Athletes in boardrooms

Athletes in Boardrooms: Evidence from the World

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Abstract

This study examines the relation between the athletic experience of board directors and corporate outcomes. We predict that athletes' attributes, such as physical fitness, mental resilience, leadership, and team-working skills, enhance their monitoring role. Using a large sample from 71 countries, we find that athletic experience is associated with better firm performance. The benefits are more pronounced when the experience is of team sports and confrontational sports, and for firms experiencing financial crisis. The results remain consistent when we instrument the athletic experience of directors with the number of Olympic medals won and Olympic sports participated in by the country in question at the previous Olympic Games.

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1. Introduction

The experience and traits of board directors have important implications for corporate governance, influencing directors' ability to cope with pressure and challenges (Güner et al., 2008; White et al., 2014; Masulis et al., 2012; Francis et al., 2015). The job of board directors is characterized by high work pressure, important issues, difficult decisions, and complex environments, making it physically demanding and mentally challenging. The existing literature identifies some important ingredients of effective boards, such as the independence, expertise, network and experience of the board directors. Despite the importance of non-business-related experience in shaping individuals, its impact on board effectiveness remains under-researched.

In this study, we focus on the impact of the athletic experience of board directors on firm performance and outcome. Physical fitness brings various psychological benefits, including a reduction of anxiety, stress, and tension. The literature in psychology finds that athletes manifest distinct personality and psychological traits and possess strong skills in certain areas (e.g. stress management and leadership). The abilities and skills developed in their athletic life are transferable to their later life, and have important implications for their post-athletic career and life (Allen and Laborde, 2014). In general, athletes are found to exhibit physical fitness, mental resilience, a strong ability to manage pressure, and good team-working skills. Since athletic experience is likely to be related to physical fitness, and personality/psychological traits and skills that are highly demanded by boards, testing whether board members with athletic experience yield positive outcomes in terms of firm performance is of interest.

The limited literature on the effect of physical fitness and mental resilience is mainly based on CEOs. Limbach and Sonnenburg (2015) measure CEOs' fitness by their marathon experience and show that it has a positive effect on firm performance. Regarding mental

resilience and personal traits related to life experience, Malmendier et al. (2011) and Benmelech and Frydman (2015) show that CEOs' military experience in early life influences their corporate policies. Malmendier et al. (2011) suggest that CEOs with military experience pursue more aggressive corporate policies, while Benmelech and Frydman (2015) show that they pursue more conservative corporate policies. Bernile et al. (2016) expand early-life experience to include natural disasters and economic depressions, and report a significant non-monotonic relation between the intensity of CEOs' early-life exposure to fatal disasters and corporate risk-taking. Building upon these studies, we extend the scope from CEOs to board members.

Those studies examine firms from the US only, which makes it difficult to determine an accurate counterfactual. Our study overcomes this limitation by conducting the empirical tests in a cross-country data setting. Specifically, using a large global panel of 94,496 firm-year observations from 14,328 firms in 71 countries over the period from 1999 to 2015, we find significant positive associations between athletic experience and both the return on assets (ROA) and Tobin's Q of firms. The results suggest that the athletic experience of board directors benefits board governance and adds value to firms.

The common challenge in interpreting such results is the endogenous matching between firms and directors. For example, alternative interpretations include firms with better performance potentially appointing directors with athletic experience for some reasons, or such directors being more likely to join firms with better performance. To address the potential endogeneity issue, we employ the propensity score matching (PSM) and two-stage least squares (2SLS) approaches. In the 2SLS, we use *Olympic medals* and *Olympic sports* as two instruments for *Athlete* and *Athlete ratio*, our main variables capturing the presence of directors with athletic experience. We expect that a firm is more likely to have these "athlete directors" in countries that perform better and participate in more types of sport in the Olympic Games.

The results from the PSM and 2SLS approaches further confirm the benefits of athletic experience for firm performance.

This study contributes to the literature in two ways. First, we add to the literature on effective boards (e.g. Agrawal and Knoeber, 2001; Jiang and Murphy, 2007; Güner et al., 2008; White et al., 2014; Litov et al., 2014; Francis et al., 2015) by providing evidence on an important new determinant, namely athletic experience, based on an international sample of 71 countries. We show that it is not only backgrounds providing professional expertise (e.g. financial, legal, and former-CEO experience) but also non-professional backgrounds (e.g. athletic experience) that can have significant explanatory power for board performance and firm value.

Second, we add to the growing literature on the governance implications of the personal experiences on firm outcome. Prior studies primarily focused on CEOs' experience of natural disasters, economic depression and the military (Malmendier et al., 2011; Benmelech and Frydman, 2015; Bernile et al., 2016) as well as sports-related hobbies such as marathon (Limbach and Sonnenburg, 2015) and golf (Biggerstaff et al., 2017). We complement these studies by extending the scope to board directors. We show that non-business-related experience could be important to shape board directors.

The remainder of this paper is organized as follows. Section 2 discusses the literature and develops the hypothesis. Section 3 introduces the data and sample. Section 4 presents the empirical results and discusses the endogeneity issues. Section 5 concludes.

2. Related literature and hypothesis development

2.1 Personal traits, abilities and skills of athletes

The psychology literature identifies personality and psychological traits of athletes or those with athletic experience. Some studies (Mihailescu and Cucui, 2014; Gould et al., 2002; Allen et al., 2011) suggest athletes tend to be more emotionally stable and confident than others. Hedgpeth and Sowa (1998) show that athletes have a high level of resilience as they regularly receive formal training on management techniques that help them cope with stress and difficult situations such as injuries during their sporting career. Allen and Laborde (2014) suggest that personality traits predict participation in physical activity and the success of athletes.

Researchers also suggest that athletic experiences have important implications for personal development later in the lives of athletes. For example, Allen and Laborde (2014) provide evidence that the personality traits of athletes are associated with mobility and strength in old age, and experience of participating in sports contributes to the development of personality over a lifetime. Gould et al. (2002) suggest that family, coach, community, and sports environment play important roles in the psychological development of athletes, both directly (i.e. through teaching or training) and indirectly (i.e. through psychological and social environments). Besides the aforementioned personality traits, researchers have examined which transferable abilities and skills are developed throughout the athletic life. Some studies show evidence that athletes possess stronger leadership skills and perform better in a group environment than non-athletes. Using 13 varsity teams, Loughead et al. (2006) find evidence that athletes show strong leadership in team tasks, and they have very good skills in managing external relationships. In a comprehensive review of personality in sport, Allen et al. (2013) highlight the role of personality for team effectiveness and group processes in team sports. The personality traits of athletes could be related to the development of interpersonal relationships

in other social contexts. Specifically, such personality traits are associated with relationship management, commitment, and conflict reconciliation. These strong interpersonal skills result from the relationship commitment in coach-athlete dyads or athlete-athlete dyads in team sports (Jackson et al., 2010, 2011). In addition, sports participation could facilitate the development of maturity concepts including discipline, teamwork, organization, fair play, and tough-mindness (Allen et al., 2013).

In addition to the mental strength reflected in these personality traits, and the abilities and skills developed in the athletic life, physical fitness is undoubtedly a distinguishable physical feature of those who have an athletic background, and could benefit post-athletic career and life (Allen and Laborde, 2014). Physical fitness could affect study or work performance (Rhea et al., 2004) through two main channels: cognitive functions and stress management. First, a number of neuroscientific and psychological studies have been carried out on the impact of fitness on cognitive abilities and academic or work performance. Using a sample of 214 sixth-grade students in the United States, Coe (2006) shows that students who participated in vigorous activity achieved better academic performance than those who did not. Kramer et al. (1999) and Colcombe and Kramer (2003) report evidence that aerobic fitness improves neurocognitive functions and therefore benefits the executive control process in several ways (e.g. scheduling, planning and working memory). Second, prior studies suggest that physical fitness could play a buffering role for those facing stressful life events (e.g. Brown, 1991). For example, Newcombe and Boyle (1995) find that sports participants are more vigorous, and less confused and anxious. Folkins and Sime (1981) show that physical training improves self-concept, mood, and work performance, but they stress that physical fitness per se does not affect most personality traits.

Two studies directly examine the effect of physical fitness in the business setting. Using interview data on top executives in firms, Neck et al. (2000) report that fitness benefits such as

strong cognitive functions, the ability to cope with pressure, and stamina significantly contribute to the strong leadership of executives. Limbach and Sonnenburg (2015) use CEOs' completion of a marathon as a proxy for their fitness. Based on a sample of S&P 1500 CEOs during the period 2001-2011, they find strong evidence that the physical fitness of the CEO has a positive impact on firm value, consistent with the beneficial effects of fitness on cognitive abilities, stress management, and job performance. They also report that CEO fitness is associated with higher firm profitability and higher announcement returns in mergers and acquisitions.

2.2 Personal characteristics, personal experience, and firm performance

Several recent studies examine the correlation between personal physical features (e.g. facial features) and firms' decisions and performance. For example, Cook and Mobbs (2016) suggest that CEOs with attractive faces could improve firm performance through increasing sales in certain industries. Halford and Hsu (2014) find that facial attractiveness is associated with higher announcement returns in mergers and acquisitions and around CEO appointments. Graham et al. (2016) show that CEOs with attractive faces receive higher compensation. This recent literature that highlights the explanatory power of physical attractiveness for firm performance could be relevant to our study. Some sports management studies show that athletes are seen as more attractive (Boyd and Shank, 2004) and that using athletes as endorsers can increase sales and firm performance (Fink et al., 2004). Although in our study we concentrate on the personal traits, ability and skills of athletes, we cannot rule out the possibility of a potential endorsement effect associated with physical attractiveness, through which athletes affect firm performance. However, this may not be a major concern, considering that our research focus is athlete directors and not athlete (product) endorsers. It is unlikely that firms appoint athlete directors solely based on their facial attractiveness, although that could be the case in the selection of product endorsers.

Another strand of literature focuses on the impact of the personal experience of executives on managerial decisions, financial policies, and corporate outcomes. Malmendier et al. (2011) suggest that early-life experience is an important factor in explaining corporate financing decisions. They find that CEOs who grew up during the Great Depression are reluctant to issue debt and rely excessively on internal finance. They also report evidence that CEOs with military service experience tend to adopt aggressive corporate policies. In contrast to Malmendier et al. (2011), Benmelech and Frydman (2015) detect a significant association between military service experience and conservative corporate policies. They find that military CEOs tend to invest less, are less likely to be involved in corporate fraud, and outperform others during industry downturns. Both studies explicitly show that military service experience has a significant impact on managerial decisions and firm performance, albeit the results are not consistent. Bernile et al. (2016) expand the study of CEOs' early-life experience by focusing on early-life disasters (e.g. natural disasters). They report a significant correlation between CEOs' early-life exposure to fatal disasters and their risk-taking when it comes to corporate decisions including those concerning cash holdings, leverage, and mergers and acquisitions. Specifically, they find that CEOs tend to be more aggressive in corporate policies if the disasters they experienced did not have extremely negative consequences, and more conservative in corporate policies if the disasters they experienced had extreme downsides. These studies demonstrate that the impact of CEOs' early-life experiences on corporate policies and firm performance is economically significant.

In a similar vein, we argue that athletic experience could also play a role in explaining corporate outcomes. For those former athletes who retired a long time ago, their athletic experience can now be considered an early-life experience. Even those who have retired relatively recently or are still active in sports will usually have begun training early in life (Baxter-Jones and Helms, 1996; Myer et al., 2013). This is particularly the case for most

successful athletes. Thus, they will have had early-life athletic training and competition experience. Such early-life athletic activities play a crucial role in the development of the psychological traits and personalities of athletes (Hedgpeth and Sowa, 1998; Gould et al., 2002), and have a significant influence on later life (Allen and Laborde, 2014). Receiving training from an early age can also help the development of leadership and interpersonal skills (Loughead et al., 2006; Jackson et al., 2010, 2011). Furthermore, although some studies show that family influence (e.g. support, pressure, and parents' sporting experience) is important (Leff and Hoyle, 1995; Gould et al., 2002) in the personal development of athletes, the evidence on the correlation between family wealth and the successfulness of athletes (or age when starting training) is very limited.

2.3 Effectiveness of corporate boards

Corporate boards have two main functions: advisory and monitoring (Adams and Ferreira, 2007). The types of board structures and characteristics of board directors that best fit these two functions are important but unresolved questions. To establish the link between personal experience (e.g. athletic experience) and firm performance, it is pertinent to understand the factors related to effective corporate governance. Existing literature reveals that the effectiveness of boards is associated with certain board characteristics, such as independence, size, meeting attendance, equal involvement of board directors, knowledge/skills of board directors, and board directors' gender and age. In this section, we discuss the literature on several important topics that are highly relevant to our study in the domain of corporate governance: independence, commitment, leadership, and professional experience.

Independence

An enormous amount of attention has been focused on the effect of board independence on the effectiveness of corporate boards. Theoretically, the dominant function of independent board directors is monitoring, in which case these directors would, ideally, not be controlled or influenced by executives or other directors. An independent and effective board should alleviate the agency problem by supervising and disciplining management, which can enhance corporate decision-making and firm performance. Most empirical studies propose a positive relation between board independence and performance (Rosenstein and Wyatt, 1990; Byrd and Hickman, 1992; Dahya and McConnell, 2007; Dahya et al., 2008; Devos et al., 2009; Nguyen and Nielsen, 2010; Fauver et al., 2017). The literature identifies two important channels through which board independence affects firm value. First, independent directors could increase firm value by removing poor management (Weisbach, 1988; Bebchuk and Cohen, 2005). Second, boards structured to be more independent are more effective at monitoring the corporate financial accounting process, and board independence seems to be related to a lower cost of capital (Klein, 2002; Anderson et al., 2004). However, it should be noted that the vast majority of studies have emphasized structure-related independence (i.e. board structures that feature high independence). We focus more on personal traits-related independence (e.g. athlete directors' independent thinking and willingness to challenge) and aim to explore how it affects board effectiveness and firm performance.

Commitment

The commitment of the directors is an important factor in effective corporate governance. Fich and Shivdasani (2006) document evidence that the quality of corporate governance is poor in firms with "busy boards" (i.e. where a majority of outside directors hold at least three directorships). These firms usually exhibit lower sensitivity of forced CEO turnover to performance, lower profitability, and higher book-to-market ratios. The market reaction (i.e. abnormal returns) to departures of busy outside directors is significantly positive.

The acquisition of an additional directorship by a director leads to negative abnormal returns for the other firms in which they hold directorships. These findings suggest that directors' commitment could significantly affect board performance.

Leadership

Kiel and Nicholson (2005) assert that leadership is among the most important elements of effective corporate governance. They argue that boards have become "increasingly more proactive in the leadership of the firms they govern", representing "a paradigm shift in management thinking" as the role of boards has gradually moved from managerial support to business leadership. Effective leadership could help firms establish their values and culture, identify strategic direction, formulate and achieve corporate objectives, and facilitate strategy implementation. Therefore, directors' leadership is crucial for a board to function effectively.

Professional experience

Prior studies show that the personal background or professional expertise (e.g. academic and legal) of the board directors could affect firm performance. For example, Güner et al. (2008) analyse how directors with financial expertise affect corporate decisions. They find that shareholders benefit from financial expertise on boards, as investment-cashflow sensitivity decreases and external funding increases when commercial bankers join boards. Francis et al. (2015) report that firms perform better when they have directors with an academic background. Their results show the presence of academic directors on boards to be correlated with greater stock price informativeness, lower CEO compensation, higher sensitivity of forced CEO turnover to performance, and lower discretionary accruals. They argue that academic directors play an effective governance role through their advising and monitoring functions. Jiang and Murphy (2007) and White et al. (2014) also demonstrate that the market values the appointment of professors for their expertise. Besides the academic background of directors, researchers have shown great interest in investigating how directors' legal and political

background affects the board's effectiveness. For example, Litov et al. (2014) find that lawyer-directors could play an important advisory role in managing litigation and regulation, and structuring compensation, so as to align managers' and shareholders' interests. Agrawal and Knoeber (2001) show that outside directors with a political background could improve the effectiveness of boards in firms for which politics matters more. These findings are consistent with the resource dependence theory (Pfeffer and Salancik, 2003), which suggests that human capital, possessed via various channels (e.g. expertise, knowledge, reputation, and health), is an important source of competitive advantage.

2.4 Hypothesis

The review of the literature shows a significant overlap between the characteristics of athletes and the factors related to effective corporate boards. Athletic experience could affect the performance of corporate boards for several reasons. First, physical fitness likely plays an important role for board directors, as they face increasingly high demands and level of responsibility (Kiel and Nicholson, 2005). Compared with other people, those with athletic experience have a unique advantage in this aspect. Physical fitness could help with cognitive functions and stress management, and positively affects work performance (Rhea et al., 2004; Allen and Laborde, 2014).

Second, the vast literature on corporate governance shows that board independence has a significant positive impact on firm performance (Rosenstein and Wyatt, 1990; Byrd and Hickman, 1992; Devos et al., 2009; Nguyen and Nielsen, 2010; Fauver et al., 2017). Besides structural independence (i.e. the composition of the board and the relation between the board directors and CEO), we argue that independence stemming from the personality traits of the directors could also play an important role. Prior psychology and sport literature shows that athletes manifest certain attributes associated with personal independence, and could help

enhance board independence. For example, Mihailescu and Cucui (2014) find that athletes have high levels of emotional stability, self-control, concentration of attention, and self-orientation. Some other studies have focused on high-level athletes (i.e. those who compete in national or international tournaments). Allen et al. (2011) report that high-level athletes are more emotionally stable, more confident, and more independent, based on a survey of 253 athletes. Using a sample of Olympic champions, Gould et al. (2002) provide evidence that the main characteristics of these athletes include toughness of mind, a high level of self-confidence, self-orientation, and a high ability to ignore distractions from others. They are willing to challenge themselves and others, and their personality traits are associated with a high level of independence. Therefore, we expect that board directors with athletic experience are more likely to speak out and challenge senior executives (e.g. CEOs). The attributes of athletes may make them good independent directors.

Third, board resilience is important for corporate governance, especially in market downturns or during crisis periods (Johnson et al. 2000; Mitton, 2002; Francis et al., 2012). Empirical evidence shows that high levels of resilience and perseverance are among the most important psychological characteristics of athletes, as they regularly receive formal training on management techniques, helping them to cope with stress and difficult situations such as injuries during their sporting career (Hedgpeth and Sowa, 1998; Gould et al., 2002). Thus, directors with athletic experience could bring their mental resilience into the boardroom and enhance firm value.

Fourth, board directors' degree of commitment in terms of time and effort expended in exercising their duties significantly affects board performance (Fich and Shivdasani, 2006). Prior studies show that less committed boards are associated with weak corporate governance, and that the performance of firms featuring such boards is poorer than that of those with more committed boards. Psychological studies show that athletes have a hard-work ethic, a strong

belief in effort, a high level of commitment, and a strong feeling of responsibility (Gould et al., 2002). Therefore, board directors with athletic experience are likely to exercise their duties in a more active, responsible, and committed manner.

Finally, the leadership role of boards is becoming more important than ever before for firm management (Kiel and Nicholson, 2005). The literature on sports psychology suggests that athletes, on average, show very strong leadership in group processes (Loughead et al., 2006). In addition, they perform well in relationship management and conflict reconciliation. This is particularly the case for those who have played team sports. For example, the relationship commitment in coach-athlete dyads or athlete-athlete dyads helps them to develop strong interpersonal skills (Jackson et al., 2010, 2011). Thus, board members with athletic experience could have an advantage in the dynamic group environment of corporate boards, and help boards to fulfil their leadership role.

Overall, based on the above dicussion, we predict that board directors with athletic experience play an active and positive role in the governance process and help their firms to increase their value and performance, given their personal characteristics and abilities. We hereby hypothesise the following:

H1: Athlete directors are positively related to firm value and performance.

3. Data

3.1 Data and sample

Our data come from two sources. We obtain information on board directors around the world from the BoardEx database. More specifically, the data cover the ratio of athlete directors and other board-level characteristics including board size, the ratio of non-executive directors, the ratio of nationality diversification, and the ratio of male directors. We obtain firm

performance measures, including Tobin's Q and the ROA, and other firm-level characteristics, from Thomson Reuters' Worldscope. Country-level variables (i.e. rule of law and corruption) are collected from the International Country Risk Guide (ICRG). After cleaning up observations with any missing values for the variables used in our main analysis, we obtain a sample with 94,496 firm-year observations for 14,328 firms in 71 countries from 1999 to 2015. We are aware that the potential survivorship bias could distort the results. That is, we are more likely to observe the outperforming firms than the underperforming (i.e. failed firms). To minimize this concern, we exhaust the databases and ensure that our sample covers all observations available, including both active and inactive (i.e. failed) firms. However, we still need to be cautious when interpreting the results, considering that the databases are likely to cover more active than failed firms.

In this study, we identify the athlete directors by reviewing the achievements profiles of board directors. An athlete director is defined as one who was a professional or collegiate athlete and obtained achievements or prizes in any sports competition. For the sports competitions, we obtained lists of summer and winter Olympic sports (www.olympic.org/sports) and world sports championships (https://en.wikipedia.org/wiki/List_of_world_sports_championships), and classify a director as an athlete director if his/her achievements are related to a sports event included in these lists. In order to prevent bias in identifying athlete directors, we also classify a director as an athlete director if his/her achievements listed in the achievements profile include the words "Olympic", "World Championships", "sportsman", or "athlete". The final athlete director-year sample includes 2,965 observations. Although we have tried our best to identify the athlete directors, there might still be some undetectable athlete directors who took part in sports not included in the Olympics or the Wikipedia list of world sports championships. In this case, our inferences could underestimate the true effects of athlete directors.

3.2 Measures of athlete directors and firm performance

To measure the presence of athlete directors, we create a dummy, *Athlete*, equal to one if a firm has at least one athlete director on its board, and zero otherwise. In addition, to capture the relative presence of athlete directors, we use *Athlete ratio,* defined as the number of athlete directors over the total number of directors. Following previous corporate board studies (e.g. Devos et al., 2009; Francis et al., 2015), we employ a market-based measure, Tobin's Q, as our main proxy for firm performance. It is defined as the market value of assets (calculated as the book value of assets minus the book value of equity plus the market value of equity) over the book value of assets. As a robustness check, we also use ROA, as an accounting measure of operating performance. ROA is defined as the ratio of net income to total assets. It should be noted that there is a potential endogeneity problem, mainly resulting from reverse causality and omitted variables in our regressions. To address this concern, we employ the PSM and 2SLS approaches in additional analyses. Those methods and the results of those tests are discussed in detail in Section 4.3.

3.3 Summary statistics

Table 1 Panel A provides the summary statistics for the full sample, and for subsamples with and without athlete directors. Sections A, B, and C show that the firm-year observations of boards with athlete directors (2,956 observations) account for about 3% of the total of 94,496 firm-year observations. The maximum ratio of athlete directors is 43%. Section D presents the differences in means. It shows that all the firm and board characteristics are significantly different between firms with and without athlete directors. For example, the ROA for firms with athlete directors is 3.53% higher than the ROA for those without athlete directors. Panel B presents the distribution by country. We also present the distribution of the relative presence of athlete directors by industry in Panel C. It shows that Amusement and Recreation Services has the highest percentage of athlete observations (14.14%), followed by Railroad

Transportation (10.56%) and then Hotels, Rooming Houses, Camps, and Other Lodging Places (10.39%). There is no direct link between any of these three industries and sports. It seems that the presence of athlete directors is not correlated with specific industries (e.g. athletic equipment or other sport-related sectors). The distribution may suggest that athlete directors are likely to play more of a monitoring role than an advisory role (e.g. providing sporting expertise) on boards. Finally, we graph the percentage of firms with athlete directors around the world in Figure 1. It shows that North America, Russia, and Australia have high percentages, while Africa and Asia have low percentages. This may cause a selection bias concern, in that athletes in Africa and Asia might be less likely to receive formal education and, therefore, be qualified to act as board directors, compared to those in North America, Russia, and Australia. To alleviate this potential problem, we control for the educational level of the athlete directors and country fixed effects in our regressions. In addition, unreported results show there is no significant correlation between the average level of education of athlete directors and the country.

[Insert Table 1 here]

[Insert Figure 1 here]

4. Empirical results

4.1 Athlete directors and firm value

In this section, we examine the impact of athletic backgrounds within the board of directors on firm value using our large global dataset. As previously discussed, we use Tobin's Q as the main measure of firm performance. The key independent variables *Athlete* and *Athlete ratio* capture the presence and relative presence (proportion) of athlete directors siting on the board. Following previous studies, we control for some board and firm characteristics that may

affect firm value (e.g. Devos et al., 2009; Francis et al., 2015). Other board-related variables include Board size, Independence, Male, and Foreign. The firm-level controls include Firm size, Sales growth, Leverage and Cashflow. All variables are defined in Appendix A. Table 2 reports the results from regressions of Tobin's Q on the two athlete director variables using different specifications. All regressions include year, country, and two-digit SIC industry fixed effects.[1]

[Insert Table 2 here]

Table 2 presents the results of the relation between athlete directors and firm value measured by Tobin's Q, estimated using ordinary least square (OLS) regressions with robust standard errors. In Column 1 (specification 1), we include our key independent variable - the *Athlete* dummy - and firm-level controls. In specification (2) we further include other types of experience (academic, financial, and legal) and five board variables which may also affect firm value. Institutional environment could affect corporate governance and the performance of firms. Therefore, in order to capture differences in it across countries, in specification (3) we include two country-level variables, Rule of law and Corruption. These two variables measure a country's legal environment and corruption level, respectively[2]. In Column 4, we rerun the regression from specification (3) and further add the lag of Tobin's Q as a control variable. In order to further examine the association between the relative presence of athlete directors and firm value, we rerun specifications (1), (2), (3), and (4) and use *Athlete ratio* instead of the *Athlete* dummy, in specifications (5), (6), (7), and (8) respectively. Across all the columns of Table 2, the estimated coefficients on our athlete director variables are positive and statistically

[1] In our regression analysis we further control for three-digit SIC code and four-digit SIC code as a robustness check, and the results are consistent with those obtained when controlling for two-digit SIC codes.
[2] See La Porta et al. (1998) for more details on the definitions of the variables and further explanation.

significant at least to the 5% level, consistently supporting our hypothesis that the athletic experience of these directors increases firm value. Specifically, in Column 2 we find that the coefficient on the *Athlete* dummy is significantly positive at the 1% level. The effect of athlete directors is also economically significant: Tobin's Q is approximately 0.06 units higher for firms with athlete directors than for firm without athlete directors. Moreover, in Column 6 we find that the coefficient on *Athlete ratio* is also significantly positive at the 1% level, indicating that a unit increase in the proportion of athlete directors on the board is associated with an increase in the firm's Tobin's Q of about 0.56 units.

We also find that the coefficient on Academic is significantly positive at the 1% level across all specifications. This result is consistent with Jiang and Murphy (2007) and White et al. (2014), who suggest that the appointment of academics for their expertise adds value to a firm. The coefficient on Legal expertise is significantly negative at the 5% level across all specifications, contradictory to Litov et al. (2014). It should be noted that, even after controlling for these experiences, the coefficient on our athlete variable (i.e. *Athlete* or *Athlete ratio*) is still significantly positive at the same level. In addition, the unreported correlation matrix shows that there is no significant correlation between *Athlete* (or *Athlete ratio*) and these other types of experience (i.e. academic, financial, and legal). The correlation result suggests that, if athlete directors increase firm value, they likely do so mainly through playing a more effective monitoring role, and not through playing a more effective advisory role. An effective advisory role requires business-related expertise or experience, but athlete directors do not seem to have them, as indicated by the very low and insignificant correlation. This echoes what we observed in the distribution of the presence of athlete directors by industry in Table 1 Panel C.[3] Turning to the board-level control variables, we find a significant positive correlation between

[3] The distribution in Table 1 Panel C shows the representativeness of athlete directors to be seemingly uncorrelated with specific industries, while an advisory role is likely to require expertise or experience in a particular industry.

Education and firm value, showing that the average educational level of the directors has a positive impact on firm value. This result is consistent with some previous studies (e.g. Westphal and Zajac, 1995; Hillman et al., 2002) that have suggested that education could enhance the cognitive/productive capabilities of directors and hence benefit firms. We also report a significant positive coefficient on Board size and Foreign. However, the proportion of male directors on the board has a significantly negative impact on firm value. In addition, with regard to the firm-level control variables, we find firm size to have a negative effect on Tobin's Q, while the sales growth rate and leverage have positive effects. These results are generally in line with the literature (e.g. Bebchuk and Cohen, 2005; Francis et al., 2015; Limbach and Sonnenburg, 2015).

In addition, according to the summary statistics, the US accounts for around 50% of all observations, raising the concern that our results may be driven by the US part of the sample. We therefore split our sample into US and non-US subsamples and replicate the tests. In both subsamples, these tests indicate that our results are not driven by the US sample. Furthermore, considering that several countries adopt the two-tier board system, we conduct split-sample tests by dropping those countries (Austria, China, the Czech Republic, Germany, Hungary, the Netherlands, Poland, Slovakia, and Slovenia). The unreported results are consistent with the baseline results in Table 2.[4]

In sum, the results reported in Table 2 indicate that the previous athletic experience of directors has a positive impact on firm performance and suggest that the personal attributes (i.e. physical fitness and personality/psychological traits) of athletes could contribute to the effectiveness of boards and enhance firm value. Our findings complement the literature on the

[4] In our baseline regression in Table 2, for the countries that adopt the two-tier board system, the athlete ratio is defined as the proportion of athlete directors on the management board, consistent with the definition for the countries that adopt the single-tier board system.

effect of expertise-related personal experiences on board performance (Agrawal and Knoeber, 2001; Jiang and Murphy, 2007; Güner et al., 2008; White et al., 2014; Litov et al., 2014; Francis et al., 2015) and show that such non-expertise-related personal experience as athletic experience also has real economic consequences for corporate governance and firm performance.

4.2 Athlete directors' performance during a time of distress

As discussed earlier, one of the reasons that might explain why athlete directors perform better is that they may cope better in difficult situations and under pressure. To assess whether athlete directors handle difficulties and pressure better, we examine whether there are differential effects on firm performance during periods of distress. The 2007-08 financial crisis affected many countries simultaneously (especially OECD countries) and led to a global economic crisis on a scale not seen since the Great Depression. It thus represents an exogenous and systematic shock that applied to most firms. The salience of the financial crisis thus provides a natural experiment we can use to study whether athlete directors may play a more positive role in bad times.

[Insert Table 3 here]

In order to conduct our analysis, we construct a subsample which includes all firms from the OECD countries over the period of 2004-2009. We believe that most firms from OECD countries are likely to have experienced difficulty or distress during the recent financial crisis period (2007-2009). We refine the analysis by interacting the athlete variables with a dummy variable capturing this period. Table 3 reports the results from regressions in which the dependent variables are Tobin's Q (Columns 1 and 3) and the stock return (Columns 2 and 4),

respectively. As shown in Table 3, the coefficients on the athlete director variables (i.e. *Athlete* and *Athlete ratio*) are significantly positive for Tobin's Q and negative for the stock return at the 1% level, suggesting that firms with athlete directors are associated with higher Tobin's Q but lower stock returns than firms without athlete directors before the financial crisis. The coefficient on Crisis is significantly negative for Tobin's Q, indicating a significant decrease in firm value during the financial crisis for firms without athlete directors. The coefficients on the interaction terms between *Athlete* (*ratio*) and Crisis capture the incremental effect of athlete directors on firm performance during bad times. The coefficients on the interaction terms are significantly positive in all specifications, indicating that athlete directors increased firm performance more significantly during the financial crisis period (i.e. a bad time). The findings support our expectation that athlete directors handle crises and pressure better and can thereby enhance firm performance.

4.3 Endogeneity issues

Our regression results in the previous sections show a significant correlation between the presence of athlete directors and firm value or performance. One possible explanation is that athletes in boardrooms could help firms to increase their value and improve their performance. However, we should be cautious about this interpretation, as there might be an endogeneity problem. First, reverse causality could be an issue since athletes might be more likely to join better-performing firms for various reasons. For example, they might choose firms with good performance to preserve their reputations, or it could be the case that better-performing firms have more financial resources (e.g. more competitive compensation packages) to attract athletes. Second, omitted variables might distort our results, considering that there are many other factors which could affect firm value or performance. To address these endogeneity concerns, we use two approaches to conduct additional analyses in this section. Specifically, we employ the PSM method to alleviate selection bias related to the observable

firm and board member characteristics. We also apply an instrumental variable approach (2SLS) to mitigate the potential reverse causality and omitted variable problems. In the remainder of this section, we introduce these two methods and discuss the results.

First, following Abadie and Imbens (2016), we apply a nearest-neighbour matching estimator based on a propensity score to construct a matching sample using firms without athlete directors. This approach ensures that each observation in the testing sample (firms with athlete directors) is paired with an observation in the matching sample (firms without athlete directors). Our propensity score model includes firm size, leverage, cashflow over net sales, sales growth, academic experience, financial expertise, legal expertise, board size, non-executive director ratio, male director ratio, foreign director ratio, average educational level, rule of law, corruption index, country, year, and industry. We rerun the regressions using a sample which pools the testing sample and the matching sample. The final sample includes 5,930 observations.

[Insert Table 4 here]

Table 4 reports the estimation results for the association between athlete directors and firm performance using a sample that pools the testing sample and the matching sample. Consistent with our results from Section 4.1, the results provide empirical support for our expectation that athlete directors have a positive impact on firm performance. More specifically, we find that the coefficients on *Athlete* for both Tobin's Q and ROA are positive and significant at least at the 5% level, indicating that, when compared to the matched firms, the presence of athlete directors is associated with higher firm value and profitability. Similarly, we find that the coefficients on *Athlete ratio* for both Tobin's Q and ROA are positive and significant to at

least 10%, indicating that the more athlete directors there are on the board, the higher are firm value and profitability.

Second, we provide two instruments for *Athlete* and *Athlete ratio*, capturing level of achievement at and participation in the Olympic Games, by each country. The instruments are motivated by the intuition that people with athletic experience are more likely to be selected as directors in countries that have performed better and participated in more sports in the Olympic Games. These two factors could indicate the development and importance of sports in that country. We expect that countries with well-developed sports sectors, and with a strong emphasis on sports, are likely to have more athlete directors for two reasons. First, the proportion of athletes within the population of these countries tends to be higher. Second, the society and firms are likely to pay higher respect to athletes and value athletic experience more when recruiting or nominating board directors. We therefore use *Olympic medals* and *Olympic sports* as two instrumental variables in our study. *Olympic medals* is defined as the total number of medals (gold, silver, and bronze) the country won in the Summer and Winter Olympic Games, scaled by 100. *Olympic sports* is defined as the total number of sports in which a country participated, in the Summer and Winter Olympic Games, scaled by 100. To construct these variables, we hand-collect the total number of medals won by each country in each year from the website of the International Olympic Committee (https://www.olympic.org) and the combined total number of summer and winter sports each country has participated in over all Olympic Games from Wikipedia.

In our first-stage regression, we run a probit model in which the dependent variable is *Athlete*, and the independent variables include *Olympic medals*, *Olympic sports*, Academic, Financial expertise, Legal expertise, Education, Board size, Independence, Male, Foreign, Firm size, Sales growth, Leverage, Cashflow, Law, Corruption, and industry, year and country fixed effects. Our results are reported in Panel A of Table 5. The coefficients on *Olympic medals* and

Olympic sports are 0.017 (sig. at 1% level) and 0.077 (sig. at 1% level), respectively, suggesting that the likelihood of having at least one athlete director on the board of a firm is positively associated with the performance of the country at the Olympic Games and the number of Olympic sports in which the country has participated. We also run a separate regression to examine the relation between *Athlete ratio* and the two instrumental variables. We report highly significant coefficients on both *Olympic medals* (coeff.= 0.002, sig. at 1% level) and *Olympic sports* (coeff.=0.009, sig. at 1% level).

We report our second-stage regression results in Panel B of Table 5. In the second-stage regression, we regress firm performance (as measured by Tobin's Q) on *Athlete* (predicted probability that a firm has at least one athlete director from the first-stage regression) and *Athlete ratio* (predicted ratio of athlete directors to board size from the first-stage regression). As shown in Column 1, the coefficient on *Athlete* is 2.038 and significant at 5%. Column 2 shows that the coefficient on *Athlete ratio* is 15.391 and significant at 5%. One potential problem with our two instrumental variables is that Olympic medals and sports may affect firm performance through channels other than athlete directors. To confirm the validity of our instruments and the 2SLS method, we run a Durbin-Wu-Hausman test and the result rejects the null hypothesis of no endogeneity at the 5% level.[5] Overall, the results from the 2SLS regression are consistent with our baseline regressions and the PSM results, suggesting that our earlier findings are unlikely to be driven by endogeneity.

[Insert Table 5 here]

[5] We also run tests for overidentifying restrictions. Both Sargan and Basmann test statistics suggest that our instrumental variables are valid.

4.4 Types of athletic experience and background of athlete directors

The results thus far show that athlete directors are positively associated with firm performance. This section presents various additional tests on whether different types of athletic experience or different characteristics of athletic directors impact firm performance differently, based on the sample firms with athlete directors. Board directors' teamwork, communication, and interpersonal skills significantly impact board effectiveness. As team-sport athletes compete and train in a team environment, they learn how to be good leaders and followers, how to receive and provide advice for the betterment of the team, and how to take control of a situation. They understand roles and know where they fit in. Therefore, we expect the team-sport athlete directors to enhance board effectiveness and firm performance more significantly than the non-team-sport athlete directors. As we discussed earlier, one of the reasons why athlete directors may improve corporate governance may be that they are more effective monitors. This may be especially true if they have been involved in confrontational sports, because they may be more likely to challenge and actively monitor the management team than directors who have participated in non-confrontational sports. In addition, athlete directors' past achievements and reputation in sports could influence the roles they play in the boardroom and their contributions to firms. Top sportspeople tend to be natural leaders and receive more respect from other directors and management. Therefore, athlete directors with and without high levels of achievement and strong reputations may have different impacts on board effectiveness and subsequent firm performance. We also empirically investigate whether the presence of executive athlete directors affects corporate governance and firm performance differently to the presence of non-executive athlete directors. Finally, we examine the potential impact of the educational level of athlete directors on firm value.

To this end, we employ the PSM model to run regressions parallel to those in Table 4, but replacing the dummy variables *Athlete* with five different variables: (1) *Team-sport*, which

indicates the relative presence (i.e. proportion) of team-sport athlete directors on the board; (2) *Confrontational sport*, which captures the relative presence of athlete directors who were involved in confrontational sports on the board; (3) *Achievement*, which indicates the athlete directors' sporting achievements and reputations; (4) *Executive athlete*, which indicates the relative presence of executive athlete directors on the board as a proportion of all athlete directors on the board; (5) *Athlete_education*, which indicates the average educational level of athlete directors. The estimation results are reported in Table 6. In an additional untabulated robustness check, we estimate regressions using ROA as the measure of firm performance instead of Tobin's Q. We again obtain similar results to our reported findings.[6]

[Insert Table 6 here]

In Column 1, we find the coefficient on *Team-sport* to be positive and statistically significant at the 5% level, suggesting that team-sport athlete directors have a more significant impact on firm value than individual-sport athlete directors. Similarly, in Column 2, the coefficient on *Confrontational sport* is positive and statistically significant at 1%, suggesting that athlete directors who were involved in confrontational sports have a stronger impact on firm value than those involved in non-confrontational sports. These results confirm our expectation that the type of sport in which an athlete director participated does matter in explaining their effect on firm value. In Column 3, the coefficient on *Achievement* is not statistically significant. This result indicates that athlete directors with high levels of achievement and good reputations in sport have similar impacts on firm value to those without such positive qualities. Column 4 shows that the coefficient on the ratio of executive athlete

[6] All these untabulated results are available on request from the authors.

directors to total athlete directors is not statistically significant, suggesting that an athlete director being an executive versus a non-executive director is not an important factor in explaining their effect on firm value. It could be argued that athletes are expected to play a larger role as non-executive directors than executive directors, since they would be particularly independent and this is more important in a non-executive role. Contradictory to this expectation, we do not find any significant difference between the executive and non-executive groups. However, our finding may suggest that, instead of independence, it is physical fitness and mental resilience (Malmendier et al., 2011; Benmelech and Frydman, 2015; Limbach and Sonnenburg, 2015) that enables athletes to play a more important role on boards and add value to firms. This is also consistent with our finding that athlete directors increase firm performance more significantly during crisis periods. Finally, there might be a concern that athletes in some countries may be less likely to receive formal education, and would therefore not be qualified to act as board directors. This selection issue might distort our results. To address this concern, we consider the educational level of athlete directors in Column 5. We do not find a significant coefficient on *Athlete_education*, suggesting that the educational level of an athlete director does not significantly alter his/her impact on firm value.

4.5 Athlete directors and firm policies

Since our results suggest that athletic experience could enhance the monitoring role of board directors and improve firm performance, we further explore the channel through which firm value is increased. Specifically, we focus on two factors which are correlated with corporate decisions, firm investment and financial leverage, and test the effect of the athlete board directors on them. Firm investment is measured by the total capital expenditure scaled by total assets. Financial leverage is the ratio of total debt to total assets. The results are reported in Table 7.

The results in Column 1 and 2 show that firms with athlete directors are more likely to decrease their investment, based on both measures of the presence and the relative proportion of athlete directors. The coefficients are significant at the 10% level. These results imply that athlete directors are effective in monitoring the management team to reduce the firm risk caused by capital expenditure. In Column 3, the positive coefficient on *Athlete* indicates that firms with athlete directors are associated with 0.9% higher financial leverage. While the magnitude is low, the sign is in line with the view of debt financing as a governance mechanism. Aivazian et al. (2005) argue that higher leverage pre-commits managers to pay cash as interest and principal, and restricts managers from investing in value-destructive projects. Overall, athletes may help overcome the overinvestment problem.

[Insert Table 7 Here]

5. Conclusion

Despite the growing interest of finance researchers in the attributes and expertise-related backgrounds of board directors that help explain board director heterogeneity (Agrawal and Knoeber, 2001; Jiang and Murphy, 2007; Güner et al., 2008; White et al., 2014; Litov et al., 2014; Francis et al., 2015), the literature has remained relatively limited when it comes to non-expertise-related experience. In this study, we focus on a particular type of non-expertise-related experience, athletic experience, as the personal traits and attributes of athletes are highly relevant to the key factors known to affect the effectiveness of boards. In addition, athletic experience has yet to be examined in the board literature.

Using a large global panel of 94,496 firm-year observations from 14,328 firms in 71 countries over the period from 1999 to 2015, we provide evidence that the presence of athlete directors and the relative proportion of athlete directors matter to firm performance. We find a

significant and positive association between athletic experience and firm performance. The findings are consistent with our prediction that personal characteristics (i.e. physical fitness and personality/psychological traits) associated with athletes benefit boards and enhance firm value, and suggest that such non-expertise-related personal experience has real economic consequences for corporate governance and firm performance. In addition, this positive relation is more pronounced during times of distress, which suggests that athlete directors perform better in such times. Furthermore, our additional analysis indicates that athlete directors who participated in team sports and confrontational sports improve firm performance more significantly than those who were involved in individual sports and non-confrontational sports. Finally, we employ the PSM and 2SLS approaches to address potential endogeneity problems. The results are consistent with our baseline findings.

Our study has important implications for corporate governance practice. Besides the board structure (e.g. proportion of outside directors) and directors' expertise-related backgrounds, non-expertise-related experiences (e.g. athletic experiences) also matter for board performance. Our findings are also important for both shareholders and participants in the managerial labour market, including board directors, senior executives, and executive selection panels. We highlight the importance of certain personal traits (e.g. physical fitness and mental resilience) and skills associated with early-life experiences for job performance.

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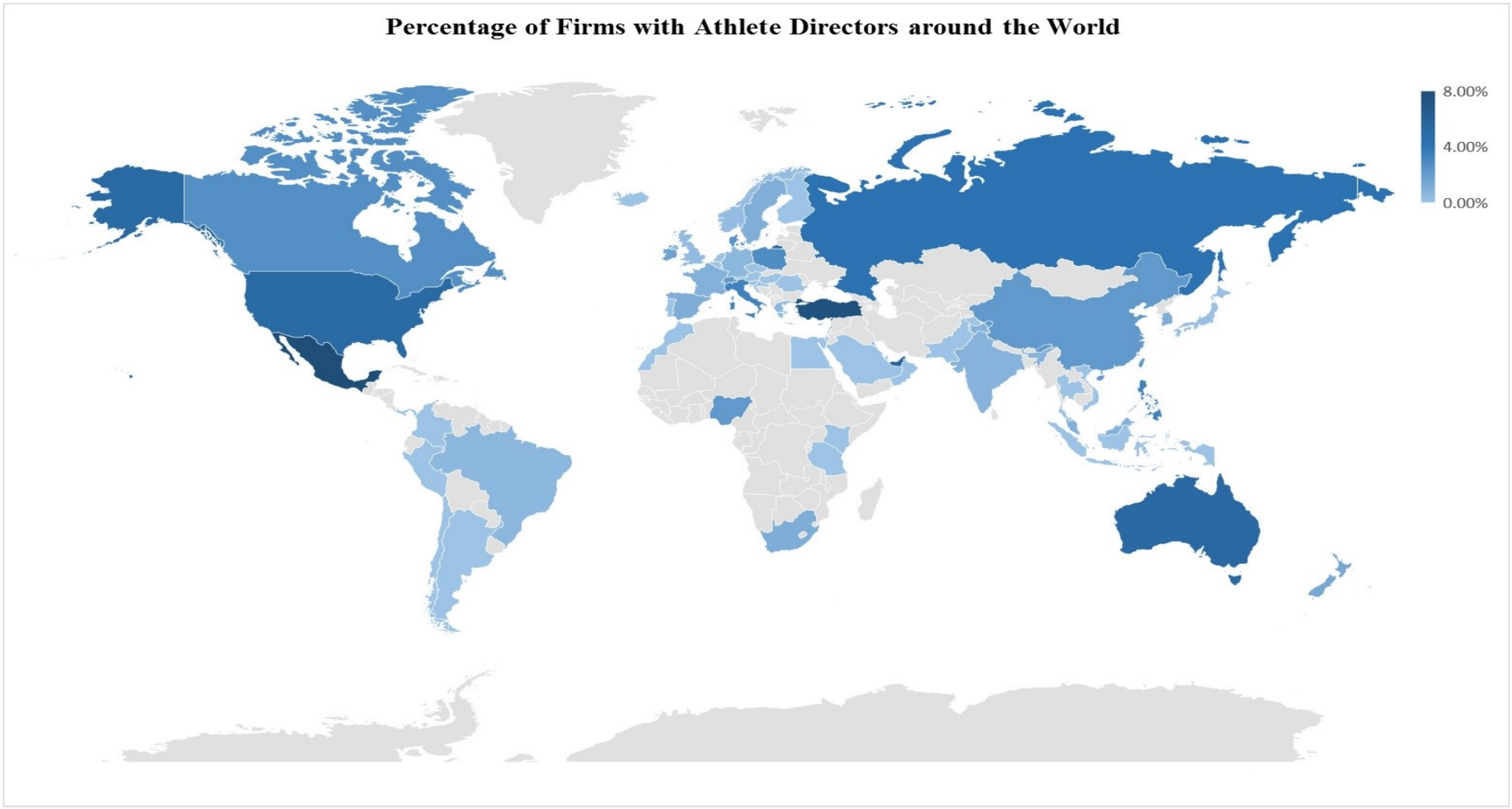
Figure 1.



This figure shows the percentage of firms with athlete directors around the world.

Table 1 Sample Description

Panel A: Summary Statistics

Variable	Section A					Section B					Section C					Section D
	Full sample (F)					Board with Athlete Directors (T)					Board without Athlete Directors (N)					Difference in Means (T-N)
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max	Mean
Tobin's Q	94,496	1.80	1.46	0.49	10.41	2,965	1.79	1.29	0.49	10.41	91,531	1.80	1.47	0.49	10.41	-0.01
ROA	93,439	0.02	0.18	-0.99	0.36	2,947	0.05	0.10	-0.99	0.36	90,490	0.016	0.17	-0.99	0.36	0.035***
Athlete	94,496	0.03	0.17	0.00	1.00	2,965	1.00	0.00	1.00	1.00	91,531	0.00	0.00	0.00	0.00	N/A
Athlete ratio	94,496	0.00	0.02	0.00	0.43	2,965	0.11	0.05	0.00	0.43	91,531	0.00	0.00	0.00	0.00	N/A
Academic	94,496	0.07	0.10	0.00	0.86	2,965	0.10	0.10	0.00	0.57	91,531	0.07	0.10	0.00	0.86	-0.03***
Financial expertise	94,496	0.20	0.15	0.00	1	2,965	0.19	0.19	0.00	0.75	91,531	0.20	0.15	0.00	1.00	0.01***
Legal expertise	94,496	0.08	0.11	0.00	1	2,965	0.11	0.11	0.00	0.75	91,531	0.08	0.11	0.00	1.00	-0.03***
Education	94,496	1.28	0.53	0.00	3	2,965	1.44	0.42	0	3.00	91,531	1.27	0.53	0.00	3.00	-0.17***
Board size	94,496	8.68	3.27	3.00	20.00	2,965	10.36	3.15	3.00	20.00	91,531	8.63	3.26	3.00	20.00	1.73***
Male	94,496	0.91	0.10	0.57	1.00	2,965	0.89	0.10	0.57	1.00	91,531	0.91	0.10	0.57	1.00	-0.03***
Foreign	94,496	0.13	0.21	0.00	0.70	2,965	0.11	0.18	0.00	0.70	91,531	0.13	0.21	0.00	0.70	-0.02***
Independence	94,496	0.76	0.17	0.20	1.00	2,965	0.82	0.11	0.38	1.00	91,531	0.75	0.17	0.20	1.00	0.06***
Firm size	94,496	20.51	2.24	14.96	26.07	2,965	21.93	2.02	14.96	26.07	91,531	20.46	2.23	14.96	26.07	1.47***
Sales growth	94,496	0.20	0.72	-0.93	5.56	2,965	0.13	0.48	-0.93	5.56	91,531	0.20	0.73	-0.93	5.56	-0.07***
Leverage	94,496	0.53	0.27	0.01	1.32	2,965	0.59	0.24	0.01	1.32	91,531	0.53	0.27	0.01	1.32	0.06***
Cashflow	94,496	0.10	0.24	-0.70	0.49	2,965	0.15	0.17	-0.70	0.49	91,531	0.09	0.25	-0.70	0.49	0.06***
Rule of law	93,854	5.03	1.31	1	6	2,956	5.49	1.12	1	6	90,898	5.01	1.31	1	6	-0.472***
Corruption	93,854	3.77	1.47	0.5	6	2,956	4.53	1.25	1	6	90,898	3.74	1.47	1	6	-0.778***
Team-sports						2,965	0.41	0.48	0	1						
Confront sports						2,965	0.43	0.49	0	1						
Achievement						2,965	0.05	0.22	0	1						
Executive athlete						2,965	0.14	0.34	0	1						
Athlete_education						2,965	1.48	0.87	0	3						

This table provides the summary statistics for the sample between 1999 and 2015. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix A.

Panel B: Sample Distribution by Country

Country	Firms	Observations	Athlete firms	Country	Firms	Observations	A
Argentina	9	65	0	Malaysia	175	572	
Australia	685	3,548	184	Mexico	35	150	
Austria	52	326	0	Morocco	3	24	
Barbados	1	8	0	Netherlands	159	1,045	
Belgium	101	824	0	New Zealand	41	146	
Bermuda	62	373	11	Nigeria	30	96	
Brazil	82	326	2	Norway	132	1,063	
British Virgin Islands	7	31	0	Oman	2	6	
Canada	638	3,177	84	Pakistan	4	10	
Cayman Islands	15	71	0	Panama	2	15	
Chile	20	91	0	Peru	7	26	
China	223	903	19	Philippines	32	122	
Colombia	12	37	0	Poland	26	145	
Croatia	2	15	0	Portugal	34	273	
Cyprus	9	23	0	Qatar	5	12	
Czech Republic	4	25	0	Romania	1	8	
Denmark	48	330	8	Russia	65	263	
Egypt	8	36	0	Saudi Arabia	19	36	
Finland	64	392	0	Singapore	228	916	
France	410	3,329	31	Vietnam	4	17	
Germany	356	2,404	15	Slovenia	1	8	
Greece	55	345	2	South Africa	194	938	
Hong Kong	294	1,163	21	Spain	117	851	
Hungary	8	23	0	Sweden	180	1,464	
Iceland	11	33	0	Switzerland	129	1,081	
India	411	1,985	16	Taiwan	52	207	
Indonesia	47	134	0	Thailand	22	69	
Ireland	84	541	9	United Arab Emirates	37	110	
Israel	108	710	1	Turkey	32	107	
Italy	173	1,122	37	United Kingdom	2,204	15,127	
Japan	260	898	1	Guernsey	20	102	
Kenya	5	29	0	Jersey	9	36	
South Korea	34	91	1	Isle of Man	7	23	
Kuwait	2	6	0	Tanzania	1	9	
Lebanon	2	6	0	United States	5983	45,831	
Luxembourg	35	168	0				

This table shows the distribution of firms and observations across countries.

Panel C: Sample Distribution by Industry

Industry Name	Total obs.	Athlete obs.	Athlete /Total	Industry Name	Total obs.	Athlete obs.	Athlete /Total
Agricultural Production - Crops	338	8	2.37%	Transportation by Air	760	18	2.37%
Agricultural Production - Livestock and Animal Specialties	77	3	3.90%	Transportation Services	383	19	4.96%
Metal Mining	1,990	25	1.26%	Communications	2,938	75	2.55%
Coal Mining	439	11	2.51%	Electric, Gas and Sanitary Services	3,212	161	5.01%
Oil and Gas Extraction	3,420	116	3.39%	Wholesale Trade - Durable Goods	1517	33	2.18%
Construction - General Contractors & Operative Builders	1,442	35	2.43%	Wholesale Trade - Nondurable Goods	1,084	54	4.98%
Heamy Construction, Except Building Construction, Contractor	763	11	1.44%	Building Materials, Hardware, Garden Supplies & Mobile Homes	223	10	4.48%
Food and Kindred Products	2,355	124	5.27%	General Merchandise Stores	557	53	9.52%
Tobacco Products	164	9	5.49%	Food Stores	692	2	0.29%
Textile Mill Products	202	11	5.45%	Automotive Dealers and Gasoline Service Stations	324	6	1.85%
Apparel, Finished Products from Fabrics & Similar Materials	479	20	4.18%	Apparel and Accessory Stores	891	57	6.40%
Lumber and Wood Products, Except Furniture	325	27	8.31%	Home Furniture, Furnishings and Equipment Stores	427	1	0.23%
Furniture and Fixtures	304	17	5.59%	Eating and Drinking Places	845	76	8.99%
Paper and Allied Products	813	25	3.08%	Miscellaneous Retail	1,043	50	4.79%
Printing, Publishing and Allied Industries	1,099	72	6.55%	Depository Institutions	6718	200	2.98%
Chemicals and Allied Products	5,755	105	1.82%	Nondepository Credit Institutions	817	16	1.96%
Petroleum Refining and Related Industries	619	32	5.17%	Security & Commodity Brokers, Dealers, Exchanges & Services	2,418	52	2.15%
Rubber and Miscellaneous Plastic Products	659	25	3.79%	Insurance Carriers	2,628	105	4.00%
Leather and Leather Products	166	8	4.82%	Real Estate	2,490	60	2.41%
Stone, Clay, Glass, and Concrete Products	750	14	1.87%	Holding and Other Investment Offices	4,787	113	2.36%
Primary Metal Industries	1,278	59	4.62%	Hotels, Rooming Houses, Camps, and Other Lodging Places	693	72	10.39%
Fabricated Metal Products	1,011	10	0.99%	Personal Services	243	10	4.12%
Industrial and Commercial Machinery and Computer Equipment	3,655	114	3.12%	Business Services	9,829	238	2.42%
Electronic & Other Electrical Equipment & Components	5,639	57	1.01%	Motion Pictures	449	32	7.13%
Transportation Equipment	2,050	95	4.63%	Amusement and Recreation Services	679	96	14.14%
Measuring, Photographic, Medical, & Optical Goods, & Clocks	3,986	129	3.24%	Engineering, Accounting, Research, and Management Services	2876	52	1.81%
Miscellaneous Manufacturing Industries	583	30	5.15%	Educational Services	345	16	4.64%
Railroad Transportation	180	19	10.56%	Social Services	129	10	7.75%
Motor Freight Transportation	639	3	0.47%	Health Services	1,079	44	4.08%
Water Transportation	840	20	2.38%				

The table only reports the distribution of observations across industries which have athlete directors. The industries are classified by two-digit SIC code. Total obs. is the total number of observations in the full sample and athlete obs. is the number of observations of firms with athlete directors.

Table 2 Athlete Directors and Firm Value

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Athlete	0.095***	0.064***	0.063***	0.024***				
	(0.026)	(0.022)	(0.022)	(0.006)				
Athlete ratio					0.657**	0.555**	0.553**	0.200***
					(0.240)	(0.246)	(0.248)	(0.059)
Academic		0.397***	0.403***	0.138***		0.398***	0.403***	0.138***
		(0.102)	(0.104)	(0.0302)		(0.102)	(0.104)	(0.030)
Financial expertise		-0.006	-0.010	-0.00195		-0.005	-0.00994	-0.002
		(0.0977)	(0.101)	(0.0205)		(0.098)	(0.102)	(0.020)
Legal expertise		-0.148**	-0.150**	-0.043**		-0.148**	-0.150**	-0.042**
		(0.058)	(0.061)	(0.020)		(0.058)	(0.0615)	(0.020)
Education		0.271***	0.271***	0.0723***		0.271***	0.271***	0.072***
		(0.033)	(0.034)	(0.012)		(0.033)	(0.0337)	(0.012)
Board size		0.0261***	0.026***	0.0125***		0.026***	0.0262***	0.013***
		(0.009)	(0.009)	(0.002)		(0.009)	(0.00919)	(0.002)
Independence		-0.212	-0.226*	0.034		-0.212	-0.226*	0.0345
		(0.137)	(0.134)	(0.039)		(0.137)	(0.134)	(0.039)
Male		-0.601***	-0.605***	-0.217***		-0.602***	-0.606***	-0.217***
		(0.115)	(0.112)	(0.033)		(0.115)	(0.113)	(0.033)
Foreign		0.318***	0.324***	0.107***		0.318***	0.324***	0.107***
		(0.051)	(0.048)	(0.026)		(0.052)	(0.0487)	(0.026)
Firm size	-0.128***	-0.182***	-0.183***	-0.072***	-0.127***	-0.182***	-0.183***	-0.071***
	(0.008)	(0.015)	(0.016)	(0.004)	(0.008)	(0.016)	(0.0159)	(0.004)
Sales growth	0.209***	0.203***	0.204***	0.004	0.209***	0.203***	0.205***	0.0036
	(0.047)	(0.046)	(0.047)	(0.006)	(0.047)	(0.046)	(0.0475)	(0.006)
Leverage	0.094	0.139	0.135	0.248***	0.094	0.140	0.135	0.248***
	(0.177)	(0.178)	(0.182)	(0.067)	(0.177)	(0.178)	(0.181)	(0.067)
Cashflow	-0.075	0.0381	0.0422	0.033	-0.076	0.038	0.0421	0.033
	(0.132)	(0.129)	(0.131)	(0.041)	(0.132)	(0.130)	(0.131)	(0.041)
Law			-0.0270	-0.001			-0.0272	-0.001
			(0.031)	(0.011)			(0.031)	(0.011)

Corruption			0.0286	0.006			0.0286	0.0066
			(0.024)	(0.015)			(0.0241)	(0.014)
Tobinq_lag1				0.681***				0.728***
				(0.105)				(0.112)
Constant	4.04***	5.25***	5.269***	1.736***	4.029***	5.253***	5.270***	1.736***
	(0.156)	(0.176)	(0.238)	(0.142)	(0.158)	(0.176)	(0.238)	(0.142)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country cluster	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Observations	94,496	94,496	93,854	91,001	94,496	94,496	93,854	91,001
R-squared	0.192	0.205	0.206	0.653	0.192	0.205	0.206	0.653

This table presents the OLS regression results for the relation between athlete directors and firm value. The dependent variable is Tobin's Q, which is defined as the ratio of the market value of assets to the book value of assets. Athlete is a dummy variable that is equal to one if a firm has at least one athlete director and zero otherwise. Athlete ratio is the ratio of athlete directors to board size. Board size is the number of directors sitting on the board. Academic, Financial expertise, Legal expertise, Independence, Male, and Foreign are the percentages of directors with academic experience, financial expertise, and legal expertise, and non-executive, male, and foreign directors on the board, respectively. Education is the average educational level of the directors. Firm size is the logarithm of the firm's total assets. Sales growth is the annual growth rate in sales. Leverage is the book value of debt over total assets. Cashflow is the ratio of funds from operations to net sales. Law is the law and order index, obtained from the International Country Risk Guide Table 3B. Corruption is the corruption index, obtained from the International Country Risk Guide Table 3B. All regressions include industry, country and year fixed effects. Variable definitions are provided in Appendix A. Robust standard errors are given in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3 Athlete Directors and Firm Performance during the Recent Global Financial Crisis

Variable	(1) Tobin's Q	(3) ROA	(2) Stock return	(3) Tobin's Q	(6) ROA	(54) Stock return
Athlete	0.126***	0.010***	-0.503***			
	(0.016)	(0.003)	(0.134)			
Athlete ratio				0.911***	0.006	-4.071 ***
				(0.091)	(0.033)	(1.33)
Crisis	-0.356***	-0.038***	-0.089	-0.345***	-0.038***	-0.087
	(0.047)	(0.003)	(0.077)	(0.049)	(0.003)	(0.076)
Athlete×Crisis	0.062**	0.005	0.333**			
	(0.027)	(0.004)	(0.134)			
Athlete ratio ×Crisis				0.490*	0.009**	2.358***
				(0.272)	(0.004)	(1.029)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country cluster	Yes	Yes	Yes	Yes	Yes	Yes
Observations	36,536	36,341	35,246	36,536	36,341	35,246
R-squared	0.207	0.278	0.072	0.207	0.278	0.072

This table presents the athlete regression results for the relation between athlete directors and firm value during the financial crisis. The estimations are based on a sample of all OECD countries over the period 2004-2009. The dependent variables are Tobin's Q, the return on assets (ROA) and the stock return, respectively. Tobin's Q is defined as the ratio of the market value of assets to the book value of assets. ROA is the ratio of net income to the book value of assets. Stock return is defined as the annual buy-and-hold returns. Crisis is a dummy variable that is equal to one for the financial crisis period (2007-2009), and zero otherwise. Athlete is a dummy variable that is equal to one if a firm has at least one athlete director and zero otherwise. Athlete ratio is the ratio of athlete directors to board size. The control variables are the same as in Table 2. All regressions include industry, country, and year fixed effects. Variable definitions are provided in Appendix A. Robust standard errors are provided in parentheses and are clustered by country. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 4 Athlete Directors and Firm Performance (PSM Results)

Variable	(1) Tobin's Q	(2) ROA	(3) Tobin's Q	(4) ROA
Athlete	0.066***	0.044**		
	(0.019)	(0.002)		
Athlete ratio			0.627***	0.031*
			(0.190)	(0.018)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Country cluster	Yes	Yes	Yes	Yes
Observations	5,930	5,884	5,930	5884
R-squared	0.224	0.299	0.224	0.299

This table presents robustness tests on the association between athlete directors and firm performance. We select a matching sample from firms without athlete directors. We use nearest-neighbour propensity score matching based on country, year, industry, Academic, Financial expertise, Legal expertise, Education, Independence, Male, Foreign, Board size, Firm size, and all other board and firm-level variables that are included in Table 2. The dependent variables are Tobin's Q and the return on assets (ROA), respectively. Tobin's Q is defined as the ratio of the market value of assets to the book value of assets. ROA is the ratio of net income to the book value of assets. Athlete is a dummy variable that is equal to one if a firm has at least one athlete director and zero otherwise. Athlete ratio is the ratio of athlete directors to board size. The control variables are the same as in Table 2. All regressions include industry, country, and year fixed effects. Variable definitions are provided in Appendix A. Robust standard errors are given in parentheses and are clustered by country. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 5 Athlete Directors and Firm Value (2SLS Results)

Panel A: First-stage Results - Prediction of Athlete and Athlete ratio		
Variable	Athlete	Athlete ratio
Olympic medals	0.017***	0.002***
	(0.004)	(0.0005)
Olympic sports	0.077***	0.009***
	(0.020)	(0.002)
Controls	Yes	Yes
Industry FE	Yes	Yes
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	93,320	93,320
R-squared	0.050	0.041

Panel B: Second-stage Results - Athlete Directors and Firm Value		
Variable	Tobin's Q	Tobin's Q
Athlete^	2.038**	
	(0.948)	
Athlete ratio^		15.391**
		(7.386)
Controls	Yes	Yes
Industry FE	Yes	Yes
Country FE	Yes	Yes
Year FE	Yes	Yes
Observations	93,320	93,320
R-squared	0.152	0.164

Durbin–Wu–Hausman Test for Endogeneity		
	Athlete	Athlete ratio
Test Statistic	4.603**	4.213**
(p-value)	(0.031)	(0.040)

This table presents the results of regressions to predict Athlete and Athlete ratio, respectively. In the first stage, the dependent variable is Athlete or Athlete ratio. Athlete is a dummy variable that is equal to one if a firm has at least one athlete director and zero otherwise. Athlete ratio is the ratio of athlete directors to board size. In the second stage, the dependent variable is Tobin's Q, which is defined as the ratio of the market value of assets to the book value of assets. Athlete^ is the predicted probability that a firm has at least one athlete director, taken from the first-stage regression. Athletic ratio^ is the predicted ratio of athlete directors to board size, taken from the first-stage regression. Controls are the control variables, which are the same as those in Table 2. We perform a Durbin–Wu–Hausman test for endogeneity and the chi-squared and p-value are provided. All regressions include industry, country, and year fixed effects. Variable definitions are provided in Appendix A. Robust standard errors are given in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6 The Backgrounds of the Athlete Directors and Firm Value

Variable	(1)	(2)	(3)	(4)	(5)
Team-sport	0.107**				
	(0.040)				
Confrontational sport		0.142***			
		(0.029)			
Achievement			-0.075		
			(0.181)		
Executive athlete				0.076	
				(0.048)	
Athlete_education					0.029
					(0.033)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Country cluster	Yes	Yes	Yes	Yes	Yes
Observations	2,965	2,965	2,965	2,965	2,956
R-squared	0.279	0.280	0.278	0.278	0.282

This table presents additional tests on the association between athlete directors and firm value. We select a matching sample from the firms without athlete directors. We use a nearest-neighbour propensity score matching based on country, year, industry, Academic, Financial expertise, Legal expertise, Education, Independence, Male, Foreign, Board size, Firm size, and all other board and firm-level variables that are included in Table 2. The dependent variable is Tobin's Q. Tobin's Q is defined as the ratio of the market value of assets to the book value of assets. Team-sport is defined as the ratio of team-sport athlete directors to all athlete directors on the board. Confrontational sports is defined as the ratio of athlete directors who competed in confrontational sports to all athlete directors on the board. Achievement is defined as the ratio of athlete directors who won a medal at the Olympics to all athlete directors on the board. Executive athlete is defined as the ratio of executive athletes to all athlete directors on the board. Athlete_education is defined as the average educational level of the athlete directors. The control variables are the same as in Table 2. All regressions include industry, country, and year fixed effects. Variable definitions are provided in Appendix A. Robust standard errors are given in parentheses and are clustered by country. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 7 Athlete Directors and Firm Policy

Variable	Investment (1)	Investment (2)	Leverage (1)	Leverage (2)
Athlete	-0.222*		0.009**	
	(0.128)		(0.004)	
Athlete ratio		-1.854*		0.030
		(1.018)		(0.025)
Academic	-0.587**	-0.588**	-0.074***	-0.073***
	(0.254)	(0.253)	(0.027)	(0.027)
Financial expertise	-0.184	-0.185	0.037***	0.037***
	(0.408)	(0.410)	(0.009)	(0.009)
Legal expertise	0.309	0.307	0.082***	0.082***
	(0.266)	(0.266)	(0.016)	(0.016)
Education	0.283***	0.283***	-0.029***	-0.029***
	(0.087)	(0.087)	(0.005)	(0.005)
Board size	-0.022	-0.023	0.002	0.002
	(0.017)	(0.017)	(0.001)	(0.001)
Independence	-3.330***	-3.330***	-0.061	-0.061
	(0.551)	(0.551)	(0.073)	(0.073)
Male	1.620***	1.623***	-0.010	-0.010
	(0.346)	(0.344)	(0.019)	(0.019)
Foreign	-0.288	-0.288	-0.023**	-0.023**
	(0.270)	(0.270)	(0.011)	(0.011)
Firm size	-0.068**	-0.068**	0.037***	0.037***
	(0.027)	(0.027)	(0.002)	(0.002)
Sales growth	1.555***	1.555***	-0.010***	-0.010***
	(0.206)	(0.206)	(0.003)	(0.003)
Leverage	0.612**	0.611**		
	(0.301)	(0.301)		
Cashflow	3.403***	3.404***	-0.112***	-0.112***
	(0.622)	(0.622)	(0.034)	(0.034)
Law	0.128	0.129	0.022**	0.022**
	(0.117)	(0.118)	(0.008)	(0.008)
Corruption	-0.165	-0.165	-0.011*	-0.011*
	(0.023)	(0.132)	(0.006)	(0.006)
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Country cluster	Yes	Yes	Yes	Yes
Observations	87,383	87,382	93,854	93,854
R-squared	0.282	0.282	0.347	0.347

This table presents the OLS regression results for the relation between athlete directors and firms' investment and leverage. The dependent variable is either the ratio of total investment to total assets or the leverage ratio. Athlete is a dummy variable that is equal to one if a firm has at least one athlete director and zero otherwise. Athlete ratio is the ratio of athlete directors to board size. Board size is the number of directors sitting on the board. Academic, Financial expertise, Legal expertise, Independence, Male, and Foreign are the percentages of directors with academic experience, financial expertise, and legal expertise, and non-executive, male, and foreign directors on the board, respectively. Education is the average educational level of the directors. Firm size is the logarithm of the firm's total assets. Sales growth is the annual growth rate in sales. Leverage is the book value of debt over total assets. Cashflow is the ratio of funds from operations to net sales. Law is the law and order index, obtained from the International Country Risk Guide Table 3B. Corruption is the corruption index, obtained from the International Country Risk Guide Table 3B. All regressions include industry, country, and year fixed effects. Variable definitions are provided in Appendix A. Robust standard errors are given in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix A Variable definitions

Variable	Description
Dependent variables	
Tobin's Q	Defined as the market value of assets over the book value of assets. The market value of assets is calculated as the book value of assets minus the book value of equity plus the market value of equity.
ROA	The ratio of net income to total assets
Stock return	Annual buy-and-hold returns
Board governance variables	
Athlete	A dummy variable that equals 1 for firms that have at least one athlete director on the board, and zero otherwise
Athlete ratio	The proportion of athlete directors on the board
Academic	The proportion of university professors on the board
Financial expertise	The proportion of directors with financial expertise on the board
Legal expertise	The proportion of directors with legal expertise on the board
Education	The average educational level of the directors
Board size	The total number of directors on the board
Male	The proportion of male directors on the board
Foreign	The proportion of foreign directors on the board
Independence	The proportion of non-executive directors on the board
Education	The average educational level of the board members
Team-sport	The ratio of team-sport athlete directors to total athlete directors on the board
Confrontational sports	The ratio of athlete directors who competed in confrontational sports to all athlete directors on the board
Achievement	The ratio of athlete directors who won a medal at the Olympics to all athlete directors on the board
Executive athlete	The ratio of executive athletes to all athlete directors on the board
Athlete_education	The average educational level of the athlete directors
Other control variables	
Firm size	The natural logarithm of the firm's total assets
Sales growth	The annual growth rate of total sales
Leverage	The ratio of the book value of debt to total assets
Cashflow	The ratio of funds from operations to net sales. The funds from operations are the sum of net income and all non-cash charges and credits.
Crisis	A dummy variable that equals 1 for the years of the recent global financial crisis (2007-2009), and 0 otherwise

Rule of law	The law and order index, obtained from the International Country Risk Guide Table 3B. The values for 2014 and 2015 are calculated as the average value over 2011-2013. Rule of law values range from 0 to 6. A higher value means a stronger rule of law.
Corruption	The corruption index, obtained from the International Country Risk Guide Table 3B. The values for 2014 and 2015 are calculated as the average value over 2011-2013. Corruption values range from 0 to 6. A higher value means less corruption.
Instrumental variables	
Olympic medals	The total number of medals (including gold, silver, and bronze) a country won in the Summer and Winter Olympic Games, scaled by 100
Olympic sports	The total number of sports in which a country participated over both Summer and Winter Olympic Games, scaled by 100