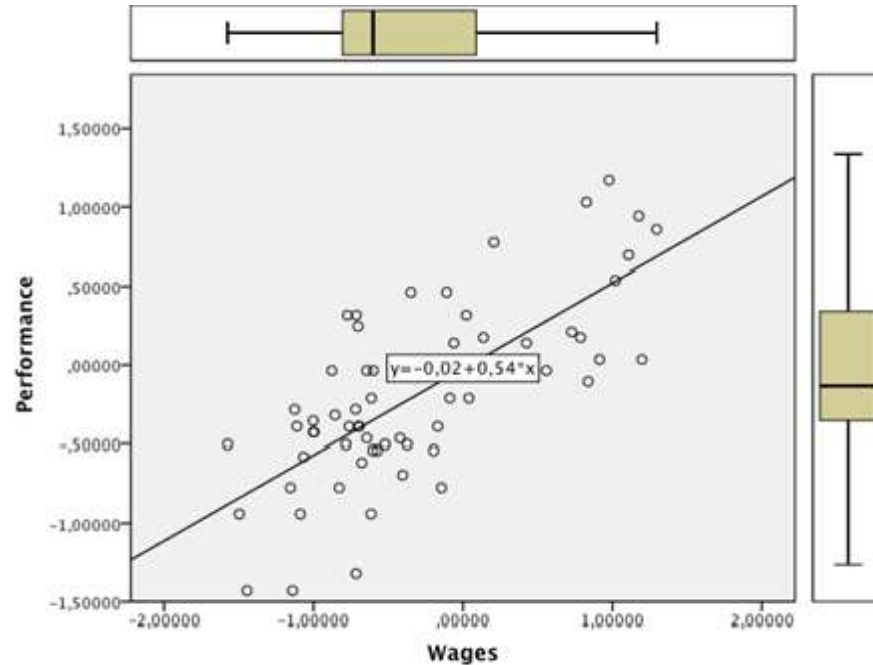
As in other studies, the performance values were calculated using the natural logarithm of the logit function applied to the points won by a team out of the total points available. The values of the total cost of wages were calculated as the natural logarithm of the ratio between the total cost of wages for each team and the average for the current season. Over the three championships, the Pearson's coefficient was estimated as 0.75 for the first and second seasons and 0.69 for the third.

## Theoretical discrimination hypothesis

To understand the methodology used in this survey, a theoretical discrimination hypothesis is needed.

Assuming that each team is composed of  $n$  players— $n_a$  players





**Figure 1.** Correlation (wages; performance) for Italian Serie A football clubs (Source: Authors' analysis using SPSS).

have a certain characteristic and  $n_b$  players do not—the formula is:

$$N = N_a + N_b$$

Where

$N$  represents the total number of football players,  
 $N_a$  represents the share of players with the given characteristic ( $N_a/N$ ),  
 $P_N$  represents the team's overall performance, and  
 $P_{Na}$  represents the contribution of group A to this performance.

*H<sub>p</sub>: If it is possible to demonstrate statistically that, in a given season, teams with a higher  $N_a$  performed better, it should follow that the average of the wages of group A players ( $\mu_a$ ) should be significantly higher than the averages of the wages of group B players ( $\mu_b$ ).*

From this perspective, there should be no discrimination if:

- (1) The positive impact on performance by group A determines a higher retribution, on average,
- (2) The insignificant impact on performance by group A does not determine any difference in retribution, and
- (3) The negative impact on performance by group A determines a significant difference in retribution in favour of group B.

In contrast, there is evidence of discrimination if:

- (1) The positive impact on performance by group A does not determine any difference in retribution or determines a significant difference in retribution in favour of group B (discrimination against A),
- (2) The negative impact on performance by group A does not determine any difference in retribution to the detriment of A or

determines a difference in retribution in its favour (discrimination against B), and

- (3) The insignificant impact on performance by group A determines a difference in retribution in its favour (discrimination against B) or a difference in retribution in favour of B (discrimination against A).

Figure 2 summarises all the cases hypothesised. The analysis was carried out on two characteristics (race and nationality) over three consecutive seasons (2010 to 2011, 2011 to 2012, and 2012 to 2013) and with reference to all the championship teams (T), the cluster of big teams (B), and that of small teams (S). Table 1 shows the cases that were subjected to critical analysis.

For the calculation of the means, a sample survey was carried out, since the data concerning the retributions of all players in group A was incomplete. This meant that it was possible to accept or refuse the hypothesis for equality of the means, referring to the wages of footballers belonging to the categories surveyed.

The comparison between the average retributions was carried out starting from the players' individual wages. It was not possible to use this approach to estimate the contribution of group A members to the team's performance. The contribution of group A to performance could not be calculated as the sum of the contributions of each member in group A to the team's performance mainly for two reasons:

- (1) Nowadays, there is no suitably reliable and general indicator of a footballers' individual performance that can be applied to every position covered on the pitch, and
- (2) A team's performance cannot always be defined as the simple sum of the performances of every footballer.

Therefore, in the present study, the contribution to team performance by each footballer was determined by allocating to each a share of the team's result according to the number of matches the footballer played during the seasons under examination; therefore, group-specific performance was considered.

|                                |               |                              |                              |                              |
|--------------------------------|---------------|------------------------------|------------------------------|------------------------------|
|                                |               | Retribution                  |                              |                              |
|                                |               | $\mu_a > \mu_b$              | $\mu_a = \mu_b$              | $\mu_a < \mu_b$              |
| Impact on the performance of A | positive      | No discrimination            | Moderate discrimination vs A | Discrimination vs A          |
|                                | insignificant | Moderate discrimination vs B | No discrimination            | Moderate discrimination vs A |
|                                | negative      | Discrimination vs B          | Moderate discrimination vs B | No discrimination            |

**Figure 2.** Theoretical discrimination hypothesis.

**Table 1.** Symbols for cases that were analysed to determine discrimination behaviour.

| Symbol        | Description   |
|---------------|---|
| 2010-11 (T/F) | Foreign footballers investigated in the 2010-11 season with reference to all clubs      |
| 2010-11 (B/F) | Foreign footballers investigated in the 2010-11 season with reference to big clubs      |
| 2010-11 (S/F) | Foreign footballers investigated in season 2010-11 season with reference to small clubs |
| 2010-11 (T/C) | Black footballers investigated in the 2010-11 season with reference to all clubs        |
| 2010-11 (B/C) | Black footballers investigated in the 2010-11 season with reference to big clubs        |
| 2010-11 (S/C) | Black footballers investigated in the 2010-11 season with reference to small clubs      |
| 2011-12 (T/F) | Foreign footballers investigated in the 2011-12 season with reference to all clubs      |
| 2011-12 (B/F) | Foreign footballers investigated in the 2011-12 season with reference to big clubs      |
| 2011-12 (S/F) | Foreign footballers investigated in the 2011-12 season with reference to small clubs    |
| 2011-12 (T/C) | Black footballers investigated in the 2011-12 season with reference to all clubs        |
| 2011-12 (B/C) | Black footballers investigated in the 2011-12 season with reference to big clubs        |
| 2011-12 (S/C) | Black footballers investigated in the 2011-12 season with reference to small clubs      |
| 2012-13 (T/F) | Foreign footballers investigated in the 2012-13 season with reference to all clubs      |
| 2012-13 (B/F) | Foreign footballers investigated in the 2012-13 season with reference to big clubs      |
| 2012-13 (S/F) | Foreign footballers investigated in the 2012-13 season with reference to small clubs    |
| 2012-13 (T/C) | Black footballers investigated in the 2012-13 season with reference to all clubs        |
| 2012-13 (B/C) | Black footballers investigated in the 2012-13 season with reference to big clubs        |
| 2012-13 (S/C) | Black footballers investigated in the 2012-13 season with reference to small clubs      |

**Empirical analysis framework**

The research was carried following two steps:

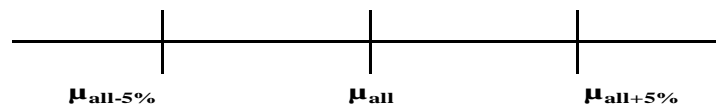
- (1) The first step consisted of analysing the annual wages of a group of Serie A football players divided by nationality and race, with reference to the 2010 to 2011, 2011 to 2012, and 2012 to 13 seasons. To carry out this analysis, we used a database provided by the *Gazzetta dello Sport*, the leading Italian sports newspaper.
- (2) The second step consisted of comparing the footballers' wages with the team's performance in matches played by the footballers. For data relating to attendance and team performance, we used the database available through the transfer market website, <http://www.transfermarkt.com>.

With regards to the first step, it is important to specify that the group of players was selected from among all the footballers who played in at least ten matches over each season analysed. This group is representative of about 90% of the total population of footballers who played at least one game over each season.

Since there is a significant correlation between the level of the footballers' net wages and their clubs' total expenditure on wages (the Pearson's coefficient for the three championships was estimated as 0.75 for the first and second seasons and 0.69 for the third), the virtual population was divided into two subgroups—big and small clubs. Small clubs are clubs that spend less than 30 million euros on their players' wages annually. Table 2 shows the composition of the football clubs in terms of the two football features

**Table 2.** Composition of footballer groups.

| Variable            | 2010-11 season |            |            | 2011-12 season |            |            | 2012-13 season |            |            |
|---------------------|----------------|------------|------------|----------------|------------|------------|----------------|------------|------------|
|                     | Small clubs    | Big clubs  | All clubs  | Small clubs    | Big clubs  | All clubs  | Small clubs    | Big clubs  | All clubs  |
| Italian players (I) | 125            | 73         | 198        | 128            | 60         | 188        | 127            | 45         | 172        |
| Foreign players (F) | 93             | 67         | 160        | 95             | 86         | 181        | 107            | 75         | 182        |
| <b>Total</b>        | <b>218</b>     | <b>140</b> | <b>358</b> | <b>223</b>     | <b>146</b> | <b>369</b> | <b>234</b>     | <b>120</b> | <b>354</b> |
| Black players (C)   | 25             | 20         | 45         | 22             | 19         | 41         | 27             | 22         | 49         |
| White players (W)   | 193            | 120        | 313        | 201            | 127        | 328        | 207            | 98         | 305        |
| <b>Total</b>        | <b>218</b>     | <b>140</b> | <b>358</b> | <b>223</b>     | <b>146</b> | <b>369</b> | <b>234</b>     | <b>120</b> | <b>354</b> |

**Figure 3.** Range used for comparing mean value of footballers' wages.

being analysed.

The analysis of the groups involved comparing the mean of the wages of footballers belonging to the groups. The difference between the means of groups A and B is significant if it is 5% above the mean of all players (Figure 3). In practice, the value of the range is calculated as the difference between 5% more and 5% less than the mean for all players.

## FINDINGS

### Evidence from first step

Applying the methodology explained in the previous section, Table 3 gives the results for the population of all the Serie A clubs for the three seasons. With reference to nationality, for all the seasons, the mean of the retribution for foreigner footballers was higher than that for Italian players, and all the differences in the means were significant because they were greater than the 5% range.

The result was the same with reference to race of footballers, except for the 2012 to 2013 season, when there was a relevant reduction in the wage gap, as indicated by the insignificance in the differences. When foreign footballers received a higher wage than their Italian counterparts, it can be explained through the specific characteristics of the Italian football labour market. Clubs are generally prepared to pay a premium to a foreign footballer based on the conviction that he will have a greater influence on the clubs' results during that season.

It is important to point out that the differences between the wages of black and white footballers and between Italian and foreign footballers decreased rapidly between the 2010 to 2011 and 2012 to 2013 seasons, and this

reduction can be partially explained by the reduction in Italian football clubs' total investment in talented players caused by the general economic situation. The analysis of the group of small clubs is summarised in Table 4.

With reference to nationality, an opposite trend seemed to emerge, with the wages of Italian footballers constantly above those of other players. The difference was significant, however, only for the 2012 to 2013 season. In the 2012 to 2013 season, for the other characteristics under examination (race), there was an inversion in the trend—on average, the wages of white footballers were lower than those of black footballers. After analysing the significance of the wage difference, we found that this had occurred for the last two seasons. Table 5 presents the results of the analysis for the group of big clubs.

Looking at the group of all Serie A clubs, the mean of the black players' wages was higher than that of the white players. Similarly, the average of the wages of foreigner players was higher than that of Italian players, with the exception of the 2012 to 2013 season. Concerning nationality, in all seasons, the difference between the wage means for the groups of players was significant.

In the 2012 to 2013 season, the wages of Italian players were, on average, higher than those of foreign players and the wages of black players were, on average, lower than those of white players. With reference to the latter group, in the 2012 to 2013 season, the difference between the two wage means was not greater than 5% of the mean of all players.

In summary, the results of the first phase led to the following main conclusions:

- (1) In the 2010 to 2011 and 2011 to 2012 seasons, for all clubs and big clubs, there was a significant difference in

**Table 3.** Results for all clubs (wages in millions of euros).

| Variable           | 2010-11 season |        |                 |          | 2011-12 season |        |                 |          | 2012-13 season |        |                 |          |
|--------------------|----------------|--------|-----------------|----------|----------------|--------|-----------------|----------|----------------|--------|-----------------|----------|
|                    | PI.            | Mean   | Mean of all pl. | 5% range | PI.            | Mean   | Mean of all pl. | 5% range | PI.            | Mean   | Mean of all pl. | 5% range |
| Foreign players    | 160            | 1.1259 | -               | -        | 181            | 1.0773 | -               | -        | 182            | 0.89   | -               | -        |
| Italian players    | 198            | 0.8917 | -               | -        | 188            | 0.7895 | -               | -        | 172            | 0.801  | -               | -        |
| <i>Differences</i> | -              | 0.2342 | 0.9964          | 0.0996   | -              | 0.288  | 0.9307          | 0.0931   | -              | 0.089  | 0.8469          | 0.0847   |
| Black players      | 45             | 1.3638 | -               | -        | 41             | 1.1471 | -               | -        | 49             | 0.901  | -               | -        |
| White players      | 313            | 0.9436 | -               | -        | 328            | 0.9036 | -               | -        | 305            | 0.838  | -               | -        |
| <i>Differences</i> | -              | 0.4202 | 0.9964          | 0.0996   | -              | 0.244  | 0.9307          | 0.0931   | -              | 0.0631 | 0.8468          | 0.0847   |

**Table 4.** Results for group of small clubs (wages in millions of euros).

| Variable            | 2010-11 season |         |                 |          | 2011-12 season |         |                 |          | 2012-13 season |        |                 |          |
|---------------------|----------------|---------|-----------------|----------|----------------|---------|-----------------|----------|----------------|--------|-----------------|----------|
|                     | PI.            | Mean    | Mean of all pl. | 5% range | PI.            | Mean    | Mean of all pl. | 5% range | PI.            | Mean   | Mean of all pl. | 5% range |
| Foreign players (F) | 93             | 0.4543  | -               | -        | 95             | 0.4062  | -               | -        | 107            | 0.4175 | -               | -        |
| Italian players (I) | 125            | 0.4545  | -               | -        | 128            | 0.4338  | -               | -        | 127            | 0.4672 | -               | -        |
| <i>Differences</i>  | -              | -0.0002 | 0.4544          | 0.0454   | -              | -0.0275 | 0.4220          | 0.0422   | -              | -0.05  | 0.4445          | 0.0444   |
| Black players (C)   | 25             | 0.4148  | -               | -        | 22             | 0.3641  | -               | -        | 27             | 0.4539 | -               | -        |
| White players (W)   | 193            | 0.4595  | -               | -        | 201            | 0.4284  | -               | -        | 207            | 0.3726 | -               | -        |
| <i>Differences</i>  | -              | -0.0447 | 0.4544          | 0.0454   | -              | -0.064  | 0.4221          | 0.0422   | -              | 0.0813 | 0.3820          | 0.0382   |

**Table 3.** Results for group of big clubs (wages in millions of euros).

| Variable            | 2010-11 season |       |                 |          | 2011-12 season |       |                 |          | 2012-13 season |         |                 |          |
|---------------------|----------------|-------|-----------------|----------|----------------|-------|-----------------|----------|----------------|---------|-----------------|----------|
|                     | PI.            | Mean  | Mean of all pl. | 5% range | PI.            | Mean  | Mean of all pl. | 5% range | PI.            | Mean    | Mean of all pl. | 5% range |
| Foreign players (F) | 67             | 2.058 | -               | -        | 86             | 1.818 | -               | -        | 75             | 1.564   | -               | -        |
| Italian players (I) | 73             | 1.640 | -               | -        | 60             | 1.548 | -               | -        | 45             | 1.744   | -               | -        |
| <i>Differences</i>  | -              | 0.418 | 1.840           | 0.184    | -              | 0.27  | 1.708           | 0.1708   | -              | -0.18   | 1.632           | 0.163    |
| Black players (C)   | 20             | 2.122 | -               | -        | 19             | 2.054 | -               | -        | 22             | 1.55    | -               | -        |
| White players (W)   | 120            | 1.449 | -               | -        | 127            | 1.656 | -               | -        | 98             | 1.6498  | -               | -        |
| <i>Differences</i>  | -              | 0.673 | 1.545           | 0.155    | -              | 0.398 | 1.708           | 0.1708   | -              | -0.0998 | 1.632           | 0.163    |

**Table 6.** Index of impact on performance.

| Variable        | 2010-2011 season        |                   | 2011-2012 season        |                  | 2012-2013 season        |                   |
|-----------------|-------------------------|-------------------|-------------------------|------------------|-------------------------|-------------------|
|                 | Non-Italian players (S) | Black players (C) | Non-Italian players (S) | Black players(C) | Non-Italian players (S) | Black players (C) |
| All clubs (T)   | <b>0.51</b>             | <b>0.71</b>       | 0.07                    | 0.36             | 0.31                    | 0.38              |
| Small clubs (S) | 0.32                    | 0.49              | 0.16                    | 0.44             | <b>0.50</b>             | <b>0.61</b>       |
| Big clubs (B)   | <b>0.73</b>             | <b>0.89</b>       | <b>-0.57</b>            | 0.28             | <b>-0.81</b>            | -0.29             |

the wage means in favour of foreign and black players, compared to Italian and white players;

(2) In the 2011 to 2012 season, for small clubs, there was a significant difference between the wages of black and white players, in favour of white players;

(3) In the 2012 to 2013 season, for big clubs, there was a significant difference in wage means in favour of foreigner players for all clubs, and in favour of Italian footballers;

(4) In the 2012 to 2013 season, for both small and big clubs, there was a significant difference in wage means favouring foreigner players, compared to Italian footballers;

(5) In the 2012 to 2013 season, for small clubs, there was a significant difference in wage means between black and white players, in favour of black footballers;

(6) In all other cases, we were not able to verify any significant wage mean differences for the groups of footballers.

### Evidence from second step

In the second step of the research, the study aim was to measure the contribution of each group to the performance of their clubs.

An estimation was carried out on the impact of foreign and black players on the results of each team. This estimation first involved establishing

the total number of the players present on the pitch for each team and, subsequently, calculating the share of performance/success that can be allocated to foreign and black players. Performance was determined as the share of points won in relation to the total points to be won throughout the 20-team championship.

Based on the aforementioned data, the index of impact on performance was calculated as the Pearson's coefficient between the share in attendance that can be attributed to foreign and black players, respectively, and the result achieved by their clubs over the three seasons.

In terms of the first part of the research, the analysis was carried out after making the distinction between big and small clubs. Table 6 shows the results of the analysis for the clubs in the Italian Premier League (Serie A) for the 2010 to 2011, 2011 to 2012, and 2012 to 2013 seasons.

Of the 18 cases, 6 had an index that was greater or equal to 0.5 and 2 that had an index that was less than -0.5. This means that, in 8 of the 18 cases, the higher number of foreign and black players seemed to have influenced the teams' results, up to a point. In particular, for the 2010 to 2011 season, foreign and black players had a significant influence on team performance, especially in big clubs. For the 2011 to 2012 season, a radical change of direction took place, where in big clubs, an increase in foreigner

players seemed to have caused a drop in team results. In the 2012 to 2013 season, more small clubs chose foreign players than the larger, richer clubs.

### DISCUSSION

Having verified the hypothesis that, in Italian professional football, higher pay tends to correspond to better team performance, it should follow that, in the presence of a significant contribution by foreign and black players to club performance, these groups of players should receive a higher share of the clubs' expenditure on wages. In Figure 4, the results relating to black and foreign players are classified according to the three seasons.

The central column of the matrix shows the cases where the wage differences were not considered significant. With reference to the analysis by race group for the 2012 to 2013 season, the insignificant contribution by black players to the teams' performance corresponded to a non-significant difference in wages. We can, therefore, avoid any assumption that this is a case of discrimination.

The first quadrant presents the results relating to black and foreign players for the 2010 to 2011 season, with reference to all teams (T). In this case, there was no discrimination, because the

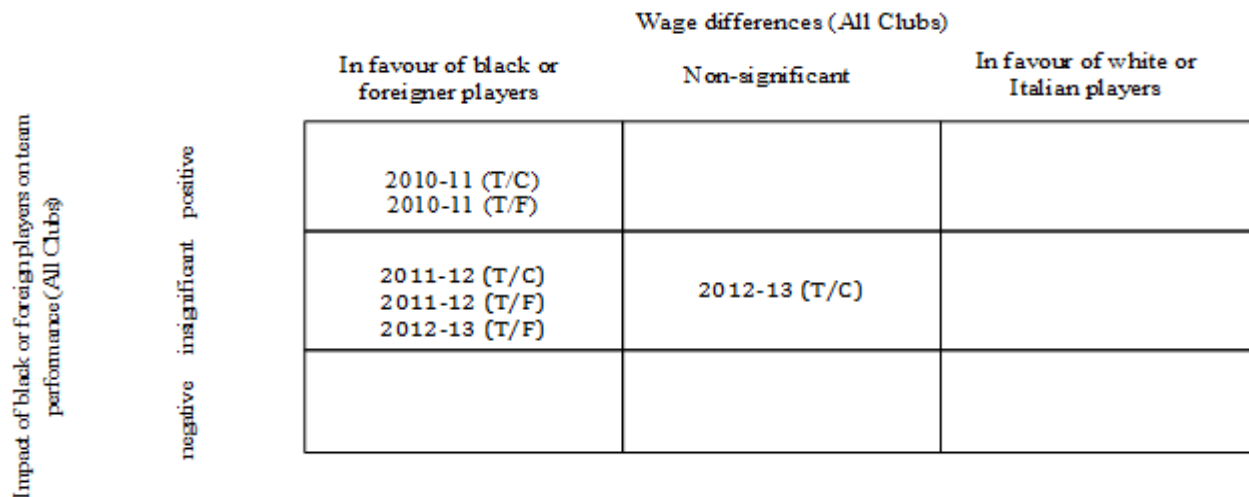


Figure 4. Discrimination cases in all clubs.

significant presence of black players (C) and foreign players (F) corresponded to a significant wage difference for the group (higher than the 5% range of the mean for all players).

For the remaining cases, moderate discrimination was observed in the fourth quadrant, where significant wage differences existed in favour of black and foreign players and the higher wages for black and foreign players had no significant influence on the teams' results. It can therefore be stated that there was moderate discrimination against white footballers for the 2011 to 2012 season, and against Italian footballers for the 2011 to 2012 and 2012 to 2013 seasons.

Subsequently, to focus the study analysis on the behaviour of big and small clubs, we investigated the two groups separately, and the results are clarified in Figure 5.

The results presented on Figure 5 show that, in Italy, the professional football labour market did not show any indication of discrimination in 67% (8 out of 12) of the cases, but it existed in 33% (4 out of 12) of the cases. According to the study analysis, this 33% included:

- (1) Two cases of moderate discrimination—one against white players and the other against Italian players, with reference to big and small clubs, respectively—for the 2011 to 2012 season (that is, a significant wage difference was linked to an insignificant impact on the club's performance); and
- (2) Two cases of strong discrimination—one against Italian players in big clubs for the 2011 to 2012 season (that is, a negative impact of the group of Italian players on performance corresponded to a significant wage difference in favour of foreign players), and the other against foreign players in small clubs for the 2012 to 2013 season (that is, a positive impact of the group of

foreign players on performance corresponded to higher wages for Italian players).

Overall, the empirical analysis has identified the following: strong discrimination against Italian footballers for the 2011 to 2012 season with reference to big clubs, and strong discrimination against foreign players for the of 2012 to 2013 season with reference to small clubs; moderate discrimination against white footballers for the 2011 to 2012 season with reference to all clubs and big clubs, against black players for the 2011 to 2012 season with reference to small clubs, and against Italian footballers for the 2012 to 2013 season with reference to all clubs.

The findings of this study can be useful in future investigations on the possibility that the behaviour of professional football club managers is subject to systematic errors (Lombardi et al., 2014) that are related to some kind of conscious and/or unconscious discrimination (Ohlert, 2016). In addition, with regards to the difference between big and small clubs, there is evidence that big club managers make the same number of discrimination errors as small club managers.

Interesting considerations can be made in connection with the types of error involved. Big clubs tend to overestimate the contribution of foreign and black players to the disadvantage of Italian and white players. In contrast, small clubs are inclined to overrate the contribution of Italian and white players to the disadvantage of foreign and black footballers.

Focusing the study attention on the temporal distribution of the errors, we find that they were concentrated in the 2011 to 2012 and 2012 to 2013 seasons, when the well-documented economic crisis started to affect the entire professional football sector (from the 2011 to 2012 season to the 2012 to 2013

Wage Differences (Big and Small Clubs)

|   |               | In favour of black or foreign players           | Non-significant  | In favour of white or Italian players |
|---|---------------|---|--|---------------------------------------|
| Impact of black or foreign players on performance (Big and Small Clubs) | positive      | 2010-11 (B/C)<br>2010-11 (B/F)<br>2012-13 (S/C) |  | 2012-13 (S/F)                         |
|   | insignificant | 2011-12 (B/C)                                   | 2010-11 (S/F)<br>2010-11 (S/C)<br>2011-12 (S/F)<br>2012-13 (B/C) | 2011-12 (S/C)                         |
|   | negative      | 2011-12 (B/F)                                   |  | 2012-13 (B/F)                         |

**Figure 5.** Discrimination cases for big and small clubs.

season, the expenditure for wages dropped from 875.5 million euros to 866.3 million euros). For the 2010 to 2011 season, no evidence of discrimination was observed for any of the groups. It would appear, therefore, that in periods of crisis, discrimination processes tended to worsen.

On the one hand, big clubs, despite reducing the wage differential between Italian and foreign footballers, continued to favour the international market, still acquiring players who were not able to bring a definitive competitive advantage (their contribution to their team's performance was negative).

On the other hand, small clubs worked harder in scouting the emerging markets, gaining the greatest profit from the difference in wages between foreign and black players and their contribution to the team's performance, which tended to transform into an economic advantage.

## Conclusion

The aim of this work was to investigate whether there are strategies that discriminate against human capital within professional football, particularly the Italian Football Premiership (Serie A), which is one of the top five European leagues.

The analysis focused on the wages of Serie A footballers and involved three aspects. Wages were examined from the perspective of the players' race and country of origin (perspective on the type of discrimination) over three consecutive seasons (temporal perspective) for all clubs in the league and, in a different way, for big and small clubs (perspective on the size of clubs in the league).

As in other research on the topic, the study used a

theoretical framework in which it was assumed that a positive correlation exists between a player's wage level and the contribution of each category of players to the total performance of the club in which they play. Subsequently, we analysed the cases where there was a significant difference between the level of wages for the group and the contribution to the group's performance. This inconsistency was interpreted as providing evidence of discrimination and was subjected to a critical examination to verify whether the reasons for this can be included among the possible strategies put in place by professional football club managers.

The analysis produced the following main results. No systematic form of discrimination existed within the Italian Premier League, because discrimination factors were only identified in 33% of the cases. However, from the perspective of type of discrimination, we found evidence of discriminatory behaviour either to the advantage or disadvantage of the categories, verifying that big clubs tended to overrate the contribution of foreign and black players, to the disadvantage of Italian and white players, while small clubs tended to overrate the contribution of Italians and white players, to the disadvantage of foreign and black players. Considering all clubs, the impact of discriminatory behaviour on the part of big clubs was greater than that of small clubs. From the temporal perspective, there has been an increase in episodes of discrimination over the past two years, when, for the first time, league clubs reduced their total expenditure on wages.

Furthermore, this research provided an answer to its second question, because it demonstrated that processes of discrimination were strictly connected to the strategies implemented by Italian football club managers and these differed according to the size of the club:



(1) Big clubs seemed to prefer famous foreign and black footballers, incurring high costs and paying large salaries, to increase their relational capital value (Trequattrini et al., 2014), exploit the effect of these negotiations in the media, and increase their income from stadium tickets, merchandising, and TV rights; and

(2) Small clubs preferred to acquire unknown foreign and black footballers from emerging markets, containing costs and paying lower wages, to improve their financial performance by exploiting the potential future recognition of the players acquired.

To avoid these discrimination strategies carried out by the managers of professional football clubs, there should be a higher correlation between the wages of players and their contribution to their team's performance, and this correlation may be imposed by football bodies on football clubs (Trequattrini et al., 2015).

Discrimination can be interpreted as a form of underhanded imperfection in the Italian footballer labour market, since it exists in the function of the economic objectives of the clubs in the industry. This consideration underlines the limits of the present research and opens the field to future analyses. If the hypothesis that discrimination is in the function of the strategic aims of professional football clubs is correct, it follows that wage differences between footballers should be correlated not only to their match performance, but also to the financial results of these clubs, putting into the discussion the theoretical models that assume that they have a single objective in the form of either maximising profits or maximising wins.

Finally, the research has some limitations. First, a footballer's performance is a complex variable that cannot be represented by one index, and future studies can aim to improve upon this aspect by considering other variables beyond match attendance. Moreover, the research focuses only on Italian Serie A clubs and it could be expanded considering all the European leagues.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

## REFERENCES

- Anderson D, Sweeney D, Williams T, Camm J, Cochran J (2012). *Quantitative Methods for Business*. London: Cengage Learning EMEA.
- Becker G (1971). *The Economics of Discrimination*. Chicago: University of Chicago Press.
- Beech J, Chadwick S (Eds.) (2004). *The Business of Sport Management*. Harlow: Pearson Education.
- Bellemore FA (2001). Racial and ethnic employment discrimination. *Promotion in Major League Baseball*, *J. Sports Econ.* 2(4): 356-368.
- Bodvarsson Ö.B., Brastow R.T. (1999). A test of employer discrimination in the NBA. *Contemp. Econ. Policy* 17(2):243-255.
- Brown E, Spiro R, Keenan D (1991). Wage and nonwage discrimination in professional basketball: Do fans affect it? *Am. J. Econ. Sociol.* 50(3): 333-345.
- Christiano KJ (1986). Salary discrimination in Major League Baseball: The effect on race. *Sociol. Sport J.* 3(2):144-153.
- Christiano KJ (1988). Salaries and race in professional baseball: Discrimination 10 years later. *Sociol. Sport J.* 5(2):136-149.
- Collignon H, Sultan N, Santander C (2011). *The sports market: Major trends and challenges in an industry full of passion*. Paris: AT Kearney, retrieved from <http://www.atkearney.com/index.php/Publications/the-sports-market.html>.
- Dana LP, Korot L, Tovstiga G (2005). A cross-national comparison of knowledge management practices. *Int. J. Manpow.* 26(1):10-22.
- Dobson S, Goddard J (2011). *The Economics of Football*, Cambridge: Cambridge University Press.
- Dongfeng S (2013). Research on diversity, conflicts and performance in creative team management. *Afr. J. Bus. Manag.* 7(39): 4139-4148.
- Eitzen DS, Sage GH (1978). *Sociology of American Sport*. Dubuque: Wm. C. Brown.
- Frick B (2007). The football players' labour market: Empirical evidence from the major European leagues. *Scott. J. Polit. Econ.* 54(3):422-446.
- Frick B, Prinz J, Winkelmann K (2003). Pay inequalities and team performance: Empirical evidence from the North American major leagues. *Int. J. Manpow.* 24(4):472-488.
- Gius M, Johnson D (1998). An empirical investigation of wage discrimination in professional basketball. *Appl. Econ. Lett.* 5(11):703-705.
- Goddard J, Wilson JOS (2009). Racial discrimination in English professional football: Evidence from an empirical analysis of players' career progression. *Camb. J. Econ.* 33(2):295-316.
- Groothuis PA, Hill JR (2008). Exit discrimination in Major League Baseball: 1990-2004. *South. Econ. J.* 75(2):574-590.
- Hair JF, Celsi MW, Money AH, Samouel P, Page MJ (2003). *Essentials of Business Research Methods*. London: ME Sharpe.
- Hrisanta DM, Dorel A, Cosmin ML (2013). Analysis of gender discrimination using the Gini index multiple decomposition method. *Afr. J. Bus. Manag.* 7(26):2576-2582.
- Kahn LM (1991). Discrimination in professional sports: A survey of the literature. *Ind. Labour Relat. Rev.* 44(3):395-418.
- Kahn LM, Sherer, PD (1988). Racial differences in professional basketball players' compensation. *J. Labour Econ.* 6(1): 40-61.
- Kanazawa MT, Funk JP (2001). Racial discrimination in professional basketball: Evidence from Nielsen Ratings. *Econ. Inquiry.* 39(4):599-608.
- Lardo A, Dumay J, Trequattrini R, Russo G (2017). Social media networks as drivers for intellectual capital disclosure: Evidence from professional football clubs. *J. Intellect. Cap.* 18(1):63-80.
- Lombardi R, Trequattrini R, Battista M (2014). Systematic errors in decision making processes: The case of the Italian Serie A football championship. *Int. J. Appl. Decis. Sci.* 7(3):239-254.
- Maguire, JA (1988). Race and position assignment in English soccer: A preliminary analysis of ethnicity and sport in Britain. *Sociol. Sport J.* 5(3):257-269.
- Makris IA, Nikolaidis VN, Stavroyiannis S (2012). Identifying factors affecting firm performance: The role of exporting activity on Greek industry. *Int. J. Bus. Glob.* 9(1):59-69.
- Medoff MH (1975). A reappraisal of racial discrimination against blacks in professional baseball. *Rev. Black Polit. Econ.* 5(3):259-268.
- Mogull RG (1981). Salary discrimination in professional sports. *Atl. Econ. J.* 9(3):106-110.
- Ohlert C (2016). Establishment heterogeneity, rent sharing and the rise of wage inequality in Germany. *Int. J. Manpow.* 37(2): 210-228.
- Owor JJ (2016). Human resource management practices, employee engagement and organizational citizenship behaviours (ocb) in selected firms in Uganda. *Afr. J. Bus. Manag.* 10(1):1-12.
- Preston I, Szymanski S (2000). Racial discrimination in English football. *Scott. J. Polit. Econ.* 47(4): 342-363.
- Raimondo HJ (1983). Free agents' impact on the labour market for baseball players. *J. Labour Res.* 4(2):183-193.
- Reisi M, Hoseini SE, Talebpour M, Nazari V (2013). Regression equation fitted to knowledge management and organizational effectiveness in the selected sport organizations of Iran. *Afr. J. Bus. Manag.* 7(39):

- 4159-4167.
- Shamot MM (2014). The role of human resources management practices represented by employee's recruitment and training and motivation for realization of competitive advantage. *Afr. J. Bus. Manag.* 8(1): 35-47.
- Shams SMR, Lombardi R (2016). Socio-economic value co-creation and sports tourism: Evidence from Tasmania. *World Rev. Entrep. Manag. Sustain. Dev.* 12(2/3):218-238.
- Söderman S, Dolles H (Eds.) (2013). *Handbook of research on sport and business*. Cheltenham: Edward Elgar Publishing.
- Szymanski S (2000). A market test for discrimination in the English professional soccer leagues. *J. Polit. Econ.* 108(3): 590-603.
- Szymanski S (2010). The market for soccer players in England after Bosman: Winners and losers. In Szymanski (Ed.), *Football Economics and Policy*. 27-51. Basingstoke and New York: Palgrave Macmillan.
- Tomé E, Naidenova I, Oskolkova M (2014). Personal welfare and intellectual capital: The case of football coaches. *J. Intellect. Cap.* 15(1):189-202.
- Trequattrini R, Lombardi R, Battista M (2015). Network analysis and football team performance: A first application. *Team Perform. Manag. Int. J.* 21(1/2):85-110.
- Trequattrini R, Lombardi R, Lardo A (2014). Evaluating relational capital by social networks: Applications in the football clubs industry. *Proceedings of 9<sup>th</sup> International Forum on Knowledge Asset Dynamics 'Knowledge and Management Models for Sustainable Growth'*, 11-13 June, Matera, pp. 1310-1333.
- Ukpere WI, Slabbert AD (2009). A relationship between current globalisation, unemployment, inequality and poverty. *Int. J. Soc. Econ.* 36(1/2):37-46.
- Waters D (2008). *Quantitative Methods for Business*. Edinburgh: Pearson Education Limited.

*Full Length Research Paper*

## Does bank capital regulation affect bank value?

Lotto Josephat

Institute of Finance Management United Republic of Tanzania.

Received 25 March, 2017; Accepted 8 May, 2017

The aim of this study was to examine the relationship between capital adequacy and the bank profitability measured by returns on equity (ROE) for Tanzanian large commercial banks during the period between 2009 and 2014. The positive relationship between bank capital and performance may also be explained using monitoring-based theory. The monitoring-based theory suggests that higher bank capitals encourage serious scrutiny and monitoring of borrowers to avoid default risk. The monitoring of borrowers indirectly improves the probability of bank's survival by eventually increasing surplus generated through the healthier relationship between borrowers and banks, hence, bank performance. Furthermore, the study found a significantly positive relationship between bank size and bank returns on equity. This is consistent with a familiar explanation that larger banks accumulate large assets which generate relatively more income and eventually increases the bank's profitability. The study also reveals a negative and significant relationship between non-performing loans and bank profitability. This relationship shows that accumulation of Non-Performing Loans invites vulnerability to default risk which consequently causes banks' failure to sustain or increase their investment efficiency. Similarly, lower NPLs are associated with drop in deposits rate which eventually impacts on banks' operations and profitability. Consequently, the study recommends the banks' capital regulation to be anchored on a sound system of bank monitoring and the Bank of Tanzania should swiftly and strictly enforce the compliance of the bank capital requirements and review the minimum capital requirement of deposit money regularly so as to maintain the optimal capital level in an attempt to improving bank profits level. The study also encourages bank capitalization to improve performance. More specifically, banks are encouraged to have a habit of retaining more earnings instead of distributing such large sums as bonuses in order to increase the banks' capital base.

**Key words:** Capital regulation, performance, returns on equity.

### INTRODUCTION

The financial intermediation role in the banking sector is a very crucial process which connects deficit spending units and surplus spending units to ensure the transactions between the depositors and borrowers is successful. In this arrangement, banks take the

intermediary role and receive commissions for this intermediation process.

Bank operations are regularly financed by capital procured from various sources including owners' funds, reserves and share capital. The ultimate profits

E-mail: [tathioga@yahoo.co.uk](mailto:tathioga@yahoo.co.uk). Tel: +255 784 759 865.

Authors agree that this article remain permanently open access under the terms of the [Creative Commons Attribution License 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

generated by banks from their operations are guided by some monetary and banking policies set by the central bank of a particular country (Longe, 2005).

In the absence of the statutory regulations imposed by the central banks to commercial banks, the customers would not have the assurance of their withdrawals when the needs arise. Among the statutory regulations imposed by central banks is a bank capital regulation. This is determined by capital–asset ratio which is obligatory to banks' effective operations.

According to Longe (2005), capital regulation depends on the bank's level of deposits and capital funds. Normally, customers do put their reliance on the adequacy of banks' capital for the security of their deposits. Therefore, the management of bank's capital adequacy is a very crucial exercise and a mandatory one which improves its image in the eyes of the bank customers and its owners because the bank's business is vulnerable to the dynamism and uncertainty of the economy as highlighted by Yudistira (2003) and Brash (2001).

According to Brash (2001), maintaining higher capital by banks is usually costly for banks because of the capital market imperfections and tax advantages related to debts. However, the trade-off theory suggests that higher capitals have ability to reduce risk and lower the premium required by investors as a compensation for the bankruptcy costs. It, therefore, follows that capital and bank value are either directly or inversely related in a short-run when banks have not attained their optimal capital ratio. This relationship disappears in a long-run when the banks attain their optimal level of capital ratio.

In this situation, regulatory bank capital requirements exceeds optimal capital ratio and the relationship between bank value and capital becomes negative showing that higher capitals reduce bank value if and only if capital ratios of banks are above optimal level either due to capital requirements or unexpected shocks.

According to Bash, (2001) banks usually raise their optimal capital levels during banking sector down-turns because during such a period, the probability of bankruptcy increases. On the other hand, during stable periods where the condition is normal, banks may either meet their optimal capital ratios, and in this case, the relationship between capital and bank value estimates to zero or go beyond in which case banks increase their values by decreasing the capital ratio and hence taking advantage of tax benefits of debt.

There is a strand of studies such as Hart and Moore, (1995), Leland and Pyle, (1977), Diamond and Rajan, (2001) etc. which have emphasized the possible undesirable effects on performance from banks holding more capital. Two explanations may be suggested for this effect on the bank's cash-flows. The first explanation, according to Hart and Moore (1995), is based on the disciplinary role of debt. Because employing more debt into bank's capital structure invites control from market,

bank managers tend to avoid more debt and hence increase the level of equity capital as the cushion against market discipline.

In line with this, we also have to remember that there is an informational advantage attached to debt issuance in such a way that managers use the issuance of debt as a signal of bank financial soundness to financial markets as advocated by Leland and Pyle (1977). The study by Diamond and Rajan (2001) also shows that the use of too much capital reduces the level of bank liquidity creation. All these factors contribute to creating additional costs of holding more capital.

The contrasting view to the impact of holding too much capital emphasizes, however, the possible benefits of doing so by banks. According to Calomiris and Kahn (1991) there are two major conduits based on moral hazard between shareholders and debt-holders. Firstly; shareholders, holders of equity capital, enjoy the limited liability where losses are floored but more and more risks taken increases the potential gains. This usually tempts managers to take excessive risks at an expense of debt-holders and other stakeholders. Most often the debt-holders do foresee this habit and characteristically require a compensation for such excessive risks taken by managers. It follows; therefore, that increasing capital may reduce the compensation/premium and increase cash flows. Secondly; the increase in bank capital attracts more attention and stronger monitoring incentives from bank managers which ultimately increases the bank profitability. Following this mechanism, the capital ratio has a positive effect on value of the bank because monitoring affects the payoff from the bank's loans portfolio (Holmstrom and Tirole, 1997; Mehran and Thakor, 2011).

However, in recent times bank supervisors throughout Africa, and particularly the Bank of Tanzania, call for banks to put aside some level of regulatory capital to cover for the risk they take, and also advise banks to sustain minimum regulatory capital levels so as to prevent the possibility of insolvency and stability of the banking system as advocated by Berger (1995) and Aggarwal and Jacques (2001).

This regulatory pressure brings about a discipline to banks' managers and therefore improves the risk imposed to customers' money. The capital regulatory pressure set up by central banks generally entails to improve the value of banks' shareholders' wealth. To strengthen the banking sector in Tanzania, according to the Banking and Financial Institutions Act (2014), the bank core capital requirement is set at 12.5% and total capital ratio at 14.5%, significantly above the ratio stipulated in the Basel (I-III). Basel 1-III set the total capital at 8%, tier-1 capital at 4.5% and tier-2 capital 6%. This capital regulations initiative is meant to secure the owners' capital and improve the performance of the banks by strengthening the soundness and stability of the banking system which is quite crucial to the financial system and ultimately to

the value maximizing objective of the bank.

Although the studies focusing on the impact of regulatory capital requirements on bank failure is common (Ng and Roychowdhury, 2014), the impact of regulatory capital requirements on bank profitability is not adequately covered by research particularly for banks in Africa (Barth et al., 2008; Berger and Bouwman, 2013). There is, then, a need to empirically examine the effect of capital regulation on banks' profitability in Tanzania as a typical African country. Studies which examine the effect of bank capital regulations on performance are limited in developing countries and Tanzania in particular.

The objective of this study is, therefore, to examine the empirical relationship between the capital adequacy and the bank profitability measured by returns on equity in Tanzanian banks. The study, therefore, hypothesizes that; there is a positive relationship between bank capital and profitability because the increase in bank capital ratio through the capital regulations reduces the risk of bankruptcy to banks.

## LITERATURE REVIEW

There are extensive literatures which address the effects of capital regulation on bank performance. Some of the studies support the positive relationship while others are in line with a negative relationship between bank capital and performance or profitability. The first group of studies advocates a positive relationship between bank capital and performance. Among these studies include Whitehead (2008) who argues that banks with high level of capital are capable of carrying out greater business expansion due to their large financial resources. Due to the sufficient resources such banks are holding, they may also develop capacity to compete more effectively and improve their technology level. This, ultimately, increases banks' innovation in developing new banking products and remain competitive. Therefore, according to Whitehead (2008), bank capital is positively related to performance.

Furthermore, Whitehead (2008) suggests also that because sufficiently capitalized banks are more competitive to offer their banking products in wider network coverage, to price their products competitively and to finance a many transactions across sectors, they tend to improve their performance by doing so. Whitehead (2008) also reveals that banks holding sufficient capital tend to issue larger and long-term loans as compared to other undercapitalized banks and this, as a result, strengthens the bank performance. Along the similar line, Aderinokun (2004) found a positive relationship between bank capital base and performance. According to Aderinokun (2004), overcapitalized banks are able to increase their operational scope within the banking industry, decrease risk, guarantee quality asset management and attract a better liquidity position and

ultimately increase the bank performance.

Similarly, Bolt and Tieman (2004) cite capital adequacy as a tool of limiting the possibility of bank managers taking too much risk on behalf of banks shareholders with limited liability, hence, encouraging risk sharing between the bank owners and the depositors. As a result, this reduces the risk of bankruptcy. According to the authors, capital adequacy also is considered as a buffer to cover potential bankruptcy costs thereby reducing the probability of bank illiquidity. It should also be understood that overcapitalized banks may offer their services even during financial down-turns and therefore perform their lending functions more efficiently and effectively.

Most papers which examined the relationship between banks' capital and profitability reported a positive relationship employing different sample countries and different time periods. Among these papers include Angbazo (1997), Demircuc-Kunt and Huizinga (1999), Vennet (2002), Nier and Baumann (2006) and Flannery and Rangan (2008). These results may be directly attributed to the pecking order theory of capital structure.

Furthermore, Beltratti and Stulz (2009) put forward that banks with sufficient regulatory capital ratios perform better because they have sufficient capital to absorb unfavorable financial shocks that would otherwise jeopardize bank profitability especially during the period of financial down-turns. This view is in line with the direct relationship between risk and return in the theoretical literature as highlighted in Campbell (1993), Connor and Korajczyk (1988) and Mandelker (1974). These studies show that banks that take more risky financial decisions to earn more returns would force regulatory capital ratios up to match the level of risks they are taking. This, therefore, implies that banks with higher regulatory capital ratios perform better than banks with lower levels of regulatory ratio.

On the other hand, another group of scholars associate holding more capital with more costs to the banks. For instance, according to Berger et al. (2013) the imposition of higher bank capital requirement limits banks' competitive pressure as a result of competition which may occur on issues such as loans, deposits and sources of debt and equity investment. Following this effect banks may end up lending less, reduce deposit rates so as to maintain the larger capital base required by the regulators and, as a result, impairing the banks' operations. Furthermore, when the financial market is concentrated banks with ample capital may think they are "too-big-to-fail" and this may lead to bank failures.

The core objective of any banking business is to maximize the return of the shareholders as previously insisted by Berger et al. (2013). Building on this, Berger et al. (2013) conducted a study of US banks to examine the empirical relationship between banks' return on equity and the capital ratio. The results of the study showed a significantly positive relationship between return on equity (ROE) and capital ratio. Another study by Abreu and

Mendes (2002), using the Europe sample of banks, investigated the factors affecting bank interest margin and profitability and the results showed that banks with higher capital are reported to have lower funding costs with lower likelihood insolvency. This may, therefore, directly be linked with higher profit levels.

According to Nacuer (2003) banks which are adequately capitalized tend to have little need for external funding as the level of the capital they hold is used as the buffer and this increases the ability of such banks to earn more profits. Contrary to Nacuer (2003) claim, inadequately capitalized banks suffer a reputational query in the eyes of the depositors and investors which may result into investors refraining from doing business with these kinds of banks. This may ultimately affect adversely the bank's profitability. This shows that increasing bank capital directly leads to a corresponding improvement on banks' overall returns. This positive significant relationship is supported by authors such as Furlong and Keeley (1989), Keeley and Furlong (1990) and Berger (1995).

## METHODOLOGY

### Data assembly

The data employed in this study is assembled from the respective large commercial banks' published annual financial reports for the period between 2009 and 2014. This sample period is chosen because Tanzania under BoT issued the amended capital adequacy regulations Act in 2008 and from 2009 the Act became operational; therefore this period is relevant to see how such amendment relate to bank profitability. The sample covers all large commercial banks operating in the Tanzanian banking sector. Large banks are chosen because they control about 80% of the market share as highlighted in the study by Serengeti (2014).

### Model specification and variable definition

This study primarily aims at examining how capital adequacy influences the profitability of commercial banks in Tanzania. The model used in this study is used before by Demirguc-Kunt and Huizinga (1999). The dependent variable in this model is return on owners' equity (ROE) and independent variable is Capital Adequacy while control variables are bank size, Non-performing Loans and Liquidity.

### The model

$$ROE_{it} = b_0 + b_1 * BSZ_{it} + b_2 * CARP_{it} + a_3 * NPL_{it} + b_4 * LIQ_{it} + e_{it}$$

Where;

- ROE (Profitability) = Returns on Equity shows the effectiveness of management in the utilization of the funds contributed by shareholders

- CARP=Capital Adequacy Ratio shows the strength of banks against the vagaries of economic and financial environment

- BSZ (Size of the bank): logarithm of total assets of the bank. Size can show the economies of scale.

- NPL (Non-Performing Loans) - This is an indicator of credit risk management. It particularly indicates how banks manage their

credit risk because it defines the proportion of loan losses amount in relation to Total Loan amount

- LIQ - This is measured as the ratio of Liquid Assets to Total assets  
 $e_{it}$  - Error term

The variables used in this study are summarized in Table 1.

### Regression diagnostics

In specifying the model it is understood that the independent variables are able to explain much of what is different about an observation, a bank, or a year, but there is probably some unmodeled heterogeneity.

Usually the heterogeneity which is left unmodeled goes into the error term ( $e_{it}$ ). The true problem occurs when some banks (or, less commonly, time periods) share some unmodeled heterogeneity. In this case, we would like to be able to explain everything that makes each bank different, but usually this is unmanageable, so something has to be done to remove this shared and thus systematic heterogeneity from the error term. Because this study uses a panel data, to solve the potential problem of heterogeneity either a fixed effect or random effect regression model should be employed.

To decide between fixed or random effects a Hausman test, where the null hypothesis is that the preferred model is random effects vs. the alternative the fixed effects (Green, 2008.) is used. The Hausman test shows whether the unique errors are correlated with the regressors; the null hypothesis is that they are not correlated. If the probability of chi squared in the Hausman test output is less than 0.05 fixed effect is preferred otherwise random effect is preferable. When this test was run the Chi-squared is found to be 0.0194 which is less than 0.05 hence, the study chose to apply fixed effect regression model presented in Figure 2. The result of the Hausman test is presented in Figure 1.

## Empirical results

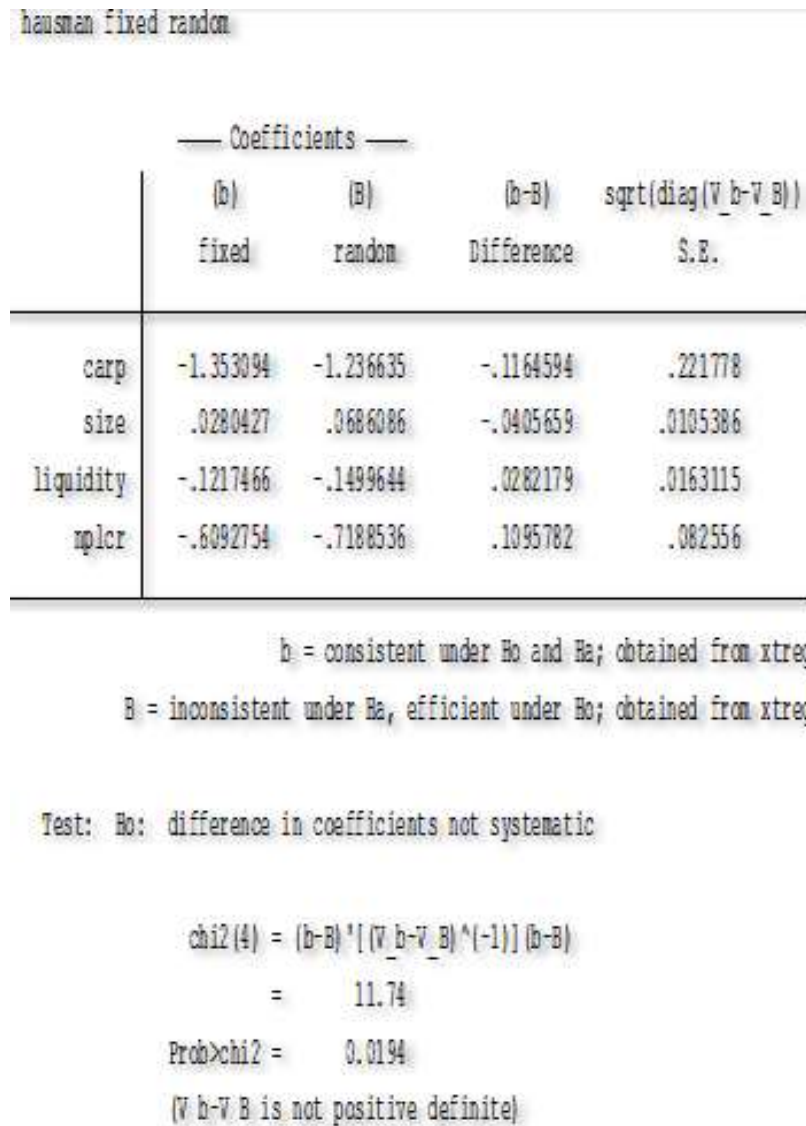
### Descriptive statistics

Figure 2 shows a descriptive statistics of the study. The table shows that during the study period, 2009 to 2014 banks' the capital ratio had a mean value of 12.6% which is at par with the minimum capital requirements by the Bank of Tanzania. On the other hand, the maximum capital ratio is 24% while the minimum stands at 9%. The interesting finding is that even the bank which has not complied with the minimum capital requirement set by BoT has shown to comply with the standard set by Basel (I-III) which shows the minimum total capital ratio of 8%. Figure 3 also shows that bank' non-performing loans ratio had a minimum of 0% and reached a maximum of about 25% with average (mean) of around 7%. Large commercial banks in Tanzania have a reported average return on equity of about 2% with maximum of 5% and minimum of -2% as shown in descriptive statistics Figure 2. Likewise the descriptive Figure 2 shows that Capital Adequacy is an essential mechanism to protect banks' solvency and profitability because the banks' business is among the riskiest businesses in the financial market. Figure 2 also reports an average liquidity of about 48% with a minimum of roughly 18% and the maximum of 71%

**Table 1.** Definitions and sources of variables.

| Variable                     | Definition                             | Adapted From                        |
|------------------------------|--|-------------------------------------|
| Bank size (BSZ)              | The natural logarithm of total assets  | Boyd et al. (2009); Josephat (2016) |
| Returns on equity (ROE)      | Net profit after tax to owners' equity | Khrawish (2011); Josephat (2016)    |
| Capital adequacy ratio (CAR) | Bank Capital/Total assets              | Josephat (2016)                     |
| Non-performing loan          | NPLs/Total assets                      | Josephat (2016)                     |
| Liquidity (LQ)               | Liquid assets/Total assets             | Josephat and Justus (2015)          |

Source: Author's construction.



**Figure 1.** The result of Hausman test.

**Regression results**

The regression model of this study comprised of bank profitability measured by returns on equity with four

explanatory variables namely bank capital adequacy, bank size, non-performing loans and bank liquidity as presented in Figure 3. Figure 3 shows that bank capital has a positively statistically significant relationship with



```
sum roe carp size npl liqrisk
```

| Variable | Obs | Mean     | Std. Dev. | Min       | Max      |
|----------|-----|----------|-----------|-----------|----------|
| roe      | 48  | .0201331 | .0152364  | -.0207176 | .0532177 |
| carp     | 48  | .1264725 | .0301037  | .0895609  | .2371712 |
| size     | 48  | 13.90863 | .6163424  | 13.1305   | 15.23251 |
| npl      | 48  | .0688222 | .0571987  | 0         | .2534406 |
| liqrisk  | 48  | .478305  | .1022169  | .1760045  | .7100908 |

Figure 2. Descriptive statistics.

```
. xtreg roe carp liquidity size npl, fe
```

Fixed-effects (within) regression

Number of obs = 48

Group variable: bank

Number of groups = 8

b-sq: within = 0.9202

between = 0.8389

overall = 0.8634

Obs per group: min = 6

avg = 6.0

max = 6

F(4,36) = 103.71

Prob > F = 0.0000

corr(u\_i, Xb) = -0.2226

| roe       | Coef.     | Std. Err.                         | t     | P> t  | [95% Conf. Interval] |
|-----------|-----------|-----------------------------------|-------|-------|----------------------|
| carp      | 6.667519  | .3782199                          | 17.63 | 0.000 | 5.900454 7.434585    |
| liquidity | .1021593  | .0326072                          | 3.13  | 0.003 | .0360289 .1682897    |
| size      | .0173388  | .007789                           | 2.23  | 0.032 | .0015421 .0331356    |
| npl       | -.4714407 | .1399543                          | -3.37 | 0.002 | -.7552811 -.1876002  |
| _cons     | -.2100695 | .1092364                          | -1.92 | 0.062 | -.4316112 .0114722   |
| sigma_u   | .04080603 |                                   |       |       |                      |
| sigma_e   | .02104733 |                                   |       |       |                      |
| rho       | .78986505 | (fraction of variance due to u_i) |       |       |                      |

test that all u\_i=0: F(7, 36) = 12.11 Prob > F = 0.0000

$$ROE_{it} = -0.21 + 0.17 \cdot BSZ_{it} + 6.67 \cdot CARP_{it} - 0.47 \cdot NPL_{it} + 0.10 \cdot LIQ_{it} + e_{it}$$

Figure 3. Regression results.

bank ROE at 5% significant level.

This finding supports the results of the famous conclusion of Berger (1995) who found that banks increase the level of their capital by boosting up the level of their capital requirements. The result is further supported by studies such as Flannery and Rangan (2008) who argue that banks with high capital ratios relative to their long-run targets may increase the level of their profitability by raising capital ratios. This study realizes that capital regulatory pressure compels the banks to regulate the structure of their capital in a more flexible manner. This positive relationship between bank capital and performance may further be explained using monitoring-based theory. The monitoring-based theory suggests that higher bank capitals encourage serious scrutiny and monitoring of borrowers to avoid default risk. The monitoring of borrowers indirectly improves the probability of bank's survival by eventually increasing surplus generated through the healthier relationship between borrowers and banks, hence bank performance. The explanation of the monitoring-based theory is supported by Tirole (1997) and Carletti and Leonello (2011).

The results of this study are consistent with those of Campbell (1993), Connor and Korajczyk (1988) and Mandelker (1974). These studies show that banks that take more risky financial decisions to earn more returns would force regulatory capital ratios up to match the level of risks they are taking. This, therefore, implies that banks with higher regulatory capital ratios perform better than banks with lower levels of regulatory ratio. Concerning the control variables; bank size, liquidity and non-performing loans, Figure 3 show that, the bank size has a statistically significant positive relationship with ROE at 5% significance level. This is in line with a known explanation that larger banks possess larger asset levels generating more income for banks and eventually increasing the bank profitability.

On the other hand, the bank liquidity has a positive significant relationship with bank profitability at 5% significance level. This means that banks which are more liquid assets tend to create the environment of better performance and hence increase the value of shareholders wealth and improves earnings while banks with liquidity problem may amount under-performance and in extreme case this may attract a complete bankruptcy.

Regarding the non-performing loans, Figure 3 reports a statistically significant relationship between ROE and NPLs at 1% significant level. The results reflected in this study demonstrate that commercial banks are often vulnerable to default risk or delayed payment of the loans from the borrowers. Such default is considered by banks as loan losses and more of these losses negatively affect the ability of banks to honor its lending function. The consequence of this is the failure to maintain or increase the efficiency of banks' investment. Likewise, lower NPLs

are associated with decline in deposits rate which ultimately impact on banks' operation and profitability. This result is consistent with the ones previously presented by Kargi (2011) in Nigeria, Epure and Lafuente (2012) in Costa-Rica, and Ara et al. (2009) in Sweden.

## CONCLUSION AND RECOMMENDATIONS

The purpose of this study was to examine the relationship between capital adequacy and the bank profitability measured by returns on equity for Tanzanian large commercial banks during the period between 2009 and 2014. The results of the study show that capital ratio positively impacts banks' returns on equity.

The positive relationship between bank capital and performance may be explained using monitoring-based theory. The monitoring-based theory suggests that higher bank capitals encourage serious scrutiny and monitoring of borrowers to avoid default risk. The monitoring of borrowers indirectly improves the probability of bank's survival by eventually increasing surplus generated through the healthier relationship between borrowers and banks hence bank performance.

The explanation of the monitoring-based theory is supported by Tirole, (1997) and Carletti and Leonello, (2011). The fact that bank capital shows a positive effect on bank returns on equity influences the endorsement of bank financial soundness and security.

This study realizes that capital regulatory pressure compels the banks to regulate the structure of their capital in a more flexible manner. Furthermore, the study found that bank size positively and significantly affects bank's returns on equity. This is consistent with a familiar explanation that larger banks accumulate larger level of assets generating relatively more income and eventually increases the bank's profitability.

The study also concludes a negative and significant relationship between bank returns on equity and the assets quality measured by the non-performing loans. This relationship shows that accumulation of NPLs invites vulnerability to default risk which is recognized by banks as loan losses and more of these losses negatively affect the ability of banks to do justice to its lending function.

This consequently causes a failure to sustain or increase the bank investment efficiency. Similarly, lower NPLs are associated with drop in deposits rate which eventually impacts on banks' operation and profitability.

Consequently, the study recommends the banks' capital regulation to be anchored on a sound system of bank monitoring and the bank of Tanzania should swiftly and strictly enforce the compliance of the bank capital requirements and review the minimum capital requirement of deposit money regularly so as to maintain the optimal capital level in an attempt to improving bank profits level. The paper also encourages bank capitalization to improve performance. More specifically, banks are encouraged to

have a habit of retaining more earnings instead of distributing such large sums as bonuses in order to increase the banks' capital base. This study is faced with the limitations of having no qualitative information which could enrich the quantitative analysis presented. However, the study proposes a further study which may combine both qualitative and quantitative data.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

## REFERENCES

- Aderinokun O (2004). "Market Structure and Profitability in the Banking Industry of CFA countries": The Case of Commercial Banking in Cameroon. Available at [www.jsd-africa.com](http://www.jsd-africa.com)
- Abreu M, Mendes V (2002). Commercial bank interest margins and profitability. Evidence from E.U countries", Porto Working paper series.
- Angbazo L (1997). Commercial bank net interest margins, default risk, interest rate risk, and off-balance sheet banking. *J. Bank. Financ.* 21:55-87.
- Barth JR, Caprio G, Levine R (2008). Rethinking bank regulation: Till angels govern. Cambridge: Cambridge University Press.
- Beltratti A, Stulz RM (2009). Why did some banks perform better during the credit crisis? A cross-country study of the impact of governance and regulation (NBER No. w15180). National Bureau of Economic Research.
- Berger AN, Bouwman CH (2013). How does capital affect bank performance during financial crises? *J. Financ. Econ.* 109(1):146-176.
- Berger AN (1995). The relationship between capital and earnings in banking, *J. Money Credit Bank.* 27:432-456.
- Bolt W, Tieman A (2004). Banking Competition, Risk and Regulation. *Scand. J. Econ.* 4:783-804.
- Calomiris C, Kahn C (1991). The role of demandable debt in structuring optimal banking arrangements. *Am. Econ. Rev.* 81:497-513.
- Campbell JY (1993). Understanding risk and return. (National Bureau of Economic Research, Working Paper No. 4554). NBER.
- Yudistira D (2003). The Impact of Banks Capital Requirement in Indonesia. Loughborough University, Leicestershire, UK.
- Connor G, Korajczyk RA (1988). Risk and return in an equilibrium APT: Application of a new test methodology. *J. Financ. Econ.* 21(2):255-289.
- Demirgüç-Kunt A, Huizinga H (1999) Determinants of commercial bank interest margins and profitability: Some international evidence. *World Bank Econ. Rev.* 13:379-408.
- Diamond D, Rajan R (2001). Liquidity risk, liquidity creation, and financial fragility. *J. Polit. Econ.* 109:287-327.
- Flannery MJ, Rangan KP (2008). What caused the bank capital build-up of the 1990s? *Rev. Financ. Stud.* 70:213-227.
- Furlong FT, Keeley MC (1989). Capital Regulation and Bank Risk-Taking: A Note." *J. Bank. Financ.* 13(6):883-891.
- Keeley MC, Furlong FT (1990). A Reexamination of Mean Variance Analysis of Bank Capital Regulation. *J. Bank. Financ.* 14(1):69-84.
- Hart O, Moore J (1995). Debt and seniority: an analysis of the role of hard claims in constraining management. *Am. Econ. Rev.*, b85:567-585.
- Holmstrom B, Tirole J (1997). Financial intermediation, loan-able funds, and the real sector. *Q. J. Econ.* 112:663-691.
- Josephat L, Justus M (2015). Assessing the Determinants of Bank Liquidity with an Experience from Tanzanian Banks. *Afr. J. Financ. Manage.* 23(1&2):76-88.
- Josephat L (2016). Efficiency of Capital Adequacy Requirements in Reducing Risk-Taking Behavior of Tanzanian Commercial Banks. *Res. J. Financ. Account.* 22:110-118.
- Khrawish HA (2011) Determinants of commercial bank performance: Evidence from Jordan. *Int. Res. J. Financ. Econ.* 5(5):19-45.
- Leland H, Pyle D (1977). Informational asymmetries, financial structure, and financial intermediation. *J. Financ.* 32(2):371-387.
- Longe AA (2005). An Overview of the Regulatory Reports on Banks in Nigeria. A seminar paper, CBN Training Centre, Lagos No 3
- Mandelker G (1974). Risk and return: The case of merging firms. *J. Financ. Econ.* 1(4):303-335.
- Mehran H, Thakor A (2011). Bank capital and value in the cross-section. *Rev. Financ. Stud.* 24(4):1019-1067.
- Ng J, Roychowdhury S (2014). Do loan loss reserves behave like capital? Evidence from recent bank failures. *Rev. Account. Stud.* 19(3):1234-1279.
- Vennet R (2002) Cost and profit efficiency of financial conglomerates and universal banks in Europe. *J. Money Credit Bank.* 34:254-282.
- Whitehead (2008). Deconstructing Equity: Public Ownership, Agency Costs, and Complete Capital Markets. *COLUM. L. REV.* 231:244-247.
- Brash DZu (2001). Proposed new Capital Adequacy Framework. A Paper Presentation to the Secretary General of Basel Committee on Banking Supervision, Bank for International Settlements, Basel Switzerland.



# African Journal of Business Management

## Related Journals Published by Academic Journals

- Journal of Geography and Regional Planning
- Journal of Economics and International Finance
- Journal of Hospitality Management and Tourism
- International Journal of Sociology and Anthropology
- Journal of Public Administration and Policy Research
- African Journal of Marketing Management

**academicJournals**