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Board of directors and performance of public and semi-public enterprises in Chad

Conseil d'administration et performance des entreprises publiques et parapubliques au Tchad

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Abstract:
Considered as creators of value, jobs and contributors to the Gross National Product (GDP), public and parapublic companies (EPP) in Chad are characterized by a dysfuction of their board of directors. This dysfunction seems to weaken the effectiveness of the Board of Director, even though the latter is a governance mechanism which plays an essential role in the accomplishment of these companies thanks to its characteristics. The objective of this paper is to highlight the influence of the size and presence of women on the board of directors on the performance of EPPs companies in Chad.

To test our hypotheses relating to the relationship between the caracteristics of the turnover and the financial and economic performance measured by the indicators (ROE, ROE and VA/CA), we installed three linear regression models. Based on a survey carried out among on twenty (20) public and parapublic companies in Chad, over a period 2020-2023, the results show that the variables presence of women (PFCON) and the size of the company (SIZE) positvely and significantly improve the performance of public companies and parapublics. While the size of the board of directors has a negative influence on the performance of said companies**.**

Keyword: Governance mechanisms- Board of directors- Financial of Economic performance- Public and parapublic Campanies - Chad

1. INTRODUCTION

1.1. Contexte de la recherche

Considered as providers of jobs, general interest services and incubators of the national economy, Chad's public and parapublic companies have never been the subject of in-depth reflection in their creation process, whereas the State and the public authorities have multiplied them in all sectors (from primary to quaternary) related to socio-economic development. Added to those dating from the post-colonial era, Chad's newly created public enterprises and parastatal have no major objectives, nor any profound ambition to respond to the concerns of the day. The creation of these entities is encouraged by the relative economic prosperity of the country during the period of oil exploitation (2003-2016). The increase in the number of these entities has led to confusion in the administration and management of the said companies, and especially in their relations with the supervisory ministries. This confusion has created dramatic situations which undermine the proper functioning of the public sector and, consequently, cool down the intervention of state policy vis-à-vis these companies. These dysfunctions have rapidly spread to the socio-organisational and socio-economic level of these entities, and are characteristic of the malfunctioning of their boards of directors.

In Chad's public and parapublic companies, the members of the board of directors are therefore, like the managers, appointed by presidential decree, not only for their skills, but because of their partisan affiliation or their proximity to the regime in place. This partisan appointment influences the activities of the board, which does not improve its efficiency, and therefore the performance of these public enterprises and parastatal. In any case, the pursuit of the dual socio-economic and political objective by these entities leads to the reflection that these companies are looking for the best performance. Whereas the Boards of Directors of these companies find their legitimacy from the government which, by appointing the directors (members of the Board) imposes on them a roadmap which may be different from that of the performance objectives. Therefore, the issue of performance needs to be put back on the agenda by looking at the governance mechanisms that would be likely to influence it. In this sense, it is felt that the fundamentals of value creation permeate all aspects of the company, from performance measurement and strategic and operational decision-making to control systems (Bogliolo, 2001). Thus, strategic decisions imply a long-term, futuristic vision for companies in general, and public and parapublic companies in particular, require stability and consistency in governance mechanisms.

Among these mechanisms, the Board of Directors better responds to the concern of protecting shareholders by resolving conflicts between stakeholders in order to positively affect performance. Indeed, while the Board of Directors is an indispensable tool for disciplining managers and removing them from office when they fail to manage, it also has a strategic and cognitive role to play in bringing skills and innovation to companies. The mission assigned to the Board of Directors as a disciplinary and reward mechanism can also be a mechanism for energizing companies. The implementation of its mission can be achieved thanks to the structural and cognitive characteristics of its members. To this end, it is understood that the effectiveness of a board of directors is based on its characteristics such as its size (Godard, 2001; Zahra and Pearce, 1992), but also on its gender diversity, which are factors of choice in decision-making (Toé, 2014). These characteristics enable the board of directors to carry out its mission in the effective management of stakeholders, in order to initiate the performance of companies.

However, the observation is that in the majority of Chad's public and parapublic companies, the opacity of the functioning of the board of directors deprives it of its effectiveness and could therefore influence the performance of the enterprises. This translates into poor economic and financial results of public enterprises. In view of these organizational and economic difficulties, the improvement in the performance of public and parapublic companies during the 2020-2023 periods does not seem to be on track, since it is the subject of the characteristic dysfunction of the board of directors. In view of the problems encountered by these EPP, the issues raised in our paper are reflected in the following questions:

What is the influence of the size of the board of directors on the performance of public and parapublic companies in Chad?

What is the influence of the presence of women on the board on the performance of public and parapublic companies in Chad?

These questions seem worrying to the point that it is important to pay particular attention to the CAs, in order to examine the motives and issues likely to determine the performance of public and parapublic companies in Chad. It is within this framework that our article entitled: "Board of Directors and Performance of Public and parapublic companies in Chad" is written.

1.2. Structure :

Specifically, the objective of this paper is to test the effects of the presence women on the board and size of the board of directors on the performance of public and parapublic companies. Its aim is to highlight the influence of the characteristics of the Board of Directors on the performance

financial and economic of companies, in order to measure it thanks to performance indicators such as ROE, ROA and VA/CA.

The paper is structured around the three sections. In a first section, we discuss the theoretical and empirical relevance of the characteristics of Board of Directors in relation to company performance. In a second section, we work on the presentation of the sample and the operationalization of the selected variables. We end this paper with the analysis and discussion of the results.

2. FONDEMENTS THEORIQUES

For many years ago, the question of governance mechanisms has been a key issue in the conduct of business, prompting researchers and professionals to produce work in this area. Some studies on governance mechanisms (Moungou, 2017, Fotso, 2015; Koudri and Aziez, 2015; Wamba, 2010 etc.) in different contexts have focused on the issue of the board of directors, whose mission is to control managers and protect shareholders against managerial opportunism. Others have approached the Bod by examining its demographic and gender diversity (Guetsop Sateu, 2016; Toé, 2014; Feudjo and Mfouapon, 2013). The results of these studies appear to be contradictory. Our reflection is thus conducted on the relationship between turnover and performance, based on its structural and cognitive characteristics (size and the presence of women) which appear to be decisive in improving the performance of the said public and parastatal companies in Chad.

2.1. Cadre conceptuel de la recherche

Company performance is the result of the combined efforts of the different stakeholders in the company (Zahra and Pearce, 1989). Since board members are primarily responsible for strategic and control issues, i.e. in terms of decision making or control, they are directly involved in defining and assessing the performance of the company (Saber and Laghmari, 2018). The proper functioning of the board of directors could be therefore contributed to its effectiveness and thus improve the performance of the enterprise (Zhang, 2013).

Several governance theories explaining the BoD highlight its role in defining strategy, control and the innovation process. Charreaux (2008) proposes two main approaches to governance which underpin the characteristics of AC: the contractual approach to governance, the

main theory of which is that of agency (Jensen and Meckling, 1976) and the strategic approach, the main perspective of which is the so-called cognitive approach (Charreaux, 2011).

Indeed, much of the work within the contractual vision of governance raises the question of the impact of structural characteristics of the board of directors on corporate performance.

The agency theory (Jensen and Meckling, 1976) views the board of directors as a privileged mechanism whose role is to discipline management in order to maximize the creation of shareholder value. Thus, several studies have focused on the characteristics of Board of Directors in relation to corporate performance (Wanda, 2010; Fotso-Sangué, 2015). The question of the greatest effectiveness of the board is dominated by its composition, size, and separation of functions, which are often determining factors in the quality of its performance as governance mechanisms that influence the performance of the firm. Studies on board effectiveness have been growing around the "assumption" that the independence of directors, the separation of functions, and the size of the board improves its effectiveness and thus the performance of the firm. However, the results of these studies have been weak, scattered and, even for some authors, inconclusive or even disappointing (Wanda, 2010; Godard, 2001).

Indeed, the model of Fama and Jensen (1983) assigns several roles to the Board of Directors, including the role of strategy. These authors define strategy as a process passing through four stages, namely initiation, ratification, implementation and monitoring. While management is fully responsible for the implementation of strategic decisions, the role of the board is limited to the ratification of these decisions and the supervision of management, in order to reduce agency costs and protect the interests of shareholders. Thus, the role of the Board is to appoint, dismiss and set executive compensation and even influence counterproductive decisions.

However, from the cognitive perspective of governance, the Board of Directors is conceived as a place for exchange and debate between directors and managers. This theory postulates that organizations are seen as open, interacting systems, building relationships between organizations and their environment (Meyer and Rowan, 1977). To this end, the board plays a role in creating links of influence between organizations through joint administrations and acts as a bridge between boundaries.

From the perspective of resource dependence, Pfeffer (1978) argues that directors are important resources that create a relationship between the company and its environment. This relationship translates into interaction, which indicates that external administrators position

themselves as a point of connection between the organization and other centres of interest, facilitating access to the critical resources it needs through cognitive or material contributions.

In this way, the board of directors becomes a mechanism of cooptation enabling the enterprise to link up with its environment and to secure the resources necessary to protect itself from the hazards of the environment (Stiles et al., 2001). This is done through the selection of directors and managers likely to sit on the board of directors.

Thus, increasing the size of the board and its diversity increases the security of critical resources and reduces environmental risks. In the same perspective, Pearce and Zahra (1992) report that the composition of the board reflects the exchange of resources between the company and its environment. These authors highlight the existence of a positive association between the co-opting of external directors and corporate performance. Huse (2007) believes that the external dependencies of the company are reduced by linking the company to its environment, particularly through networks. Indeed, the board of directors can support management reflection, stimulate creativity and the innovation process. It contributes to the search for new opportunities by offering strategic alternatives (Andrews, 1982). Mutual collaboration between directors and management in the formulation and implementation of strategy is essential to ensure an effective strategic contribution from the board (Jaoua & Mim, 2018). with a view to improving the company's performance.

Moreover, such involvement of the Board members would help to shape the leadership to be more dynamic and effective. Board involvement could help leaders to develop better strategies and, as a result, to achieve higher levels of performance over the long term (Zhang, 2010; Wirtz, 2011). Indeed, in its role of strategy implementation, it is recognized that the board should ensure the complementarily of the two theoretical visions. The first vision consists of the procedural presentation of the company's strategy, while the second vision relates to the interpretation of the board's contribution in the stages of the strategic process. While the agency theory gives the BoD exclusively the role of decision control (ratification and monitoring), the cognitive perspective highlights the BoD's contribution to strategic initiation and innovation.

In order to study a complete vision of the firm's performance, an analysis of the diversity and size of the Board of Directors seems indispensable. Therefore, we can think that the larger the size of the board, the more diverse its members may be in terms of gender and skills in the quest for better business performance

2.2. Ancrage théorique de la recherche: **Relationship between board characteristics and firm performance**

Research on the relationship between Board characteristics (notably the presence of women and size of the board) and company's performance has been conducted in different contexts (NgomesseNjiké et Tcheubeu, 2017; GuetsopSateu, 2016; Toé, 2014 et 2012). Following the logic of these different studies, our reflection examines these works with a view to adapting them to EPP.

2.3. Revue de littérature empirique : **Presence of women on boards and companies performance / Board size and firm performance**

The presence of women on the board Directors (or gender balance on the board) has been the subject of several theoretical and empirical studies, especially in developed countries. Following the example of the studies carried out by Singh (2008) which focuses on British companies, there are also studies by Adams and Ferreira (2007, 2009) relating to the American context. Similarly, Rose (2007) study of Danish companies examined the relationship between gender board diversity and company performance. In the African context, this gender characteristic of turnover has also been the subject of some studies, but the results seem to be contradictory (GuetsopSateu, 2016; Galia et Zenou, 2013; Triki and Bouaziz, 2012; Arnaud, 2016). The question that arises is whether the mix within the board influences the performance of companies. The answer to this question is contradictory between the defendants and the opponents of gender diversity (or gender mix) in boards. The authors are not unanimous on the meaning of the influence of board mix on corporate performance.

For the ins and outs in favor of gender diversity, they fall under the vision of the theory of human capital and that of dependence on resources (Pfeiffer, 1972). These reveal that in a board of directors, each member brings a portfolio of knowledge, experience and proven skills. These components of this portfolio could positively influence the performance of companies. The research work of Catalyst Inc. s research (1996 and 2000) has shown that there is a strong correlation between the number of women in senior management positions and the financial performance of companies.

For M'hamid (2011), the heterogeneous board increases the image of the company through the disclosure of their openness, tolerance and fairness. The presence of more women on boards means a greater diversity of skills, experience, opinions and strategies (German I. and Brullebaut, 2014; Andrieux, 2013). These lead to good governance, and thus to better performance of the organization[1]. The research by Carter et al (2002) on the direct link between financial and performance and the gender and nationality diversity of board members produced conclusive results. For GuetsopSateu (2016), the relationship between gender diversity and performance in Cameroonian companies is positive and significant. However, the author points out those women's values do not contribute anything to company performance. Toé (2014) research on the relationship between women's representation on boards of directors and performance in French companies has produced encouraging results. The conclusion shows that feminization brings distinctive skills to the board, that it contributes to good governance, bringing competitive advantages, and that the financial market encourages the integration of women in governance bodies. Studies by Adams and Ferreira (2008) show the positive impact of gender diversity in the board in situations of weak governance. Similarly, the study by Minguez and Vera (2010) on the link between women's presence in the board of directors and business performance in Spain produced conclusive results. The results show that the relationship between the two variables is established in the short term. For Catalyst (2003, 2007), research on American companies regarding gender diversity and financial performance was successful in the period 2001 to 2004. In the same vein, Omri et al (2011) point out that mixed boards improve the image of the company through the disclosure of their openness, tolerance and fairness. This result confirms those obtained by Kang et al (2009), who indicate that the announcement of the addition of a woman to the board has an effect on improving performance. Proponents of gender balance argue that women bring new ideas, have a very high communication capacity compared to men, and deal with strategic issues at board meetings. This positively influences company performance (Carter et al 2003, Adams and Ferreira 2003).

However, the opponents of the mixed Board of Directors observe the situation differently. According to these authors (Zahra et al., 1998; Westphal and Milton, 2000), the presence of women on the Board increases problems of consensus and creates tensions between board members. Shrader et al (1997) analyzed 200 US mixed board companies with the highest market capitalization between 1992 and 1993. They do not find a positive and significant relationship

[1]Catalyst, The Bottom Line: ConnectingCorporate Performance and GenderDiversity (Catalyst, 2004)

between the percentage of women on the board and the financial performance of the companies. Similarly, Kochan et al (2003)do not find a positive relationship between gender diversity in decision-making positions and corporate financial and economic performance. The study by Zahra et al (1998) on the presence of minorities on the board (women and racial minorities) and financial performance led to a non-significant association. Other results show no impact of gender diversity on board membership on company performance (Rose, 2007). Westphal and Milton (2000) point out that the introduction of women on the board can increase cognitive conflicts, degrade group cohesion and limit the group's capacity for action. base on the discussion between opponents and activists in favour of gender diversity in the board of directors, we put forward the following hypothesis.

H_1: the presence of women on the board significantly improves the performance of public and parapublics companies in Chad

Several studies have been highlighted the relationship between the size of the turnover and the performance of companies. The resource dependency theory maintains that in an uncertain environment, the larger the board size, the more the different knowledge of directors allows effective control over management and improved performance (Pfeiffer, 1972). Godard and Schatt (2011) predict that the larger the number of directors, the better performance the company achieves. In this vein, Pearce and Zahra (1989) prove the existence of a positive relationship between board size and corporate performance. Following their meta-analysis, Dalton et al (1999) confirm this relationship and find that it is more intense for large companies. In the same sense, Adams and Mehran (2003) find that firms with large board size perform better.

On the other hand, several studies report that large boards generate a low level of individual commitment and negatively affect the motivation of their members and their effective participation in decision-making. Although a large board increases the amount of expertise present, it creates friction between the different members and is highly manipulative Caby and Hirigoyen(2001) argue that as a group grows in numbers, it will be hit with inefficiency due to organizational dysfunction, which would have a negative effect in relation to the skills expected of board members. Thus, leaders seek to expand the size of the board to enable them to adopt the rooting strategy (Lagmango, 2020). Studies by Andres et al (2005) on the impact of board size

and composition on firm value in a sample of 450 non-financial firms in ten Western European countries show a negative relationship. Similarly, Beiner et al (2003) found no significant relationship between board size and company value. Turnover size in the Australian context, where turnover is small, has no influence on performance. Using the GMM method, Wintoki (2007) estimated the relationship between performance (measured by ROA) and turnover size. Using company panel data between 1999 and 2003, these results show that there is no significant relationship between board size and firm performance. The authors are not unanimous as to the number of directors that would be effective in ensuring a well-functioning board. Some authors argue in favor of a larger size, while others, on the contrary, show that a smaller number of directors strengthen the control of the board and subsequently improves corporate performance. This divergence of results does not allow to decide whether or not, there is a positive relationship between the size of the board and its ability to act in favor of performance. In the light of the arguments put forward by these authors, the following hypothesis emerges:

H_2: The board size significantly improves performance of public and parapublics companies in Chad.

3. CADRE EMPIRIQUE DE LA RECHERCHE

3.1. Presentation of the sample and operationalization of the variables

The purpose of this section is to present and describe the variables in the study. The aim is to present the sample selected and to proceed with the modeling of these related variables (turnover and performance).

- **Presentation of the sample**

Our empirical analysis focuses on state-owned enterprises in Chad. Indeed, we selected twenty (20) companies over a period of 4 years, from 2020 to 2023. The choice of these enterprises is justified by the period of their creation (2003-2016), a period when Chad has returned to economic prosperity. The choice of these twenty (20) EPP was made on the basis of the acceptability of the managers of the said companies. Thus, we can qualify our sampling as that of convenience, that is to say,the companies that agreed to respond to our survey.

The choice of these companies is also justified by the period of their creation which dates from 2010 to 2016, that is to say those whose age is six (6) years of existence before our period of study. The choice of this period is justified by the fact that Chad was in economic prosperity (oil activities wish is the natural resources). This choice of sample is also based on the fact that they have reliable financial data from the Ministry of Finance and the General Directorate of Taxes. All the companies in our sample are operational in Ndjamena (Capital of Chad). The data relating to the characteristics of the board were collected by the means of a questionnaire administered to these companies. Performance data was collected from the General Directorate of Taxes and completed with the accounting departments of the companies in the sample. Are excluded from the sample, coinsurance companies and financial institutions due to the specificity of their accounting rules, as well as some newly created companies (After the year 2016).

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- **Measurement of performance variables**

The financial indicators that are mobilized in the context of research in finance and governance are operational zed in this study. The objectivity of the indicators and the ease of access to the data represent the main arguments for using these measures. It is in this context that we have chosen two indicators to measure financial and economic performance, in particular ROA, ROE and added value reported on turnover (VA/CA).

- The ROA (it) makes it possible to evaluate the profitability of the assets. It is measured by the ratio between operating income and total assets. This ratio places all the assets on the same risk plane and neglects the off-balance sheet activities which take on greater importance in the activities of a firm covers all the activities of the firm without being affected by accounting manipulations**.** It measures the profitability of shareholders in accordance with the financial structure of the company (Ben Taleb and Léger-Jarniou, 2012). It is equal to the Net income reported on total assets of the company.

- The ROE (it) meanwhile is used to measure financial profitability by the ratio between net income and equity. ROE (Return on Equity) represents financial profitability, and expresses the ability of capital invested by shareholders to generate a certain level of net profits. Bouaziz and Bouri (2011), then Kolsi and Ghorbel (2011) used this indicator to measure financial performance. It is equal to the ratio of net income to equity.

- VA/ CA: This added value indicator reported on turnover constitutes economic performance. As regards economic performance, it is measured by the ratio of value added to annual turnover (Fotso-Sangué, 2011). Because value added expresses the wealth created by the company during its production process, we felt it was better suited to assess economic performance if it is reported on turnover.

Financial indicators that are mobilized in the framework of research in finance and governance are used to measure performance. The objectivity of the indicators and the ease of access to data are the main arguments for using these measures. It is within this framework that we have selected two indicators to measure financial performance and economic added, namely ROA; ROE and VA/CA.

❖ **Measurement of CA characteristic variables and control variables**

To achieve this in the modeling we used two exogenous variables (explanatory variables of performance) and three control variables (size of the company, sector of activity and age of the company)

❖ **The characteristics of the CA were assessed by two variables**

- TAILCON (it): The Size of the Board is measured by the number of directors who sit on the Board. The majority of studies plead in favor of the small size of the AC to guarantee the relevance of the control compared to the large board (Lipton and Lorsch, 1992). While the

analyzes by Adams and Mehran (2003) and Godard et al. (2004) militate in favor of the large size of the board, particularly in banking companies.

- PFCON (it): it represents the diversity of the board of directors measured by the number of women sitting on the Board (GuetsopSateu, 2016; Toé, 2014; Galia et Zenou, 2013)

❖ **For the control variables, they were assessed by three variables**

- SIZE (it): the size of the company is apprehended through the logarithm of The total assets of the firm (Zahra and Pearce, 1989); (Godard, 2002). Size thus constitutes an alternative for reducing the uncertainty of the environment (Pfeffer, 1982)**.** A large size increases the chances of obtaining significant information for decision-making (Finet and Labelle, 2004).

- SECTA (it): it is the sector of activity which makes it possible to isolate the sector effect in relation to the error term, on the one hand, and on the other hand to control heterogeneity at the level of the companies. It is a binary variable that takes the value 1 if the company is part of the industrial sector and the value 0 if it belongs to the other sectors.

- AGE (it): the age variable has often been considered as a variable that can have a very significant effect on performance. In general, the age variable of the company is expressed by means of the logarithm of the number of years of operation. The age of the company represents the number of years of existence of the company since its creation. Like these authors, we adopt the logarithmic transformation of the number of years as a measure of the age of the company.

3.2. Model specification

To test the hypotheses already formulated, we use the analysis model below. The objective of this study is to test the influence of turnover characteristics on the performance of public and parapublic campanies in Chad. To do so, we carried out three linear regressions. The endogenous variable is performance, and the exogenous variables are the characteristics of board and those of the companies (control variables). The methodology adopted is inspired by that of Ben TalebSfar & Leger-Jarniou (2012) and Fotso-Sangué (2015).The models used are the following:

$$ROA_{it} = \beta_0 + \beta_1 PFCON_{it} + \beta_2 TAILCON_{it} + \alpha_1 AGE_{it} + \alpha_2 SECTA_{it} + \alpha_3 TAILLE_{it} + E_{it} \quad (1)$$

$$ROE_{it} = \beta_0 + \beta_1 PFCON_{it} + \beta_2 TAILCON_{it} + \alpha_1 AGE_{it} + \alpha_2 SECTA_{it} + \alpha_3 TAILLE_{it} + E_{it} \quad (2)$$

$$(VA/CA)_{it} = \beta_0 + \beta_1 PFCON_{it} + \beta_2 TAILCON_{it} + \beta_3 TAILLE_{it} + \beta_4 GE_{it} + \beta_5 SECTA_{it} + E_{it} \quad (3)$$

Where β_0 is the model constant.β_1, β_2, α_1, α_2, α_3 are the regression coefficients of the model and Eit is the standard residual term.And i = 1, 2, 3.... 20 is the number of companies in our sample. And t = 1, 2, 3, 4 is the number of periods retained for the study.

❖ Analysis and Interpretation of Results

We have presented above the methodological path that led us to test our research model. This time, we present the descriptive statistics, the multivariate tests and close with the analysis and results obtained by the relationship between gender mix, board size and company performance.

❖ Descriptive studies and multivariate analyses

We will describe the statistics of our variables and the correlation matrix to verify the absence of multicollinearity**.**

❖ Descriptive statistics and correlation matrix

Descriptive statistics for our sample are presented in table (1) below. Reading table (1), it can be seen that the average size of the company, measured by the logarithm of the assets, is 19.51%. The average firm in our sample has a return on assets of 4.31%. In addition, our sample has a mixed board with 38% of directors.

The average size of the board is around 10.

Table 1: Descriptive statistics

Study variables	Number of observations	average	Standard deviation	Min	Max
ROA	200	0.043123	0.69669	4050132	423659

ROE	200	0.034561	0.45605	-730169	630169
VA/CA	200	0.02543	0.2134	0.2352	0.0673
TAILCON	200	10.2539	1.944936	0.500	13.00
PFCON	200	3.890524	1.834547	0.01000	0.300
LOG SIZE	200	19.5140	1.975331	10.0855	20.6553
LOG AGE	200	6.131746	4.825091	0.3000	0.6000
SECTA	200	2.835309	0.65432	0001	02000

Source: Author under STATA

❖ **Multicolinearity tests**

A more in-depth analysis (correlation matrix) was carried out to ensure the adequacy of the selected variables. The analysis of the correlation matrix makes it possible to highlight whether there is an autocorrelation between the variables considered. The correlation coefficients shown (in Table 4) have values below 0.8. This analysis tells us that there is no multi-collinearity between the exogenous variables.

Table 2 : Pearson Corrélation Matrix

Study variables	TAILCON	PFCON	AGE	SIZE	SECTA
TAILCON	1				
PFCON	0.0309	1			
AGE	0.0124	-0.1315	1		
SIZE	0.1788	0.0512	-0.0250	1	
SECTA	0.0448	0.1096	0.0479	0.0978	1

Source: Author under STATA

This table (2) presents the correlation matrix of the independent variables used to study the relationship between board of directors characteristics and company performance. The observation of the results relating to table (2) leads us to presuppose the quality of the empirical tests. The low correlation between the pairs of variables prevents us from generating biases. To this effect, we

assume that the heterogeneity of the variety of the sample is taken into account in order to decide on the role of the board characteristics in the performance of the company.

❖ **Verification of assumptions and discussion of results**

The analysis of the results obtained will be done in two stages. In the first stage, the effect of the characteristics of board of directors on the financial and economic performance of companies in Chad as measured by ROA will be examined by analyzing the results of the estimation of the first regression model (model 1). In the second stage, the analysis of the results obtained from the influence of board of directors characteristics on financial and economic performance measured by ROE (Model 2) will be addressed. Our third model analyzes the influence of exogenousnvariables on the economic performance of public and parapublic companies in chad.

To do so, it is first of all necessary to check whether there are individual effects or not, in our models, which are a matter of choosing between the fixed-effects model or the random-effects model by applying the Hausman specification test.

3.2. Results of the influence of board characteristics on financial performance (ROA)

Table 3 : Fisher statistics

Tests	Values of the Fisher statistic	Sig.	Conclusion	Type of effects
Models 1 (ROA)	3.5928	0.0000	Rejecting the null hypothesis of equality of constants	Specificeffects

Source: Author Under Stata

We find that the probability of accepting the null hypothesis of the Fisher test is 0.0000<at the 5% threshold. Then, we reject the null hypothesis H0, for confirmation. In this case, the use of Hausman's (1978) specification test is decisive in order to identify the nature of the specification (fixed or random).

Table 4: Hausman test

Correlated Random Effects - Hausman Test Equation: ROA Test cross-section random effects .	
Test Summary	Chi-Sq. d StatisticdfChi-Sq. Prob
Random cross section	0.0006

Source: Author under STATA

According to the Hausman Test (1978), there is a probability of (0.0006) below the critical value at the 5% threshold; which means that the model studied is with fixed individual effects. From an econometric point of view, this result means that the individual effects are added to the model constant (β_0) and not to the error term.

Table 5: Linear regression for the model (1)

Dependent variable ROA				
Variables	Plannedsign	Coefficient β	t- statistic	Prob
CONSTANTE		-0.062934	-0.563680	0.5748
PFCON	+	0.112294***	3.495056	0.0008
TAILCON	-	0.000389	0.120650	0.9043
SIZE	-	0.001196	0.126088	0.9000
AGE	-	0.098508***	-4.373467	0.0000
SECTA	-	- 0.017956	-1.091590	0.2794
$R^{2=}$ 0.846022	R2 adjusted = 0.770149	F=11.15049	p= 0.000	N= 20

Source: Author Under Stata

*** significant at the 1% threshold ** significant at the 5% 10% threshold

Examination of table (5) reveals a positive and statistically significant relationship at the 1% threshold between financial performance measured by ROA and the mix of turnover (PFCON, β= 0.1122, P= 0.008). This result assumes that hypothesis $_{H1,}$ which asserts that the mix of turnover

positively influences financial of economic performance, is validated. These results confirm the studies by Singh (2008) and Kang and al (2009).

With regard to the control variable (SIZE of the company), we note that the sign obtained for the estimated coefficient does not conform to the sign expected. Indeed, the table shows that the size of the enterprise has a positive and non-significant effect (β= 0.0011, P= 0.9). These results confirm those of Godard and Schatt (2011). Indeed, our results are in line with those of Godard and Schatt (2004), who predict that the larger the number of directors, the better the performance of the company. Zahra and Pearce (1989) and Provan (1980) confirm the existence of a positive relationship between board size and corporate performance. Dalton et al (1999) confirm this relationship and find that it is more intense for large companies.

- **Results of the influence of board characteristics on financial performance (ROE)**

Table 6: Fisher Statistics

Correlated Random Effects - Hausman Test Equation: ROA Test cross-section random effects .	
Test Summary	Chi-Sq. d Statistic df Chi-Sq. Prob
Random cross section	19.998038 0.0179

Source: Author Under Stata

Table 8: Linear regression results of the model (2)

		Dependent variable ROE		
Variables	Plannedsign	Coefficient β	t- statistic	Prob
CONSTANTE		0.78897**	2.050561	0.0441

PFCON	+	-0.042590	-0.384654	0.7017
TAILCON	+	0.001008	0.090703	0.9280
SIZE	-	0.009244	-0.282764	0.7780
AGE	-	-0.055882	-0.719927	0.4740
SECTA	-	-0.085096	-1.501170	0.1379
R^2 = 0.74950	R2 adjusted = 0.625107	F = 6.072948	P= 0.000	N= 20

Source: Author under stata

*** significant at the 1% threshold ** significant at the 5% 10% threshold

The results in Table (8) indicate that signs of the coefficients for the PFCON variables do not conform to the expected signs. First, it should be noted that, contrary to hypothesis H_1, the mix of turnover does not seem to have a significant effect on financial performance as measured by ROE. Indeed, the coefficient relating to the PFCON variable is negative and insignificant (β= -0.0425, P=0.7017).

Similarly, the results obtained indicate that the coefficient associated with the size of turnover variable (TAILCON) is negative (β= -0.001) and insignificant (P=0.9280) which does not confirm our prediction of hypothesis H_2 which predicts that the size of turnover positively affects the financial performance of public and parapublics companies. As far as the control variables are concerned, the sign found for the company size variable (SIZE) is in line with the expected sign. The coefficient on firm size is negative but statistically insignificant (β=-0.0092, P=0.778).

- **Results of the influence of board characteristics on economic performance (VA/CA)**

This result, using the Hausman (1978) specification test, is decisive in order to identify the nature of the specification (fixed or random).

Table 9 : Fisher statistics

Tests	Values of the Fisher statistic	Sig.	Conclusion	Type of effects

Models 3 (VA/CA)	2.5928	0.0000	Rejecting the null hypothesis of equality of constants	Specificeffects

Source: Author Under Stata

Table 10: Linear regression results of the model (3)

Dependent variable ROE				
Variables	Plannedsign	Coefficient β	t- statistic	Prob
CONSTANTE		0.9997**	2.050561	0.0441
PFCON	+	0.522590	0.384654	0.7017
TAILCON	-	0.01008	0.090703	0.9280
SIZE	-	0.019244	-0.282764	0.7780
AGE	-	0.055882	0.719927	0.4740
SECTA	-	-0.085096	-1.501170	0.1379
R^2 = 0.54950	R2 adjusted = 0.525107		F = 7.072948	P= 0.000 N= 20

Source: Author under stata

*** significant at the 1% threshold ** significant at the 5% 10% threshold

The results in Table (10) indicate that signs of the coefficients for the PFCON variables do not conform to the expected signs. First, it should be noted that, contrary to hypothesis H_1, the mix of turnover does not seem to have a significant effect on economic performance as measured by VA/CA. Indeed, the coefficient relating to the PFCON variable is negative and insignificant (β= -0.55425, P=0.707).

Similarly, the results obtained indicate that the coefficient associated with the size of turnover variable (TAILCON) is negative (β= -0.001) and insignificant (P=0.9280) which does not confirm our prediction of hypothesis H_2 which predicts that the size of turnover positively affects the economic performance of public and parapublics companies. As far as the control variables are concerned, the sign found for the company size variable (SIZE) is in line with the expected sign. The coefficient on firm size is negative but statistically insignificant (β=-0.0092, P=0.778).

Discussion and implications: The explanatory results generated by our study need to be compared with those of previous work presented in the literature review. At the end of this discussion, there are implications along the theoretical, managerial and methodological axes. Thus, our results from the tests show that several variables of our models do not positively influence the performance of EPPs. Our results require comparison with those predicted in the literature.

Regarding the size of the board (TAILCON), our results show that it negatively influences performance, contrary to agency theory (Jensen and Meckling, 1989) which predicts that the size of the board determines its effectiveness, and improve business performance. Indeed, our results are in contradiction with Godard and Schatt (2005) who predict that the larger the turnover, the more the company achieves high performance. Similarly, the sector of activity has no effect on the performance of the EPPs.

The hypothesis of an influence of the quality of the structural characteristics of the Board of Directors on the performance of EPPs was rejected after the various tests carried out. These results contradict previous work by Godard and Schatt (2005). The results of the tests of assumptions carried out proved that the characteristics of the CA have a negative influence on the financial and economic performance of the EPPs of our sample.

With regard to the mix of turnover, our results are in line with the results of studies carried out by Toé (2012) then Triki and Bouaziz (2014) and Guetsop Sateu (2016) which show a positive influence on the performance of companies. Our results are in line with the resource dependence theory (Pfeffer, 1972), which advances the idea that the board composed of a diversified structure is efficient and greatly contributes to its performance. Pfeffer (1982) argue that the effectiveness of a board depends on its diversity and size. Indeed, developing and renewing the board structure to make it mixed, agile, is a determining factor in the performance of the public and parapublic companies

The study on the small size of the sample (20 public and parapublic companies) operating in Chad does not allow generalizing the results obtained. So, although the sample is small, our results cannot be systematically generalized. However, this limit does not alter the quality of the work, since this sample allowed us to produce acceptable statistics. Our results open avenues for future research such as:

-The extension of the research with a larger sample including private companies may be essential.

- The majority of previous research on this topic considers the relationship between turnover and performance as unidirectional and not reciprocal, it might be nice to look at the relationship in the opposite direction.

-It would perhaps be interesting to conduct a comparative study on the turnover of two categories of companies, namely a category of private companies and another concerning public and parapublics companies.

This paper contributes to the enrichment of existing works on the theories of governance in the strategies of the board of public and parapublics companies. It is a question of verifying if the basic assumptions are valid in the case of the Chadian public and parapublics companies. The highlighting of the structural variables of turnover seen from the angle of diversity and size in the specific context of public and prapublics companies has made it possible to justify the contractual theory of governance, in particular the agency theory. In view of the aforementioned elements, we suggest that the State define the rules of good governance so that the characteristics of the Board (Size and PFCON) fully play their role in favor of performance.

By way of conclusion, we recall that the influence of turnover characteristics on the financial performance of public and parapublics companies was based on an investigation of 20 EPPs operating in Chad (Ndjamena and Moundou). In order to properly examine this influence, we conducted a bivariate analysis by studying the association between the endogenous variables and the explanatory variables. Similarly, the multivariate analysis essential to our study was carried out through the application of multiple linear regressions. The uses of descriptive statistics and multicollinearity test have a decisive contribution to our study. Indeed, the results of the descriptive statistics are summarized in a set of mean, median and frequency.

The interest of these results is to have some information on certain practical characteristics of public and parapublics companies in Chad in terms of turnover characteristics. The results obtained from all the bivariate and multivariate tests show that there is a positive and significant influence of certain characteristics of the turnover on the financial and economic performance measured by the ROA, ROE and VA/CA.

4. Conclusion

The study of the influence of turnover characteristics on the financial and economic performance of public and parapublics companies. was based on an investigation of twenty 20 EPPs operating in Ndjamena and Moundou (Chad). In order to properly study this influence, we conducted a

bivariate analysis by studying the association between endogenous variables and explanatory variables. Similarly, the multivariate analysis which is essential to our study was carried out through the application of multiple linear regressions. The use of descriptive statistics and multicolinearity test statistics make a decisive contribution to our study. Indeed, the results of the descriptive statistics can be summarised as a set of mean, median and frequency. The interest of these results is to have some information on certain practical characteristics of Chad's EPPs in terms of corporate governance, and in particular on the main characteristics of the turnover. The results obtained from all the bivariate and multivariate tests show that there is a positive and significant influence of certain characteristics of the turnover (PFCON) on the financial performance measured by ROA, ROE and VA/CA. Regarding the influence of the characteristics of the board of directors on financial performance as measured by ROA, we find that only the presence of women (PFCON) of the board and the size of the firm have a positive and significant effect on financial performance.

In conclusion, the results of this empirical study show that the characteristics of the turnover such as the size of the turnover (TAILCON), and the control variables notably the sector of activity of the company (SECTA), as well as the age

(AGE) of the company does not have an influence on the financial and economic performance measured by the different ratios (ROA, ROE and VA/CA).

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