

## **Does board of director's age diversity affect financial performance in agricultural sector? Evidence from an emerging country**

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### **Abstract**

This paper investigates if board of director's age diversity impact financial performance in the agricultural sector of an emerging economy. Although exploring the effect of board of director's age diversity on financial performance has been widely researched in the last years, this is the first study conducted in the agricultural sector, and the first study which explores the age effect on financial performance in the region of Eastern Europe as well. Our sample is consisting of all Serbian agriculture companies listed on the Belgrade Stock Exchange for the period of 2013-2016. We find that the average age of the board of director is 51 years, with the standard deviation of 7.14779. The average age of the chairman is also 51, but the standard deviation is vast higher (S - 12.643). Return on capital employed (ROCE) and Return on equity (ROE) are used as indicators of financial performance. The profitability of the companies in the sample is very low. The average return on capital employed is 3,2%. We did not find evidence that board of director's age impact financial performance, as well as we did not find correlation between the chairman age and profitability. We also did not find evidence that board of director's age diversity has impact on financial performance. These results indicate that age factor should not be considered as important in board constitution in the agricultural sector of an emerging economy. These results also indicate that the person of

chairman does not significantly influence the other members of the board in order to increase firm profitability.

**Keywords:** Financial performance. Age diversity. Board of directors. Chairman. Agriculture companies

## 1. Introduction

Since Hambrick and Mason (1984) have introduced their echelons theory (UET), many researchers tried to explain the correlation between the organizational outcome and executive attributes. The management field has accumulated a substantial amount of research over the past 3 decades built on upper echelons theory, which posits that CEO characteristics manifest in firm strategic actions and, in this way, influence future firm performance. (WANG, HOLMES JR, OH, ZHU, 2016, p. 775; HAMBRICK, D.C. 2007)

A rising interest for this topic is not a surprise having in mind that CEO demographics, as well as their personality attributes and behaviorally characteristics, may significantly influence their strategic choices, and through these choices, the firm performance. But the link between executive attributes and strategic choices is less clear than the effect of executive attributes on firm performance as stated by Liu, Fisher and Chen (2018, p. 789).

It seems that the gender effect on performance receives the highest attention among these numerous studies (CHILD, 1975; KESNER, 1988; SHRADER, BLACKBURN, ILES; 1997; CARTER, SIMKINS, SIMPSON, 2003; ERHARDT, WERBEL, SHRADER, 2003; FARRELL, HERSCH, 2005; SMITH, SMITH, VERNER; 2006; CAMPBELL, MÍNGUEZ-VERA, 2008; FRANCOEUR, LABELLE, SINCLAIR-DESGAGNÉ, 2008; ADAMS, FERREIRA, 2009; ADAMS, GRAY, NOWLAND, 2010; JOECKS, PULL, VETTER, 2013; KNEŽEVIĆ, PAVLOVIĆ, BOJIČIĆ, 2017; REGUERA-ALVARADO, DE FUENTES, LAFFARGA, 2017; GORDINI, RANCATI, 2017; MCGUINNESS, VIEITO, WANG, 2017; CONYON, HE, 2017; GALBREATH, 2018; AHMADI, NAKAA, BOURI, 2018; LI, CHEN, 2018). As it could be seen, the gender effect on firm performance takes attention of researchers for almost half of century, and the interest for this topic is rising in the latest years. Researches were also conducted to explore the effect of self-evaluation (Hiller and Hambrick, 2005; Simsek et al, 2010), hubris (Hayward & Hambrick, 1997), humility (Ou et al., 2014), narcissism (Chatterjee & Hambrick, 2007, 2011), and overconfidence (Chen,

Crossland, & Luo, 2015) of the CEO on firm performance, as well as the impact of CEO's background, such as functional experience (Barker, Mueller, 2002; Datta, Rajagopalan, 1998), education (Ng, Feldman, 2009), and international experience (Carpenter, Sanders, Gregersen, 2001; Khavul, Benson, Datta, 2010). (According: LIU, FISHER, CHEN, 2018, p. 789) Ages, as a CEO demographics attribute has also been widely considered, but no one of these research pay attention that the most of these personal attributes could change over the lifetime. As Tasselli, Kilduff and Landis (2018, p. 467) have recently mentioned, evidence and theory concerning personality change are only just emerging in the organizational behavior research landscape, despite personality psychology findings. Damian, Spengler, Sutu and Roberts (2018, p. 18) recently support Erikson (1963), who postulated that people mature as they age, and change continuously throughout the life span, pressed to adapt by the ever-increasing social demands and developmental tasks required by each life stage. So, their findings suggest that personality has a stable component across the life span, both at the trait level and at the profile level, and that personality is also malleable and people mature as they age. (DAMIAN, ET AL, 2018, p. 18) A high correlation between age and nonverbal intelligence has been noticed a long time ago. (Chown, 1960, p. 492) Psychologists also suggest that ability of emotional intelligence may also vary with age, due to fact that several emotional functions have been shown to vary with age, including positive and negative affect (CABELLO, SORREL, FERNÁNDEZ-PINTO, 2016, p. 1486). But as Taylor (1975, p. 74) warned a long time ago, the implications for managerial decision making depend upon the extent to which impairments occur within the normal managerial age range.

It is probable that the majority of explored personal attributes (experience, self-evaluation, hubris, humility, narcissism, etc.) are linked to age. Some studies take into account that personal attributes are linked to age, most often, taking into account age as an indicator of experience. But huge numbers of studies do not link age with personal attributes. It is not a rarity to find study which explore board or CEO heterogeneity and firm performance which is not taking age diversity into account. So, it could be concluded that the influence of board and CEO age on firm performance is not adequately caught in all studies.

## 2. Theoretical Aspect of Age Effect on Business Decisions and Work Attitudes

Besides it is explored as an organizational phenomenon, age influence on cognitions, values, perceptions and behavior is widely investigated by sociologists, criminologists, psychologists and religionists. Even the first studies of the top management age effect on performance dated from the period of the Second World War (See: HART, MELLONS, 1970, p. 51), as Strough, Löckenhoff and Hess (2015, p.1-2) state, the field of aging and decision making has dramatically expanded since the turn of the millennium. The extend literature confirms that top management's age is directly or indirectly related to firm performance. In the recent past, the topic of how director/CEO age influences corporate performance even gained attention of magazines and newspapers. The fact that over the past decade, the number of CEOs ages 65 to 69 nearly doubled to 36, while those ages 70 to 74 increased from nine to 13, according to a survey of Fortune 500 CEOs by Korn Ferry (according: DELLA CAVA, CHARISSE, 2016) certainly contributed to the increase public interest on this topic, as well as it is contributed by the famous names from the corporate world like Warren Buffett (88), Rupert Murdoch (88), Ellen Gordon (87), Leslie Wexner (81), or Sumner Redstone who was 92 years old when he stepped down concerning over his mental competence or Melvin Gordon, the oldest CEO of a company trading on a major American stock exchange, who was 95 years old at the time of his death in 2015.

The idea that young directors improve firm performance has been present between scholars for a long time. Hart and Mellons (1970, p. 50) wrote almost 50 years before, that younger directors are more receptive to new ideas and tend to be prepared to work harder for the growth of their companies; not only do they have greater physical and mental energy, they also have more incentive to work for growth because they want to "make their mark" in society, while senior directors, facing retirement, do not want to set the *Thames on fire*, but merely wish to maintain their companies in a reasonably strong financial position so that they can avoid being taken over by the "young men in a hurry". (HART, MELLONS, 1970, p. 50) Taylor (1975, p. 81) noted that older managers had some difficulty in integrating information into accurate decisions. From these days, many scholars highlight the benefit of having younger directors. Liu and associates (2018, p. 793) recently states that younger CEOs are more likely to have the physical and mental stamina to perform at a higher level, have a lower psychological commitment to the status quo, be less concerned about financial and career security, and hence be more inclined to take risks when making strategic decisions, while

older CEOs are more likely to employ outdated business practices, thus potentially dragging down performance.

It is also well known that conservatism increases with age. (See: CORNELIS, VAN HIEL, ROETS, KOSSOWSKA, 2009) This issue is mentioned in management literature as well. (QI, ET AL, 2017, p. 147) The recent study of Sun, Kent, Qi and Wang (2017) which find that younger male are less conservative and risk averse than others, is a rare study which pay attention on gender differences. But the difference between conservatism in the social-cultural and economic domains it not often adequately distinguished in the management literature. While increases in cultural conservatism with age is confirmed, the influence of age on economic conservatism is far to be completely clear. (See: CORNELIS, AT, AL, 2009)

Simultaneously with the popular thesis that older employees should be replaced with the younger one in order to improve firm performance, scholars warn that there are many age stereotypes. Fifty-three years ago, Aaronson (1966, p. 431) suggests that increasingly negative stereotypes are associated with increasing age and suggest that older workers become the double victims of age stereotypes. In many instances of age discrimination, it is quite likely that managerial bias against older workers is based on age stereotypes, that is, widely held beliefs regarding the characteristics of people in various age categories. (ROSEN, JERDEE, 1976, p. 428) From this time, many studies confirmed that age stereotypes are still present. Recently Wang and associates (2016, p. 819) have revealed in their study, that CEO age did not predict the broad indicator of firm strategic actions. This finding is also counter to age stereotypes that older workers, including executives, are less aggressive and more risk averse. As they said, "our findings caution against making broad generalizations about the preferences of older CEOs." (Wang et al., 2016, p. 819) Newly research even suggests that CEO birth order is more related to strategic risk taking than the CEO age. (CAMPBELL, JEONG, GRAFFIN, 2018)

Although, Peterson and Spiker (2005, p. 165) suggest, that the time has come to take a positive psychology perspective on older workers. By recognizing the positive contributory value that older workers can bring through their high levels of psychological, intellectual, emotional, and social capital, organizations can reap financial and competitive benefits. Namely, the older employees have unique value because they contribute to a dimension of human resources obtained only through many years of working in a specific organization and learning a specific industry; they contribute socially complex dynamics, such as social connections developed across years of working in a given business environment, and finally,

older employees often have a higher level of caring and responsibility than do younger employees (LE, ET AL, 2011, p. 250). Taylor (1975, p. 81) find that older decision makers were able to diagnose the value of information more accurately than were younger decision makers. Hambrick and Mason (1984) state that insight and complex reasoning that come with age in a CEO may provide an advantage to firms, such that firms led by older CEOs are more effectively managed and hence generate better overall results. (LIU, FISHER, CHEN, 2018, p. 793)

Above that, huge numbers of scholars find that older decision makers are more ethical than the younger one, while numerous studies confirmed that age of the decision maker is positively related to the quality financial reporting and lower uses of earnings management practices. (See: PAVLOVIĆ, ET AL, 2019) This finding put in questions the reported results of some studies which find that engaging younger CEO leads to better performance.

Noted characteristics of older decisions-maker, as being less bolder with tendency to take longer to reach decisions, less confident of their decisions and more flexible in altering them in the face of adverse consequences of the choice (TAYLOR, 1975, p. 81), that they adopted more conservative approach (QI, ET AL, 2017, p.147), and they are less risk oriented are sometimes mentioned as negative characteristics. As Taylor (1975, p. 81) warns, the tendency for older decision makers to seek greater amounts of information could have been influenced by years of management experience, but the older group showed no tendency to process information more slowly. It has been seen many times, that less risk oriented strategies and conservative approach has avoiding losses as consequences, particularly in finance industry in the crises periods. Experience sometimes may help to avoid mistakes. Due to limited experiences, younger CEOs often lack the complex and well-developed cognitive schema that older CEOs have. (WANG, ET AL, 2016, p, 781) In turn, younger CEOs have greater difficulty seeing, understanding, and appreciating the possibility that their strategic choices might produce returns below what they envision. (WANG, ET AL, 2016, p. 781)

Numerous studies explored the age effect on firm performance with mixed results. (See: EKLUND, PALMBERG, WIBERG, 2009; HILLER, BEAUCHESNE, WHITMAN, 2013; WANG, ET AL, 2016; CROCI, DEL GIUDICE, JANKENSGÅRD, 2017; LIU, FISHER, CHEN, 2018). But, apparently, differences between younger and older director exist in many domains, as preferences for acquisitions and greenfield investments to joint ventures (YIM, 2013), attitude for international diversification (HERRMANN, DATTA, 2006), risk-averse attitude (SERFLING, 2014; CHOWDHURY, FINK, 2017), attitude for R&D

investment (CHOWDHURY, FINK, 2017; BARKER, MUELLER, 2002), risk taking and product innovation (WANG, ET AL, 2016), etc. (See: LIU, FISHER, CHEN, 2018, p. 798) Andreou, Louca and Petrou (2017, p. 1287) show that firms with younger CEOs are more likely to experience stock price crashes, including crashes caused by revelation of negative news in the form of breaks in strings of consecutive earnings increases. Li, Low and Makhija (2017, p. 89) claim that younger CEOs are more likely to enter new lines of businesses and exit from existing ones, that they undertake bolder expansions and divestments, which lead to significant increases and decreases in firm size, respectively. However, such busier investment style of the younger CEOs appears not to hurt firm efficiency. (LI, ET AL, 2017, p. 89)

### **3. Theoretical Aspect of Age Diversity Effect on Firm Performance**

Researches on board of director diversity effect, included age diversity effect, on firm performance started at the end of the eighties and gain popularity in the nineties of the twenty century. (see: MILLIKEN, MARTINS, 1996, p. 425-433) In the recent past, many studies were exploring the effect of board diversity on performance and other different business aspects. (See: GILPATRICK, 2000; KANG, CHENG, GRAY, 2007; MAHADEO, SOOBAROYEN, HANUMAN, 2012; FERRERO-FERRERO, FERNÁNDEZ-IZQUIERDO, MUÑOZ-TORRES, 2015; KATMON, MOHAMAD, NORWANI, AL FAROOQUE, 2017) Simultaneously, age diversity has emerged as a major research topic in the extant literature on work group diversity (Schalk, van der Heijden, de Lange, van Veldhoven, 2011; Stone, Tetrick, 2013). (SEONG, HONG, 2018, p. 621). Board of director diversity can be defined as the extent to which a board of director is heterogeneous, and board of director's age diversity can be defined as the extent to which a board of director is heterogeneous with respect to the age of its members. (LI, CHU, LAM, LIAO, 2011, p. 247) As Li and associates (2011, p. 247) recently mentioned, today, the issue of age diversity has become increasingly important in human resource management due to the aging of workforces throughout the world. So, it is not surprising that age diversity is now one the three most investigated dimension of demographic diversity.

Cox and Blake (1991, p. 45, 54) highlight almost three decades ago that the management literature suggested that organizations should value demographic diversity to enhance firm performance, as the results of gaining competitive advantage in creativity,

problem-solving capability, and flexible adaptation to change. Today, it is widely considered that age diversity may enhance firm performance due the fact that age diversity offers a broad range of perspectives, skill and insights that can enhance creativity and capabilities in a firm (Avery, McKay, and Wilson, 2007; Peterson and Spiker, 2005). (LI, ET AL, 2011, p. 250) Literature on age diversity suggest that generational diversity may prevent groupthink and lead to better monitoring by balancing the enthusiasm, energy, and risk appetite associated with younger directors, with the experience, caution, and risk averseness of older ones. (Ararat, Aksu, Tansel Cetin, 2015, p. 86) As scholars suggest, age diversity can improve marketing and financial performance (Jayne and Dipboye, 2004), and can help a firm to better understand the preferences and demands of customers of different ages (Morrison, 1992). (LI, ET AL, 2011, p. 250) As Seong and Hong (2018, p. 621) recently state, it is crucial for the success and productivity of firms that they manage age heterogeneous teams harmoniously, and managers are expected to possess credible insights into how to optimally lead and manage work teams of diverse age composition. Ararat, Orbay and Yurtoglu (2010) argue that diversity in board members' age will lead to variation in values and perspectives since each generation is unique and special in the sense that their worldview is developed according to different experiences, social, political and economic environments, and events. (KATMON, MOHAMAD, NORWANI, AL FAROOQUE, 2017, p.9)

Unmanaged or poorly managed diversity can result in negative outcomes such as high turnover and lower organisational performance (e.g., Ali, Metz, & Kulik, 2015; Kunze et al., 2013; Schneid, Isidor, Steinmetz, Kabst, 2016). (ALI, FRENCH, 2019, p. 2) Houle (1990) argues that an age-diverse board can ensure that a more efficient division of labour operates at board level with the older group providing the experience, the network and the financial resources, the middle-aged group in charge of the main executive responsibilities and a younger group 'learning the ropes' and developing its knowledge of the business. (MAHADEO SOOBAROYEN, HANUMAN, 2012, p. 377). For a successful board a mixture of different ages of directors is desirable to disseminate knowledge and experience from the senior group to the younger group of directors that could contribute to robust decision making. (KATMON, MOHAMAD, NORWANI, AL FAROOQUE, 2017, p. 9) Although, all studies do not find clear evidence on the impact of age diversity on corporate performance (See: FERRERO-FERRERO, ET AL, 2015)

While Kilduff, Angelmar and Mehra (2000), Kim and Lim (2010) and Darmadi (2011) report positive effect of board age diversity on performance, the studies of Randøy, Thomsen and



Oxelheim (2006) as well as Kusumastuti, Supatmi and Sastra (2007) did not find significant impacts. Some results are mixed, as the one of Ararat, Orbay and Yurtoglu (2010), who find that age diversity has a significant influence on return on equity (ROE), but not on Tobin's Q.

According to prior research, a firm's country of origin, in particular whether they are from a Western or East Asian society, may also have a moderating effect on the relationship between age diversity and firm performance, (LI, ET AL, 2011, p. 252) primarily due to the preference for individualism or collectivism as a significant cultural value of some areas. But, as Cohen, Wu and Miller (2016, p. 1237) recently highlight, any cultural system (be it a country or a religion) contains both individualistic and collectivistic features. Studies exploring the relationship of the contextual context and the age diversity effect on firm performance usually take that the exploring region (country) has a clear unitary feature, and do not catch the effect of religion, which can be important as the cross-cultural psychologists suggest. (COHEN, ET AL, 2016). Taking into account that fact is more important if the migration process has occurred in the analyzed region (country).

#### **4. Hypothesis Development and Variable Description**

The paper tests the hypothesis related to the board of director's age and its effects on financial performance of Serbian agricultural companies in the period 2013–2016.

We posted the following hypothesis:

H 0: There is association between the board of director's chairman age and ROCE

H 1: There is association between the board of director's chairman age and ROE

H 2: There is association between the board of director's age diversity and ROCE

H 3: There is association between the board of director's age diversity and ROE

We decided to measure these effects using the following variables: *dependent variable* is firm financial performance, while *independent* are the board of director's chairman age and the age diversity of the board of director. Accounting variables are calculated from the firm's financial statements for the four year period 2013–2016.

## 5. Data and Methodology of a Research

The influence of board of director's age diversity on financial performance is tested on a sample consisting of all Serbian agriculture companies (agriculture, fishing, forestry sector) listed on the Belgrade Stock Exchange for the period 2013-2016. This includes 35 companies. The financial information was obtained from the Serbian Business Register Agency web site for the analyzed period. The age of the board of director's members has also been obtained by the Serbian Business Register Agency web site.

Return on capital employed (ROCE) is used as indicator of financial performance, i.e. business profitability. This financial ratio measures a company's profitability and the efficiency with which its capital is used without taking account of the current liabilities. We exclude the current liabilities due the fact that taking them into account could distort the results as a consequence of different stock procurement policies and possible seasonal peaks that are specific to some companies in the agricultural sector. ROCE is calculate as Earnings before interest and tax - EBIT/ (total assets less current liabilities)

The second used indicator is Return on capital (ROE). Due the fact that financial decisions may also be influenced by the personal characteristics of the board members, particularly their risk taking attitude, we have tested does ROE is influenced by the age of the board members.

Under Serbian corporate law ("Official Gazette of the Republic of Serbia", no. 36/2011, 99/2011, 83/2014 - and 5/2015), companies may operate under either a one-tier or two-tier corporate governance. In both systems, it could be one or more directors. The director, i.e. the board of directors is governing the company. Public joint stock companies must have board of directors with 3 members at least (Article 383). (PAVLOVIĆ, KNEŽEVIĆ, BOJIČIĆ, 2019, p. 256) In our sample, each company is governed by a board of directors.

## 6. Key findings on influence of board of director's age diversity on financial performance

**Table 1. Set of Descriptive statistics of variables for the period 2013-2016**

### Board of director members' age

|      | Male | %     | Female | %     | Summary | %     |
|------|------|-------|--------|-------|---------|-------|
| < 40 | 9    | 30.00 | 1      | 20.00 | 10      | 28.57 |

|                |    |        |   |        |           |               |
|----------------|----|--------|---|--------|-----------|---------------|
| <b>40-50</b>   | 4  | 13.33  | 2 | 40.00  | <b>6</b>  | <b>17.14</b>  |
| <b>50-60</b>   | 10 | 33.33  | 2 | 40.00  | <b>12</b> | <b>34.29</b>  |
| <b>&gt; 60</b> | 7  | 23.33  | / | /      | <b>7</b>  | <b>20.00</b>  |
| <b>Summary</b> | 30 | 100.00 | 5 | 100.00 | <b>35</b> | <b>100.00</b> |

Source: Author's own calculations

**Descriptive Statistics**

|                              | N  | Minimum | Maximum | Mean    | Std. Deviation | Variance |
|------------------------------|----|---------|---------|---------|----------------|----------|
| Average age of board members | 34 | 37.00   | 70.67   | 50.9109 | 7.23835        | 52.394   |
| Valid N (listwise)           | 34 |         |         |         |                |          |

Source: Author's own calculations

|                    | N  | Minimum | Maximum | Mean  | Std. Deviation | Variance |
|--------------------|----|---------|---------|-------|----------------|----------|
| Chairman (Age)     | 34 | 32      | 77      | 50.82 | 12.736         | 162.210  |
| Valid N (listwise) | 34 |         |         |       |                |          |

Source: Author's own calculations

**Descriptive statistics of the relationship between age structure of women with the rest of the board members**

|              | N     | The youngest member of the board Women | Total number of women in the board | Number of women younger than the average board age | Number of women older than the average board age |
|--------------|-------|--|------------------------------------|--|--|
| Mixed boards | 19    | 8                                      | 23                                 | 14   | 9  |
| In %         | 55.88 | 42.11                                  | 100.00                             | 60.87  | 39.13  |

Source: Author's own calculations

**Table 2. Influence of board of director's age on ROCE**

**Average age of board members & Average ROCE**

|                              | Mean      | Std. Deviation | N  |
|------------------------------|-----------|----------------|----|
| Average ROCE                 | .03192986 | .0567          | 35 |
| Average age of board members | 50.9820   | 7.14779        | 35 |

Source: Author's own calculations

**Correlations**

|                     | Average ROCE | Average age of board members |
|---------------------|--------------|------------------------------|
| Pearson Correlation | 1.000        | -.031                        |
|                     | -.031        | 1.000                        |
| Sig. (1-tailed)     | .            | .430                         |

|   |              |      |    |
|---|--------------|------|----|
|   | Average age  | .430 | .  |
| N | Average ROCE | 35   | 35 |
|   | Average age  | 35   | 35 |

Source: Author's own calculations

**Model Summary<sup>b</sup>**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .031 <sup>a</sup> | .001     | -.029             | .057541958                 | .001              | .031     | 1   | 33  | .861          |

a. Predictors: (Constant), Average age of board members

b. Dependent Variable: Average ROCE

Source: Author's own calculations

**ANOVA<sup>a</sup>**

| Model |            | Sum of Squares | df | Mean Square | F    | Sig.              |
|-------|------------|----------------|----|-------------|------|-------------------|
| 1     | Regression | .000           | 1  | .000        | .031 | .861 <sup>b</sup> |
|       | Residual   | .109           | 33 | .003        |      |                   |
|       | Total      | .109           | 34 |             |      |                   |

a. Dependent Variable: Average ROCE

b. Predictors: (Constant), Average age of board members

Source: Author's own calculations

The ANOVA table shows that this relationship is significant at the level Sig. 0.861 which is higher than 0.005. The Adjusted R square shows negative relationship between variables (- 0.029) at the level of significance of 0.861. According to the results obtained, this relationship can be considered as statistically insignificant. According to the above mentioned this relationship can be considered as statistically insignificant with the F value of 0.031.

**Coefficients<sup>a</sup>**

| Model |                              | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|------------------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                              | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)                   | .044                        | .071       |                           | .624  | .537 |
|       | Average age of board members | .000                        | .001       | -.031                     | -.177 | .861 |

a. Dependent Variable: Average ROCE

Source: Author's own calculations

**Table 3. Influence of board of director's age diversity on ROCE**

**Age diversity & Average ROCE**

**Descriptive Statistics**

|               | Mean      | Std. Deviation | N  |
|---------------|-----------|----------------|----|
| Average ROCE  | .03192986 | .0567          | 35 |
| Age diversity | 17.71     | 8.009          | 35 |

Source: Author's own calculations

**Correlations**

|                     |               | Average ROCE | Age diversity |
|---------------------|---------------|--------------|---------------|
| Pearson Correlation | Average ROCE  |              | -.118         |
|                     | Age diversity | -.118        |               |
| Sig. (1-tailed)     | Average ROCE  | .            | .250          |
|                     | Age diversity | .250         | .             |
| N                   | Average ROCE  | 35           | 35            |
|                     | Age diversity | 35           | 35            |

Source: Author's own calculations

**Model Summary<sup>b</sup>**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|-------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                   |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | .118 <sup>a</sup> | .014     | -.016             | .057168608                 | .014              | .464     | 1   | 33  | .500          |

a. Predictors: (Constant), Age diversity

b. Dependent Variable: Average ROCE

Source: Author's own calculations

**ANOVA<sup>a</sup>**

| Model |            | Sum of Squares | df | Mean Square | F    | Sig.              |
|-------|------------|----------------|----|-------------|------|-------------------|
| 1     | Regression | .002           | 1  | .002        | .464 | .500 <sup>b</sup> |
|       | Residual   | .108           | 33 | .003        |      |                   |
|       | Total      | .109           | 34 |             |      |                   |

a. Dependent Variable: Average ROCE

b. Predictors: (Constant), Age diversity

Source: Author's own calculations

The ANOVA table shows that this relationship is significant at the level Sig. 0.500 which is higher than 0.005. The Adjusted R square shows negative relationship between variables (- 0.016) at the level of significance of 0.500. According to the results obtained, this relationship can be considered as statistically insignificant. According to the above mentioned this relationship can be considered as statistically insignificant with the F value of 0.464.

**Coefficients<sup>a</sup>**

| Model |               | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|---------------|-----------------------------|------------|---------------------------|-------|------|
|       |               | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)    | .047                        | .024       |                           | 1.967 | .058 |
|       | Age diversity | -.001                       | .001       | -.118                     | -.681 | .500 |

a. Dependent Variable: Average ROCE  
 Source: Author's own calculations

**Table 4. Influence of the chairman's age on ROCE**

|                | Mean  | Std. Deviation | N  |
|----------------|-------|----------------|----|
| Average ROCE   | 0.032 | 0.057          | 35 |
| Chairman (Age) | 51.09 | 12.643         | 35 |

Source: Author's own calculations

**Correlations**

|                     |                | Average ROCE | Chairman |
|---------------------|----------------|--------------|----------|
| Pearson Correlation | Average ROCE   | 1.000        | 0.094    |
|                     | Chairman (Age) | 0.094        | 1.000    |
| Sig. (1-tailed)     | Average ROCE   | .            | 0.296    |
|                     | Chairman (Age) | 0.296        | .        |
| N                   | Average ROCE   | 35           | 35       |
|                     | Chairman (Age) | 35           | 35       |

Source: Author's own calculations

**Model Summary**

| Model | R                  | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|--------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                    |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | 0.094 <sup>a</sup> | 0.009    | -0.021            | 0.057316098                | 0.009             | 0.292    | 1   | 33  | 0.59          |

a. Predictors: (Constant), Chairman (Age)

Source: Author's own calculations

| Model |            | Sum of Squares | Df | Mean Square | F     | Sig.               |
|-------|------------|----------------|----|-------------|-------|--------------------|
| 1     | Regression | 0.001          | 1  | 0.001       | 0.292 | 0.593 <sup>b</sup> |
|       | Residual   | 0.108          | 33 | 0.003       |       |                    |
|       | Total      | 0.109          | 34 |             |       |                    |

a. Dependent Variable: Average ROCE

b. Predictors: (Constant), Chairman (Age)

Source: Author's own calculations

The ANOVA table shows that this relationship is significant at the level Sig. 0.593 which is higher than 0.005. The Adjusted R square shows negative relationship between variables (0.021) at the level of significance of 0.593. According to the results obtained, this relationship can be considered as statistically insignificant. According to the above mentioned this relationship can be considered as statistically insignificant with the F value of 0.292.

| Model |                | Unstandardized Coefficients |            | Standardized Coefficients | t    | Sig. |
|-------|----------------|-----------------------------|------------|---------------------------|------|------|
|       |                | B                           | Std. Error | Beta                      |      |      |
| 1     | (Constant)     | .010                        | .041       |                           | .256 | .800 |
|       | Chairman (Age) | .000                        | .001       | .094                      | .540 | .593 |

a. Dependent Variable: Average ROCE

Source: Author's own calculations

**Table 5. Influence of board of director's age diversity on ROE**

**Average age of board members & Average ROE**

|             | Mean    | Std. Deviation | N  |
|-------------|---------|----------------|----|
| Average ROE | 0.0218  | 0.0672         | 35 |
| Average age | 50.9820 | 7.1478         | 35 |

Source: Author's own calculations

|  | Average ROE | Average age |
|--|-------------|-------------|
|  |             |             |

|                     |             |       |       |
|---------------------|-------------|-------|-------|
| Pearson Correlation | Average ROE | 1.000 | 0.000 |
|                     | Average age | 0.000 | 1.000 |
| Sig. (1-tailed)     | Average ROE | .     | 0.499 |
|                     | Average age | 0.499 | .     |
| N                   | Average ROE | 35    | 35    |
|                     | Average age | 35    | 35    |

Source: Author's own calculations

**Model Summary**

| Model | R                  | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|--------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                    |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | 0.000 <sup>a</sup> | 0.000    | -0.030            | 0.0682                     | 0.000             | 0.000    | 1   | 33  | 0.998         |

a. Predictors: (Constant), Average age

Source: Author's own calculations

**ANOVA<sup>a</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.               |
|-------|------------|----------------|----|-------------|-------|--------------------|
| 1     | Regression | 0.000          | 1  | 0.000       | 0.000 | 0.998 <sup>b</sup> |
|       | Residual   | 0.154          | 33 | 0.005       |       |                    |
|       | Total      | 0.154          | 34 |             |       |                    |

a. Dependent Variable: Average ROE

b. Predictors: (Constant), Average age

Source: Author's own calculations

The ANOVA table shows that this relationship is significant at the level Sig. 0.998 which is higher than 0.005. The Adjusted R square shows negative relationship between variables (- 0.030) at the level of significance of 0.998. According to the results obtained, this relationship can be considered as statistically insignificant.

**Coefficients<sup>a</sup>**

| Model |             | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig.  |
|-------|-------------|-----------------------------|------------|---------------------------|-------|-------|
|       |             | B                           | Std. Error | Beta                      |       |       |
| 1     | (Constant)  | 0.022                       | 0.084      |                           | 0.257 | 0.799 |
|       | Average age | 3.692E-6                    | 0.002      | 0.000                     | 0.002 | 0.998 |

a. Dependent Variable: Average ROE

Source: Author's own calculations



**Age diversity & Average ROE**

|               | Mean   | Std. Deviation | N  |
|---------------|--------|----------------|----|
| Average ROE   | 0.0218 | 0.0672         | 35 |
| Age diversity | 17.71  | 8.009          | 35 |

Source: Author's own calculations

**Correlations**

|                     |               | Average ROE | Age diversity |
|---------------------|---------------|-------------|---------------|
| Pearson Correlation | Average ROE   | 1.000       | -0.236        |
|                     | Age diversity | -0.236      | 1.000         |
| Sig. (1-tailed)     | Average ROE   | .           | 0.086         |
|                     | Age diversity | 0.086       | .             |
| N                   | Average ROE   | 35          | 35            |
|                     | Age diversity | 35          | 35            |

Source: Author's own calculations

**Model Summary**

| Model | R                  | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics |          |     |     |               |
|-------|--------------------|----------|-------------------|----------------------------|-------------------|----------|-----|-----|---------------|
|       |                    |          |                   |                            | R Square Change   | F Change | df1 | df2 | Sig. F Change |
| 1     | 0.236 <sup>a</sup> | 0.056    | 0.027             | 0.0663                     | 0.056             | 1.940    | 1   | 33  | 0.173         |

a. Predictors: (Constant), Age diversity

Source: Author's own calculations

**ANOVA<sup>a</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.               |
|-------|------------|----------------|----|-------------|-------|--------------------|
| 1     | Regression | 0.009          | 1  | 0.009       | 1.940 | 0.173 <sup>b</sup> |
|       | Residual   | 0.145          | 33 | 0.004       |       |                    |
|       | Total      | 0.154          | 34 |             |       |                    |

a. Dependent Variable: Average ROE

b. Predictors: (Constant), Age diversity

Source: Author's own calculations

The ANOVA table shows that this relationship is significant at the level Sig. 0.173 which is higher than 0.005. The Adjusted R square shows positive relationship between variables (0.027) at the level of significance of 0.173. According to the results obtained, this relationship can be considered as statistically insignificant. According to the above mentioned this relationship can be considered as statistically insignificant with the F value of 1.940.

**Coefficients<sup>a</sup>**

| Model         | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig.  |
|---------------|-----------------------------|------------|---------------------------|--------|-------|
|               | B                           | Std. Error | Beta                      |        |       |
| 1 (Constant)  | 0.057                       | 0.028      |                           | 2.065  | 0.057 |
| Age diversity | -0.002                      | 0.001      | -0.236                    | -1.393 | 0.173 |

a. Dependent Variable: Average ROE

Source: Author's own calculations

**Table 6. Relationship between chairmen's age and age of other board members**

**Statistics**

Chairman comparing other board members

|                        |         |         |
|------------------------|---------|---------|
| N                      | Valid   | 35      |
|                        | Missing | 0       |
| Mean                   |         | 0.157   |
| Median                 |         | 0.500   |
| Mode                   |         | 9.00    |
| Std. Deviation         |         | 13.524  |
| Variance               |         | 182.894 |
| Skewness               |         | 0.127   |
| Std. Error of Skewness |         | 0.398   |
| Kurtosis               |         | -0.846  |
| Std. Error of Kurtosis |         | 0.778   |
| Minimum                |         | -22.00  |
| Maximum                |         | 25.00   |

**Statistics**

Chairman comparing other board members -

Absolute number

|                        |         |        |
|------------------------|---------|--------|
| N                      | Valid   | 35     |
|                        | Missing | 0      |
| Mean                   |         | 11.129 |
| Median                 |         | 9.000  |
| Mode                   |         | 9.000  |
| Std. Deviation         |         | 7.445  |
| Variance               |         | 55.432 |
| Skewness               |         | 0.339  |
| Std. Error of Skewness |         | 0.398  |
| Kurtosis               |         | -1.070 |
| Std. Error of Kurtosis |         | 0.778  |
| Minimum                |         | 0.500  |
| Maximum                |         | 25.000 |

Source: Author's own calculations

## 7. Interpretation of the Results

The age profile suggests that 28.57% of the directors in 2016 are under the age 40, 17.14% are between 40 and 50 years old, 34.29 % are between 50 and 60 years old and about

20.0% are older than the age 60. Comparing with the results in Turkey, which is also considered as an emerging country, geography not so far away, it could be seen a huge amount of director under the age of 40 in Serbia, contrary to the Turkey results revealing that there are more directors between 40 and 50 years old. (ARARAT, ORBAY, YURTOGLU, 2010) The average age of board's member is close to 51 years with huge dispersion (PAVLOVIĆ, ET AL, 2019), which is close (53,9 years old) to the average age of hire CEO in the leading companies from the Fortune 500 and the S&P 500 Indexes in the 2018 (CRIST, VOLTER, 2018, p. 31) The youngest board has in average 37 years, while the older one has close to 71 years, with standard deviation of 7.23835. (PAVLOVIĆ, ET AL, 2019)

We find no evidence of the significant linear relationship between board of director's age and financial performance. The results of the analysis suggest that there is an insignificant relationship between board of director's age and ROCE. Just 2,9% of the variability of ROCE could be explained by the board of director's age. In the above table we can see that R square for the analyzed period is 0.001 with the standard error of the estimate of 0.05754, while the Sig. is 0.861 which is higher than 0.05. The results suggest also that there is an insignificant relationship between board of director's age and ROE. Just 3% of the variability of ROE could be explained by the board of director's age. In the above table we can see that R square for the analyzed period is 0 with the standard error of the estimate of 0.0682, while the Sig. is 0.998 which is higher than 0.05.

We find no evidence of the significant linear relationship between board of director's age diversity and financial performance. The results of the analysis suggest that there is an insignificant relationship between board of director's age diversity and ROCE. Just 1,6% of the variability of ROCE could be explained by the board of director's age diversity. In the above table we can see that R square for the analyzed period is 0.014 with the standard error of the estimate of 0.0572, while the Sig. is 0.500 which is higher than 0.05. The results suggest also that there is an insignificant relationship between board of director's age diversity and ROE. Just 2,7% of the variability of ROE could be explained by the board of director's age. In the above table we can see that R square for the analyzed period is 0.056 with the standard error of the estimate of 0.0663, while the Sig. is 0.173 which is higher than 0.05.

Having in mind that the chairman can strongly influence the other member of the board (see: AMRAN, YUSOF, ISHAK, ARIPIN, 2014; CHENG, ET AL., 2010), particularly

in the emerging markets, have explored the age of the chairman comparing the other board members and we have tested the influence of chairman's age on financial performance.

Concerning the age of the chairman comparing the other board members, the mean value of the deviation is 0.157, while the standard deviation is 13.524. Maximum value is 25, what means that the chairman in one board is 25 years older than the average of the other board members, and the minimum value is 22, what means that the chairman in one board is 22 years younger than the average of the other board members. The arithmetic mean is low due to the fact that the deviation has positive and negative value as well. Looking at the absolute deviation reveals that the mean deviation is close to 11 years. The correlation between this variable and firms profitability could not be found due to the small arithmetic mean and huge standard deviation. So, we can conclude that the age of the chairmen does not influence financial performance. Our finding does not support Cheng, Chan and Leung (2010) finding that older board chairman is positively associated with higher financial performance.

## 8. Conclusion

Although agricultural sector is considered as a very important sector for Serbia, with significant influence on the whole economy, the profitability of the companies listed on the Belgrade Stock Exchange is very low. For a while, scholars are agreeing that age influence strategic decision-making perspectives and choices. Scholars highlight the importance of having a diverse board of directors composed of members of different ages, considering that the uniqueness of every generation can improve firm performance. So, understanding how age diversity and particularly, how the board of director's and CEO age diversity influence firm performance in different contextual factors seems to be a very important issue.

Our research is the first one of this type conducted in the agricultural sector, and the first study which explores the age effect on financial performance in the region of Eastern Europe as well. We did not confirm that director's age and director's age diversity impact financial performance of the Serbian agricultural sector. All hypotheses have been rejected. Our findings confirm Ararat, Aksu and Tansel Cetin (2015, p. 100) state that diversity benefits seem to be highly contextual and firm-specific. We did not find that the board's chairman significantly influenced the other members of the board in order to increase firm profitability. The main contribution of this study is that age factor should not be considered as an important element of board constitution in the agricultural sector of an emerging economy.

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