GENDER DIVERSITY AND FINANCIAL PERFORMANCE OF THE STOCK EXCHANGE LISTED COMPANIES

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Abstract

Tunisia is considered one of the first Arab Muslim countries to have the freedom of women and their participation in the economic sphere. Despite these advancements in women's freedom, Tunisia still has a few women in positions of responsibility in the business. Our reflection on gender diversity will, therefore, be studied from the angle of the contribution of women to the performance of the company. Our research uses different gender diversity proxies such as the percentage of women on the board, a binary variable, and two additional indices of the diversity the Blau and Shannon indices. In order to properly study this impact, we have mainly used bivariate analysis by studying the association between endogenous and explanatory variables and multivariate analysis by applying double least square regression (2SLS). Using the panel data methodology and controlling for endogeneity, the results show that gender diversity on the board of directors does not have an impact on the performance of listed companies measured by Tobin's Q. However, if critical mass is reached, the impact on gender diversity becomes positive and significant.

Keywords: Gender Effect, 2SLS, Financial Performance, Tobin's Q, Shannon and Blau Indices

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1. INTRODUCTION

This work deals with gender diversity in businesses, a subject that is increasingly debated in both the social and financial spheres. The interest in gender diversity is not new and dates back to the work of Adler (2001), Adams and Ferreira (2009), Gordini and Rancati (2017), and several other works. Like these studies, we note that the role of women in society remains one of the most controversial subjects in corporate governance and which still raises questions. When we look at the condition of women in different countries, we see that everywhere women have rights that are lower than those of men. The objective of this paper is to examine the relevance of the increase of women's representativity on the boards and its effect on the improvement of the firm performance. Our reflection is to examine what then is the role of board gender diversity on financial performance of a firm? Gender diversity will therefore be studied from the perspective of women's contribution to business performance.

Tunisia is considered to be the first Arab Muslim country to have women's freedom and participation in the economic and business world. Despite these advances in women's freedom and the launch of laws that protect them, Tunisia still has a few women in positions of responsibility in business (manager, entrepreneur, etc.) but we cannot forget women Tunisian has always played a significant role in the political and economic life of society.

So that the diversity of the board of directors comes today as a social activity of the company,

therefore, several countries and companies have implemented means or activities to accelerate and increase the feminization of their board.

The rest of the paper is structured as follows. In Section 2, we first provide a brief review of the literature in which we explore different forms of diversity. Thereafter, we develop the interaction between the company's diversity and performance, distinguishing between the different measures of performance and highlighting the relationship between diversity and financial performance. In Section 3, we describe and discuss the methods and data, and we present the descriptive statistics. Section 4 is reserved for the presentation as well as the analysis of the research result. And finally, in Section 5 we provide a conclusion and a discussion of the study's limitations and areas for future research.

2. LITERATURE REVIEW

The notion of diversity has grown in popularity over the past few years, especially when it comes to the issues of integration and living together, so this notion has become fashionable, especially for businesses; which improves efficiency and promotes a culture that accepts differences in order to make the organization more efficient.

Workplace diversity exists when companies hire employees from diverse backgrounds and experiences. Many companies see the diversity of the workplace as an investment in building a better business. While diversity at work offers many benefits, it also poses many challenges for employees and managers. To reap the benefits of workplace diversity, employees and managers must understand the challenges and know how to deal with them effectively. This is how Garner-Moyer (2006) defines diversity which covers differences in terms of gender, culture, ethnicity, age, nationality, and disability.

Also, there are other definitions. According to Haas and Shimada (2014) diversity can be defined by a categorization of individuals according to their objective characteristics but it can also be based on the feeling of belonging of individuals to one or more categories specific.

For Jones and Munro (2005), diversity encompasses a range of differences, for example in ethnicity, nationality, sex, function, competence, language, religion, lifestyle.

Furthermore, Val Singh and Point (2006) present the notion of diversity as the set of individual differences in a group, whether these are visible.

Diversity, on the other hand, can be defined as "an internal need for change intended to meet internal economic and commercial needs arising from the representativeness of different categories in the active population and the need to use all areas of research skills the survival and effectiveness of the organization. (Kandolla & Fullerton, 1994).

Nishii and Özbilgin (2007) define diversity in a global context as follows:

"At the most general level, we see global diversity as referring to two main questions. The first is the management of diversity across countries, with the aim of understanding how each country can define and conceptualize diversity differently from a social, legal and political point of view (...), we also see overall as referring to the management of cultural diversity through employees and countries within a global company" (p. 1884).

According to Naschberger and Guerfel-Henda (2013), diversity management emphasizes the recognition and appreciation of individual differences. It considers each individual as an added value for the performance of the company.

According to the French Association of Diversity Managers (AFMD), *"Diversity, therefore, appears today as a polysemic concept, which adapts to the context and history of each company in a very pragmatic way. Companies define the contours of diversity according to their history, their previous policies regarding disabled workers, professional equality, seniors, all components for which it has incentives, even injunctions to negotiate".*

Diversity in the workplace means bringing people of different ethnic origins, religions, and age groups together in a coherent and productive unit. To survive, a business must be able to effectively manage and use its diverse workplace. Managing diversity in the workplace should be part of the culture of the entire organization.

Milliken and Martins (1996) identified eight types of diversity: ethnic or cultural diversity, gender (more or less mixed), age diversity, diversity of value and personality, diversity of training, functional and occupational diversity. Diversity means all the ways in which we differ. Some of these differences that we are born with and cannot change. Several dimensions of diversity can be distinguished.

Gender is a socially constructed definition of women and men. It is not the same as sex (biological characteristics of women and men). Gender is determined by the conception of the tasks, functions, and roles assigned to women and men in society and in public and private life, in other words, gender refers to the social and cultural classification between males and females.

Many researchers show that there is a positive link between gender diversity (man/woman) and business performance (Campbell & Mínguez-Vera, 2010; Adams & Funk, 2012; Farrell & Hersch, 2005). So for this, the company needs more women and much higher levels of responsibility. It is a societal necessity which allows the company to improve its image in its environment, but also economically so equality is a fair fight to reduce the level of discrimination at the workplace which allows the company to improve its image and become more efficient, so the organization must open up to diversity and heterogeneity to succeed.

Age is a socio-demographic variable that is frequently encountered in management sciences. Workers can be divided into two age categories: older workers and younger workers; by this distinction, it is easy to identify the tasks of each individual that compatible with their age. Age diversity is a very important variable to study for board diversity because most of the time only people over 60 are on the board. Advancing age is naturally accompanied by a decrease in maximum performance and a risk of reduced functional capacity. The decline in abilities that occurs with

age, varying according to the individuals in their intensity, their modalities, when it appears, and based on their professional background. It is noted that the individual experiences a decline in his physical and cognitive capacities from the thirties. This decline is exercised to different degrees depending on the individual. We also find that the performance of older workers is equivalent to that of younger workers, provided that they can regulate their work activity. However, aging workers often put in place "strategies" based on their professional experiences and the accumulation of knowledge which makes a company more efficient, but also the inclusion of young people can have a positive effect on performance thanks to their cognitive abilities.

The topic of religion in business is a particularly sensitive subject because questions related to the place of religions and religious behavior in societies have become very delicate in recent years especially for Muslims, but in Tunisia, the problem of religious discrimination is rarely found because 95% of the Tunisian population is Muslim. On the other hand, in other countries, the subject of religious diversity in the workplace occupies an important place for this these countries apply international, European, and national tests concerning the freedoms of religion, beliefs, and conviction as well as the freedom of thought and consciences.

Recruitment and employment of disabled people is a part of many companies today as a part of a strategy of openness to diversity, so companies are perfectly aware of these equal skills, a handicap is not a brake on its performance. In Tunisia, the integration of disabled people in businesses is of great importance, according to the labor code any private or public business is required to reserve 1% of its jobs for disabled people. There are many reasons why companies hire people with disabilities when it comes to corporate social responsibility. It is therefore advantageous for an organization to have a diverse staff.

The term "origin" can refer to the geographical origin of a person, his nationality, his place of birth or residence, but also to his membership of an ethnic group whose indices can be based on his physical appearance. Discrimination can, therefore, occur in the organization when equal treatment is based on a foreign nationality or ethnic origin. In this case, people of foreign origin are frequently victims of discrimination because of their nationality, skin color, national or ethnic origin. Several studies that attempt to establish the influence of racial diversity on performance. Mannix and Neale (2005) report a study of 1,200 employees spread across 122 groups.

Empirical studies on the effect of board diversity on company performance are inconclusive. The results depend heavily on the methodology. The mixed results reflect the difference; time period, countries, economic environments, types of businesses, and measures of diversity, and financial performance (Rhode & Packet, 2014).

While some research has shown positive correlations between the diversity of the board and various measures of business performance, others have found the opposite or no significant relationship. The discussion below presents the relationship between diversity and performance.

Set of techniques to measure the performance of the company, performance is measured with criteria or qualitative or quantitative results indicators. Traditionally, financial performance has been measured using ROA and ROE indicators. Today, we also use *Tobin's EVA* and *Q* indicator.

•*ROA (Return on assets):* ROA is an indicator that measures the profitability of a company in relation to its total assets. This indicator gives an idea of the efficiency of the company to create profits with its assets. It is calculated as follows:

$$ROA = \frac{net\ income}{total\ assets} \quad (1)$$

It expresses the ability of a business to generate income from its resources.

•*ROE (Return on equity):* This ratio measures the financial profitability of the capital contributed by the owners of the company. This ratio is used as a general indicator of the efficiency of the company. It is measured as follows:

$$ROE = net\ income/equity \quad (2)$$

•*EVA (Economic value added):* It is a term that indicates the evaluation of the performance of the company. The basic idea of the indicator is that the capital invested must have a greater advantage than the cost of capital. The *EVA* is an annual measure of the creation of value of the company established by comparison with the cost of the invested capital with its profitability.

$$EVA = economic\ assets * (economic\ profitability - cost\ of\ capital) \quad (3)$$

•*The Tobin's Q ratio:* The "Tobin's Q" is a ratio representing the ratio between a listed value and the replacement value of fixed capital. This measurement is made by relating the sum of the market values of the securities held by financial investors (shareholders and creditors) to the amount of capital they have invested. The value of the capital invested is measured by the cost of replacing the financed assets, most often evaluated from fixed assets. A *Q* greater than 1 indicates a situation where the company has an interest in investing since the capital invested will be valued for more than its amount, thus creating value. Conversely for a *Q* lower than 1.

$$Tobin's\ Q = \frac{market\ value\ (equity + financial\ debt)}{Replacement\ cost\ of\ assets} \quad (4)$$

Various studies have attempted to highlight the relationship between professional diversity and the company's financial performance. The conclusions are not always consistent. One of the most cited is the study by Carter, Simkins, and Simpson (2003) doing studies on large American companies included in the S&P 500 Index, found that gender and ethnic diversity on the board has a positive and significant effect on ROA, although it reveals no effect on Tobin's Q. In addition, Erhardt, Werbel, and Shrader (2003) consider that diversity has a positive impact on financial performance. Their research is applied to 127 large companies in the United States for the period between 1993 and 1998 who study the relationship between demographic diversity on boards of directors and financial performance.

With the use of a sample of Norwegian and Swedish companies, Oxelhim and Randoy (2003) notice a higher Tobin's Q for companies that have Anglo-American nationals in the meeting rooms.

Also, Bear, Rahman, and Post (2010) who examine the impact of diversity in working groups on performance using a sample of mutual fund companies in the United States, they find that the influence of diversity on performance depends on the dimension of diversity which is analyzed, they find that the diversity of social categories has a negative impact on performance which is mainly motivated by gender diversity, while age diversity does not a strong impact. Ararat et al. (2015) based on data from Turkish companies conclude that age diversity has a significant influence on return on capital (ROE); however, there is no effect on Tobin's Q. The same result is found for developing countries.

More recently, several studies have focused on ensuring good governance, Rose-Hulman (2015) study the impact of certain corporate governance practices on financial performance, in particular on ROA and ROE such as gender, age or nationality based on a sample of 39 companies located in Germany during the period 2006 and 2014 with the use of the mixed linear model, the results of their empirical research indicate only age has a positive effect and significant on ROE while gender and nationality do not show significant results on ROE and ROA.

Performance is a complex concept to understand because performance is a term that interests many fields such as economics, accounting, information systems, sport, etc.

Financial performance is a subjective measure of how a business can use major business assets and generate income. This term is generally used as a general measure of the overall financial health of an organization over a given period, and can be used to compare similar businesses in the same industry. Financial performance refers to the extent to which financial objectives are achieved. We see that financial performance is the ability of an organization to make a profit, to be profitable by adding value and achieving its objectives. Financial performance is assessed using several indicators: profitability, profitability, self-financing, and dividends paid to shareholders.

Hillman (2015) argues that much of the work on conference room diversity has focused on gender diversity, yet the benefits of diversity can also come from ethnicities, nationalities, positions, and others. types of diversity. This leads to several interesting avenues for future research.

According to Adler's study (2001), which focused on 215 large American companies (Fortune 500 classification) between 1980 and 1998 established that the firms, having promoted the most women, are those whose profitability is the best, whatever the measure of the measure. In the same vein, Carter et al. (2003) were studied 638 companies (Fortune 500 classification) and found a positive relationship between the presence of women (and minorities) on the board of directors and the value of the firm materialized by Tobin's Q.

On the other hand, Adams and Ferreira (2004) carry out studies on 1024 listed companies in 1998 to examine the significant correlations between stock market returns, the remuneration structure of directors and gender diversity on the board of directors. These authors use a simple measure of gender diversity which is the proportion of female directors on the board, so to measure performance they use a market-based measure, Tobin's Q as well as an accounting measure, ROA asset returns. The three robust results of their research are concluded: companies that have fewer women on their boards are faced with greater variability in their stock market returns.

Campbell and Mínguez-Vera (2008) find after their study of Spanish companies through the use of panel data, that the presence of one or more then two women on the board of directors has a negligible effect on financial performance at the opposite of the presence of man. However, Campbell and Mínguez-Vera suggest that a more diverse board of its kind can lead to a different and, therefore, critical thought, which in turn leads to a decision process that is both longer and less effective. Opposing theories and results on the social theory of psychology suggest that gender diversity can have positive and negative repercussions on financial performance (Carter, D'Souza, Simkins, & Simpson, 2010).

Several previous studies have shown that the presence of women on the board of directors has a positive effect on performance, like the studies Francoeur, Labelle, and Sinclair-Desgagné (2008) study the relationship between diversity and performance while taking risk into account, they also found that diversity on the board has an impact on the financial performance of the company, they showed that there are different results depending on the situation of the companies. They find that women have a positive effect on businesses, operate in difficult conditions with a greater risk of failure. However, they also find that companies with a high proportion of women in meeting rooms do not generally create excessive returns but manage to keep pace with the stock market index.

In the new research by Adams and Ferreira (2009) they argue that a more equal composition of men and women on boards of directors changes the outcome of their activity. They find from panel data of companies listed during the 1996-2003 period that the presence of female directors can have both a positive and negative effect on financial performance

depending on the nature of the company studied. So the effect of gender diversity could be another motivating factor to consider.

A large body of literature examines the links between gender diversity and business performance. Some studies find positive effects on accounting and market performance; as the study by Campbell and Mínguez-Vera (2010) focuses on the impact of female directors in Spain between 1989 and 2001, they find that the stock market reacts positively in the short term to the announcement of the appointment of women, this is positively associated long-term board female appointments.

Several economic studies have focused on the exogenous variations in gender diversity within boards of directors generated by the implementation of quota policies. Ahern and Dittmar (2012) examine the effect of the quota requirement on board diversity for 248 Norwegian companies listed on the stock exchange in 2003-2009. They conclude that the quota year of 2006 "40% of the directors were women at the time only 9% were in place, caused a significant drop in share prices and a large drop in Tobin's Q over the years following". Likewise, Husang and Kisgen (2013) examine the financial and investment decisions of companies made by female and male executives. They find that male executives make more important decisions than female executives.

In addition, some studies have found a positive relationship between diversity and performance, while others have found no or even a negative relationship. For example, Lückerath-Rovers (2013) studied the financial performance of Dutch companies with and without women on the board. The analysis extends on the basis of the methods used in the research of Catalyst (2007) and McKinsey and Company (2007). Their results show that companies with women do better than those without women on their boards.

More recently, Post and Byron (2015), these authors define the representation of the female board as the number, the proportion or the presence of women on the board of directors, they analyze the influence of the directors on the financial performance of the company in terms of cognitive framework linked to decisions and considerations of stakeholders. They claim that boards with multiple women directors achieve higher levels of participation in the strategy. Therefore directors are likely to bring different cognitive frameworks to board due to the difference between gender in the experience and knowledge. Their results demonstrate that gender diversity on the board has a positive impact on the performance of the organization.

Admittedly, studies show a significant positive link, for example, the longitudinal studies carried out by Catayst (2005, 2007) with the largest American firms (Fortune 500) during the periods 1996-2000 and 2001-2004, confirm the presence of a link between the feminization of advice and performance and even narrower when the number of women equals or exceeds at least three. These results are confirmed in the Spanish context (adoption of a law mandating the presence of women on boards. The appointment of women leading to positive stock market reactions in the short and long term (Campbell & Mínguez-Vera, 2010).

The study carried out by Catalyst (2005) on the impact of gender diversity on financial performance for the period between 1996 and 2000. Two dimensions were used to measure financial performance. These are *Return on Equity (ROE)* or return on equity on the one hand, and *Total Return to Shareholders (TRS)* or total return for the shareholder, on the other hand; several points emerge from this study. First of all, the companions, who have a high proportion of women in their top management, show a financial performance superior of 35.1% in terms of ROE and 34% and terms of TRS, compared to those who have fewer. The authors state, among other things, that in the industry sector, these results extend to the five industrial companies analyzed in terms of ROE and to the same four companies concerned in terms of TRS. The Catalyst replicated the same study in 2011; made a new study that examines the relationship between women on the board and the financial performance of their businesses in the United States. Catalyst ranked 524 companies based on the average percentage of women on the boards of these companies in 2004-2008. The financial measures used by Catalyst were: return on equity (ROE), return on sales (ROS), and return on invested capital (ROCI). The results of their analyzes are: companies with a large number of women directors on the board are better than companies in low number on ROS of 16% and on ROIC of 26%.

Table 1. Definition and measurement of variables

Authors	*Variable*	*Definition*	*Measures*
Dependent variable			
Gordini and Rancati (2017), Campbell and Mínguez-Vera (2008), Adams and Ferreira (2008), Carter et al. (2003)	*Tobin's Q*	Tobin's Q combines financial and stock market data. It reflects the situation of the organization.	$Q = \frac{book\ debts + market\ capitalization}{book\ value\ of\ assets}$
Independent variables			
Gordini and Rancati (2017), Adams and Ferreira (2009), Campbell and Mínguez-Vera (2007)	Dummy variable *(DFemale)*	Dummy variables are used in the regression analysis. These variables are artificial attributes, and they are used with two or more categories or levels. It is used when you want to work with categorical variables that have no quantifiable relationship with each other.	*DFemale,* which is equal to 1 when at least one woman sits on the board and 0 otherwise.
Gordini and Rancati (2017), Campbell and Mínguez-Vera (2010)	The proportion of women directors on the board *(PFemale)*	The proportion of women on the board is among the measures that allow for the degree of diversity.	*PFemale,* calculated as the number of female administrators divided by the total number of administrators.
Gordini and Rancati (2017)	*Blau index*	The Blau index gives the degree of homogeneity. In the advice in terms of gender category and the degree of gender distribution, it is the same for the Shannon index.	$Blau = 1 - \sum_{i=1}^{k} (N_i/N)^2$
Gordini and Rancati (2017)	*Shannon index*	The Shannon index is an index used to measure specific diversity.	$Shannon = -\sum ((N_i/N) * log2\ (N_i/N))$ where N_i: number of individuals of a given species; i ranging from 1 to S (total number of species); N: total number of individuals.
Control variables			
Gordini and Rancati (2017), Campbell and Mínguez-Vera (2010), Carter et al. (2010)	The size of the board of administration *(Size B)*	The purpose of measuring the size of the board of directors – to be sure that a possible effect of the women's presence on the board of directors is not linked to the fact that they are more so in companies that have large boards of directors.	The size of the board of directors is measured by the natural logarithm of the total number of directors sitting on the board of directors.
Gordini and Rancati (2017), Campbell and Mínguez-Vera (2010) Carter et al (2010)	*Size C*	The size of the company.	The size of the firm is measured by the natural logarithm of the book value of the total assets.
Gordini and Rancati (2017), Campbell and Mínguez-Vera (2010) Carter et al. (2010)	Return on assets *(ROA)*	The return on assets (ROA) measures the ratio between the net result (tool allowing to know if the company is profitable or loss-making) and the total assets (all the elements generating resources). It expresses the capacity of a company to generate income from its resources.	$ROA = \frac{operating\ profit}{total\ assets}$
Gordini and Rancati (2017) Campbell and Mínguez-Vera (2010) Carter et al. (2010)	Leverage *(L)*	Leverage is used in accounting to determine the consequences of the contribution of external capital compared to the equity of a company. This assessment determines the maximum amount of debt acceptable to a company, without putting its equity at risk.	$L = Debts/total\ assets$

3. RESEARCH METHODOLOGY

The objective here is to analyze the effect of the presence of women on the board of directors of Tunisian companies listed on the stock exchange.

The sample consists of 46 Tunisian companies listed on the Tunisian Stock Exchange (BVMT), from 75 firms, over a period of 5 years (2015-2019). We have chosen companies that have a fairly large number of women on their boards of directors during this period.

Financial data is collected from the financial statements available on the website of the Tunisian Stock Exchange (www.bvmt.com.tn) regarding the stock market, data are collected through the same stock exchange site.

The data on the board of directors are collected from the reference documents available to the financial council of the market (CMF) on its website (www.cmf.org.tn), as well as from the annual reports, the official bulletins, activity indicators, financial statements, and from the stock guide provided by the BVMT.

3.1. Presentation of the model

In order to understand the effect of the presence of women on the financial performance of Tunisian companies measured by Tobin's Q, we test the double least square model by integrating the control variables (size of the company, size of the board of administration, leverage, and ROA) to control their effect on the dependent variable. The model is as follows:

$$Tobin's\ Q_{it} = \beta_0 + \Sigma\beta_j women_{ijt} + \Sigma\beta_j CV_{jit} + \psi_t + \eta_i + \varepsilon_{it} \quad (5)$$

where *Tobin's Q* represents the value of the firm, the *women* represents the four alternative variables used to measure the female representation described above, *CV* represents the control variables also described above, refers to the temporal effects, and refers to unobservable heterogeneity ψ_t, η_i:

- *Tobin's Q:* performance measurement;
- *Women*: the four independent variables: *DFemale* (variable dummy exists woman or not), *PFemale* (percentage of women), the *Blau index* and the *Shannon index*;
- *CV:* the four control variables: *Company size, Board size, ROA,* and *Leverage.*

3.2. Descriptive statistics

Table 2. Descriptive statistics

Variables	*Number of observations*	*Average*	*The standard deviation*	*Minimum*	*Maximum*
Tobin's Q	230	1,398	0.753	0.142	7.056
DFemale	230	0.548	0.498	0	1
PFemale	230	0.083	0.097	0	0.444
Blau	230	0.133	0.139	0	0.494
Shannon	230	0.189	0.203	0	0.687
Size C	230	19.605	1,939	15,698	23,204
Size B	230	2.195	0.302	1.098	2,485
L	230	0.784	0.629	0.009	6.867
ROA	230	0.025	0.367	-5.126	1, 626

The results presented in the table above indicate that the average of Tobin's Q is (1,398) and that this ratio has a maximum value of (7,056). However, some companies have Tobin's Q, which is less than one (0.142), which theoretically means that they have difficulty leveraging funds to invest. This means that the share price is falling and the market value of the company may fall below its book value. In this case, the investors are led to a certain distrust towards the company. The percentage of companies with one or more women on the board of directors (*DFemale*) is (54.8%), so the presence of women in these companies is not high. The most significant is the average percentage value of women on the board of directors (*PFemale*) which is equivalent to (0.0083%), which suggests that the introduction of women on the board of Tunisian companies is still very limited. Finally, for the two indices, *Shannon* and *Blau* are two indices for measuring diversity; Blau varies between a minimum value (0) and a maximum value (0.5), on the basis of this index we can know the degree of diversity in the board when the index equals 0, so the board of directors is composed of a single category of people are men. It is the same for the Shannon index, the only difference is that the range of values is from 0 to 0.69 and the logic is similar. However, the Shannon index is more sensitive to smaller differences in the gender composition of the board's administration. Since it is a logarithmic measure of diversity. These indices are used to measure the degree of gender diversity.

4. RESEARCH RESULTS

Adams and Ferreira (2009) stress that the empirical study of the relationship between performance and governance is subject to problems of endogeneity. The results of the Hausman tests on the different estimates do indeed indicate a problem of endogeneity between the variables measuring gender diversity in counseling and performance. Faced with this problem, Gordini and Rancati (2017) suggest using the double least squares method and/or instrumental variables if the econometric model used can be broken down into simultaneous equations.

When an independent variable is correlated with the error term, the classical assumptions of the linear model are violated and we are faced with endogeneity. In this case, we can use the instrumental variable estimator or two ordinary double least squares (DMCO) (Carter et al. 2003; Campbell & Mínguez-Vera, 2008; Gordini & Rancati, 2017). In agreement with Carter et al. (2003), Campbell and Mínguez-Vera (2008), and Gordini and Rancati (2017), we control the problem of endogeneity by estimating the following system of double least square equations (2SLS):

$$Tobin's\ Q_{it} = \beta_0 + \beta_1 women_{it} + \Sigma\beta x + \varepsilon_{it} \quad (6)$$

$$women_{it} = \alpha_0 + \alpha_1 Tobin's\ Q_{it} + \Sigma\alpha z + \varepsilon_{it} \quad (7)$$

In this system of equations, the performance and diversity of the genres of counseling are determined jointly to grasp all the feedback mechanisms that may be involved in their relationships.

The vectors *x* and *z* are exogenous variables. In agreement with Campbell and Mínguez-Vera (2008) and Gordini and Rancati (2017), the vector *x* includes the leverage (*L*), *ROA,* and the size of the company (*Size C*). The vector *z* includes the size of the board (*Size B*) and the size of the company.

It should be noted that using a 2SLS method aims to find instruments that can predict endogenous variables (i.e., business performance and gender diversity in Consulting that appear as variables explanatory in the system of equations in our case).

Table A.2 presents the relation between *DFemale* and Tobin's Q with the use of vector *x* which describes above that for the first model, in the same table, we also present the effect of Tobin's Q on the independent variable *DFemale* for the second model with the use of vector *z* which describes above.

Table A.2 shows that the presence of women on the board of directors does not have a significant impact on Tobin's Q. This result seems to confirm the simple presence of women on the board of

directors does not affect the value of a company in accordance with the results of Campbell and Mínguez-Vera (2008) and Gordini and Rancati (2017). Regarding the control variables, the size of the company and the ROA, respectively, have a negative and positive effect on Tobin's Q; however, the leverage does not influence it. For the last column of the table, using the presence of at least one woman (*DFemale*) as a dependent variable, a significantly negative relationship between the presence of women on the board and the performance of the company (Tobin's Q) is detected. In other words, a company with a higher performance value tends to include fewer female directors on their boards. So higher performance has a significant and negative impact on gender diversity on the board.

Table A.1 presents the results of the estimation of two models of the relationship between gender diversity in counseling and performance. The double least square approach shows that the percentage of women on the board has no effect on Tobin's Q. Regarding the control variables, it is the same result in Table 2; leverage has no influence on Tobin's Q, only the size of the company and ROA have an effect on Tobin's Q, in accordance with the results of Gordini and Rancati (2017). It can be concluded that a company can appoint a woman to its board of directors for family reasons but not necessarily for reasons of profitability improvement. On the other hand, this table indicates that Tobin's Q is negatively affected *PFemale* at the 5% threshold.

This result in Table A.2 indicates that the Blau index does not influence Tobin's Q. The Blau index was used to measure the gender diversity of boards of directors. This index was chosen because some authors (Campbell & Mínguez-Vera, 2008) have argued that the percentage of women on a board is not an appropriate measure of diversity because boards with a strong presence female will exhibit a high degree of homogeneity in terms of this gender category. As for the control variables, they are identical to the previous results.

For the last column of Table A.2, the markedly unfavorable relationship is indicated in this table using the Blau index as the measure of the representation of the women's committee. A company with a higher performance value is prone to include a more homogenous gender on the board. When it comes to male dominance on boards in the data, greater gender homogeneity implies the greater number of male directors. So the value of the company is high when there are more male directors.

Table A.3 indicates that the Shannon index has no impact on Tobin's Q. Regarding the control variables, they are identical to the results in Table A.1 and Table A.2. To assess the validity and robustness of the study results, we used the Shannon index, a measure of alternative diversity. The results are similar to those found later. So the Shannon index does not influence Tobin's Q. Also, there is a significantly negative relationship between the Shannon index and company performance, which implies that more members of the men's committee in a company give a higher performance value.

On the other hand, with regard to the values of the control, the size of the company and the ROA, respectively, have a negative and positive effect on Tobin's Q, on the other hand, the leverage does not influence it.

For the second model, the size of the company and the size of the board of directors have a significant, respectively, negative and positive influence on the presentation of women on the board measured by *DFemale*, *PFemale*, the *Blau index,* and the *Shannon index*.

5. CONCLUSION

The study of the impact of diversity on the financial performance of companies was based on an investigation of 46 Tunisian companies listed on the Tunis Stock Exchange (BVMT).

In order to properly study this impact, we essentially called on a bivariate analysis by studying the association between endogenous and explanatory variables and in a multivariate analysis by applying the regression of double least square.

Our research uses different gender diversity proxies such as the percentage of women on the board, a binary variable that takes the value of 1 when there is at least one woman, or not on the board otherwise, and two additional indices of the diversity – the Blau and Shannon index. Using the panel data methodology and controlling for endogeneity, the results show that gender diversity on the board of directors does not have an impact on the performance of listed companies measured by Tobin's Q. However, if critical mass is reached, the impact on gender diversity becomes positive and significant. Finally, the results show that much remains to be done to achieve the objective of the research. Indeed the limited number of companies used in our sample can bias the results. Moreover, the number of women who have decision-making power in Tunisia is practically limited, which makes it possible to minimize their impact on the financial performance of listed companies.

REFERENCES

1. Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics, 94*(2), 291-309. https://doi.org/10.1016/j.jfineco.2008.10.007
2. Adams, R. B., & Funk, P. (2012). Beyond the glass ceiling: Does gender matter? *Management Science, 58*(2), 219-235. https://doi.org/10.1287/mnsc.1110.1452
3. Adler, R. D. (2001). Women in the executive suite correlate to high profits. *Harvard Business Review, 79*(3), 30-32. Retrieved from https://www.researchgate.net/publication/267822127_Women_in_the_Executive_Suite_Correlate_to_High_Profits
4. Ahern, K. R., & Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board representation. *The Quarterly Journal of Economics, 127*(1), 137-197. https://doi.org/10.1093/qje/qjr049
5. Ararat, M., Aksu, M., & Tansel Cetin, A. (2015). How board diversity affects firm performance in emerging markets: Evidence on channels in controlled firms. *Corporate Governance: An International Review, 23*(2), 83-103. https://doi.org/10.1111/corg.12103

6. Bear, S., Rahman, N., & Post, C. (2008). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics, 97*(2), 207-221. https://doi.org/10.1007/s10551-010-0505-2
7. Boukattaya, S., & Omri, A. (2018). Gender diversity and firm performance: Evidence from French boardrooms. *EuroMed Journal of Management, 2*(4). https://doi.org/10.1504/EMJM.2018.096456
8. Campbell, K., & Mínguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of Business Ethics, 83*(3), 37-59. https://doi.org/10.1007/s10551-007-9630-y
9. Campbell, K., & Mínguez-Vera, A. (2010). Female board appointments and firm valuation: Short and long-term effects. *Journal of Management & Governance, 14*(1), 37-59. https://doi.org/10.1007/s10997-009-9092-y
10. Carter, D. A., D'Souza, F., Simkins, B. J., & Simpson, W. G. (2010). The gender and ethnic diversity of US boards and board committees and firm financial performance. *Corporate Governance: An International Review, 18*(5), 396-414. https://doi.org/10.1111/j.1467-8683.2010.00809.x
11. Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity, and firm value. *Financial Review*, *38*(1), 33-53. https://doi.org/10.1111/1540-6288.00034
12. Catalyst. (2005). *Report: 2004 Catalyst census of women corporate officers and top earners of Canada*. Retrieved from https://www.catalyst.org/research/2004-catalyst-census-of-women-corporate-officers-and-top-earners-of-canada/
13. Catalyst. (2007). *Report: 2007 Catalyst census of women board directors of the Fortune 500*. Retrieved from https://www.catalyst.org/research/2007-catalyst-census-of-women-board-directors-of-the-fortune-500/
14. Dutta, M., & Samanta, P. K. (2020). Directors' interlock, gender diversity and firm performance: A panel data approach. *Asian Journal of Research in Business Economics and Management, 10*(1), 1-17. https://doi.org/10.5958/2249-7307.2020.00001.8
15. Erhardt, N. L., Werbel, J. D., & Shrader, C. B. (2003). Board of director diversity and firm financial performance. *Corporate Governance: An International Review, 11*(2), 102-111. https://doi.org/10.1111/1467-8683.00011
16. Faccio, M., Marchica, M. T., & Mura, R. (2016). CEO gender, corporate risk-taking, and the efficiency of capital allocation. *Journal of Corporate Finance, 39,* 193-209. https://doi.org/10.1016/j.jcorpfin.2016.02.008
17. Farrell, K. A., & Hersch, P. L. (2005). Additions to corporate boards: the Effect of gender. *Journal of Corporate Finance, 11*(1-2), 85-106. https://doi.org/10.1016/j.jcorpfin.2003.12.001
18. Francoeur, C., Labelle, R., & Sinclair-Desgagné, B. (2008). Gender diversity in corporate governance and top management. *Journal of Business Ethics, 81*(1), 83-95. https://doi.org/10.1007/s10551-007-9482-5
19. Garner-Moyer, H. (2006). Gestion de la diversité et enjeux de GRH. *Management & Avenir*, *7*(1), 23-42. https://doi.org/10.3917/mav.007.0023
20. Gordini, N., & Rancati, E. (2017). Gender diversity in the Italian boardroom and firm financial performance. *Management Research Review, 40*(1), 75-94. https://doi.org/10.1108/MRR-02-2016-0039
21. Haas, A., & Shimada, S. (2014). Les politiques de gestion de la diversité dans les organisations: Proposition de typologie à l'usage des chercheurs et des entreprises. *Management international, 18*(2), 14-21. https://doi.org/10.7202/1024190ar
22. Hafsi, T., & Turgut, G. (2013). Boardroom diversity and its effect on social performance: Conceptualization and empirical evidence. *Journal of Business Ethics, 112*(3), 463-479. https://doi.org/10.1007/s10551-012-1272-z
23. Hillman, A. J. (2015). Board diversity: Beginning to unpeel the onion. *Corporate Governance: An International Review, 23*(2), 104-107. https://doi.org/10.1111/corg.12090
24. Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives over confident relative to female executives? *Journal of Financial Economics, 108*(3), 822-839. https://doi.org/10.1016/j.jfineco.2012.12.005
25. Jones, C., & Munro, R. (2005). Organization theory, 1985-2005. *The Sociological Review, 53*(1), 1-15. https://doi.org/10.1111/j.1467-954X.2005.00537.x
26. Kandola, R., & Fullerton, J. (1994). Diversity: More than just an empty slogan? *Personnel Management, 26*(11), 47-50. Retrieved from https://mmu.rl.talis.com/items/41CABDC8-6AC5-A9F0-D21A-D29596DAE33E.html
27. Limbago, E., & Sulistiawan, D. (2019). The effect of gender in the board of commissioners on company value with family control as a moderation variable in Indonesia. *Review of Management and Entrepreneurship, 3*(2). https://doi.org/10.37715/rme.v3i2.1202
28. Lückerath-Rovers, M. (2013). Women on boards and firm performance. *Journal of Management & Governance, 17*(2), 491-509. https://doi.org/10.1007/s10997-011-9186-1
29. Manita, R., Elommal, N., Dang, R., Saintives, C., & Houanti, L. (2020). Does board gender diversity affect firm performance? The mediating role of innovation on the French stock market. *International Journal of Entrepreneurship and Small Business, 39*(1-2). https://doi.org/10.1504/IJESB.2020.104253
30. Mannix, E., & Neale, M. A. (2005). What differences make a difference?: The promise and reality of diverse teams in organizations. *Psychological Science in the Public Interest, 6*(2), 31-55. https://doi.org/10.1111/j.1529-1006.2005.00022.x
31. McKinsey & Company. (2007). Women matter: Gender diversity, a corporate performance driver. Retrieved from https://www.mckinsey.com/business-functions/organization/our-insights/gender-diversity-a-corporate-performance-driver#
32. Milliken, F. J., & Martins, L. L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *The Academy of Management Review, 21*(2), 402-433. https://doi.org/10.2307/258667
33. Naschberger, C., & Guerfel-Henda, S. (2013). La mise en oeuvre d'une démarche diversité en PME – Quelques enseignements d'un centre d'appel spécialisé. *Management international, 17,* 98-112. https://doi.org/10.7202/1015815ar
34. Nielsen, S., & Huse, M. (2010). The contribution of women on boards of directors: Going beyond the surface. *Corporate Governance: An International Review, 18*(2), 136-148. https://doi.org/10.1111/j.1467-8683.2010.00784.x
35. Nieto, M. J. (2018). *The influence of women and minority members of corporate boards of directors on firm performance measures*. Retrieved from https://conservancy.umn.edu/bitstream/handle/11299/197896/Nieto%2C%20Maria%20%28The%20Influence%20of%20Women%20Min%20Mem...%29Capstone%202018.pdf?sequence=1&isAllowed=y
36. Nishii, H., & Özbilgin, M. F. (2007). Global diversity management: Towards a conceptual framework. *The International Journal of Human Resource Management, 18*(11), 1883-1894. https://doi.org/10.1080/09585190701638077

37. Oxelheima, L., & Randøy, T. (2003). The impact of foreign board membership on firm value. *Journal of Banking & Finance, 27*(12), 2369-2392. https://doi.org/10.1016/S0378-4266(02)00395-3
38. Post, C., & Byron, K. (2015). Women on boards and firm financial performance: A meta-analysis. *Academy of Management Journal, 58*(5), 1546-1571. https://doi.org/10.5465/amj.2013.0319
39. Reguera-Alvarado, N., de Fuentes, P., & Laffarga, J. (2017). Does board gender diversity influence financial performance? Evidence from Spain. *Journal of Business Ethics, 141*(2), 337-350. https://doi.org/10.1007/s10551-015-2735-9
40. Rhode, D. L., & Packel, A. K. (2014). Diversity on corporate boards: How much difference does difference make? *Delaware Journal of Corporate Law, 39,* 377-425. Retrieved from http://www.directwomen.org/sites/default/files/assets/Rhode%20and%20Packel%20%281%29.pdf
41. Rose-Hulman. (2015). *Diversity director brings wealth of diversity, inclusiveness experiences*. Retrieved from https://www.rose-hulman.edu/news/2015/first-full-time-center-for-diversity-director-brings-wealth-of-diversity-inclusiveness-experiences.html
42. Sila, V., Gonzalez, A., & Hagendorff, J. (2016). Women on board: Does boardroom gender diversity affect firm risk? *Journal of Corporate Finance, 36,* 26-53. https://doi.org/10.1016/j.jcorpfin.2015.10.003
43. Singh, V., & Point, S. (2006). (Re)presentations of gender and ethnicity in diversity statements on European company websites. *Journal of Business Ethics, 68*(4), 363-379. https://doi.org/10.1007/s10551-006-9028-2
44. Terjesen, S., Couto, E. B., & Francisco, P. M. (2016). Does the presence of independent and female director's impact firm performance? A multi-country study of board diversity. *Journal of Management & Governance, 20*(3), 447-483. https://doi.org/10.1007/s10997-014-9307-8

APPENDIX

Table A.1. Analysis of correlation matrices

Variables	*Tobin's Q*	*DFemale*	*PFemale*	*Blau*	*Shannon*	*Size C*	*Size B*	*L*	*ROA*
Tobin's Q	1,000								
DFemale	-0.1663	1,000							
PFemale	-0.1088	**0.7789**	1,000						
Blau	-0.1344	**0.8692**	**0.9757**	1,000					
Shannon	-0.1330	**0.8488**	**0.8669**	**0.9017**	1,000				
Size C	-0.2994	0.1747	-0.0937	-0.0275	0.0101	1,000			
Size B	-0.1429	0.3016	0..1350	0.1660	0.1854	0.5026	1,000		
L	-0.1116	0.757	-0.0423	-0.0086	0.0004	0.1413	0.0452	1,000	
ROA	0.1516	-0.1159	-0.1232	-0.1371	-0.1490	0.0433	0.1266	-0.0884	1,000

Table A.2. Gender diversity and Tobin's Q: regression results from DFemale's DMCO panel data and Tobin's Q

Variables	*Tobin's Q*	*DFemale*
Constant	3.689 ***	1.602 ***
Tobin's Q		0.044 **
DFemale	0.842 ***	
Size C	0.000 *	0.135 ***
Size B		0.001 **
L	0.398 ***	
ROA	0.023 **	
Wald χ^2	31.56 ***	18.34 ***
R^2	0.1262 *	
Hausman test	0.04818 **	5.1364 ***

*Note: * Significant at the 1% level; ** Significant at the 5% level; *** Significant at the 10% level.*

Table A.3. Gender diversity and Tobin's Q: regression results from PFemale's DMCO panel data and Tobin's Q

Variables	*Tobin's Q*	*PFemale*
Constant	3.689 ***	1.602 ***
Tobin's Q		0.044 **
PFemale	0.842 ***	
Size C	0.000 *	0.135 ***
Size B		0.001 *
L	0.364 ***	
ROA	0.030 **	
Wald χ^2	31.70 ***	18.34
R^2	0.1299 ***	
Hausman test	0.06497 ***	5.1367 ***

*Note: * Significant at the 1% level; ** Significant at the 5% level; *** Significant at the 10% level.*

Table A.4. Gender diversity and Tobin's Q: regression results of data from the DMCO panel of the Blau index and Tobin's Q

Variables	*Tobin's Q*	*The Blau index*
Constant	3,745	0.682
Tobin's Q		0.053 ***
The Blau index	0.842 ***	
Size C	0.000 *	0.012 ***
Size B		0.006 **
L	0.368 ***	
ROA	0.035 **	
R^2	0.1300	
Wald χ^2	31.70	11.05
Hausman test	0.067048 ***	3,799

*Note: * Significant at the 1% level; ** Significant at the 5% level; *** Significant at the 10% level.*

Table A.5. Gender diversity and Tobin's Q: regression results of the DMCO panel data from the Shannon index and Tobin's Q

Variables	*Tobin's Q*	*Shannon*
Constant	3.745 ***	0.992 ***
Tobin's Q	0.842 ***	
Shannon		0.044 **
Size C	0.000 *	0.020 **
Size B		0.008 ***
L	0.370 ***	
ROA	0.041 **	
Wald χ^2	31.64 ***	10.68 ***
R^2	0.1284	
Hausman test	0.0426 **	4.867 ***

*Note: * Significant at the 1% level; ** Significant at the 5% level; *** Significant at the 10% level.*