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FACTORS INFLUENCING THE QUALITY OF FINANCIAL AUDIT

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Abstract: *Investors' decisions are based on financial and non-financial information. To be useful, the information provided by the financial reports must be accurate, which is also ensured by the opinion expressed by the auditors. The purpose of the paper is to show the importance of the quality of audit services both for investors and for professional accountants and auditors. Audit quality factors can be structured according to several criteria and were represented by the size of the auditor, rotation, duration of the contract, types of services provided. In order to support this hypothesis, the correlation between the variables was tested on the basis of a sample of seven companies listed at Bucharest Stock Exchange in the energy field and utilities included in index BET, for period 2013 - 2018. The data was collected from the annual financial statements and reports issued by financial auditors. The results show that there is a correlation between variables, but of different intensities depending on the indicators chosen. Increasing the quality of financial reporting and the quality of audit leads to increased investor confidence in professional accountants.*

Keywords: audit quality, financial statements, audit opinion, factors

JEL classification: M41, M42

1. Introduction

According to International Standard on Auditing (ISA) 200 "Overall Objective of the Independent Auditor, and the Conduct of an Audit in Accordance with International Standards on Auditing", issued by The International Auditing and Assurance Standards Board (IAASB) For the opinion, the auditor is required to obtain reasonable assurance about the absence of material errors in the information contained in the financial statements under review.

An essential link to be outlined is that of expressing a quality opinion without influences or distortions and factors that can have an impact on opinion audiences, which is directly proportional. Thus, when a potential risk factor, which is not adequately prevented and / or controlled, appears to have a direct impact on the quality of the expressed opinion, this is influenced by the auditor's reasoning. The reason for this discussion will be the factors that can influence the auditor's reasoning as well as the quality concept of the opinion issued by the auditor.

In order to analyze the factors that may influence the auditor's opinion seven companies listed on the Bucharest Stock Exchange (BVB) were analyzed. Entities were chosen from the field of energy and utilities to ensure better comparability, the data were taken from the financial statements, the administrators' reports and the auditors' reports. From data processing were identified the auditor's opinions on the financial statements, the date when the auditors changed, the fees charged for the services rendered.

Starting from the processed results, an econometric model on the relationship between the factors that could influence the auditor's opinion was tested in the second stage, so the following variables were selected auditor size, auditor change, evolution of fees as a share of turnover.

The research will contribute to the development of the literature as it provides an analysis of the available data on auditors' reports for the companies surveyed from a perspective geared to the importance and necessity of public disclosure of all information on the relationship with financial auditors.

The paper is structured as follows: the second section contains a summary of the relevant literature on the quality of the audit, while the third section describes the research methodology. The fourth section presents the results of the study along with our comments. The last section includes the conclusions, limitations of the study and future research directions.

2. Literature review

The literature on the quality of the audit and its measurement is vast; but despite the scope of this literature, numerous studies and legislation in place, there is no generally accepted definition of the quality of audit. From this point of view, DeAngelo (1981) gives an appropriate definition, according to which the quality of the audit results from the "probability that an auditor will discover and report a breach of regulations in the client's accounting system. The discovery of distortion depends on the quality and volume of knowledge gained and the auditor's capacity, while the reporting of distortion depends on the auditor's motivation to disclose it. "

The definition given by DeAngelo is in line with that of the IAASB, but it makes it much clearer that detection of an irregularity is not sufficient, and it is essential that steps be taken to take appropriate steps such as correcting or reporting the error. In order to perform a quality audit, any detected irregularity that may have an impact on the information in the financial statements must be adequately corrected. To improve the quality of the audit, IAASB has developed a new standard on the content of the auditor's report that presents users with more information, applicable starting with the financial statements of year 2016 (ISA 700).

The study of Malihi et al. (2013) complements this definition, thus defining the intrinsic factors for an audit mission: the auditor's ability to perform an activity in accordance with the required standards and its independence. The freedom to take the necessary measures without the risk of some personal or professional repercussions that may result from expressing an opinion contradictory to what the client desires.

The definition was update by DeFond and Zhang (2014) to "greater assurance that the financial statements faithfully reflect the firm's underlying economics, conditioned on its financial reporting system and innate characteristics."

These definitions outline risk areas where influences may arise on the auditor's judgment in expressing opinions and therefore present the risks that require particular attention so that their impact does not affect the quality of the audit engagement and the opinion expressed because of it, resulting in an effective audit.

As a result of the ideas outlined by DeAngelo in 1981, numerous researches by field professionals in both emerging economies and developed economies has been conducted to identify various factors that have an impact on the quality of an audit and how they vary from one sector to another. Among the factors discussed are the degree of specialization of the auditors regarding the information analyzed, the size of the audit company undertaking the mission, the level of remuneration, the level of certification of the auditors, the level of collaboration with professionals from other auditor specialties, the period of collaboration. Another factor debated in contemporary literature that can influence the audit mission and therefore the opinion issued is how the auditor is called. Through a study by Hameed (1995), a number of pivotal factors have emerged in expressing a high-quality external audit opinion, namely: audit team experience, honesty / professional ethics and professional knowledge in accounting and auditing matters. Another factor of influence for the audit opinion was the

degree of specialization of the industry and its regulation. According to a study led by Dunn and Mayhew (2004), were concluded that in a highly specialized industry lacking specific operating and regulatory standards to conduct a quality audit it is necessary to use a specialized auditor with a specific knowledge. Next, the following factors will be analyzed in depth: the size of the audit firm, the level of audit fee and, the duration of the audit mandate.

2.1. The size of the audit company

DeAngelo (1981) thoroughly examined the potential impact that the size of the audit service provider may have on the opinion expressed on the correctness of the information contained in the audited financial statements. As a result of this study, it was concluded that the size of the audit service provider is sufficient to inflate the audit opinion issued, as it is highlighted that a large company in terms of number and diversity of clients will perform a mission with a higher quality than a small company, which is not dependent on one or two clients. This implication leads to the conclusion that an external audit service provider with a large number of clients will not suffer substantial losses from such a situation, but on the contrary, in the case of a reputable company such as big companies (Big 4), conducting an audit with a low level of quality could lead to much greater losses. The more the company has more customers, the more it has to lose. DeAngelo (1981) emphasizes the risk that a client with a limited portfolio of clients may have a relationship of dependence between the client and auditor. In such cases, misunderstandings that may result from expressing an opinion contrary to what the customer desires may result in loss, which may have a substantial impact on a company's revenue with a limited number of clients, which risks the auditor not reporting all the irregularities, discovered so to maintain its source of income.

Craswell et al. (1995) conduct a study of this potential influence factor on the auditor's judgment to evaluate DeAngelo's conclusions. It uses a sample of 1,484 public companies in Australia using data gathered over an 8-year period to study their evolution over time. The conclusion reached was that audit service providers with a larger market share carry out higher quality audit missions. It outlined, however, that these companies are using higher rates, up to 35% higher than small companies, which allows them to invest substantial amounts in the specialization of employees and in developing the systems they use.

A similar study was conducted by Becker et al (1998), using a sample of 12,500 companies over a 3-year period. The results of this study are similar to those found by Craswell et al. (1995), the revenue of a larger auditing company stems both from the high number of customers and from the higher rates they use. However, like DeAngelo (1981), he outlined that these companies risk losing more if their reputation is affected than by losing customers. Thus, the risk of these auditors being influenced is much lower than in the case of a small company.

Contrary to the above findings, a study by Louis and Robinson (2005), on a sample of seven Korean companies that had previously been fraudulent, did not identify any qualitative difference between the financial statements audited by a Big 4 and a small one. The main difference, however, is the brand effect that suggests a much higher degree of confidence attributed to the report and thus to the information in the financial statements.

This association of high-grade audit firm size has arisen due to the difficulty in assessing the quality of the work done by auditors and the increasing interest of users of financial statements on this subject. The main elements of influence attributed to this factor are the dependency relationship between the client and the supplier, the share of client revenue with total portfolio, the degree of audit development and the incentives offered to guarantee the identification and reporting of potential irregularities, the value attributed to the reputation the auditor created over time (especially Big 4), etc.

Users of financial information regard the audit opinion as assurance on the reality of the material presented by a company, raising their value. The reason why, from the perspective of a potential user, the level of trust suggested by the auditor who has accredited the

information is essential. Considering the difficulty with which product quality can be inferred for consumers, the reputation of the supplier has become a pivotal factor in determining the level of confidence that can be given.

The reputation of audit service providers is gained through practice, longevity, consistency and quality. Thus, we can see that the highest degree of trust is attributed to Big 4 companies, which have a monopoly on this market. The reputation acquired by practitioners is strengthened with every customer and opinion issued, but it can easily be missed with the wrong opinion. What this case proves is that once consumer confidence in the quality of service offered by a supplier is lost, it risks losing its market share.

2.2. Financial dependence on the client

As stated above, the composition of the auditor's revenue has a strong impact on its objectivity. Thus, if a high percentage of the auditor's income is composed of audit fees paid by a single client, there is a risk of dependence on it that is contrived by two possible scenarios that can influence the quality of the expressed opinion: the emergence of own interest in the result obtained or the risk of intimidation, both derive from the substantial financial impact of the customer's loss. It should be noted that under certain circumstances, the quality of an audit could be questioned even if there is no relationship of dependence between the client and the auditor, and only the appearance of one that will impose a high degree of skepticism on the outcome of a mission, questioning the objectivity of the auditor. This proves the importance of transparency in customer interactions.

However, the level of remuneration is not a factor that warrants the occurrence of a problem, this depends on a number of determining factors such as: the structure of the firm providing the audit service, the significance of the client in terms of revenue, if the firm is established on the market (Big 4) having gained a high degree of experience and prestige, or if it is a relatively new company that has not yet created a solid portfolio of clients, etc. In order to counteract the impact of these possible risk factors, the auditor has to implement various tactics such as: applying a system of external verification of the quality of the services offered, calling for external consultancy from professionals and reducing dependence on the margin of income earned from main customers by diversifying and expanding customer portfolio.

2.3. The duration of the audit mandate

One factor of influence that has been determined by scandals in recent decades and which has been concerned by experts in the field is the duration of the audit mandate. The main reason that led to the discussion was the concern about the possible impact on the auditor's independence.

Independence is a key factor in maintaining the ethical behavior of the auditor (Lin and Tepalagul, 2015). It involves maintaining an objective attitude towards the client, i.e. avoiding relationships of dependence or influence between the parties involved. In order to carry out his duties an auditor must maintain his skeptical attitude during the mission, an attitude that can disappear with familiarity with the client. Moreover, in order to maintain the relationship with the client, he may ignore or even hide certain evidence that would otherwise lead to the creation of disputes concerning the fairness of the information presented in the financial statements.

A study by Hsieh (2011) indicated that an audit conducted for the first time by a new auditor is of a lower quality than in the following years. A detailed analysis of this issue has suggested low value causality attributed to the lack of detailed information about the client's expertise rather than to the level of effort made by the auditor. Another suggestion of this study has indicated that this deficit may be caused by the auditor's intention to retain the client for the coming years by providing a favorable result.

Another study led by Siregar et al. (2012) in Indonesia, following the implementation of specific legislation related to the duration of the mandate for auditors at 3 or 5 years as the case may be, suggested that rotation of auditors does not often have a positive impact on the quality of work, but leads to the loss of know-how and the loss of their ability to detect certain customer-specific errors. While a prolonged mandate helps the auditor to become familiar with the client's activity in order to identify weaknesses in how reporting and activity-specific risks, the quality of the audit increases with familiarity to a certain point. However, studies suggest that auditor change may have negative consequences on the stock market of a company if the switch is made from Big 4 to another or a local company, and is often interpreted as an unlawful move to hide potential errors. At the same time, an opposite effect occurs when a company changes its auditor by opting for a Big 4 instead of an "obscure" service provider, or when the change occurs due to the object of activity or for an obvious reason for users of the financial information.

3. Methodology

The case study is based on research into the factors that influence the auditor's opinion on the financial statements. The sample consists of seven companies listed and traded on the BSE in the oil, electricity and natural gas, which forms the BET index, between 2013 and 2018.

The motivation for choosing the sample is that the seven companies have close business area and there are the largest companies in the country and are vital to Romania's economy. The chosen period was determined by the existence of the data and the split of the period in 2 stages 2013-2015 and 2016-2018, as a result of the change in the content of the report issued by the auditors for the financial statements of 2016. The data used for the study were collected from the company's annual reports and were confronted with the official data.

The auditor's opinion on financial statements may be influenced by several factors that have been tested on econometric model, as a relationship between the dependent variable - the auditor's opinion and the independent variables: auditor change, auditor size category, fee evolution, as a percentage of turnover, the independent auditor's report (new or old model) and the company's governance system. Table 1 shows how to represent these indicators.

Table 1: Description of variables

Variables	Explanations
Auditor's opinion (Oa)	1 – if the opinion was unqualified 0 – if the opinion was qualified
Auditor rotation (Ro)	1 – if the auditor was changed in the reference period 0 – if the auditor wasn't changed in the reference Period
Size of the auditor (Sa)	1 – if the auditor belongs of Big 4 group 0 – if the auditor belongs of non-Big 4 group
Evolution of audit fee – percentage in turnover (Fa)	1 – if the share of audit fee increased, compared to the previous period 0 – any other situation
Auditor's report (Ra)	1 – new auditor's report starting with year 2016 0 – old auditor's report
Governance system (Gov)	1- if the governance system of company is unitary 0 – if the governance system of company is dual

Source: Author's compilation, 2019

The regression equation will be linear multifactor type according to the following formula:

$$Oa = \alpha_{it} + \beta_1 Ro + \beta_2 Sa + \beta_3 Fa + \beta_4 Ra + \beta_5 Gov + \varepsilon_{it} \quad (1)$$

To determine the power of explanation of the proposed model, hypothesis testing will be performed by several models that will include all independent variables, as well as testing only with variables whose statistical significance will be more relevant.

4. Results

The information presented in the independent auditors' reports on the audit of financial statements are compiled in Table 2.

Table 2: Information regarding the auditors and corporate governance

No	Company's name	Qualified opinion	Changes the auditors	Governance system
1	OMV Petrom S.A.	No	No	Dual
2	S.N.G.N. Romgaz S.A.	No	Yes, in 2018	Unitary
3	C.N.T.E.E. Transelectrica	Yes, in 2013 and 2018	Yes, in 2014 and 2018	Dual
4	Soc Energetica Electrica S.A.	Yes, in 2013	Yes, in 2018	Unitary
5	S.N.T.G.N. Transgaz S.A.	No	Yes, in 2015 and 2018	Unitary
6	S.N. Nuclearelectrica S.A.	Yes, in all period	Yes, in 2014 and 2017	Unitary
7	Conpet S.A.	No	Yes, in 2016	Unitary

Source: Author's compilation, 2019

Table 2 shows that in four companies the auditors issued unqualified opinions throughout the period under review. It stands as OMV Petrom SA maintained the same auditor, and S.N. NUCLEARELECTRICA S.A. is the only company in the sample to which the auditors have issued a qualified opinion on the financial statements throughout the analyzed period. Regarding the corporate governance system, most companies have a unitary structure of governance.

In order to highlight the factors influencing the opinion of the auditors, a descriptive statistic of the analyzed indicators presented in Table 3 was made.

Table 3: Descriptive statistics

Variables	Mean	Standard Error	Standard Deviation
Auditor's opinion (Oa)	0.7851	0.0641	0.4153
Auditor rotation (Ro)	0.2143	0.0641	0.4153
Size of the auditor (Sa)	0.7381	0.0687	0.4450
Evolution of audit fee – percentage in turnover (Fa)	0.3810	0.0758	0.4915
Auditor's report (Ra)	0.5000	0.0781	0.4572
Governance system (Gov)	0.7823	0.0706	0.5061

Source: Author's compilation, 2019

Thus, from the total number of observations of 42 (representing 7 companies per 6 years) on average 78.51% cases have been reported unmodified auditor's opinions. The auditor was changed in the case of 21.43% of the number of observations and 73.81% of the analyzed financial statements were audited by auditors belonging to the Big 4 group. In addition, an average of 38.10% of the observations increased the share of auditors' annual fee in turnover. In order to have comparable data in terms of considering the auditor's report chosen, given the period selected, half of the number of observations was taken from the new audit reports.

The correlation between variables is presented in Table 4, which shows that the dependent variable, the auditor's opinion is in a positive correlation with the size of the auditor (0.61). Of the independent variables, the most relevant positive correlations were identified between the governance system variable, which has a moderate correlation with the size of the auditor (0.38), and the evolution of the auditor fee (0.26). It is also worth mentioning the negative correlations of the auditor size variable with the rotation of the auditors (-0.35), as well as the auditor's report model. (-0.27)

Table 4: Correlation matrix

	Oa	Ro	Sa	Fa	Ra	Gov
Oa	1					
Ro	-0.1515	1				
Sa	0.6127	-0.3488	1			
Fa	-0.0683	0.1878	-0.0903	1		
Ra	0.0580	0.1741	-0.2708	0.0981	1	
Gov	0.2018	-0.0734	0.3767	0.2636	0	1

Source: Author's compilation

From the econometric model, the change of the independent variables influences 87% the change of the dependent variable, according to the data in Table 5.

Table 5: Regression's results

Regression Statistics	
Multiple R	0.9341
R Square	0.8726
Adjusted R Square	0.8318
Standard Error	0.3377
Observation	42

ANOVA

	df	SS	MS	F	Significance F
Regression	5	28.7965	5.7593	50.6939	0.0000
Residual	37	4.2035	0.1136		
Total	42	33			

	Coefficients	Standard Error	t Stat	P-value
Intercept	0	#N/A	#N/A	#N/A
Ro	0.1194	0.1297	0.9205	0.3633
Sa	0.8278	0.0845	9.7994	0.0000
Fa	0.0248	0.1105	0.2240	0.8240
Ra	0.2762	0.0945	2.9231	0.0059
Gov	-0.0836	0.1301	-0.6428	0.5243

Source: Author's compilation, 2019

After testing the model with all the independent variables, it was found that, the model was validated for the auditor size variable. In addition, another variable of great significance is the variable, the model of the report, according to the data in Table 5.

Contrary to expectations, the rotation of the auditors and the evolution of their fees do not have a significant influence on the auditor's opinion on the financial statements of the companies in the analyzed sample. If higher audit fees are associated with greater audit effort or a fee for auditing specialization, the audit quality could be expected to be higher. Contrarily, relatively higher audit fees could lead the auditor to become financially dependent on the client, thereby eroding the independence. In our case, the opinions of the auditors of the seven companies required greater efforts by the economic entity to carry out a higher volume of audit procedures that led to an increase in fees from year to year, resulting in the quality of the information transposed in the auditor's report. As the turnover of the financial years 2013-2018 shows increased financial performance, it involves a high audit risk of applying additional audit procedures to reduce this risk, with a direct impact on audit fees, in order to increase them.

Thus, high audit fees are justified by the increase in audit procedures performed by the auditor to reduce audit risk. The study considers the impact of audit fees on audit quality in two ways: high audit fees paid to auditors may reflect the complexity of the audit process and increase the auditors' effort. However, higher auditing fees paid to auditors could help build the financial link between the client and the auditors, so that auditors are easier to compromise for the independence of the audit, for fear of losing highly profitable fees.

5. Conclusion

The topic of the quality of financial audit remains an important subject to be followed by users of financial statements for investment decisions or other strategic decisions. Issuing by auditors of opinions based on a high degree of professionalism contribute to increasing the confidence of all stakeholders on their activity. Practice can bring different audiences to different audiences, but by rigorously applying audit standards and using professional judgment, the most effective views on an audit mission can be built.

An important conclusion that comes after this work is that the auditor's opinion is based on professional judgment, but in practice, it can be influenced by the size of the audit firm materialized by the experience gained, similar with results of DeAngelo (1981) and Francis and Yu (2009). Other factors that can influence the opinion are the size of the fees and the duration of the contract.

The results of the study showed that the auditor's opinion does not modify at the change of audit firm from year to year, this is the same regardless of the contracted auditor. While it is certain that, the increase in turnover involves investigating higher auditor's financial risks. In the course of the analysis it was also found that in most cases the change of the auditor led to the increase of the audit fee from one year to the next, depending also on the risks associated with the economic entity.

The paper can be a bibliographic source for researchers in the field of accounting and financial audit, for managers of companies to understand the necessity and importance of drawing up financial quality reporting, as well as for the practitioners of the accounting profession who find in the paper a number of factors that can influence the auditor's opinion.

The limits of the research consisted in the fact that the size of the sample was small, but was justified by the need for data comparability. In addition, a limitation factor is the lack of certified databases and no history of long-term information about rotation and auditor fees. Future research directions can be translated into expanding the number of companies and the period under study, as well as analyzing the correlation between the quality of financial reporting and the quality of financial audit.

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DYNAMIC ANALYSIS OF THE COOPERATION AND COMPETITION RELATIONSHIP IN THE OIL AND GAS INDUSTRY IN ROMANIA

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Abstract: *The aim of the paper is to analyse the cooperation and competition relationship in the oil and gas industry in Romania using the game theory. The players are the companies, the payoffs are the profits obtained by the entities and there are two strategies as cooperation and competition. Two cases are considered: duopolistic and triopolistic market. The mathematical models have as variables the probabilities of choosing cooperation and competition by each player. They are described by two and three nonlinear differential equations. The time delay is introduced in order to highlight the time between choosing a strategy and its effect. The case studies use real data for two and three companies, respectively, with two scenarios related to the obtained payoffs if they cooperate or not. The time evolutions of the variables are carried out using Wolfram Mathematica 9. Finally, some conclusions and future research are drawn.*

Keywords: competition, cooperation, oligopolistic market, evolutionary games, replicator dynamics.

JEL classification: D21, C02, C73, D50, H32

1. Introduction

The evolutionary game theory is a framework to model and study continuous interaction in a large population of agents (Weibull, 1997); Khalifa and al., 2014; Khalifa and al., 2015). In particular, in the oligopolistic market it is based on the survival of the fittest entity. The replicator dynamics is a standard approach that uses differential equations to model the choice of the agents between two strategies. Each strategy leads to a payoff (Zhao and Yuxin, 2015). It is assumed that the strategy of choice has a payoff more than the average payoffs (Zhao and al. 2015).

Lately, the replicator dynamics was studied by (Yi and Wang, 1997; Alboszta and Jacek 2004; Iijima, 2012; Sîrghi and al., 2012; Khalifa and al., 2015; Zhao and al. 2015; Khalifa and al., 2017; Aliaga, 2017). In Wesson and Richard (2016), the time delay is considered in the fitness of each strategy and the existence of the oscillations are investigated for the replicator dynamic model.

Taking into account the previous considerations, we consider the mathematical models for the replicator dynamic corresponding to duopoly and triopoly market, respectively, where the players are bounded rational. They can choose two strategies, one being cooperation and the other one competition.

The structure of the paper is as follows. The methodology of the paper is presented in Section 2. Section 3 stands for the analysis of the duopolistic market, where OMV Petrom and Rompetrol are taken into account. Section 4 deals with the analysis of the triopolistic

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market, where OMV Petrom, Rompetrol and Lukoil are considered. The conclusions and future research are given in Section 5.

2. Methodology

Firstly, we consider two bounded players as two companies which have to choose between two strategies: cooperation and competition. We denote by p_{11} and p_{21} the net incomes of the players, when they both choose cooperation. In case of competition the net incomes are p_{14} and p_{24} , respectively. When there are different strategies and the first player goes for cooperation and the second one for competition, the payoff for the first company is p_{12} and for the second one is p_{22} . If the first company chooses competition and the second one cooperation, the payoff for the first one is p_{13} and for the second one is p_{23} . Therefore, the payoffs of the firms are displayed in the following table:

Table 1: Payoffs in a duopoly game

No.	Strategies		Company 1	Company 2
1	x_1	x_2	p_{11}	p_{21}
2	x_1	$1 - x_2$	p_{12}	p_{22}
3	$1 - x_1$	x_2	p_{13}	p_{23}
4	$1 - x_1$	$1 - x_2$	p_{14}	p_{24}

Source: Neamțu M., Sîrghi N., Rănescu D. (2017)

The change rates of the probabilities for both players to choose cooperation is given by (Neamtu M., Sîrghi N., Rănescu D., 2017):

$$\begin{aligned} \dot{x}_1(t) &= x_1(t)(1 - x_1(t))(\alpha_0 + \alpha_2 x_2(t)) \\ \dot{x}_2(t) &= x_2(t)(1 - x_2(t))(\beta_0 + \beta_1 x_1(t)) \end{aligned} \quad (1)$$

where

$$\alpha_0 = p_{12} - p_{14}, \alpha_2 = p_{11} - p_{12} - p_{13} + p_{14}, \beta_0 = p_{23} - p_{24}, \beta_1 = p_{21} - p_{22} - p_{23} + p_{24}$$

We consider that there is time delay between choosing a strategy and its effect, therefore the dynamic replicator becomes (Neamțu M., Sîrghi N., Rănescu D., 2017):

$$\begin{aligned} \dot{x}_1(t) &= x_1(t)(1 - x_1(t - \tau_1))(\alpha_0 + \alpha_2 x_2(t)) \\ \dot{x}_2(t) &= x_2(t)(1 - x_2(t - \tau_2))(\beta_0 + \beta_1 x_1(t)) \end{aligned} \quad (2)$$

with $\tau_1 \geq 0, \tau_2 \geq 0$.

Proposition 1. (Neamțu M., Sîrghi N., Rănescu D., 2017) *If $p_{12} - p_{14} < 0, p_{23} - p_{24} < 0$, the equilibrium point $O(0, 0)$ is locally asymptotically stable, for all $\tau_1 \geq 0, \tau_2 \geq 0$.*

Proposition 2. (Neamțu M., Sîrghi N., Rănescu D., 2017) *If there are no delays and $p_{11} - p_{13} > 0, p_{21} - p_{22} > 0$, the equilibrium point $C(1, 1)$ is locally asymptotically stable. If $p_{11} - p_{13} > 0, p_{21} - p_{22} > 0$, $C(1, 1)$ is locally asymptotically stable, for any $0 < \tau_1, \tau_2 < \min\{\tau_{10}, \tau_{20}\} = \tau_{12}$, where $\tau_{10} = \frac{\pi}{2(p_{11} - p_{13})}$, $\tau_{20} = \frac{\pi}{2(p_{21} - p_{22})}$ a Hopf bifurcation occurs when $\tau_1 = \tau_2 = \tau_{12}$.*

Secondly, we consider three companies denoted by F_i , $i = 1, 2, 3$. Company F_1 chooses *competition* with the probability $x_1 (0 \leq x_1 \leq 1)$ and *cooperation* with „ $1 - x_1$ ”. In a similar way the probabilities for the other companies are denoted by x_2 and x_3 , respectively. The payoffs corresponding to the strategies are given in Table 2.

Table 2: Payoffs in a triopoly game

Nr.	Strategies			Company 1	Company 2	Company 3
1	x_1	x_2	x_3	p_{11}	p_{21}	p_{31}
2	x_1	x_2	$1 - x_3$	p_{12}	p_{22}	p_{32}
3	x_1	$1 - x_2$	x_3	p_{13}	p_{23}	p_{33}
4	x_1	$1 - x_2$	$1 - x_3$	p_{14}	p_{24}	p_{34}
5	$1 - x_1$	x_2	x_3	p_{15}	p_{25}	p_{35}
6	$1 - x_1$	x_2	$1 - x_3$	p_{16}	p_{26}	p_{36}
7	$1 - x_1$	$1 - x_2$	x_3	p_{17}	p_{27}	p_{37}
8	$1 - x_1$	$1 - x_2$	$1 - x_3$	p_{18}	p_{28}	p_{38}

Source: Neamtu M., Sirghi N., Rădescu D. (2017)

The dynamic replicator with time delay is given by (Neamtu M., Sirghi N., Rădescu D., pag. 338, 2017):

$$\begin{aligned}
 x_1'(t) &= x_1(t)(1 - x_1(t - \tau_1))(\alpha_0 + \alpha_2 x_2(t) + \alpha_3 x_3(t) + \alpha_{23} x_2(t) x_3(t)) \\
 x_2'(t) &= x_2(t)(1 - x_2(t - \tau_2))(\beta_0 + \beta_1 x_1(t) + \beta_2 x_3(t) + \beta_{13} x_1(t) x_3(t)) \\
 x_3'(t) &= x_3(t)(1 - x_3(t - \tau_3))(\gamma_0 + \gamma_1 x_1(t) + \gamma_2 x_2(t) + \gamma_{12} x_1(t) x_2(t))
 \end{aligned} \quad (3)$$

with $\tau_1 \geq 0, \tau_2 \geq 0, \tau_3 \geq 0$ and

$$\begin{aligned}
 \alpha_0 &= p_{14} - p_{18}, \alpha_2 = p_{12} - p_{14} - p_{16} + p_{18}, \\
 \alpha_3 &= p_{13} - p_{14} - p_{17} + p_{18}, \\
 \alpha_{23} &= p_{11} - p_{12} - p_{13} + p_{14} - p_{15} + p_{16} + p_{17} - p_{18}, \\
 \beta_0 &= p_{26} - p_{28}, \beta_1 = p_{22} - p_{24} - p_{26} + p_{28}, \\
 \beta_2 &= p_{25} - p_{26} - p_{27} + p_{28} \\
 \beta_{13} &= p_{21} - p_{22} - p_{23} + p_{24} - p_{25} + p_{26} + p_{27} - p_{28} \\
 \gamma_0 &= p_{37} - p_{38}, \gamma_1 = p_{33} - p_{34} - p_{37} + p_{38}, \\
 \gamma_2 &= p_{35} - p_{36} - p_{37} + p_{38}, \\
 \gamma_{12} &= p_{31} - p_{32} - p_{33} + p_{34} - p_{35} + p_{36} + p_{37} - p_{38}
 \end{aligned} \quad (4)$$

Proposition 3. (Neamtu M., Sirghi N., Rădescu D., 2017). If $p_{14} - p_{18} < 0, p_{26} - p_{28} < 0, p_{37} - p_{38} < 0$, the equilibrium point $A_0(0,0,0)$ is locally asymptotically stable for all $\tau_1 \geq 0, \tau_2 \geq 0, \tau_3 \geq 0$.

Proposition 4. (Neamtu M., Sirghi N., Rădescu D., 2017). If $p_{11} - p_{15} > 0, p_{21} - p_{23} > 0, p_{31} - p_{32} > 0, \tau_1 = \tau_2 = \tau_3 = 0$, the equilibrium point $A_{123}(1,1,1)$ is locally asymptotically stable. If $p_{11} - p_{15} > 0, p_{21} - p_{23} > 0, p_{31} - p_{32} > 0$, and

$\tau_1 = \tau_2 = \tau_3 \in [0, \tau_{123})$, where $\tau_{23} = \min \{\tau_{10}, \tau_{20}, \tau_{30}\}$, $\tau_{10} = \frac{\pi}{2(p_{11}-p_{15})}$, $\tau_{20} = \frac{\pi}{2(p_{21}-p_{23})}$, $\tau_{30} = \frac{\pi}{2(p_{31}-p_{32})}$, then $A_{123}(1,1,1)$ is locally asymptotically stable. A Hopf bifurcation occurs when $\tau_1 = \tau_2 = \tau_3 = \tau_{123}$.

3. Duopoly in the gas and oil Industry

For the particular case of OMV Petrom (Company 1) and Rompetrol (Company 2), the payoff matrix is given by:

Table 3: The payoffs of the companies

No.	Strategies		Company 1	Company 2
1	x_1	x_2	373	190.74
2	x_1	$1 - x_2$	834	0
3	$1 - x_1$	x_2	0	853.74
4	$1 - x_1$	$1 - x_2$	$V_{OMV\ Petrom} - 503$	$V_{Rompetrol} - 503$

Source: own processing

We consider two scenarios:

Scenario 1. OMV Petrom and Rompetrol get greater payoffs in the competition case ($V_{OMV\ Petrom} = 1330, V_{Rompetrol} = 1350$);

Scenario 2. OMV Petrom and Rompetrol get greater payoffs in the cooperation case ($V_{OMV\ Petrom} = 2000, V_{Rompetrol} = 2100$).

If there are no delays $\tau_1 = \tau_2 = 0$, the equilibrium point (1, 1) is locally asymptotically stable (see Figure 1):

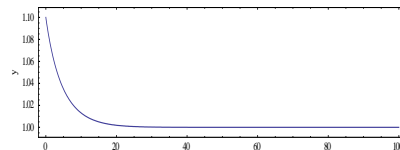
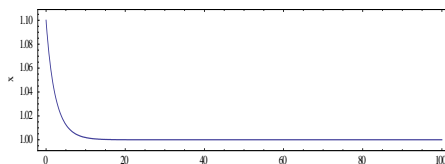


Figure 1: The equilibrium point (1, 1) is locally asymptotically stable for $\tau_1 = \tau_2 = 0$ and $V_{OMV\ Petrom} = 1330, V_{Rompetrol} = 1350$;

Source: own processing

The decisions of competition lead to a favourable situation. If there are no delays $\tau_1 = \tau_2 = 0$, the equilibrium point (0,0) is unstable (see Figure 2). The decisions of cooperation lead to an unstable situation.

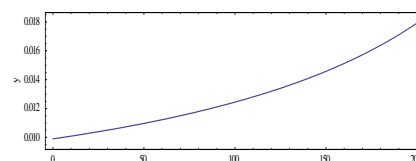
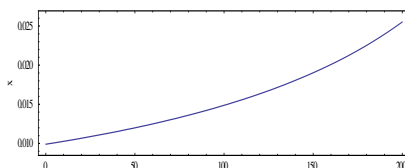


Figure 2: The equilibrium point (0,0) is unstable for $\tau_1 = \tau_2 = 0$ and $V_{OMV\ Petrom} = 1330, V_{Romp petrol} = 1350$;
Source: own processing

If there is delay only for *OMV Petrom* ($\tau_2 = 0$), the equilibrium point (1,1) is locally asymptotically stable for ($\tau_1 \in [0, 4.21)$) (see Figure 3).
The decisions of competition lead to a favourable situation for $\tau_1 \in [0, 4.21)$, $\tau_2 = 0$

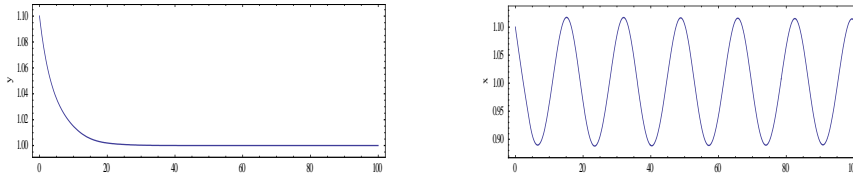


Figure 3: If there is delay only for *OMV Petrom* ($\tau_2 = 0$), there are oscillations for $\tau_1 \in [0, 4.21)$, $\tau_2 = 0$ and $V_{OMV\ Petrom} = 1330$ and $V_{Romp petrol} = 1350$;
Source: own processing

If there is delay only for *Romp petrol* $\tau_1 = 0$, the equilibrium point (1,1) is locally asymptotically stable for $\tau_2 \in [0, 8.23)$ (see Figure 4):
The decisions of competition lead to a favourable situation for $\tau_2 \in [0, 8.23)$, $\tau_1 = 0$

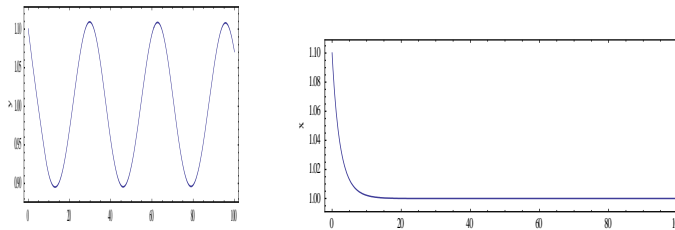


Figure 4: If there is delay only for *Romp petrol* $\tau_1 = 0$, there are oscillations for $\tau_2 \in [0, 8.23)$, $\tau_1 = 0$ and $V_{OMV\ Petrom} = 1330$ și $V_{Romp petrol} = 1350$;
Source: own processing

4. Triopoly in the gas and oil Industry

In the triopoly case we consider three players as: OMV Petrom (Company 1), Rompetrol (Company 2) and Lukoil (Company 3) with the probabilities to choose cooperation x_1, x_2 and x_3 , respectively and $1 - x_1, 1 - x_2$ and $1 - x_3$ the probabilities to choose competition. The payoffs are given in Table 4:

Table 4: The payoffs in the triopoly game

Nr .	Strategies			OMV Petrom Company 1	Romp petrol Company 2	Lukoil Company 3
1	x_1	x_2	x_3	$T_{OMV\ Petrom} - C_{OMV\ Petrom}$	$T_{Romp\ petrol} - C_{Romp\ petrol}$	$T_{Lukoil} - C_{Lukoil}$
2	x_1	x_2	$1 - x_3$	$T - T_{Romp\ petrol} - C_{OMV\ Petrom}$	$T - T_{OMV\ Petrom} - C_{Romp\ petrol}$	0
3	x_1	$1 - x_2$	x_3	$T - T_{Lukoil} - C_{OMV\ Petrom}$	0	$T - T_{OMV\ Petrom} - C_{Lukoil}$

Nr .	Strategies			OMV Petrom Company 1	Rompetrol Company 2	Lukoil Company 3
4	x_1	$1 - x_2$	$1 - x_3$	$T_{OMV\ Petrom} - C_{OMV\ Petrom}$	$V_{Rompetrol} - A$	$V_{Lukoil} - A$
5.	$1 - x_1$	x_2	x_3	0	$T - T_{Lukoil} - C_{Rompetrol}$	$T - T_{Rompetrol} - C_{Lukoil}$
6	$1 - x_1$	x_2	$1 - x_3$	$V_{OMV\ Petrom} - A$	$T_{Rompetrol} - C_{Rompetrol}$	$V_{Lukoil} - A$
7	$1 - x_1$	$1 - x_2$	x_3	$V_{OMV\ Petrom} - A$	$V_{Rompetrol} - A$	$V_{Lukoil} - C_{Lukoil}$
8	$1 - x_1$	$1 - x_2$	$1 - x_3$	$V_{OMV\ Petrom} - A$	$V_{Rompetrol} - A$	$V_{Lukoil} - A$

Source: own processing

Where

$T_{OMV\ Petrom}$ = overall potential market for OMV Petrom

$T_{Rompetrol}$ = overall potential market for Rompetrol

T_{Lukoil} = overall potential market for Lukoil

$C_{OMV\ Petrom}$ = cost of engaging in competition for OMV Petrom

$C_{Rompetrol}$ = cost of engaging in competition for Rompetrol

C_{Lukoil} = cost of engaging in competition for Lukoil

T = overall potential market = 855 mil Ron

A = penalties if the companies (OMV Petrom, Rompetrol, Lukoil) are found to practice illegal type of cooperation = 503 mil Ron

$$T_{OMV\ Petrom} - C_{OMV\ Petrom} = 394 - 21 = 373 \text{ mil Ron}$$

$$T_{Rompetrol} - C_{Rompetrol} = 192 - 1.26 = 190.74 \text{ mil Ron}$$

$$T_{Lukoil} - C_{Lukoil} = 98 - 0.6 = 97.4 \text{ mil Ron}$$

$$T - T_{Rompetrol} - C_{OMV\ Petrom} = 855 - 192 - 21 = 642 \text{ mil Ron}$$

$$T - T_{OMV\ Petrom} - C_{Rompetrol} = 855 - 394 - 1.26 = 459.74 \text{ mil Ron}$$

$$T - T_{Lukoil} - C_{OMV\ Petrom} = 855 - 98 - 21 = 736 \text{ mil Ron}$$

$$T - T_{OMV\ Petrom} - C_{Lukoil} = 855 - 394 - 0.6 = 460.4 \text{ mil Ron}$$

$$T - T_{Lukoil} - C_{Rompetrol} = 855 - 98 - 1.26 = 755.74 \text{ mil Ron}$$

$$T - T_{Rompetrol} - C_{Lukoil} = 855 - 192 - 0.6 = 662.4 \text{ mil Ron}$$

$$T_{Lukoil} - C_{Lukoil} = 98 - 0.6 = 97.4 \text{ mil Ron}$$

The companies (OMV Petrom, Rompetrol și Lukoil) obtain greater payoffs if they cooperate in the following conditions:

$$V_{OMV\ Petrom} - A > \max(T - T_{Lukoil} - C_{OMV\ Petrom}, T - T_{Rompetrol} - C_{OMV\ Petrom}, T_{OMV\ Petrom} - C_{OMV\ Petrom})$$

that leads to

$$V_{OMV\ Petrom} - A > 736$$

$$V_{Rompetrol} - A > \max(T - T_{Lukoil} - C_{Rompetrol}, T - T_{OMV\ Petrom} - C_{Rompetrol}, T_{Rompetrol} - C_{Rompetrol})$$

$$\text{with } V_{Rompetrol} - A > 755.74$$

$$V_{Lukoil} - A > \max(T - T_{Rompetrol} - C_{Lukoil}, T - T_{OMV\ Petrom} - C_{Lukoil}, T_{Lukoil} - C_{Lukoil})$$

$$\text{with } V_{Lukoil} - A > 662.4.$$

This is equivalent to:

$$V_{OMV\ Petrom} > 1239, V_{Rompetrol} > 1258.74, V_{Lukoil} > 1165.4$$

To visualize the variables $x_1(t)$, $x_2(t)$ and $x_3(t)$ we consider two scenarios:

Scenario 1. All companies get smaller payoffs when they cooperate as opposed to the situation when they do not: $V_{OMV\ Petrom} = 870$, $V_{Romp petrol} = 860$, $V_{Lukoil} = 700$

Scenario 2. All companies get greater payoffs when they cooperate as opposed to the situation when they do not: $V_{OMV\ Petrom} = 2300$, $V_{Romp petrol} = 2500$, $V_{Lukoil} = 2000$

In **Scenario 1**, the payoffs obtained in the competition are greater than in cooperation, the equilibrium point (1,1,1) is locally asymptotically stable, that means the competition is a preferred situation. The equilibrium point (0,0,0) is unstable and making a cooperative decision is unfavourable.

In **Scenario 2**, for $V_{OMV\ Petrom} = 2300$, $V_{Romp petrol} = 2500$, $V_{Lukoil} = 2000$, the equilibrium point (0,0,0) is locally asymptotically stable for all values of the delay parameter. In Figure 5, we can notice if there is delay for OMV Petrom (Company 1) than the equilibrium point (1,1,1) is locally asymptotically stable for $\tau_1 \in (0, 4.21)$ and there are oscillations for $\tau_1 = 4.21$ days, $\tau_2 = 0$, $\tau_3 = 0$:

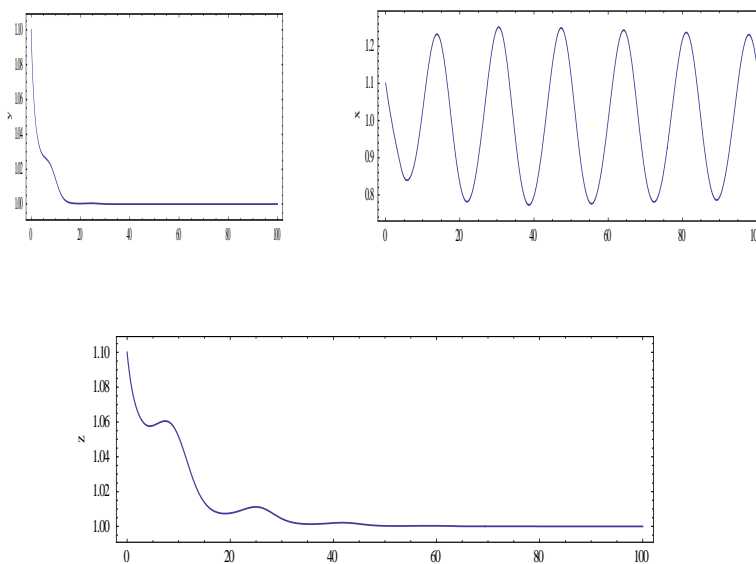


Figure 5: There are oscillations for $\tau_1 = 4.21$ days, $\tau_2 = 0$, $\tau_3 = 0$ and $V_{OMV\ Petrom} = 2300$, $V_{Romp petrol} = 2500$, $V_{Lukoil} = 2000$
Source: own processing

If there is delay for *Romp petrol* (Company 2), then the equilibrium point (1,1,1) is locally asymptotically stable for $\tau_2 \in (0, 8.23)$ and there are oscillations for $\tau_2 = 8.23$ days, $\tau_1 = 0$, $\tau_3 = 0$.

If there is delay for *Lukoil* (Company 3), then the equilibrium point (1,1,1) is locally asymptotically stable for $\tau_3 \in (0, 16.12)$ and there are oscillations for $\tau_3 = 16.12$ days, $\tau_1 = 0$, $\tau_2 = 0$.

If for *Romp petrol* (Company 2) and *Lukoil* (Company 3) there is no delay in making the competition decision, then OMV Petrom (Company 1) has to make the competition decision in $[0, 4.21)$ for an economic profitability for all. If there is no delay in making the competition decision for OMV Petrom and *Lukoil*, then *Romp petrol* has to make the competition decision

in $[0, 8.23)$ for an economic profitability on behalf of all. In a similar way, Lukoil has to make the competition decision in $[0, 16.12)$.

In Figure 6, we can notice that if there is no delay, the equilibrium point $(1, 1, 1)$ is locally asymptotically stable, that means the competition decision for all is convenient.

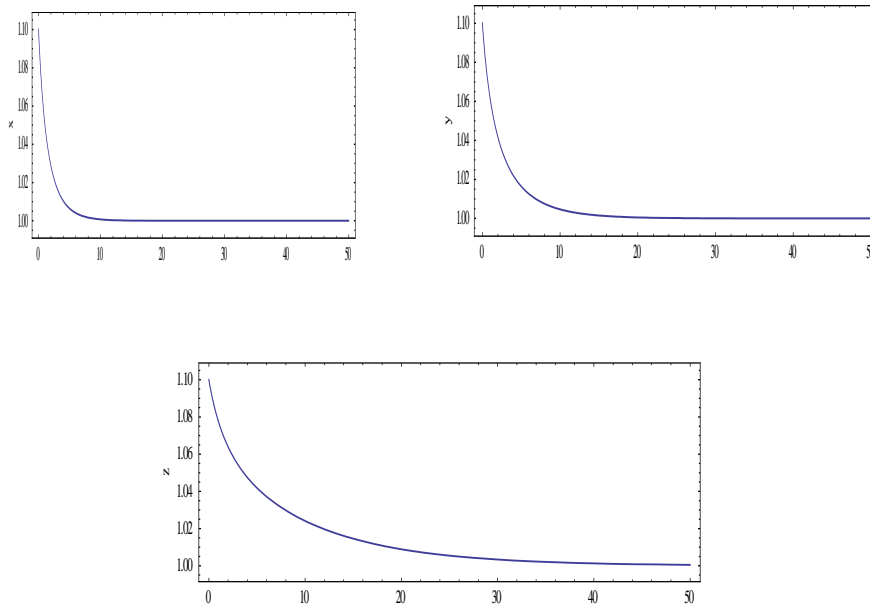


Figure 6: The equilibrium point $(1,1,1)$ is locally asymptotically stable for $\tau_1 = 0, \tau_2 = 0, \tau_3 = 0$ and $V_{OMV\ Petrom} = 2300, V_{Rompetroil} = 2500, V_{Lukoil} = 2000$

Source: own processing

4. Conclusion

In the framework of game theory, the paper has analysed the cooperation and competition relationship among two and three companies, respectively. The mathematical models are described by nonlinear differential equations with time delay. The introduction of the time delay is mandatory, because the effect of choosing a strategy becomes visible after a period of time. The existence of the oscillations in the economic processes has been investigated, in two scenarios: the competition leads to a greater payoff than the cooperation and vice versa. For duopolistic case two companies (OMV Petrom and Rompetrol) are considered with two strategies: cooperation and competition. Their payoffs are represented in a matrix and the replicator dynamics with time delay is formulated. In order to visualize the evolution of the probabilities for making the cooperation decision Mathematics software is used.

Two scenarios are taken into consideration for OMV Petrom and Rompetrol. In Scenario 1 the companies obtain smaller payoffs if they cooperate and greater payoff if they compete, in Scenario 2. Similarly, we conduct an analysis for the triopolistic case, where three players are introduced: OMV Petrom (Company 1), Rompetrol (Company 2) and Lukoil (Company 3). Each company has to choose between two strategies: cooperation and competition.

Moreover, as a future work we can investigate the stochastic mathematical model that considers the economical environmental perturbations, as in (Neamțu, 2010; Sirghi, Neamțu, 2013).

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IMPORT COMPETITION AND LABOUR PRODUCTIVITY IN NIGERIA

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Abstract: *The paper examines the effects of import competition and other factors such as capital intensity, foreign direct investment (being a channel through which foreign technologies are transmitted into an economy) and access to electricity, on labour productivity in Nigeria using annual time series data spanning the period from 1991 to 2018. In doing this, the FMOLS estimator is employed for estimation of a long run cointegrating model. The study finds that import competition adversely affects labour productivity in the long run. It also finds that the effect of capital intensity on labour productivity is positive, but not statistically significant. Further evidence from the study are that foreign direct investment and access to electricity positively and significantly affect labour productivity in the country. The study recommends, as measures to increase labour productivity in the country, efforts by the government to improve access to electricity, enhance the attractiveness of various sectors of the economy to FDI, and boost domestic production capacity to increase volume and quality of output so as to enhance its competitiveness and reduce dependence on imports, especially of consumption goods.*

Keywords: Import Penetration, Access to Electricity, Foreign Direct Investment, Capital intensity, Labour productivity, Nigeria.

JEL Classification: E24, F16, J24.

1. Introduction

Import competition, also referred to as import penetration is the share of imports in total domestic demand. It indicates the extent to which domestic demand is satisfied by imports. A country with high rate of import competition or import penetration relies heavily on imports to meet its domestic demand. One of the reasons for high import penetration in less developed countries (LDCs) is low level of output. Where output level is low, a country may have to either rely on imports to meet its domestic demand, or attract multinational corporations through which foreign direct investment (FDI) is channeled into an economy, to complement domestic production, thereby raising output levels. However, the WTO (1984) has demonstrated that high import penetration is not peculiar with LDCs alone, as industrialised and highly developed countries may also have high rates of import penetration or import competition as a result of intensification of intra-industry trade. This is trade in differentiated products such as textiles, automobile, etc. which is characteristic of trade between or among industrialised countries, and accounts for the largest share of global trade (Turcan and Ates, 2010).

From a macroeconomic perspective, labour productivity refers to output per unit of labour employed (ILO, n.d.). This is one of the commonest measures of labour productivity, and it is affected by myriads of factors. In this study, we examine whether or not import competition plays any role in labour productivity. Import competition could have mixed consequences for labour productivity depending on the structures of industries in the economy – that is whether they are concentrated or fragmented (MacDonald, 1994), and how an economy responds to it. A fragmented industry is one with many competing firms, where no single or small group of firms dominates. A concentrated industry is one dominated by a single firm or

a few firms. Labour productivity effect of Import competition could be positive in (an economy with) concentrated industries; it could be non-significant in (an economy with) fragmented industries. The effect of import competition on labour productivity in an economy could be positive if industries in the country become more technically efficient by taking advantage of the knowledge spillover (positive externality) effect of learning, by investing in training (human capacity development), research and development (R&D) so as to copy foreign technology used for production of items facing stiff competition with imports in the domestic or home market. This has the potential to boost production per labour employed. At firm level, the positive effect of competition on productivity has been linked to improvement in management quality it engenders. The argument has been that competition leads to improvement in management quality, which in turn leads to improved productivity (Reenen, 2010).

The effect of import competition on labour productivity could be adverse where import becomes more competitive than locally made goods in the domestic market. This may discourage local production, and adversely affect wages and productivity. Most LDCs are ill-prepared for the new wave of globalization and its attendant competitive pressures to which infant industries are exposed. Considering that these countries little or no capacity to absorb the ascribed benefits of globalization the effect of import competition on labour productivity may not be benign. This will be empirically investigated in this paper using Nigeria as the country in focus.

Nigeria is a lower-middle income country, according to the recent World Bank's classification (World Bank, 2019). The country is highly dependent on imports. Her imports range from basic primary commodities such as agriculture and other raw/crude materials, to manufactures and technology goods. Labour productivity in the country has not been impressive (Akinleye, 2007). Though several studies (Fagbenle, Ogunde and Owolabi, 2011; Umoru and Yaqub, 2013; Muhammad *et al*, 2015; Jimoh, Oyewobi, Suleiman and Isa, 2017) have attempted to explain the poor productivity of labour in Nigeria, to the best of our knowledge, none have considered the potential role of import competition in explaining labour productivity in the country. Considering that import competition in the country is quite intense as a result of her high dependence on imports, investigating whether import competition plays any role in labour productivity in the country is not out of place in view of the fact that labour productivity is a key factor for sustainable growth and development as seen in various growth theories (Krugman, 1995; ILO, n.d; Nekrep, Strašek and Boršič, 2018). High labour productivity enhances economic growth, while low labour productivity impedes it. The objective of this paper is to investigate the effect of import competition on labour productivity in Nigeria. To the best of our knowledge, though several researchers have examined the effect of import competition on labour productivity in other countries or regions, the labour productivity effect of import penetration in Nigeria is yet to be investigated. This study contributes to extant knowledge in this discourse by bridging this gap.

2. Literature Review

The study by MacDonald (1994) on the effect of import competition on labour productivity involving 94 manufacturing industries in the U.S. found that import competition positively affected labour productivity in highly concentrated industries during the 1975-1987 period. This effect did not occur contemporaneously, but with a lag of one period (year). The study found no significant effect of import competition on labour productivity in less concentrated industries.

Bloch and McDonald (2001) examined the impact of import competition on labour productivity using panel dataset on Australian manufacturing firms for the period 1984 to 1993. The study found positive impact of import competition on labour productivity. It also

found an interaction between import competition and domestic competition. The positive impact of import competition on growth of labour productivity rose with the extent of competition among domestic producers. The results, according to the researchers suggest that less control on inflow of manufactured imports by way of lowering of border protection enhanced productivity of labour in concentrated industries.

Ospinar and Schiffbauer (2010) utilized firm-level observations from the World Bank's Enterprise Survey database to investigate the effect of import competition on firm productivity in emerging market countries of Eastern Europe and Central Asia. The study found positive relationship between import competition and productivity, and this relationship was robust to alternative measures of both variables. It also found that countries that embarked on product-market reforms experienced higher level of import competition which in turn engendered enhancement of their firms' productivity. Specifically, increase in import competition due to product market reform accounted for 12%-15% of growth in productivity. Murphy and Siedschlag (2012) examined the effects of changes in international competitiveness on labour productivity growth through the channels of export, import and import competition using micro-data on Irish manufacturing firms during the period from 1995 to 2002. Among other findings, the study found that import competition resulting from appreciation of the real exchange rate had no significant effect of growth of firm's labour productivity.

Olper, Pacca and Curzi (2013) examined the effect of import penetration on productivity growth in Europe during the period from 1995 to 2008. The study covered 9 industries from 25 European countries. Different dynamic panel estimators were used for the analysis. The study found that increase in import penetration was "systematically positively related" to productivity growth. The positive effect of import penetration on productivity growth was robust to alternative measures of productivity and it was driven by competition in final products from developed countries, particularly the EU-15 countries.

Doan, Nguyen, Vu, Tran and Lim (2014) investigated whether import competition harms productivity of local firms in less advanced economies. In the study, panel and instrumental variable methods were employed for analysis of unbalanced panel dataset covering the period from 2000 to 2009 on firms in Vietnam's manufacturing sector. The study found that import competition negatively and significantly affected productivity of local firms in the country's manufacturing sector.

Ding, Sun and Jiang (2015) examined whether the distance to technology frontier matters in the effect of import competition on firm productivity and innovation in China. The study found that import penetration positively affected firms' productivity growth and their expenditure in R&D if firms and industries in which they belong were close to the world's technology frontier. However, from lagging firms and industries, which are far from the frontiers of global technology, the productivity growth and innovation effects of import penetration or competition was adverse.

The study by Yahmed and Dougherty (2016) on the effects of domestic regulation and import penetration on firm-level productivity growth in OECD countries during the 1990s to late 2000s revealed that import penetration positively affected productivity growth of firms that were close to the technology frontier and this effect was enhanced by less stringent domestic regulations. However, for firms that are not close to the technology frontier, the effect of import competition on productivity growth was not statistically significant. For these firms, the effect of interaction of import competition with domestic regulation on firm-level productivity growth was also not statistically significant. This suggests that domestic regulation has no bearing on the effect of import competition on firm-level productivity in the countries.

Dhyne, Petrin, Smeets and Warzynski (2016) investigated the effect of import competition on firm product-level productivity in Belgium during the period from 1995 to 2007. Ordinary least squares and instrumental estimations were performed for the investigation. The study

found that increased import competition was associated with rise in firms' product-level productivity. A 10% rise in import completion was found to be associated with same percentage rise in technical efficiency.

3. Methodology

3.1. Key Variables and their Measurements

Labour Productivity:

This study adopts the approach of the ILO (n.d.). Labour productivity is measured as real GDP per labour employed.

$$\text{Labour Productivity} = \frac{\text{Real GDP}}{\text{Labour Employed}}$$

Data on this measure of labour productivity (that is, Real GDP per labour employed) were obtained from the World Bank's World Development Indicators (2018).

Import Competition (Import Penetration):

Following WTO (1984) we measured import competition as the ratio of imports to domestic demand.

$$\text{Import Competition} = \frac{\text{Imports}}{\text{GDP} - X + M} \quad [1]$$

Where GDP = Nominal Gross Domestic Product, X = Value of export, M = Value of imports, and (GDP – X + M) = Domestic Demand.

3.2. Model Specification

The basic Solow growth model provides the theoretical framework for this study. Output is expressed as a function of production inputs (capital and labour).

$$Y = f(K, L) \quad [2]$$

Where Y is real output, K = physical capital stock and L = Labour employed. Expressing Y in terms of per unit of capital employed, we have:

$$Y/L = f(K/L, 1) \quad [3]$$

$$y = f(k) \quad [3']$$

Where $y = Y/L$ = Labour productivity (as defined above), and $k = K/L$ = capital intensity.

Equation [3] expresses labour productivity as a function of capital intensity. To capture the effect of import competition on labour productivity, we incorporate this variable in equation [3]. Incorporating the variable in the model is in sync with theoretic predictions on effect of global trade in an economy, and also in line with previous empirical studies such as Doan *et al*, 2014 and Ding *et al*, 2015.

$$y = f(k, \text{imcom}, X) \quad [4]$$

The variables are as previously discussed. X represents other variables affecting labour productivity such as foreign direct investment and access to electricity.

The labour productivity model is therefore expressed functionally as:

$$\text{RGDPPL} = f(k, \text{imcom}, \text{nFDI}, \text{AELEC}) \quad [5]$$

The econometric specification of the model is represented as:

$$\ln(\text{RGDPPL}_t) = \delta_0 + \delta_1 \ln(k_t) + \delta_2 \text{imcom}_t + \delta_3 \ln(\text{nFDI}_t) + \delta_4 \text{AELEC}_t + \mu_t \quad [6]$$

Where RGDPPL = Real GDP per labour employed adjusted for purchasing power parity (measure of labour productivity), nFDI = net foreign direct investment inflow (BoP, current US\$), AELEC = Access to electricity (% of population), μ is the error term. Other variables are as previously defined.

The *a priori* expectations are: $\delta_1 > 0$, $\delta_2 < 0$, $\delta_3 > 0$, $\delta_4 > 0$. Capital intensity is expected to enhance labour productivity. Increase in capital per labour is expected to engender increase

in output per labour, *ceteris paribus*. There is no theoretical consensus on the effect of import penetration on labour productivity. Its effect depends on the absorptive capacities of countries. The effect may be positive in countries with high absorptive capacity, and potential of learning by doing; it may be negative in LDCs with less potential of learning by doing. Thus, the effect is indeterminate. Inflow of foreign direct investment which is a key channel through which foreign technology flows into a country, is expected *a priori*, to positively affect labour productivity, through technology spill-over effects. Improved access to electricity is also expected to positively affect labour productivity as uninterrupted electricity (power supply) enhances productivity, all things being equal.

The single equation fully modified ordinary least squares (FMOLS) estimation technique developed by Phillips and Hansen (1990) was used to estimate the model. The choice of this estimator was informed by the fact that it corrects the problems of endogeneity and serial correlation to yield optimal long run estimates of cointegrating model. A condition for employing this estimator is that the variables must be cointegrated. Thus long run relationships among the variables were tested using the Johansen cointegration procedure. Prior to the cointegration test, the variables were tested for unit root using the augmented Dickey Fuller (ADF) test and the Dickey-Fuller Generalised Least Squares (DF-GLS) test to determine their stationarity properties.

3.3. Data

Annual time series data on all the variables, spanning the period from 1991 to 2018 were used for the analysis. The scope was guided (dictated) by data availability. All data were sourced from the WDI database (2018).

4. Results and Discussions

4.1. Unit Root and Cointegration Tests

The result of the unit root test involving the ADF and the DF-GLS tests is summarized in Table 1.

Table 1: Summary Unit Root Test

ADF Unit Root Test			
Variables	First Difference		d*
	ADF test stat.	Critical Value (5%)	
ln(RGDPPL)	-3.94	-2.98	1
ln(k)	-6.06	-3.61	1
lmcom	-6.33	-3.60	1
ln(nFDI)	-5.87	-3.60	1
AELEC	-5.05	-3.64	1
DF-GLS Unit Root Test			
Variables	First Difference		d*
	DF-GLS test stat.	Critical Value (5%)	
ln(RGDPPL)	-3.97	-3.19	1
ln(k)	-6.31	-3.19	1
lmcom	-6.60	-3.19	1
ln(nFDI)	-6.11	-3.19	1
AELEC	-8.38	-3.19	1

d* = order of integration

Source: Author's Estimation using EViews 9

The unit root's test results indicate that the variables are stationary at first differences. In spite of this, there is the tendency for them to converge in the long run. This was tested using the Trace test of the Johansen cointegration test. The result is presented in Table 2.

Table 2: Cointegration Test

Sample (adjusted): 1993 2016				
Included observations: 24 after adjustments				
Trend assumption: Linear deterministic trend				
Series: ln(RGDPPL) ln(k) Imcom ln(nFDI) AELEC				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
0 *	0.740542	74.14049	69.81889	0.0217
≤ 1	0.623884	41.76067	47.85613	0.1655
≤ 2	0.404528	18.29206	29.79707	0.5446
≤ 3	0.159709	5.850445	15.49471	0.7131
≤ 4	0.067383	1.674268	3.841466	0.1957
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Author's Estimation using EViews 9

The cointegration test result shows that the variables are cointegrated as one cointegrating equation is indicated by the Trace test. This suggests that a long run relationship exists between the dependent variable and the explanatory variables.

4.2. Model Estimation

Since the variables were found to be cointegrated, the FMOLS estimator was used to obtain efficient and consistent long run coefficients of the cointegrating model. The result of the estimation is presented in Table 3.

Table 3: Model Estimation Result

Dependent Variable: ln(RGDPPL)			
Method: Fully Modified Least Squares			
Sample (adjusted):1992 2016			
Included observations: 25 after adjustment			
Variable	Coefficient	t-Statistic	Prob
ln(k)	0.02	0.11	0.92
Imcom	-0.02	-4.16	0.00
ln(nFDI))	0.21	5.80	0.00
AELEC	0.02	4.17	0.00
C	4.20	2.58	0.02
$R^2 = 0.90$; Adj. $R^2 = 0.88$; Long Run Variance = 0.01			

Source: Author's Estimation using EViews 9

The result shows positive sign on the coefficient of capital intensity. This conforms to *a priori* expectation, though the coefficient is not statistically significant. This suggests that capital intensity in the country in the period under review did not contribute significantly to productivity of labour. It also suggests that the rate of capital formation in the country has

been quite low and as a result, the variable did not contribute significantly to productivity of labour therein.

Import competition is observed to be negatively related to labour productivity in the long run in Nigeria, and the relationship is highly significant at the 1% level. This suggests that increase in import competition will adversely affect labour productivity in Nigeria in the long run. This result which is contrary to observations in developed and other emerging market countries such as the U.S. and China suggests that the country's industries are weak, making the economy less competitive. It is also an indication that the country is currently not fully prepared to for the vagaries of competition at the international level. Furthermore, the result suggests that the country's industries are far from the world's technology frontier. The observation corroborates evidence from the study by Doan *et al* (2014) which also found negative and significant effect of import competition on local manufacturing firms' productivity in less advanced country of Vietnam.

Foreign direct investment positively affects labour productivity as expected, and the effect is significant at the 1% level. This is not unexpected considering that FDI constitutes a mechanism through which technology which enhances productivity of labour is transferred into an economy. The more FDI the country attracts into various sectors of the economy, the more productive will be the labour employed in the production of its output as it adopts foreign advanced technologies for production. This observation corroborates evidence from previous studies such as Liu, Parker, Vaidya and Wei (2001), Ramirez (2006), and Boghean and State (2015) which also found positive effect of FDI on labour productivity.

Access to electricity is observed to be positively and significantly related to labour productivity. This conforms to *a priori* expectation. It suggests that increased access to electricity will enhance the productivity of labour employed for production in various sectors of the economy in the long run. This is in sync with results from Alam, Miah, Hammoudeh and Tiwari (2018) which also found that improved access to electricity will engender increase in labour productivity in the long run.

5. Recommendations and Conclusion

5.1. Policy Recommendations

Based on the empirical evidence, the following are proffered as recommendations for policy consideration:

- i. There is need for the government to design, formulate and implement policies that are geared towards encouraging domestic investment to boost domestic output of goods and services, as well increase their competitiveness, curb demand for imports and stymie the adverse effect of import competition on labour productivity in the country. Specific measures in this regard include development of infrastructure (including roads, telecommunication, and other information technology infrastructure etc.), reduction in cost of doing business, favourable tax regimes, lowering the lending interest rate of the lending institutions through reduction of the monetary policy rate which is the benchmark interest (to ease access to investment credit), cautious control of imports, subsidizing some sectors of the economy (such as agriculture, etc.) and so on
- ii. Efforts should be made to enhance the attractiveness of the country to FDI as this constitutes a main channel for transmission of foreign technology which enhances productivity of labour. Measures to enhance the attractiveness of the country to FDI include tackling the security challenges bedeviling the country, combating crimes, trade openness, infrastructural development, etc.
- iii. The observation of positive and significant effect of access to electricity on labour productivity further underscores the need for massive investment in power/electricity generation and, development of efficient channels of distribution. This will no doubt boost labour productivity in the country.

5.2. Conclusion

The study examined the effects of import competition and other macroeconomic factors namely capital intensity, FDI and access to electricity on labour productivity in Nigeria during the period from 1991 to 2018. The FMOLS estimator was employed for the analysis. The study found that import competition adversely (negatively and significantly) affected labour productivity in the country. It also found positive but not significant effect of capital intensity on labour productivity. Further evidence from the study were that FDI (which is a key mechanism for technology transfer by multinational corporations) and increased access to electricity positively and significantly affected labour productivity in the country. Based on the findings, recommendations were made for formulation of policies targeted at enhancing productivity of labour in the country in her quest for sustainable growth and development.

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Bio-note

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THE ROLE OF ENTREPRENEURIAL ORIENTATION IN PRODUCT INNOVATION IN EMERGING MARKETS ON THE LOCAL PRODUCTS

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Abstract: *This research is to improve product development with resource-based innovation that is based on the competitive advantage of local product SMEs with an initial market orientation and the role of mediating entrepreneurial skills and driving skills. This study is based on product cases in the domestic market and develops markets for local SME products with interviews and quantitative methods in 30 Small and Medium Enterprises in Central Kalimantan with PLS SEM analysis tools. The findings in this study included identifying and supporting mediating roles. Entrepreneurial orientation towards product innovation in increasing proactive knowledge and risk-taking, innovative market-oriented ideas in product innovation. This research only has results and research units from the scale of local SME products and then for research and theoretical research can be examined on a large scale with additional literature on market orientation. The research implications of research and analysis in product research in local products with market orientation and entrepreneurial orientation can increase revenue and sales, SMEs can implement EO as an important role after market control to improve innovation products and as a strategy in competition with cultural values. The novelty in research is the contextual business strategy and the theory of RBV in a significant positive competitive advantage from EO support in local SME product innovation*

Keywords: Market orientation, Entrepreneurial Orientation, Product Innovation, SME Local Products.

JEL classification: O31, D24, L26.

1. Introduction

Small and Medium Enterprises (SME) are moving rapidly and continuously in emerging markets such as in Indonesia in local products in the direction of full challenges in the current era (Zohdi et al., 2013). Business Opportunities that can survive in the crisis that occurred in Indonesia in early 2002 and 2018 data show that 65% of SME have survived in the last 3 years in Central Kalimantan, the most recent province in Indonesia (Setyanti et al., 2013). Continuous success based on business (Siringoringo et al., 2013) is that local products will survive when they are able to innovate, rejuvenating products at maturity as a business strategy to survive in the efforts of non-local products.

Many literatures have views on human resources and resource-based theory (RBV) as the basis of capability in product innovation and adopt the definition of resources as including assets in organizational capabilities and processes, company attributes, information and knowledge so that SMEs are controlled. by markets that allow them to develop and implement strategies that increase efficiency as sustainable capabilities in emerging markets (Wu, 2013). Market orientation (MO) provides a value of efficiency and

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effectiveness, and ultimately drives the performance of product innovation (Wong, 2012). This definition is broad in product innovation and when, if its nature includes capabilities and expertise that are strategically related to companies that are not resources, MO is not necessarily strong in product innovation (Yu et al., 2016). Abdulai Mahmoud and Yusif (2012) suggest that companies that innovate and engage in entrepreneurship can survive with competitive advantages on products. By offering innovative products, companies can sometimes avoid price competition, access new marketing, and make new requests, and improve the company's business performance as indicated by financial metrics such as turnover, profits, and stock prices and or develop strength in strategic metrics such as reputation, loyalty, and satisfaction (Tohidi and Jabbari, 2012).

In product innovation expertise as an entrepreneurial orientation is positively related because innovation has a positive effect on business performance (Zhang et al., 2014). However, market orientation shows a negative effect on business performance, due to the lack of proactive and risk-taking elements in the market orientation dimension in the strength of the multi-channel business in the local product market with innovation as an idea. Generation in SME (Baker et al., 2009) its role in business strategy MO but market orientation does not significantly affect product innovation (Kocak A, 2017, Yu et al., 2016). The strong relationship of MO influences the EO as a positively related variable (Inic and Petrovic, 2012, Boso et al., 2016, Line and Wang, 2016, Pitchayadol et al., 2018) using the RBV theory in research and becomes the basis of the EO with the dimensions of Proactiveness, Risk taking, and Innovative Idea in Mediating the relationship of MO (Vega-Vázquez et al., 2016, Haryanto, 2017) with product innovation (Newman, 2016). Based on research gaps and strategies to improve product development, this study aims to examine the role of EO in mediating MO and product innovation in local SME products in Central Kalimantan, Indonesia.

2. Literature review

2.1. Product Innovation (PI)

Sharma et al. (2016) emphasize the fact that little attention has been devoted to the influence of innovation, customer orientation, and entrepreneurial orientation on corporate performance and it is also important to consider innovation in one particular sector in product products such as product innovation. Product innovation is a process that includes: technical design, research and development, production, management, and commercial activities related to marketing new products (Sok and O'Cass, 2015). Product innovation is part of the innovation process into the initiation stage and the implementation phase with an important part of the initiation stage is openness to product innovation, which is determined by whether the product craftsman is willing to consider adopting a purposeful product innovation activity to improve management efficiency to maintain human resource strategies with customer needs and see the life of the product survive in the market from competitors (Nuryakin, 2018).

Product innovation performance is a factor used to measure product and product performance in innovation must be differentiated based on time and cost (Pan and Li, 2016). The benefits of product innovation in product development that product innovation must be determined by the cost and time of the project so that it can be effective and efficient for customers, the ability to compete with competitors with internal coordination (Yang and Yang, 2015). Measuring costs and time objectively (Ozkan-Canbolat et al., 2016) and subjectively can show the success of product innovation performance in product development.

2.2. Market Orientation (MO)

MO has been defined by marketing researchers as a framework for improving product sustainability and competitive advantage (AH Affendy, 2015). In some studies, MO is a strategy with market orientation as a focus on latent needs that leads to insight into the demands of customers and for more commitment to the development of innovation products and services (Abdulai Mahmoud and Yusif, 2012). Based on this approach, (Boso et al., 2012) distinguishes two constructs of innovation: innovation and the capacity to innovate. They also observed that innovation contributes to the company's capacity to innovate, that is, to implement new ideas, processes, or products with Market Orientation (Carbonell and Rodríguez Escudero, 2010). Innovation is very helpful to be improved as a fulfillment of customer demands for products through customer orientation and making a line of challenges in competitor orientation (Han et al., 1998, Abdulai Mahmoud, 2012). Diversity of innovation products can finally survive with the innovation of the MO with the dimensions of consumer orientation and competitor orientation and requires shared willingness within the organization consistently analyzes the competitive environment. The relative role of business actors in the market can actively target customer-oriented with high-level innovation capabilities that can develop innovative services and products in accordance with changes in the market environment during differences business cycle phase (Adhikari and Gill, 2011).

Market Orientation in Product Innovation

MO as a basis for business research in the value chain shows that actors in each segment focus on the value chain to serve the needs of key customers and coordinate strategically with value propositions in a vertically and horizontally coordinated marketing system as a business strategy (Beneke et al., 2016). The responsive dimensions of market orientation in businesses that adopt responsive MO are focused on valuing customer needs articulated by serving segments or markets, and then continually increasing the value of products or services served by actors through product innovation (Boso et al., 2012). The importance of inter-functional coordination to be superior to customers mentioned in various studies that focus on positive effects on product development (Ejdys, 2015). The positive relationship between market orientation and customer satisfaction is almost default because SMEs who have a basis for market orientation are to find and meet customer needs and have a theoretical research competitive advantage (Augusto and Coelho, 2009).

Market orientation by defining product innovation capabilities as the ability to keep changing with knowledge and ideas into products, new processes and systems with customer orientation and competitor orientation provides evidence to show a positive relationship between innovation capabilities in product innovation (Ata, 2018), while coordinating with innovation capabilities high level can develop innovative services and products to address environmental changes during different business cycle phases with coordination capabilities (Day, 2000, Brashear et al., 2012). Therefore, we put forward the following in the hypothesis:

H1: Is there a positive and significant Market Orientation to the EO?

H2: is there a positive and significant influence on the role of Market Orientation on PI?

2.3. Entrepreneurial Orientation (EO)

Entrepreneurship is very important as one of the marketing disciplines that emphasizes marketing is home to the entrepreneurial process in organizations (Adeniran and Johnston, 2012). In addition, entrepreneurship interacts with internal and external relations in SME (Al-Dhaafri and Al-Swidi, 2016). Rational factors for generating business results, not driving performance independently (Balodi, 2016) with an entrepreneurial orientation are seen as important additional processes in business through ideas in innovation and results on a small business scale. Many orientation and market learning orientations are developed, business people / craftsmen tend to defend them by involving entrepreneurial orientation variables as the relationship between ideas and performance tends to persist in various

contexts (Deniz, 2016). The focus of entrepreneurship is one of the market based elements that influence innovation leading to product innovation is the implementation of a product or service with improved performance characteristics that provide objectively new or better (Caseiro and Coelho, 2018).

Entrepreneurial Orientation towards product innovation

Innovation is an important organizational capability, because the success of new products is the engine of growth that gives and impacts on increasing sales, profits, and competitiveness for many organizations (Jin et al., 2017). Product or service innovation will not mean much if it does not achieve commercial success (Jin and Cho, 2018). Companies must develop the ability to market new products or services with the ability to entrepreneurship with three indicators of Proactiveness, risk taking and inter and Entrepreneurship coordination is a dynamic process of capability and skills in product innovation can generate profit (Jalilvand et al., 2017). Wealth is created by individuals who bear the main risk, in the form of capital, time, and commitment to career risk in terms of providing value to products or services because it is the ability to take risks in decision making on EO (Amin et al., 2016). Product innovation that are applied to EO methods by business people through efforts to achieve and allocate the skills and resources and from the view of some experts, it can be concluded that entrepreneurship is the ability to think creatively and act innovatively as a basis for product innovation (Alireza et al., 2014, Aljanabi, 2018). Our second hypothesis is as follows:

H3: Are there positive and significant influences on the role of EO Mediation on Product Innovation?

3. Methodology and Data

This research uses a quantitative method with SEM partial least square (PLS) analysis tool (Bauer and Auer-Srnka, 2012, Dilger et al., 2017). Quantitative testing is done to test field data taken based on theoretical and empirical studies, test the validity and reliability of indicator relationships and latent variables (external models or measurement models), and relationships between variables which end with testing research hypotheses or structural models. Using a questionnaire developed based on theoretical and empirical research relevant to research variables (MO, EO and PI). Quantitative analysis is done using the SEM equation model based on partial least square (PLS). Data does not have to be normally distributed, it can be used for variable analysis with good formative reflective indicators, and can be used to analyze the relationship between variables with a minimum sample of 30 for the field of multivariate data analysis in management and strategy with descriptive analysis (Hair et al., 2011).

Research Location of Small and Medium Enterprises (SME) local batik cloth products in Palangkaraya City, Province. State of Central Kalimantan Indonesia. The types of data used are questions and data analysis (quantitative) sourced from as many as 30 SMEs with typical batik products from Central Kalimantan. Methods of data collection: 1. Surveys, this method of selecting SMEs is the focus of research to see and analyze data used for at least 5 years and based on 2. Direct interviews on site to ensure samples can be trusted in the selection of research locations and contextual indicators the research and quality of batik cloth products are recognized by the Department of Trade and Industry of Central Kalimantan Province. 3. questionnaires, in the form of a list of questions submitted based on indicators (literature and interviews) are easily understood by business actors whose receipts are 40-60 years old. and, 4. Sampling techniques Based on local products, Central Kalimantan batik cloth as a sample. This study uses a minimum sample for analysis and uses Partial Least Square (PLS) analysis tools, so it can predict the relationship between variables with a minimum sample size of 30 (Hair et al., 2010).

4. Research result

The results of the study show that the relationship in the study is strong and influencing each variable indicator and based on the statistical results with PLS SEM shows the results:

Table 1: Outer Loading

Variable	Indicators	Outer Loading
Market Orientation	MO.1	0.710
	MO.2	0.835
	MO.3	0.858
Entrepreneurial Orientation	EO.1	0.944
	EO.2	0.717
	EO.3	0.788
Product Innovation	PI.1	0.706
	PI. 2	0.716
	PI.3	0.897

Based on the best correlation in the Market Orientation variable questionnaire, MO.2 (Competitor Orientation) and MO.1 (Consumer Orientation) of $0.640 > 0.5$ (AVE) and the cross-loading relationship between MO.3 variables (Interfirm Coordination) shows a $0.858 > 0.7$ loading is strong in the influence of the relationship with EO and PI. In the Entrepreneurial Orientation variable, the best correlation in the EO.2 variable (Risk taking) and EO.1 (Proactive) is equal to $0.817 > 0.5$ (AVE) even though the small EO3 (Innovativeness) remains significant for PI and in cross loading relationships and a positive relationship between EO.1 (Proactiveness) variables has $0.944 > 0.7$ largest outer loading in relation to PI. In the PI variable the value of PI.3 (Products are better than competitors) and PI.2 (Modification of product capabilities) has the best correlation of $0.797 > 0.5$ (AVE) and in external loading PI.3 (Products better than competitors) have the biggest influence between variables, but PI.1 (product design capacity) also exceeds $0.706 > 0.7$ in the smallest outer loading value in the product innovation variable shows a good relationship between variables.

Table 2: Cross Loading

Indicators	Variabel		
	Market Orientation	Entrepreneurial Orientation	Product Innovation
MO.1	0.640	0.307	0.571
MO.2	0.579	0.318	0.420
MO.3	0.510	0.463	0.486
EO.1	0.411	0.741	0.471
EO.2	0.673	0.692	0.436
EO.3	0.566	0.817	0.619
PI.1	0.472	0.378	0.631
PI.2	0.379	0.561	0.813
PI.3	0.317	0.406	0.797

Table 3: Average Variant Extracted (AVE)

Variable	AVE (>0,5)	Composite Reliability (>0,6)	Cronbach's Alpha
Market Orientation	0.517	0.817	0.832
Entrepreneurial Orientation	0.572	0.893	0.864
Product Innovation	0.514	0.864	0.821

Next, in answering the hypothesis by testing the goodness of the model in testing the R-square value and the t-statistical test can be accepted if p-value is <0.05. based on the data in the hypothesis test table show:

Table 4: T-Statistics and P-Value Hypotesis

	Influence	R-Square	T-Statistics	P-value	Results
H1	Is there a positive and significant Market Orientation to the EO	0.446	5.103	0.000	Accepted
H2	is there a positive and significant influence on the role of Market Orientation on PI	0.521	7.681	0.000	Accepted
H3	Are there positive and significant influences on the role of EO Mediation on Product Innovation	0.353	3.714	0.024	Accepted

On the AVE value, the average variance of each variable shows the mean sample value > 1.96, meaning valid and reliable with an average of 50% of 97.5% data confidences as well as questionnaire data biased less than 10% and based on the matrix above the direct relationship novelty EO on PI in each activity greatly influences and is needed in addition to policies in decision making and innovative idea generation, proactiveness in PI when positive and negative values are diagrams with high frequencies contributing to the maturity of the product. The results of the analysis in this study suggest that EO in mediating MO and PI (H1) results were significant and strong in direct MO compared to PI (H2) even though the results were significantly positive. Whereas H3 has a significant positive effect of MO to be antecedent EO to PI. SME in Central Kalimantan in developing local products is important to sharpen methods with EO so that good Product Innovation can improve business sustainability and can be a business strategy for product development with entrepreneurial human resources (Chen et al., 2012) assets. In this study denied the gap on the capability theorists seek to explain how combinations of resources and capabilities can be developed and deployed in response to dynamic business environments (Teece et al., 1997, Ngo and O'Cass, 2012, Yu et al., 2016) based on emerging market results is a significant positive result of MO on PI and states that this research is in line with related Product Innovation based on market research through MO will increase sale growth and can develop products better because based on consumer orientation, competitor orientation and good coordination interface (Yu et al., 2016).

5. Conclusion

The sustainability of small and medium enterprises in local products that are culturally valuable with Product Innovation can increase revenue and support the government in gaining foreign exchange (Chen et al., 2014) because SME is a small business that has a

product unique (Yuan and Chen, 2015, Açıkgoz et al., 2016, Fernandez-Mesa et al., 2013) product philosophy (Chahal et al., 2016) that will not be eroded by the digitalization era MO (Morgan et al., 2016). MO and PI will get positive added value if SME can improve Human Resources knowledge and skills through EO (Vega-Vázquez et al., 2016) in product innovation (modification of forms so that fashion updates, adjusting price and quality, maintaining the quality of cultural values with the application of other interesting material / form adoption) can become SME activities in improving PI performance for business sustainability in the batik business arena and having products that not easy to imitate, according to the needs of consumers and have an advantage on the same product in SME Central Kalimantan. This study has limited data and geographical locations in Central Kalimantan which may be different in other emerging markets. However, in MO the results are significantly positive, this value is not stronger than EO for PI, so it can be further carried out from this research, about how MO for PIs with other mediations to fill gaps and answer some phenomena that refer to local SMEs for products to be able to sustainable.

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SECTORAL COMPOSITION AND TAX REVENUE PERFORMANCE IN ECOWAS COUNTRIES

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Abstract: *The study investigates sectoral composition and tax revenue performance in ECOWAS countries. Specifically, the study examines taxable capacity, tax efforts and tax structure of thirteen Economic Community of West African States (ECOWAS) countries taking into account three major sectors comprising agriculture, service and industrial sectors for the period 2000 to 2015. This is meant to bridge the gap in the extant literature which mainly focused on tax revenue to gross domestic product without taking into account taxable capacity and tax efforts with respect to specific sectors of the economy. The study employed stochastic frontier, forecast error variance decomposition, vector autoregression and the generalized methods of moment accordingly in the empirical analysis. The result from the analysis shows that the hypothesis of a low taxable capacity and tax efforts in the agricultural, industrial and service sectors in ECOWAS countries should be rejected. Specifically, the result revealed that though the three sectors are yet to be maximally exploited, the taxable capacity of ECOWAS countries is reasonably high. Also, the service and industrial sectors express more favourable responses to the tax revenue performance compared to the agricultural sector. It was recommended among others that on the average the governments of ECOWAS countries should formalize and strengthens tax revenue collections in the agricultural, service and industrial sectors.*

Keywords: Stochastic Frontier, ECOWAS, Taxation, Revenue.

JEL: C53, F02, H20, H27.

1. Introduction

The assessment of the taxable capacity, tax efforts and tax structure of Economic Community of West Africa States (ECOWAS) countries taking into account sectoral composition of countries in the sub-region is imperative for a better understanding of the overall tax revenue performance of the countries in the sub-region. These will no doubt help to ease and strengthen the level of international comparability of the countries' tax efforts. This study specifically examines the taxable capacity, tax effort and tax structure in three major sectors vis-a-vis agriculture, industry and services in relation to total tax, direct tax and indirect tax as well as inter-country comparisons of the average tax potential and tax effort estimates in thirteen ECOWAS countries for the period spanning 2000 to 2015. This is at variant with most studies in the extant literature that mainly focused on tax revenue to gross domestic product without taking a look at taxable capacity and tax efforts with respect to specific sectors of the economy. The working hypothesis is that there are low taxable capacity and tax efforts in the agricultural, industrial and service sectors in ECOWAS countries.

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Following this introductory remark is theoretical issues and theoretical framework. This was also followed by model specification and estimation techniques, empirical analysis, implications of the findings, recommendations and conclusion.

2. Theoretical Issues and Theoretical Framework

The foremost authors who examined the existence of the relationship between “the level of development” and “the structure of taxation” were Hinrichs (1966) and Musgrave (1969) and in terms of the examination of international cross-section comparisons, both researchers’ strongly believed that the dearth of simple mechanisms of collecting tax revenues characterized the early stages of development. Musgrave and Musgrave (1982) note that the progress in the scope and nature of economic activities stimulates sales and production so as to broaden the scope of indirect taxation as a more stable tool for additional mobilization of tax revenue.

Taking into account our interest in taxable capacity and/or tax performance of the ECOWAS countries, we took actual tax shares as a function of desired tax share and tax bases that lend themselves to taxation. Hence, we incorporated specific sectoral compositions as elements of tax bases. This understanding will give us the following functional relationship:

$$\left(\frac{T}{Y}\right)_{i,t} = f\left[\left(\frac{T}{Y}\right)_{i,t}^* B_{i,t}\right] \quad (1)$$

Where: $\left(\frac{T}{Y}\right)_{i,t}$ = Total tax, direct tax and indirect tax shares; $\left(\frac{T}{Y}\right)_{i,t}^*$ = desired tax shares

at time “t” in selected ECOWAS countries “i” and $B_{i,t}$ = vector of tax bases at time “t” in selected ECOWAS countries “i”.

In finding the various element of tax bases, this study have demonstrated that specific tax bases significantly influence tax shares (total taxes, direct taxes and indirect taxes). Therefore, the effects of some tax bases (for example, agriculture as a share of GDP, industry value added and service value added) are endogenously incorporated in developing the general framework for this study. Hence, the functional expression for the tax bases is presented in a panel data framework as:

$$B_{i,t} = f[Ay_{i,t}, Ser_gdp_{i,t}, ind_gdp_{i,t}] \quad (2)$$

Where:

$Ay_{i,t}$ = the share of agriculture (A) in income(y) at time “t” in selected ECOWAS countries

$ser_gdp_{i,t}$ = Service value added

$ind_gdp_{i,t}$ = industry value added

$$\left(\frac{T}{Y}\right)_{i,t} = f\left[\left(\frac{T}{Y}\right)_{i,t}^*, Ay_{i,t}, ser_gdp_{i,t}, ind_gdp_{i,t}\right] \quad (3)$$

The above hypothesized relationship (without the desired tax shares which will be examined with the stochastic frontier model) yielded the following fundamental model for this study:

$$\left(\frac{T}{Y}\right)_{i,t} = \beta_0 + \beta_1 Ay_{i,t} + \beta_2 ser_gdp_{i,t} + \beta_3 ind_gdp_{i,t} + \varepsilon_{i,t} \quad (4)$$

Therefore, equation (4) becomes the fundamental equation for this study, and forms the underlying framework on which subsequent estimations, analysis and discussions on which this study is based.

3. Model Specification and Estimation Techniques

This section contains models and estimation techniques examining the taxable capacity (taking into account sectoral compositions), the forecast error variance decomposition and impulse response functions or forecast performance of sectoral compositions in explaining taxes and the dynamic relationship between the various sectors of the ECOWAS countries and tax ratio.

3.1. Sectoral Composition and Taxable Capacity

To examine the taxable capacity of the ECOWAS countries in light of the sectoral compositions of the different economies, this study adopted the Stochastic Tax Frontier Analysis (STFA) based on the Stochastic Frontier Analysis (SFA) of Aigner, Lovell and Schmidt (1977) and Meeusen and Van de Broeck (1977) because the SFA enables us to define the maximum amount of tax revenue that ECOWAS countries could mobilize on the average from the period of 2000 to 2015 given her sectoral compositions. Hence, the basic Stochastic Tax Frontier Model of the ECOWAS countries in a panel data framework for the study is specified as:

$$tax_gdp_{i,t} = \alpha_0 + \sum_{i=1}^k \alpha_i X_{i,t} + v_{i,t} - \mu_{i,t} \quad (5)$$

Where, $tax_gdp_{i,t}$ represents total taxes, direct taxes and indirect taxes to gross domestic product ratio for country i at time t , that is the actual maximum tax revenue mobilized taking into account the sectoral composition of the ECOWAS Countries.

$X_{i,t}$ represents the sectoral composition (agriculture, industry and services) affecting ECOWAS countries' taxable capacity. The taxable capacity of the ECOWAS countries are predicted based on Jondrow, Lovell, Materov and Schmidt's (1982) formula given by the observable values of $v_{it} - \mu_{it}$. However, the stochastic frontier models were estimated based on Battese and Coelli's (1995) framework. From the model specified, α_i denotes the vector of unknown parameters. Also, we assumed that the idiosyncratic error component, v_i , is independently $N(0, \sigma_v)$ distributed over the observations, while, the inefficiency term μ_i is assumed to be independently half - normally $N^+(0, \sigma_u^2)$ distributed. The μ_i may also be assumed to be exponentially distributed with variance, σ_u^2 .

3.2. Forecast Performance and Impulse Responses of Sectoral Composition of Taxes

This section involves tracing the forecast performance and impulse response of taxes to the sectoral compositions of ECOWAS countries. This involves the use of the forecast error variance decomposition and impulse response function variants of the vector autoregressive model of the form:

$$Y_t = \delta_{it} + \sum_{i=1}^k \beta_{ij} Y_{t-j} + \varepsilon_{it} \quad (6)$$

Where Y_t = vector of variables [total taxes, direct taxes, indirect taxes, agriculture, industry and services], Y_{t-1} = vector of lagged variables, δ_{it} = vector of intercept terms, β_{ij} = matrix of coefficients, ε_{it} = stochastic error terms. The model can provide a background for tracing the pattern of responses of taxes to the various sectors (agriculture, industry and service) of the ECOWAS countries.

3.3. Dynamic Relationship between Sectoral Composition and Tax Performance

In order to ensure smooth operationalization of the dynamic relationship between sectoral compositions and tax revenue there is need for a simultaneous equations framework because sectors (agriculture, industry and services) value added to national output and taxes may be endogenous in a long run relationship. Hence, the dynamic relationships can be ascertained by employing a methodology that would ensure simultaneity bias is eliminated. We therefore adopt the GMM estimation method for the analysis of the relationships. The GMM model is specified in the form of:

$$y_{i,t} = \alpha_0 + \alpha_1 y_{i,t-1} + \alpha_2 X_{i,t} + \varepsilon_{it} \quad (7)$$

Where: $y_{i,t}$ represents total taxes, direct taxes and indirect taxes as dependent variables in three variants of models, while $X_{i,t}$ is vector comprising of agriculture value added, industry value added and service value added., while i 's and t 's represent individual country and time frame, respectively, and $\varepsilon_{i,t}$ denotes error term. The instrumental variables the Researcher used in this study were the lagged values of all the independent variables.

4. Empirical Analysis

4.1. Sectoral Composition and Taxable Capacity

This study estimated three baseline stochastic frontier models for ECOWAS countries taking into account the aggregate taxes and disaggregated tax components as dependent variables and the sectoral compositions as explanatory variables(see Table 1), this model is the fulcrum on which tax potential and tax effort estimates of the ECOWAS countries are based (see Table 2 in Annex 1).

The Wald tests for the models are significant at 1 percent level, implying that the tax and sectoral variables employed in the model are jointly significant, and the likelihood estimate is negative as expected by theory. The inefficiency parameters (sigma_u and eta) for the models are quite large and statistically significant at 1 percent, implying the rejection of the null hypotheses (sigma_u=0) of no technical inefficiencies in the relationships between tax variables and sectoral composition. This is consistent with the studies of Cyan et al(2013) and Langford and Ohlenburg (2015) that reject the likelihood of no technical inefficiencies in stochastic frontier models. Also, this may have accounted for the relatively low tax-to-GDP ratio in ECOWAS countries.

Empirical evidence from the stochastic frontier models show that agriculture value added has significant and negative impact on direct and indirect taxes at 5% and 10% significance levels, and reveals negative and not significant effect in terms of total taxes in ECOWAS countries. Thus, this finding is indicative of the largely subsistence nature of the agricultural sector, and reflects the low taxable surplus from the sector. The industrial sector reveals positive and significant relationships with total taxes and direct taxes but shows a positive and non-significant relationship with indirect taxes. Also, the service sector shows positive and significant relationship with total taxes and direct taxes except for that of indirect taxes that reveals positive but non-significant relationship. Generally, the results show that the

industrial and service sectors contribute more significantly to tax revenue than the agricultural sector in ECOWAS. However, more attention should be given to the formalization of tax revenue collections from the agricultural sector and base-broadening in order to pursue substantial indirect tax responsiveness to the revenue performance of ECOWAS countries.

Table 1: Sectoral Composition and Taxable Capacity: Stochastic Tax Frontier Analysis

Battese Coelli - Half Normal Stochastic Tax Frontier Models								
	Total Taxes				Direct Taxes		Indirect Taxes	
Variables	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error
Total Tax+	-	-	-	-	-	-	-	-
Direct Tax++	0.16	0.14	-	-	-	-	-	-
Indirect Tax+++	0.39***	0.06	-	-	-	-	-	-
Agriculture	-0.01	0.02	-0.02	0.02	-0.03**	0.12	-0.98*	0.05
Industry	0.11***	0.03	1.19***	0.03	0.15***	0.17	0.04	0.33
Service	0.19***	0.02	0.29***	0.17	0.09***	0.97	0.04	0.06
Constant	-1.37	2.19	-1.57	1.80	-3.01	0.97	14.11***	4.05
Inefficiency								
Lamda	0.13	1.57	2.83	2.69	2.38	0.28		
Eta							-0.32***	
sigma(u)	0.03	1.55	4.01	0.38	1.99	0.19	30.46	32.75
sigma_u=0	0.00		17.18***		11.19***			
Summary Statistics								
Wald chi(2)	440.77***		355.91***		161.35***		9.49*	
log likelihood	-477.14		-501.42		-369.73		-479.92	

Source: Author's Computation +, ++, +++ dependent variables. */**/** = 10, 5 and 1 significant levels.

4.2. Tax Potential and Tax Effort of ECOWAS Countries: Country-Specific

This study conducted the inter-country comparisons (See Table 2 in Annex 1) of the average tax potential and tax effort estimates of thirteen ECOWAS countries, and a country with tax effort index in excess of unity is considered to be making appreciable effort in the collection of taxes and those below unity are considered to be making unappreciable tax collection efforts. We discuss the country-specific taxable capacities in this study:

Benin

The average actual tax ratio is about 16.20%, and the country recorded a relatively low tax potential of about 15.85% with an appreciable effort index of 1.02, and this indicated that the country has made appreciable efforts in bridging the tax gaps by stimulating the tax collection efforts. However, there are relatively high potential for the mobilization of direct-and indirect tax efforts in the country.

Cape Verde

The country has made tremendous effort in tax revenue collections taking into account the sectoral compositions of the economy. There is a substantial tax collection effort in terms of indirect taxes as compared to direct tax effort. However, the country is expected to make appreciable efforts towards direct tax revenue collection.

Burkina Faso

The country experienced a relatively moderate level of direct-(0.67) and indirect (0.55) tax efforts indices. Hence, there is substantial amount of taxable capacity with regards to the tax composition of the country.

Cote d' Ivoire

There is relatively large unexploited tax potential in the country. Hence, the tax effort indices range from 0.81 to 0.97, though, there is an appreciable level of tax effort, however, considerable attention should be given to tax revenue mobilization.

Ghana

There is moderately high taxable capacity in the country. For instance, the tax potential is as high as 16.18 percent as compared to 13.14 percent of actual tax ratio. However, there is considerable high indirect taxable capacity in the country from the period of 2000 to 2015.

Guinea

It is noticeable that the country has appreciable direct tax effort (about 0.85) as compared to indirect tax effort index of 0.65. Hence, appreciable effort has not been made to exploring the opportunities inherent in the unexploited indirect tax potentials in the country.

Guinea Bissau

The country has a high level of direct and indirect tax potentials of about 3.86% and 10.76% as compared to the actual direct and indirect tax ratios of 0.62% and 2.10% respectively. Hence, the country has not made appreciable effort in reaping the taxable capacities provided by the various sectors of the country's economy.

Mali

The country has marginal difference between the actual tax ratio and tax frontier, for instance, the direct tax ratio is 3.65% as against tax frontier of 4.86%, and indirect tax ratio of 10.54% as against tax frontier of 11.19%. This estimate show that the country is making appreciable effort towards mobilizing direct and indirect taxes, but there is need for more effort in enhancing the revenue-earning capacity of the country's tax system.

Niger

There is considerably high level of tax potentials in the country. For instance, direct tax ratio is 2.48% as compared to tax frontier of 4.48%, and indirect tax ratio of 8.36% compared to 10.94% tax frontier. Hence, the country requires more efforts to collecting more tax revenue.

Nigeria

There are huge unexploited tax potentials in the country taking into account the sectoral compositions of the country. For instance, the country's average direct tax ratio is 2.88% as against 5.78% tax frontier indicating a negative tax gap; and indirect tax ratio is 2.54% compared to tax frontier of 11.59%, indicating a negative indirect tax gap, and this reveal that the country have a much higher indirect tax potential compared to that of direct tax potential. Hence, there is unappreciable effort made by the fiscal authorities of the country towards tax collections.

Senegal

There is huge unexploited direct and indirect tax potentials and an unappreciable direct and indirect tax efforts. For instance, actual direct tax ratio is 4.01% as against tax frontier of 6.18%, and indirect tax ratio of 10.78% compared to indirect tax frontier of 13.86%.

Sierra Leone

The country has witnessed a reasonably high level of tax efforts ranging from about 0.63 to 0.99. However, the country has some unexploited tax potential that needed to be mobilized.

Togo

The country has a reasonably high taxable capacity considering the sectoral compositions of the country. For instance, the direct tax ratio is 2.01% as against the tax potential of 4.36%, and indirect tax ratio of 4.96% as against indirect tax frontier of 12.07%. These estimates show that the country has not made tremendous progress in the mobilization of tax revenue from 2000 to 2015.

4.3. Forecast Performance of Sectoral Composition in Explaining Taxes

The effects of sectoral composition on tax revenue are presented using empirical outcomes from estimated forecast error variance decomposition (FEVD) of the vector autoregressive (VAR) equation. The FEVD is used to show how much the agriculture, service and industrial sectors explain the aggregative and disaggregated components of tax system of ECOWAS countries. The FEVD estimates are presented in Table 6.

In terms of total taxes, the agricultural sector explains an increasing proportion of total tax revenue overtime, with the proportion reaching a considerable high level of 5.22% in the tenth period. This shows that the agricultural sector is expected to have stimulated the taxable capacity of the ECOWAS countries in the period under study. For the other sectors, the FEVD results show that the service sector substantially contributes more significantly to total tax revenue at the tenth period to the tune of 5.71% as compared to that of the agricultural sector. The results show that the industrial sector perform worse in explaining the variances in total tax revenue; it only explains a maximum of 3.32% points in the tenth period.

In terms of direct taxes, the industrial sector performs quite well in the FEVD, the sector explained a substantial proportion of direct taxes, indicating that the industrial sector explains direct taxes to the tune of 4.31% in the tenth period as against the 2.42% and 0.14% of the agriculture and the service sectors respectively.

In terms of indirect taxes, the service sector took the lead to as high as 1.06% in the tenth period in its explanation of the variance in indirect taxes. However, the agricultural and industrial sectors apparently show low performance to explaining the variance in indirect taxes in ECOWAS countries.

Table 3: Forecast Performance of Sectoral Composition in Explaining Taxes in ECOWAS Countries

Horizon	Total Taxes			Direct Taxes			Indirect Taxes		
	Agric ulture	Service	Industry	Agric ulture	Service	Industry	Agric ulture	Service	Industry
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1.00	0.02	0.12	0.19	0.10	0.01	0.00	0.00	0.13
3	1.50	0.18	0.56	0.42	0.12	0.25	0.00	0.01	0.14
4	2.08	0.58	0.94	0.67	0.11	0.67	0.02	0.04	0.13
5	2.62	1.21	1.34	0.95	0.10	1.22	0.06	0.10	0.13
6	3.16	2.00	1.74	1.24	0.10	1.84	0.12	0.20	0.14
7	3.69	2.88	2.14	1.54	0.10	2.48	0.19	0.35	0.19
8	4.21	3.82	2.54	1.84	0.11	3.12	0.29	0.55	0.26
9	4.72	4.77	2.93	2.13	0.12	3.74	0.39	0.79	0.35
10	5.22	5.71	3.32	2.42	0.14	4.31	0.51	1.06	0.46

Source: Author's Computation

4.4. Responses of Sectoral Composition in Explaining Taxes

The interactive responses between the sectoral composition and taxes of ECOWAS countries are explained by the Impulse Response Functions (IRFs) estimates of the VAR model (See Table 4). Apparently, the agricultural sector is negatively related to total taxes, direct taxes and indirect taxes, indicating the adverse contributions or interactions of the agricultural sector to the taxable surplus of ECOWAS countries. For the other sectors, the service sector (except for the second period) and industrial sector contribute positively to explaining total taxes in ECOWAS countries. In terms of direct-and indirect taxes, a relatively high number of periods show that the service sector and industrial sector are positively related to explaining the direct and indirect tax revenues. Generally, the service and industrial sectors express favourable responses to the tax revenue performance except the agricultural sector that shows otherwise.

Table 4: Responses of Sectoral Composition in Explaining Taxes

Horizon	Total Taxes			Direct Taxes			Indirect Taxes		
	Agric ulture	Service	Industry	Agric Ulture	Service	Industry	Agric ulture	Service	Industry
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	-0.17	-0.02	0.06	-0.06	-0.04	0.01	-0.01	0.01	-0.10
3	-0.16	0.08	0.13	-0.08	-0.03	0.07	-0.02	0.03	-0.06
4	-0.19	0.14	0.14	-0.09	-0.01	0.10	-0.05	0.05	-0.02
5	-0.21	0.19	0.16	-0.09	0.00	0.13	-0.07	0.08	0.02
6	-0.22	0.23	0.18	-0.10	0.01	0.14	-0.08	0.11	0.05
7	-0.23	0.26	0.19	-0.10	0.01	0.14	-0.10	0.14	0.08
8	-0.24	0.29	0.20	-0.10	0.02	0.15	-0.11	0.16	0.10
9	-0.25	0.31	0.21	-0.10	0.02	0.14	-0.12	0.18	0.11
10	-0.26	0.32	0.22	-0.10	0.02	0.14	-0.13	0.20	0.13

Source: Author's Computation

4.5. Dynamic Relationship between Taxation and Sectoral Composition

Table 5 shows the results from the Generalized Methods of Moment model, and the variables employed are in their first difference based on the Arellano-Bond's estimation procedure. The diagnostic statistics are quite impressive. The coefficient of determinations show that the sectoral composition of the economies explains about 89%, 75% and 70% of total taxes, direct taxes and indirect taxes in ECOWAS countries. The Hansen's J over-identifying restriction test of our respective models indicate the acceptance of null hypothesis of the validity of the instruments. Also, the study reports the absence of first order autocorrelation (in terms of direct and indirect taxes models) and second order autocorrelation (in terms of total taxes and indirect taxes).

The effect of agriculture as share of GDP is negative and statistically non-significant suggesting the large subsistence nature of the sector, and a low taxable surplus of the agricultural sector in the ECOWAS countries.

The effect of the service sector is positive and statistically significant at 1% and 10% significance levels in terms of the total taxes, direct taxes and indirect taxes. This finding suggests that a favourable improvement in the activities of the service sector will stimulate the tax revenue performance of the ECOWAS countries.

The industrial sector has a statistically significant (except in the case of indirect taxes) and positive impact on the ECOWAS countries' tax revenue. The improvement in the industrial sector will enhance the revenue-earning capacity of the tax revenue of ECOWAS countries.

Table 5: Dynamic Relationship between Taxation and Sectoral Composition

	Total Taxes		Direct Taxes		Indirect Taxes	
Variables	coef.	t-stat.	coef.	t-stat.	coef.	t-stat.
Tax Ratio (-1)	0.88***	23.65				
Direct Taxes (-1)			0.81***	18.14		
Indirect Taxes (-1)					0.78***	16.77
Agriculture	-0.01	-0.55	-0.02	-0.45	-0.01	-0.55
Service	0.03***	2.62	0.01*	1.77	0.04***	2.72
Industry	0.02**	1.98	0.02**	2.27	0.01	0.92
R- Square	0.89		0.75		0.70	
Adjusted R-Square	0.89		0.75		0.70	
J-Statistics	0.90		1.33		2.81	
AR (1)	-		-60.83		-264.07	
AR(2)	7.25		-30.42*		-323.61	

Source: Author's Computation. ***/**/* = 1, 5 and 10 significance levels

5. Policy Implications, Recommendations and Conclusion

The implications that emanates from this study includes; general inefficiency in tax administration resulting in low tax-to-GDP ratio in ECOWAS countries, huge proportion of agricultural activities is still being carried out in subsistence nature in ECOWAS countries reflecting in the low taxable surplus and poor effect of agricultural share of GDP. Other policy implications are: the industrial and service sectors contribute more significantly to tax revenue than the agricultural sector in ECOWAS countries, ECOWAS countries have a reasonably high taxable capacity considering these sectoral compositions yet to be maximally exploited, the service and industrial sectors expresses favourable responses to the tax revenue performance compared to the agricultural sector.

In the light of the above, the following recommendations are suggested;

1. Efforts should be made by relevant authorities on ECOWAS countries to formalize and strengthens tax revenue collections in agricultural sector in other for the sector to be more responsiveness to tax revenue performance.
2. Efforts should also be made to enhance activities in the service and industrial sectors to stimulate more tax revenue performance in ECOWAS countries.
3. Agencies saddled with the responsibility of tax administration in ECOWAS countries should be strengthen in other for them to perform optimally. This has the potency of improving tax revenue performance generally.

In conclusion, this study investigated the taxable capacity, tax efforts and tax structure of ECOWAS countries taking into account sectoral composition (Agriculture, service and industrial) of thirteen ECOWAS countries for the period 2000 to 2015. This was informed by the need to ease and strengthen the level of international comparability of countries' tax efforts and aid better understanding of tax revenue performance along three major sectors of the economy of ECOWAS countries. Based on the theoretical framework, models were built along sectoral composition and Taxable capacity, forecast performance and impulse responses of sectoral composition in Explaining taxes and dynamic relationship between sectoral composition and tax performance.

It was found that ECOWAS countries have a reasonably high taxable capacity considering these sectoral compositions though yet to be maximally exploited. This implies a rejection of the hypothesis that ECOWAS countries have low taxable capacity. It was also revealed that the service and industrial sectors express favourable responses to the tax revenue performance compared to the agricultural sector. This also implies a rejection of the hypothesis that there is a low tax effort in ECOWAS countries. However, the study revealed that the industrial and service sectors contribute more significantly to tax revenue than the agricultural sector in ECOWAS countries.

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Bio-notes

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Annex 1

Table 2: Sectoral Composition, Tax Structure and Taxable Capacity in ECOWAS Countries, Averages, 2000-15

Countries	Taxable Capacity (Sectoral Composition and Tax Structure)			Taxable Capacity (absence of Tax Structure)			Direct Taxable Capacity			Indirect Taxable Capacity		
	Total Tax Ratio	Tax Potential	Tax Effort	Tax Potential	Tax Effort	Tax Effort	Direct tax ratio	Direct tax potential	Direct tax effort	Indirect tax ratio	Indirect tax potential	Indirect tax effort
Benin	16.20	15.85	1.02	17.66	0.92	0.92	4.25	5.76	0.74	11.95	12.28	0.97
Cape Verde	21.97	20.40	1.06	23.57	0.92	0.92	5.80	6.95	0.84	12.83	12.71	1.01
Burkina Faso	12.46	12.75	1.00	15.18	0.82	0.82	2.77	4.16	0.67	7.61	13.87	0.55
Cote D'Ivoire	15.69	16.20	0.97	18.75	0.84	0.84	4.61	5.66	0.81	10.53	12.79	0.82
Ghana	13.14	13.51	0.98	16.18	0.82	0.82	4.87	5.17	0.93	8.37	11.96	0.70
Guinea	13.51	14.30	0.94	17.39	0.78	0.78	5.49	6.45	0.85	8.03	12.29	0.65
Guinea Bissau	6.17	8.78	0.72	14.08	0.44	0.44	0.62	3.86	0.16	2.10	10.76	0.19
Mali	14.51	13.34	1.09	15.20	0.96	0.96	3.65	4.86	0.76	10.54	11.19	0.94
Niger	11.94	12.49	0.96	15.52	0.79	0.79	2.48	4.48	0.57	8.36	10.94	0.77
Nigeria	8.99	10.53	0.90	15.76	0.59	0.59	2.88	5.78	0.50	2.54	11.59	0.22
Senegal	18.03	17.64	1.04	20.55	0.88	0.88	4.01	6.18	0.65	10.78	13.86	0.78
Sierra Leone	8.89	9.02	0.99	11.86	0.75	0.75	2.72	3.11	0.87	6.17	9.79	0.63
Togo	14.66	11.39	1.34	15.55	0.95	0.95	2.01	4.36	0.47	4.96	12.07	0.41

Source: Authors' Computation

EVALUATING BANKS FINANCIAL PERFORMANCE USING FINANCIAL RATIOS: A CASE STUDY OF KUWAIT LOCAL COMMERCIAL BANKS

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Abstract: *This study investigates the effect of Leverage, Total deposit to total assets, Total loans to total assets, Retained earnings to total assets, and Tangible book value per share ratios on banks' financial performance for Return on Assets (ROA) as the dependent variable. The data were obtained from the financial statement (Income statement and Balance sheet) of the selected banks. The results were found by analyzing the financial ratios of five commercial banks in Al-Kuwait throughout five years (2013–2017). We used analytical methods which led us to the presented results. MANOVA and ANOVA analysis were used to show the difference between banks in their financial situation and performance, and then the panel regression model used to study relationships among variables. The Hausman test was applied to compare fixed and random effect models which were shown that the random effect model gives the better result. Our findings show that the independent variables "Total deposit" to "total assets" and "Retained earnings" to "total assets" have a strong significant impact on our dependent variable ROA. "Leverage" and "Total loans" to "total assets" have a less significant effect on the banks' financial performance (ROA) while Tangible book value per share does not affect the ROA.*

Keywords: Bank financial performance, ROA, Financial ratios, MANOVA-ANOVA analysis, Panel regression, Hausman test.

JEL classification: G21, G24, G32.

1. Introduction

Profit is the primary goal of all commercial banks, and all their activities and strategies are designed to realise this objective. This study measures the profitability of banks using Return on Assets ratio. The determinants of banks' profitability can divide into two main factors such as internal and external factors (Al-Tamimi, 2010). Internal factors are affected by the banks' management policies and decisions, while external factors are the macroeconomic indicators, and they reflect the economic environment where banks work such as GDP, inflation rate, etc. (Mosko and Bozdo, 2016). Among these different internal factors, we chose five ratios: Leverage, Total deposit to total assets, Total loans to total assets, Retained earnings to total assets, and Tangible book value per share. The performance analysis was performed by using financial ratios to examine the relationships among ratios used and ROA to determine the differences in performances of commercial banks in Al-Kuwait. Many other researchers chose ROA as determinants of profitability of commercial banks such as Elsiefy (2013) employed ROA as a proxy measure of bank financial performance in Qatar. As well, Nimer, Warrrd, and Omari (2013) applied the same method in studying the impact of liquidity on Jordanian Banks profitability through return on Assets. So mainly, the study intends to identify the impact of five financial factors that affect the performance of five commercial banks in Al-Kuwait from 2013 to 2017 and to present a brief overview of the banking system in Kuwait.

The objectives of this study are:

- to contribute to analysing five financial factors that have an impact on commercial bank performance in Al-Kuwait to use more efficiently way the bank's resources,
- to classify the commercial banks in Al-Kuwait by their financial characteristics as a guideline for future development and to assess their financial performance, also
- the study provides some indications for bank management, on which are the factors that determine bank performance.

This study is different from the earlier ones in two ways because the data used are recent. Moreover, however, there were a considerable number of empirical studies on bank performance around the world especially commercial banks but very little on bank performance of Al-Kuwait.

This paper has the following structure. Section 2 gives a brief overview of the current situation of Kuwait banking system, and reviews several important empirical studies and develops the research hypotheses considering the variables investigated. Section 3 describes the data and methods used. Section 4 reports and discusses the results obtained. Section 5 gives the conclusion.

1.1 A brief overview of the banking system in Kuwait

In Kuwait, financial institutions play an important and direct role in influencing the economy of the country, and banks there have a solid economic prospect supported by high oil prices, rapid expansion of retail banking, and rising stock exchange market. Furthermore, the Kuwaiti banking system is considered one of the strongest in the MENA (the Middle East and North Africa) region. The majority of Kuwait's domestic banking sector is owned by the institutional, government, and individual (families) shareholders (Al-Saidi and Al-Shammari, 2013). The number of the current banks in Kuwait is 23 (including five commercial banks, 5 Islamic banks, one specialised bank and 12 branches of foreign banks) and they are under the supervision of the Kuwait Central Bank.

However, it is worth noting that banks are essential actors of the stock exchange market and real estate which is very volatile by its nature and risk (Alam et al., 2018). Risk remains a real issue regarding loans and deposits in Kuwait banks sector. If we take the latest annual economic report of the Central Bank of Kuwait for the year 2017, we will see growth rates of performance and profitability of banks during the years 2017 and 2016. The combined balance sheet of all 23 banks amounted to about 63467.8 million dinars at the end of 2017 compared to 60444.5 million at the end of the previous year, thereby achieving growth rate of 5.0% and the value of 3023.4 million dinars during 2017, compared to growth rate of 3.1% and the value of 1830.4 million during 2016 (Central Bank of Kuwait (CBK), 2017).

Table 1 shows working Kuwait banks and date of establishment.

Table 1: Kuwait banks and date of establishment

Local Kuwait Banks		Arab & Foreign Banks
Commercial	Islamic	
1-National Bank of Kuwait (1952)	7- Ahli United Bank (1971)	12- Bank of Bahrain and Kuwait (1977)
2- Gulf Bank of Kuwait (1960)	8-Kuwait International Bank (1973)	13- HSBC Bank Middle East Limited (2005)
3- Commercial Bank of Kuwait (1960)	9- Kuwait Finance House (1977)	14- BNP Paribas (2005)
4- AlAhli Bank of Kuwait (1967)	10-BoubyanBank (2004)	15- National Bank of Abu Dhabi (2006)
5-Industrial Bank of Kuwait (government bank,1973)	11-WarbaBank (2010)	16- Citi Bank (2006)
6- Burgan Bank (1977)		17- Qatar National Bank-QNB Kuwait (2007)
		18- Doha Bank (2008)
		19- Mashreq Bank (2009)
		20- Bank Muscat (2010)
		21- Al-Rajhi Banking & Investment Corporation (Al-Rajhi Bank) (2010)
		22- Union National Bank (2012)
		23- Industrial and Commercial Bank of China Limited (2014)

Source: Authors own computation using data from Central Bank of Kuwait

2. Literature Review

Bank performance is the concept of how to use the bank capacity to make sustainable profitability (Bassey et al., 2016). There are some indicators for evaluating the financial performance of banks by the financial measures. Accordingly, Khrawish (2011) mentioned that bank financial performance could measure by three different variables. First, the most important profitability ratio is the return on assets (ROA) which shows the ability of bank assets to achieve the profit. The second ratio is the return on equity (ROE), this ratio related to returns to shareholders' equity. The next one is the return on investment (ROI), this approach uses the invested capital to measure bank efficiency.

Reviewing the existing literature, we found that researchers have applied different approaches to measuring banks financial performance. One example is Etebari (2018) metrics which combined financial ratios analysis with benchmarking to measure performance against budget. Others used the net interest margin, returns on equity, invested capital, and many others. However, ROA is the essential ratio frequently used in the literature of measuring bank financial performance. Hassan and Bashir (2003) mentioned that ROA not only shows the profit earned of assets, but it also reflects the management's ability and efficiency to develop banks' investment resources to produce

higher profits. The European Central Bank (ECB, 2010) announced that a good performance measurement structure should cover more aspects of the performance than just profitability indicators.

Financial performance is measured through financial ratios taken from financial statements primarily the balance sheet and income statement. We can calculate different classes of financial ratios including liquidity, activity, leverage and equity ratios. Profitability ratios evaluate the efficiency of how the business resources were used to make a profit (Brigham and Houston, 2005).

In general terms, leverage is the ratio between the financial institution debt and equity. Pandey (2008) defines financial leverage as the existence of debt in a corporation's capital structure. Financial leverage includes the use of debt and preferred shares in addition to the owners' equity (Dare and Sola, 2010).

According to Abubakar (2015), if you look only at the total amount of loans made by a bank, it will not be beneficial, and it will be difficult to determine if a bank is over-leveraged. Managers overcome this problem by using the ratio of assets to capital on the bank's balance sheet, or another word its "leverage ratio". A higher leverage ratio indicates that the bank should use more debt to finance its assets relative to its total amount of borrowed funds. Among all the several financial factors that affect banks performance, the loans and the deposits are the primary factors of determining the bank profitability. Both loans and deposits are equally outstanding in the banking process like two sides of the same coin. Most previous studies found a positive relationship between loans and ROA, Peek and Rosengren (2002) write that Loans represent the primary earning asset at most banks. Amahalu Nestor (2017) also said there is a positive and statistically significant relationship between loan management and financial performance (ROA). While, Wang and Wang (2015) studied the loans influence from many aspects and more comprehensively, he said a high loans-to-assets ratio point to a fact that a bank is issuing more loans and making more income. On the other hand, a low loans-to-assets ratio means that the bank makes less income. However, we cannot deny the fact of a high loans-to-assets ratio puts the bank at high liquidity risk.

Naceur and Goiaed (2001) after examining the factors of the Tunisian banks' performances during the period 1980-1995 found empirical evidence indicating that the best performing banks are those who maintained a high level of deposits relative to their assets. So this means increasing the ratio of total deposits to total assets will increase the funds achievable by the bank in different profitable ways such as lending and investments activities.

About loan and deposit ratios, Baharuddin and Azmi (2015) argue that the higher deposit ratio is more preferred than the loan ratio to improve bank profitability, while Naceur (2003) found that bank loans and interest margin have a positive effect on bank profitability.

Retained earnings can be considered as the first line defence to capital diminution and a safeguard against the risky bank business. It allows the bank to remain competitive and profitable. The rate at which retained earnings grow has a direct effect on the bank equity growth and constant growth of bank assets (Onoh, 2002). Nzotta (2004) found a strong relation between bank profitability and earnings; he stated that retained earnings are undistributed profits accumulated over the years that could be used to increase the capital resources of the bank.

Tangible book value per share of a financial institution is what common shareholders are expecting to receive if the institution goes bankrupt and all of its assets are paid at their book value. The intangible assets, such as goodwill, are omitted from this calculation because they do not have monetary value so they cannot be sold during liquidation (Aswath, 2010). So, regarding that, a high tangible book value per share offers shareholders higher protection in the case of bankruptcy.

3. The list of variables and the hypotheses developed

On the base of the review of the literature, five variables have been included for measuring banks financial performance. Table 2 contains a preliminary explanation of variables selected along with hypotheses are derived for each variable.

Table 2: List of variables

	Variable Name	Proxy	Source
Dependent Variable	Return on assets	Net Income / Total Assets	Income Statement & Balance Sheet
Independent Variables	Leverage	Total Debt / Total Equity	Balance Sheet
	Total deposit to total assets	Total Deposit / Total Assets	Balance Sheet
	Total loans to total assets	Total Loans / Total Assets	Balance Sheet
	Retained earnings to total assets	Retained earnings / Total Assets	Balance Sheet
	Tangible book value per share	Tangible Assets / Shares Outstanding	Balance Sheet

Hypotheses:

H₀: There is no significant impact between the internal factors (6 financial ratios) and banks performance.

To analyse the effect of each factor the study uses the following five sub-hypotheses:

- H₁: The Leverage has a statistically significant effect on banks financial performance represented by ROA.
- H₂: The Total deposit to total assets ratio has a statistically significant effect on banks financial performance represented by ROA.
- H₃: The Total loans to total assets ratio has a statistically significant effect on banks financial performance represented by ROA.
- H₄: The Retained earnings to total assets ratio has a statistically significant effect on banks financial performance represented by ROA.
- H₅: The tangible book value per share ratio has a statistically significant effect on banks financial performance represented by ROA.

The (1) equation was developed to carry out this research which investigates the effect on banks financial performance using the Financial leverage, Total deposit to total assets, Total loans to total assets, Retained earnings to total assets, and Tangible book value per share ratios as explanation variables, and the Return on assets (ROA) as result variable.

$$ROA_{it} = \beta_0 + \beta_1 LEV_{it} + \beta_2 \frac{TD}{TA}_{it} + \beta_3 \frac{TL}{TA}_{it} + \beta_4 \frac{RE}{TA}_{it} + \beta_5 \frac{TBV}{SHARE}_{it} + \varepsilon_i \quad (1)$$

where:

ROA_{it} = Return on Assets (the dependent variable observed for each bank of the 5 (i) at time t = 2013, ..., 2017)

β_0 = Intercept for independent variable of i^{th} bank

$\beta_1 - \beta_5$ = Coefficient for the independent variables of each bank (i), denoting the nature of the relationship with the dependent variable at time $t = 2013, \dots, 2017$)

LEV= The financial leverage

$\frac{TD}{TA}$ = Total deposit to total assets

$\frac{TL}{TA}$ = Total loans to total assets

$\frac{RE}{TA}$ = Retained earnings to total assets

$\frac{TBV}{SHARE}$ = Tangible book value per share

ε_i = Error term

4. Methodology

Evaluating the bank's performance, we need tools that can be used to measure the performance, and the financial ratio analysis is one of the most popular tools, to perform that. Therefore, we used six financial ratios which can be useful indicators to measure the financial position of commercial banks in Al-Kuwait.

To test the multiple response variables simultaneously was used the multivariate analysis of variance (MANOVA). We should use MANOVA when we have one or more categorical independent variables (which are the five different banks) with two or more treatment levels. Moreover, there are more than one continuous response variable (the six financial ratios during five years) that is what makes it "multivariate" to see if there is a difference in banks financial performance related to the six variables ratios calculated. If the MANOVA shows a significant difference (less than 5%) among variables, then we can continue the analysis by ANOVA (French et al., 2008).

In the second part, we analyse the data by Panel Data Model (also known as longitudinal or cross-sectional time-series model) using financial ratios which model examines cross-sectional (group) and/or time-series (time) effects. These effects may be fixed or random. Fixed effects assume that individual group/time have a different intercept in the regression equation, while random effects hypothesise individual group/time have a different disturbance (Croissant and Millo, 2018). This paper explores the use of both of panel techniques (fixed and random) to identify the most important financial ratios that can be considered as indicators of the bank's financial position, which can give the bank's management an early warning about the bank situation.

Hausman-test is a useful tool in panel data analysis, in comparing the estimates of the fixed and random effects models. Choosing the more appropriate model must be based on information about the independent variables, identify the presence of endogeneity in the explanatory variables (Sheytanova, 2014).

4.1 Dataset

The commercial banks included in this study are:

1. National Bank of Kuwait (NB)
2. Gulf Bank (Gulf)
3. Kuwait Commercial Bank (COM.B.K)
4. AL-Ahli Bank of Kuwait (ALAHLI.B.)
5. Burgan Bank (BURG)

The data were obtained from the annual reports (balance sheet and income statement) of banks during five years from 2013 to 2017 from the websites of the respective banks, Central Bank of Kuwait, and Kuwait Stock Exchange (Bursa Kuwait). Financial ratios were calculated by MS Excel (See Appendix 1).

The study limitations can be mentioned as follows: First, the study mainly investigates only the locally owned Kuwait commercial banks, and it does not include the foreign-owned commercial banks in Kuwait. Second, the financial data was collected only from the annual reports of the banks and the Kuwait Stock Exchange websites which normally published financial statements do not give a complete picture of the commercial banks' performance. Finally, this study was constrained by lacks of the relevant research and literature about Kuwait bank sector. However, in our judgment, these limitations did not impair the academic content of the study.

5. Results and testing hypotheses

The graphs of Figure.1 present the heterogeneity of the investigated banks' financial ratios. It is clearly shown that the bank financial indicators connected to the six variables are very different in their ranges. In the case of NB, the volatility of ratios have a small range what indicates a low risk that means more stability. Contrary to NB the BURG has a considerable range in most of the cases that means the highest volatility and risk. The most substantial average volatility is shown in the case of the ROA ratios, while the smallest one in the case of the Total loans to total assets ratios.

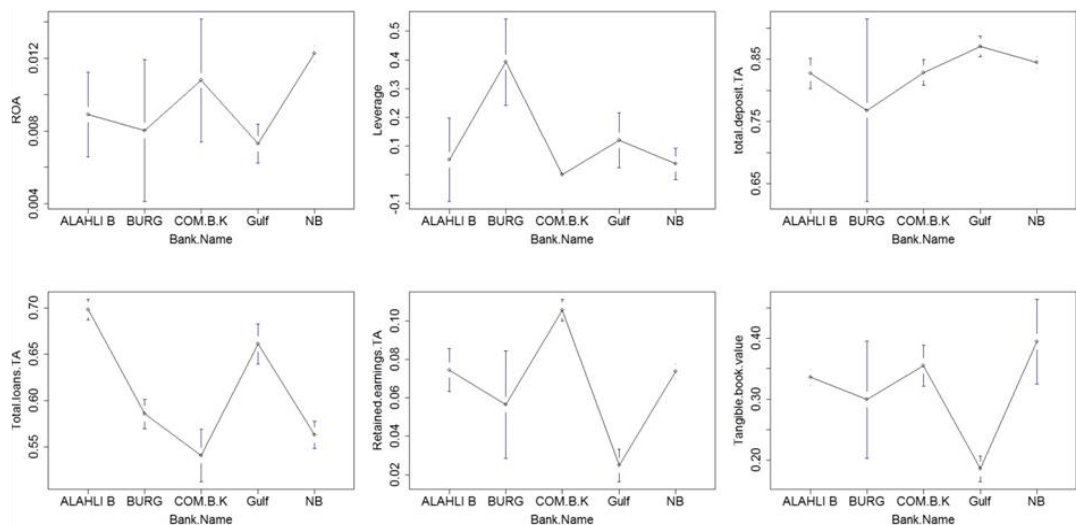


Figure 1: Heterogeneity across banks - differences among several years

Source: Author's calculation by R statistical system

First, we examined whether there is a significant difference between the banks taking into account all the variables investigated. The Pillai test was applied to determine the significance level of the difference between the banks, which is used by the MANOVA function of the R statistical system. Table 3 shows that the significance level of Pillai test is less than 5% what indicates that there is a significant difference among banks concerning ratios investigated. Thus, the null hypothesis (H_0) is rejected, and the alternative hypothesis will be accepted, and it is concluded that there is a significant difference among banks concerning calculated ratios. Since MANOVA's analysis has shown that there is a significant difference among banks considering all the variables, therefore we can examine the

differences among banks considering each variable separately. Each variable was tested individually with the ANOVA function, and it was found that there is a significant difference among the banks in the case of the five variables (ROA, Leverage, Total deposit to total assets, Retained earnings to total assets, Tangible book value per share) and there is no significant difference among the banks in the case of the Total loans to total assets (Table 3).

Table 3: Results of MANOVA and ANOVA analysis

Name of the ratio	Significance level
Total ratios (MANOVA - Pillai Test)	0.1%
Results of ANOVA	
ROA	1.0%
Leverage	0.1%
Total deposit / Total Assets	10.0%
Total loans / Total Assets	0.1%
Retained earnings / Total Assets	0.1%
Tangible book value per share	0.1%

Source: Author's calculation by R statistical system

Using MANOVA and ANOVA functions, it was determined that banks differ considering the investigated variables.

I continued the analysis to test the other five hypotheses using the panel regression models. Both fixed and random panel regression was determined for the bank variables selected, the results of which are shown in Tables 4 and 5.

Table 4: Result of fixed effect panel regression

Variables	Coefficients	Standard error	t-value	Significance level	Sign of significance level
Leverage	-0,0051	0.0037	-1.3797	18.79%	-
Total.deposit.TA	-0.0252	0.0093	-2.7019	1.64%	*
Total.loans.TA	0.0240	0.0206	1.1664	26.17%	-
Retained.earnings.TA	0.1323	0.0425	3.1110	0.72%	**
Tangible.book.value	0.0107	0.0090	1.1911	25.21%	-
R-squared	0.6661				
Adjusted R-squared	0.4657				
F statistic p-value	0.31%				

Source: Author's calculation by R statistical system

Table 4 shows the coefficients of fixed effect panel regression model which indicates how the dependent variable (ROA) changes when the independent variables change by one unit. The t-tests of regression coefficients show that Total deposit/Total assets and Retained earnings/Total assets ratios have a significant influence on the dependent variable. The R-squared value (0.6661) represents a strong relationship ($R = 0.7797$) between dependent and independent variables. The F-test p-value because it is less than 5%, strengthens that the independent variables give a determinative explanation on the ROA as the independent variable.

Based on Table 5 we can see that both fixed and random models contain the same significant variables, but in the case of the random effect model, the F-test p-value is lower (0.19%) than in the case of fixed model (0.31%). The random effect model indicates that the individual effect (88%) is greater than the idiosyncratic effect (11%) which means that the common effect of individuals (banks) and the time (years) is less than the effects of individuals. Choosing between fixed and random effects model was justified by Hausman-test (See Appendix 2).

Table 5: The result of the random effect panel regression model

Variables	Coefficients	Standard error	t-value	Significance level	Sign of sig. level
Intercept	0.0039	0.0121	0.3209	75.18%	-
Leverage	-0.0047	0.0034	-1.3770	18.45%	-
Total.deposit.TA	-0.0205	0.0086	-2.3859	2.76%	*
Total.loans.TA	0.0200	0.0167	1.1990	24,53%	-
Retained.earnings.TA	0.1031	0.0377	2.7373	1.31%	*
Tangible.book.value	0.0127	0.0085	1.4843	15.41%	-
R-squared	0.6079				
Adjusted R-squared	0.5047				
F statistic p-value	0.19%				

Source: Author's calculation by R statistical system

While the Hausman-test p-value (78.8%) was higher than 5%, it means the better to use the random effect model. From Table 5 we can state that there are only two variables with significant impact on ROA which are variables containing the Total deposit to Total assets and Retained earnings to Total assets ratios. Finally, we made a panel regression with the variables which have a significant effect on ROA (Table 6). Using only the two significant variables from Table 5, we can see that the explanatory power of the independent variable was decreased what was shown by the lower value of R-squared. However, in this case, all of the coefficients are significant at least at significance level 1%. Finally, the coefficient result presented in Table 6 reveals that Retained earnings to total assets ratio show the highest impact which has a positive relationship with ROA, whereas Total deposit to total assets is the second factor, and it has a negative relationship with ROA.

Table 6: Results of random-effect panel regression with significance variables

Variables	Coefficients	Standard error	t-value	Significance level	Sign of sig. level
Intercept	0.0233	0.0054	4.3501	0.03%	***
Total.deposit.TA	-0.0270	0.0072	-3.7579	0.11%	**
Retained.earnings.TA	0.1258	0.0312	4.0267	0.06%	***
R-squared	0.4710				
Adjusted R-squared	0.4229				
F statistic p-value	0.09%				

Source: Author's calculation by R statistical system

From the result of the analysis, we can test the five hypotheses we put in the study. The two hypotheses (No. 2 and No. 4) which assume there is a statistically significant impact of retained earnings and total deposit on ROA will be accepted. Regarding the other three hypotheses (No. 3, and 5) we found that all banks have a positive and non-significant relationship between these two variables, Total loans to total assets and Tangible book value per share ratios and ROA. However, all banks have a negative and non-significant relationship between Leverage and ROA (Hypothesis No. 1). According to that, these three hypotheses will be rejected.

6. Conclusions and Recommendations

Study findings showed there is an element, the proportion of retained earnings which can significantly increase the bank profitability especially return on assets. Herefore the study concludes that there is a significant relationship between Retained earnings to total assets and financial performance of Kuwait local commercial banks. Moreover, these results support the views of earlier researcher studies such as Naceur - Goiaed (2001), and Husni (2011).

The study as well concluded that there is a strong relationship between Retained earnings to total assets and financial performance of the commercial banks listed. The present findings are also aligning with the previous studies of Onoh (2002) and Nzotta (2004).

The following points are the recommendation may help Banks to perform well in the future:

- i. Since the major goal of any firm is to maximize profits, the banks' management should therefore come up with ways to increase deposits in the bank portfolio.
- ii. To maximize performance they should ensure an acceptable high ratio of retained earnings which are the undistributed profits accumulated over the years that could be used for increasing the capital resource.
- iii. A lack of finance literature related to the Middle East banking sector. Therefore, more researches should be done in this field and with other factors.
- iv. Finally, similar studies should be conducted on different sectors and industries such as insurance, investment, manufacturing and processing, hospitality, agriculture, and energy.

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Bio-note

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Appendix 1: values of the financial ratios of the six variables

Bank Name	Year	ROA	Leverage	Total deposit / Total Assets	Total loans / Total Assets	Retained earnings / Total Assets	Tangible book value per share
GBK	2017	0.0084	0.1663	0.8571	0.6702	0.0334	0.2070
GBK	2016	0.0079	0.1744	0.8598	0.6303	0.0297	0.1970
GBK	2015	0.0072	0.0000	0.8873	0.6682	0.0241	0.1850
GBK	2014	0.0067	0.0859	0.8807	0.6721	0.0200	0.1750
GBK	2013	0.0063	0.1751	0.8675	0.6637	0.0167	0.1640
NBK	2017	0.0124	0.1068	0.8350	0.5571	0.0729	0.4570
NBK	2016	0.0122	0.0403	0.8405	0.5616	0.0736	0.4320
NBK	2015	0.0120	0.0420	0.8484	0.5743	0.0712	0.4100
NBK	2014	0.0120	0.0000	0.8557	0.5467	0.0721	0.3500
NBK	2013	0.0128	0.0000	0.8421	0.5750	0.0789	0.3240
CBK	2017	0.0126	0.0000	0.8043	0.5089	0.1087	0.3980
CBK	2016	0.0122	0.0000	0.8219	0.5455	0.1072	0.3660
CBK	2015	0.0114	0.0000	0.8273	0.5691	0.1062	0.3450
CBK	2014	0.0117	0.0000	0.8447	0.5506	0.0977	0.3300
CBK	2013	0.0060	0.0000	0.8439	0.5289	0.1081	0.3370
ABK	2017	0.0082	0.2617	0.8106	0.7050	0.0702	0.3450
ABK	2016	0.0076	0.0000	0.8483	0.7070	0.0675	0.3350
ABK	2015	0.0070	0.0000	0.8478	0.6990	0.0664	0.3200
ABK	2014	0.0107	0.0000	0.8180	0.6923	0.0828	0.3460
ABK	2013	0.0111	0.0000	0.8100	0.6857	0.0852	0.3340
BURG	2017	0.0088	0.3717	0.5603	0.5944	0.0202	0.3300
BURG	2016	0.0094	0.5515	0.7938	0.5883	0.0740	0.3550
BURG	2015	0.0112	0.2792	0.8172	0.5989	0.0744	0.3460
BURG	2014	0.0080	0.2816	0.8172	0.5785	0.0631	0.3000
BURG	2013	0.0028	0.4787	0.8511	0.5675	0.0504	0.1660

Source: Author's calculation by Excel soft software

Appendix 2: Hausman test

Hausman Test								
data: ROA ~ Leverage + total.deposit.TA + Total.loans.TA + Retained.earnings.TA + ...								
chisq = 2.4736, df = 5, p-value = 0.7805								
alternative hypothesis: one model is inconsistent								

Source: Author's calculation by R statistical program

DOES CAPITAL ADEQUACY INFLUENCE THE FINANCIAL PERFORMANCE OF LISTED BANKS IN NIGERIA?

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Abstract: *Capital adequacy is important for the effective operation of any institution, particularly, its sustenance, viability and future growth. Banks as core financial institutions require sufficient capital base for its fund requirement and needs. Against this premise, banks and other financial institutions must keep balance between capital and available risk in its assets in order to reduce the likelihood of systemic crises, financial fragility and thus guarantee stability. This study empirically examines the impact of capital adequacy on the financial performance of banks in Nigeria. A sample of ten (10) listed banks on the basis of size and availability of data were examined over the period 2010 to 2017, using descriptive statistics, and multivariate panel data estimation technique, after conducting the Hausman, test of correlated random samples, wherein the fixed effect model was selected as the appropriate model. The empirical results revealed that banks' capital adequacy ratio has a positive and significant impact on the financial performance of banks in Nigeria. Other variables found to be significant in the determination of the financial performance of banks in Nigeria are; bank size, bank loans and advances, debt ratio and growth rate of output. Against the backdrop of these findings, we recommend amongst others; sufficient capital base for banks, increased bank size through economies of scale measures, efficient deployment of bank resources, increased economic output (economic productive capacity) that will stimulate bank performance. These, will, in no doubt, reduce banks' vulnerability to systemic crises and consequently enhance their stability for national growth through efficient financial intermediation.*

Keywords: Capital adequacy, financial performance, Risk weighted assets, Panel data.

JEL classification: E44, G21 G28, O16

1. Introduction

A strong capital base is critical to the financial health and viability of any bank. As the corner stone of bank's strength, it is the most widely used parameter and indicator for measuring bank's performance. In this regard, the capital adequacy of a bank determines the reliability and healthiness of the bank, as it serves as a safety buffer against unanticipated losses, particularly systemic crises (Singh and Milan, 2018). The sufficiency of banks capital or adequacy is determined by capital adequacy ratio. Capital adequacy thus refers to the determination of banks existing capital structures, in terms of the ability weld against potential widespread risk, crisis and distress. Banks' capital adequacy influence bank performance, since the adequacy of by implication determines the amount of funds available for banks' business and other profitable initiatives and the degree of absorption of risks (Singh and Milan, 2018).

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Given the bitter experiences of past financial crises and in the Nigerian banking industry against the backdrop of weak capital adequacy, and the resultant effects which left trails of woes for, depositors, investors, shareholders, and the general economy, there is no doubt, that the health and safety of the entire banking system depends on the capital adequacy. It is in recognition of this that a number of bank reforms, particularly aimed at increasing the capital base of banks have been launched. In general, banking crisis can be triggered by the preponderance of weak banks characterized by persistent illiquidity, insolvency, under-capitalization, high level of non-performing loans and weak corporate governance among others, as in the Nigeria case (Uchendu, 2005). Since the sufficiency or adequacy of banks' capital is directly related to its performance, a study of this nature, which empirically seeks to investigate the nexus between banks' capital adequacy and banks' performance in Nigeria, is very sacrosanct.

There is scarcity of empirical evidence on the effect of bank's capital adequacy on the performance of banks in Nigeria, within the context of the Basel standards. In addition, the few related studies only examined the impact of bank capital base on the performance of banks, using a battery of bank internal asset and efficiency variables, without taking into cognizance the effect of macroeconomic environment on the capital adequacy- bank performance nexus. The recognition of these obvious gaps necessitates this study.

In the light of this, the following hypotheses are tested in this study:

- (i) There is no significant relationship between capital adequacy of banks and bank financial performance in Nigeria.
- (ii) Capital adequacy has no significant impact on the financial performance of listed banks in Nigeria.

Aside the introductory section, the paper is organized as follows. Section two consists of literature review which considers key theoretical, empirical and policy issues associated with capital adequacy and financial performance of banks. Section three contains the methodology, model specification and data, while section four presents the empirical results and analysis. The conclusion and policy recommendations are presented in section five.

2. Literature Review

2.1. Theoretical Issues

Capital adequacy is a measure of the sufficiency of banks' capital base against their vulnerability to widespread risk, crisis and distress. As a financial liquidity mechanism, it is used to protect depositors and promote the stability and efficiency of financial system, by helping to prevent excessive leverage and insolvency of banks. High capital adequacy, as a financial cushion helps to minimize incidence of non-performing loans. Thus, banks with high capital adequacy ratio face lower bankruptcy, funding costs and illiquidity problems, which are the precipitating factors of systemic crises. The adequacy of banks' capital thus, determines health and virility of banks. Thus, when banks have weak capital adequacy ratio, it is a direct signal of impending financial crisis. Capital adequacy can be measured in a number of ways, however, the most widely used measure is Capital to Risk-Weighted Assets Ratio (CRAR).

Capital Adequacy and Banks' Supervision and Regulatory Framework

The Bank Supervision and Regulation committee approved the international accepted norms for capital adequacy standards, developed by the Basel Committee on Banks Supervision (BCBS). BCBS initiated Basel I norm in 1988, considered to be the first step toward risk weighted capital adequacy norms. Basel I is a framework for calculation of "Capital to Risk-Weighted Assets Ratio (CRAR)". It defines a bank's capital as two types: Core (or tier I)- which includes paid-up capital (ordinary shares), statutory reserves,

perpetual non-cumulative preference shares eligible for inclusion as tier-I capital, subject to laws in force from time to time. Innovative perpetual debt instruments and capital reserves representing surplus arising out of sale proceed of assets. Under Basel I, at least 50 percent of a bank's capital base should consist of core capital. Supplementary (or tier-II) capital-include undisclosed reserves, revaluations reserves, hybrid capital instrument, general provisions and loss reserves, subordinated debt and investment reserve account. Supplementary capital absorbs losses in the event of winding up and thus provides lesser degree of protection to its depositors.

Basel II Accord

Basel II Accord, came into operation in 2004, being a revision of Basel I. Under the Basel critical aspects, namely; Minimum Capital Requirement- calculated to include credit, market and operational risks; Supervisory Review-providing key principles for reviewing, risk management guidance and supervisory transparency and accountability, and Market II Accord, credit risk includes market risk. In addition, operational risk is taken into cognizance in the calculation of capital adequacy ratio. The Basel II Accord focuses on three Discipline, which focuses on discipline by developing a set of disclosure requirements that allow market participants assess key information on risk exposure, risk assessment process and capital adequacy of a bank (Singh and Milan, 2018).

Basel III

The financial crisis of 2008 was the propelling force behind the introduction of the Basel III guidelines released in December 2010. It was motivated by the need to further strengthen the system as banks in the developed economies were under-capitalized, over-leveraged and had a greater reliance on short term funding. Also, the quantity and quality of capital under Basel II were deemed insufficient to contain any further risk. Under Basel III, the minimum capital adequacy ratio banks must maintain is 8%, also known as Capital to Risk (Weighted) Assets Ratio (CRAR). The rationale is to promote a more resilient banking system by focusing on four vital banking parameters, namely: capital, leverage, funding and liquidity. The Basel III capital requirement would also have a positive impact for banks, as it raises the minimum core capital stipulation, introduce counter- cyclical measures, and enhances bank's ability to conserve core capital in the event of stress thought a conservation capital buffer. The stipulated liquidity requirements, on the other hand, would bring in uniformity in the liquidity standard followed by the banks globally. This liquidity standard requirement would be of immense benefit to Nigerian banks to manage liquidity pressure in a stress scenario more effectively.

2.2. Theoretical Review

The role of financial sufficient capital base in enhancing efficiency and performance of banks is replete in the finance literature by leading finance-growth theorists such as Mckinnon (1973) and Levine (2005). In line with their position, good capital base helps to prevent systemic financial crises, illiquidity and solvency problems, and consequently enhance the performance of banks. The relationship between capital base and performance show that efficiency in financial intermediation, monetization and capital formation determine bank viability and stability and performance (Imala, 2005). It therefore follows that that well-capitalized banks face lower bankruptcy, funding costs and illiquidity problems and are usually insulated from financial crises enabling them perform their financial intermediation function of resource mobilization and credit channeling to the real sector of the economy (Levine, 1997).

Boyd and Runkle (1993) buttressing this, argued that well-capitalized banks are more profit-efficient and susceptible to lower fragility. This is against the backdrop that the high capital base arising provides a buffer against adverse shocks and unanticipated financial

crises. Studies on financial liberalization, development and fragility further gave credence to the imperative for high capital adequacy by drawing from the model used by Demirguc-Kunt and Levine (2003) which posits a strong positive correlation between bank capital and efficiency. The model established the existence of a positive correlation between financial bank capital and its performance. It maintained that sufficient capital base will not only enhance performance of banks, but will ginger the economy through efficient financial intermediation.

2.3. Empirical Review

Few studies have examined the impact of capital adequacy on bank performance. A review of the pertinent studies is presented in this sub-section.

Ezike and Oke (2013) investigate the empirical nexus between capital adequacy standards, Basel accord and bank performance, using evidence from Nigeria. Using data covering the period 2003 to 2007, and ordinary least variables technique, the findings show that capital adequacy standards exert a major influence on bank performance. They however recommend the CBN no to rely solely on the capitalization of banks as a determination of bank performance.

Olalekan and Adeyinka (2013), assess the effect of capital adequacy on deposit money banks' profitability, using empirical evidence from Nigeria. The study, in particular assesses the effect of capital adequacy of both foreign and domestic bank in Nigeria and their profitability. They used primary data collected from 76 structured questionnaires involving sand secondary data collected from banks statements (2006-2010). The findings of the primary show a non-significant relationship, but the secondary data analysis showed a positive and significant relationship between capital adequacy and profitability of bank. This implies that for deposit-taking banks in Nigeria, capital adequacy plays a critical role in the determination of profitability.

Enoch (2013) examines the effect of bank recapitalization on the performance efficiency of banks, in terms of lending to the real sector of economy. He used the Twenty-two banks that finally emerged from the recapitalization exercise were used for the study. Structured questionnaire was administered to two top echelons of each bank and data collected was analyzed with using correlation and regression analysis. The findings show that bank recapitalization has stimulated the ability and efficiency of banks to lend to the productive sector of the economy. The study therefore recommended that the exercise should be review in the future to keep peace with trend.

Kumar and Nazeen (2014) investigate the impact of capital adequacy on the performance of the Indian private sector banks. Employing panel data analysis, the evidence show that capital adequacy has a positive and significant impact on the financial performance of private banks.

Nikhat (2014) examines the relationship between the adequacies of capital as a financial soundness indicator for banks. Using various components of regulatory capital in line with Basel's norm in respect to minimum capital requirements for banks, and a trend analysis for the top ten commercial banks in India, the author finds that banks with the highest CAR are able to withstand financial crises.

Mathur (2015) examines effect of capital adequacy norms on the banking sector in India. Employing panel data methodology, the findings show that capital adequacy norms have positive operational effect on banking sector performance. Against the background of this finding, she recommends sound regulatory policy on capital base for banks.

Agbeja, Adelakun and Olufemi (2015) investigate the link between capital adequacy ratio and bank profitability, in Nigeria. In particular, the study sought to empirically investigate whether or not capital adequacy ratio affects banks profitability, its effect on loans and advances and bank profitability, as well as the impact of capital adequacy on bank's exposure to credit risk. They use secondary data for the analysis, which covered the period

2010-14, and multivariate regression analysis. The empirical results show a positive and significant relationship between capital adequacy and bank's profitability, suggesting that banks with more equity capital invariably have higher financial safety, and such advantage implies higher profitability. Against the backdrop of these findings, they recommend that deposit money banks in Nigeria be made to have minimum capital base to the optimal level in order to enjoy access to cheaper sources of funds with subsequent improvements in profit levels.

Torbir and Zaagha (2016) examine the impact of capital adequacy measures on bank financial performance in Nigeria using a co-integration technique and granger causality test approach. The empirical findings revealed the existence of significant long run relationship between bank financial performance variable and capital adequacy indicator in the Nigerian banking industry. The granger causality test results reveal that there is unidirectional causality flowing from the ratio of shareholder funds to bank total assets. The Causality also shows evidence of a feedback relationship from the ratio shareholders fund to return assets in Nigerian banks. These findings suggest that capital adequacy significantly influence the financial performance of banks in Nigeria.

Singh and Milan (2018) investigate the impact of capital on banks financial performance in India in two different sub-periods of 2012-13 to 2016-17, employing ANOVA and multivariate analyses. The results show that private sector banks performance is positively and significantly related to capital adequacy. On the other hand, public sector banks performance is found to be moderate correlated with capital adequacy but its impact on banks performance not effective.

Edeh (2018) empirically examines the nexus between capital adequacy and performance of private and public banks in Nigeria. A sample of ten (10) banks consisting of seven private and three public banks was examined between 2012 and 2017, using return on equity as measure of bank performance. The multivariate panel least squares estimation technique was used. The empirical results revealed that capital adequacy ratio has a significant positive effect on the performance of private banks in Nigeria, while the effect on public sector banks is positive but weak. Apparently due to the fact that the capital adequacy ratio (CAR) tier capital is higher than private sector banks, and most often government-determined. Against the backdrop of these findings, the author recommends that strong institutional, regulatory and supervisory and measures be put in place to minimize the incidence of non-performing loans and the resultant near- financial crisis-situation, so as to make banks more virile to support national development.

3. Methodology

3.1. Population and Sample

The population of this study is the entire banking industry in Nigeria, composed of 23 listed banks in the Nigerian Stock Market since the study borders on the establishing the relationships between capital adequacy and financial performance of banks in Nigerian. A sample of ten (10) selected banks on the basis of size and data availability are selected for empirical examination. The banks include, Access Bank Plc, Diamond Bank Plc, ECO Bank Plc, First Bank Nig. Ltd, First City Monument Bank (FCMB), Guarantee Trust Bank (GTB), Sterling Bank Plc, United Bank for Africa (UBA), Union Bank Plc, and Zenith Bank Plc. The selected panel of banks are the ten biggest banks in Nigeria, known as the 'big 10' and constitute about 85.2 of the total assets of banks in Nigeria. The period for the study is seven (8) years covering 2010 to 2017.

3.2. Variables Description

In this study, the Return on Asset (ROA) is used as financial performance indicator-measured as earnings before interest and taxes (EBIT). Its selection is based on its ability to appropriately capture banks performance from the perspective of efficiency of assets. The independent variables are capital adequacy ratio (CAR), measured as Risk weighted assets ratio, bank size (BS), measured as total assets of banks and debt ratio (DR), measured as sum of short and long term debt to total assets (leverage) ratio, bank loan and advances (BLA) - measured as total loans and advances and growth rate of a real GDP (GRGDP-real output capacity of the economy) - a measure of the impact of the macroeconomic environment on bank performance.

3.3. Model Specification

The model specified in this study demonstrates that bank' financial performance (ROA) is a function of CAR, BS, BLA, DR and GRGDP. The functional form of this model will be thus expressed as:

$$ROA = f(CAR, BS, BLA, DR, GRGDP) \quad (1)$$

Where: ROA= Return on asset

CAR= Capital adequacy ratio

BS=Bank size

BLA=Bank loan and advances

DR= Debt ratio (or leverage)

GRGDP= Growth rate of real GDP

The econometric form of the model can be specified as:

$$ROA_{it} = \alpha_0 + \alpha_1 CAR_{it} + \alpha_2 BS_{it} + \alpha_3 BLA_{it} + \alpha_4 DR_{it} + \alpha_5 GRGDP_{it} + \varepsilon_{it} \dots\dots (2)$$

Where all the variables are as earlier defined.

ε_{it} =random error term

The apriori expectations in the model are: $\alpha_1, \alpha_2, \alpha_3, \alpha_5 > 0$; $\alpha_4 < 0$.

3.4. Method of Estimation

The model specified in (2) is based on the panel regression analysis procedure that is adopted in this study. The main advantage of the panel data analysis is that it comprehensively takes the individual characteristics of the different firms used in the study. It is generally observed that firm-level behaviour is a strong factor in the determination of dividend policy and hence, this differentiation may bring endogeneity bias into the estimation. The panel data analysis helps to correct this inherent estimation problem. The basic class of models that can be estimated using panel technique may be written as:

$$Y_{it} = f(X_{it}, \beta) + \delta_i + \gamma_t + \varepsilon_{it} \dots\dots (3)$$

The leading case involves a linear conditional mean specification, so that we have:

$$Y_{it} = X'_{it} \beta \delta_i + \gamma_t + \varepsilon_{it} \dots\dots (4)$$

Where Y_{it} is the dependent variable, and X_{it} is a -vector of regressors, and ε_{it} are the error terms for $i = 1, 2, \dots, M$ cross-sectional units observed for dated periods $t = 1, 2, \dots, T$. The α parameter represents the overall constant in the model, while the δ_i and γ_t represent cross-section or period specific effects (random or fixed).

A central assumption in random effects estimation is the assumption that the random effects are uncorrelated with the explanatory variables. One common method for testing this assumption is to employ a Hausman test to compare the fixed and random effects estimates of coefficients in order to determine the best model for the financial performance model. This test is also used to examine the randomness of the data distribution in this study.

Two techniques are employed in the empirical analysis of this study. These involve the use of descriptive statistics, to have a background summary measures and initial characterization of the data series. The second is the panel data estimation in order to

investigate the influence of each of the explanatory variables on the dependent variable (ROA).

3.5. Data Sources

The study utilizes annual time series data mainly from the secondary sources. The underlying data for the variables of interest are obtained from the banks published annual Financial Reports at the Nigerian Stock Exchange (NSE).

4. Empirical Results and Analysis

4.1. Descriptive Statistics.

The descriptive statistics for the variables used in the analysis is presented in Table 1.

Table1: Descriptive Statistics

	Mean	Max.	Min.	Std. Dev.	Skew	J-B
ROA	25.20	158.3	0.42	7.26	4.83	1103.2
CAR	30.92	82.20	3.82	9.75	2.40	68.27
BS	28.45	187.2	19.20	6.32	7.21	80.26
BLA	19.02	243.1	6.34	9.02	0.48	25.51
DR	1.85	7.25	0.27	2.68	1.92	65.42
GRGDP	4.90	8.02	-1.58	4.75	0.19	12.18

Source: Authors' computation

The descriptive statistics shows that the mean value for ROA of return on asset for the banks is 25.20, with maximum and minimum values of 158.3 and 7. 26 percent, respectively. The standard deviation value of 7.26 shows that there is wide variability in terms of return on asset performance of the banks. Apparently, the sampled banks are dissimilar in terms of the efficiency of use of assets. The mean value of capital adequacy is 30.9. The maximum and minimum values are 82 20 and 3.42 percent, respectively. The standard deviation value is 9.50. The mean value bank size bank loans and advances, debt ratio and growth rate of real GDP are 28.45 percent, 19.02 percent, 1.85 percent and 4.90 percent respectively. The Jacque Bera value of ROA is 11032. In general, the data series show high skewness and kurtosis values for ROA, with significant J-B values; an indication of asymmetric distribution and non-normality of values. The implication of this is that there is heterogeneity among the banks in terms of financial performance, using ROA. Endogeneity problem is thus expected, thus necessitating the adoption of the panel data analysis technique for the estimation of the relationships.

4.2. Correlation Analysis

In order to examine the nature and degree of relationship among the variables, the correlation analysis is carried out. Table 2 presents the results of the correlation matrix.

Table 2: Correlation Results

	ROA	CAR	BS	BLA	DR	GRGDP
ROA						
CAR	0.075					
BS	0.303	-0.022				
BLA	0.1608	0.071	0.018			
DR	-0.028	0.194	0.202	-0.112		
GRGDP	0.154	0.201	0.074	0.082	0.103	

Source: Authors' computation

The correlation results show that capital adequacy ratio, bank size, bank loans and advances and growth rate of real GDP are positively correlated with the return on asset of banks, while debt ratio (leverage) is negatively correlated with ROA. Given that a higher degree of correlation may lead to multi-collinearity problem, the results are reliable and tenable. The low correlation values thus implies that the performance variables are not mutually exclusive, as each is important to the determination of the financial performance of banks in Nigeria. Given the absence of excessive correlational pattern among the variables, the results become reliable. This is buttressed by the findings of Alege and Ogundipe (2013).

4.3 Pooled OLS and Multivariate Panel Data Results

We present the Pooled OLS and Multivariate Panel Data results for the ten (10) sample banks in Table 3.

The goodness of fit for the model is not quite impressive, given the low coefficient of determination of 0.19, which indicates that only 19 percent of the net systematic variations in the financial performance of banks (proxied by ROA) is explained by the explanatory variables; a clear indication of low explanatory and predictive power of the model. The Durbin Watson statistic shows that the estimated suffers from first order positive correlation. The coefficients of growth rate of the economy and capital adequacy ratio pass the significance test at the 1 percent and 10 percent level respectively. These results are however not surprising, given the fact that pooled OLS technique is used before conducting the Hausman test. The OLS estimates reported above cannot be relied on for policy directions, since the estimates inherently possess endogeneity issues. To address this, the panel data analysis technique is employed in re-estimating the relationships. The standard test for the method of panel analysis is to employ the Hausman to choose the appropriate method of estimation. The results of the tests for the Hausman test is reported in table 2. In the result, the Hausman test (Chi-Square statistic) of 10.52, with a probability value of 0.03 is significant test at the 5 percent level. Thus, we reject the null hypothesis that unobserved firm specific heterogeneity is uncorrelated with regressors, and thus base our analysis on estimates provided by the fixed effect model, as the random effect estimates are likely to be biased and inconsistent. The estimates provided by the fixed effect is thus relied on for policy purpose.

In the results, the diagnostic statistics have improved significantly, compared to the OLS estimates. The adjusted R-squared value of 0.80 clearly shows that 80 percent of the net systematic variations in the financial performance of banks (indicated by ROA) are explained by the five regressors. The F- statistic of 25.3 is highly significant at the 1 percent level, and validates the existence of a significant linear relationship between the explanatory variables and the dependent variable, and suggests that the explanatory variables are jointly significant in the determination of the financial performance of the cross-sectional banks over the period. The Durbin Watson statistic of 1.70 shows that there is no serial correlation in the model, implying that the model can be used for structural and policy analysis.

Table 3: Results from Pooled OLS and Panel Multivariate Estimation

Dependent Variable: ROA

Variable	Pooled OLS		Fixed Effect	
	Coefficient	T-Ratio	Coefficient	T-Ratio
C	0.134 (0.109)	1.220	1.540 (1.098)	1.403
CAR	0.124 (0.069)	1.782*	0.1302 (0.061)	2.130**
BS	0.296 (0.251)	1.178	0.315 (0.061)	2.431**
BLA	0.031 (0.040)	0.775	0.256 (0.141)	1.821*
DR	-3.067 (2.405)	-1.275	-2.202 (1.374)	-1.402
GRGDP	1.245 (0.469)	2.561***	0.727 (0.195)	3.721***
			Hausmann Test= 10.52 (0.03)	
R ² = 0.19 DW=0.98			R ² = 0.802 F-value =25.3 DW=1.70	

***Statistical significance at the 1%level, ** Statistical significance at the 5 % level

* Statistical significance at the 10% level, Standard errors of coefficients in parentheses

Source: Authors' computation

In terms of the individual performance of the variables in the model, the coefficients of the independent variables are appropriately signed in line with theoretical expectations. The coefficient of capital adequacy is significant at the 5 percent level. This implies that banks' capital adequacy is significantly related to their financial performance in Nigeria. Apparently, high capital adequacy ratio tends to enhance the financial performance of banks, as it provides financial cushion to minimize incidence of liquidity crises, thereby promoting the stability, virility and efficiency of the financial system. In general, high capital sufficiency or adequacy of capital tend to prevent banks from widespread risks and other systemic crises. Thus, banks with high capital adequacy ratio face lower bankruptcy, funding costs and illiquidity problems. These have the capacity to stimulate performance. The coefficient of bank size is significant at the 5 percent level. This implies that larger banks tend to have better economies of scale in terms of financial, cost and non-pecuniary advantages that give them edge over smaller banks, particularly in terms of better growth opportunities that enhance performance. The coefficient of bank loans and advances is statistically significant at the 10 percent level. Thus, the higher the bank loans and advances granted customers, the greater the capacity of banks to make higher returns and hence, financial performance. The coefficient of leverage passes the significance test at the 10 percent level. Invariably, the higher the size of debt-ratio, the lower the financial performance of banks in Nigeria. Thus, in line with the capital structure theory, large debt stock tends to diminish the opportunity for better performance, in contrast to equity proportion. The coefficient of economic output passes the significance test at the 1 percent level. Thus, increase economic output (activities) tend to enhance bank financial performance, as greater economic output (economic activities) tend to call forth large bank transaction and services.

4.4. Policy Implications of Findings

A number of important implications can be deduced from the results, as follows:

- (i) Capital adequacy of banks is positively and significantly related to the financial performance of banks in Nigeria. The implication of this finding is that strong capital base that can insulate banks from fragility, arising from systemic crises, will, significantly induce greater financial performance of banks in Nigeria. The regulatory authorities should therefore ensure strong capital base for banks in order to withstand any probable fragility.
- (ii) Bank size has a positive and significant effect on the financial performance of banks in Nigeria. Therefore, policies that encourage sizeable bank size, particularly in terms of market shares or asset built-up place are imperative to enhancing the financial performance of banks in Nigeria.
- (iii) Bank loans and advances has a positive but weak impact on the financial performance of banks in Nigeria. This requires that bank's management put in place effective and efficient policies to increase lending to the real sector of the economy. This, however should not be an overzealous policy focus, as other bank financial performance-enhancing policies and strategies are important.
- (iv) Debt ratio (leverage) is negatively related to the financial performance of banks in Nigeria. The implication is that for asset management, debt pattern (structure) matter. Given a pervasive effect of debt ratio on banks' financial performance, an optimal debt-equity policy mix becomes imperative
- (v) Real GDP growth rate (a measure of real output capacity) has a positive and significant effect on the financial performance of banks in Nigeria. Thus, policies to increase the productive capacity of the economy should be put in place, and in particular, stimulate economic activities, since increased economic activities will translate to increased financial services, and consequently, better financial of banks in Nigeria.

5. Conclusion

The importance of sound capital adequacy ratio for the stability, growth and performance of banks cannot be over-emphasized in banking architecture. Sufficient bank capital base over weighted risks (capital adequacy) has the capacity to reduce banks' vulnerability to crises. The ability of banks to minimize their vulnerability to crises lies largely in strong capital base, along with efficient deployment and management of internal assets. Without doubt, a strong, vibrant and virile banking sector is critical to efficient financial intermediation, which can support the growth of the economy. Since banks constitute the major hub of financial intermediation, there is greater imperativeness of the monetary and other regulatory authorities, particularly the CBN to put up strong, regulatory and effective institutional mechanisms in order to enhance bank performance and overall financial health, sustenance and stability. In the light of this, the Nigerian government and the regulatory authorities both have greater role to play in the efficient regulation and supervision of banks, particularly in the area of minimum capital adequacy in line with economic dynamics, prevailing shocks and Basel standards that will help guarantee the stability of banks. In addition, proper and efficient financial management policies in terms of lower incidence of debt ratio and sound macroeconomic policies that will stimulate the performance of the economy are imperative to enhancing the financial performance of banks, in order to galvanize their financial intermediation role for rapid economic growth.

Limitation(s) of the paper

This paper is limited by its concentration on private sector banks in Nigeria. Future studies should analyzed the effect of capital adequacy on the financial performance of public sector banks alongside private sector banks, to allow robust comparison and for all-inclusive policy prescriptions. The study is also limited by the sample size used, as larger sample size would provide more representative inferences. Enlarging the cross-section (i.e number of banks) should thus be the focus of further studies.

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FINANCIAL INCLUSION – ONE STEP CLOSER TO THE EUROZONE?

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Abstract: *Factors leading to financial exclusion are primary linked to shortages of financial resources, high costs for financial services, distrust in financial institutions, and lack of financial education. Financial inclusion of the population can sustain economic monetary and financial stability by taking efficient saving and investing decisions or by boosting the performance of an economy. In a responsible financial system, people can safely save money without fearing losing it as a result of fraud, theft, or operational errors, can conduct financial transactions, can take a loan for consumption or for investing in personal development or business idea with a proper understanding of the terms and conditions, and they can insure themselves against any kind of risk. Considering that financial exclusion leads to social exclusion, the need to establish institutions that can offer marginalized categories of the population access to different financing means is obvious, especially in rural areas. People can use financing for self-employment or for implementing entrepreneurial ideas that can generate new jobs and revenue for the community. This paper adds to the existing literature in identifying the existing relations between financial inclusion and economic growth and further investigates if an increase in the level of financial inclusion has an impact on achieving the convergence criteria and therefore entering the Eurozone.*

Keywords: financial inclusion, financial literacy, Eurozone, Euro currency, economic growth.

JEL classification: O11, G00, G22, I22, O15, R58.

1. Introduction

A topical issue is represented by the financial exclusion as a considerable percentage of the world's population does not have basic knowledge or any access to financial or banking services. In this paper, we are interested in emphasizing the primordial role that financial inclusion plays in economic growth, especially in developing countries and Romania.

Romania is currently struggling to achieve the convergence criteria for entering the Eurozone and recent research shows that by developing the financial services, better convergence results could be achieved.

Romania joined the European Union in 2007 and the euro adoption is an obligation enforced by the EU Accession Treaty. Currently the Eurozone consists of 19 countries: Belgium, Germany, Finland, France, Ireland, Italy, Luxembourg, Netherlands, Austria, Portugal, Spain, Greece, Slovenia, Cyprus, Malta, Slovakia, Estonia, Latvia and Lithuania. There are 9 countries: Bulgaria, Croatia, Denmark, Czech Republic, Denmark, Hungary, Poland, Romania, Sweden and the United Kingdom that are EU members but do not use the euro as a currency. Denmark and the United Kingdom are legally exempt from joining the Eurozone through special opt-outs obtained through the original Maastricht Treaty.

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Romania is required by the accession agreement to replace the national currency, the Romanian RON with the Euro, as soon as it fulfills the nominal euro convergence and the appropriate levels of real convergence criteria.

The convergence criteria refer to price stability, sound public finances, exchange rate stability and durability convergence. Based on the last convergence report (Convergence Report 2018), Romania is currently the least prepared EU Member state for adopting the euro by meeting only one out of four criteria, the one related to sound public finances.

Bulgaria currently fulfills three out of the four conditions, the Czech Republic two out of four, Croatia three out of four, Hungary two out of four, Poland two out of four and Sweden three out of four economic criteria.

Financial inclusion requires homogeneous availability and usage of financial services. Especially in developing countries, access to credit facilitates and encourages financial development and economic outcomes.

2. Literature overview

Financial stability contributes to the sustainable development of the countries and ensures efficiency of resources and financial intermediation. As a result, policymakers worldwide are interested in understanding and preventing financial exclusion.

There are three levels of financial inclusion (Allen et al., 2012): ownership of a formal bank account, use of a formal savings account and frequent use of the account consisting of three or more withdrawals every month.

The ownership of a formal bank account is considered a first step to many types of economic and social inclusion (Dermiguc and Klapper, 2013) for multiple reasons: it is often necessary to get a salary or public subsidies, it allows for more liquidity and gives access to savings, it reduces transaction costs, it is useful when accessing a credit, it strengthens the financial autonomy for women, it helps smoothen consumption and investments and it reduces the risk of fraud. The researchers show that the importance of informal financial inclusion in the developing countries is not only emphasized by sight accounts but also by savings and loans.

Developed and inclusive financial system presents the potential to reduce information and transaction costs (Beck et al., 2007), impact saving rates, investment decisions, technological innovation and the long-run growth rates. The development of financial inclusion does not only depend on the health of the financial markets, but also on the entire ecosystem defined through economic, political, social and the technological fields.

Financial inclusion has therefore received a great deal of attention from researchers, politicians, and other financial stakeholders. It is broadly believed that because people with low incomes are being refused the right to access financial services, the risk of social exclusion is aggravated. Compared to the Euro Zone members, Romania is presented with the highest values of poverty or social exclusion risks. Similarly, studies conducted further in this paper show that the financial exclusion levels reach the highest values for the EU in Romania.

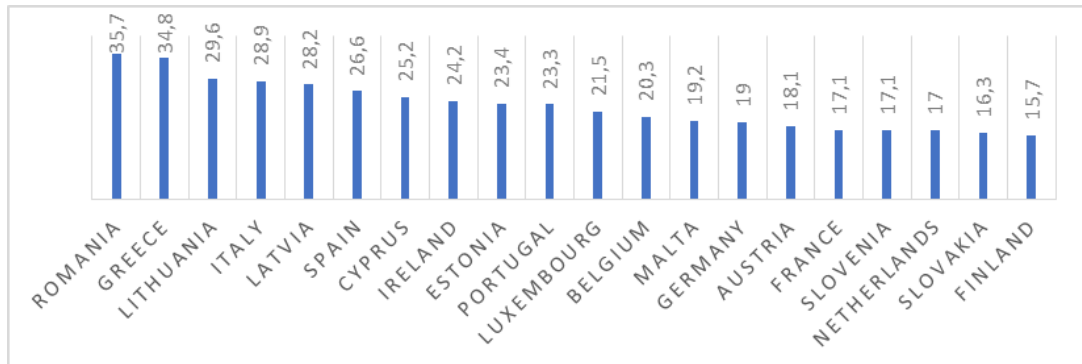


Figure 1: People at risk of poverty or social exclusion by NUTS 2 regions in 2017 (% of total population)

Source: Author's own computation based on Eurostat data

Post financial crisis literature has focused on how financial inclusion affects economic outcomes. It has been revealed (Kim et al., 2018) that there is a relationship between levels of financial exclusion and economic growth or poverty. The conclusion was reached after analyzing 55 Organizations of Islamic Cooperation countries by using a dynamic panel regression analysis.

Similar studies (Chauvet and Jacolin, 2017) showed that the impact of financial deepening on growth may depend on the degree of financial inclusion in developing and emerging countries, based on a sample of 55596 firms in 79 countries.

The relationship between one of the financial inclusion factors, insurance market penetration, and economic growth has been closely examined (Pradhan et al., 2016) and findings concluded that there is a bidirectional causality between the insurance market and economic growth. Another recent research based on transition economies of Central and Eastern European Union (Bayar and Gavriltea, 2018) revealed the existence of a one – way causality between financial markets access and economic growth. Other empirical research (Delis et al., 2013) shows that financial development decreases income inequality based on the type of policy implemented.

An analysis (Naceur and Samir, 2007) of the relationship between financial development and economic growth for a total of 11 countries from Middle East and North Africa region showed that undeveloped financial systems in the MENA region impede economic growth. As financial exclusion plays an important role, not only for social reasons, but also for economic purposes, further studies (Ampudia and Ehrmann, 2017) concluded that financial inclusion is highly correlated to national wealth.

3. Financial inclusion – measuring and scores

Financial inclusion of the poor must be closely considered as it represents a way through which people have access to different types of funding that can help them overcome poverty. This point of view is also shared by the European Commission who claims that financial exclusion is closely linked to social exclusion.

Many countries regard financial inclusion as a part of the economic and social development process. For example, in 1997 the US adopted the Community Reinvestment Act through which banks were required to grant loans in low income areas. Similarly, France passed a law against exclusion emphasizing the right of their citizens to open a bank account and the UK founded a Financial Inclusion Task Force in 2005, to monitor the degree of financial inclusion. Furthermore, data is constantly being collected by the World Bank, the

International Monetary Fund and the European Commission in order to develop policies for achieving financial inclusion.

The European Commission together with Microfinance Center treat financial inclusion as the financial system's ability to offer a wide range of products and services that are appropriate for all the individuals interested in using them.

An inclusive financial system operates as an open system in the sense that it allows anyone to use it (when and if needed) by offering the same terms and conditions. However, finding methods through which financial inclusion can be streamlined and supported through programs and policies is the real challenge.

One way to measure financial inclusion is by quantifying the level of financial literacy. An international study conducted in 2015 by Standard and Poor's and the World Bank reveals that 33% of adults (3.5 billion people) worldwide have basic financial knowledge. Although in Europe this percentage was as high as 52, Romania ranked last when compared to other European countries with a percentage of only 22. The situation is also similar worldwide as Romania ranked 123rd out of 143 countries included in the study. The researchers conducting the study emphasized that in poorer countries "national policies such as those linked to education and consumer protection are shaping the financial literacy of their economies more than any other factor of influence".

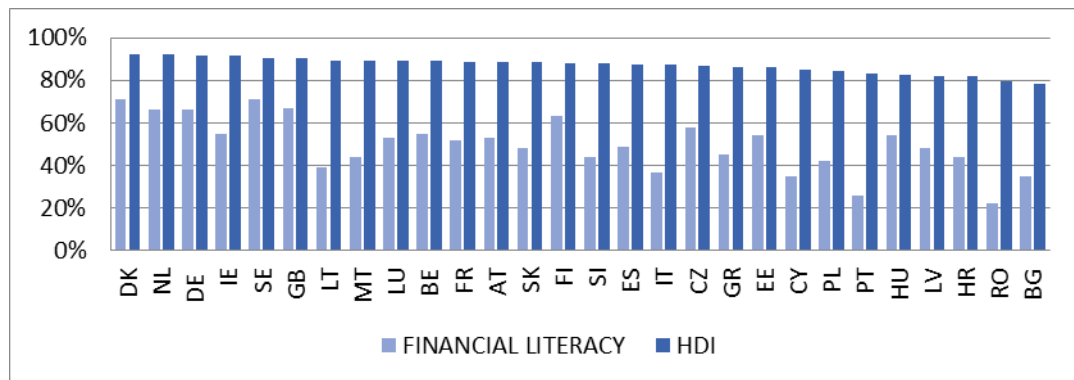


Figure 2: Financial literacy in the European Union in 2014 (% total population)

Source: Klapper, Lusardi and van Oudheusden (2015)

It can be noticed that the financial literacy level is not correlated to the HDI (Human Development Index) value for European countries. There are countries with high HDI that have a level of financial literacy more reduced than countries with low HDI: Lithuania, Austria, Portugal, Italy and Spain. A level of 50% in financial literacy is recorded in Hungary, Estonia, Czech Republic and Austria. The highest values are reached by Denmark and Sweden (71%) whereas the lowest values are recorded in Cyprus and Bulgaria with 35% and Romania with 22%. Worldwide, in 2014 Norway scored the highest value (71%) and Afghanistan the lowest (14%).

Another method of quantifying the degree of financial exclusion is by dividing the population into banked people, unbanked people, and the marginalized group. Based on the study carried by Réseau Financement Alternatif between 2007 and 2008, the European Commission brings together evaluation reports for fourteen European countries (Romania not included) with the purpose of identifying measures that can be used in order to prevent financial exclusion among poor people or socially excluded individuals. It is believed that because of that fact that people with low incomes are being refused the right to access financial services, risk of social exclusion is aggravated. The levels of financial exclusion for the countries included in the analysis showed that 20% of adults don't have any access to financial services, approximately 30% don't have a savings account, and 40% do not have a

credit line to their name (although only 10% had their applications rejected). In new member states, 33% of adults are financially excluded, over 50% do not have a bank account or a savings account, and over 75% don't have immediate access to permanent credit. The groups that are most likely to be financially excluded are people with low income, people living in rural areas, immigrants, and unemployed people. The fact that the countries that ranked last don't show a governmental concord towards financial exclusion is very troubling.

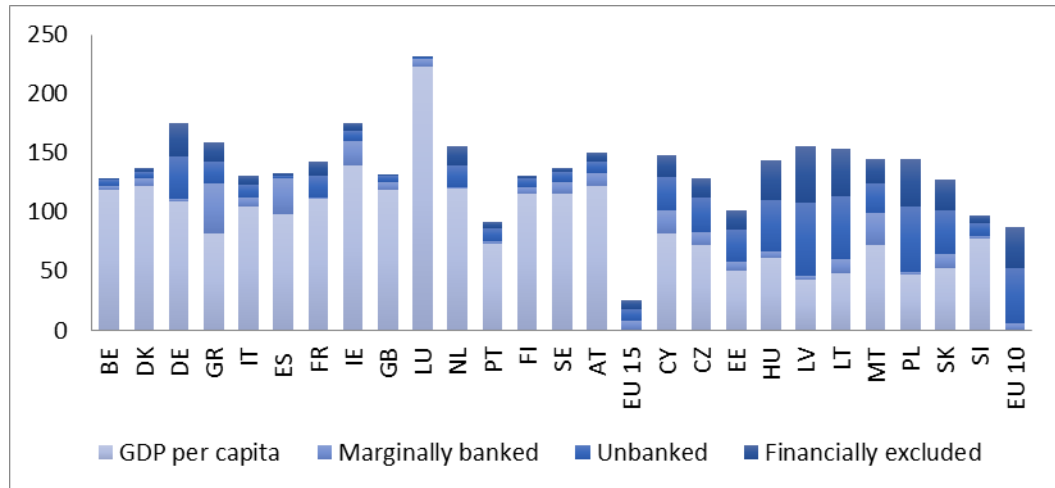


Figure 3: Level of financial exclusion among 15 European countries recorded between 2007-2008 (% total adult population)
Source: European Commission (2008)

In countries such as Denmark, Belgium, Luxembourg, and the Netherlands, the recorded level of financial exclusion is 1% while at the opposite side of the spectrum Poland (40%) and Lithuania (48%) can be found.

The study reveals that the level of financial exclusion is negatively correlated with the GDP per capita. The percentage of unbanked and banked people, marginalized groups, and financially excluded individuals is higher in EU 10 than in EU 15 except for Slovenia.

The method used to quantify the degree of financial inclusion was based on a macro-level inclusion approach consisting of the calculation of a composite European Financial Inclusion Index (FII). This is a performance index based on relative measure and rating of the financial systems from each country by comparing them to the benchmark. The method used was the DEA (Data Envelopment Analysis) procedure for optimization.

The financial inclusion of a system can be represented as a set of outputs concerning the actual use of basic financial systems including current accounts, consumer credits, savings accounts, and insurance policies. The inputs include supply factors such as the financial services infrastructure, demand factors such as service quality of how well the consumer expectations are met and policies adopted to develop the financial inclusion in a country of choice.

A score of 1 for the financial inclusion index shows that the system is successfully converting the access factors involved and it automatically becomes a benchmark for the other countries. A value less than one for the FII shows that the financial system is less inclusive than the benchmark. In both cases ($FII = 1$, $FII < 1$) it is still possible for some people to be excluded from using financial services and further measures need to be developed to highlight the specific nature and scale of the exclusion.

Table 1: Financial inclusion score and rankings for 27 EU Countries in 2011

Category	Country	Rank	FII
Leaders	Sweden	1	1.000
	Denmark	2	1,000
	Finland	3	1,000
	Ireland	4	1.000
	France	5	1.000
	Cyprus	6	1.000
	Slovenia	7	1.000
	Germany	8	1.000
	Latvia	9	1.000
	Spain	10	1.000
	Netherlands	11	1.000
High performers	Malta	12	0.999
	Austria	13	0.996
	Belgium	14	0.987
	Estonia	15	0.964
	UK	16	0.962
	Slovakia	17	0.930
	Czech Rep.	18	0.921
	Luxemburg	19	0.904
Aspiring performers	Portugal	20	0.876
	Hungary	21	0.841
	Greece	22	0.840
	Italy	23	0.800
	Lithuania	24	0.753
	Poland	25	0.747
Laggards	Bulgaria	26	0.567
	Romania	27	0.554

Source: Korynski, Pytkowska (2014)

The data presented in the previous table shows that Romania ranked last in the financial inclusion hierarchy of European countries.

The inclusion index components analysis demonstrates that although in Romania access factors are efficiently applied (supply factors 6th place, public policy factors 4th place, demand factors 10th place) the outcome is still unsatisfactory as Romania ranked 27th.

Table 2: FIS score and FIS input rankings in 2011

Country	FIS rank	Supply	Policy	Demand
Sweden	1	1	1	1
Denmark	2	4	2	2
Finland	3	3	7	13
Ireland	4	12	3	7
France	5	19	8	3
Cyprus	6	21	15	11
Slovenia	7	22	20	8
Germany	8	13	26	20

Country	FIS rank	Supply	Policy	Demand
Latvia	9	16	23	26
Spain	10	27	19	21
Netherlands	11	15	27	27
Malta	12	24	24	18
Austria	13	7	6	5
Belgia	14	17	16	6
Estonia	15	20	25	25
UK	16	18	17	16
Slovakia	17	5	13	9
Czech Rep.	18	2	9	19
Luxemburg	19	14	5	4
Portugal	20	26	21	22
Hungary	21	8	14	23
Greece	22	25	22	24
Italy	23	23	12	17
Lithuania	24	10	18	14
Poland	25	9	10	12
Bulgaria	26	11	11	15
Romania	27	6	4	10

Source: Korynski, Pytkowska (2014).

The Total Financial Inclusion Index (TFI) is another index used to easily measure the level of financial inclusion as the total percentage of adults using at least one financial product or service. The figure shows the TFI Index for European countries in 2011:

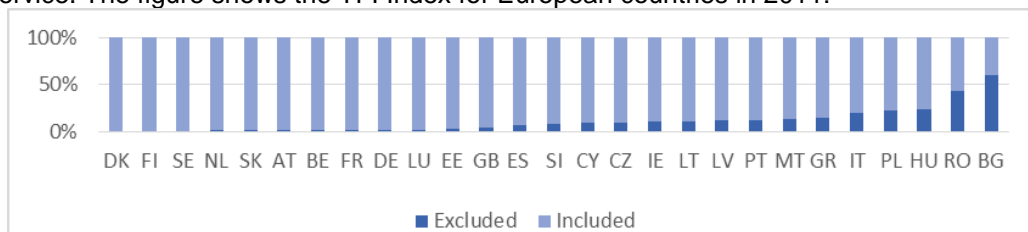


Figure 4: Total Financial Inclusion (TFI) Index

Source: Korynski, Pytkowska (2014)

Because the data used for index calculation is public, the data collecting becomes a relatively simple process. The importance of financial inclusion in reducing poverty and social exclusion is emphasized, highlighting the immediate need for Romania to implement new means of financial inclusion that could reduce the existing gap between our country and the rest of Europe.

Measuring financial exclusion requires special instruments in order to develop global, European and national policies that could lead to reducing its occurrence. International standardization bodies, especially those pertaining to the Bank for International Settlements (BIS) are actively involved in creating financial inclusion policies for more than a decade.

In 2012, in Kuala Lumpur, the Malaysian workshop showed the importance of quantifying the financial exclusion in developing policies for encouraging innovation and growth in the financial services field and maintaining stability for the measures already implemented.

In the last quarter of 2015, the Irwing Fisher Committee of the Central Bank Statistics published a study about measuring financial inclusion in 47 countries: 17 well developed states and 30 with an emerging economy from Asia, Eastern Europe, and Latin America

(including Romania). The main concerns of the study referred to the defining of financial inclusion, Central Bank policies in this field, types and sources of data used to determine index values, partnerships with global fora, and contribution to the international initiatives. The study findings show that there is no unanimously accepted definition for financial inclusion and that Central Banks are only formally involved in financial inclusion. Data collection is superficial, and it generally refers to the number of people having a bank account or using Internet banking, but this type of data is insufficient for conclusive research. The need to harmonize quantifying and defining financial inclusion is obvious when talking about international collaboration (Irving Fisher Committee on Central Bank Statistics, 2016). G20 also shows concern and recognizes the primordial importance of financial inclusion when fighting poverty and trying to encourage sustainable development. The indicators proposed in 2012 seek to evaluate three broad perspectives: access to financial services, quality of the financial services, and usage levels. Starting with 2013, another set of indicators used to quantify the level of digital financial service usage was introduced. According to the G20, data collection should be carried out by public institutions so that a better level of understanding is reached. (G20, 2016)

The indicators implemented in Romania between 2011 and 2015 revealed that there is a shortage of data in this field. Relevant data shows that between 2011 and 2014 the number of people with a bank account increased from 44.6% to 60.8% (European average is 94.8%) especially amongst individuals aged 15 to 34 (from 48.4% to 64.9%). The number of commercial bank branches has dropped from 35.3 per 1000 adults in 2011, to 30.8 per 1000 adults in 2014. Although 91.2% of adults owned a mobile phone in 2014, the level of debit card mobile transactions represented only 2.6% of the total. The SME loans from IFNs dropped from 93.5% in 2011 to 92.6% in 2014. There is no indicator at this time that can measure the level of individual loans from IFNs.

Table 3: Banking account levels (% of population aged 15 or more) between 2011-2014

	Bank account holders	
	2011	2014
Euro Zone	90.6	94.8
Hungary	72.7	72.3
Republic of Serbia	62.2	83.1
Bulgaria	52.8	63.0
Romania	44.6	60.8

Source: Barna, Vameşu (2015)

According to the report, the level of access to financial services in rural areas increased from 33.6% in 2011 to 50.4% in 2014. The loans level is 45.7%, above the European average of 35.4%. Only 2% of these loans are redirected towards starting a new business or developing an already existing venture.

Table 4: Uses of loan funds in 2014 (% of population aged 15 or more)

	Type of Loans		
	Education or tuition fees	Health or other medical services	Business launch or business development
Euro Zone	4.0	3.7	2.8
Romania	5.4	13.3	2.0
Bulgaria	2.1	5.0	1.6
Republic of Serbia	2.6	4.1	2.3
Hungary	2.0	3.7	1.1

Source: Barna, Vameşu (2015)

Romania has only recently started taking interest in quantifying financial inclusion. The latest study carried out by the National Romanian Bank shows that in rural areas (where 41% of the populations lives) the oldest Romanian bank – CEC Bank – owns around 900 branches, whereas other banks only have 50 branches. Out of 2686 communes in Romania, only 41% have a bank branch.

The research was conducted in 2015 in order to measure the access to financial services for working people aged between 26 and 65 with a revenue between 750 and 1700 RON. Results showed that 31.8% do not use any financial services, 60% of the people living in cities have a bank account (compared to the EU average of 90%), 61% of the people who save money prefer to keep it at home, 37% have an outstanding loan from a bank or CAR, 2% have a loan from NBF (Provident or Cetelem), especially people with a bad credit score.

5. Conclusions

Romania is far from reaching the convergence requirements imposed by the EU. Further attention should be paid to price stability, exchange rate stability, durability of convergence, and national legislation. Although the process will be demanding and challenging, better results can be achieved through structural reforms.

One of the major threats is the income inequality in our country as economic growth should be inclusive. But recent studies have confirmed an existing correspondence between levels of financial inclusion and income disparity. We believe that by increasing the level of financial inclusion the disparity can be diminished and economic growth can boost.

Data presented throughout the study shows that Romania ranked last in the financial inclusion hierarchy of European countries, while the risk of poverty or social exclusion is the highest.

We are inclined to believe that by increasing the level of financial inclusion, Romania's chances to achieve convergence will increase through the encouragement of economic growth and the reduction of income inequality and it will result in national poverty alleviation. In order for this to happen, it is strongly advised that in the future government policies are directed to the financially excluded population by developing a partnership with banks or other financial institutions.

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Bionote

Oana Cojocaru and Otilia Floroiu are both PhD students in fourth year of study at *Stefan cel Mare University of Suceava*. Oana Cojocaru is working on her PhD thesis: "Microfinance Development Strategies Specific to the present Regional Development Processes" and Otilia Floroiu is working on her PhD thesis: "Efficient Strategies for the Euro Currency Adoption in Romania".

THE INFORMATION CONTENT OF AUDIT OPINION FOR USERS OF FINANCIAL STATEMENTS

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Abstract: *In a market economy with frequent changes, audit is an area that can provide some stability at the economic and social lever, even if the economic and financial crises have questioned the audit work and led to a decrease in the trust of the intended users in the auditors work, leading to a distortion of the primary purpose of the financial audit. The article presents the relevant aspects of the evolution of audit reporting, especially on the underlying issues that expressing qualified opinions or disclaimer of opinion. The content of paper includes a review literature, national and international, and a case study that identified and analyzed the qualified opinions expressed in the auditor's independent reports, after analysis the financial statements of companies listed on the Bucharest Stock Exchange for the period 2015, 2016 and 2017. The entities were grouped on 9 sectors of activity and researched for each industry if the auditors expressed an unqualified opinion or a modified opinion and if the auditor is part of a Big4 company or belongs to another auditor category. The reasons behind the modified opinions were analyzed and grouped according to the frequency of their appearance in the audit reports. The most important conclusion of the case study was that in all cases, the reasons that led to express modified opinions, was detailed in the auditor's report, this being considered as a reference guide for the future auditor's missions, as well as, a recommendation for improving the highlighted aspects.*

Keywords: auditor's report, modified opinion, disclaimer of opinion, financial statements, financial reporting, Big4.

JEL classification: M40, M42.

1. Introduction

The activity that the financial auditor carries out does not provide an absolute guarantee, but he is responsible for the opinion expressed on the basis of the evidence collected to properly inform users about the financial statements.

Auditor's report does not bring added value if the public does not trust the information offered by the auditor, or if it is considered that it could offer more than that (Mock, 2013).

Through this paper aims to emphasize the importance of issuing an appropriate opinion, which reflects that the financial statements were elaborated in accordance with the applicable financial reporting framework, but also the mention in the auditor's report of the reasons that lead to express another opinion that one unqualified. In the case study were analyzed 62 companies listed on the Bucharest Stock Exchange (BSE). Entities were grouped by industry, depending on the object of activity and it is done an analysis of the information from the financial statements and auditor's report. As a result of systematization of the data were identified qualified opinions and disclaimer of opinion and were explained the reasons that led to express this.

2. Theoretical considerations

Currently, the global economy is constantly changing, being influenced by the changes made at the social, political and legislative level. An instrument created by the needs of participants in the economy to provide assurance on the quality and reliability of the information provided by the entity's financial statements is the audit. As a result of the auditor's work, based on the audit evidence collected, he formulates an opinion on the information analyzed, being expressed in the Independent Auditor's Report (Mortura, 2018) Kiss, Fulop and Cordoş (2015) believe that the interest for the form and content of the audit report is higher than ever, and it represents a reaction to the financial crisis and financial scandals of recent years. Investors are cautious because of accounting frauds, so their requirement for a revised audit report and a quality audit is considered justified.

Regulators (International Auditing and Assurance Standards Board) and researchers have focused their attention on this issue, and the reforms are to appear quickly as the revised standards have been published at the beginning of 2015 and will come into effect from 2016. With these revisions, the degree of transparency of information has also been amended, thereby increasing the degree of assurance on compliance with the code of corporate governance of the entity.

In addressing international regulations, the audit report has a triple role (Horomnea, 2010):

- Instrument for communication with users of the financial statements prepared by the entity, mainly with shareholders and the public, for substantiating economic decisions;
- A tool for confirming the confidence of shareholders and the public in the financial statements presented by the entity;
- Identification tool of responsibilities for auditor and for the management of the audited entity.

Botez (2015) considers that the paragraph about opinion expresses in a synthesized form the auditor's conclusion about the financial statements and the belief that the auditor expresses an opinion on the compliance of the accounting references with the International Financial Reporting Standards.

Kiss, Fulop and Cordos (2015) show that the auditor's opinion is very important, it is considered that the statutory audit report should provide more transparency as to what actions the statutory auditor carries out on an audit mission and how it reaches the results of his work.

The new regulations issued in January 2015 of the International Auditing and Assurance Standards Board (IAASB) has emerged in this context. These are intended to develop the audit report in order to provide more information on what the auditor considers most relevant in the audit. These IAASB regulations are an important first step to address the needs of users who want to get a more comprehensive picture of the performed audit

According to Mortura (2017) the form of the new Independent Auditor's Report is more complex, generating greater transparency in the information provided by the auditor. The purpose of changing the structure and content of the report is to increase the confidence of users of financial statements in the auditor's work and to more clearly present the auditor's responsibilities in an audit of the financial statements.

The auditor's opinion may be influenced by the quality on audit, supported by the competence requirements, the ethical and professional conduct that the auditor should consider when fills is the mandate received. Competence is needed throughout the mission and leads to opinion based on the evidence, guaranteed by the auditor's independence and objectivity (Robu et al., 2016).

Hategan and Crucean (2018) speak about the companies listed on the BSE from the perspective of subsequent events that occurring before or after the date of the audit report, events that in some cases may influence the auditor's opinion or may cause the auditor to issue a different audit opinion than the first issued, taking into account the impact that these subsequent events can change the annual financial statements.

Barnes, Cussatt and Harp (2018) consider that the smaller auditors (non-Big4) were being stimulated to provide quality audits to attract and retain customers (national reputation) while larger auditors (Big4) have more to lose from reputational damage.

Chen and Hassan (2018) argue that the companies with collaboration culture can enhance the quality of information available within the organization; this high-quality internal information environment is examined and analyzed by auditors, leading to decreased audit risk and audit fees.

Francis, Wu and Siraj (2017) have found that auditor's experience of auditing firms from different industries was significantly and positively associated with audit fees. Also, the authors find that auditors who have extensive experience in several areas also charge higher audit fees for the diversified firms.

Fulop (2018) considers that always when an opinion is different from the one unmodified, the auditor should add an explanatory paragraph in the auditor's report, explaining the reasons for his opinion.

3. Methodology

In research were studied 62 companies listed on Bucharest Stock Exchange (BSE), with non-financial activity. Based on the annual reports published for the period 2015 - 2017 the companies were grouped on 9 sectors of activity. After analyzing the annual reports and the audit reports for the mentioned period, were synthesized how many entities submitted unqualified opinions and how many presented modified opinions. Also were structured the opinions that was found and grouped them by auditor categories, justifying the reasons that led to express modified opinions, according to the frequency that its meet in the audit reports.

4. Results

4.1. Statistics of audit opinions issued in the period 2015 – 2017

To synthesize the results of the analysis, I explained in the following table, for each year of analysis, the status of the audit opinions expressed, and their breakdown into two categories of auditors: Big 4 PricewaterhouseCoopers (Pwc), KMPG, Deloitte Touche Tohmatsu, Ernst Young (E&Y) and other audit entities.

Table 1: Opinions issued during the analysis period

Year	Total number of companies	Opinion		Auditor		Modified opinions were express by?
		Unqualified	Modified	Big 4	Other	
2015	64	52	12	25	39	7 opinions - Big 4 5 opinions – Non Big4
2016	64	53	11	23	41	3 opinions - Big 4 8 opinions – Non Big4
2017	64	52	12	19	45	3 opinions - Big 4 9 opinions – Non Big4
TOTAL	-	157	53	67	125	13 opinions - Big 4 22 opinions – Non Big4

Source: author's own projection

Differences from one year to the next are not so significant, in the first year of analysis (2015) from the total of 64 audited companies, were issued 52 unqualified opinions and 12 modified

opinions. After a detailed analysis, from the total of 12 modified opinions (8 in the manufacturing industry and 3 in the supply, accommodation, construction and financial industry), only 7 were issued by a Big4 company, the difference of 5 being issued by other auditors.

The second year of analysis, 2016, shows an almost similar situation, from the total of 64 audited companies, were issued 53 unqualified opinions and 11 modified opinions. After a detailed analysis, from the total of 11 modified opinions (8 in the manufacturing industry and 3 in the supply, accommodation and financial industry), only 3 were issued by a Big4 company, the difference of 8 being issued by other auditors.

An almost similar situation has encountered in the last year of analysis, 2017, where from the total of 64 audited entities were issued 52 unqualified opinions and 12 modified opinions (9 in the manufacturing industry and 3 opinions in the supply, accommodation and financial industry). Similar to the previous year, 3 modified opinions were issued by a Big 4 company and the difference of 9 modified opinions by other auditors.

The table no. 3 contains a more in-depth approach of the modified opinions, as well as, of the auditor category that was grouped into two categories: Big4 and NonBig4. From the total of 62 companies analyzed, only 12 presented modified opinions (qualified and disclaimer).

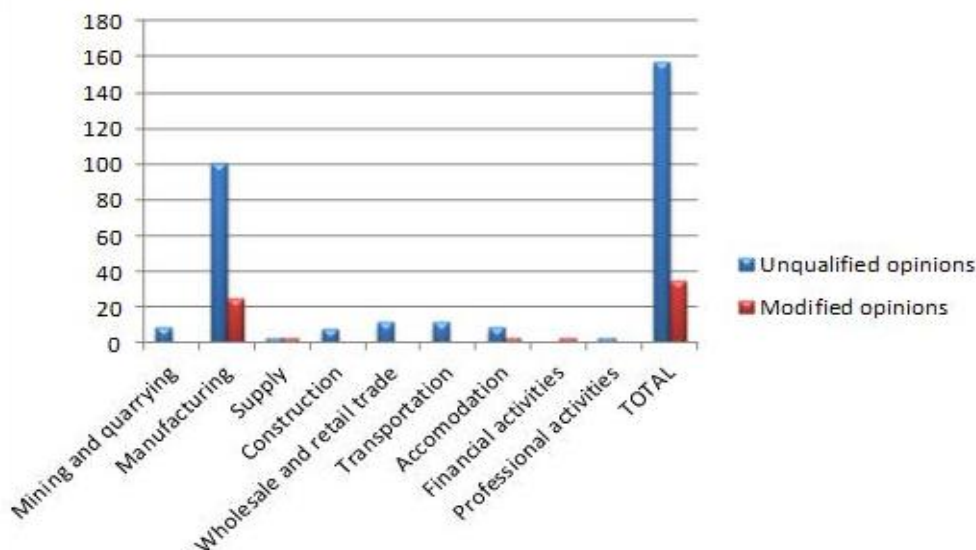


Figure 1: Audit opinions expressed from the financial statements on the period 2015-2017
Source: author's own projection

In the Figure 1 are presented the audit opinions expressed after the analysis of the financial statements for each industry. It can be seen that the most significant share is held by the manufacturing industry. This is due to the fact that this industry has more entities than the other industries analyzed. Unqualified opinions are collared in blue, and at the opposite, the modified opinions in red. The second category is not significant because the balance of the modified opinions in the total opinions is much lower than the balance of the unqualified opinions in the same total.

4.2. The reasons for the modified opinions

In the Table 2 are presented the reasons that were behind the issuance of the modified opinions by the auditors. The reasons were analyzed for each entity, starting from the review of the audit reports issued during the analysis period.

Table 2: The frequency of reasons for the qualified opinions

Reason	Entity	Year	Explication	Industry
Uncertainties about going concern	Armătura S.A.	2015 2016 2017	Recording net loss and significant cumulative loss	Manufacturing
	Electroputere S.A.	2016 2017	Recording net loss and significant cumulative loss	Manufacturing
	Nuclear Electrica S.A.	2016 2017	Uncertainties about going concern of a branch	Supply
	Oltchim S.A.	2016	Open insolvency proceedings	Manufacturing
	Romcab S.A.	2017	Open insolvency proceedings	Manufacturing
Non compliance IAS	Natura Q S.A.	2015 2016	IAS 39	Financial
	Retrasib S.A.	2016 2017	IAS 11 and IAS 29	Manufacturing
	Electroputere S.A.	2016	IAS 11	Manufacturing
	Oltchim S.A.	2017	IAS 8	Manufacturing
	Turism S.A.	2017	IAS 37	Accommodation
Uncertain claims	Natura Q S.A.	2015 2016 2017	Claims with overdue maturity and uncertain recovery	Financial
	Turism S.A.	2016	Claims uncollectible.	Accommodation
	Romcab S.A.	2015 2016 2017	Claims with suppliers in insolvency	Manufacturing
	Electroputere S.A.	2015 2016	Commercial claims recorded erroneously.	Manufacturing
	Retrasib S.A.	2015 2016 2017	Claims relating to on deferred tax due for the tax loss	Manufacturing
Transactions with affiliated parties	Natura Q S.A.	2016 2017	Transactions with affiliated parties without transfer pricing file	Financial
	Ves S.A.	2017	Transactions with affiliated parties without transfer pricing file	Manufacturing
Internal control deficiencies	Retrasib S.A.	2016	Incorrectly performed tests	Manufacturing
	Ves S.A.	2016 2017	SAP software	Manufacturing
Debts not reimbursed	Armătura S.A.	2016 2017	Non-repayable loan, the entity does not have cash for restitution, action that led to litigation	Manufacturing
Non compliance contracts	Electroputere S.A.	2015 2016	Non-fulfilment the obligations stipulated in the employment contracts	Manufacturing

Reason	Entity	Year	Explication	Industry
Fluctuations of assets	Armătura S.A.	2016 2017	The net asset value dropped below the subscribed share capital	Manufacturing
	Mecanica Ceahlău S.A.	2016	Recording tangible assets (overstatement of current result and sub-valuation of result report)	Manufacturing
	Mecanica Fină S.A.	2015 2016 2017	Tangible assets for which cannot be estimated net realizable value	Manufacturing
	Nuclear Electrica S.A.	2016	Tangible assets capitalized for a branch in insolvency	Supply
	Electroputere S.A.	2016 2017	Tangible assets that requiring adjustment	Manufacturing
Evaluations and revaluations	Oltchim S.A.	2015 2016	Not doing the evaluation for insolvency proceedings	Manufacturing
	Ves S.A.	2016 2017	Not doing the revaluation of buildings and lands	Manufacturing
	Mecanica Fină S.A.	2017	Positive and negative revaluation differences	Manufacturing
Non-participation to inventory	Retrasib S.A.	2016	Auditing process was established after that the companies had the inventory; in which case the auditor could not take part to inventory	Manufacturing
	Sinteza S.A.	2017	Auditing process was established after that the companies had the inventory; in which case the auditor could not take part to inventory	Manufacturing
	Ves S.A.	2017	Auditing process was established after that the companies had the inventory; in which case the auditor could not take part to inventory	Manufacturing
Costs capitalization	Romcab S.A.	2016 2017	Prepayments capitalized	Manufacturing
	Mecanica Ceahlău S.A.	2016 2017	Capitalizing costs of R & D projects as well as ongoing assets	Manufacturing
	Nuclear Electrica S.A.	2015 2017	Tangible assets which were capitalized incorrectly	Supply
Inconsistencies	Ves S.A.	2016	Initial balances that could	Manufacturing

Reason	Entity	Year	Explication	Industry
between the initial balances and the final balances		2017	not be confirmed	
Provisions and adjustments	Armătura S.A.	2017	There were no provisions for litigation and benefits for employees at retirement age	Manufacturing
	Mecanica Ceahlău S.A.	2017	Lands that require adjustment	Manufacturing
	Turism S.A.	2017	Depreciations of the participation titles	Accommodation
	Natura Q S.A.	2017	Adjustments uncertain claims	Financial
Returns and commissions	Mecanica Ceahlău S.A.	2017	Returns and commissions with current value greater than the estimated value	Manufacturing

Source: author's own projection

The main reasons that the auditors encountered when they expressed qualified opinions, were related to uncertainties about going concern, most companies presenting reasons that support these uncertainties. The same frequency was for the non compliance IAS or the first use of these standards, but also uncertain claims or overdue maturity and fluctuations of assets, especially of immobilizations. Also was met, repeatedly, the omitting to record provisions or adjustments for assets that need this forecast, reason present in three analyzed industries. At a lower frequency was met the companies that registered transactions with affiliated parties, but had not completed the transfer pricing file. Another aspect behind the issue modified opinions was that the start of auditing process was established after that the companies had the inventory, in which case the auditor could not take part to inventory. Do not record revaluation differences or not evaluating land and buildings at the right time, as well as, the capitalization of costs, were reasons found with the same frequency in the auditor's reports. Another reason for the ranking is represented by deficiencies encountered in the internal control system or in the accounting software and mistaken tests. This reason was only met in the manufacturing and financial industries. The last place was occupied by reasons found only in the manufacturing industry, related to: returns and commissions with current value greater than the estimated value, failure the obligations to the employees stipulated in the employment contracts, loans not repaid at the right time and initial balances that could not be confirmed or inconsistent between the initial balances and the final balances.

Table no. 2 contains the modified opinions, as well as the auditor's category grouped into two categories: Big4 and NonBig4. Of the total of 62 companies analyzed, only 12 companies listed were in case to express modified opinions.

The reasons have been grouped in the Figure 3, by the frequency that I have encountered in the audit reports, from the largest to the smallest.

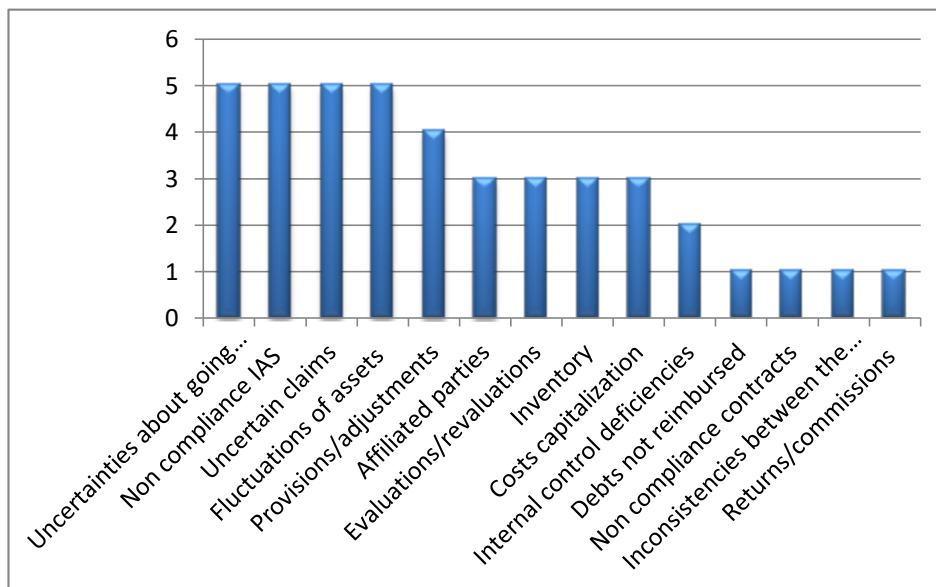


Figure 2: The reasons for the qualified opinions

Source: author's own projection

In Table 3 was presented the comparison of auditor's opinions for companies with modified opinions. From all companies, some entities showed particular situations. One company changed the auditor's category, so the audit opinion was differed in the studied period.

Table 3: Auditor's opinion

Company – Industry	Year 2017		Year 2016		Year 2015	
	Auditor	Opinion	Auditor	Opinion	Auditor	Opinion
ARMATURA S.A. – Manufacturing	Non Big4	Disclaimer of opinion	Non Big4	Disclaimer of opinion	Non Big4	Disclaimer of opinion
ELECTROPUTERE S.A. – Manufacturing	Big4	Qualified opinion	Big4	Qualified opinion	Big 4	Qualified opinion
IMPACT DEVELOPER & CONTRACTOR S.A. – Construction	Big 4	Unqualified opinion	Big 4	Unqualified opinion	Big 4	Qualified opinion
MECANICA CEHLAU – Manufacturing	Big4	Qualified opinion	Big4	Qualified opinion	Big 4	Unqualified opinion
MECANICA FINA SA – Manufacturing	Non Big4	Qualified opinion	Non Big4	Qualified opinion	Non-Big 4	Qualified opinion
OLTCHIM S.A. RM. VALCEA – Manufacturing	Big4	Qualified opinion	Non Big4	Qualified opinion	Big 4	Qualified opinion
PRODPLAST S.A. – Manufacturing	Big 4	Unqualified opinion	Big 4	Unqualified opinion	Big 4	Qualified opinion
RETRASIB SA – Manufacturing	Non Big4	Qualified opinion	Big4	Disclaimer of opinion	Big 4	Unqualified opinion
ROMCAB SA – Manufacturing	Non Big4	Qualified opinion	Non Big4	Qualified opinion	Non-Big 4	Qualified opinion
SINTEZA S.A. – Manufacturing	Non Big4	Qualified opinion	Non Big4	Unqualified opinion	Non-Big 4	Qualified opinion
VES SA –	Non Big4	Qualified	Non	Qualified	Non-Big	Unqualified

Company – Industry	Year 2017		Year 2016		Year 2015	
	Auditor	Opinion	Auditor	Opinion	Auditor	Opinion
Manufacturing		opinion	Big4	opinion	4	opinion
S.N. NUCLEARELECTRICA S.A. - Electricity, gas, steam and air supply	Non Big4	Qualified opinion	Non Big4	Qualified opinion	Non-Big 4	Qualified opinion
TURBOMECANICA S.A. – Manufacturing	Big 4	Unqualified opinion	Big 4	Unqualified opinion	Big 4	Qualified opinion
TURISM, HOTELURI, RESTAURANTE MAREA NEAGRA S.A. - Accommodation and food service activities	Non Big4	Qualified opinion	Non Big4	Qualified opinion	Non-Big 4	Qualified opinion
NATURA QUATTUOR - ENERGIA HOLDINGS - Financial and insurance activities	Non Big4	Qualified opinion	Non Big4	Qualified opinion	Non-Big 4	Qualified opinion

Source: author's own projection

The company Retrasib S.A. shows a particular situation, the auditor being changed from a Big 4 company who in 2015 was issued a modified opinion, in 2016 was unable to express an audit opinion into a non-Big4 company that in 2017 issued a qualified opinion. The auditor issued a disclaimer of opinion because the entity has recorded significant cumulative losses, reason that leads to uncertainties about going concern. Other reasons that have influenced the auditor's opinion are about the revaluation differences, the non compliance IAS, and the auditing process that was established after that the companies had the inventory. The entity Olchim S.A. was audited in 2015 and in 2017 by a Big 4 company and in 2016 although the auditor was changed to a non-Big 4 company, the opinion remained unchanged.

A more special situation is presented by the entity Sinteza S.A. which has passed from a qualified opinion in 2015, to an unqualified opinion in 2016 and in 2017 return to unqualified opinion, all three opinions being expressed by a non-Big4 company.

In the situation in which the auditor was changed but the audit opinion has been modified, are also the entities: Ves S.A. (NonBig4), Turbomecanica S.A. (Big4), Prodplast S.A. (Big 4), Mecanica Ceahlau S.A. (Big4), Impact developer & contractor S.A. (Big4).

Within the other entities, even if the auditor's category evolved, the audit opinion issued was remained unchanged.

5. Conclusions

Throughout this article presented the theoretical and practical aspects regarding to the audit reporting and the issuing the auditor's opinion. The topic about the auditor's opinion about the financial statements remains an important subject to be followed by auditors, by the entity's management and by the users of the financial statements, when they take investment or strategic decisions.

The opinion that an auditor express after the analysis of the annual financial statements facilitates the confidence in these reports for the both parties, the audit board and the users of the entity results. The audit reporting is a complex activity and the opinion expressed by the auditor has an important contribution to investors' decisions because they are prudent to financial-accounting frauds, so their requirement for a revised audit report and a quality audit is warranted. The case study was focused on non-financial entities listed on the BSE to found if the auditors expressed modified opinions and if it were justifiable. A sample of 62

companies was fixed and after that was analyzed the annual reports and the audit reports of each company for the period 2015-2017. The auditors were divided into two categories, as well as the auditor's opinion for each year and the reasons behind the issuance of the modified opinions.

In conclusion many entities were audited by a Big4 auditor, this trend being in a continuous increase from year to year, and the most repetitive reasons behind the expressed modified opinions were related to: uncertainties about going concern, non-compliance with IAS standards, uncertain claims or the fluctuations of assets.

The limits of the research were the fact that is not a certified database; the data was collected manually, being retrieved from information published by the companies, their confidence being provided by the independent auditor's reports.

Future research directions can be materialized into expanding the number of companies and the period of study, as well as, a comparative analysis of the audit reports that present qualified opinions, of the companies from different countries.

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Bio-note

Andreea Crucean, is a PhD student in the field of Accounting and Audit, member at *East European Center for Research in Economics and Business from the West University of Timisoara*. As a young researcher, Andreea focused on the quality and integrity of the services that an auditor provides for the enterprises, researching this area in her papers.

THE ANALYSIS OF THE CONTRACTS AWARDED ON THE BASIS OF A SINGLE TENDER IN THE PUBLIC PROCUREMENT IN ROMANIA

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Abstract: *The analysis of the contracts awarded on the basis of a single tender in public procurement is necessary to be performed for studying the degree of openness of a market and for identifying a number of deficiencies such as reduced competition, high level of bureaucracy, reduced stimulation of the small and medium enterprises participation at the procurement procedures or non-splitting into lots the object of the procurement. The article describes the existing specialised literature, the advantages and disadvantages of receiving only one tender situation in Romania and European Union during the period 2015 – 2017, in correlation with the statistics regarding the weight of contracts awarded to small and medium enterprises and the weight of procurement procedures divided into lots. Also, the article longer poses a number of issues concerning the approach of contracts contracts based on only one offer as an indication of fraud or corruption or the conclusion of anticompetitive agreements.*

Keywords: public procurement, procurement procedure, contract, only one tender.

JEL classification: C46, H57, H83.

1. Introduction

UNDP - United Nations Development Programme (2007), apud Thai (2009: 4), considers that public procurement is a comprehensive process of purchasing products, services and civil works that includes all the functions from identifying the need, selecting the supplier, requesting the offers, preparing, awarding and administrating the contract until the end of the asset's useful life or the service delivery.

In Romania, article 3 from Law 98/2016 regarding public procurement defines public procurement as the acquisition of works, goods or services through a contract by a contracting authority or several contracting authorities from designated economic operators regardless if this works, goods or services are destined for the achievement of a public interest or not.

Currently, in the world it can be observed an increase of the public opinion pressure on governments in order to spend public funds as efficient as possible. This goal can be achieved through the analysis of procurement procedures in which only one tender was submitted, to identify the measures regarding the increase of the level of competition and reduction of purchasing prices.

The necessity to examine the procurement procedures with only one tender results from the fact that this situation is the most disadvantageous for contracting authority that must accept the offer (which often doesn't represent the lowest price that public authority can obtain from the free market) or disadvantageous contractual clauses.

2. Literature review

Thai et al. (2009) consider that competition cut costs and that important differences exist between types of procurement (civil or military). The recommendation of the authors is that contracting authorities should have at least four tenderers. In the situation with three tenderers, situation is worse and when there is only one tenderer, the situation is catastrophic (Thai et al., 2009).

During times of economic crisis, Gugler, Weichselbaumer and Zulehner (2014) found that negative demand increases the competition, because the firms bid much more aggressively in the remaining procurement procedures.

The determining factors that influence final price are: tenderer's features, type of services / products, procurement procedure's type, sector features and of course number of tenderers (Brannman, 1987, apud Grega and Nemec, 2015: 3).

Furthermore, Rose-Ackerman (1999), apud Grega and Nemec (2015: 3), consider that if tenderers found that they are competing with other tenderers, submitting offers in the procedure slowed down because bidders compare potential profit with participation costs and if the number of bidders are higher, then the potential profit decreases significantly.

The procurement procedures with only one tender present a number of advantages and disadvantages. The main advantages of the single offer situation are:

- workload reduction necessary for the analysis of submitted offer or meeting technical specifications requested in tender documents;
- reduction of offer assessment period and for the procedure completion;
- risk reduction / elimination for the submission of appeals.

The main disadvantages of the single offer situation are:

- reduction of competition can result in awarding offers with high prices, leading to inefficiency of public funds spending. As regards to necessary competition level for getting a appropriate response from the specialized market, several authors like Brannman (1987), Gupta, (2002), Gineitiene and Serpytis, (2011), Pavel, (2010), Ilke, Rasim and Bedri (2012), all apud Grega and Nemec (2015: 2-4), have carried out studies according to which the price decrease stops with the increase of the number of participants / offers above 6 – 8 tenderers. After this point, any additional received offer doesn't have any effect over the final price, reaching the maximum competitiveness of the procurement;
- imposition by the only tenderer of disadvantageous contractual clauses for the public authority which can only to accept them or to cancel the procurement procedure;
- knowing that it was the only participant, the tenderer can try to deliver to the contracting authority products or services of inferior quality compared with the requirements from tender documents, in order to maximize the profit;
- in the event that procurement procedure also has stages of negotiation, these rounds can become very difficult to conduct because the tenderer may adopt a position of strength through which to make very few concessions to public authority.

3. Research objectives and working hypotheses

Even though public procurement procedures are regulated at European level by a series of public procurement directives, there are significant differences between the results of the procurement procedures carried out in EU Member States.

The research aims to identify some of these differences between Romania and the rest of the EU Member States, regarding contracts awarded on the basis of a single tender, winning the procurement procedures by small and medium-sized companies and dividing the object of the procurement procedures into lots.

Also, the research aims to demonstrate that a procurement procedure for which a single tender has been received can be interpreted as a signal (red flag) regarding the occurrence

of fraud and corruption situations. The working hypothesis of the research is that dividing the object of the procedures into lots leads to an increase in the number of small and medium-sized companies participating in the procedures (increased competition), a reduction of the number of procedures for which a single tender was received, a reduction of final prices and implicitly in the efficient spending of public funds.

4. The analysis of the contracts based on only one offer in the public procurement in Romania

This indicator (contracts based on only one offer) shows the economic competitiveness and bureaucratic level of procurement procedures / processes. If more tenderers respond, then contracting authority has more options and obtains more added value for the funds spent. In the year 2015, in Romania was awarded a number of 73,360 contracts. From these contracts, a number of 7,534 was awarded by contracting authorities on the basis of a single offer. In this situation was not included a number of 20,992 contracts awarded by the call for tenders procedure (ANAP - Romanian National Agency for Public Procurement, 2015).

The total number of awarded contracts, the number of contracts based on only one offer and the distribution by type are presented in Table 1.

Table 1: The total number of awarded contracts and the number of contracts based on only one offer in Romania in 2015

No.	Contract type	Number of awarded contracts	Weight	Number of contracts based on only one offer	Weight from total
1	Products	62,134	84.70%	5,912	8.06%
2	Services	6,168	8.41%	1,487	2.03%
3	Works	5,058	6.89%	135	0.18%
Total		73,360	100%	7,534	10.27%

Source: ANAP - Romanian National Agency for Public Procurement (2015)

In the year 2016, in Romania were awarded 68,010 contracts and 6,712 of them were awarded with only one offer (Table 2). In this situation were not included 18,976 contracts awarded by the call for tenders / simplified procedure. Therefore, if the total number of contracts taken into consideration would be 49,034, the number of 6,712 contracts based on only one offer would represent a weight of 13.69% (ANAP, 2016).

Table 2: The total number of awarded contracts and the number of contracts based on only one offer in Romania in 2016

No.	Contract type	Number of awarded contracts	Weight	Number of contracts based on only one offer	Weight from total
1	Products	58,820	86.49%	5,340	7.85%
2	Services	5,815	8.55%	1,259	1.85%
3	Works	3,375	4.96%	113	0.17%
Total		68,010	100%	6,712	9.86%

Source: ANAP (2016)

In the year 2017, in Romania were awarded 74,727 contracts and 12,716 of them were awarded with only one tender (Table 3).

In this situation were not included 26,947 contracts awarded by the call for tenders / simplified procedure. Therefore, if the total number of contracts taken into consideration would be 47,780, the number of 12,716 contracts based on only one offer would represent a weight of 26.61% (ANAP, 2017).

Table 3: The total number of awarded contracts and the number of contracts based on only one offer in Romania in 2017

No.	Contract type	Number of awarded contracts	Weight	Number of contracts based on only one offer	Weight from total
1	Products	60,324	80.73%	10,241	13.70%
2	Services	9,643	12.90%	2,309	3.09%
3	Works	4,760	6.37%	166	0.22%
Total		74,727	100%	12,716	17.02%

Source: ANAP (2017)

The graphical representation of total number of awarded contracts and number of contracts based on only one tender in Romania between 2015 and 2017 is presented in Figure 1.

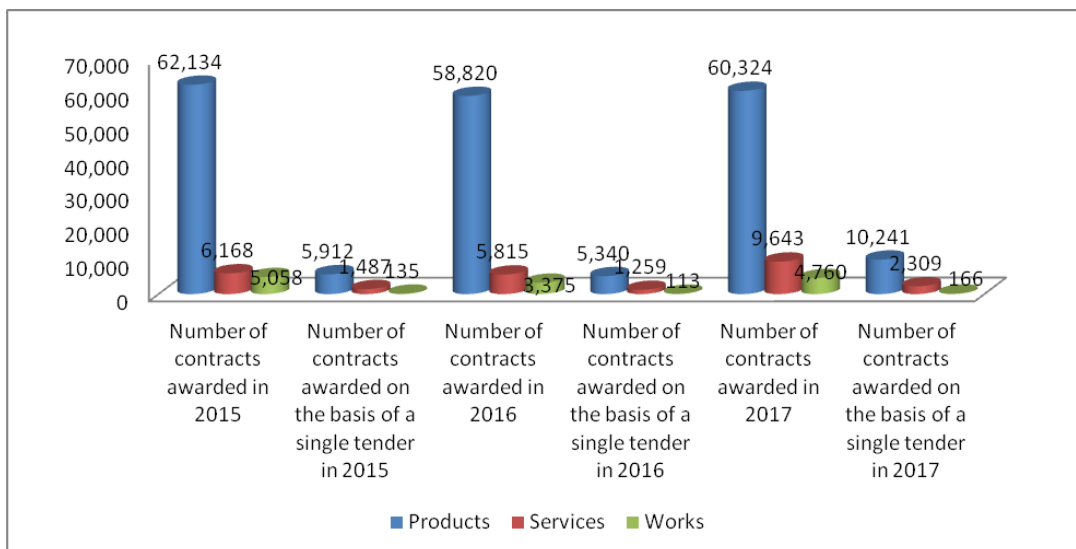


Figure 1: Graphical representation of total number of awarded contracts and number of contracts based on only one tender in Romania between 2015 and 2017

Source: Based on the data in Tables 1, 2 and 3

From the analysis of evolution of the number of contracts based on only one offer during the period 2015 – 2017, it can be observed that the number and weight of these contracts has almost doubled in the year 2017 (number 12,716, weight 17.02%) by comparison with the years 2015 (number 7,534, weight 10.27%) and 2016 (number 6,712, weight 9.86%).

In comparison with other European countries, during the period 2015 – 2017, Romania presented one of the highest weightings of the contracts based on only one offer. The weightings of the contracts with only one tender as a result of public procurement procedures carried out in the countries of the European Union are presented in Table 4. The situations at European level described in the following contain the dates of all the

procurement procedures conducted in the period in question, including dates of the procurement procedures carried out with European non reimbursable funds.

Table 4: The weight of the contracts based on only one offer during the period 2015 – 2017 in European countries (in %)

Country/Year	2015	2016	2017
Belgium	14	14	19
Bulgaria	27	27	32
Czech Republic	33	41	47
Denmark	10	12	14
Germany	13	17	19
Estonia	22	17	20
Ireland	15	12	11
Greece	24	16	34
Spain	21	23	23
France	14	15	15
Croatia	44	41	44
Italy	29	31	30
Cyprus	40	38	42
Latvia	32	31	27
Lithuania	28	17	21
Luxemburg	8	10	14
Hungary	36	36	35
Malta	12	11	15
Netherlands	12	12	16
Austria	10	14	17
Poland	43	46	49
Portugal	25	20	22
Romania	36	38	43
Slovenia	39	37	-
Slovakia	32	31	19
Finland	12	13	11
Sweden	12	13	11
United Kingdom	11	27	32
Iceland	11	5	10
Liechtenstein	-	14	16
Norway	12	11	10

Source: European Commission (2018)

From the situation over a three-year period (2015 - 2017), high levels of the weight of contracts based on only one offer, exceeding 35%, have presented countries such as Romania (RO), Poland (PL), Hungary (HU), Cyprus (CY), Croatia (HR) and Czech Republic (CZ), which are countries with insufficient developed economies or in transition, in circumstances where countries with solid market economies such as Germany (DE), France (FR), Finland (FI) and Sweden (SE) had weightings of the contracts based on only one offer lower than 15%.

One of the methods by which the competition can be increased and the weight of the contracts based on only one offer can be decreased is the division of the contract's object in lots for encouraging small and medium enterprises participation. That is why, in the following will be analysed at the European level the weight of the contracts awarded to small and medium enterprises and the weight of the procurement procedures divided into lots.

Taking into account that the large majority of the economic operators in the European Union are small and medium enterprises, a high weight of the contracts awarded to small and medium enterprises indicate favouring firms that produce the greatest added value. A small weight indicates bureaucracy, low competition, higher prices and procedures with conditions that firms cannot fulfil.

The weight of contracts awarded to small and medium enterprises in the year 2017 in the European Union countries is presented in Table 5.

Table 5: The weight of contracts awarded to small and medium enterprises in 2017 in the European countries (in %)

Country	%	Country	%
Belgium	20	Hungary	67
Bulgaria	53	Malta	88
Czech Republic	63	Netherlands	71
Denmark	54	Austria	42
Germany	44	Poland	56
Estonia	68	Portugal	32
Ireland	63	Romania	17
Greece	37	Slovenia	77
Spain	28	Slovakia	62
France	44	Finland	58
Croatia	47	Sweden	61
Italy	33	United Kingdom	49
Cyprus	76	Iceland	66
Latvia	68	Liechtenstein	67
Lithuania	28	Norway	36
Luxemburg	64		

Source: European Commission (2018)

Unfortunately, in the year 2017, at the European level, Romania had the lowest weight of the contracts awarded to small and medium enterprises (17%). From the year 2016, by Romanian Law 98/2016 regarding public procurement, The National Agency for Public Procurement (ANAP) imposed to the contracting authorities to divide into lots the object of the procurement procedure. The contracting authorities have to justify in the procedure documents the reason for not dividing contract object's into lots. The ANAP inspectors can reject the contracting authorities' justifications and can compel the public authority to divide the procedure's object into lots.

The highest weightings have presented Slovenia (SI), Malta (MT) and Cyprus (CY) with values between 76% and 88%. These countries have obtained high weightings because of the reduced sized of the national economies that favours the creation and development of small and medium enterprises.

As regards the weight of the procurement procedures divided into lots, it should be mentioned that dividing into lots favours small and medium enterprises participation. High values of this indicator reveal that at the procurement procedures are allowed to participate

especially the large firms and contracting authorities do not benefit of the opportunities which small and medium enterprises can offer.

The weight of procurement procedures divided into lots during the period 2015 – 2017 in the European Union countries is presented in Table 6.

Table 6: The weight of procurement procedures divided into lots during the period 2015 – 2017 in the European countries (in %)

Country/Year	2015	2016	2017
Belgium	26	26	29
Bulgaria	39	42	41
Czech Republic	24	19	20
Denmark	22	28	28
Germany	19	20	20
Estonia	28	28	28
Ireland	22	22	19
Greece	37	41	40
Spain	21	22	24
France	39	42	42
Croatia	30	32	36
Italy	23	25	28
Cyprus	36	38	32
Latvia	47	39	40
Lithuania	35	34	39
Luxemburg	8	9	9
Hungary	38	34	40
Malta	15	12	15
Netherlands	20	19	19
Austria	10	10	12
Poland	45	45	47
Portugal	14	22	23
Romania	48	52	56
Slovenia	50	44	42
Slovakia	21	29	30
Finland	7	19	24
Sweden	2	3	5
United Kingdom	26	26	27
Iceland	3	6	5
Liechtenstein	-	22	-
Norway	7	8	10

Source: European Commission (2018)

Surprisingly, Romania had the highest weight of procedures divided into lots in the European Union during the period 2015 – 2017 (between 48% and 56%).

However appearances can be deceiving, because from the analysis of this indicator an previous one for the year 2017, result that in the case of Romania, even though a large number of procurement procedures have been divided into lots to facilitate participation of

small and medium enterprises (the highest weight in European Union – 56%, in the year 2017), these firms have won procedures in a proportion of only 17% (the lowest weight in EU).

The comparative analysis of these two indicators for the year 2017 reveals that the measures taken by ANAP in 2016 regarding the division into lots of procurement's object and justifying non-splitting in procedure's documents, were not effective. Furthermore, measures for increasing the weight of contracts awarded to small and medium enterprises are necessary to be implemented.

5. Contracts awarded on the basis of a single tender – indication of fraud situations

The submission of a single offer in procurement procedures may represent a clue regarding to appearance of fraud or corruption situations. In a procurement procedure, a public authority can introduce several conditions in order to restrict competition and favour a particular economic operator, either in the qualification criteria or in technical specifications. The specialized literature and mass-media abounding in procurement procedures "with dedication", in which certain technical specifications artificially restrict competition, situations that lead to appeals and to procurement procedures blocking.

A "classic" example of technical specifications "with dedication" for only one economic operator is the procurement procedure regarding taxi services from the "Henri Coandă" – Otopeni Airport. Technical specifications of procurement procedure contained the following conditions:

- the economic operator had to have a car park of at least 60 cars produced in the previous year;
- the trunk volume had to be more than 600 litres (Dacia Logan model – the most widespread model in Romania - with a trunk volume of 510 litres, did not meet this condition);
- the colour of the taxi had to be metallic grey (not yellow), although any potential client easily identifies taxis after their yellow colour. Only one firm in Romania was fulfilling all three conditions.

Also, a high number of procedures with only one offer (or a reduced number of offers) can be an indication regarding anticompetitive agreements between economic operators, through which only one firm to submit a tender. These anticompetitive agreements, reduce competition, vulnerabilise public authority in front of the only one tenderer, lead to higher prices and increase the inefficiency of public funds spending.

For example, in Romania, according to Popescu and Preda (2019), a cause of the low numbers of offers received at the procurement procedures having as object the supply of motor vehicles can be the existence of some anticompetitive agreements among the representatives of the same car manufacturer. The authors have analysed 132 procurement procedures during the period 17.02.2015 – 22.12.2018 for supplying motor vehicles and have found that the number of procedures with only one offer was 91 (weight 68.93%), the average number of offers received for every procedure was of 1.52 offers / procedure. Therefore, authors consider that car manufacturers have founded some divisions that participate in public procurement procedures and have forbidden to their dealers' to get involved in public procurement procedures. These dealers can sell cars only to individuals and other firms and only the company at national level is involved in the procurement procedures and hardly ever their dealers (Popescu and Preda, 2019).

6. Conclusions

The study found that the main advantages of the procurement procedures in which was received only one tender are reduction of workload necessary for the analysis of submitted offer, reduction of offer assessment period and reduction or elimination of the risk for

appeals and the main disadvantages are reduction of competition which can lead to a weaker position of contracting authority and award of some offers with higher prices. Also, the study showed that in Romania, in the period 2015 – 2017, the number and weight of contracts based on only one offer almost doubled in the year 2017 by comparison with the years 2015 and 2016.

The weight of the contracts awarded on the basis of a single tender in Romania is increasing, in 2017 finding that 43% of the contracts were awarded based on a single tender, one of the highest weights at European level, given that the weight of small and medium-sized companies that won contracts in Romania was the lowest in the European Union (17%), although between 2015 and 2017 Romania had the highest weights in the EU of procurement procedures divided into lots (between 48% and 56%).

Even if in 2016 ANAP took measures regarding the division into lots of the object of the procurement procedure, these did not have the expected result, because in 2017 Romania presented the lowest weight of all EU Member States of small and medium-sized companies that have won contracts and one of the highest weight at EU level of contracts awarded on the basis of a single tender. Therefore, in the case of Romania, the working hypothesis according to which the division into lots leads to the increase of the number of small and medium-sized companies participating in procedures (increased competition) and to the reduction of the number of procedures in which a single tender was received is rejected.

Because the reduction of competition has led to the increase of the final prices and implicitly to the inefficient spending of the public funds, further measures are needed that will lead to an increase of the weight of small and medium-sized companies that will win contracts in Romania.

Furthermore, the study revealed that receiving of only one tender can be an indicator (red flag) regarding to appearance of fraud or corruption situations, to existence of procurement procedures “with dedication”, in which technical specifications have been designed to artificially restrict competition or to existence of anticompetitive agreements between various economic operators.

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Bio-note

Ionel Preda is a PhD student in second year of study at the *Doctoral School of Management, Bucharest University of Economic Studies* and currently he is working on PhD thesis: "Contributions to improving public procurement management".

MIGRANTS' REMITTANCES AND PUBLIC EXPENDITURE ON EDUCATION NEXUS: EVIDENCE FROM AN OIL-DEPENDENT ECONOMY

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Abstract: *This study examined migrants' remittances, public expenditure on education and their implications for educational development in Nigeria, using Secondary School enrolment rates (SSER) as a proxy for the latter for the period 1981 to 2017. The study utilised Cointegration and error correction modelling approach in order to minimise the likelihood of producing explosive regression estimates. The empirical findings of the study indicate that Migrants' remittances received, Public expenditures on Education and Per Capita Income growth rate exert statistically significant positive impacts on educational development in the country, while the association turned negative in the case of population growth rate. The fundamental role played by both migrant's remittances received and Public expenditures on Education in stimulating educational development was evidently established in the study. The study therefore recommends, among others, the adoption of strategic measures that will help boost the rate of school enrolment in the country by encouraging migrants' remittances through continuous engagement of Nigerians in the Diaspora in the country's political and socio-economic affairs, progressive increment in budgetary allocations to the nation's education sector, as well as enhancing the per capita income of the country through investments in key sectors of the nation's economy.*

Keywords: Migration, Remittance, Public Expenditure on Education, Educational Development, Nigeria.

JEL classification: F22, F24, H52, I22

1. Introduction

Over the last few years, a substantial volume of studies have been carried out on how human capital development has been influenced by the joint forces of Migration, Remittances and Public Expenditure on Education across several countries of the world. It is worthy to note that, most of the early research on immigration programme hypothesised that immigrants move from their respective countries, move into another country, adapt to the settings of the new social order, and gradually wane their bonds with their ancestral home of origin. In the present days, the wave of globalization permits immigrants to retain the bonds with their country of origin while living in a foreign country, thus abating the likelihood of forfeiting their original identity and parting from their native countries.

Remittances, simply described as the cash transactions carried out by migrants in favour of their beneficiaries such as relations and friends back home, have progressively attracted the attention of researchers and policymakers as they continue to increase in volume and their significant impact on the development of the nation's economy becomes more explicit and profound. For instance, it is projected that approximately 15 million Nigerians settle and work in foreign countries and draw substantial volumes of remittances to their home countries

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(Nigeria) on an annual basis. In 2016, statistical report from the World development indicators of the World Bank on official remittances reveal that, Nigerians living abroad remitted approximately 20 billion dollars (World Bank, 2016) with the likelihood that the amount will soar high in successive years sequel to the government recent efforts in engaging Nigerians living abroad in various national development programmes.

Over the years, it has been acknowledged that a preponderant number of Nigerians living in foreign countries account for a powerful driving force for national progress. Such indication largely revolves around investments and remittances in the area of monetary contributions. However, in recent times, there has been an increasing awareness of the likely impact of Nigerians in diaspora on national development in terms of non-financial commitments. Thus, much as remittances may have the tendency to significantly affect the nation's economy, it is necessary to map out channels through which Nigerian diaspora are encouraged to contribute to national development. The practice of enhancing the smooth flow of skills and information from overseas to Nigeria with a view to boosting the development of the education sector informs the need to acknowledge the significance and effectiveness of diaspora's expertise and proficiencies in that sector.

In 2016, statistical report from the World development indicators of the World Bank on migration indicates that the number of persons who reside outside their native countries globally rose from 153 million in 1990 to about 249 million in 2016, and this represents approximately 2.87 percent of the global population in the year 1990 and about 3.32 percent of the world population in the year 2016. Similar report reveals that, the total sum of remittance receipts grew from approximately \$68 billion in 1990 to about \$558 billion in 2016. On the average, the volume of remittances received from Diaspora (in 2011 constant dollars) rose from about \$688 in 1990 to roughly \$2128 in 2016. These figures, however, only reflect the amount of remittances that have been received through official platforms.

In the nation's determined efforts to substantially augment the knowledge, expertise and involvement of Nigerian professionals overseas in various national development agenda, the Nigerian government swigged into action in 1999 by enacting foreign policies to boost Diaspora's involvement in National affairs. These policies further came to limelight through the nomination of three Nigerian academic professionals in the diaspora as Vice Chancellors of three (3) newly-created institutions of higher learning (Universities) in 2011. The idea was to rejuvenate the nation's system of higher education in the course of meritoriously attracting Nigerians in the diaspora to render their inputs in various sectors of the nation's economy. The implication of the above measures can be evaluated from the ease at which the newly appointed academic scholars were able to draw several other prominent Nigerian professors abroad to come back to their native country to contribute their quota as pioneer professors in the newly established universities.

Government expenses on education on the other hand, are imperative disbursement items universally. The extent to which the sector receives the attention of players in both public and private sectors has an unswerving and significant bearing on economic development through human capital development. In Nigeria, budgetary allocations to formal education are positively skewed in favour of secondary and tertiary institutions which larger share of public financing than primary education in the country. Relatively, however, most institutions in Nigeria are starved of financing while several relevant infrastructures are lacking, a development that has been partly blamed for the resultant poor outputs from these institutions.

The 2016 statistical reports from the Central Bank of Nigeria reveal that, about ₦ (Nigerian Currency) 57.95 billion was allocated to the Nigerian education sector in the year 2000. The figure increased to about ₦335.8 billion and ₦341.88 billion in 2011 and 2016 respectively. Despite the increasing financial inflows from Remittances and a sizeable amount of public spending on the Education sector, most Nigerian schools still suffer from over-enrolment of students, poor sanitation, maladministration and abandoned capital projects. This

repeatedly translates into shut down of schools and frequent strike actions by various academic and non-academic bodies with the resultant and combined effects of reduced quality of education and training which in turn lead to low quality of outcomes.

Though a handful of studies have been carried out on the relative impact of migrants' remittances and government expenditure on educational development, most of such studies have either been panel studies, or have been conducted outside the confines of the Nigerian economy as in the case of Ratha (2007) for Ghana and Lu and Treiman (2007) for South Africa. Replicating the policy prescription(s) from such panel studies or country-specific studies for the Nigerian economy may be quite misleading. Besides, the latest period examined by the authors was 2007. And, considering the fact that the Nigerian economy has gone through series of educational reforms in the last one decade, makes the relevance of such policy recommendations doubtful.

This study therefore attempts to fill these gaps by investigating the relative impact of migrants' remittances and government expenditures on educational development within the context of Nigeria. Accordingly, the rest of the study is organized as follows; section two captures the review of relevant literature, while section three presents the model specification and methodology of the study. Lastly, the analysis of the results of the empirical survey is encapsulated in section four, while section five concludes the study.

2. Review of Related Literature

Several studies that have been carried out by scholars on the impact of migrant remittances and government expenditures on Education sector development have produced differing empirical outcomes. A number of scholars, predominantly from industrialised nations, are of the opinion that the influx of migrants remittances can significantly influence remittance-recipient nations in diverse channels, such as financial sector development, expansion of political institutions, inequality and poverty reduction, impact on growth and welfare, health and education outcomes (Cox Edwards and Ureta, 2003; Rapoport and Docquier, 2005; Gapen et al., 2009; Giuliano and Ruiz-Arranz, 2009; Rao and Hassan, 2011; Ziesemer, 2012; Ziesemer, 2012; Li and Zhou, 2013; Li and Zhou, 2015; Al Mamun et al., 2015; Bang, Mitra and Wunnava, 2016; Williams, 2017).

In every economy, migration plays a significant role in the development of human capital. Interestingly, in recent time, there is an emergent pool of empirical substantiation signifying that, a sizeable proportion of migrant remittances are channelled into the education sector (Adams, 2005; Adams et al. 2008 and Valero-Gil 2008). Migrants' children are associated with a higher likelihood of gaining access to quality education as they have the predisposition to complete their schooling on time. This is however attributed to the fact that, the rising earnings from remittances offer auxiliary financial supports and better projections connected to migration impact and inducements geared towards the attainment of more education (Cox-Edwards and Ureta 2003; Yang 2008; UNDP, 2009). Further empirical evidence from Pakistan reveals that short-term migration is directly related to rising school enrolment (Mansuri 2006).

Further analysis on the impact of Migrant Remittances on the development of the Education sector reveal that, a major disparagement raised against remittance inflows is that it does not sustain the recipients as they spend these inflows on direct consumption in an extravagant way (Cattaneo, 2010). Nonetheless, this finding contradicts the idea that most households invest remittances on human capital development. Several studies show that, an average remittance-receiving family invest more on education and health care when compared to those households that are not associated with this form of earnings and this facilitates higher educational accomplishment for families in the country of origin (Edwards and Manuelita, 2003; Richard, 2005; World Bank Development Prospects Group, 2006; Prabal and Dilip, 2012).

Study by Benedictis, Calfat and Jara (2010) on the relationship between migrant remittances and child education in Ecuador with specific attention on the impacts on the conditions for education supply at the regional level substantiate previous findings that remittances exert positive impacts on child education. Similarly, a cross sectional analysis on 11 Latin American countries by Acosta (2011) reveals positive effect of migrant remittances on education. Similar survey of several households in Colombia by Medina and Cardona (2010) shows a significant impact of migrant remittances on education, whereby the recipient families spend approximately 10 per cent of their total international remittances on education compared to non-remittance receiving families.

The empirical findings on public expenditures on education and its implications for educational development have been inconsistent. For instance, Okeke (2014) examined the effects of government spending on aggregate school enrolment and under-5 mortality rate in Nigeria by utilising vector error correction mechanism (VECM). The empirical result shows that public spending on education has no statistically significant impact on total school enrolment in the country. Ime (2016) also examined public sector expenditure on education and human capital development in Nigeria and found that the expenditure on education in Nigeria has been far from satisfactory and lack the propensity to address the essentials of educational institutions whose enrolment is on a rapid increase.

On the other hand, Oriakhi and Ameh (2014) examined the effect of education expenditure on the level of literacy in Nigeria and found a statistically significant long-run association between public expenditures on education and literacy rate. Charles, et al. (2016) further examined government education spending and education outcome in Nigeria from 1970-2013 using Ordinary Least Square (OLS) technique. The empirical findings indicated that, Government expenditure on education is a statistically significant factor to be reckoned with, when discussing issues relating to the determinants of education outcomes in the country.

McMahon (1999) revealed a significant linkage between per pupil expenditures and the primary gross enrolment rate. He further submitted that, growing public education spending has a positive and significant bearing on gross enrolment rate. This corroborates the findings of Mingat and Tan (1992), Gupta, Verhoeven and Tionsan (2002), Okonkwo (2014), Ude and Ekesiobi (2014), Adowaa (2014) and Jackson, Rucker and Persico (2015). Similar study by Ebejer and Ulrike (2009) evaluated the efficiency of public spending in Malta and found that, Government spending on education in Malta seems to be reasonably efficient at the primary and secondary levels, while it became less efficient at the tertiary education level.

The implication of the above mixed empirical outcomes is that, Government expenditure and other variable inputs in the education sector may be characterised by inter-spatial or cross-sectional heterogeneity, suggesting that what play out at a specific time period or in a given nation/region may be totally different from what holds in another. It is therefore imperative that, this study revisit the manner in which budgetary allocations to the education sector have been managed over the years, and further explores the nature of impact running from public expenditure on education to education outcomes in the context of Nigeria.

2.1. Relative trends in Migrant's Remittances, Public Expenditures on Education and School enrolments in Nigeria

Statistical report from the World Bank (2018) reveals the volume of migrant's remittances received from 1981 to 2017. In 1981, about ₦13.39 million was received as migrants' remittances. This figure however plummeted to about ₦10.45million, and thereafter, it rose to about ₦99.18million and ₦17.362billion in 1991 and 1994 respectively. Migrants' remittances received in Nigeria oscillated between ₦5.47 billion and ₦300.34billion between 1995 and 2005. In addition, the average remittance received from Nigerians in the Diaspora

between 2006 and 2015 was ₦2.86trillion. It however attained it peak of about ₦6.325trillion in 2016 after which it dropped to about ₦6.017trillion in the year 2017. Figure 1 reports this trend.

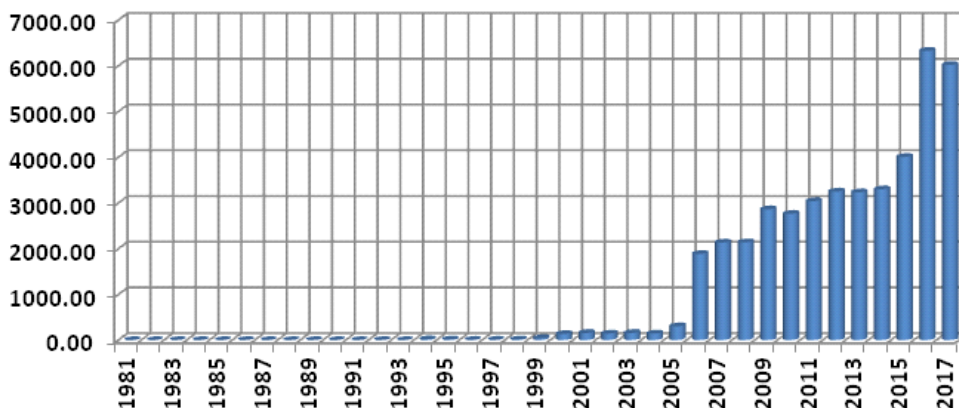


Figure 1: Migrants's remittances received (NBn)

Source: Underlying data from World Development Indicators of the World Bank (2018)

Furthermore, Figure 2 displays the trends in Public expenditure on education in Nigeria from 1981 to 2017. From the figure, budgetary allocations to the education sector stood at ₦0.17billion in 1981. It however increased to about ₦3.01billion in 1989 but declined to about ₦0.29billion in 1992 after which it increased to about ₦57.96billion in the year 2000. Government expenditure on education however fluctuated between ₦39.88billion and ₦170.80billion from 2001 and 2010. The figure rose to about ₦390.42billion in 2013 and further reached it all time high of about ₦394.90billion in 2017. The figure 2 shows the trend in budgetary allocations to the education sector for the 37-year period (1981-2017) in Nigeria.

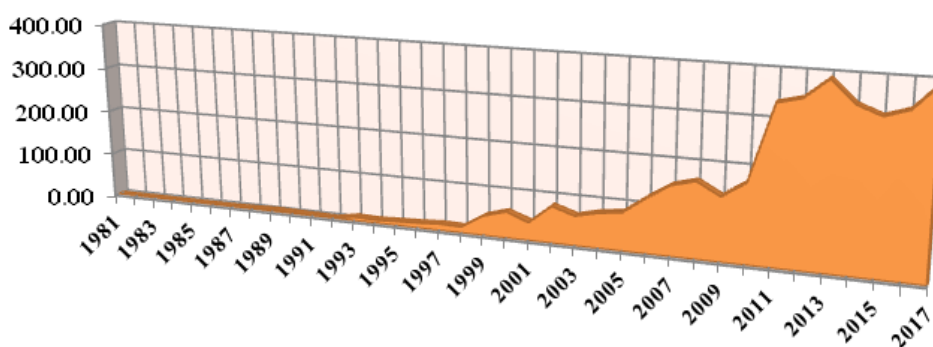


Figure 2: Public Expenditures on Education (NBn)

Source: Underlying data from Central Bank of Nigeria Statistical Bulletin (2017)

In similar vein, Figure 3 shows the trends in Secondary School enrollment in Nigeria between 1981 and 2017. The figure reports that, Secondary School enrollment rate in Nigeria stood at about 17.10 percent after which it grew to about 29.32 percent in 1985. The figure further rose to about 33.01 percent in 1988, but then declined slightly to about 32.46

percent in 1992. The average secondary school enrolment rate in Nigeria was 33.08 percent between 1993 and 2008. The country however experienced the highest rate of about 56.18 percent in 2013 after which the figure declined to about 41.98 percent in 2016, before rising to about 45.92 percent in 2017.

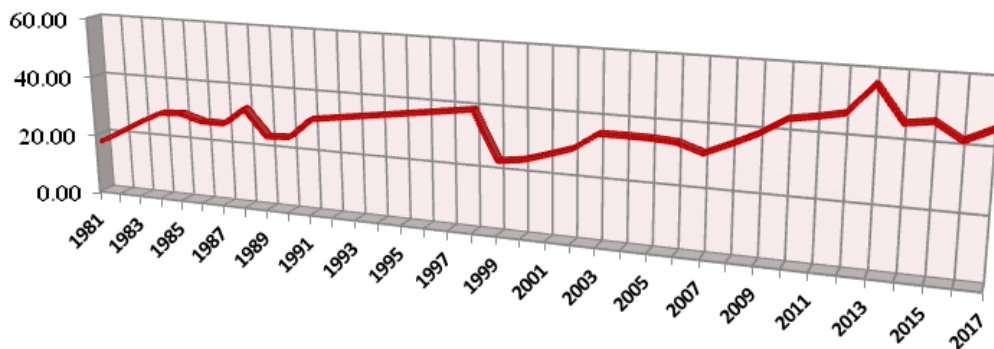


Figure 3: Secondary School enrolment (% gross)

Source: Underlying data from World Development Indicators of the World Bank (2018)

3. Methodology and Model Specification

This segment covers the description of research design adopted in migrants' remittances, Public expenditure on education and their implications for educational development in Nigeria. These include theoretical framework, model specification, method of data collection as well as the method adopted in analysing the data for this study.

3.1. Theoretical Underpinnings

The theoretical framework of this study is predicated on the Human capital investment theory advanced by Becker (1975), though with slight modifications. Becker (1975), in the theory, delineated the various transmission channels between income, expenditure and human capital development. The idea is that increasing income enables individuals to channel more financial resources in the direction of improved quality of education which translates into higher human capital development. The relevance of this theory is that it reveals the mechanism through which expenditure on education impacts on human capital development. From the foregoing, this study will regress education outcome on Government spending on education and other relevant macroeconomic fundamentals.

3.2. Model Specification

Drawing on the reviewed literature and the theoretical basics of the study, the theoretical model is specified below;

$$SSER = F(MREM, PEXED, PCI, PGR) \dots \dots \dots (1)$$

Supposing a linear association exists amongst the above variables, following previous studies (for instance, Schady, 2002; Dauda, 2011; Ude and Ekesiobi, 2014), the above functional relation can be re-specified in an estimable Error Correction modelling framework presented as follows;

$$SSER_t = \beta_0 + \omega_i \sum_{i=1}^J .SSER_{t-i} + \eta_i \sum_{i=0}^k .MREM_{t-i} + \psi_i \sum_{i=0}^l .PEXED_{t-i} + \gamma_i \sum_{i=0}^m .PCI_{t-i} + \alpha_i \sum_{i=0}^n .PGR_{t-i} + \xi ECM_{t-1} \dots \dots \dots (2)$$

Where, $\omega_i, \eta_i, \psi_i, \gamma_i, \alpha_i$ are the impacts measuring parameters of the respective variables captured in the model. However, the following restrictions are imposed;

$$\frac{\partial SSER_t}{\partial SSER_{t-1}} = \omega > 0, \frac{\partial SSER_t}{\partial MREM_{t-i}} = \eta > 0, \frac{\partial SSER_t}{\partial PEXED_{t-i}} = \psi > 0, \frac{\partial SSER_t}{\partial PCI_{t-i}} = \gamma > 0, \frac{\partial SSER_t}{\partial PGR_{t-i}} = \alpha > 0, \xi < 0 \dots \dots \dots (3)$$

Where SSER=Secondary School enrolment rate (the dependent variable), MREM=Migrant's remittances, PEXED=Public expenditure on education, PCI=Per Capita Income growth rate, PGR=Population growth rate, t=time, i=lage length, ECM= Error correction term, which determines the speed of adjustment to long run equilibrium and μ =stochastic disturbance term that encapsulates all other variables not captured in the model. β_0 =the intercept in the model, η_i, ψ_i, γ_i and α_i are the impacts measuring parameters of the respective variables captured in the model, ∂ indicates the first difference of the respective variable which is given as $X_t - X_{t-1}$. Where X_t could be any variable and X_{t-1} is the lagged series under consideration.

3.3. Methodology

This study adopted co-integration and error correction procedure (ECM) to examine issues relating to migrants' remittances, Public expenditure on education and their implications for educational development in Nigeria. The variables were tested for unit root, following the method advanced by Dickey and Fuller (1981) and complemented by Phillip and Perron (1988). The idea of using the Phillip-Perron test hinges on its robustness in the face of autocorrelation and time dependent Heteroskedasticity. After that, the study considered co-integration test for possible linear combination of long run relationship among variables by adopting the Johansen rank test.

3.4. The Data

The data set for this study includes annual time series covering the period 1981-2017, sourced from the World development indicators of the World Bank and Central Bank of Nigeria (2017) Statistical year Book.

4. Discussion of Findings and Policy Implications

This section is devoted to the presentation and discussion of the various findings of the study as well as their implications for policies.

4.1. Descriptive Statistics

The summary statistics of the variables for the study are reported in Table 1. Considering the time range of the study (1981-2017), and the frequency of the data set (yearly), all the series have 37 observations. As shown by the corresponding statistics, only Population growth rate and Secondary School enrolment rate were normally distributed. The Jarque-Bera statistics as well as their corresponding probability values simultaneously prove the null hypotheses of

normality at 5% significance level. In addition, migrants' remittances received and GDP per capita growth rate were leptokurtic, while Public Expenditures on Education, Population growth rate and Secondary School enrolment rate had low kurtosis values, suggestive of platykurtic distributions. All variables (except GDP per capita growth rate) were positively skewed in their distribution.

Table 1: Descriptive Statistics of all Variables Used

Statistic	Migrants remittances received	GDP per capita growth rate	Public Expenditures on Education	Population growth rate	Secondary School enrolment rate
Mean	1136.69	0.58	101.19	2.58	34.15
Median	41.58	1.64	39.88	2.59	34.44
Std. Dev.	1780.92	5.47	134.09	0.07	8.54
Skewness	1.47	-0.89	1.18	0.10	0.37
Kurtosis	4.22	4.52	2.85	1.73	2.82
Jarque-Bera	15.55	8.41	8.56	2.57	0.87
Probability	0.00	0.01	0.01	0.28	0.65
Observations	37	37	37	37	37

Source: Author's Computation Using E-Views 10

4.2. Stationarity Test

Study by Granger and Newbold (1977) discloses that, most time series variables always drift in non-stationary fashion. Thus, using such non-stationary series might result in spurious regression outcomes. Therefore, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were considered with a view to determining the stationarity position of the variables considered in the study. The ADF test minimizes the Akaike information criterion (AIC) while the Phillips-Perron test borders on the Bartlett Kernel technique while the bandwidth is chosen in line with the Newey-West method. The results are reported in Table 2.

Table 2: Augmented Dickey Fuller and Philips Perron Unit Root Tests

Variable	ADF test statistic	ADF Critical values	Remark	PP test statistic	PP critical values	Remark
MREM	-5.34	-3.63***	I(1)	-5.34	-3.63***	I(1)
PCI	-9.83	-3.63***	I(1)	-9.88	-3.63***	I(1)
PEXED	-5.18	-3.63***	I(1)	-5.13	-3.63***	I(1)
PGR	-5.01	-3.63***	I(1)	-4.38	-3.63***	I(1)
SSER	-6.71	-3.63***	I(1)	-7.13	-3.63***	I(1)

Source: Author's Computation Using E-Views 10 Note: ***denote significance at 1%

From the stationarity results in Table 1, both the Augmented Dickey Fuller and Philips Perron Unit Root tests indicate that all the variables became stationary at first difference (at 1 percent level). Next, we check if there is a long run association among the series employed in the study.

4.3. Testing for Co-integration

Cointegration tests are generally conducted to assess the presence or otherwise of long-run relationship among the series in a regression model. This paper therefore espoused the procedure advanced by Johansen (1988) and Johansen and Juselius (1990). By employing the approach provided by Johansen and Juselius (1990), the Max-Eigen and Trace tests were considered in evaluating the number of possible cointegrating vectors. Table 3 reports the results gotten from the Johansen cointegration rank test.

The test statistics however rejects the null hypothesis of no cointegration. On the other hand, the results reveal the existence of two (2) cointegrating vectors from the Trace test statistic at both 5 percent and 1 percent levels while the Max-Eigen test statistic reveal the existence of two (2) cointegrating vectors at 5 percent and one (1) cointegrating vector at 1 percent level of significance. Judging from similar findings by Pesaran (1997), the implication is that, there is a stable long run relationship among the series under investigation and this is fundamental in the area of policy design.

Table 3: Johansen Cointegration Test results

Null Hypothesis	Trace Statistics	Critical value at 5 percent	Critical value at 1 percent	Max-Eigen Statistics	Critical value at 5 percent	Critical value at 1 percent
$r = 0$	105.78**	68.52	76.07	48.45**	33.46	38.77
$r \leq 1$	57.33**	47.21	54.46	28.82*	27.07	32.24
$r \leq 2$	28.51	29.68	35.65	16.66	20.97	25.52
$r \leq 3$	11.86	15.41	20.04	11.75	14.07	18.63
$r \leq 4$	0.11	3.76	6.65	0.11	3.76	6.65

Note: r represents number cointegrating vectors **(*) denote significance at 1% (5%)

Source: Author's Computation Using E-Views 10

4.4. The Parsimonious Error Correction Estimates

Having shown that the variables are stationary and co-integrated, we now proceed to estimate the parameters of the parsimonious error correction relations in order to capture the short-run dynamics that ensued in estimating the long-run cointegrating equations. The parsimonious error correction model achieves this by offering an error correction term (ECM). In this regard, the error correction term makes it possible for us to measure the speed at which Secondary School enrolment rate adjusts to its long-run convergence. All the variables in under investigation are stationary and as such, Least Squares technique gives reliable estimates (Enders, 1995). The estimates of the parsimonious error correction model are presented in Table 4 below.

Table 4: Parsimonious Error Correction Estimates

Dependent Variable: D(SSER)

Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.64	0.27	2.40	0.02**
D(SSER(-1))	0.10	0.07	1.47	0.15
D(MREM)	0.31	0.08	3.92	0.00***
D(PEXED)	0.03	0.01	2.22	0.03**
D(PCI)	0.09	0.05	1.70	0.10*
D(PGR)	-20.66	8.45	-2.45	0.02**
ECM(-1)	-0.57	0.06	-9.49	0.00***
R-squared	0.82	Akaike info criterion		5.93
Adjusted R-squared	0.68	Schwarz criterion		6.24
F-statistic	7.24	Hannan-Quinn criter.		6.03
Prob(F-statistic)	0.00	Durbin-Watson stat		2.05

Note: ***denote significance at 1%, **denote significance at 5%, *denote significance at 10%

Source: Author's Computation Using E-Views 10

The empirical findings from the table above reveal that, both migrants' remittances, Public expenditures on Education and Per Capita Income growth rate exert positive impact on educational development in Nigeria. This is suggestive of the fact that, an appreciable improvement in these economic fundamentals would not only boost the rate of Secondary School enrolment, but also guarantee some level of stability in the nation's economy. In addition, migrants' remittances received were found to be significant at 1 percent, Public expenditures on Education at 5 percent, Per Capita Income growth rate at 10 percent, while Population growth rate (though negatively impact on Secondary School enrolment rate) was found to be statistically relevant at 5 percent level.

Interestingly, our finding on the significant positive relationship between Migrants' remittances received and educational development substantiates earlier findings by Adams (2005), Mansuri (2006), Adams et al. (2008), Valero-Gil (2008) and Yang 2008. Likewise, this study reveals that, public expenditures on education positively impact on educational development. This further corroborates previous findings of Ebejer and Ulrike (2009), Okonkwo (2014), Ude and Ekesiobi (2014), Adowaa (2014) as well as Jackson, Rucker and Persico (2015), who at one time or the other examined the above subject matter, though, employed different proxies.

Also, the coefficient of one period lagged error correction term (ECM (-1)) is correctly signed. The implication is that, about 57 percent of the previous year's dynamics in Secondary School enrolment rates is reconciled every twelve months and this is also significant at 1 percent level. Interestingly, this indicates a high speed of adjustment which is vital in policy analysis. In line with the submission of Kalimand Hassan (2013), a statistically significant error correction variable is an alternative avenue to corroborate the incidence of long run linkage among variables in a regression identity. Next, we examine the stability properties of the estimates in our regression model.

4.5. Structural Stability Analysis

In this segment, we analysed the stability status of the coefficients of our estimated model by utilising the technique presented by Brown, Durbin and Evans (1975). This is achieved by examining the plots of the Cumulative Sum of Recursive Residual (CUSUM) and the Cumulative Sum of Squares of Recursive Residual (CUSUMsq) reported in figures (4) and (5) respectively. For all intents and purposes, there is parameters stability, if the CUSUM and CUSUMsq lie within the bands characterised by the two dotted straight lines, while the occurrence of instability is established, if the CUSUM and CUSUMsq are found outside the bands. From the graphs, both the CUSUM and CUSUMsq lie within the 5 percent critical lines, indicating parameter stability during the course of assessments. The results are however simultaneously reported below.

In this regard, all existing bottlenecks faced by migrants and remittance service providers which tend to constrain the inflow of remittance to the should be comprehensively addressed via the concerted efforts of the government and other related agencies or parastatals.

Figure 4: CUSUM

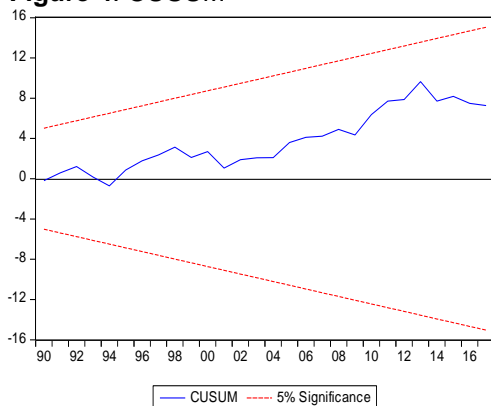
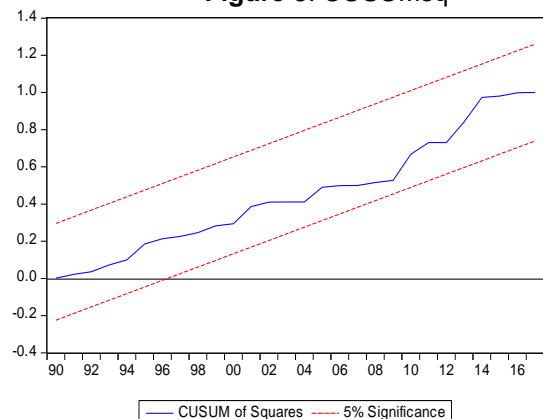


Figure 5: CUSUMsq



Source: Author's Computation

5. Conclusion

This study has examined migration, remittance and public expenditure on education as well as their implications for educational development in Nigeria, using secondary school enrolment rates (SSER) as a proxy for the latter for the period 1981 to 2017. The findings of the study indicate that migrants' remittances received, public expenditures on education and per capita Income growth rate exert statistically significant positive impacts on educational development in the country, while the association turned negative in the case of population growth rate. The fundamental role played by both migrants' remittances received and public expenditures on education in stimulating educational development was evidently established in the study.

The above findings therefore suggest the need to adopt strategic measures that will help boost the rate of school enrolment in the country. This can be achieved by encouraging migrants' remittances through continuous engagement of Nigerians in the Diaspora in the country's political and socio-economic affairs. Also, there should be progressive increment in budgetary allocations to the nation's education sector, as well as enhancing the per capita income of the country through investments in key sectors of the nation's economy.

In this regard, all existing bottlenecks faced by migrants and remittance service providers which tend to constrains the inflow of remittances to the recipients in the domestic economy should be comprehensively addressed via the concerted efforts of the government and other related agencies and parastatals.

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