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Organic Agriculture Contribution to the Rural Tourism Development in the North of Montenegro

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Abstract
This research was conducted in order to determine the benefits that local communities in Montenegro can achieve by developing rural tourism. The main aim of this paper is to establish how organic agriculture can contribute to the rural tourism development. This research is non-experimental, based on the content analysis, observation method, case study method, and questionnaire. The obtained results showed that organic agriculture contributes to the development of rural tourism by creating a special niche market, giving the additional value to the product, providing tourists with the possibility of education on organic agriculture as well as contributing to the destination differentiation. Participation in the preparation of healthy food as well as in the rural jobs is the most interesting activity for tourists. Rural tourism also contributes to the creation or expansion of the organic product market. In order for organic agriculture to contribute to the rural tourism development in Montenegro, it is necessary to develop the awareness of youth about the significance and benefits that it provides by allowing the children to visit organic farms and participate in organic agriculture activities. There should be organized events which include public presentations on organic agriculture processes and the possibility of discussion with organic farmers. Another thing to be done is to expand the organic food market. It is also necessary to enable the promotion of every interested rural household through the internet and advertise domestic products through national television in order to protect them and support organic producers.

Key Words: Local community development, Montenegrin rural areas, Organic agriculture, Rural tourism.

1. Introduction

Montenegro, known as the last unspoiled place in Europe, is one of the most famous tourist destinations around the world. The importance of tourism for Montenegro is of priceless value. The data shows that this branch of economy represents over 25% of GDP (Tourism development strategy of Montenegro until 2020).

Considering the natural potential that makes Montenegro a competitive destination, it is understandable that in recent years tourists are more and more interested in Montenegrin rural areas. However, in addition to all the preconditions Montenegro has for rural tourism development, there are a number of aggravating circumstances that decelerate this process. According to preliminary research, (A. Babović, A. Babović, & A. Babović 2015); (Despotović, Joksimović, Jovanović, & Svržnjak, 2017) among the main problems of the rural tourism development is inadequate accommodation capacity. The quality of accommodation does not satisfy the preferences of tourists, mostly prevail rooms that can not accommodate a group of tourists, and often remain empty. The locals consider that the state's investments in this type of tourism are not sufficient. Therefore the

majority of households cannot meet the basic requirements of tourists, e.g., suitable accommodation. Roads leading to households are mostly not paved. Households still do not make significant revenue in order to invest by themselves. Promotion of rural tourism is very poorly developed. Montenegro is mostly promoted as a "sun and sea" destination. Tourist organizations do not promote a specific destination, i.e., households in an appropriate manner so that even domestic tourists are not familiar with their offers. Inadequate workforce represents another significant problem. Household owners are mostly pensioners aged 60, and over, just few of them are farmers.

The agricultural sector can be integrated together with tourism in order to strengthen both sectors, and this is done through rural tourism (Borg 2013). In order to offer the new product and provide the new experience, the use of organic agriculture can help the future improvement of rural tourism. This will result in a new niche market for Montenegro. Consequently, the main goal of this research is to explain in which ways organic agriculture can contribute and support the policy of rural tourism development.

These are the main problems this research is focused on:

- Primarily, youth are not sufficiently educated in the field of organic agriculture. Their awareness of the organic agriculture importance and the benefits it provides is very low, which leads to a high migration degree and the lack of young workforce in the rural areas of Montenegro.
- Real estate fragmentation and nonexistence of the organic products market greatly impede the development of organic agriculture in Montenegro. This causes farmers to produce only for the needs of their households.
- Insufficient Government support for organic food producers - relates primarily to low subsidies and inadequate promotion and protection of Montenegrin organic products. This often causes distrust in the quality of organic products among consumers, they consider the price to be high, and they prefer to buy very cheap imported products.

2. Literature review

There are a large number of researches on a similar topic which mainly describe the different offers of many countries in rural tourism. As far as Montenegro is concerned, conducted researches usually concentrate on problems of underdevelopment of agro-tourism as well as socio-economic characteristics of the rural population.

2.1 The main characteristic of rural areas in the north of Montenegro

Rural areas cover more than 90% of the whole territory of Montenegro. The northern region encompasses 13 municipalities, and this is the biggest region according to number of rural villages. In the last 30 year, the number of inhabitants in northern region is constantly reducing (Despotović, Joksimović, & Jovanović, 2016). At the same time, agricultural production faces the same trend (Vujošević 2007). According to data provided by NGO "Euromost" from Bijelo Polje, the north of Montenegro which makes up more than half of the territory has lost 50,000 inhabitants in the last 25 years (www.pvinformer.me). As far as internal migrations are concerned, according to Monstat official data (2017), the negative migration balance was recorded only in the northern region of Montenegro, amounting to 1.268 persons. Residents mainly run away to the central and southern part of the country (www.monitor.co.me). Currently, one-third of the population is located in Podgorica, the capital. Research on Economic Migration from Montenegro to the European Union (2016), showed that a large number of residents mainly from the northern part seek asylum in Germany. In 2015 year, the 3.635 inhabitants of Montenegro filed a claim asylum in Germany (Radulović & Brnović, 2016). Previous analyzes have shown that the northern region has a share of only 18% in GDP (Milanović, Radojević, & Škatarić, 2010). From the unemployment view of point, it is particularly pronounced in the Northern Region (Radević & Theotokatos, 2011). Based on the statistical data of Employment Office on December 31, (2016) there were 49.487 unemployed persons (women 25.842 or 52.21%). The unemployment rate is particularly pronounced in Bijelo Polje 29.95%, Rozaje 28.93%, Kolasin 28.13%, while in Pljevlja it is 26.18% (Employment Office 2016). Agricultural activity has the smallest share in total employment, only 8.3% (Radović & Djurašković, 2016).

2.2 Structure of agricultural holdings in Montenegro

According to the last agricultural census (2010), the total number of farms in Montenegro was 48.870, of which 48.824 are family farms or 99%. The main characteristic of family farms is high proportion of older working-age population on the farm and a lack of young people. On family farms in Montenegro 6.717 persons were under 24 years old, which makes 6.83 %, while 23.198 working-age population is aged 65 and over, which makes 23.58% of the total workforce (Despotović et al., 2016). According to the Census of Agriculture (2010), women comprise only 12.87% of holders of family farms, while about 33.24% of holders of holdings are aged over 65 or more, and they are mostly man. When it comes to education of the labor force on family farms in Montenegro the highest share belongs to people with 4 years of high school, 33.74%, of which 66.88% are men and 33.22% are women. Only 1.47% has secondary or higher agricultural education, of which more than 70% are men. One of the most important demographic characteristic of rural villages in the northern region is their fragmentation. If we look at the number of members on the farm, most of those farms have 1to 2 members, and they accounted to 76.8% (Vujošević 2007).

2.3 Brief explanation on rural tourism

As a result of industrialization and globalization, especially in developing countries, rural tourism has experienced an expansion. Rural tourism primarily relates to the agricultural environment, agricultural products and the stay of tourists in the rural area (Ljubišić 2017). The European Commission (1986) presented rural tourism as a broad concept that includes not only farm tourism or agrotourism—accommodation provided by farmers—but all tourist activities in rural areas. In rural areas tourists have found a refuge from the urban life (Daugstag 2008). Rural farms are becoming attractive tourist destinations because more visitors are nostalgic for a "quiet" life. They want to escape the hustle of city life and connect with natural and cultural heritage. In addition, tourists want to learn and meet genuine people engaged in a rural/agricultural lifestyle (Mbasera 2012). The term "rurality" is itself a specific tourist attraction. Tourists in the rural area are looking for high quality and "intact" landscape, peace, silence, as well as special kindness and contact with the host, which can be provided by agrotourism as a core product of rural tourism (Krajnović, Čičin Šain, & Predovan, 2011). Rural tourism represents a key strategy for regional development (Schubert 2006), while local population plays a very important role in the overall process. This is most commonly associated with different types of activities and services provided by farmers and rural people to attract tourists to their areas and generate extra income for their businesses (Gannon 1994).

The state has its own reasons for promoting rural tourism, such as avoiding depopulation of the countryside, protecting the natural environment and to provide income in a cheaper way for local residents, etc. (Lane 1994). Within the rural tourism, the following activities can be offered to guests: visits to farms, participation in everyday activities in the countryside, local food tasting and participation in its preparation, getting to know the village and the environment, gathering forest fruits, recreational activities (hiking, riding, biking), etc. (Bećagol 2014). The importance of history and tradition is invaluable for rural tourism, therefore the concept of rural tourism should include living history of the countryside such as rural customs and folklore, local and family traditions and the values and beliefs that make up a common heritage (Rajko 2013). Sustainability in rural tourism must be based on other principles, in addition to the principle of environmental protection. Economic sustainability implies the economic viability of the sustainable way of life and doing business. Socio-cultural aspect of sustainability implies the authenticity of family relations, compliance with customs and traditions as well as the culture of living in spiritual and material sense. The political dimension of sustainability of rural tourism refers to general support in doing business - from the local governments (villages, municipalities…), family, neighbours and so on. The support of the local governments refers to infrastructure and activities which contribute to the quality of life and working of the rural population (Kantar & Svržnjak, 2017).
Taking into account all characteristics of rural tourism as Lane (1994) considers, in its purest form rural tourism should be:

- Located in rural areas.
- Functionally rural – built upon the rural world‘s special features of small-scale enterprise, open space, contact with nature and the natural world, heritage, ―traditional societies and ―traditional practices.
- Rural in scale – both in terms of buildings and settlements – and, therefore, usually small-scale.
- Traditional in character, growing slowly and organically, and connected with local families. It will often be very largely controlled locally and developed for the long-term good of the area.

2.4 Organic agriculture concept

Organic farming has originated early in the 20th century as an alternative agricultural system in reaction to rapidly changing farming practices (www.wikipedia.com). Consumers of industrialized countries have shown a great interest toward organic production in last 30 years. Food safety and quality issues have affected the awareness of people, and they start to be suspicious towards conventional products (Mutlu 2007). The term organic agriculture include the full organic and biodynamic supply chain from inputs to final manufactured goods, as well as cultural and social aspects of the movement, not just the on-farm production aspects (Kristiansen & Merfield, 2006). Organic farming is a form of farming that creates integrated, humane, environmentally and economically sustainable production systems (Lampkin 1994). Based on the principle of the International Federation of Organic Agriculture, organic agriculture is a production system that sustains the health of soils, ecosystems, and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects (www.ifoam.bio).

In contrast to modern systems, organic agriculture represents a deliberate attempt to make the best use of local natural resources. The important thing for most organic farmers is that it represents a system of agriculture rather than simply a set of technologies. The primary aim is to find ways to grow food in harmony with nature (Deshmukh & Babar, 2015). According to the IFOAM organic agriculture is based on the 4 principles: principle of health, of ecology, of fairness and of care. Principle of health implies that organic agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible. Second principle emphasizes that production is to be based on ecological processes, and recycling. Those who produce, process, trade, or consume organic products should protect and benefit the common environment including landscapes, climate, habitats, biodiversity, air, and water. According to the principle of fairness, those involved in organic agriculture should conduct human relationships in a manner that ensures fairness at all levels and to all parties – farmers, workers, processors, distributors, traders, and consumers. The last principle, principle of care indicates that science is necessary to ensure that organic agriculture is healthy, safe and ecologically sound. Besides the science, this principle relates to the practical experience, accumulated wisdom and traditional and indigenous knowledge. (www.ifoam.bio). Today, there are a large number of so-called organic producers without a certificate for organic production. Consequently, there are two types of organic farming in developing countries: officially certified organic farming and informal, organic farming. The first tends to focus on the export of organic products, while the second involves small-scale activities to improve the livelihoods of individual farmers (Parror, Olesen, & Hogh-Jensen, 2006).

2.5 Relationship between rural tourism and organic agriculture

Many countries are focusing on the opportunity that the linkage of food and tourism provides and have used it as a point of competitive advantage. In research conducted in New Zeland (Steinmetz 2010) it is confirmed that the linkage of the food and tourism has the potential to increase the number of visitors to a region, extend the length of visitor stay and increase revenue generation. Organic agriculture contribution to the rural tourism development is reflected in the creation of a special niche market (Borg 2013). Organic farms can provide same tourist services and facilities as well as conventional agriculture farms, but the added value to this product gives the organic character of production. Knowing they are eating completely natural products, consumers are additionally motivated to buy healthy food (Mutlu 2007). Kristen Borg's research (May 2013) also showed that the first advantage organic farming can offer is that tourists can participate in such rural activities organized by the organizations and farmers, experience it hands-on and learn more about organic farming in Malta. The famous project in Turkey, called "Ta Tu Ta," includes farmers who receive visitors into their home in form of

"farm volunteers" or "tourists" (Tetik & Girgin, 2017). As long as tourists stay at farms, hosts can earn more income by providing accommodation and food services. Within the tourist offer, food is one of the key factors for selecting a particular destination by visitors. Many countries have recognized the importance and role of food in tourism, so they have created food strategies, which at the same time promote certain parts of that country, e.g., France, Italy and Spain use their food/wine reputation to promote tourism (du Rand & Heath, 2008). Local produce adds authenticity to the tourist experience and motivate visitors to come to a location (Sims, 2009). Food production without the use of pesticides and other chemicals contributes to the protection of the land, people, and animals on the farm. In addition to consuming organic food, through recreational activities, e.g., bike rides, horse riding, trekking, tourists breathe fresh air, and in that way contribute to improving their health (Organization for Economic Co-operation and Development 1994).

2.6 Contribution of tourism to the local community development

Tourism is a major source of employment and a central part of the economy (Ashley, Goodwin, McNab, Scott, & Chaves, 2006). It can improve local community livelihoods through employment, income generation and poverty alleviation (Privitera 2010). The potential of rural tourism to contribute to the rural community development in job creation typically occurs in the hotel and catering trades, but in the research conducted by Nara Mao (2015), about the role of tourism in poverty reduction in Siem Reap-Angkor Region in Cambodia was proved that local population have big opportunity for employment through transport. Young people can directly engage in the launch of tourism businesses, especially in small communities. Today, youth very rapidly learns foreign languages, they love to socialize and gain new experiences. Self-employment makes them independent and prevents the so-called extinguishing of the village.

Tourism encourages local residents to learn foreign languages and often provides skills training and education, so they can qualify for better-paid jobs (Honey, Vargas, & Durham, 2010). Traditional entertainments and museums are an indispensable feature of rural tourism. These events also provide the local population with the opportunity to prepare traditional food and sell organic products growing in their gardens. Tourism can revitalize traditional craft industries and provide a new market for the handicraft products (Djordjević Milošević & Milovanović, 2012). Tourism can also provide a market for agricultural products if local farmers can sell their vegetables, fruits and dairy products to hotels or restaurants that cater to tourists (Ashley et al., 2006). Farmers can also sell their product directly at the farm to tourists who are coming for a visit (Turalija, Grgić, & Zrakic, 2017). Many tourist places are known by roadside vendors (Mao 2010). Infrastructure improvements such as village paving and traffic regulation, sewage and litter disposal, can be assisted by tourism revenues and political pressure from tourism authorities. This help contributes to the value of the place itself, plays an important role in retaining existing businesses, and in attracting new enterprises and families (Government of Alberta 2010). Research in West Bengal, India has shown that the tourism development has contributed to transport facilities, communications, sanitation, living standards of local people and poverty reduction (Ray, Das, Sengupta, & Ghosh, 2012).

This research is needed to explain in which way organic agriculture can contribute to rural tourism development, and which benefits can achieve local communities by this development. This study aims to contribute to the alleviation of the unemployment problem, which is the main characteristic of the Montenegrin rural areas.

Research method

This research is conducted by the thesis that the main goal of rural development through organic production does not include the export of products aboard. The main goal implies products placement on the domestic market and organic food offer in major restaurants, hotels and rural households.

The paper set up 2 main hypotheses:

- Organic agriculture development will increase the number of tourists in rural areas.
- Rural tourism will expand organic products market.

In order to successfully achieve the main goal of this research the following methods are used:

Content analysis

The content analysis was used in order to analyze the successful practices of other countries in terms of the development of rural tourism and local communities, therefore on the basis of their experience, some similar practices are proposed for Montenegro. Based on the analysis of the content, the characteristics of the rural areas in Montenegro are presented as well as the current problems faced by organic producers.

Observation method

The researcher took part in the event organized by the "Društvo prijatelja Kolašina "(Kolašin Friends society), August 2017, in the same city. Women from Kolašin prepare food that is served on the main square, and everyone present is able to taste it. The researcher had a role of information provider about the food producers and their household location. The researcher wanted to find out if the tourists visit rural households to buy organic food?

Questionnaire

In order to determine the attitudes and preferences of the younger population, the questionnaire covered respondents of up to 35 years because this population is mostly under the influence of technology advancement, which shapes their lifestyles and creates new demands, mostly related to rural tourism. The written questionnaire was conducted in August 2017 at the territory of Montenegro. The respondents were informed that the survey is anonymous. The questionnaire consists of 10 questions, the total number of respondents is 100, out of which 49% are men while 51 % are women.

Case study

The case study method refers to the Puletić household which has been engaged in cattle breeding for almost 40 years. Four years ago they developed an attractive tourist offer, which, along with accommodation in a traditional rural environment, includes exclusively domestic food and participation in rural jobs. The household is located in the north of Montenegro, Gornje Lipovo village, Kolašin municipality, 12 kilometers away from the city. The reason for the selection of this household is to get to know their experience as the initiators of this type of business. The researcher visited Milenko and Milijanka Puletić's household in January 2018.

4. Results

Obtained results have confirmed the set up hypotheses.

Organic agriculture development will increase the number of tourist in rural areas:

Organic agriculture in rural tourism represents a new market niche. The possibility of consuming exclusively organic food satisfies special preferences of tourist therefore, their number is significantly increased. The opportunity of education on organic production directly at the farm is a new experience for tourists, which additionally motivates them to come and stay overnight. The production of typical organic products contributes to the identity and authenticity of some area, which affects increase of tourist's interest in this destination. Owners of the Puletić's household claim, the main reason that every year more and more tourists are visiting their farm is the possibility to participate in preparing organic food and doing rural jobs. Results in conducted questionnaire confirmed the same. Participation in the preparation of healthy food with the host was the most interesting activity during the visit rural households (45.4%) than followed by recreation and enjoyment at farm (30.9%).

Rural tourism will expand organic products market:

Organic products are most often sold in health food stores, but by supplying local restaurants and hotels, farmers will allow tourists to eat organic food within the hotel's offer. Many tourists have a chance to buy organic products thanks to roadside vendors. Rural households can expand organic product market like Puletić household did by providing tourists with the opportunity to eat meals prepared from organic fruits and vegetables from their own orchards and gardens. They also confirmed that a large number of tourists come to their farm exclusively to buy organic food. The event organized in Kolašin, August 2017, is one more proof that

rural tourism can expand organic product market. During the talk with the hosts, they confirmed that the same tourists who tried their cheese at the main square visited their farm just to buy it.

The results of the research also showed that the future development of villages and agriculture in the northern region of Montenegro largely inhibits the insufficient number of working-age population. This lack is caused by a high migration rate in the search for a job. A large number of households consists of only 1 or 2 members, mostly aged 60 and over, who are not able to deal with agriculture not even for their household needs. Empty households close the door to the development of tourism and the trend of extinguishing Montenegrin villages continues.

5. Discussion

5.1 The necessity of reviving villages

In this case, revival involves stopping migrations from villages to cities and launching agricultural production. Revival would contribute to resolving the unemployment problem the population of Montenegro is facing a longer period of time. However, the main problem is that young people are not at all interested in rural life and dealing with agricultural activities. Even those who were born and grew up in the countryside have completely excluded this option as a possibility of employment.

The results of this research have shown that organic agriculture has a great potential to create new tourist product and provide new workplace. The fact that 98% of tourists would again visit the same rural household is talking about the role of these households in the development of rural tourism itself. Among the rare who recognized value of family holding itself are Milijanka and Milenko Puletić who said that they are very grateful to tourists, without their help they wouldn't realize how much each inch of their farm is worth. The experience of the Puletić's household has confirmed that small rural households have enormous potential to develop private business through organic agriculture. Every member of the Puletic family works on their own holding, and there is no financial crisis for them, confirmed the hosts. However, organic production in Montenegro is still at the beginning. According to monteorganica (company for controlling and issuing certificates in organic agriculture in Montenegro), there are 354 organic producers registered, more than 120 are in Bijelo Polje (www.orgcg.org).

5.2 Obstacles on the development of organic agriculture in Montenegro

Data obtained found out that the obstacles on the development of organic agriculture in Montenegro are numerous. It has not begun to live as a possibility for the development of a private business yet. Moreover, the youth are ashamed of dealing with agriculture, because they lack the information and experience about its significance and the benefits it provides. It has led to a high migration rate and a deficit of young workforce in rural areas of Montenegro. Results of this research also show that the holding fragmentation is one more important problem of the organic agriculture development. It affects producers to produce only for household needs. The organic products market in Montenegro almost does not exist. Government support for smaller organic food producers is insufficient. Rural households are not promoted in an appropriate way, while domestic organic products are not protected- imported products are significantly cheaper. Insufficient education on organic agriculture of the labor force on family farms is another one cause of the organic agriculture stagnation.

5.3 The significance of participation in organic farming activities

In order to significantly influence the awareness of the youth about the importance of organic agriculture, first, it should start from the pupils in elementary school, like it has done in Denver, USA by turning an unused grassy field into an organic garden (www.zdravahrana.com). The children would have the opportunity to participate in the cultivation of the land, see how the vegetables grow and participate in its cultivation. In this way, the school saves its money, by supplying the school dining with organic products at a minimum price, since it produces

them. This project is a great experience both in the emotional and educational sense because it greatly stimulates the interest of city children not only to make organic vegetables but also to eat them!

It is important to allow the children to experience organic agriculture, to feel its beauty instead of experiencing it as shame and hard work. It would be the best to provide them with the opportunity to visit organic farms. Carolin Wacher in the research on the development of agro-tourism on organic farms in the new EU-Poland, Estonia, and Slovenia (2006) countries shared similar example (Wacher 2006). Thus children can try new food, have contact with animals and learn a lot of useful things about organic agriculture during the talk with the farmers. This practice would be a great opportunity for children in Montenegro to fall in love with organic agriculture and stay on family holdings.
Similarly to the Ta Tu Ta project in Turkey (Tetik & Girgin, 2010), it should provide the opportunity for the potential farmers to stay and participate in all agricultural activities on large organic farms. In addition to participating in the entire process of organic production, they would have the opportunity to communicate with tourists. In this way, they would be convinced that the combination of rural tourism and organic agriculture brings high incomes. It would motivate them not to leave their holdings, but to develop private businesses. This is a great way to overcome the embarrassment of rural life and dealing with farming.

5.4 Merging small real estates as a solution for land fragmentation

Fragmentation of soil in Montenegro prevents producers to produce in large quantities. Local population should be introduced to the “merge” of several real estates into big one like it is done in Kerun Morden Agricultural Park, located in China, the province of Hubei, Jingzhou. This practice works in the following way: main owner rents real estates from several farmers and employs a large number of local people at that same big holding. The owner pays a lease to farmers on an annual basis, and the opportunity of working on the holding provides them with additional income. The same method should be applied in Montenegro. Owners of small real estate mainly produce only for household needs, but now they would be able to earn money on an annual basis, as well as the salary every month for working on the holding.

5.5 Expansion of the organic products market as a prerequisite for the development of organic agriculture

Research on the consumers habits in Montenegro has shown that (42%) of those who do not buy domestic products comment that these products are not always available. As soon as organic products are not available, and awareness about their importance low, consumers, will not try to find them by themselves. Therefore, it is necessary to expand the market of organic products in order to be consumed primarily by the inhabitants of Montenegro. If domestic tourists do not buy them, it cannot be expected from foreigners. Foremost, it is necessary to create a marketplace for organic products in Montenegro. When the consciousness of domestic tourists about the importance of organic food is increased, then the owners of large restaurants and hotels will be forced to buy domestic healthy products. In that way, the organic market is expanding, and the producers are motivated to produce more. In Italy, organic products are mostly sold in National Parks (Grandi & Triantafyllidis, 2010). The five National parks in Montenegro should be used to expand the market for organic products. It is necessary to support the creation of farmers' markets within the park, promote the use of park products in local schools and sell through park structures such as the restaurants, "Visitors Center," information offices… As a result of this practice, the number of tourists in protected areas would be considerably increased.

5.6 Internet, national television and public interactive workshops as the most powerful means to promoting organic products and rural households

Insufficient support by the Government to organic producers (low subsidies, inadequate promotion, and protection of Montenegrin organic products) has affected its low demand and distrust in quality among the consumers. Those who do not buy domestic products, also believe that imported products are cheaper (20%), (18%) think that imported products are of better quality, while (11.3%) have a habit of buy imported products. It is unacceptable that in an ecological state that has perfect natural and climatic conditions for the development of organic agriculture, imported products have an advantage. First of all, the Government should better promote

organic products, e.g., on national television to make a commercial (Let's support domestic, live healthy) and alike. It would affect changes in consumer habits. Also, in order to reduce consumer's distrust in the quality of domestic products, there should be organized the public interactive workshops with the aim of educating the general public about recognizing organic products and distinguishing from conventional and false organic, manner of production, control and certification as well as about the protection of the right of consumers of organic food. A similar event was organized in Serbia in 2017 (www.agropress.org.rs).

There are some rural households in Montenegro that offer organic food and accommodation services, but the main reason why tourists do not know about these households is their poor promotion. Today, the internet is the most powerful tool for direct promotion. Based on the successful experience of France (Radonjić 2011), the National Tourism Organization of Montenegro should establish a central reservation system throughout Montenegro, which enables the direct booking of any rural household that is a member of the same association.

5.7 Adaptation of the salaš in order to satisfy the special tourist's preferences

The results of the conducted questionnaire revealed that during the stay in the rural areas (54, 2%) of respondents would stay overnight in the hut while (30, 2%) opted for the host home. Only (10, 2%) would like to stay in local hotel. It indicates that tourists are more interested in the traditional type of accommodation. There are a lot of "salaš" in Montenegro which most often serve as storage space, while the old hosts lead a difficult battle to build new accommodation capacities or renovate older houses. The use of salaš can be a great opportunity for the rural households to satisfy specific preferences of the tourist. In order to improve the future development of the rural households in addition to the roads improvement (38, 8%), tourist suggested preservation of traditional house appearance (20, 4%), the same percent propose better promotion of rural households. "It is only necessary to clean the salaš and free the spirit of life from the distant past." In the salaš, the food is prepared from organic fruits and vegetables from surrounding gardens. Visitors have the opportunity to cultivate the land, and they also can learn traditional crafts as well as traditional songs and customs, during the organized entertainments. In Hungary, life in salaš was an unforgettable experience for many visitors (Banić, Grubišić, & Antonijević, 2013). The salaš activation in the tourist offer would provide tourists to experience the way of life of Montenegrin ancestors, which implied the common life of the whole family in the salaš, as well as the cultivation of the surrounding land.

One of the long-standing problems of the underdevelopment of the northern region of Montenegro is in the process of resolving. It is about big project, the construction of a highway, which will enable the infrastructure connection of the north and south of Montenegro. Tourists will have an unseen opportunity, that in less than 90 minutes from the mountains they reach the impeccable beaches. Farmers will also be able to supply coastal cities with healthy food on a daily basis. In this way, the organic food market will expand to the southern region also. Montenegro is not a member of the EU yet, and its accession will greatly contribute to both organic agriculture and tourism.

6. Conclusion

Combined with organic agriculture, tourism has great potential to increase revenue of the local population, employment rate and number of young workforce in rural areas, as well as to reduce migration to cities and import of agricultural products. This study has confirmed that currently, organic agriculture has the greatest role in increasing the number of tourist in rural areas. Data also shows that the market for organic products is significantly expanding within rural tourism.

In order to bridge the gap between the northern and southern region, it is needed to enrich the offer and develop product to motivate tourists to enjoy Montenegro even out of the main season. Visitors should be given a chance to discover beauties of the Montenegrin villages, their tradition, and culture. Regarding the development of organic agriculture, financial, educational and professional assistance should be provided to rural households. As to make youth closer with organic agriculture and encourage them to develop a private business it is needed to provide them with the possibility to visit organic farms and attend public events on organic agriculture. National

television and internet are the most powerful promotional channels which should be used to change consumer habits and promote rural households. Organic agriculture can be remedy for reviving neglected rural areas in Montenegro and great opportunity for rural households to develop private business.

This article opens door for future research. However, it is necessary to mention certain limitations during the conduct of the research. In the preliminary studies linkage of organic production and development of rural tourism is poorly explained, so it is difficult to assess the other countries experience within this regard. The researcher stayed in Montenegro for a short period of time, so, it was not possible to apply the method of a case study involving more households, and compare their attitudes and experiences. The research highlights the benefits of rural tourism and organic production, but the negative effects that arise in their development are missing.

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Credit Risk in Microfinance Institutions: Empirical Evidence from Accra Metropolis of Ghana

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Abstract
This study investigates the credit risk in the Microfinance Industry in Ghana using Microfinance Institutions (MFIs) in Accra Metropolis as the test case. The study used the loan default rate as a proxy variable to measure credit risk and examined the effect of some explanatory variables on loan default. Primary data was used, and the purposive sampling techniques were adopted to select 90 respondents from 20 Microfinance Institutions out of 43. The multivariate linear regression model was used to analyze the relationship between the dependent and explanatory variables. The results indicated that interest rates have a positive and significant effect on loan default whereas loan maturity period has a negative and significant effect on loan default. Also, Credit Officers' educational level have a negative and significant effect on loan default while having a marketing department has a positive and significant effect on loan default. However, the loan appraisal process, lending gap, and governance quality have no significant effect on loan default. Thus, MFIs should promote sound loan pricing policies in order to charge the appropriate interest rate and adopt loan repayment regimes that boost liquidity. Additionally, Credit Officers should be highly educated, and hence management of MFIs should put in place continuous development programs to upgrade the skills of all personnel in the credit delivery system in relation to best practices in lending.

Key Words: Credit Risk, Loan Default, Microfinance Institutions.

1. INTRODUCTION

The Microfinance Industry in Ghana has attained significant growth in the wake of low financial inclusion in the country. However, in recent times a number of MFIs have collapsed, and some have experienced financial distress owing to ineffective credit management systems. Loan default, delinquencies, and non-performing loans do not only cause the liquidation of MFIs but also account for the loss of confidence in the financial system and its attendant dire consequences on economic growth in emerging economies such as Ghana.

Towards making MFIs solvent to enable them to play their pivotal roles in poverty alleviation and financial intermediation, sound credit risk management becomes absolutely critical. There becomes the need to know the causal variables of credit risk.

2. EMPIRICAL REVIEW

Credit risk has attracted numerous academicians and practitioners in the microfinance industry worldwide. Some contributors to the literature on credit risk focus on credit risk management practices and their effects on loan performance. Others delve into the factors accounting for loan defaults and non-performing loans (NPL) and have identified credit risk as the single most important factor that causes the collapse and under-performance of MFIs.

Ahmed and Malik (2015) investigated credit risk management and loan performance of Micro Finance Banks in Pakistan. They took credit terms, client appraisal, collection policy and credit risk control as the dimensions of the credit risk management practices and used multiple regression analysis for empirical relationship evaluation of the credit risk management practices on the performance of loan. Their study revealed that the credit terms and client appraisal have a positive and significant impact on loan performance while the collection policy and credit risk control have a positive but insignificant impact on loan performance.

Moti, Masinde,Galo, and Sindani (2012) undertook a similar study in the Micro Finance Sector in Kenya in connection with the effectiveness of the credit management system on loan performance. The study sought to establish the effect of credit terms, client appraisal, credit risk control measures and credit collection policies on loan performance. The researchers adopted a descriptive research design, and their respondents were the credit officers of the MFIs in Meru Town. Collection policy was found to have a higher effect on loan repayment. They recommended for further research on the effectiveness of credit referencing on loan performance of MFIs.

Maina, Kinyaririo, and Muturi (2016) assessed the influence of credit risk management practices on loan delinquency in Savings and Credit Cooperative Societies (SACCOS) in Meru County, Kenya. Their study also adopted a descriptive research design, and the population consisted of all the 44 credit officers of SACCOS in Meru County. The questionnaire was used for data collection, and multiple linear regressions were used in data analysis. The study revealed that there exists a strong relationship between credit risk controls, collection policy and loan delinquency in SACCOS. They concluded credit risk management practices significantly influenced loan delinquency in SACCOS in Meru County and recommended the adoption of a more stringent policy on credit risk management practices in SACCOS for effective debt recovery.

Kiplimo and Kalio (2014) investigated the effect of credit risk management practices on loan performance in MFIs in Baringo County, Kenya. The target population in the study was managers and credit officers in MFIs in Baringo County. The questionnaire was used for data collection, and descriptive and inferential statistics were used in data analysis. The study concluded that there was a strong relationship between client appraisals and loan performance in MFIs. It was revealed that an increase in client appraisal led to an increase in loan performance in MFIs in Baringo County. The study concluded that credit risk management practices significantly influenced loan performance in MFIs in Baringo County. The study recommended the adoption of a more stringent policy on credit risk management practices in MFIs in Baringo County so as to improve the financial performance.

Mwengei (2013) assessed the factors contributing to Non-performing Loans (NPLs) in Kenyan Banks. The study used secondary data form journals and Central Bank of Kenya annual reports from 2008 – 2012. He concluded that macroeconomic factors have led to the increase in NPLs. He also found that the Credit Reference Bureaus have a positive impact on the reduction of non-performing loans and therefore their use should be adopted by all banks and other lending institutions like SACCOS in order to control the serial defaulters.

Klein (2013) investigated the NPLs in Central, Eastern and South-Eastern Europe (CESEE) in the period of 1998-2011. He found out that the level of NPLs can be attributed to both macroeconomic conditions and banks' specific factors, though the latter set of factors was found to have a relatively low explanatory power. The examination of the feedback effects broadly confirmed the strong macro-financial linkages in the region. While NPLs were found to respond to macroeconomic conditions, such as GDP growth, unemployment, and inflation, the analysis also indicated that there were strong feedback effects from the banking system to the real economy, thus suggesting that the high NPLs that many CESEE countries are currently faced adversely affected the pace of economic recovery.

Mutambanadzo, Bhiri, and Makunike (2013) investigated the reasons behind the collapse and under-performance of MFIs in a dollarized regime in Zimbabwe. They adopted a survey design targeting all 17 MFIs in Bulawayo, inclusive of those that collapsed. Their major finding was that MFIs were facing funding challenges. Most of them use limited personal funds to finance their businesses. The study also revealed that MFIs have poor corporate governance structures. Management Information Systems (MIS) have not been fully exploited. The conclusion was that lack of funding is the major factor hindering the growth and development of MFIs in Zimbabwe.

Kohansal and Mansoori (2009) investigated the factors influencing repayment behaviour of farmers that receive a loan from the agricultural bank by using the logit model and a cross-sectional data of 175 farmers of Khorasan-Razavi province in 2008. The results showed that loan interest rate is the most important factor affecting repayment of agricultural loans. Farming experience and total application costs are the next factors respectively.

Derban, Binner, and Mullineaux (2005) examined institutional characteristics of 16 Community Development Finance Institutions in the UK and assessed their influence on the loan loss rates. The results showed that 8 out of 13 institutional characteristics examined significantly influence loan repayment performance. Although a vast body of literature supports the view that borrower characteristics are highly influential, their results provide strong evidence to show that institutional characteristics are equally important and both factors need to be taken into account if loan repayment performance is to be improved.

Awunyo-Vitor (2013) investigated the determinants of loan repayment default among farmers in Brong Ahafo region of Ghana. Data was gathered through a survey of 374 farmers in five districts within Brong Ahafo region of Ghana. The study employed a Probit model to investigate factors that influence farmers' repayment default. The results showed that farm size and employment in off-farm income generating activities reduces the likelihood of loan repayment default significantly. Also larger loan amount and longer repayment period, as well as access to training, are more likely to reduce loan repayment default.

3. METHODOLOGY

3.1. RESEARCH DESIGN

The study adopted the survey design and the econometric analysis techniques of multivariate linear regression. Multicollinearity test using variance inflation factor and Breusch-Pagan test for heteroskedasticity were conducted to test the fitness of the model.

3.2. SOURCE OF DATA

We used primary data sources for the study. The primary sources of data were collected through structured questionnaires.

3.3. SAMPLING

We also used a purposive sampling method to select 20 microfinance institutions in the Accra Metropolis out of a total population of 43 microfinance institutions. The selection was non-random and based on the following criteria: Number of years in business; Number of branches operating in the Accra Metropolis; Reputation of the institution; Presence of Headquarters in Accra; and a Total number of customer base.
Following a conventional rule of thumb for sample size determination is derived from the formula,
$n > 50+8m$

Where, n = sample size, and m = number of predictors (as cited by statistics solutions, 2005).
Substituting the number of predictors into the above formula yielded 90 as sample size, i.e., if n=5 (predictors) therefore substituting 5 into the above formula, gave a sample size of 90. Additional 10 respondents were added for contingency purpose making a total of 100, knowing that some respondents may not participate in the study. Purposive sampling technique was used to select five respondents from each of the 20 selected MFIs who are

mainly Credit Officers and Branch Managers. However, ten of the respondents could not complete their questionnaires and therefore reduced the sample size to 90. The responsive rate was 90%.

3.4. MODEL SPECIFICATION

The study used the loan default rate as a proxy to capture credit risk of the microfinance institutions. The higher the default rate, the risky and less sustainable the microfinance institutions are. A multivariate linear regression model was employed to establish the relationship between the degree of loan default rate of microfinance institutions and their loan appraisal process, lending gap, loan maturity period, interest rate, governance quality, credit risk management as well as some demographic characteristics. The multivariate linear regression is empirically specified as:

$$LoanDefault_i = {}_0 + {}_1 LAP_i + {}_2 LG_i + {}_3 LMP_i + {}_4 IR_i + {}_5 GQ_i + {}_6 HND_i + {}_7 Fdegree_i + {}_8 Masters_i$$
$$+ {}_9 Experience2_i + {}_{10} Experience3_i + {}_{11} Experience4_i + {}_{12} Department2_i$$
$$+ {}_{13} Department3_i + {}_{14} Department4_i + e_i \quad (1)$$

Where *Loan Default* denotes loan default rates (in percentages); LAP denotes Loan Appraisal Process (mean score); LG represents Lending Gap (mean score); LMP denotes Loan Maturity Period (mean score); IR denotes Interest Rate charged per month (in percentages); GQ denotes Governance Quality; HND represents staff members with HND qualification, First degree indicates employees with first degree qualification while Masters denotes employees with masters degree qualification. Diploma was used as a based category. Experience2 denotes employees with working experience of 1-3years (1 if employee has 1-3years working experience and 0 otherwise), Experience3 denotes employees with working experience of 3-5years (1 if employee has 3-5years working experience and 0 otherwise), Experience4 denotes employees with working experience of more than 5years (1 if employee has more than 5years working experience and 0 otherwise), while Experience1 denoting working experience less than one was used as a based category. Department2 denotes Marketing Department (1 if employee works at the Marketing Department and 0 otherwise), Department3 denotes Human Resource Department (1 if employee works at the Human Resource Department and 0 otherwise), Department4 denotes Credit Department (1 if employee works at the Credit Department and 0 otherwise) and Department representing Finance Department was used as a based category. *e* denotes the error term which captures other variables unknown to the researcher. ${}_1, \ldots, {}_{14}$ denote the coefficients while ${}_0$ represents the constant term.

4. RESULTS AND DISCUSSIONS

The results in relation to the socioeconomic characteristics of the respondents captured in Table 1 below showed that the total number of the respondents were 90, comprising of 60 (66.7%) male and 30 (33.3%) female respondents. This means gender inequality exists in the microfinance industry. However, it is perceived that females are more risk-averse than males in lending decisions. The respondents fell within the various age categories, but mostly between the ages of 26 and 35years meaning workers in the institution are mostly youth by Ghana Statistical Service Standards. Most of the respondents are married, representing 46(51.10%) as against 44(48.9) respondents who are single and may need to ensure the continued existence of the institution in order to feed their families. Majority of the respondents hold a first degree followed by Masters' Degree, Higher National Diploma (HND) and Diploma representing 56.7%, 15.6%, 15.6% and 12.2 respectively.

This implies that 72% of the respondents at least hold a first degree, henceforth it can be concluded that they have the requisite knowledge and capacity to work in the microfinance institutions and would be able to make lending decisions. Most of the respondents were Credit Officers, 46 translating into 51.1%. This implies that most of the responses given by the respondents were from the Credit Officers who make lending decisions that involve credit risk and their accuracy can be assured. Furthermore, 28 of the respondents were in the Marketing Department translating into 31.1%, followed by the Finance and Human Resources Departments representing 10% and 7.8% respectively indicating the specialization of staff of the institution in the institutions' value chain.

Finally, 38 (42%) of the respondents had between 3-5years working experience while 26 (28.9%) had more than 5years working experience, 14 (15.6%) of them (respondents) had between 1-3 years, and 12 (13.3%) had less than a year working experience. These results show that 87% of the respondents had at least 3 years' experience working in the MFI, hence the tendency to be familiar with the risk in the entire industry and credit risk in particular.

TABLE 1: Socioeconomic Profile of the Respondents

Variable		**Frequency**	**Percent**
Gender	Male	60	66.7
	Female	30	33.3
Age	18-25	11	12.2
	26-35	57	63.3
	36-45	21	23.3
	Above 45	1	1.1
Marital status	Single	44	48.9
	Married	46	51.10
Educational level	Diploma	11	12.2
	HND	14	15.6
	First degree	51	56.7
	Masters	14	15.6
Department	Finance	9	10.0
	Marketing	28	31.1
	human resource	7	7.8
	Credit	46	51.1
Working experience	less than a year	12	13.3
	1-3years	14	15.6
	3-5years	38	42.2
	more than 5yrs	26	28.9

Source: Author's Survey Data, 2015

Variance inflation factor was estimated for the explanatory variables to determine if there is a problem of multicollinearity (Table 2). None of the variables had a variance inflation factor greater than 10. The mean variance inflation factor is 2.20 indicating there is no multicollinearity problem. Breusch-Pagan test was employed to check the presence of heteroskedasticity in the model. The chi-square statistic (10.20) from the test is statistically significant at 1% level showing that there is heteroskedasticity present in the model. The presence of heteroskedasticity in the model results in biased estimates. Therefore, the robust estimation approach was employed in computing the standard errors to address the issue of heteroskedasticity.

Table 2: Diagnostic test

Multicolinearity Test		
Variable	VIF	1/VIF
Depart4	3.72	0.268958
Depart3	3.37	0.297008
Experience4	3.08	0.325100
Edu3	2.78	0.359329
Edu4	2.77	0.360473
Experience3	2.68	0.373677
Edu2	2.25	0.445264
Experience2	2.24	0.446065
GQ	2.17	0.461431
experience5	2.06	0.485689
LG	1.76	0.568194
IR	1.45	0.690117
LAP	1.42	0.704217
	1.38	0.725145
	1.27	0.785747
Mean VIF	2.20	
Breusch-Pagan Heteroskedasticity Test		
Chi-square (1)	10.20	
Probability	0.001***	

*, ** and *** denote 10%, 5% and 1% levels respectively.

Source: Authors' Estimation Using Field Survey Data, 2015

Table 3 below presents results on the estimates of the multivariate linear regression together with the standard errors, t-values, and probabilities. The R-square of 0.3049 indicates that about 30.49% of the variation in loan default rate which was used as a proxy for credit risk is explained by the variation in the explanatory variables as shown in the multivariate regression model. In addition, F-statistic (5.17) is statistically significant at 1% level suggesting that the explanatory variables jointly influence the loan default rate of microfinance institutions. Among the variables included in the linear regression; interest rate, loan maturity period, having HND, First degree, Masters, Marketing and credit departments had a significant influence on the loan default.

The coefficient of interest rate has a positive effect on the loan default rate and is significant at a 5% level. This suggests that increasing the interest rates of microfinance institutions tends to increase loan default rate. This means that when MFIs charged high-interest rates borrower's repayment will as well increase and all other things being equal the returns on the borrower's investment will be adversely affected therefore loan repayment becomes a challenge and this will increase default rate. This finding is consistent to that of Kohansal and Mansoori (2009) who averred that loan interest rate is the most important factor affecting repayment of agricultural loans. The finding is also in tandem with the assertion of Mwenygei (2013) that macroeconomic factors have led to the increase in NPLs in banks and other lending institutions.

The loan maturity period tends to have a negative influence on loan default and is significant at a 10% level. This indicates that when microfinance institutions offer longer loan maturity period for their clients, the level of default rate tends to reduce. Practically, this means that when loan maturity period is longer instalment amount reduces and therefore give borrowers the incentive to pay their loans easily. This eventually reduces loan default rate as compared to shorter maturity period which results in higher instalment amount. This finding is not consistent with that of Awunyo-Vitor(2013) who noted that longer repayment period is likely to reduce loan repayment default.

The coefficients of education variables- HND, first degree, masters- had negative impacts on loan default rate and are significant at 5%, 1%, and 5% respectively. The implication of this result is that the microfinance institution with personnel with higher education level- HND, first degree and masters tend to reduce loan default rate than those with diploma education. Microfinance Officials especially Credit Officers with higher education

level have the needed expertise and knowledge to properly screen loan applicants to ensure that loans are extended to the right borrowers. This helps reduce default rate as compared to members of staff with low education level.

In addition, the coefficient of the marketing department positively relates to loan default rate and is significant at 5% level. This indicates that personnel of microfinance institutions in the marketing department are less likely to contribute to reducing loan default unlike those in the finance department.

The coefficient of the credit department negatively relates to the loan default rate and is significant at 5% level. The implication of this result is that Credit Department Officers tends to significantly contribute to reducing loan default rates than those in the finance department. The credit department is directly involved in the management of the loan portfolio of microfinance institutions. The findings on the education and Credit Department variables confirmed the assertion of Derban, Binner, and Mullineaux (2005) that institutional characteristics are highly influential determinants of repayment and if the default is to be minimized, they need to be taken into consideration.

Table 3: Estimates of the Multivariate Linear Regression Model

Variable	Coefficient	Standard error	T-value	Probability
Loan appraisal process	-1.321348	1.896217	-0.70	0.488
Lending gap	-0.4485955	2.355842	-0.19	0.850
Interest Rate	1.977575**	0.9211535	2.15	0.035
Governance quality	-0.7047472	2.78808	-0.25	0.801
Loan maturity period	-6.456428*	3.601694	-1.79	0.077
EDU2 (HND)	-6.909925**	2.875154	-2.40	0.019
EDU3 (First Degree)	-6.791682***	2.259806	-3.01	0.004
EDU4 (Masters)	-6.976449**	2.991711	-2.33	0.023
Experience2 (1-3years)	1.253165	3.764329	0.33	0.740
Experience3 (3-5years)	-2.92	2.664637	-1.10	0.277
Experience4 (more than 5years)	-1.08739	3.704657	-0.29	0.770
Depart2 (Marketing)	6.922192**	2.912985	2.38	0.020
Depart3 (Human resource)	-3.390401	3.820903	-0.89	0.378
Depart4 (Credit)	-9.013731***	2.672156	-3.37	0.001
Constant	28.96414**	14.59836	1.98	0.051
R-squared	0.3049			
F-statistic	5.17			
Probability	0.004			

*, **, *** denote 10%, 5% and 1% significant levels respectively.

Source: Authors' Estimation (Field Data, 2015)

5. CONCLUSION AND RECOMMENDATIONS

The study concludes that the significant factors that drive credit risk are the interest rate, loan maturity period and educational levels of personnel in the lending cycle. The following recommendations are made for the attention and consideration of operators in the Microfinance fraternity.

1. MFIs should avoid charging high-interest rates which adversely affect clients' return on investment and consequently their repayment performance. MFIs should undertake loan pricing of all their products and facilities in order to charge affordable interest rates. Additionally, managers of the economy should ensure macroeconomic stability and fiscal consolidation in other to avoid high-interest rate regime in the financial service industry.
2. MFIs should concentrate on extended credit to borrowers with shorter repayment periods. This will not only reduce the incidence of high defaults but also boost liquidity which is the lifeblood of the solvency of MFIs.

3. Credit Officers should be highly educated, and management of MFIs should put in place continuous development programs to upgrade the skills of all personnel in the credit delivery system including marketing officers in relation to best practices in lending.

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The Financial Crisis and its Impact on Comovements of Financial Markets: Evidence from Exchange-Traded Funds

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Abstract
The two-fold objective of this paper is, on one hand, to study the comovements of international financial markets before and after the "subprime" financial crisis and, on the other hand, to determine their impact on international diversification, using substitutes for investable country indices, that is, exchange-traded funds. These new instruments are highly prized by investors. Three main categories of comovements are analyzed: short-term comovements as studied by contagion and dynamic conditional correlations; long-term comovements as studied by cointegration; and, finally comovements induced by the transmission of extreme values. In studying these comovements between the American market and 21 other developed and emerging markets, our results suggest that, after the financial crisis, the interdependencies and transmission of extreme values between the American market and the other markets studied increased significantly in the short term and, thus, reduced the advantages of international diversification in the short term. However, our analyses of contagion and cointegration suggest that the benefits of international diversification persist over the long term, even in times of crisis.

Key Words: Short-Term Comovements, Long-Term Comovements, Financial Crisis, Exchange-Traded Funds, International Diversification.

1. Introduction

One striking characteristic of the globalization of financial markets and the rapid transmission of information is the spread of financial crises from one country to another. The experience of recent financial crises has shown that spectacular movements in a particular market may have a major and rapid impact on other markets, even if the underlying economic fundamentals differ. Consequently, in such a context, it is important for investors and regulators to understand the nature of links between financial markets during financial crises. Indeed, investors are interested in the international diversification of risks. Nonetheless, if, for example, the financial markets become more tightly correlated in times of crisis, then the possibilities of international diversification diminish at the very time when they are most needed. For regulators of financial markets, it is also important to understand these links, on the one hand, because of the perceived increase of the spread of contagion among world financial markets and, on the other hand, so that they are able to propose adequate regulatory solutions.

The literature on comovements of financial markets is very rich and encompasses three major branches: the first is interested in short-term comovements and tests their characteristics using correlation coefficients or vector autoregression models (Bae, Karolyi, and Stulz, 2003); the second studies comovements by modelling and

testing long-term relations of cointegration amongst financial asset prices (Ahlgren and Antell, 2002); and, finally, the third is interested in the transmission of volatility amongst financial markets, and studies this through ARCH and GARCH modelization and their various extensions (Baele, 2004).

Nevertheless, the succession of crises, notably the American stock market crash of 1987, the Japanese crash of 1989-1990, the Mexican economic crisis of 1994-1995, the Asian crisis and the Russian political-financial turmoil of 1997-1998, have all led a number of researchers to concentrate more on comovements of financial markets in the short term in the particular context of a financial crisis, as well as on its contagion (Claessens, Dornbusch and Park, 2001; Dungey, Fry, Gonzalez-Hermosillo and Martin, 2007; Forbes and Rigobon, 2002; and Corsetti, Pericoli and Sbracia, 2005). Forbes and Rigobon (2002) defined contagion as a significant increase of inter-market comovements following a shock in a given country.[1]

However, the existence of contagion during financial crises remains an open question on which there is no clear consensus. Indeed, initial studies have demonstrated an increase in correlation coefficients during financial crises and have concluded that, indeed, a contagion effect exists (Bertero and Mayer, 1989; King Sentana and Wadhwani, 1994; and Murshid, 2006). However, other researchers (Forbes and Rigobon, 2002; and Bordo and Murshid, 2006)[2]Note that, in considering heteroscedasticity, the increase in correlations between financial markets is not significant. They conclude that there was no pure contagion but merely the continuation of interdependencies which existed before the shock but at higher levels of correlation. More recently, Corsetti et al. (2005), in an essay on financial contagion based on a single-factor model, conclude that there is "a certain contagion and a certain interdependence." The divergence of these results does not allow us to definitively determine whether or not there is contagion during financial crises in as much as the majority of these studies have based their analyses of comovements on market indices which are not investable, thus, which do not necessarily reflect reality.

This research differs from previous studies because not only do we analyze the short-term comovements of markets stemming from a financial crisis, but we also study the long-term transmission of extreme variations. In addition, we illustrate the impact of these different types of comovements on the international diversification of an American investor's portfolio composed of exchange-traded funds (ETF), notably iShares, as substitutes for foreign financial markets. While the majority of studies rely on market indices which are not investable, we use iShares, organized as exchange-traded funds and conceived to track the performance of certain investable indices constructed by S&P or MSCI, amongst others. Our choice to use ETFs is justified by the fact that they are good proxies for market indices (Phengpis and Swanson, 2004), that they seem to be more appropriate for studying the different interactions amongst global markets (Schwebach, Olienyk, and Zumwalt, 2002) and that they permit us to measure the impact of these comovements on international diversification, since they are readily investable, these funds adequately follow variations in the market (Pennathur, Delcoure, and Anderson, 2002). Furthermore, from a technical perspective, the series of prices of iShares is exempt from a certain number of specific problems of international funds, such as nonsynchronization, fluctuations in exchange rates and transaction restrictions (Olienyk, Schwebach, and Zumwalt, 1999).

To test each category of comovements, we employ different methodologies. Thus, for the short term, we verify the existence of contagion using the methodology of Forbes and Rigobon (2002). Subsequently, to control for the problem of heteroscedasticity raised by Forbes and Rigobon (2002), we use the multivariate GARCH model introduced by Engle (2002). This model is more appropriate to measure dynamic conditional correlations (DCC). Furthermore, and since the American financial crisis lasted longer than others, we take advantage of this opportunity to study long-term comovements, using the cointegration analysis proposed by Engle and Granger (1987). Finally, given the extent of this crisis, we test the transmission of extreme values with the value-at-risk (VaR) methodology, calculated using three distinct approaches.

[1] There are other definitions of contagion in the literature. In this paper, we use that of Forbes and Rigobon (2002).

[2] Forbes and Rigobon (2002) define "pure contagion" as a significant increase of market comovements following a shock. A higher level of correlation merely suggests the continuity of interdependencies through pre-existing real channels (basic contagion).

This study contributes to the existing literature in a number of ways. First and foremost, this paper is the first to utilize exchange-traded funds which replicate investable indices to study stock market comovements during a financial crisis, the “subprime” crisis in the United States. The use of ETFs allows us to avoid problems related to the lack of synchronization between markets in different time zones, the volatility of exchange rates and the lack of liquidity. This study also permits us to examine different categories of comovements in both the short and long-term, as well as the phenomenon of contagion and the transmission of extreme values between the American market and 21 other developing and emerging markets before and after the "subprime" financial crisis.

The rest of the article is organized as follows. The next section provides a review of the literature in two parts. The first examines various studies on comovements of financial markets, financial crises, and international diversification. The second part is devoted to the literature on exchange-traded funds. In the second section, we present the methodology: the test for contagion proposed by Forbes and Rigobon (2002); GARCH dynamic correlations to study short-term interdependencies; an analysis of cointegration to handle long-term relations; and, finally, value-at-risk to bring to light the impact of extreme values during the crisis on internationally diversified portfolios. The analysis of results and the conclusion follow in the final section.

2. Review of the Literature

2.1. Comovements of Markets, Financial Crises, and International Diversification

Grubel (1968) and Levy and Sarnat (1970) were the first to demonstrate that the combination of foreign and domestic shares improves a portfolio’s return/risk ratio. Solnik (1974) confirms that adding international equity to a portfolio composed of American stocks substantially reduces its systematic risk by as much as 40%, without diminishing the portfolio's return (Bergstrom, 1975).

However, the emergence and growth of globalization have raised questions about the potential advantages of international diversification. Indeed, when national markets are segmented, a particular market will be more influenced by national factors than external ones, which will increase the benefits of diversification. Nonetheless, since economies are increasingly integrated, national markets are more affected by common external factors, multivariate and stock markets become more closely correlated, thus lessening the advantages of international diversification.

Some empirical evidence of this phenomenon was brought forward by Solnik, Boucrelle and Le Fur (1996). The authors examined both the correlation and the volatility of stock markets in some large industrialized countries. Their research revealed that, while the correlations between markets fluctuate significantly, they have a tendency to increase over time. They also showed that, even if the volatility is not completely synchronized, it has a tendency to be contagious across markets. Their results also underscore a significant rise in the correlation between markets in a period of strong volatility. Thus, the benefits of international diversification would be greatly reduced at the very point when managers of global funds most need effective international diversification, that is, in a period of considerable volatility such as that which usually characterizes bear markets. This phenomenon was also reported in an earlier study by Erb, Harvey, and Viskanta (1994). These conclusions then suggest that international correlations increase during periods of great volatility.

Consequently, for investors, an understanding of the nature of interdependencies of financial markets during financial crises becomes crucial since the last two decades have witnessed a series of such crises. All these crises have arisen in a given country and then spread to other markets and different regions. The spreading of this shock can only be explained by the evolution of fundamentals or by economic ties between these countries (Kaminsky and Reinhart, 2000; Caramazza et al., 2004; and Haile and Pozo, 2008). These financial crises and other events which create considerable turmoil in the financial markets have very profound consequences. They are generally characterized by major drops in share prices and increased market volatility. In addition, they have serious implications for risk and portfolio managers due to the eventual changes in the structure of dependence amongst the markets during these crisis periods.

Along these same lines, King and Wadhwani (1990) studied the impact of the 1987 collapse of the American stock market on the correlations of stock markets in the United States, the United Kingdom, and Japan. Lee and Kim (1993) examined the effects of this same collapse on twelve developed stock markets. Calvo and Reinhart (1996) analyzed the impact of the Mexican peso crisis of 1994 on its contagious effect in the main financial markets. These studies generally concluded that correlations between markets in a period of crisis increase significantly, thus bearing witness to the contagious effect in financial markets following financial crises. Hamao et al. (1990) and Edwards et al. (2003) arrived at the same conclusion when investigating the spillover effects of volatility.

In one of the most important recent studies, Forbes and Rigobon (2002) researched the question of the interdependence and contagious effect of markets during financial crises. The authors defined contagion as a significant increase in the comovements of markets following a shock in one country or a group of countries. Their study demonstrated that the correlations depend on volatility and, consequently, the estimation of correlations has an upward bias when markets are most volatile. After correcting for this bias, their results suggest that there was no contagion but simply a continuity of interdependence during the Asian crisis, the Mexican crisis and the 1987 crash of the American market.

Simulating a chronological series of returns of financial assets according to stochastic processes commonly used in financial research, Bartram and Wang (2005) replicate the study of Forbes and Rigobon (2002) and, both analytically and empirically, investigate the impact of volatility on the interdependence of markets. Their results reveal that this does not always depend on volatile systems and that the bias in correlation measures requires the respect of certain hypotheses relative to the dynamic of chronological series. Furthermore, data from the real world not always being homoscedastic, the correction of estimations of unconditional correlations during a financial crisis is not always necessary. Consequently, Bartram and Wang (2005) conclude that contagion certainly exists as a real phenomenon during financial crises and that it reduces the advantages of international diversification when this is most needed.

There are other limitations to the main trends of this literature covering the financial crises. First, numerous researchers have considered that a significant increase in correlation coefficients between markets is proof of contagion. However, Forbes and Rigobon (2002) demonstrate that correlation coefficients are conditional on the volatility of markets, which increases during crises, causing an upward bias in the estimation of correlations. The rise in correlation coefficients could be due to heteroscedasticity, the volatility becoming greater during a crisis, in comparison to stable periods, thus biasing the tests for contagion.

Secondly, given that contagion is defined as a significant increase of inter-market comovements, while any correlation which continues at high levels is only considered interdependence (Forbes and Rigobon, 2002), the existence of contagion must entail demonstrating a dynamic increment in the correlations. Thus, the dynamic nature of the correlation needs to be considered.

Thirdly, the identification of the source of the crisis can also greatly influence the conclusions. This choice may seem arbitrary in the study of certain crises. Thus, for example, Chiang et al. (2007), respectively tested Thailand and Hong Kong as countries at the source of the contagion during the Asian crisis. Moreover, the date of the onset of the crisis and the length of the time of the study play a determining role in the results obtained (Billio and Pelizzon, 2003). Consequently, the choice of subsamples characteristic of periods of greater and lesser volatility may be questionable and contribute to a selection bias (Boyer et al., 1999).

Fourthly, most studies interested in financial crises and contagion have focussed on an examination of short-term inter-market links. Essentially, these studies have used correlations or vector autoregression models (Bae, Karolyi and Stulz, 2003). Long-term comovements, however, have often been neglected, apparently due to the short duration of financial crises preceding the American subprime crisis. Long-term inter-market relations are generally validated through the cointegration tests of Engle and Granger (1987) or using Johansen's test in the multivariate case, but the studies have rarely used them in the context of financial crises (Ahlgren and Antell, 2002; and Sheng and Tu, 2000).

Fifthly, previous empirical studies of contagion during financial crises were hampered by the nonexistence of negotiable and "investable" financial instruments as "proxies" for the national stock markets.[3] This is particularly problematic in the case where daily data are used.[4] Above all, to represent the markets, earlier studies used stock market indices such as that of MSCI or the IFC indices[5] for emerging markets. Nevertheless, these indices are not directly negotiable shares. Bekaert and Harvey (1995) stress that the usage of these indices generally ignores important factors, such as the higher cost of transactions, the lack of liquidity and the barriers to foreign investment which especially characterize emerging markets. Consequently, they violate the hypothesis of "investability" underlying the argument for arbitration and, therefore, call into question the conclusions concerning the potential of international diversification.

Sixth and finally, the integration of financial markets has major consequences for the performance of international portfolios and for financial risk management. Investors are interested in international diversification with the goal of reducing their risk. Nonetheless, if financial markets become more tightly correlated in times of crisis, the possibilities of international diversification diminish, at the very time it is most needed. However, increased correlations are not the only source of concern in evaluating the benefits of international diversification. Another current problem is the potential gap with respect to the normal distribution. It is well documented in the literature that most financial returns do not follow a normal distribution[6]And, consequently, we need to examine the impact of the higher points on the advantages of international diversification, especially in the context of a financial crisis distinguished by an excess of volatility and more frequent extreme values.

In a recent study, Kim (2011) examines the effects of cointegration and contagion in the United States and the Asia-Pacific region, using nine ETFs in the period from January 7th, 2004 to September 30th, 2010, with subperiods before and after the 2007 financial crisis. The nine ETFs are: SPDR, TOPIX, KODEX200 (KODEX), Tracker Fund of Hong Kong (TraHK), Polaris Taiwan Top 50 Tracker Fund (TT), SPDR S&P/ASX 200 Fund (STW), StreetTRACKS Straits Times Index Fund (STI), SmartFONZ (FNZ) and China 50 ETF. Analysis of the cointegration shows that there Is a relation of cointegration of SPDR and TraHK, STW, STI, and FNZ before and after the global financial crisis. However, the TOPIX shows little cointegration with the SPDR. In the case of the KODEX and the TT, no relation of cointegration existed before the crisis, but one appeared subsequently. On the other hand, although the SPDR was cointegrated with the China 50 before the crisis, this relationship weakened after the crisis. Granger tests of causality indicate that, while American stock markets led the stock markets of the Asia-Pacific region, the latter did not have the same influence. This study confirms the fact that, generally, since the global financial crisis of 2007-2008, effects of cointegration have not continued to grow.

Similarly, Ji and In (2010) examine the impact of the global financial crisis on the comovements of LIBOR-OIS currency swaps, a measure of the financial stress on interbank markets. Analysis of the response generated was done in a system with a number of variables. The collection of data suggests that the crisis considerably changed the nature of interactions between currencies. Also, according to the authors, the global monetary markets did not succeed in containing the financial stress, with the American dollar and the role of the Japanese yen as a source of liquidity seeming to be significant, while these two currencies were steering the currency system and the stress of liquidity.

The current state of the literature shows that correlations increase during financial crises. However, there is no clear consensus about the nature of interdependencies and their impacts on international diversification. Therefore, this paper is contributing to the literature in proposing a fresh look at the relation between the interdependence of financial markets and volatility regimes under conditions of financial crisis. The utilization of practical instruments of international diversification, notably ETFs, will allow us to broach the subject more realistically.

[3] To our knowledge, Olienyk et al. (1999) and Barari et al. (2008) have produced the only research which used iShares to study the comovements of financial markets.
[4] Olienyk et al. (1999)advance the argument of the non-synchronization of negotiations and the fluctuations of exchange rates.
[5] International Finance Corporation
[6]. The distributions of returns of financial securities often reveal asymmetry and an excess of kurtosis.

2.2. Exchange-Traded Funds and International Diversification

The current literature on international diversification through ETFs has been limited to the study of country iShares. Moreover, all these studies fall into three principal categories. The first essentially bears on factors influencing the returns for iShares and the evolution of their level of correlation with the American market. The results of these studies usually reveal that country iShares are strongly dependent on the American market, which minimizes their contribution to the portfolio's performance with respect to the direct use of stock market indices. The second category of research bears on the capacity of iShares to replicate their underlying indices, sometimes in comparing them to classic index investment funds. Generally, they conclude that the tracking error of country iShares is negligible, often temporary and that the capacity of country iShares to track their indices is better than that of classical index funds. Finally, certain studies have compared the performance of country iShares in the context of portfolio management, to that obtained by classical funds or even that of ADRs. These studies have attempted to find the optimal geographic allocation in the different countries for which iShares are available. In this last category, the authors have also concluded that iShares offer better performance than their rivals, classic investment funds.

One of the earliest studies of ETFs as instruments of international diversification was that of Olienyk, Schwebach, and Zumwalt (1999). The authors determined the cointegration and Granger causality between the SPDR, 17 WEBs[7]And 12 country funds during the period from 1996-1998. The benefits of the diversification of country iShares were also analyzed by Pennathur, Delcoure, and Anderson (2002), Schwebach, Olienyk (2002), Durand and Scott (2003), and Miffre (2004). Pennathur, Delcoure, and Anderson (2002) apply two models, the first to a single factor and the second to two factors, to the price of country iShares during the period 1996-1999. Their two-factor model, which includes the local market returns and those of the American market, indicates that iShares are considerably exposed to the American market. Therefore, the authors conclude that country iShares do not constitute a perfect investment vehicle for international diversification.

This conclusion is confirmed by Durand and Scott (2003) in the case of Australian iShares. The authors employ a VaR model to explain the dynamic of returns and of volumes of Australian iShares due to movements of returns in the American market, volumes and exchange rates. Their results suggest that American investors who invest in the Australian market tend to exaggerate their reaction to public and past information emanating from the American stock market, exchange rates and returns on iShares.

However, despite their strong correlation with the American market, iShares seem to offer greater diversification than that of country fixed capital funds. Miffre (2004) demonstrates that investment in country iShares can produce efficient frontier which is more highly performing than those obtained from country fixed capital funds. Based on the optimization of portfolios and the Sharpe ratio, we conclude that a representative investor would benefit from international variability investment, placing approximately half of his or her wealth in the S&P 500 index and the remainder in iShares representing the developed European markets (Spain, Italy, the U.K. Sweden and France). Miffre (2004) is the only author who considered the correlation between the S&P 500 returns and those of iShares over time. Nonetheless, while recognizing that correlations are not constant over time, the author did not consider this phenomenon in constructing optimal portfolios.

Schwebach, Olienyk, and Zumwalt (2002) draw attention to the impact of volatility on the efficacy of diversification. They evaluate the performance and benefits of the diversification of iShares and country fixed capital funds, before and after the Asian crisis. After having analyzed the correlations, their paper concludes that the performance and scale of the advantages of diversification have changed considerably since the Asian crisis. This was reflected in increased correlations. As suggested by the results of the analysis of correlations, after the Asian crisis, iShares offered better opportunities for diversification than country fixed capital funds.

Similarly, Phengpis and Swanson (2004) discuss the construction of optimal portfolios and, in this context, they employ the results of the analysis of cointegration to determine whether, rather than counting exclusively on short-term information, consideration of information regarding long-term integration could help to improve

[7] World Equity Benchmark Securities; SPDR is the fund negotiated in the market representing the S&P500.

gains from diversification. The authors conclude that the utilization of national indices (as opposed to iShares) to evaluate the benefits of diversification could exaggerate the real advantages. In addition, the inclusion of long-term information as additional data in the construction of portfolios might improve the advantages of diversification.

Zhong and Yang (2005) examine the risk factors which explain the returns of iShares. The iShares studied in this article are those who track the MSCI indices of foreign countries and, therefore, are of interest to American investors seeking international diversification. The main question addressed by the authors is whether or not the price of iShares on the American market faithfully replicates the corresponding MSCI index, or whether significant deviations exist between the performance of the fund and that of the underlying index. The fundamental concern is, thus, to know whether iShares provide American investors complete exposure to the foreign country's index or whether the risk of these funds traded in the market contains a substantial component which is related to the particularities of the American market. Movements in the price of iShares on the American market may differ from those of the MSCI index for two main reasons. First, the underlying capital comprising the iShares funds is limited but not exactly equal to the capital comprising the MSCI index. Pennathur, Delcoure, and Anderson (2002) indicate that approximately 95% of the capital in the iShares fund corresponds to the MSCI index. Secondly, iShares may be traded at prime or at a discount compared to the net value of the fund share.

3. Data

Our database is comprised of daily prices of iShares in 14 developed countries, and 7 emerging countries, and SPDR for the American market. These data are all in American dollars and cover the period between July 1st, 2004 and June 30th, 2010. This period allows us to divide our sample into two subsections, the period between July 2004 and June 2007, before the crisis, and that between July 2007 and June 2010, after the financial crisis. In addition to the United States, the sample includes the following 14 developed countries: Australia, Austria, Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Singapore, Spain, Sweden, Switzerland and the United Kingdom, and the following seven emerging countries: Brazil, Hong Kong, Malaysia, Mexico, South Africa, South Korea and Taiwan. To our knowledge, this paper is the first to employ such a large sample of countries to study comovements in the context of a financial crisis. As these data are daily and cover a period of six years, they are perfectly adapted to the study of the long-term relationship, using the technique of cointegration. The returns are calculated in continuous time.

4. Methodology

4.1. Analysis of Correlations: Contagion or Interdependence?

As the analysis of the correlation was primarily used to measure the degree of financial contagion, we begin our analysis with an examination of correlations between the American market and the other markets under study. Nonetheless, the correlation coefficients between markets are liable to increase during periods characterized by greater volatility. In other words, if a crisis hits Country A with increased volatility in its financial market, it will be transmitted to the financial market of Country B with a rise in its volatility and also in the correlation between returns of both Countries A and B (Longin and Solnik , 1995; and Ang and Bekaert, 2002).

To isolate the effect of contagion on the effect of increased volatility, we calculate the correlation coefficients adjusted for heteroscedasticity, using the method proposed by Forbes and Rigobon (2002). Next, we use the standard Z test for statistical inferences. This methodology requires the identification of the source of contagion which, in our study, is the American market.

Forbes and Rigobon (2002) propose that the calculation of the correlation coefficient be adjusted for heteroscedasticity with the following formula:

$$^{*} = \frac{}{\sqrt{1+ \left(1 \quad ^{2}\right)}}$$

where: $= \left(\text{var}(r_2)_h / \text{var}(r_2)_l\right) \quad 1$

is the unadjusted correlation which varies in periods of increased volatility (*h*) or stable volatility (*l*) and is calculated using the following formula:

$$= Corr(r_1, r_2) = \frac{Cov(r_1, r_2)}{\sqrt{\text{var}(r_1).\text{var}(r_2)}} = \frac{_1 \text{var}(r_2)}{\sqrt{\quad _1^2 \text{var}(r_2) + \text{var}(r_1) \quad .\text{var}(r_2)}} = \quad 1 + \frac{\text{var}(r_1)}{_1^2 \text{var}(r_2)}^{1/2}$$

$r_{1,t}$ and $r_{2,t}$ are respectively the returns for Markets *1* and *2* at time *t* in the following equation:

$$r_{1,t} = \quad _0 + \quad _1 r_{2,t} + \quad _{1,t}$$

Where $_{1,t}$ is the independent random error term of $r_{2,t}$; represents the relative increase of the variance of r_2 ; and $\text{var}(r_2)_h$ $\text{var}(r_2)_l$ represent the variances of r_2 respectively during the periods of higher and stable volatility.

Morrison (1983) suggests a statistical test of the following null hypothesis:
Ho: no increase in the correlation

This test is calculated using the following formula: $T = \left(Z_0 \quad Z_1\right) \Big/ \sqrt{1/\left(N_0 \quad 3\right) + 1/\left(N_1 \quad 3\right)}$ with $Z_0 = 1 \Big/ 2 \ln \left(1 + \quad _0\right) / \left(1 \quad _0\right)$ and $Z_1 = 1/2 \ln \left(1 + \quad _1\right) / \left(1 \quad _1\right)$ as the two Fisher transformations of coefficient correlation before and after the crisis. N_0 And N_1 are, respectively, the number of observations before and after the crisis. This test is basically normally distributed and sufficiently robust for the non-normality of correlation coefficients.[8]

4.2. Analysis Using GARCH Dynamic Correlations (DCC-GARCH)

Initial studies on the correlations between international markets generally employed a constant correlation to study the benefits of international diversification (Panton and Lessig, 1976; and Watson, 1980). This approach ignores the fact that the correlation between two variables fluctuates over time and that, therefore, it often deviates from their constant unconditional correlation. Other simple methods such as historical rolling correlations, correlation coefficients adjusted for different volatility regimes and methods of exponential smoothing are widely used (Forbes and Rigobon, 1999). In this paper, we contribute to this literature by using conditional correlations which vary over time, in order to obtain a different perspective on the use of the correlation in the study of international diversification. More precisely, we examine the model of dynamic conditional correlation (DCC) introduced by Engle (2002).

Indeed, Engle (2002) developed a novel approach (Dynamic Conditional Correlation), in two steps, according to which correlations are dynamic. This new class of multivariate GARCH model is distinguished by its simplicity in the sense that, at the first stage, univariate GARCH specifications are estimated for each series separately and

[8] Basu (2002) and Corsetti et al. (2005) used this test.

then, at the second stage, the dynamic correlations are estimated based on the central residuals from the first stage.

The conditional correlation between two random variables r_i and r_j at time t is conditional on the information available at time (t-1) and is defined as follows:

$$\rho_{ij,t} = q_{ij,t}/\sqrt{q_{ii,t}q_{jj,t}} = E_{t-1}[r_{i,t}r_{j,t}]/\sqrt{E_{t-1}[r_{i,t}^2]E_{t-1}[r_{j,t}^2]} \qquad (1)$$

We can normalize each return using its dynamic standard deviation to obtain the following normalized return:

$$z_{it} = r_{i,t}/\sigma_{i,t} \qquad (2)$$

In separating the returns according to their conditional standard deviations, we create variables z_{it} ; i = 1,2... n, which all have a conditional standard deviation of 1.

The conditional correlation of returns $r_{i,t}$ expressed in the equation (1) is equal to the conditional covariance of standardized variables $z_{it,}$as can be seen in the following demonstration:

For equation 2, we have: $z_{it} = r_{i,t}/\sigma_{i,t}$ in dividing the returns by their conditional standard deviation, we create variables z_{it}; i = 1,2... n, which all have a conditional standard deviation equal to 1.

The conditional correlation of returns $r_{i,t}$ expressed in Equation (1) is equal to the conditional covariance of standardized variables $z_{it,}$as we can see in the following demonstration:

$$E_t[z_{it}z_{jt}] = E_t[(r_{i,t}/\sigma_{i,t})(r_{j,t}/\sigma_{j,t})]$$

$$= E_t(r_{i,t}r_{j,t})/(\sigma_{i,t}\sigma_{j,t})$$

$$= \sigma_{ij,t}/(\sigma_{i,t}\sigma_{j,t})$$

$$= \rho_{ij,t} \quad \text{for all } i \text{ and } j \qquad (3)$$

Thus, the modelization of the dynamic conditional correlation of raw returns is equivalent to the modelization of the conditional covariance of standardized returns. To model the covariance between standardized returns z_{it}, Engle (2002) suggests the GARCH process (1,1) which permits us to model the return in the following manner:

$$q_{ij,t+1} = \overline{\rho_{ij}} + \alpha(z_{it}z_{jt} - \overline{\rho_{ij}}) + \beta(q_{ij,t} - \overline{\rho_{ij}}) \qquad (4)$$

Where $\overline{\rho_{ij}}$ is the unconditional correlation between z_i and z_j with the following GARCH restriction: $\alpha+\beta<1$ in order to guarantee non-negativity and the stability of variances. Thus, the conditional correlations are modeled individually according to the GARCH process.

4.3. The Analysis of Cointegration

Cointegration is a characteristic that a certain stable chronological series may exhibit. Engle and Granger (1987) were the first to develop an estimation technique in two stages to analyze the long-term equilibrium relationships (cointegration) of chronological series. Amongst other things, this technique has been used by a number of other researchers to study the interdependence of financial markets and the efficiency of the foreign exchange market (Hakkio and Rush, 1989, 1991; and Copeland, 1991).

Consistent with the methodology of Engle and Granger, two nonstationary variables, (for example, a and Y_t) are said to be cointegrated when there is a linear economic relationship between them which is stable over time, even if these variables evolve independently from one another, and even if they do not fluctuate around the same constant variable. This null linear combination represents the long-term relationship between the variables, a relationship which may be considered to be in a state of equilibrium (Step 1). In such a case with two variables, the linear combinations form a line which links the values of pairs of two variables in long-term equilibrium. The deviations from this line, which represent short-term movements around the equilibrium, must be stable and statistically and significantly linked to the initial differences for at least one of the original variables (Step 2).

The initial determination of the instability of individual variables (for example, the series of prices of iShares) constitutes a pretest of cointegration analysis (Haley, 2007). It consists of determining whether the variables under study are, indeed, integrated of order 1 (X_t ~ I (1) and Y_t ~ I (1)). A variable I (1) contains a single unit root and should be differentiated only once to become stationary, I (0). The goal of the initial test is to determine whether the individual variables constantly fluctuate around a fixed average. To that end, we conducted a unit-root test, that is, the ADF test (K*) (Augmented Dickey-Fuller by Dickey and Fuller, 1981), on each variable. To determine the optimal order of k delays,* we use the following three information criteria: Akaike (AIC), Schwartz (SC), and Hann-Quin (HC). When the condition of instability is met, we can apply the Engle and Granger two-step procedure as follows:

The first step requires an estimation by least squares regression (OLS) of the relationship between the prices of the SPDR and iShares in another country:

$$Y_t = \alpha + \beta X_t + \varepsilon_t$$

Where:

- Y_t is the price of iShares in a given country at date *t;*
- X_t is the price of the SPDR on date *t;* and
- ε_t is the error term.

The goal here is to extract the error terms $\hat{\varepsilon}_t$ from the regression $\hat{\varepsilon}_t = Y_t - \hat{\alpha} - \hat{\beta} X_t$.

Subsequently, we verify whether the error terms are indeed stable, using the same ADF(K*) test. There again, the order of optimal k* delay will be determined by the three information criteria identified earlier. Consequently, if the error terms are stable, then we can proceed to the next step.

The second step requires a least squares regression (OLS) estimation of two error correction models (ECM), one for each variable studied (1) (series of ETFs). The two error correction models are represented by the following two equations:

$$\Delta Y_t = \mu_1 + \gamma_1 \varepsilon_{t-1} + \sum_{i=1}^{p} \delta_i \Delta X_{t-1} + \sum_{i=1}^{p} \varphi_i \Delta Y_{t-1} + u_t$$

$$\Delta X_t = \mu_2 + \gamma_2 \varepsilon_{t-1} + \sum_{i=1}^{p} \delta_i \Delta Y_{t-1} + \sum_{i=1}^{p} \varphi_i \Delta X_{t-1} + u_t'$$

Where p, the number of delays, is chosen arbitrarily (p=1 in the present document), and ΔY_t *and* ΔX_t are the changes in the cointegrated variables. The two coefficients γ_1 and γ_2 reflect the adjustment speed of the long-term equilibrium. For a cointegration relationship to exist, at least one of the two coefficients, $\gamma_1$ou γ_2, must be

significantly different from zero. If at this second stage of the estimation, there is no such statistically significant error correction, the analyst must conclude that this is probably a case of spurious correlation (Haley, 2003).

4.4. Analysis of Value at Risk

The effect of the deviation from the constant correlation is not the only concern in the evaluation of the benefits of international diversification. Another current problem is the potential deviation from the normal distribution. It is well known that most financial returns are not distributed normally (often being asymmetrical with an excess of kurtosis). Consequently, we need to examine the impact of the peak periods on the advantages of international diversification, especially since the context of some of the data is that of a financial crisis characterized by an excess of volatility and more frequent extreme values. More precisely, we use the four moments value-at-risk (VaR) in order to integrate kurtosis and asymmetry into the measurement of risk, and then to compare this two moments VaR measure with the unconditional variances and GARCH variances estimated in the first section. In addition, examination of the potential loss with the VaR is an alternative measure of the degree of a portfolio's diversification.

Value-at-risk (VaR) is a measure which permits us to combine the statistical points of distribution into a single value, allowing us to compare the performance of portfolios across a number of markets in terms of risk in the distribution tails. Consequently, the VaR offers a direct comparison compatible with the interests of portfolio managers in evaluating the downside risk of a portfolio. The two moments VaR, currently a popular measure of downside risk, is given in the following formula:

$$VaR_p = \mu_p - z_\alpha \sigma_p$$

Where μ_p is the portfolio's average return, σ_p its standard deviation and z_α is the number of standard deviations associated with a certain percentile α. The two moments VaR underlies the normal distribution of returns where only the average return and the standard deviation are considered.

The modified VaR, considering only the four first moments of the distribution of returns, offers a measure of the potential risk for a portfolio given a probability characterized by its average return, its standard deviation, its asymmetry and, finally, its kurtosis. This VaR was developed by Favre and Galeano (2002) and is expressed in the following equation:

$$VaR_p = \mu_p - \left[z + \frac{1}{6}(z^2 - 1)S_P + \frac{1}{24}(z^3 - 3z)K_P - \frac{1}{36}(2z^3 - 5z)S_P^2\right]\sigma_P$$

Where μ_p, σ_p, S_P and K_P are the four first points in time for the distribution of the returns of Portfolio P (S_P *and* K_P representing respectively asymmetry and the kurtosis of Portfolio P). The two moments VaR is a particular case of this four moments VaR in the case when the asymmetry and kurtosis are negligible.

5. Empirical Results

Analysis of short term comovements with the use of correlation coefficients, as reported in Table 1, confirms the conclusions of Forbes and Rigobon (2002). We observe that, apart from the correlation with Japan, all the correlations not adjusted for heteroscedasticity increased significantly after the financial crisis. However, in correcting this bias identified by Forbes and Rigobon (2002), the adjusted correlations are not significant, with the exception of Australia. These results clearly demonstrate that the American financial crisis was not transmitted to other countries by a contagion effect, but that the correlations increased with other countries because of interdependence, as stated by Forbes and Rigobon (2002).

Table 1: Test of the Significance of the Increase of the Correlation After the Crisis

	Correlation before the crisis	Correlation after the crisis	Correlation-adjusted after the crisis	Z-statistic (nonadjusted)	Z-statistic (adjusted)
Developed Countries					
U.S.-Australia	0.027	0.287	0.102	-5.199***	-1.460*
U.S.-Austria	0.248	0.496	0.192	-5.650***	1.135
U.S.-Belgium	0.331	0.537	0.213	-4.950***	2.480
U.S.-Canada	0.490	0.726	0.340	-7.465***	3.512
U.S.-France	0.409	0.583	0.239	-4.498***	3.710
U.S.-Germany	0.422	0.623	0.263	-5.402***	3.515
U.S.-Italy	0.390	0.549	0.219	-3.972***	3.660
U.S.-Japan	0.055	0.000	0.000	1.065	1.058
U.S.-Netherlands	0.391	0.584	0.239	-4.961***	3.269
U.S.-Singapore	0.089	0.371	0.136	-5.829***	-0.918
U.S.-Spain	0.399	0.552	0.221	-3.849***	3.837
U.S.-Sweden	0.308	0.548	0.219	-5.780***	1.845
U.S.-Switzerland	0.302	0.512	0.200	-4.913***	2.117
U.S.-U.K.	0.351	0.581	0.237	-5.757***	2.418
Developing Countries					
U.S.-Brazil	0.605	0.760	0.372	-5.729***	6.015
U.S.-Hong Kong	0.096	0.288	0.103	-3.891***	-0.137
U.S.-Malaysia	0.050	0.171	0.059	-2.374***	-0.180
U.S.-Mexico	0.607	0.770	0.383	-6.155***	5.837
U.S.-South Africa	0.205	0.419	0.156	-4.642***	0.967
U.S.-Korea	0.091	0.254	0.090	-3.263***	0.028
U.S.-Taiwan	0.045	0.167	0.058	-2.397***	-0.251

Short term comovements estimated by the dynamic conditional correlations (DCC- GARCH) are represented in Figure 1. As our sample covers 21 developed and emerging countries, we content ourselves with presenting the results of certain representative countries, the other results being similar. On these graphs, we can distinguish two main periods. The period before the crisis is characterized by weak volatility and some relatively weak dynamics. The second period which covers that of the financial crisis and which coincides with considerable instability in the global markets is characterized by a system of extremely heightened conditional volatility, and correlations between the American market and the other countries which increased significantly. These results confirm those of Longin and Solnik (1995) who demonstrate that comovements between stock markets increase in periods of high volatility. These results also confirm those of Schwebach et al. (2002) who found that volatility and correlations amongst 11 markets, 5 of whom are in the G7, increased after the Asian crisis.

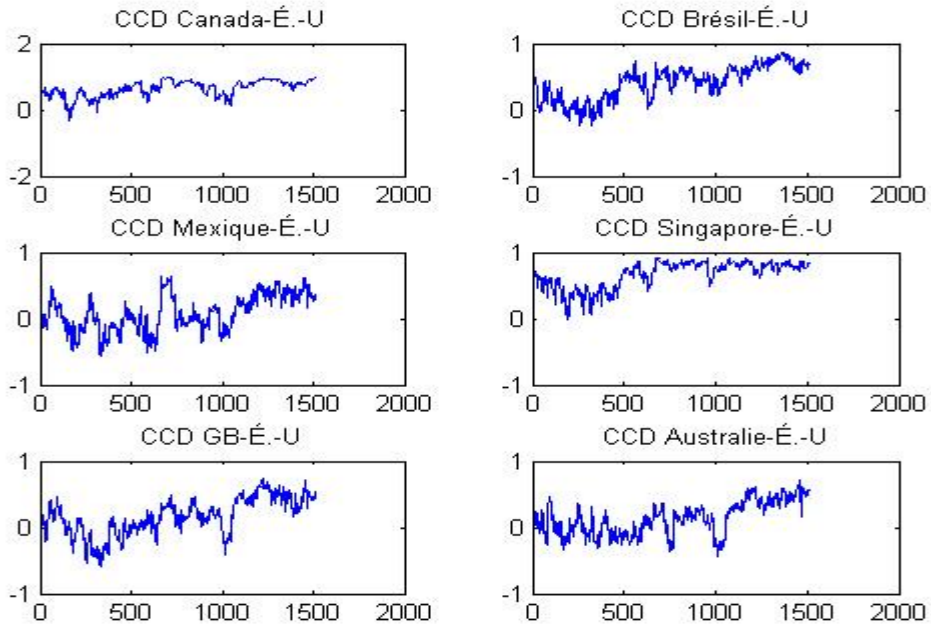


Figure 1: The GARCH Dynamic Correlation Between the American Market and Other Developed and Emerging Markets Before and After the Financial Crisis

Concerning long-term comovements, before and after the financial crisis, we have summarized the conclusions of all the results of the analysis of cointegration, using the method of Engle and Granger (1987) in Table 2 for the developed countries and Table 3 for developing countries. The details of these calculations are presented in the annex. These two tables first show that, for all countries, there is no cointegration with the American market during the period after the financial crisis (2007-2010) or for the entire period before and after the crisis, that is, between 2004 and 2010. However, for the period before the crisis, certain countries were cointegrated with the American market, notably Australia (very strong integration), Belgium, Hong Kong, Mexico and Taiwan (strong integration), Austria, the Netherlands, Spain, and the United Kingdom (weak integration).

Tables 2 and 3 also present the unconditional correlation between the American market and the other countries. We observe that, for all the countries except Japan, the unconditional correlation increased after the financial crisis. Furthermore, we note that, despite increased correlations after the crisis, the integration disappeared for the countries which were integrated with the American market before the crisis. This result is hardly surprising, given that correlation and cointegration are two different measures of interdependence in the short and long terms which are separate and distinct (Carol Alexander, 2001).

Table 2: Summary of the Statistical Intensity of Cointegration and Unconditional Correlation in Developed Countries.

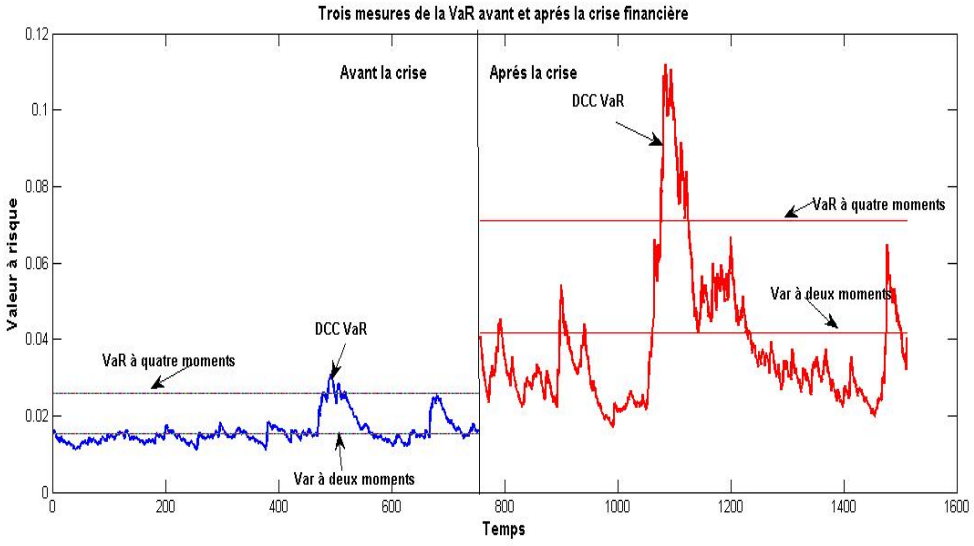
Market Pairs	Before the Crisis (2004-2007)		After the Crisis (2007-2010)		Throughout the Period (2004-2010)	
	Cointegration	Correlation	Cointegration	Correlation	Cointegration	Correlation
U.S.-Australia	Very Strong	0.027	None	0.287	None	0.213
U.S.-Austria	Weak	0.248	None	0.496	None	0.439
U.S.-Belgium	Strong	0.331	None	0.537	None	0.495
U.S.-Canada	None	0.490	None	0.726	None	0.703
U.S.-France	None	0.409	None	0.583	None	0.538
U.S.-Germany	None	0.422	None	0.623	None	0.568
U.S.-Italy	None	0.390	None	0.549	None	0.508
U.S.-Japan	None	0.055	None	0.000	None	-0.009
U.S.-Netherlands	Weak	0.391	None	0.584	None	0.539
U.S.-Singapore	None	0.089	None	0.371	None	0.293
U.S.-Spain	Weak	0.399	None	0.552	None	0.515
U.S.-Sweden	Very Strong	0.308	None	0.548	None	0.494
U.S.-Switzerland	None	0.302	None	0.512	None	0.461
U.S.-U.K.	Weak	0.351	None	0.581	None	0.528

Table 3: Synthesis of the Statistical Intensity of Cointegration and Conditional Correlation in Emerging Countries

Market Pairs	Before the Crisis (2004-2007)		After the Crisis (2007-2010)		Throughout the Period (2004-2010)	
	Cointegration	Correlation	Cointegration	Correlation	Cointegration	Correlation
U.S.-Brazil	None	0.605	None	0.760	None	0.714
U.S.-Hong Kong	Strong	0.096	None	0.288	None	0.220
U.S.- Malaysia	None	0.050	None	0.171	None	0.127
U.S.-Mexico	Strong	0.607	None	0.770	None	0.721
U.S.-South Africa	None	0.205	None	0.419	None	0.354
U.S.-Korea	None	0.091	None	0.254	None	0.205
U.S.-Taiwan	Strong	0.045	None	0.167	None	0.133

Finally, to study the impact of extreme values on international diversification during the financial crisis, we created two portfolios. Each is composed of all the securities in our sample (the 21 iShares plus the American SPDR) and covers each of two subperiods of this study, that is, the periods before and after the crisis. Then, for each portfolio we calculated the VaR using three distinct methods: the two moments VaR with unconditional variance; the two moments VaR GARCH conditional variance and the four moments VaR which takes into consideration asymmetry and kurtosis. The results are summarized in Figure 2. First, they reveal that the returns are not normally distributed. Indeed, for the two subperiods, the four moments VaR is always higher than that at two points. However, after the crisis, we observe that the difference between these two VaRs is greater. This is due to the fact that the volatility and, above all, the extreme values (estimated by the kurtosis), were greater after the crisis. The conditional two moments VaR shows the considerable volatility characterizing the period after the crisis. Finally, we are able to conclude that the potential losses of internationally diversified portfolios, calculated by the VaR, were much greater after the financial crisis. This result can be explained by the high rate of extreme values and by the increased volatility.

Figure 2: The VaR of Portfolios from the American Market and Those of All Other Developed and Emerging Countries Before and After the Financial Crisis



6. Conclusion

A number of studies have reported that correlations between financial markets increase when volatility increases (Solnik et al.,1996). Thus, the benefits of international diversification lose their importance when portfolio managers most need them. The turbulence in the financial markets following the recent American financial crisis provides a vivid illustration of this phenomenon. Our study examines the importance of long and short-term interdependence of the United States and 21 other developed and developing countries, and its impact on international diversification following the subprime financial crisis. Contrary to most studies on comovements of international markets, which generally use stock market indices, our study uses a series of prices of exchange-traded funds, with the goal of providing empirical evidence of the real extent of the possibilities of international diversification offered to American investors. Our study offers an in-depth analysis of comovements between stock markets, based on econometric techniques which allow us to illustrate the variable nature over time of interdependencies between markets, both in the short and the long-term and at the level of extreme values.

Our results, based on data provided by iShares, suggest that the benefits of international diversification in the short term have diminished significantly. Indeed, the degree of short-term interdependence, measured by conditional correlations, increased after the financial crisis, as indicated by the increase in the conditional correlation of daily iShare returns. In addition, using the two moments and fourn moments VaR, to analyze the risks of potential losses of two internationally diversified portfolios during the periods before and after the financial crisis, the results suggest that when asymmetry and kurtosis are considered important factors in the calculation of the adjusted VaR, the VaR increases considerably compared to that at two points in time. However, this increase is much greater after the financial crisis due to the great volatility during this period, as well as the existence of more extreme values. The results for the VaR suggest that international diversification after the financial crisis was much less efficacious due to potential losses which increased substantially.

However, analysis of contagion and long-term interdependencies first suggests that the financial crisis was transmitted by an effect of interdependence and not contagion. This result signifies that the effect of international diversification has diminished but still exists. Concerning long-term interdependence, we observe that the intensity of the cointegration with the United States differed from one country to another before the crisis, but that this cointegration disappeared for all countries after the crisis while correlations increased. This means that the effect of long-term international diversification persists and is still relevant.

Thus, we can conclude that, during the subprime financial crisis, short-term interdependencies between the American market and the other financial markets under study, measured by dynamic correlations and the VaR, significantly increased so that the short-term benefits of international diversification diminished considerably. Nonetheless, analysis of contagion and cointegration demonstrate that, despite the extent of the financial crisis, international diversification remains relevant.

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Foreign Direct Investment and Economic Growth in Nigeria

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Abstract
This study analyzes the relationship between foreign direct investment and economic growth in Nigeria. Secondary data on foreign direct investment, gross domestic product, and monetary policy rate were sourced from Central Bank of Nigeria. The model was analyzed using the Fully modified Least Squares, ADF Unit Root and the Johansen Cointegration test methods. The ADF test result revealed that the variables are not stationary at levels but stationary in first difference. There exists long-run relationship among the variables as shown from the Johansen Cointegration test result thereby forming the basis for employing the FMOLs. The Outcome of the Cointegrating test result shows that all the coefficients of the explanatory variable (FDI and MPR) are positive. However, only FDI was found to be significant. Based on the result of the research, the following recommendations were made among others: a combination of monetary, fiscal as well as other trade policies geared towards attracting foreign investors should be strategically deployed by the government, the government should create an enabling environment to encourage the inflow of foreign capital by the development of infrastructural facilities. There is also the need for a stable political environment to ensure the security of life and property.

Key Words: Foreign Direct Investment, Gross Domestic Product, Monetary Policy Rate

1. INTRODUCTION

Foreign direct investment (FDI) refers to investment from one country into another country (normally by companies) that involves establishing operations or acquiring tangible assets, including stakes in other business. Huge capital inflow into a country is expected to increase output, income, employment and accelerate the rate of economic growth and development.

The Nigeria government has adopted several policies to attract foreign direct investment into the national economy. An example of such program is the implementation of the Structural Adjustment Program by the then Ibrahim Babangida regime in the mid -80's which was geared towards liberalizing various sectors of the economy and attracting foreign investors. Despite widespread criticism of the policy at the time, FDI rose from an estimated $200mn in 1970 to $2bn in 1994. Unfortunately, the FDI fell between 1996 and 1999 following the 1993 general elections saga (World Bank, 2018).

Furthermore, Nigeria has witnessed the high flow of FDI over the years; this is due to its abundant natural resources which have attracted the attention of foreign investors from different parts of the globe. For instance, Nigeria has recorded a high flow of FDI from countries like the United States, the United Kingdom (with about 20% of the total FDI) and China. The sudden rise in FDI was also facilitated by the Nigeria Investment Act 0f

1995 which allows foreign investors to maintain 100% ownership of their investment. The Nigeria FDI stood at $8 billion in 2012 which represents 15% of the total FDI received by Africa. Furthermore, the ease with which the profit and dividend of the expatriate can be transferred to their countries has also aggravated FDI inflow.

While Nigeria has not been bereft of foreign investment, the question posed by economic analysts and observers is whether or not the huge capital inflow witnessed by the country has had a positive impact on the economy. The main objective of this study is to examine the trend of foreign direct inflow within the period of study. Also, to ascertain whether or not foreign direct inflow has had any impact on the Gross Domestic Product of Nigeria.

2. LITERATURE REVIEW

2.1. Theoretical Review

The Concept of FDI

FDI has been defined by the United Nations Conference on Trade and Development (UNCTAD, 2001) as a form of investment by an individual or firm in other countries aside their own. It's a scenario where an investor establishes foreign business operations or acquires business assets in a foreign company. FDI refers to capital inflow from abroad into a country whereby foreigners maintain a certain amount of shares of domestic firms (Egbo, 2010). Umuezuruike E. (2015) asserts that the study of Foreign Direct investment has to do with the proliferation of multinationals to other countries in order to seek the highest returns on investment.

Foreign Direct Investment and Monetary Policy

According to Akinremi (2017), the key policy variables found to affect FDI inflows to Nigeria are the exchange rate and interest rate captured by the monetary policy rate. He reiterated the need for a reduction of the monetary policy rate to boost productivity, reduce the rate of inflation (especially cost-push inflation), and consequently, bring about an increase in Foreign direct investment.

Foreign Direct Invest and Economic Growth

Whether or not foreign direct investment translates to economic growth has been at the front burner of economic debate. On apriori grounds, foreign direct investment is expected to boost economic growth by increasing the stock of a nation's capital either via physical transfer or technological transfer. Markusen (1995), posits that foreign direct investment precipitate economic growth through technological diffusion. According to him, multinational firms have a high ratio of research and development which has the potential of increasing output, income and employment in the resident country. He further stated that multination co-operations are technologically advanced the world over and that foreign direct investment will not only bring about the importation foreign technologies, but the multiplier effect of such imported technology on the local firms will be colossal.

Bonojour (2003), further buttressed the spillover effect of the foreign direct investment on developing countries. According to him, the productivity of the local firms in developing countries will be increased as a result of the spillover effect of the technological transfer.

In relation to the advantages of the spillover effect of technological transfer to developing countries, Ngowi (2001), identified ten benefits to these countries. They are; Job creation, skill acquisition, capital formation, production diversity, technology transfer, efficient local resource, observe human labour right, the creation of forwarding and backward linkages of the economy, use of clean environmental technology.

Although, the inflow of foreign direct investment has been dubbed a catalyst for economic growth and development, and developing nations over the years have been encouraged to create an enabling environment to attract such inflows. It is instructive to identify some of the costs to the recipient country which tend in the long run to offset its benefits. They are; high cost, foreign exchange crisis, loss of domestic autonomy, the creation of a monopoly, discouragement of local enterprise, etc. (Jhingan, 2007).

2.1 Empirical Review

Akpan and Eweke (2017), carried out a study aimed at examining the relationship between Foreign Direct Investment (FDI) and performance of the industrial sector on Nigeria's economic growth. Time series data relating to Foreign Direct Investment (FDI), Industrial Sector Output level (IND), and Gross Domestic Product (GDP) were analyzed using the Impulse Response Function (IRF) and Variance Decomposition (VDC) techniques within a Vector Autoregressive Framework. The VAR estimate shows that FDI and IND both had a slight positive significant impact on GDP. The Impulse Response Function revealed that the GDP has a negative response to a shock to both FDI and IND. However, while the latter response was up to the 3rd period, the former lasted throughout the period under observation. They concluded that the flow of FDI is not impactful on Nigeria's Economic growth whilst the contribution of the industrial sector has been very low hence, its inability to significant spur economic growth.

Adeleke K, Olowe. S, and Fasesin. (2014), their research explored the impact of foreign direct investment on economic growth empirically. Time series data on Gross Domestic Product (GDP), Foreign Direct Investment (FDI), Exchange Rate (EXR), and Export (EXP) were sourced from various publications of Central Bank of Nigeria, such as; Statistical bulletin, Annual Reports, and statements of accounts. The model was estimated to cover a period of 1999 – 2013 was analyzed using the regression analysis of Ordinary Least Square (OLS). Their findings revealed that economic growth is directly related to the inflow of foreign direct investment. The study recommended the liberalization of the foreign sector in Nigeria in order to eliminate all barriers to trade and encourage foreign investors.

Uzoka C. I (2012), the study examined the impact of foreign direct investment on economic growth. The data used were time series data which included Gross Domestic Product (GDP), Foreign Direct Investment (FDI) and Export Earning (EXE) which were computed from Central Bank of Nigeria Statistical Bulletin. The model was estimated to cover the period of 1980 -2010 and was analyzed using Ordinary Least Square (OLS) multiple regression analysis. The research finding showed that Foreign Direct Investment (FDI) had a positive impact on the Gross Domestic Product. He further recommended that the provision of adequate infrastructure and policy framework is important in order to induce a further inflow of FDI necessary to stimulate economic growth.

Oyatoye et al. (2011), studied and analyzed the relationship between foreign direct investment and economic growth. Secondary data on Gross Domestic Product (GDP), Foreign Direct Investment (FDI) and Export (EX) were gathered from the Central Bank of Nigeria Statistical bulletin. The scope covered a period of 20 years (1967 -2006). Regression analysis of Ordinary Least Squares (OLS) was used to analyze the data. The study concluded that there is a positive relationship between foreign direct investment and economic growth.

Theoretically, monetary policy plays a pivotal role in the maintenance of domestic price, exchange rate stabilization and the development of a sound financial system all of which are prerequisites for developing countries seeking to attract foreign capital. Unfortunately, previous empirical studies along this line have failed to identify the role of monetary policy in foreign capital inflow. This study intends to highlight the role of monetary policy in attracting foreign direct investment by introducing the monetary policy rate as a control variable, which has not been done before.

3. METHOD OF STUDY

3.1 Data Collection Method & Sources

The data used are time series data which includes Gross Domestic Product (GDP), Foreign Direct Investment (FDI), and Monetary Policy Rate (MPR) computed from the Central Bank of Nigeria Statistical bulletin.

3.2 Model Specification

The model employed in this study is in line with the work of Oyatoye et al. (2011). However, it was modified for the purpose of this research. It is estimated to cover a period of 1996 – 2012. The functional form of this model is expressed as thus:

GDP = f (FDI, MPR) ……..……. (3.2.1)

Where,
GDP = Gross Domestic Product
FDI = Foreign Direct Investment
MPR = Monetary Policy Rate

The econometric model for Gross Domestic reaction function in equation (3.2.1) above is postulated as the following linear specification.

$\mathbf{GDP}_t = \alpha_0 + \alpha_1 FDI + \alpha_2 MPR + U$…… (3.2.2)
Where; GDP, FDI and MPR are described in equation above (3.2.1)
$\boldsymbol{\alpha_0}$ = Constant regression estimate, $\boldsymbol{\alpha_2 - \alpha_1}$ = slope regression estimates and e_1 = random error term

The vector autoregressive models for estimating the casual relationship among the series are formalized as:

$$\Delta GDP_t = \beta_1 + \sum_{i=1}^{n} \alpha_{11} \Delta GDP_{t-1} + \sum_{i=1}^{n} \alpha_{12} \Delta FDI_{t-1} + \sum_{i=1}^{n} \alpha_{13} \Delta MPR_{t-1} + U_{1t} \ldots\ldots \quad (3.2.3)$$

$$\Delta FDI_t = \beta_1 + \sum_{i=1}^{n} \alpha_{21} \Delta FDI_{t-1} + \sum_{i=1}^{n} \alpha_{22} \Delta GDP_{t-1} + \sum_{i=1}^{n} \alpha_{23} \Delta MPR_{t-1} + U_{2t} \quad (3.2.4)$$

$$\Delta MPR_t = \beta_1 + \sum_{i=1}^{n} \alpha_{31} \Delta MPR_{t-1} + \sum_{i=1}^{n} \alpha_{32} \Delta GDP_{t-1} + \sum_{i=1}^{n} \alpha_{33} \Delta FDI_{t-1} + U_{3t} \quad (4.2.1) \quad (3.2.5)$$

Where β_1= intercept, $\alpha_{11} - \alpha_{33}$ = coefficient of the explanatory variables, Δ first difference operator, n = maximum lag order and $U_{1t} - U_{3t}$ = random error terms.

Unit Root Test

Owing to the characteristic nature of time series data and its implication on the regression result if not checked, the Augmented Dickey-Fuller unit root tests were employed to test whether or not the data are stationary. The null hypothesis (non-stationarity) was tested against the alternative hypothesis of no unit root (stationarity). Mathematically, the unit root equation can be expressed thus;

$$\Delta(Y_t = m_0 + m_1(X_{t-1}) + \sum_{i=1}^{q} \beta_1 \Delta(x_{t-1}) + E_t$$

Where: Y = variable being tested for unit, m_1 and β_1= parameter estimates, q = maximum order of lag, Δ = notation for first difference, E_t = Error term.

Co-integration Test

Co-integration is conducted based on the test proposed by Johansen it has to do with modeling non-stationary time series variables. The algebraic specification of the model is thus;

$$J_{trace}(r) = -N \sum_{i=r+1}^{n} Log(1 - \lambda_i)$$

$$J_{max}(r, r+1) = -N\, Log \sum_{i=r+1}^{n} Log(1 - \lambda r + 1)$$

Where $F_{trace}(r)$ and $F_{max}(r, r+1)$ denotes trace and max Eigen statistics respectively.
λ =coefficient of characteristics root, N = Sample Size, r = cointegrating vectors
n = lag length and log = notation of logarithm transformation

4. RESULTS AND DISCUSSION

4.1 Descriptive Analysis of the Series

The descriptive analysis of GDP, FDI, and MPR relating to the mean, min, max values, normal distribution, and standard deviation are stated in table 5.1 below.

Table 4.1: Descriptive Statistics for GDP, FDI and MPR

	FDI	GDP	MPR
Mean	109.9988	512.8824	12.67294
Median	125.83	495	13.5
Maximum	157.5	834	19
Minimum	21.89	88	6.13
Std. Dev.	45.43527	182.8483	3.512068
Skewness	-1.17245	-0.225233	-0.138567
Kurtosis	3.039584	3.095124	2.434015
Jarque-Bera	3.895922	0.150144	0.28131
Probability	0.142564	0.927677	0.868789
Sum	1869.98	8719	215.44
Sum Sq. Dev.	33029.82	534935.8	197.354
Observations	17	17	17

Source: Calculated by Authors from E-view 9 statistical Package

The descriptive statistics of GDP, FDI and MPR are seen in table 4.1 above. The result indicates that the minimum and maximum levels of FDI over the period (1996 -2012) are 21.89 and 157.5 respectively. Also, on average, Nigeria witnessed FDI inflow of 109.99. The Nigeria economic growth rate measured by (GDP) averaged 512.88, with a maximum and minimum value of 834 and 88 respectively. The average Monetary policy rate was 12.6% with a maximum of 19% within the period under review.

4.2 Test for Unit Root

The Augmented Dickey-Fuller unit root test was performed to ascertain the various levels of stationarity of the selected variables. The results are displayed in table 4.2 below:

Table 4.2: Unit Root Stationarity Test

Variables	ADF Test	Critical Value			Order of integration
		1% Critical value	5% Critical value	10% Critical value	
D(GDP)	-1.717356	-2.728252	-1.9663	-1.60503	(1)=1St Diff.
D(FDI)	-3.231966	-2.728252	-1.96627	-1.605026	(1)=1St Diff.
D(MPR)	-4.34806	-2.728252	-1.96627	-1.605026	(1) =1St Diff.

Source: Calculated by Authors from E-view 9 statistical Package

The unit root test in table 4.2 shows that all the variables (GDP, FDI, and MPR) are integrated at order 1 (first difference) though at different levels of significance. From the result, only GDP was integrated at a 10% level of significance. While FDI and MPR were stationary at various levels of significance (1%, 5%, and 10%). Therefore all the time series in this study are stationary.

4.3 Test for Cointegration

Table 4.3: Cointegration Test Result

Series: GDP, FDI, MPR

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.852106	41.04319	35.19275	0.0104
At most 1*	0.453214	35.37427	20.26184	0.0359
At most 2	0.198487	3.318806	9.164546	0.5228

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.852106	28.66892	22.29962	0.0056
At most 1*	0.453214	18.055464	15.8921	0.0279
At most 2	0.198487	3.318806	9.164546	0.5228

Source: Calculated by Authors from E-view 9 statistical Package

From the table 4.3 above, the trace, as well as the max Eigen statistics, are above their associated 5% critical values, which is an indication that there are two cointegrating equations. This collaborates the unit root test results in table 4.2 above, where we observed that all the variables are stationary at order one. The above co-integration result implies that there is a long run association in the variables thereby justifying the use of FMOLs in the estimation of the cointegrating equation model.

4.4 Cointegration Regression Analysis

The FMOLS was used to analyze the regressing cointegration equation. The result is as seen in table 4.4 below.

Table 4.4: Cointegrating Regression Result

Dependent Variable: GDP

Method: Fully Modified Least Square (FMOLS)

Sample Adjusted: 1996 - 2012

Included Observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	3.353174	0.847836	3.954982	0.0014
MPR	8.885031	7.898139	1.124952	0.2795
R-squared	-0.752728	Mean dependent var		522
Adjusted R-squared	-0.235066	S.D. dependent var		184.81
S.E. of regression	205.3865	Sum squared resid		590570
Long-run variance	39033.51			

Source: Calculated by Authors from E-view 9 statistical Package

Table 4.4 shows the cointegration result output of the observed variables. As can be seen, all the coefficients are not in consonance with apriori expectations. Both the FDI and MPR have positive coefficients (3.3) and (8.8) respectively. However, while the FDI coefficient conforms to apriori expectation, the MPR does not. Furthermore, The FDI is statistically significant at 5% level; this implies that a percentage increase in FD1 will bring about a 3.3% increase in GDP. While MPR is statistically insignificant given the estimated probability level of (0.2) which is lower than 5%. The insignificance of the Monetary Policy Rate collaborates the work of Umuzuruike E. (2010).

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study critically analyzed the relationship between foreign direct investment and economic growth. It concluded that foreign direct investment has a positive and significant impact on the gross domestic product; hence, it plays a pivotal role in propelling economic growth in the Nigerian economy. Furthermore, the Monetary policy rate though insignificant as revealed in the table (4.4) can still be impactful if complemented by other economic policies such as fiscal policy.

5.2 Recommendations

In line with the findings of this study, the following recommendations have been made.

i. In order to attract foreign investors, the government should address the issue of the infrastructural deficit by embarking on the development of infrastructural facilities which will serve the purpose of reducing the cost of doing business in the country, thereby boosting both local and foreign investments.

ii. A combination of monetary, fiscal as well as other trade policies geared towards attracting foreign investors should be strategically deployed by the government.

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Financial Contagion and Its Impact on the Nigerian Stock Market

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Abstract
The integration between markets is becoming tighter due to increased international financial transactions among countries. Following the emergence of globalization and integration of market, researchers have observed that during the periods of market turmoil the correlation between international stock markets increased significantly, while some countries reap from the transient turmoil, the LDCs have suffered adverse loses in their investment portfolios. The paper aimed at determining the effect of the expansion of selected foreign stock markets on the Nigerian Stock market using the Bayesian VAR model. The result of the study showed a negative effect of contagion from the American and Chinese market on the Nigeria market, with the effect being magnified following the drift in currency exchange rate. The analysis of the impulse response function of the British economy and exchange rates revealed that there were the major causes of contagion in the Nigerian stock market. Nigerian economy is susceptible to the dynamics of fluctuation arising from the British and Chinese currency exchange. To hedge against contagion effects, adequate trade balance must be pursued between Nigeria and Britain while focusing on/taking advantage of the openness of trade with the Chinese economy, as their market seems fairly stable compared to the British economy.

Key Words: Financial Contagion, Exchange Rate, Impulse Response Function, Market Capitalization, Variance Decomposition

INTRODUCTION

In any economy, the essence of the stock market is adjudged through its role in evaluating and facilitating economic activities. Essentially, the stock market around the globe is concerned with the act of mobilizing and channeling scarce resources to potential funds users. The fundamental basis for the establishment of stock markets is primarily for developmental purposes and a window for business organizations to access the required funds in order to promote the effective and efficient allocation of funds for investment and expansion. Stock markets also help in investment risks reduction through trade in equity and its critical role in facilitating economic activities in most countries (Yartey & Adjasi, 2007).

In some developing countries, financial markets have rapidly grown over the past decades as a result of innovations such as market integration, information technology advancement, globalization, and deregulation. During this time the world over, they have been growing integration witnessed amongst financial markets and

this has necessitated the debate regarding the linkages between stock market returns and macroeconomic variables.

Market integration is seen as a situation where the existence of obstructions such as tariffs, transaction costs, taxes and legal restrictions against the trade in equity portfolio and foreign assets are eliminated. Though market integration has not fully been achieved, the global economic convergence has caused economies over the world to be sensitive to the happenings in other economies (the contagious effect). As claimed by many authors, the existence of policy coordination and strong economic ties within economies can link their stock prices indirectly over time. Also, stock markets development is purported to enhance the degree of integration among them (Masih & Masih, 2002).

Dimitriou, Kenourgios, and Simos (2013) revealed that the global financial crisis had the most damaging effect on economies, worse than that of the great depression of 1929 because of cross-market linkages. One remarkable distinguishing outcome of these predicaments was how a shock in one country was swiftly transferred from one financial market to another around the world (Forbes & Rigobon, 2002). The connections between the stock market and financial markets, in general, resulted in an increase in systemic risk between countries as correlations significantly increased between markets beyond any fundamental linkages and phenomena generally known as market contagion (Kenourgios, Samitas & Paltalidis, 2011).

According to Forbes and Rigobon (2002), market contagion is a critical increase in cross-market linkages after a shock to an individual country or more has taken place. Recently financial markets research has refocused their efforts to understanding the nature of linkages across markets, especially after the financial turmoil. The recent global financial crisis that had its origin from United States of America (USA) was adjudged to have affected with varying spill-over impacts on capital markets across the globe with pervasive and intensive financial turbulence between 2007-2009.

Forbes and Rigobon (2001) argued that the answer to whether linkages between financial markets in different regions have grown stronger between financial markets is critical in proffering answers to the concerns of international and financial economies in three major areas: the effective diversification of global portfolio in order to attain risk reduction, the micro-prudential effectiveness in the regulation of banks and the pragmatic significance of contagion models that depended upon the adjustment in the behavior of investor behavior. Theoretically, the volatility in consumption through huge opportunities to diversify risks as a result of the integration of financial markets revealed contrary evidence.

The expected benefits from risk diversification could be minimal or eroded as a result of the correlated increases in asset prices in turbulent periods; as such, the scenario portrays a critical policy implication in the form of increased interdependence during crises and stronger global financial institutions coordinated intervention in such times. This is what causes the scenario often regarded as "shift contagion," hence, contagion is viewed as an extraordinary event that causes a departure from the linear correlation that was considered stable. On this basis, this study will focus on a framework that complements standard contagion spillover effects by examining how selected external stock markets affect stock market performance in Nigeria.

The growing rate of international financial markets and the presence of exchange rate regimes and monetary policy flexibility sort to explain an in-depth study on the association between the behavior of stock markets and macroeconomic variables. Couple with the global financial crisis, economies have witnessed an increase in the global transmission of stock prices, and invariably this may have affected the real economy of most remote countries.

Given the relationship of Nigeria with some countries in Europe, America and Asia through exports, imports, portfolio investments and foreign direct investment the global financial crises may have caused contagion in the Nigerian economy. This paper, therefore, seeks to examine interlinkages among stock markets and cross-market volatility transmission. Hence, the desire of this study to investigate the effect of financial contagion on the Nigerian stock market performance.

LITERATURE AND THEORETICAL ISSUES

This section will attempt to elucidate on the theoretical issues surrounding financial development, market integration and financial contagion.

FINANCE DEVELOPMENT THEORY

The integration of the stock market plays a fundamental part in the development of economies world over. The theory of finance development holds that a stock market that is considered as being integrated is more efficient than stock markets that are segmented. According to Errunza and Losq (1985), although the reverse could be the outcome, the models of asset-pricing could determine market integration in responding less to local factor than global events. Empirically, undoing restrictions on investment, global risk sharing is allowed via integration which would have a long-term effect on the growth of the economy by altering savings rates and the allocation of resources (Obstfeld, 1995). Several economies have experienced global downturn, especially in developing countries. The 1997-1998 financial crisis badly hit the Asian economies after decades of high growth. Government effective and active policies in tune with foreign trade openness and significant technological investments aided the Asian economies to overcome the crisis successfully. Unlike the Asian crisis of 97/98 and the 1980s Latin American debt crises, the 2007-2009 global financial crisis started in the advanced economies, and the advanced economies were worse hit than the developing ones. However, the extent of the financial crisis raises the concerns about the possible twin impact of the crisis on developing economies.

LITERATURE ISSUE

Empirical studies such as Riman, Offiong and Ibi (2014) and Ncube (2012) examined financial integration and its possible effects on the economies of developing countries in order to ascertain if which aspects are more exposed to risk and the extent to which risk is spread out to developing markets from the developed ones. According to Forbes and Rigobon (2002), to measure the possible effect of financial integration, there must be the adaptation of extant literature on volatility contagion and transmission.

In order to establish the financial linkages between the EU and US and the Middle East and North Africa region (MENA oil or non-oil producing countries) financial markets, Neaime (2012) employed the GARCH-family models (ARCHM and T-ARCH) and VAR analysis so as to model the conditional volatilities within the respective stock markets. In a related study, Agyei-Ampomah (2011) investigated the association between ten (10) African stock markets from 1998–2007 using decomposing volatility index of the domestic stock market and found that African stock markets are separated and segmented and separated from international markets even in the presence of the recent structural adjustments.

Due to contagion associations, it is no longer strange how American and European market shocks may have influenced the performance of the Nigerian stock market. The issues of contagion are linked with the transmission of the movement of financial variables from one market to another (Tella, 2009). According to Dornbusch, Park, and Claessens (2000), contagion is seen as a substantial increase in cross-market linkages after an individual economy or group of economies stock. Tella (2009) held that increased financial market international integration, including the capital market, has made available a cogent reason for the suspicion that in both developing and developed stock markets, there exist both positive and negative influences.

The integration between markets is becoming tighter due to increased international financial transactions amongst different countries (Rezayat & Yavas, 2006). The opening up of financial markets as a result of financial liberalization coupled with the re-emergence of the stock market and forex crises caused the question of global integration of the financial markets' especially in the context of risk management and asset allocation (Bakar & Masih, 2014). The foundation of this investigation is the theory of investments portfolio diversification and financial market contagion/integration. The financial market contagion/integration is defined by Menezes, Andreia Dionísio and Hassanic (2010) as the extent to which price and returns are closely related and the causality between them over time. There are many theories trying to model and enlighten the causes of the association in international financial market returns over time.

Kaminsky, Reinhart, and Vegh (2003) proposed a couple of scenarios that try to explain the integration between markets. They believe that the issue of irrational exuberance by investors was the main factor that will affect how money and capital markets operate and thereby increasing volatility. Other models which were emphasized on were through trade or finance. The more appealing theory is one in which they suggest that the way in which this phenomenon is transmitted is a consequence of global diversification of investments within a context of limited information.

The essence of global diversification has been demonstrated theoretically and recognized empirically for decades. The pioneering work on the theory of portfolio diversification was done by Markowitz (1959). This theory suggests that risk can be significantly reduced through proper asset allocation, where unsystematic risk can be eliminated through diversification. Unsystematic risk can be reduced significantly by formulating a portfolio of securities with negative correlation. This means that to maximize return for every unit of risk you need to combine assets in a portfolio which are not highly correlated with each other. Recently, the analysis of correlations within the international market context has been of great importance regarding cross-country diversification and allocation of the optimal portfolio.

There are various studies that were carried out on financial markets contagion (Aloui, Aissa, & Nguyen, 2011, Samarakoon, 2011, Bakar & Masih, 2014). Some of these researchers investigated the process of time-varying correlations amongst different financial markets during the period of crisis emanating from a shock from other markets. Dooley and Hutchison (2009) in their study found out that the United States of America (US) financial crisis has no aftermath effect on developing economies. Yiu, Alex, and Choi (2010) investigated the dynamics of cross-market correlations in developed markets and developing markets. They revealed that there was significant evidence of contagion between the US and the Asian markets during the 2007/9 global crisis. Yiu et al. (2010) further indicate that there is no integration between the American financial markets and Asian financial markets in crisis periods.

More recently, Loh (2013) indicates that markets have become more integrated particularly the stock markets. In line with Loh (2013), Ding and Pu (2012) report that contagion increased in line with the increase in volatility coupled with deteriorating capacity on owners' obligations as they fall due. The correlations were found to be persistent in both upward and downward trending markets. In the study by Kenourgios, Semitas, and Paltalidis (2011) where they examined the BRIC countries, they also found the effects of contagion from countries that were in turmoil to fairly stable markets during periods of financial market crisis. Among the other recent study on stock market contagion are Horvath and Petrovski (2013), Kenourgios (2014), Luchtenberg and Vu (2015). These researchers observed that during the periods of market turmoil the correlation between international stock markets increased significantly. The more interesting revelation was proposed by Ding and Pu (2012) who pointed out that there has been a dramatic change in the correlation structure before and after the crisis leading to a suggestion that financial market integration should be conceptualized differently after the 2007/9 global financial crisis. Substantial cross-market inter-linkages among international stocks will inevitably result in spillover effect to other markets.

Chiang, Jeon, and Li (2012) asserts that it is financial market liberalization that allowed for the connection of the Chinese markets to the whole world and these reforms will allow spillovers from China to the international markets. In their study of emerging and developed market, Ahlgren and Antell (2010) found no evidence of contagion rather they found evidence of short-term linkages during times of crisis. Contrary to the existence of short-term interlinkages, Awokuse, Chopra, and Bessler (2009) show that the substantial surge in market connections due to globalization and liberalization of financial markets came to a halt, in fact, there was some structural decrease in some of the markets during the Asian financial crisis of 1997.

Xu and Hamori (2012) suggest that the stock market inter-connection between the BRICs and the US sapped in both the average return and the volatility in times of market turmoil. Horvath and Petrovski (2013) confirm the same findings suggesting that the deterioration in stock market correlations during trending and prolonged bearish markets could be a consequence of decreased market capitalization.

In the analysis of US financial shocks, Samarakoon (2011) reports the existence of bi-directional, yet contagion, interdependency and asymmetric effect on emerging markets. Specifically, the study indicates the interdependence and contagion between the US and developing financial markets while the frontier markets and the American markets are also cointegrated. Kenourgios and Padhi (2012) employed the vector error correction analysis to examine the contagion effects on emerging markets during the Russian and Asian crises as well as the subprime crisis. Their findings show that there is both short and long run specifics only amongst emerging markets during Russia and the Asian crises. They then indicate that financial markets tend to be significantly integrated in times of trouble.

With the immediate pronouncement of the USA financial crisis in July 2008, the activities of the stock market in Nigeria began declining drastically. It became obvious that investors began to withdraw their investments and cause the stock price to drop continually and the net capital inflows dropped massively as the crisis began. Using the ordinary least squares method, Yakubu and Akerela (2012) found out from their study of the impact of the global financial crisis on the performance of the Nigerian stock exchange and submitted that there exists no significant effect on the Nigerian stock exchange.

Informed by literature reviewed in this study, one can conclude that there is almost a conclusive determination of the nexus between emerging and developed markets. However, studies that examine contagion in African markets are still rare. The analysis of inter-connection between African stock markets is meager despite the importance of understanding how financial markets are integrated particularly in a generation where the crisis in financial markets is persistent.

The mixed results in the study of financial markets contagion were dictated by the ever-changing correlation between financial markets through time. Mandeleno and Pinho (2012) indicate that the correlation between markets changes over time as the financial crisis occurred at different time periods. There are time variation and scale variation in correlation across the different times of the financial crises (Loh, 2013). Ozdemir and Cakan (2007) found that there is a significant two-way non-linear cointegrating association between the American markets and other markets. There is a plethora of evidence that indicates to the fact that stock markets, in general, are correlated in terms of price level and returns. The linkages have been shown to change over time where strong correlations are reported in times of crises.

In related studies in Nigeria, Olowe (2009) using the EGARCH model assessed the response of stock volatility and its return in Nigerian stock market and discovered that they are free from the severity of financial crisis as a result of the country being less exposed to the international community. According to Mobolaji (2008), while the banking industry in Nigeria is said to have less exposure to global markets, many banks with off-shore credit lines started enjoying outright cancellation or reduction credit lines in that most international banks were badly hit by the crisis already, hence, causing a weak bank credit portfolio.

SUMMARY OF LITERATURE AND STUDY GAP

Most studies that attempted to analyze the relationship between financial contagion and stock market performance from the empirical review were biased towards the adoption of the GARCH-family models to determine the conditional volatilities within the respective stock markets. This approach, therefore, failed to address the effect of techniques used in determining the contagious effect (economic shock transmission) since the GARCH is best suitable in assessing the effect of information in the markets. Based on this gap, this study adopted the Bayesian VAR model in order to capture the contagion effects between changes in foreign stock markets and their effects on the Nigerian stock market. The Bayesian VAR model is considered relevant in the use of innovations technique (impulse response function) in measuring market responses to a given shock. In summary, others studies have tested economic shock transmission by employing the commonly used ARCH-GARCH approaches. However, this study decided to adopt and use the impulse response function in measuring the transmission shocks. Besides, this study decided to use two developed economies and an emerging economy to see its influence on the Nigerian stock market.

METHODOLOGY

This study employed the autoregressive (AR) model in order to accommodate the contagion effect from economies like U.S.A, Britain, and China on the Nigerian stock market before, during and after the 2007-2009 global financial crises. The AR methodology makes room for flexible in evaluating the association between variables between and within financial markets. This study builds a Bayesian VAR (BVAR) model which incorporate small open economy assumptions. The rationale for adopting the Bayesian VAR (BVAR) is that the BVAR model is to solve the problem of the degrees of freedom which is mostly associated with the conventional AR approaches. In this study, a BVAR model of the Nigerian stock market was developed with block exogenous foreign stock markets with a number of restrictions on the contemporaneous relationships in the model. In particular, the model seeks to capture the contagion effects between changes in foreign stock markets and their effects on the Nigerian stock market.

$$MCAP = F(BDOW, ADOW, CDOW, EXCR) \quad (1)$$

Where: MCAP (Nigerian stock market capitalization), BDOW (British stock market index), ADOW (American stock market index), CDOW (Chinese stock market index), EXCR (nominal exchange rate).
From the model in equation (1), the vector ordering of our variables are:

$$\log MCAP = a_0 + a_1 \log BDOW_{t-i} + a_2 \log ADOW_{t-i} + a_3 \log CDOW_{t-i} + a_4 \log EXCR_{t-i} + U_t \quad (2)$$

Given our vector variables in equation (2), the structural identification model of 4 by 4 variable case are specified with matrix A being a lower matrix:

$$A = \begin{bmatrix} 1 & 0 & 0 & 0 \\ a_{21} & 1 & 0 & 0 \\ a_{31} & a_{32} & 1 & 0 \\ a_{41} & a_{42} & a_{43} & 1 \end{bmatrix} \begin{bmatrix} lnbdow \\ lnadow \\ lncdow \\ lnexcr \end{bmatrix} = \sum \epsilon_t = \begin{bmatrix} \epsilon_{1t}^{lnbdow} \\ \epsilon_{2t}^{lnadow} \\ \epsilon_{3t}^{lncdow} \\ \epsilon_{4t}^{lnexcr} \end{bmatrix}$$

DATA ANALYSIS AND DISCUSSION OF FINDINGS

The results of the analysis and their discussions will be presented in the following section.

UNIT ROOT TEST

The unit root test was carried out using the Augmented Dickey-Fuller (ADF) test in order to establish an integration order among the variables in the model. By so doing, the stationarity of the series holds that the ADF test statistic values must be greater than its respective critical value at one percent, five percent and ten percent level of significance. From the ADF results in table 1, none of the variables of interest were found to be stationary at levels. However, when all the variables were differenced once, they were all found to be stationary at first difference.

JOHANSEN CO-INTEGRATION TEST

Having known that the series was integrated of order 1(1); suggesting the absence of a unit root, hence, there was again the need to determine if there shall exist a long run association between the variables. In order to establish the long non-equilibrium association, the study employed the Johansen and Jesulius (1990) multivariate co-integration approach based on trace and maximum eigenvalue test. The result of the trace and maximum eigenvalue test both indicated that no cointegrating equation exists at five percent level. Based on the trace test, therefore, the study concluded that there was no long-run relationship between the variables in the model.

Bayesian VAR impulse response function

The impulse response functions analysis was conducted using the one standard deviation shocks to the innovations. There are the time paths of one or more variables given a one-time shock to a set of variables. Impulse responses are the dynamic equivalent of elasticities. However, it is not the right thing to do by interpreting the coefficient estimates of the BVAR model variables directly.

With the stationarity of the study variables at optimal lags based on Akaike Information Criterion (AIC), the study presents the impulse responses of the relationships between the Nigerian stock market and the contagion effect from selected foreign stock markets from Fig.1-4.

Innovation to the Nigerian stock market performance (MCAP) arising from a shock to each of the selected foreign stock market variables revealed that increase in British stock market (BDOW) exerts a continuous decreasing positive shock on MCAP throughout the ten years into the future. This implies that the Nigerian stock market would over the years witness a declining performance in response to volatility from the British stock market. This finding does not align with Olowe (2009) who similarly investigated how stock return reacted to volatility arising from British stock market. Olowe had earlier observed that the Nigerian stock market had no severity of external crisis as a result of the low exposure the Nigeria stock market to global economies.

Further analysis of the result revealed that the American stock market (ADOW) has a positive impact on the Nigerian stock market (MCAP). The MCAP responded positively to shocks arising from ADOW. Innovations to MCAP arising from shocks from ADOW began from the second and third period saw MCAP responding positively with an increase from 0.012068 to 0.013768 respectively. However, from the fourth period throughout the tenth year, MCAP responded positively in a decreasing magnitude of shocks from the American stock market in the future. This finding is consistent with the study of Dooley and Hutchison (2009) who also observed that the United States of America (US) financial crisis has no repercussion on emerging markets. Contrarily, in the analysis of US financial shocks, Samarakoon (2011) reported the existence of bi-directional, yet contagion, interdependency and asymmetric effect on emerging markets. Specifically, the study indicates the interdependence and contagion between the US and developing financial markets while the frontier markets and the American markets are also cointegrated. Furthermore, substantial cross-market inter-linkages among international stocks will inevitably result in spillover effect to other markets.

Similarly, the response of MCAP to a shock from the Chinese stock market (CDOW) followed after the pattern of the American stock market ADOW. The MCAP from CDOW is positive and varying in magnitude. The innovations from CDOW within the second and third period saw MCAP responding positively with an increase from 0.006912 to 0.007425 respectively. However, from the fourth period throughout the tenth period, MCAP responded positively in a decreasing magnitude of shocks from the Chinese stock market in the future. This finding collaborates with Chiang, Jeon and Li (2012) who asserted that it is financial market liberalization that allowed for the connection of the Chinese markets to the whole world and these reforms will allow spillovers from China to the international markets.

As expected, the response of the MCAP to shocks arising from drift in the foreign exchange rate (EXR) was observed to be negative throughout the selected periods. A plausible explanation for this response further revealed the overdependence of the Nigerian economy on foreign sustenance (import, foreign debts, and poor production base). This finding confirms Ding and Pu (2012) reports that contagion increased in line with the increase in volatility coupled with the deteriorating capacity to owner obligations as they fall due.

Variance decompositions

This showed the share of the h-periods-ahead forecast error variance of a series which could be accredited to another series. The nature of the variance decomposition signposts the Granger causality pattern between the series in the BVAR model such that it aided the transition to understanding from forecasting. The variables are in no particular ordered or sequence.

Considering the result of the variance decompositions as shown in table 5, the left-hand column and the one, five and ten periods into the future percentages can be credited to individual series shocks in the remaining columns is reported. The sum of the rows amounts approximately to 100% in that forecast error variance is expected to be explained by the series in the model. In a Granger sense where a series is considered exogenous, a greater aspect of such series' error variance is expected to be explained by its own innovations. By application, it's almost impossible to make a distinction between a series with minor predictive value and one that has no predictive value; rather, their magnitudes could be a useful remedy in predictions.

The variance decompositions result revealed that considering a 10-period forecast limit, about 68.97% forecast error variance in MCAP was attributed to its own innovations, hence, MCAP is assumed not to be exogenous in that other series like CDOW, BDOW, ADOW, and EXR jointly forecasted MCAP. The Nigerian stock market capitalization was found to be stable at period one to the next, and no other series showed any figure in its first period ahead of the forecast. The CDOW seems more important than the rest of the variables at influencing MCAP the horizon of forecasting.

The CDOW revealed an exogenous pattern as a result of the 81.03% error variance that was attributed to its own innovations. The exogenous behavior of CDOW is revealed in its response to innovations in MCAP between the first, fifth and tenth-month horizon while the rest of the variables were in the fifth and tenth month only. Obviously, MCAP seems more important than the rest of the variables at influencing CDOW in the horizon of forecasting throughout the periods.

The BDOW revealed an exogenous pattern as a result of the 16.51% error variance that was attributed to its own innovations. The BDOW series was highly explained by the interactions of other series during the forecasting periods. For instance, the CDOW series was the most influencing series at both shorter and longer horizons (1 to 5 and 5 to 10) than the other variables in forecasting BDOW.

The ADOW revealed an exogenous pattern as a result of the 40.51% error variance that was attributed to its own innovations. The ADOW series was highly explained by the interactions of other series during the forecasting periods. Similarly, the CDOW series was the most influencing series at both shorter and longer horizons (1 to 5 and 5 to 10) than the other variables in forecasting ADOW.

Lastly, the EXC revealed an exogenous pattern as a result of the 85.69% error variance that was attributed to its own innovations. The EXC series was not highly explained by the interactions of other series during the forecasting periods. The obvious differences in the EXR variable revealed that, at the first month, BDOW seems much more "exogenous" than the other variables (1.11%). However, at longer term (5 and 10 periods) forecasts of EXR, the ADOW innovations explained the greater aspects of the forecast error variance explained by EXR than other innovations.

CONCLUSIONS

The BVAR model imposes a block exogeneity assumption were Nigeria is assumed as an open economy with the U.S.A, Britain, and China markets. Notably, the contagion effect of market deregulation and globalization on the Nigerian stock market was shielded to showcase the obvious transmission of global contagion shocks. As such, the financial contagion effect measures, as represented by the shocks from foreign markets and exchange rate variable were restricted in the model at first lag, and the model was analyzed and seen to be in line with contemporary studies and economic theory.

The restrictions maintain that arising from a shock to each of the selected foreign stock market variables revealed that, increase in British stock market (BDOW) exerts a continuous decreasing positive shock on the Nigerian stock market (MCAP) throughout periods into the future. On the other hand the American stock market (ADOW) impacted on the Nigerian stock market (MCAP) positively; innovations arising from shocks began from the second and third period and saw MCAP responding positively with an increase, however, from the

fourth period throughout the tenth year, MCAP responded positively in a decreasing magnitude to shocks from the American stock market in the future.

Similarly, the Chinese stock market (CDOW) followed after the pattern of the American stock market ADOW. The MCAP from CDOW is positive and of varying magnitude. As expected, the response of the MCAP to shocks arising from drift in the foreign exchange rate (EXR) was observed to be negative throughout the selected periods. The variance decompositions result revealed that considering a 10-period forecast limit, about 68.97% forecast error variance in MCAP was attributed to its own innovations, hence, MCAP is assumed not to be exogenous in that other series like CDOW, BDOW, ADOW, and EXR jointly forecasted MCAP. The Nigerian stock market capitalization was found to be stable at period one to the next, and no other series showed any figure in its first period ahead of the forecast. The CDOW seems more important than the rest of the variables at influencing MCAP the horizon of forecasting. The findings from this study gave impetus to the conclusion that, no individual economy could cause a contagion effect on the Nigerian stock market. However, where many countries are involved, the presence of financial contagion is visible. Hence, as the Nigerian stock market gets more and more globalized and liberalized, the contagious effects will be present in the Nigerian stock market.

RECOMMENDATIONS

The following recommendations should be considered:

1. It is critically important that Nigeria improves its investment in infrastructure as this would enhance competitiveness and diversification in the private sector activities. This should reduce the over-dependence on the British economy.
2. In engaging deliberate trade-balance, there is a need for re-negotiations of certain bilateral deals with the British economy especially as it concerns the stock market development
3. There is need to focus on greater trading and openness to developing economies like China whose markets seem fairly stable as compared to the highly industrialized economies like the USA and Britain .
4. The macroeconomic policy of government should be domestic growth driven tailored towards import reduction and export expansion. This will strengthen the Naira against foreign trading partners.

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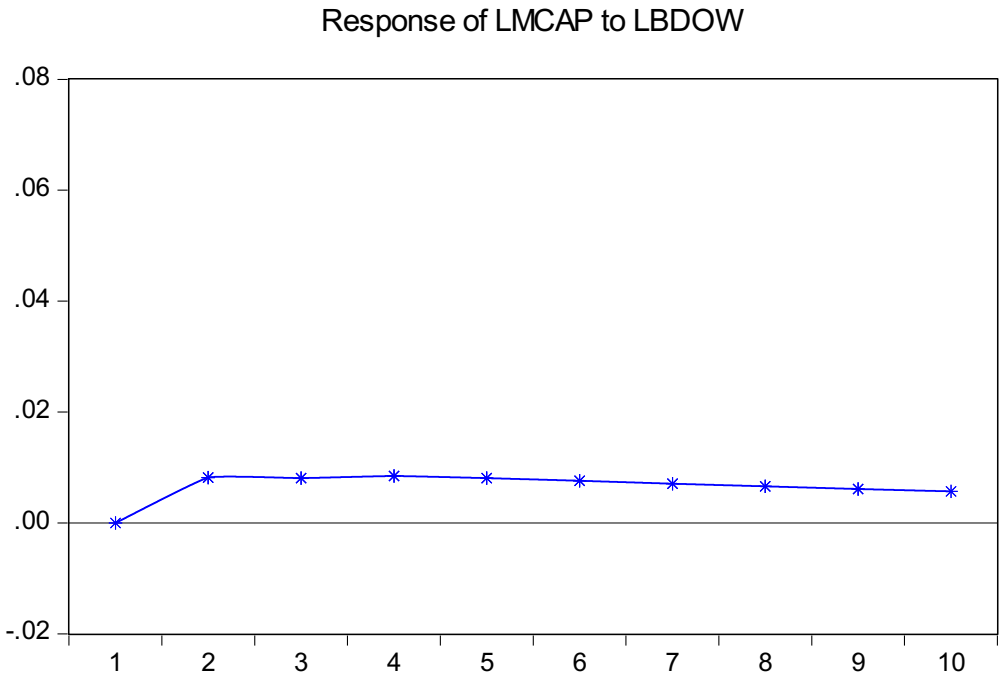
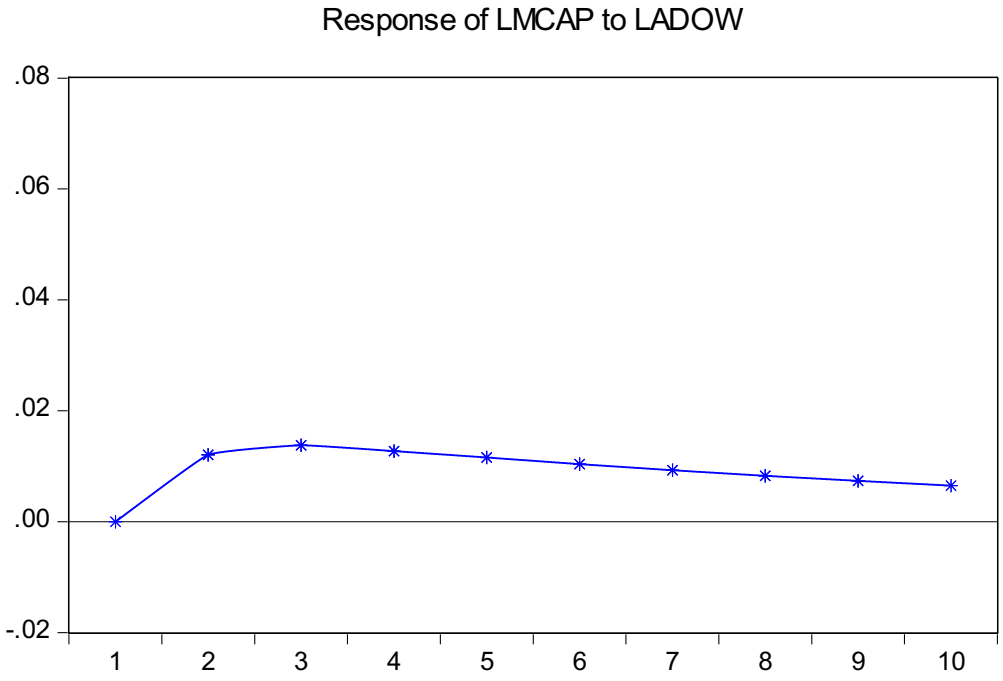
APPENDICES

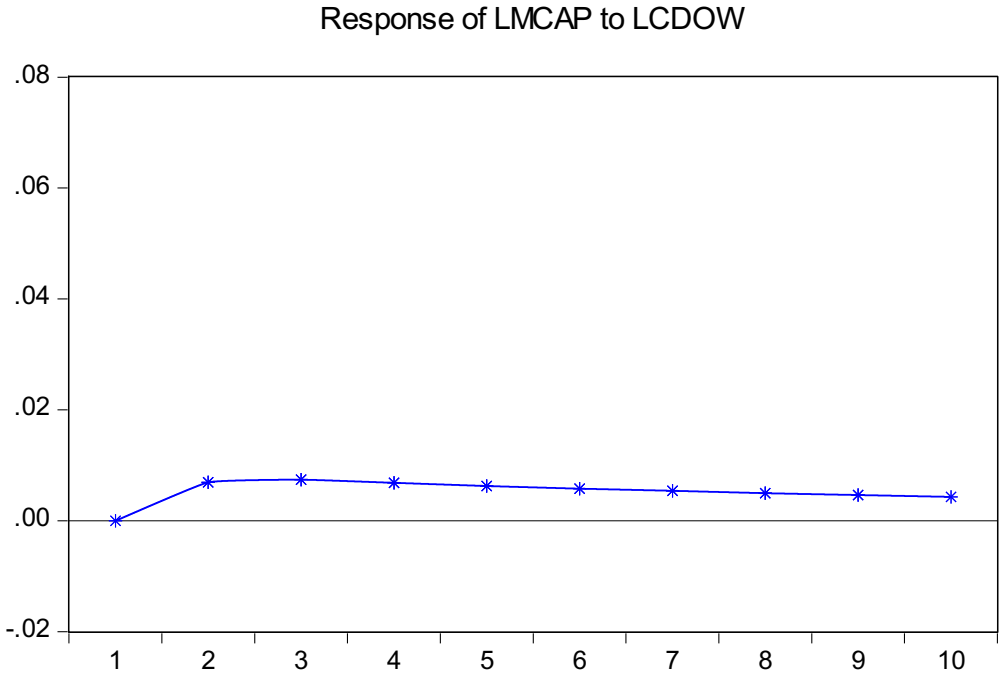
GRAPH SHOWING MCAP RESPONSE TO SHOCKS FROM BDOW



GRAPH SHOWING MCAP RESPONSE TO SHOCKS FROM ADOW



GRAPH SHOWING MCAP RESPONSE TO SHOCKS FROM CDOW



GRAPH SHOWING MCAP RESPONSE TO SHOCKS FROM EXCR

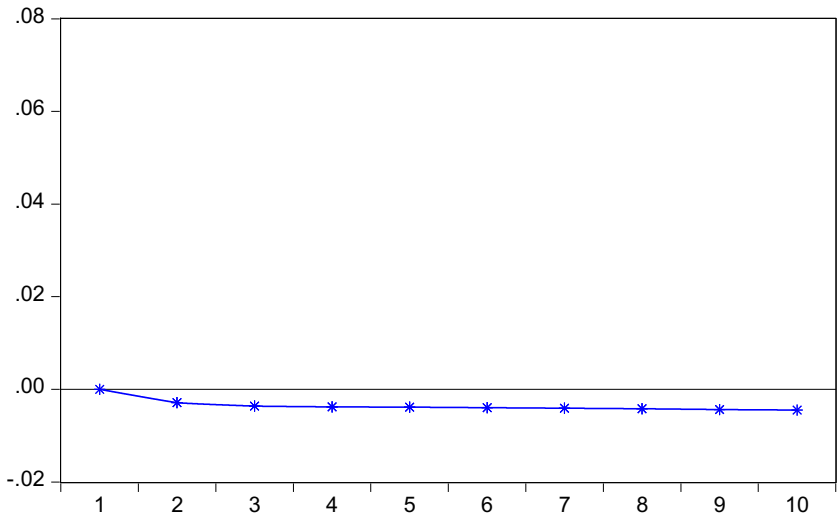


TABLE 1
Unit root test using the Augmented Dickey-Fuller (ADF) statistics

Variables	**At Level**	**At 1st Difference**	**Order of integration**
MCAP	-2.0558	-8.9231	I(1)
CDOW	-2.7793	-8.7557	I(1)
BDOW	-2.2879	-9.9500	I(1)
ADOW	-1.3098	-14.0822	I(1)
EXCR	2.1319	-6.2230	I(1)

TEST OF CRITICAL VALUES:
1%= -3.5122
5%= -2.8972
10%= -2.5858

Source: Researcher's computation from E-views 10.0

TABLE 2
Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.198854	44.72369	69.81889	0.8396
At most 1	0.133354	26.76497	47.85613	0.8630
At most 2	0.121620	15.17186	29.79707	0.7688
At most 3	0.040020	4.668114	15.49471	0.8430
At most 4	0.016648	1.359803	3.841466	0.2436

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: E-View 10.0 Statistical software

TABLE 3
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.198854	17.95871	33.87687	0.8797
At most 1	0.133354	11.59311	27.58434	0.9478
At most 2	0.121620	10.50375	21.13162	0.6964
At most 3	0.040020	3.308311	14.26460	0.9241
At most 4	0.016648	1.359803	3.841466	0.2436

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: E-View 10.0 Statistical software

TABLE 4
SHOWING MCAP RESPONSE TO SHOCKS FROM ADOW, BDOW, CDOW AND EXCR

Response of LMCAP: Period	LMCAP	LBDOW	LADOW	LCDOW	LEXCR
1	0.069886	0.000000	0.000000	0.000000	0.000000
2	0.041315	0.008185	0.012068	0.006912	-0.002877
3	0.036644	0.008094	0.013768	0.007425	-0.003625
4	0.032622	0.008459	0.012714	0.006811	-0.003770
5	0.029619	0.008087	0.011552	0.006276	-0.003877
6	0.026987	0.007604	0.010352	0.005798	-0.003986
7	0.024618	0.007085	0.009258	0.005372	-0.004102
8	0.022461	0.006584	0.008257	0.004982	-0.004221
9	0.020490	0.006115	0.007346	0.004624	-0.004341
10	0.018688	0.005682	0.006514	0.004294	-0.004459

TABLE 5
SHOWING VARIANCE DECOMPOSITIONS

VARIABLE	PERIOD	MCAP	CDOW	BDOW	ADOW	EXR
MCAP	1	100.00	0.00	0.00	0.00	0.00
	5	83.88	9.97	1.47	4.22	0.43
	10	68.97	23.24	2.78	4.63	0.34
CDOW	1	6.54	93.45	0.00	0.00	0.00
	5	8.56	86.46	3.81	0.32	0.82
	10	11.56	81.03	4.45	1.10	1.84
BDOW	1	6.55	46.38	47.06	0.00	0.00
	5	13.38	63.01	23.17	0.13	0.28
	10	16.47	66.36	16.51	0.42	0.21
ADOW	1	1.10	17.28	0.36	81.24	0.00
	5	13.26	22.77	0.52	55.69	7.73
	10	17.15	26.33	0.51	40.31	15.68
EXR	1	0.01	0.70	1.11	0.43	97.74
	5	0.09	0.48	2.45	7.41	89.55
	10	0.05	0.28	3.14	10.81	85.69

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Effect of Crude Oil Prices on GDP Growth and Selected Macroeconomic Variables in Kenya

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Abstract
Crude oil is one of the primary drivers of economic growth and a key ingredient to sustainable development. It is therefore vital that oil products be efficiently and competitively priced to accelerate economic growth. Realization of a 10% GDP growth in Kenya by the year 2030 requires a massive development in the energy sector. This study empirically explored the effect of crude oil on GDP growth and selected macroeconomic variables in Kenya; by investigating how crude oil prices affect GDP growth, Inflation and Real exchange rate. Literature has presented these three variables as the leading indicators of economic health and key variables affected by crude oil prices. Statistics from the World Development Indicator show that demand for oil in Kenya has been progressively increasing since the 1970s and this is expected to grow even further from the current consumption of 4.2 million Metric tons per year to 12 million Metric tons by the year 2030. The forecasted rise in demand has been attributed to the achievement and sustainability of the desired 10% economic growth, as envisioned in the national vision 2030 blueprint. The study used time series data covering the period 1970 to 2016, which to capture different oil shocks that have been shown through empirical and theoretical literature to have had an impact on the economy. The study estimated three Autoregressive Distributed Lag (ARDL) models to analyze the effect of crude oil on the selected variables in the study. The findings of the study revealed that Crude Oil Prices have a positive long-run impact on GDP growth, the study attributes this to the fact that Kenya imports oil and re-exports it to Uganda, Rwanda, and South Sudan. The findings also established that Crude Oil Prices have a positive effect on inflation in the long run, while in the short run its lag of one affect inflation, meaning that the Crude oil prices for the previous one year affect the current year's inflation rate. The relationship between crude oil prices and Real Exchange Rate was negative in the long run.

Key Words: Oil Prices, ARDL, GDP Growth, Kenya

1. Introduction

There exist limited indigenous energy resources in Kenya, and there is a concern that it may not be sufficient in sustaining the Country's economic development in the long run and may thus drive the Country into relying on energy imports (Macharia, 2017). Currently, Kenya meets 60 percent of its total energy demand through imports. National oil (2016) projects the share of imported energy to increase by 10 percent as a result of oil consumption by the Standard Gauge railway and reviving of industries that had collapsed such as Webuye pan paper mills; various irrigation schemes; urbanization that has led to increase in public service transportation and massive importation of cars by Kenyans etc. The challenge, therefore, is to secure adequate oil supplies at the minimum possible cost.

Demand for oil has been on the rise over the years, and this is expected to rise even further. Meeting soaring demand of crude oil and realization of most of the goals and aspirations in the vision 2030 blueprint calls for massive development in the energy sector. The National Oil (2016) estimates that at the economic growth rate of 10% desired to achieve Vision 2030, petroleum and gas consumption will grow from the current 4.5 million MT to 12 million MT by 2030.

Oil is widely used across all sectors of Kenya's economy, especially in manufacturing, transportation, and power producing industries. However, the price dynamics of oil have been relatively volatile in the recent years, posing a threat to the various sectors and the overall economy. Kenya suffers from a shortage of internal energy resources, including oil (National oil, 2016); as a result, Kenya continues to be in the category of net oil importing developing countries; this subjects the economy to vulnerability to external shocks, notably oil price fluctuations, exposing the country to risks associated with oil prices. Marquez (1986) notes that for a non-OPEC developing nation such as Kenya, oil price risk includes: a reduction in aggregate demand, increase in consumption price deflator and a decline in real income.

It is against this backdrop coupled with a lack of an effective cost-beneficial substitute available that this study sought to examine whether the prevailing hypothesis as propagated by Hamilton (1983) that oil price fluctuations hurt a net oil importing country's macroeconomic performance holds for Kenya. The endogenous variables used as proxies for macroeconomic performance are GDP growth, real exchange rate, and inflation level. The choice of variables is primarily informed by a study by Marquez (1986)) which is used as a benchmark. Moreover, according to Cologni & Manera (2008), these three variables are presented as the leading indicators of an economy's health. This study contrasts other studies carried out on Kenya's data, as it estimates the variables in a system framework, this addresses the shortcomings of non-coexistence bias and allows for a lagged and contemporaneous interconnection among the variables under study including control variables. The approach also enabled the study to measure the long run and short run effects making it possible to determine whether the impact of oil prices on GDP growth and the selected macroeconomic variable is temporary or permanent.

2. Literature Review

Empirical research on the relationship between oil prices and GDP growth focusing on developing countries especially in sub-Saharan Africa are few as much focus has been placed on developed nations (Chuku *et al*. 2010). There is an existence of little and scanty empirical literature on emerging oil-producing countries such as Kenya, and how the discovery of oil is going to change the shape of the economy. There is no direct relationship between economic growth and crude oil prices, the relationship between the two variables is mostly dependent on a country's macroeconomic policy, institutional frameworks and sectoral structure (Chuku *et al*. 2010).

Many studies have focused on developed countries for example (Hamilton J. D., 1983: 1996: 2010; Rodrigues & Sanchez 2005; Filis & Chatziantoniou 2013). Findings of the studies reveal that there is an inverse relationship between crude oil prices and GDP growth. The studies also point out that crude oil prices negatively affect the manufacturing sector leading to reduced production of industrial goods. The common conclusion, however, is that the relationship is not steady for the countries over time. This conclusion was further confirmed by Blanchard & Gali (2007), in their comparison of how oil prices affect inflation and GDP growth in the contemporary economies vis-a- vis those in the 1970s. The study established that the unsteady relationship is rampant in the modern economies as compared to the ones in the 1970's, they attributed this to a more flexible labor market, lower energy intensity and stable monetary policy.

Studies on the effect of crude oil prices on GDP growth have also produced varying results. In a survey of oil fluctuations and its impact on the GDP of Singapore Chang & Wong (2003), findings revealed that there an adverse effect although the effect is not significant. The results also showed that there is an insignificant inverse relationship between crude oil prices and other variables under study notably inflation and unemployment rate.

The study is however contradicted by a study conducted on Iranian economy by Farzanegan & Markwardt

(2009) and on Nigerian economy by Oriakhi & Osaze (2013). By using correlation analysis, the studies established a positive relationship between the two variables. The findings are attributable to Nigeria and Iran being oil exporting nations.

Jumah & Pastuszyn (2007) while using cointegration analysis on time series data covering 1965-2004, estimated the impact of oil price shocks on GDP growth through the interest rate channel. The study, however, failed to establish a significant relationship between the two variables. Nevertheless, the study identified that there is a positive relationship between crude oil and price levels which sequentially affects negative output negatively in the long run.

In a similar study and by utilizing Vector Error correction model, Adam (2008) attempted to estimate the short-run and long-run effect of crude oil prices on selected macroeconomic variables namely exchange rate, GDP, Interest rate and inflation in Ghana. The study used data covering 1970:1 to 2006:4 and the finding of the study were that the effect of crude oil on inflation level was positive while that on output was negative.

Focusing on studies in Kenya, Mureithi (2014) on his research on oil import volatility and its effect on economic growth in Kenya revealed that Oil import volatility has a significant adverse impact on GDP growth both in the short- run and the long-run. However, most research suggests that an increase in oil import results in increased economic growth and vice versa. Using Johansen-Juselius approach to co-integration test and vector error correction, the author could only establish one cointegrating relationship among the four variables under study (real exchange rate, traffic volume, total manufacturing index, and GDP growth rate).

The empirical studies on the impact of crude oil prices on inflation have produced mixed results. Odera (2015) researched on the relationship between international diesel price and the inflation rate in Kenya. The study adopted secondary time series data co-integration test to determine the long-run equilibrium relationship when the series has a linear combination and Granger causality test to test the short-run relationship between dependent and independent variables. The correlation matrix and regression failed to find the perfect link between the variables and Granger causality test also confirms that there is no short-term relationship; the study concludes that the hike in international diesel oil price does influence the domestic inflation rate as suggested by monthly data of variables.

Metcalf & Wolfram (2010), found that political stability is one of the main contributors to oil production volatility in OPEC countries. Countries with very democratic political systems had less volatility in oil production than their counterparts with autocratic political regimes. Fluctuations in oil production were found to affect global oil prices, thereby causing price volatility in countries that import oil. Besides, the level of oil consumption and the size of the economy determined oil import volatility. These results were based on data collected from OPEC and OECD countries. The dataset included oil production levels, oil import volumes, GDP, and the composite democracy index for the period 1970-2007. The study utilized two-stage least squares econometric method for data analysis. However, the researchers failed to consider the possible causes of oil import volatility in the context of developing countries such as Kenya that heavily rely on oil as their primary source of energy.

In a study on Pakistan's Economy, Naveed (2010) attempted to measure the effect of changes in oil prices on government expenditure, consumption and real exchange rate, inflation and GDP growth using annual data from 1972- 2009. By examining the long run, and short run effect, the finding revealed that there is an existence of a short-run and a long-run negative relationship between inflation and all the other variables apart from GDP. Results on GDP shows that the impact of oil is detrimental in the long run but positive in the short-run. This study, may not be however comparable to Kenya due to the difference in the level of economic development between Kenya and Pakistan.

Arinze (2011) while attempting to studying the impact of oil price on Nigerian economy using data from 1978-2009 and using the hypothesis approach, the study established that there is a direct and significant relationship between prices of petroleum products and inflation. Similar research by Eregha, Mesaran & Ayoola (2015) using data from 1994-2012 in Nigerian economy also reveals that there is a positive effect of oil prices on inflation in

the long run however in the short-run the relationship is not significant.

Tang & Xiong (2011) found a positive correlation between oil price speculation and prices of other commodities their study is consistent with Juvenal & Petrella (2012) study on oil price speculation established that oil prices have a positive impact on inflation, they further concluded that an expansion of the economy calls for an increase in demand for raw material such as oil, it is this demand that then increases prices of commodities.

Irwin & Sanders, (2010) however, contend the role of speculation in oil pricing and commodity pricing, their study did not show any changes in prices of oil as a result of speculation and hence no change in the inventory prices or level.

Studies in Kenya have shown mixed results, Odera (2013) in a study on the relationship between diesel price and the inflation rate in Kenya found that there is a positive correlation between the two variables although it is weak and insignificant. Using Vector Error Correction and Johannsen Cointegration approach on quarterly data during the period 1996Q1-2011Q4, (Suleiman, 2013) found a strong and positive correlation in the short run, the relationship was however not significant in the long-run.

Many of the studies on the relationship between real exchange rate and oil prices have mainly concentrated on effective exchange rates. It is, however, worth noting that there are different findings across the studies and regions. Kilian &Taylor (2003) point out that there are many nonlinearities between oil prices and nominal exchange rate. The relationship can only be linear in the event of high inflation differentials which lead to a more relative Purchasing power parity in the long run.

The findings were contradicted by Habib & Kalamova (2007) on their study on the role of oil exchange rate movements. They used Vector Error Correction on data from Russia, Norway, and Saudi Arabia's economies and only found a long run relationship between oil prices and exchange rate exists in Russia but not Norway and Saudi Arabia. The study agrees with the findings by Al-Mulali (2010) which established that there is a real long-run appreciation of effective exchange rate in Norway as a result of an increase in oil prices.

Recent studies reveal that there is no clear connection between real exchange rate and price of oil both in oil-importing and exporting countries. Buetzer *et al*., (2016) while using Structural VAR analysis to study oil price shocks for a group of 43 countries reports that there is no indication of appreciation of exchange rate of oil exporters against those of oil importers. The lost connection might be attributable to the intervention measures in the foreign exchange rate market by the higher oil surplus economies.

This results closely agree with Beckmann & Czudaj (2013) analysis on within and between effect estimation of a set of 10 countries. They reveal that the results vary not only within but also between the groups of oil importing and exporting countries.

2.1 Theoretical Model

The economic theory underpinning this study stems from the *Marquez model*. This model was developed by Jaime Marquez in 1986 while advancing the works of Metzler (1950) on transmission channels of oil prices internationally. Marquez, formulated a three region-three goods model of the world economy to highlight the channels by which the exogenous increase in the price of oil is internationally transmitted.

The theory puts across the effect of changes in oil prices in three country blocks: developed economies, OPEC economies and non-OPEC developing economies. For this study, we are going to concentrate on the theorem's analysis on non-OPEC developing economies.

The theory posits that oil prices impact real income in non-OPEC developing countries through various channels. The theory points out the first channel to be its negative impact on consumption by causing an increase in consumption price deflator. An increase in consumption price deflator reduces real income and causes inflation. The other channel through which real income is affected is as a result of the impact of oil prices on the

nominal holdings of foreign exchange reserve and their real purchasing power, which is caused by the increase in the export price of manufacturers in developed countries, resulting to high import prices and a decline of foreign real exchange rate reserve in developing economies. The decline in the real exchange rate reserve in turn adversely affects the import of manufacturers, capital formation and capital stock in the non-OPEC developing country which further dampens output growth and increases the prices of commodities.

Using mathematical notations and equations, Marquez model posits that oil prices would result to foreign exchange constraint on imports of manufacturers in non-OPEC developing countries. Oil payments are thus deducted from the computation of foreign exchange resources, assuming that these countries use whatever is left to finance imports of manufacturers. This is shown in equation 1

$$M_m = (R + P_r M_r - P_O M_O)/P_m \quad (1)$$

If foreign exchange constraints are binding, then imports of manufacturers will be limited, dampening capital accumulation, reduction of output leading to low-income growth and inflation. Finally, oil imports are determined as a function of oil prices and real income; this is shown in equation 2

$$M_O = M_O(P_0, Y) \quad (2)$$

Where:
Y – Real income
O - Oil
R - Resource transfer
r – Raw material
M - Imports
m - Manufacturing

3. Methodology

The study was specified in three models, one that shows the relationship between oil prices and GDP growth, the other that shows the relationship between oil prices and inflation and another one that shows the relationship between oil prices and real exchange rate. These models are informed by the theoretical underpinnings that stem from the study by Marquez (1986).

The models are specified using ARDL procedure as developed by Pesaran, Shin & Smith (2001) to examine the short- run and long-run relationship between oil prices and the three variables; we employ the ARDL procedure. The ARDL cointegration approach has numerous advantages in comparison with other econometric methods: the underlying regressors are not restrictive irrespective of whether the variables are integrated of order zero or one, i.e., I (0) or I (1). Bahmani-Oskooee & Ratha (2004) stated that the uncertain results from different tests are dependent on the power of

unit root tests. To overcome this problem, the ARDL-bounds testing approach does not require the classification of variables into stationary and nonstationary. Secondly, it is suitable for any sample size, be it small or large. Thirdly, this approach provides unbiased estimates of the long-run model and valid *t*-statistics even when some of the regressors are endogenous.

Model one

Given equation 2 which premises that oil import is a function of oil prices and real income. However, to meet our objectives of the effect of oil prices on GDP growth, the model will be modified to by making real income the subject of the formulae as shown in equation 3.

$$Y = f(-P_O, M_O) \quad (3)$$

Equation 3 shows that real income is an increasing function of oil imports and a decreasing function of oil prices. The influence of crude oil price on the real GDP growth rates of Kenya's economy will be determined by fitting the following regression equation.

$$\Delta GDP_t = \beta_0 + \beta_1 COP_1 + \beta_2 OI_2 + \varepsilon_t \qquad (4)$$

Where
ΔGDP_t denotes the real GDP growth
β_0 the intercept of the line on Y- axis.
β_1 and β_2 denotes the slope coefficient
COP_1 denotes the crude oil price. (Yearly Kenyan basket price).
OI_2 denotes oil imports
ε_t is residual term of the model representing all other factors that influence GDP growth that has not been included in the model.

Since the study sought to test for both the short-run and long-run relationship between the variables, The Autoregressive Distributed Lag model (ARDL) was estimated. The method has been used since 2001 after it was developed by Pesaran, Shin and Smith to model the relationship between Economic variables in a single equation time series variable. ARDL has also gained popularity due to making cointegration of nonstationary variables equal to an Error-Correction process. Additionally, the model has a reparameterization in the Error-Correction form (Hassler, 2000).

According to Pesaran, Shin, & Smith (2001), the Error-Correction presentation is also vital for testing for the existence of the long-run relationship. The bounds testing procedure is useful for drawing conclusive evidence without considering whether the variables are stationary at level (Integrated of order zero) or at first difference (Integrated of order one).

Model 4 will, therefore, be reparametrized into the ARDL framework as follows:

$$\Delta GDP = \alpha_0 + \sum_{j=1}^{n} b_j \Delta GDP_{t-j} + \sum_{j=0}^{n} c_j \Delta COP_{t-j} + \sum_{j=0}^{n} d_j \Delta OI_{t-j} + \delta_1 GDP_{t-1} + \delta_2 COP_{t-1} + \delta_3 OI_{t-1} + \varepsilon_{1t} \qquad (5)$$

Where:

Δ denotes the first difference operator. The parameters δ_i, i=1,2,3 function as the long-run multipliers, while the b_j, c_j and d_j function as the short-run dynamic coefficients of the underlying ARDL model.

Model two

From Marquez model equation 1, an increase in the price of oil can be translated to inflation and real exchange rate through its effect in the cost of manufactured goods denoted by P_m. This dampens imports of manufactured goods in non-OPEC developing countries leading to a decline in imports of capital goods and capital accumulation, leading to low output growth and high prices of commodities. To carry out the quantification of expected influence of crude oil prices on inflation and real exchange rate, we will modify equation 1 to follow the model of Expectations-Augmented Phillips Curve, 1968, as developed by Milton Friedman and Edmund Phelps which is depicted as follows:

$$INF = \beta_0 + \beta_1 COP_t + \beta_2 FR_t + \beta_3 RER_t + \varepsilon_t \qquad (6)$$

Where
INF denotes the inflation rate

COP denotes Crude oil prices
FR_2 denotes Foreign remittances
RER_3 denotes Real exchange rate
ε_t is residual term of the model representing all other factors that influence GDP growth that has not been included in the model.

Crude oil prices and error terms (other factors not included in the model such as political stability, drought, national security among others) constitute cost-push inflation while real exchange rate and foreign remittances constitute demand-pull inflation (Romer, 2000).

To meet the objective of the long run and short effect of crude oil prices on inflation, the study will use an ARDL model.

$$\Delta INF = \alpha_0 + \sum_{j=1}^{n} b_j \Delta INF_{t-j} + \sum_{j=0}^{n} c_j \Delta COP_{t-j} + \sum_{j=0}^{n} d_j \Delta FR_{t-j} + \sum_{j=0}^{n} e_j RER_{t-j} + \delta_1 INF_{t-1} + \delta_2 COP_{t-1} + \delta_3 FR_{t-1} + \delta_4 RER_{t-1} + \varepsilon_{1t} \quad (7)$$

Δ denotes the first difference operator. The parameters δ_i, i=1,2,3,4 function as the long-run multipliers, while the b_j, c_j, d_j and e_j function as the short-run dynamic coefficients of the underlying ARDL model.

Model three

Marquize model posits that oil prices have an impact on the nominal holdings of foreign exchange reserve and their real purchasing power, which is caused by the increase in the export price of manufacturers in developed countries, resulting to high import prices and decline of foreign exchange rate reserve in non-OPEC developing economies.

The empirical model can be stated as:

$$RER_t = \beta_0 + \beta_1 COP_t + \beta_2 CAB_t + \varepsilon_t \quad (8)$$

Where:
RER_t denotes the real exchange rate
β_0 the intercept of the line on Y- axis.
β_1 and β_2 denotes the slope coefficient
COP_t denotes the crude oil price. (Yearly Kenyan basket price).
CAB_t denotes current account balance

The ARDL model is expressed as equation 9 below

$$\Delta RER = \alpha_0 + \sum_{j=1}^{n} b_j \Delta RER_{t-j} + \sum_{j=0}^{n} c_j \Delta COP_{t-j} + \sum_{j=0}^{n} d_j \Delta CAB_{t-j} + \delta_1 RER_{t-1} + \delta_2 COP_{t-1} + \delta_3 CAB_{t-1} + \varepsilon_{1t} \quad (9)$$

Where:

Δ denotes the first difference operator. The parameters δ_i, i=1,2,3 function as the long-run multipliers, while the b_j, c_j and d_j function as the short-run dynamic coefficients of the underlying ARDL model.

4.0 Empirical Results and Discussion

The ARDL technique was used to estimate the coefficient for both the long run and the short run. This technique has an advantage of estimating procedure which allows examination for a level relationship regardless of the order of integration of the fundamental series. But first, it is important to run the stationarity test to determine the order of integration.

Table 1: Unit root test results

Variables	ADF Test		PP test		
	At level	First Difference	At level	First Difference	Order of Integration
COP	-2.178	-6.267 (3) **	-2.297	-6.264 (3) **	I (1)
OI	-1.889	-6.009 (3) ***	-2.136	-6.001 (3) **	I (1)
ΔGDP	-5.423***	-11.719 (3) **	-5.630**	-11.423 (3) *	I (0)
INF	-3.957**	-7.745 (3) *	-3.935**	-8.242 (3) ***	I (0)
RER	0.375	-6.132 (3) **	0.347	-6.121 (3) **	I (1)
FR	1.1717	-5.097 (3) **	1.682	-5.078 (3) ***	I (1)
CAB	-2.502	-10.850 (3) ***	-2.316	-10.854 (3) *	I (1)

Stationary feature was analyzed using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) for unit root; the two tests are run for robustness. The bandwidths for PP test are selected with the Newey–West Bartlett kernel method. It is essential to ensure that that the order of integration of the series is either integrated of order zero I (0) or Integrated of order one I (1) (Kripfganz & Schneider, 2016). The tests were performed on each variable, and the results are presented in table 1. Results indicate that only GDP growth and Inflation were stationary in level I (0) while Crude oil prices, Oil Imports, Real Exchange Rate, Foreign Remittances and Current Account Balance had to be differenced once to become stationary, meaning that they are integrated of order zero I (0).

4.1 ARDL Bounds Test for Cointegration

After carrying out the unit root test which is essential for determining the order of integration, the next step is to determine the existence of cointegration among the variables; this was conducted using the bounds approach to integration. One key advantage of the bounds testing approach is that it establishes whether there is presence or absence of long-run relationship between the variables.

To ascertain whether cointegration is present, the F-test of joint significance of lagged levels of the variables as well as the t-test on lag level of the dependent variable in the model must reject the null hypothesis of no cointegration.

Table 2: Results of Bounds Cointegration test for model one

Test	10%		5%		1%		P-value	
	1(0)	**1(1)**	**1(0)**	**1(1)**	**1(0)**	**1(1)**	**1(0)**	**1(1)**
F	3.307	4.327	4.046	5.184	5.763	7.145	0.000	0.000
t	-2.575	-3.236	-2.906	-3.597	-3.568	-4.309	0.000	0.000
F = 22.664, t = -6.727								

Table 2 presents the ARDL bounds cointegration results. It displays a case 3 test, i.e.,, unrestricted intercept and no trend (Pesaran *et al.*, 2009). The criteria for interpretation is to accept null (H0) if the F and t calculated tend towards zero as compared to the F and t calculated and to accept the null (H0) if F and T calculated move extremely further from zero than the critical values. The F-statistic in bounds cointegration tests the joint significance of the coefficient of the coefficients in lagged levels in ARDL-ECM whereas the t-statistic is used to test for significance of the coefficient of the of the lagged dependent variable

Results indicate that the values of F and t are extreme from zero than the critical values, at 10%, 5%, and 1%, meaning that both tests are significant. We, therefore, reject the null hypothesis of no cointegration and conclude that the equation of GDP, Crude oil prices, and Oil import exhibits a long run relationship.

Table 3: Results of Bounds Cointegration test for model two

Test	10%		5%		1%		P-value	
	1(0)	1(1)	1(0)	1(1)	1(0)	1(1)	1(0)	1(1)
F	2.862	4.018	3.475	4.771	4.904	6.505	0.002	0.009
t	-2.550	-3.439	-2.890	-3.821	-3.575	-4.579	0.000	0.005
F = 6.594, t = -4.839								

The second model represents the relationship of crude oil prices on Inflation, in this case, Inflation was the dependent variable while independent variables included, Crude oil prices, Foreign Remittance and Real Exchange rate as independent variables. The results show that the F and t values are far from zero compared to the critical values, at 10%, 5%, and 1%. We, therefore, reject the null hypothesis of no cointegration and conclude that there exists a long run relationship between the dependent variable (Inflation) and the nonstationary variables (Crude oil prices, Foreign remittances and Real Exchange rate).

Table 4: Results for Bounds Cointegration test for model three

Test	10%		5%		1%		P-value	
	1(0)	1(1)	1(0)	1(1)	1(0)	1(1)	1(0)	1(1)
F	3.299	4.342	4.043	5.213	5.779	7.217	0.000	0.000
t	-2.567	-3.228	-2.901	-3.594	-3.573	-4.318	0.000	0.000
F = 21.251, t = -6.500								

The third model attempts to investigate the effect of Crude oil price on Real Exchange rate; the independent variable includes Crude Oil price (COP) and current account balance (COB) while Real exchange rate (RER) is the dependent variable. The results indicate that the F and t values are far from zero at the 10%, 5% and 1% level of significance. The P-value for both tests is also zero, and therefore we reject the null hypothesis of no cointegration and further make a conclusion that there exists a long-run relationship between the dependent variable (Real exchange rate) and the independent variables; crude oil prices and current account balance.

4.2 Autoregressive Distributed Lag Results

The ARDL results for the three models are in tables 5, 6 and 7.

Table 5: Overall results for model one

	Coefficient	Std. Error	t	p>t
ADJ GDP L1	-.6768491	.100615	-6.73	0.000
		Long-Run Estimates		
COP	.0162505	.0197256	0.82	0.415
OI	7.78e-11	4.88e-10	0.16	0.874
		Short-Run Estimates		
GDP LD	.2468649	.0814425	3.03	0.004
Constant	2.132113	.8586421	2.48	0.017
		ARDL Estimates		
Model	(2, 0, 0)			
R-squared	0.5388			
Adjusted R-squared	0.4927			

Table 5 shows the ARDL results for model one; that relates GDP growth to crude oil prices and Oil imports. The study estimated an ARDL (2, 0, 0) which was selected based on AIC.

The results as shown in table 4.8 indicate that the long-run coefficient is positive, implying that crude oil prices and oil imports contribute to GDP growth. An increase in the price of crude oil by $1 would lead to a 0.016 percent. However, this coefficient not statistically significant at 5% and therefore this does not violate the economics principle. The positive coefficient can be explained by the consistent rise in petroleum re-exports over the last two decades to Uganda, South Sudan, Rwanda and the Democratic Republic of Congo.

The table also reports the short-run coefficient estimates that were generated from the Error Correction Model version of the ARDL model. The ECM is important as it gives an indication of the speed of adjustment which restores the stability of a model that is dynamic. This implies that the coefficients obtained denote the speed at which the variables in the model converge to equilibrium. The coefficients are expected to be statistically significant and should have a negative sign.

The table shows the ECM coefficient as -0.6768, this can be interpreted to mean that the error term has met the set conditions and thus it is statistically significant. The result confirms the existence of a steady long-run relationship.

The short-run results indicate a significant relationship of GDP growth when lagged implying that that higher GDP growth rate of the previous two years would tend to increase the GDP growth rate of this year from 1970-2016. The model has a coefficient of determination of 53%, meaning that 53% of the variation in GDP growth is explained by Crude Oil Prices, Oil import and GDP growth of up to the previous two years, it is generally a good fit.

Table 6: Overall Result for Model two

	Coefficient	Std. Error	t	p>t
ADJ INF L1	-.6407159	.1323982	-4.84	0.000
Long-Run Estimates				
COP	.0486824	.057376	0.85	0.040
FR	-3.40e-09	5.81e-09	-0.59	0.562
RER	-.0584651	.0741785	-0.79	0.436
Short-Run Estimates				
INF LD	.1780934	.1271773	1.40	0.170
COP D1	.114008	.060518	1.88	0.047
RER D1	.8616591	.1849219	4.66	0.000
Constant	6.788766	2.964019	2.29	0.028
ARDL Estimates				
Model	(2,1,0,1)			
R-Squared	0.5793			
Adjusted R-squared	0.4997			

Table 6 provides the results of ARDL estimation of the relationship between Inflation and crude oil prices, Foreign remittance and Real Exchange rate. We estimated an ARDL (2,1,0,1) which was selected using the Akaike Information Criteria. The results show a positive coefficient between Crude Oil Price and Inflation (0.0487) which is statistically significant at 5%. This implies that an increase in crude oil price by $1 is likely to result to a 0.048 rate of inflation.

The ECM coefficient has a negative value (-0.640) and is statistically significant at 5%. This is further evidence

of the existence of a Long run relationship that had been initially established using the bounds cointegration test. All the variables in the short run have positive coefficients and are all statistically significant apart from the lag of inflation. The crude oil price has a lag of two implying that if crude oil prices increased by $1 last year, it would result in an increase in the rate of inflation for this year by 0.114%.

From the result of the coefficient of determination (R^2 =57.93%), it is clear that the general goodness of fit of the estimated equations is reasonably high.

Table 7: Overall results for model three

		Coefficient	Std. Error	t	p>t
ADJ	RER L1	-.9998022	.1538199	-6.50	0.000
			Long-Run Estimates		
	COP	-.1721089	.0789592	-2.18	0.036
	CAB	8.58e-10	6.36e-10	1.35	0.185
			Short-Run Estimates		
	COP L1	.1309854	.0669158	1.96	0.058
	COP D1	.0867235	.0486901	1.78	0.083
	Constant	2.479541	.8298228	2.99	0.005
			ARDL Estimates		
	Model		(1,2,0)		
	R-squared		0.5526		
	Adjusted R-squared		0.4937		

Table 7 shows the overall result for the ARDL estimation on the relationship between Crude Oil Prices and Real exchange rate. The estimated model was an ARDL (1,2,0) which was selected using the AIC criteria.

The long-run estimates show that there exists a negative relationship between the current Account balance and Real Exchange rate. An increase in the price of Crude Oil by $1 would result in a depreciation of the Shilling by 0.172 in the long run. This coefficient is statistically significant at 5%. The adjusted ECM coefficient has a negative value (- 0.999) and is statistically significant at 5%. The result confirms the existence of a Long run relationship that had been initially established using the bounds cointegration test.

Short run results show two lags of crude oil prices, and both have a positive 0.130 and .086 for lag one and two respectively. However, the coefficients are not statistically significant at 5%. The coefficient of determination is 55.26% (R^2=0.5526) indicating that the model is a reasonably good fit.

4.2 Postestimation Diagnostic tests

Postestimation tests such as serial correlation, heteroscedasticity, and stability tests were conducted to ensure that the results were conforming to econometrics assumptions. As shown in table 8, the three models pass all the diagnostic tests; there is no evidence of serial correlation, as comfirmed by Breusch-Godfrey LM test for autocorrelation and they all have constant variances as demonstrated by LM test for autoregressive conditional heteroskedasticity (ARCH). The three models were stable according to CUSUM and CUSUMQ test; the results are shown in the appendix section.

Table 8: Post Estimation Diagnostic Tests

Postestimation test	Test statistic	Degrees of Freedom	P-value
Model one			
Ramsey rest test	F (3,37) = 0.95	-	Prob>F=0.4283
Breusch-Godfrey LM test for Autocorrelation	Chi2=0.914	1	Prob > chi2=0.3389
LM test for conditional heteroskedasticity (ARCH)	Chi2=0.935	1	Prob > chi2=0.3335
Model two			
Ramsey rest test	F (3,34) = 1.43	-	Prob>F=0.2524
Breusch-Godfrey LM test for Autocorrelation	Chi2= 0.793	1	Prob > chi2=0.3733
LM test for conditional heteroskedasticity (ARCH)	Chi2= 0.401	1	Prob > chi2= 0.5267
Model three			
Ramsey rest test	F (3, 37) = 2.38	-	Prob>F=0.0849
Breusch-Godfrey LM test for Autocorrelation	Chi2= 0.004	1	Prob > chi2= 0.9504
LM test for conditional heteroskedasticity (ARCH)	Chi2= 0.001	1	Prob > chi2= 0.9739

5.0. Conclusion

This study examined the Effect of Crude oil prices on selected macroeconomic variables namely, GDP growth, Inflation and Real Exchange Rate in Kenya. As a result, three models were estimated using an econometric method known as Autoregressive Distributed Lag (ARDL) which was recently developed by Pesaran, Shin &Smith (2001) with GDP growth, Inflation and Real exchange rate as dependent variables in the models.

The method was selected due to its ability to estimate the short run and long run relationship among the variables and still producing unbiased long-run estimates and valid *t*-statistics irrespective of whether some of the independent variables are endogenous. It is also superior to other econometric approaches as the underlying independent variables are not restrictive regardless of their order of integration, they can be either be integrated of order zero or one, i.e.,, I (0) or I (1). Thirdly, it can use any sample size and give unbiased results. The study establishes that the ARDL requirement that all the variables in the system are I (1) is satisfied.

The study revealed that Crude Oil prices have a positive long-run effect on GDP which can mainly be attributed by the fact that Kenya imports oil for resale to Uganda and the entire great lake region. This is going to be beneficial to the country now that Kenya is in the early stages of oil production and distribution through the Early Oil Pilot Scheme (EOPS). If the production of oil will be consistent, then the oil prices will result in GDP growth in the long run and possibly towards attaining the target set in the vision 2030 blueprint of 10%.

Crude Oil prices were shown to affect inflation both in the long run and in the short-run. Previous year's crude oil price was also shown to affect the current year's inflation. This is consistent with a priori where oil prices affect inflation by raising the prices of commodities which are produced using oil as an intermediate input in the production process.

Crude oil price is shown to contribute to the depreciation of the Real exchange rate in the Long run. However, the study shows no evidence of short-run relationship between the two variables. This finding conforms with existing literature, as the two variables are expected to have an inverse relationship. As the US dollar rises, the Kenyan shilling depreciates, because it costs Kenya relatively more to purchase the same amount of dollar in the foreign exchange market. A rise in the crude oil prices, therefore, widens the country's trade deficit and makes the shilling to lose value, as Kenya is a net oil Importer.

5.1 Policy Recommendation

The study recommends that the Energy Regulatory Commission (ERC) should direct much of its efforts towards promotion of eco-friendlier and cheaper energy sources such as ethanol to stop the overreliance on crude oil. Kenya enjoys a comparative advantage in the production of sugarcane and maize in the East African Community; these are the critical raw materials in the production of ethanol. This will make the price of oil reduce thus curing the inflation problem and increasing GDP growth rates.

Secondly, the nation should focus more in pursuing the manufacturing course in the "Big Four" agenda as well as adopting an export promotion strategy to lessen the pressure on the depreciating exchange rate which comes about as a result of oil importation. This will also aid the growth of the economy to a more considerable extent

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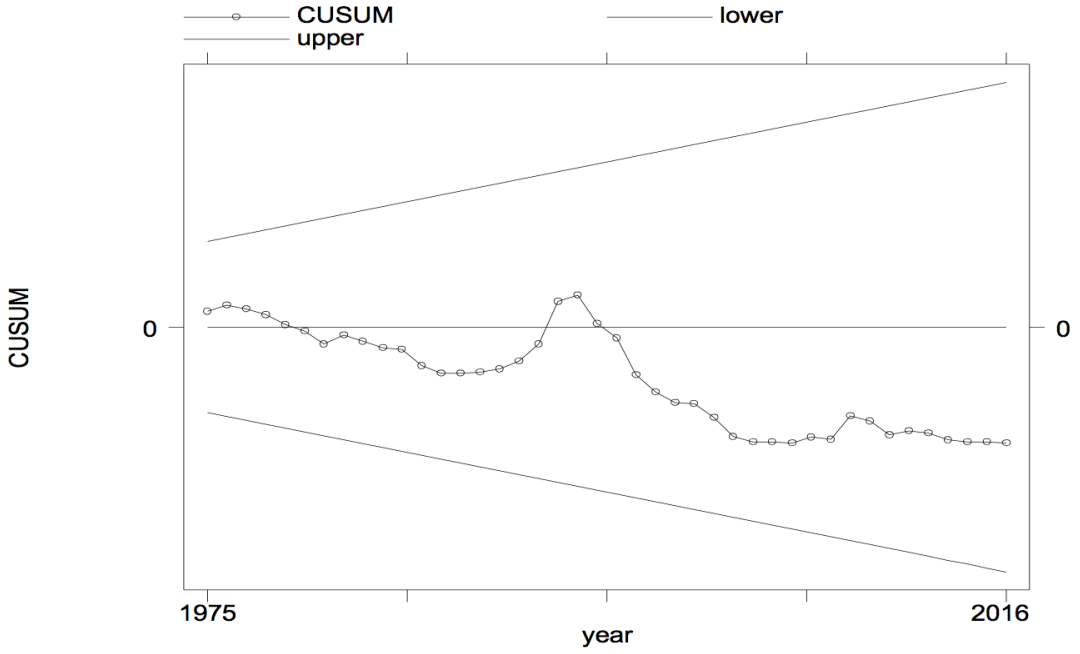
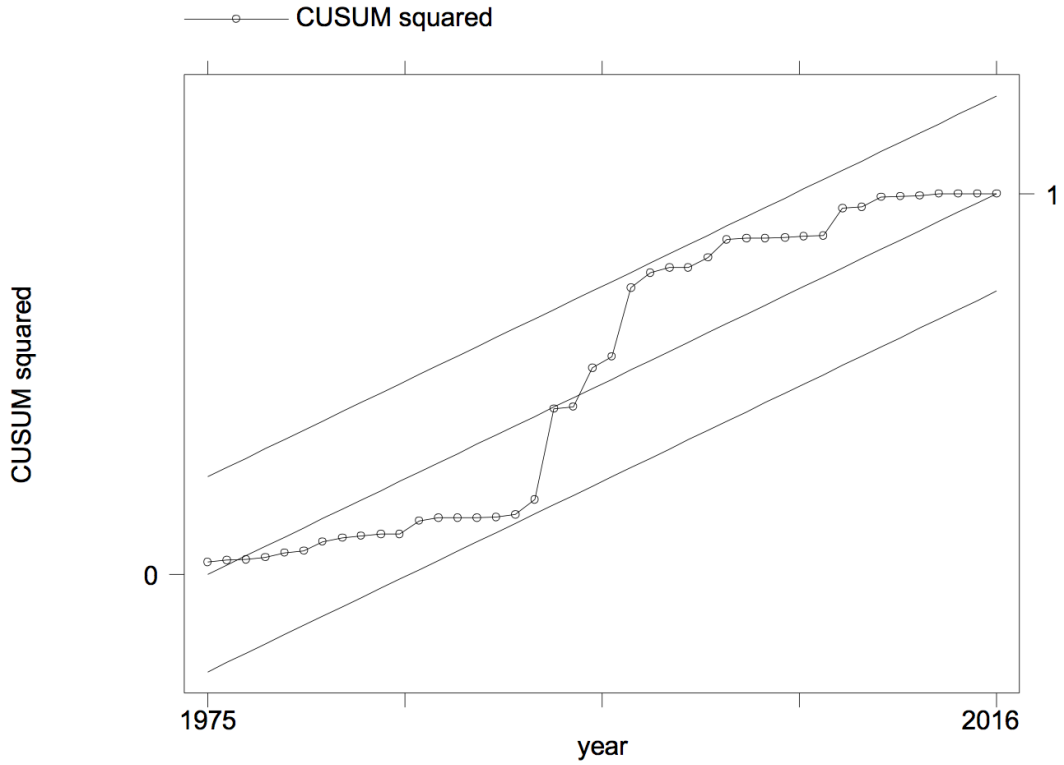
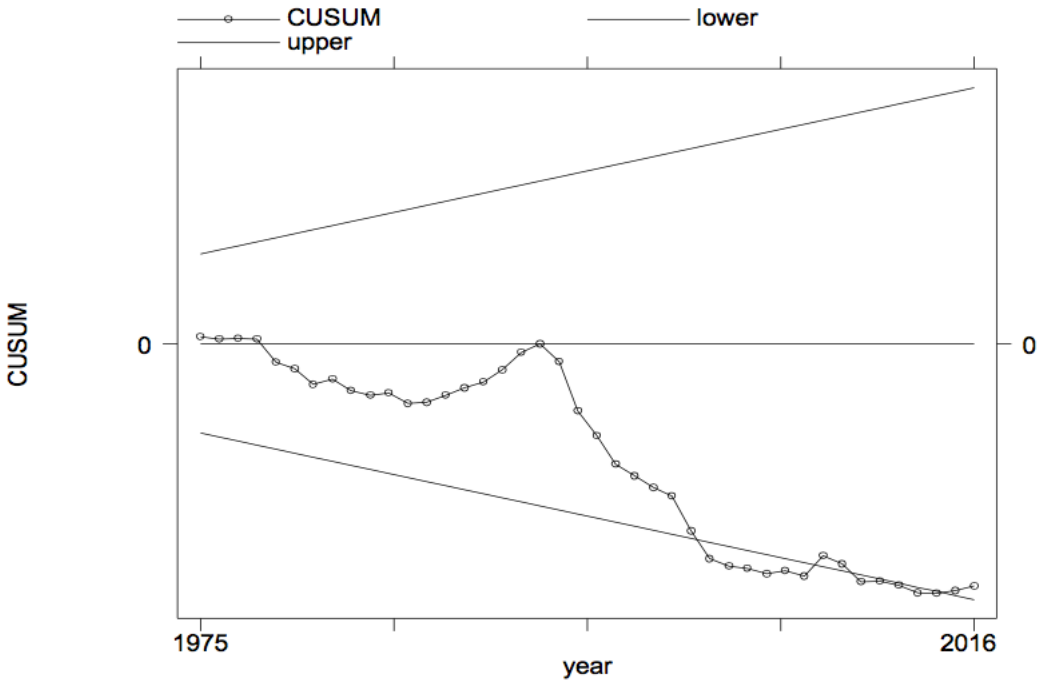
APPENDIX 1: Plot of cumulative sum and cumulative sum of squares of recursive residuals stability tests

Model One





Model Two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CUSUM
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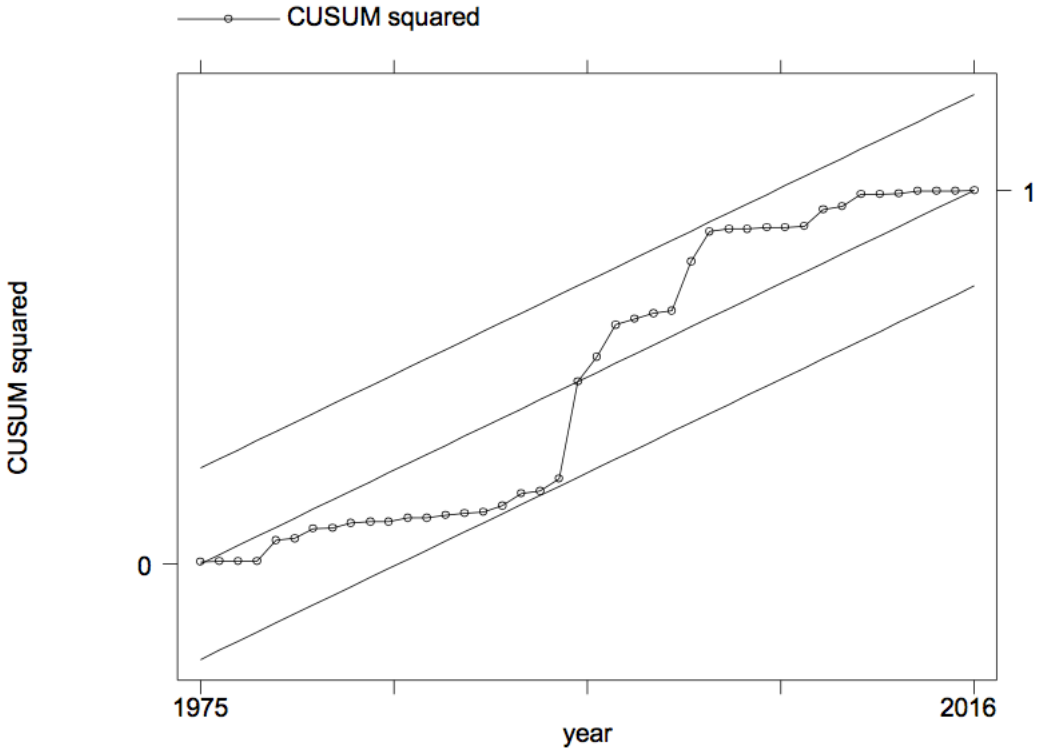
0
1975
2016
year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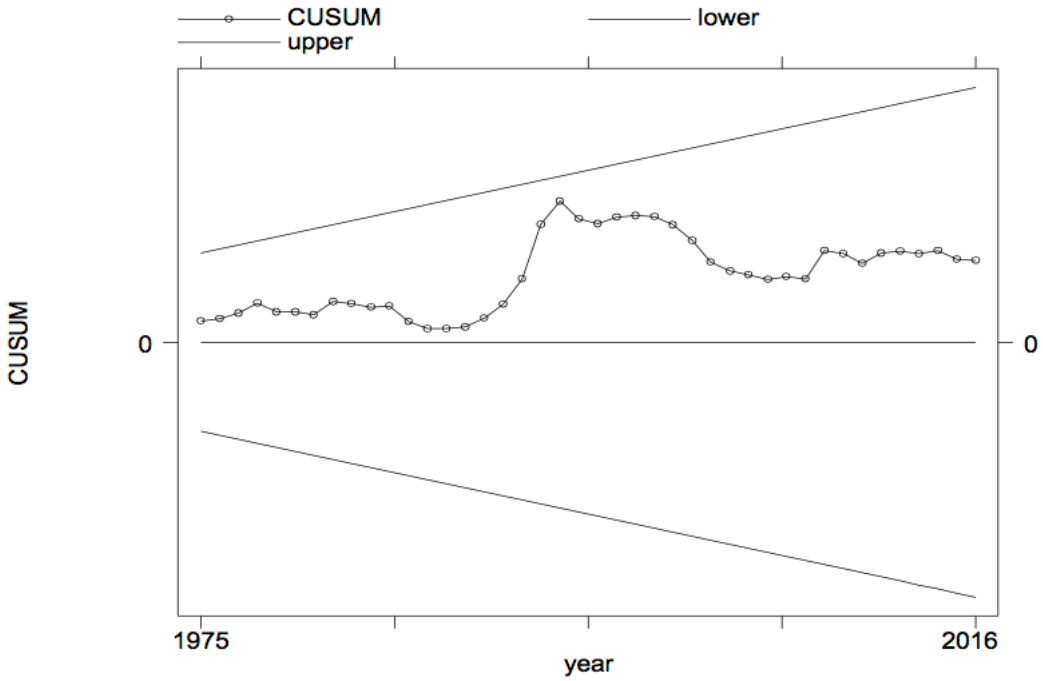
year

Model Three


CUSUM
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2016
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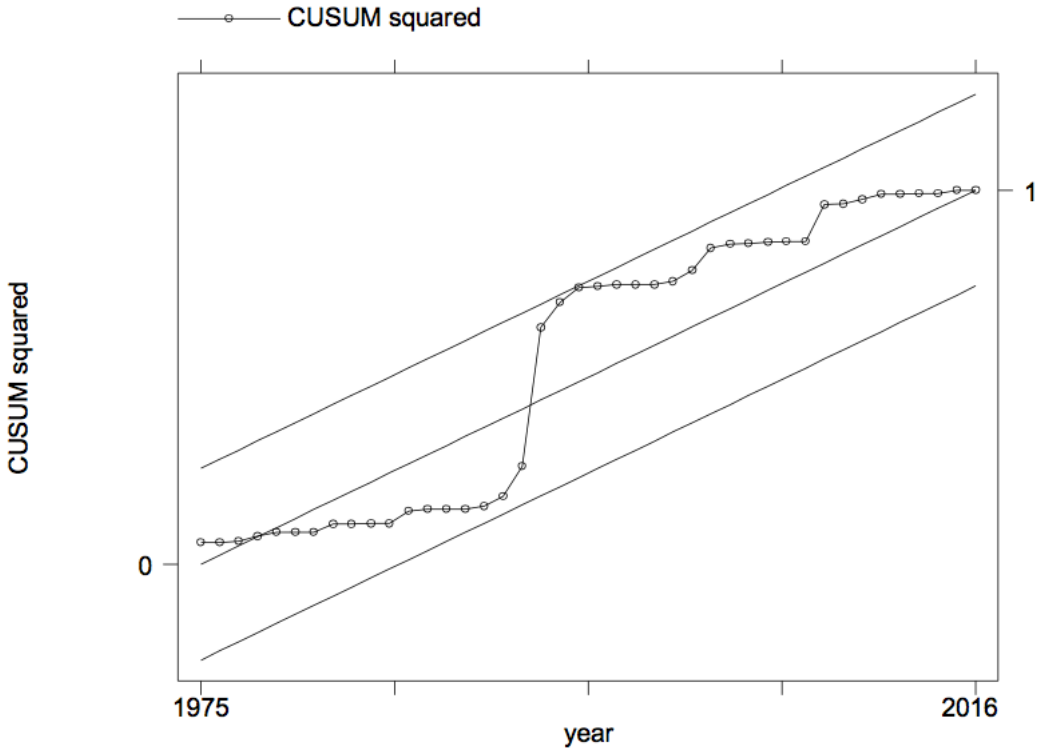
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2016
year

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Structure, Characteristics, and Determinants of Services Export in Nigeria

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Abstract
The perennial problems of unfavourable commodity terms of trade, early deindustrialisation, and exchange rate volatility are forcing a rethink of development strategies in developing countries. Services are now coming up as a new frontier for trade expansion and economic growth in developing countries. Several empirical studies in structural transformation studies have shown both services value added and exports as growing faster than manufacturing in many developing countries, hence the surge in the literature seeking to determine the important factors driving services export. This study expands the scope of the literature by examining the structure, characteristics, and determinants of Nigeria's services export. The Central Bank of Nigeria Statistical Bulletin provides data for our descriptive analysis and the World Development Indicators for econometric analysis. The auto-regressive distributed lag (ARDL) estimation technique was adopted for econometrics analysis following unit roots and cointegration tests. Residuals and stability tests conducted on the error correction model of the ARDL supports our regression results for valid and reliable inference. Findings show that Nigeria's services export is highly concentrated on the low- technology, low-productivity end of transport and travel services. Services export respond significantly to real income of the rest of the world, the real effective exchange rate, and services value added. Great potentials, however, exists for participation in high-end services like pipeline, maritime, and rail transport since these services are integral to holistic development of the country's huge gas, crude petroleum, and iron ore deposits.

Key Words: Services, Exports, Trade, Technology, Productivity, Nigeria

1. Introduction

Services constitute a large share of national production in almost all regions of the world resulting in remarkable growth in the services sector and international trade in services in both the developed and developing countries. Services accounts up to 74.3% of the gross domestic product (GDP) in the European Union in 2015, 67.4% in Latin America and the Caribbean, 58% in Sub-Sahara Africa, and 49.8% in the developing areas of East Asia and the Pacific. Services exports are mainly from developed economies as business services such as research and development, consulting, technical and trade-related services, and charges on the intellectual property. These accounts for two-thirds of total global services exports in 2016. According to UNCTAD (2017), travel dominated services exports by developing economies and of equal dollars size as exports of insurance, pension, and financial services by developed economies.

Advances in information and communication technologies (ICTs) have made it increasingly possible to trade services across borders, thus shedding the traditional toga of non-tradability. The conclusion of the General Agreement on Trade in Services (GATS), now a principal part of the World Trade Organization (WTO) system, attests to the importance of trading in services. The expansive definition of services adopted by GATS embraces a wide range of services as tradable and simplifies the analysis of trade in services. There are four modes of supply under which a service is considered tradable: cross-border trade in services (mode 1), consumption abroad (mode 2), commercial presence abroad (mode 3), and movement of natural persons (mode 4). Developing countries are increasingly exporting across the four modes depending on their respective capabilities to deliver services through any of the modes.

Services will continue to grow in importance as both exports and component of the GDP as they increasingly become integral to the production of goods, facilitation of their trade and the maintenance of trade transactions. Services hold great potential for diversification of exports and provide new channel for foreign direct investments (FDI) inflow thus bridging the foreign currency gap for many developing countries. Thus, a country's international competitiveness and the overall economic growth may fundamentally rest on the range and sophistication of its services production and exports.

This paper aims to add a new perspective to the growing literature on services exports by developing countries by specifically looking at the structure and dynamic characteristics of services exports, as well as the determinants of services exports in Nigeria. The paper is in six parts as follows; section two reviews extant literature on determinants of services exports while in section three we conduct a descriptive analysis of the structure and characteristics of Nigeria's services exports. Section four explains the procedure for the econometrics tests. The tests are conducted, and the results reported and discussed in section five. We conclude with recommendations in section six.

2. Review of literature

2.1. Services and trade in services: A conceptual clarification

The intangibility and the very heterogeneous nature of services make a definition of a service and its trade across national boundaries somehow difficult. Hufbauer and Warren (1999) following from Hill (1977) considered any economic activity that directly adds value to another economic unit or to the output of another economic unit as a service. As thus defined, services are fundamental inputs into production. Hoekman and Mattoo (2007) identified two dimensions of the input functions of services. As direct inputs, services are determinants of the productivity of other factors of production that are employed in the creation of differentiated tangible and intangible outputs. The other dimension is the facilitation of transactions through space (e.g. exchange between locations through transport or telecommunication) or the facilitation of transaction through time (e.g. financial intermediation). However, advancements in technology and the increasing sophistication of services have changed the role of services from primarily an input for the production of and facilitation of trade in goods to become a "final export" for direct consumption (Mishra, Lundstrom, and Anand 2011).

Trade in services, on the other hand, involves the supply of service across national boundaries. According to the WTO (b) and as contained in the Article 1 of the General Agreement on Trade in Services (GATS), international trade in service among member countries could result from any of the following four main modes of service supply:

i. From one country into any other through cross-border communications, without the physical movement of the service supplier or the consumer (mode 1);
ii. In one country to the service consumer of any other country through the movement of the consumer to the country of residence of the supplier (mode 2);
iii. By a service supplier of one country establishing a commercial presence in the country of the service consumer (mode 3);
iv. Through the movement of an individual service supplier of one country to the country of residence of the service consumer (mode 4).

The four modes clearly distinguish between technology-enabled modern impersonal services that can be delivered over networks and traditional personal services, which call for face-to-face interaction, as well as provide platforms for international trade in a wide range of services. Like goods trade, the modes evidently show that trade in services encompasses foreign direct investment (FDI), temporary movement of labour, and the traditional cross-border transactions.

2.2. Technology and trade in services

The traditional notion of services is that they are not tradable due to the special demand of close proximity between provider and consumer, as well as the conditions of non-storability, non-transportability, and indivisibility of many services. Thus, to the classical economists, services are exclusively for domestic consumption as inputs to agriculture and industry. However, advances in technology have conferred on services the same trade characteristics as goods (Bhagwati, 1984). Ghani and Kharas (2010) suggest that services may be more mobile across borders than goods as high-productivity modern services can be produced, stored and traded digitally across national boundaries circumventing much of the trade barriers that characterised goods exports. Thus, the global forces of technology, tradability, and transportability have dynamically changed the nature of services and trade in services. Through technological change, services in certain respects are indeed becoming similar to manufactured goods as their costs rest critically on economies of scale, agglomeration, networks, and specialisation (Mishra, Lundstrom, and Anand, 2011).

Technology has not only reduce and, in some cases, eliminates the requirement of proximity between service suppliers and consumers: it is also stimulating the unbundling of service production. Through technology, a vertically connected service activity that takes place in one location can now be fragmented and completed separately at different geographical locations across the globe (Feenstra, 2010; Jones 2000). Business services like telecommunication, logistics, and financial services facilitate connection of tasks from different locations (Goswami, Mattoo, and Sáez, 2011). This fragmentation of service production and export provide prospects for specialisation and sophistication in a manner previously unknown to trade. An empirical result from Mishra, Lundstrom, and Anand (2011) suggests that increasing sophistication of services exports positively correlate with growth in per capita income. In comparing China and India, the authors argued that advances in information and communications technologies are making services more productive with India's overall economic growth benefitting more from growth in services total factor productivity (TFP) more than China. Like India, developing countries with the requisite capabilities may leverage on services sector productivity to diversify exports, achieve economy-wide productivity growth and overall economic growth.

2.3. Determinants of services exports

The availability of quality services is an essential condition for rapid economic growth, general welfare, and development of developed and developing countries. Park & Shin (2012) identified the sector as the new frontier for economic growth in the current millennium due to its own capacity to generate new employment, in particular and generally because of its linkage to other sectors as production input, facilitator of job creation, and performance enhancer (Gonzales, Jensen, Kim & Nordas, 2012). Many developing countries are already demonstrating a strong comparative advantage in services exports that are unrelated to their level of industrial development and opening a new channel for exports diversification and economic growth (Ghani 2010). Sustained economic growth via services export growth is thus crucial to such developing countries; hence, the need to identify the major determinants of services exports as inputs into design policies supportive of services export growth. We examine briefly here the findings in empirical studies relating to services export determinants.

The gravity model, though commonly use in the analysis of goods trade has in recent times find wide application in the analysis of trade in services. Several of such models that have been estimated include Grunfeld & Moxnes (2003), Kimura & Lee (2006), Brandicourt, Schwellnus & Wörz (2008), Shepherd & marel (2010), Shingal (2010), Kandilov & Grennes (2010), Kaur (2011), Karam & Zaki (2012), Covaci and Moldovan (2015), and Pham and Vũ (2016). In both Grunfeld & Moxnes, and Kimura & Lee geographical distance is an important factor in services exports, with Kandilov & Grennes showing that the importance of geographical distance varies

substantially across types of services export. The variation, however, could be concealed when services that are not homogeneous are aggregated. In most of the estimated gravity models, other important considerations in services exports include the cost of transport, quality of infrastructure, legal and regulatory regimes, human capital, membership of regional economic block, and common language. Kimura & Lee (2006) worked on the influence of governance on both goods and services exports. Both trades relate positively to economic freedom with much stronger effect for services trade. Brandicourt, Schwellnus & Wörz (2008), and kaur (2011) deals essentially with trade potential in services. While the former demonstrates the possibility of services export coming below potentials for both large developed western economies and transition economies in Europe, the later fitted panel data based on gravity model to interrogate the USA services export convergence and divergence with six Asian trade partners (Japan, China, India, Singapore, South Korea and Hong Kong). Shingal (2010) included both the home market size and volume of goods trade as important determinants of trade in services. Karam & Zaki (2012) on their part used an adapted variant of the gravity model to examine the influence on services trade of WTO membership, and the number of commitments undertaken by sector in the WTO as well as the availability of those commitments by mode. These factors were found to have statistically significant and positive effect on services exports.

Other studies employed different variants of the export demand function of Bahmani-Oskooee (1986). This model posits that a country's total exports to the rest of the world is a log-linear function of: quality of exports (X), weighted average of the real gross national product (GNP) of a country's trading partners (YW), export price (PX), weighted average of the export prices of a country's trading partners (PXW), and export-weighted effective exchange rate (E). Simply, the Bahmani-Oskooee (1986), the export demand function implies that exports are a function of foreign income, relative prices, and the exchange rate. All of these factors have been found to have a significant positive effect on services export.

Based on the above review, we can identify several factors as being critical to trade in services and services export in particular. Researchers have variously combined these factors in empirical studies with a view to isolating elements that may inform policy design towards service exports expansion and diversification. These factors include - foreign income measured as world real GDP or real GDP of trading partners, real exchange rate which measures the relative prices and costs of one country in relation to the rest of the world (Auboin and Ruta, 2011), volume of manufacturing exports, services value added as proxy for services production, quality of human capital, quality of institutions, infrastructure development (especially communication infrastructure), foreign direct investment, and services trade barrier. The current study employed seven of these variables to explain the determinants of service exports from Nigeria. The chosen variables will be defined in the next section.

3. Structure and characteristics of services exports by Nigeria

3.1. Services and industry value added growth

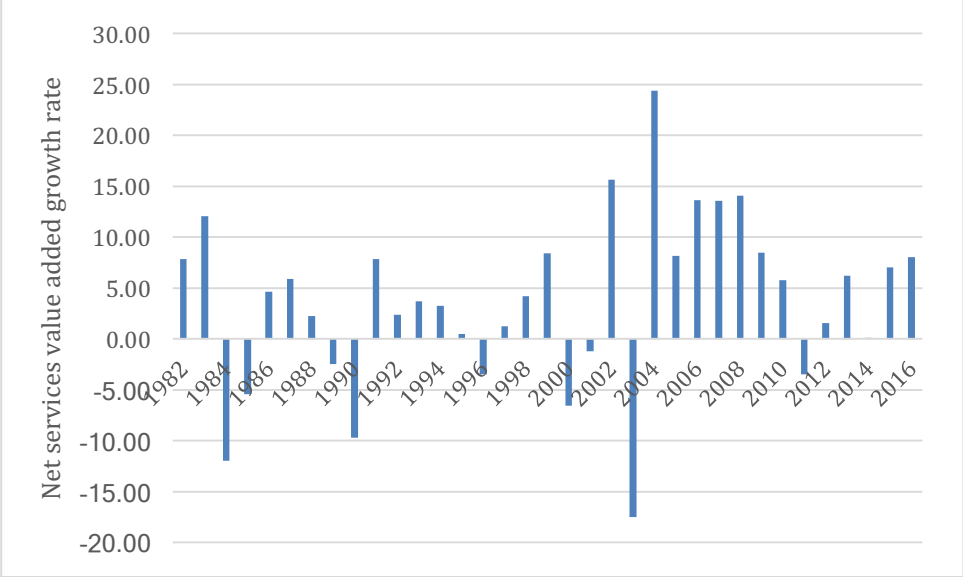

Figure 1: Services value added growth rate less industry value added growth rate
(Author's computation from WDI 2017)

Services output measured in value-added terms witnessed tremendous growth when compared to the growth rate of industry value added over the thirty-five years reviewed. Value added in services grew faster than industry's (including construction) by almost four times. Figure 1 plot the services – industry net growth rate showing services value added growing faster than industry value added for twenty-six of the thirty-five years under review. Except for a break in 2012, services value added outgrew industry value added each year from 2004 to 2016. The same trend occurred from 1991 to 1999, with services value-added growth falling behind industries only in 1996.

3.2. Services export and services value-added growth

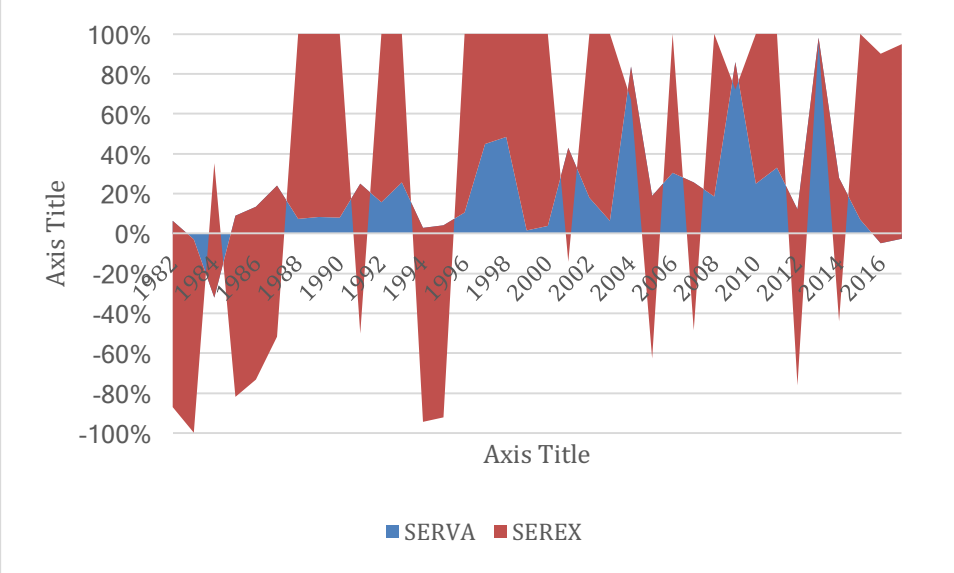

Figure 2: Service exports and service value added growth rate
(Author's computation from WDI 2017)

The growth rate of services value added mostly has been positive with negative episodes only in 1983, 1984, 2016 and 2017. Exports growth rate, on the other hand, experienced negative growth rates sixteen times between 1982 and 2017. Except for 1984, the growth rate of services value added is positive for each time services export recorded negative growth rate. A close observation of the relation between the two variables reveals some interesting facts: (i) exports growth rate doubles for every one percent increase in value added. In 1999, services export grew seventy-two times the growth in services value added. At no time did value-added growth exceeds exports growth rates when both are positive, (ii) in almost all cases, negative growth in services export is at least twice the positive growth in services value added, (iii) when both are negative, services exports are much more negative. Overall, services exports have grown much faster than value-added indicating the increasing integration of Nigeria's services exports into the global value chains and providing opportunities for exports diversification. The stylised facts also indicate that different factors may be responsible for determining the growth of services export and value added.

3.3. Foreign exchange earning capacity

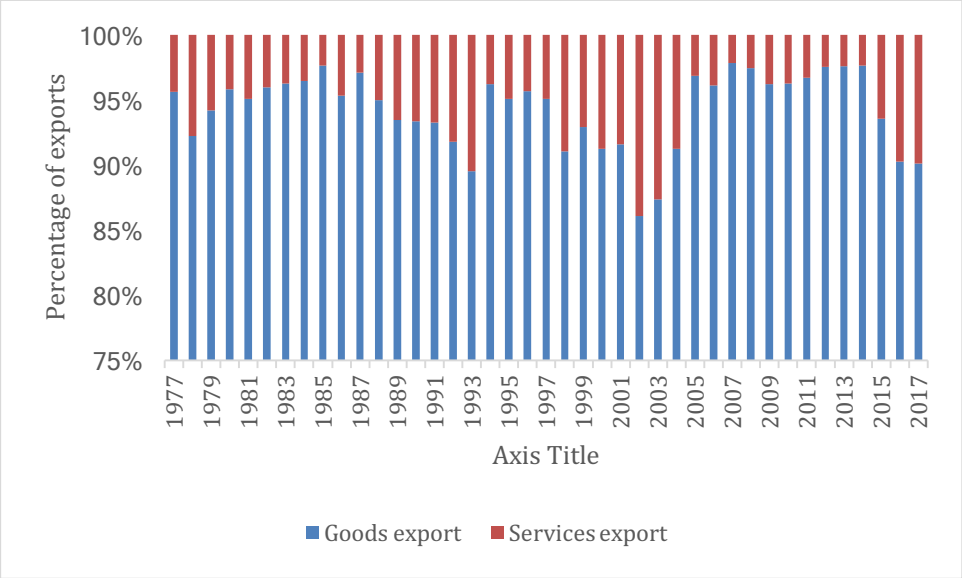

Figure 3: Services and goods export (Bop, current US$)
(Author's computation from WDI 2017)

Although services value added has been growing faster than industry's, manufacturing industries generate more export earning than services. The growth and macroeconomic stability of most developing countries depend on the quantum of foreign earnings to import necessary inputs for industrial output growth and diversification, infrastructure upgrade and to stabilise the exchange rate. Value of services export reached its peak in 2002 and 2003 constituting about 14% and 13% of the total value of goods and services exports. Between 2012 and 2014 the value of services export averages 2.4% of total exports value. In the last two years of our study period, the value of services exports stands at about 10% of exports of goods and services. On the average, services export accounts for 5.71% of the value of goods and services export for the entire study period, with a range of 11.77%. Interestingly, while goods export accounts for 94.27% of the gap between its highest and lowest contribution to total exports value is equally 11.77%. Factors like real effective exchange rate and growth in global demand for goods and services may subject both categories of exports to the same pattern of variability, especially if both categories are more of traditional exports.

The very low foreign exchange earning capacity of services in the face of growing services value added may suggest that services output in Nigeria largely serves the domestic market as direct consumption, input into the production of goods, and facilitation of goods trade. Though services export has been rising since 2015 with a concurrent decline in goods exports, Nigeria is still a long way to service-led economic growth.

3.4. Structure of services export

Five main activities constitute services exports in Nigeria. Table 1 computed export of each service as a percentage of total services export on a five-year average from 1977 to 2016, with values also for 2017. Service export is highly concentrated on two activity areas of communications and transport services, which jointly accounts for no less than 67% and going as high as 96% of total service exports. In the last two decades, (1997-2016) share of communication services in total service export declined progressively from 81.7% in 1997-2001 to 23.94% in 2012-2016.

Table 1. Percentage of services exports

	1977-1981	1982-1986	1987-1991	1992-1996	1997-2001	2002-2006	2007-2011	2012-2016	2017
Communications, computers, etc.	21.89	10.92	73.44	81.70	81.47	56.59	24.30	23.94	16.30
ICT services	0.00	0.00	0.00	0.00	0.00	0.61	2.25	6.55	6.73
Insurance and financial services	4.88	3.60	0.87	0.67	0.68	0.46	0.66	4.31	7.18
Transport services	62.05	56.61	14.24	14.45	12.10	39.34	54.25	48.91	25.85
Travel services	11.18	28.87	11.45	3.18	5.75	3.61	20.79	22.84	50.67
	100.00	100.00	100.00	100.00	100.00	100.61	102.25	106.55	106.73

(Author's computation from WDI 2017)

Within the same period, transportation services increased its share of total services export from 12.10% in 1997-2001 to 54.25% in 2007-2011. For the first time since 1977-1981, transport services overtook communication as the top service export in 2007-2011 and 2012-2016. In 2017, transportation contribution to service exports was about 59% higher than communications. By the records of the CBN available in its 2016 edition of the Statistical Bulletin, communication services average 3.66% of transportation services between 2005 and 2016. Communication services export thus has declined sharply relative to transportation services export since the last one decade. A breakdown of transportation exports (see Figure 4) shows that freight and other auxiliary services such as cargo handling, storage and warehousing, and freight-transport agency services are the principal drivers of transportation export. Both accounts for about 91% of transportation services export.

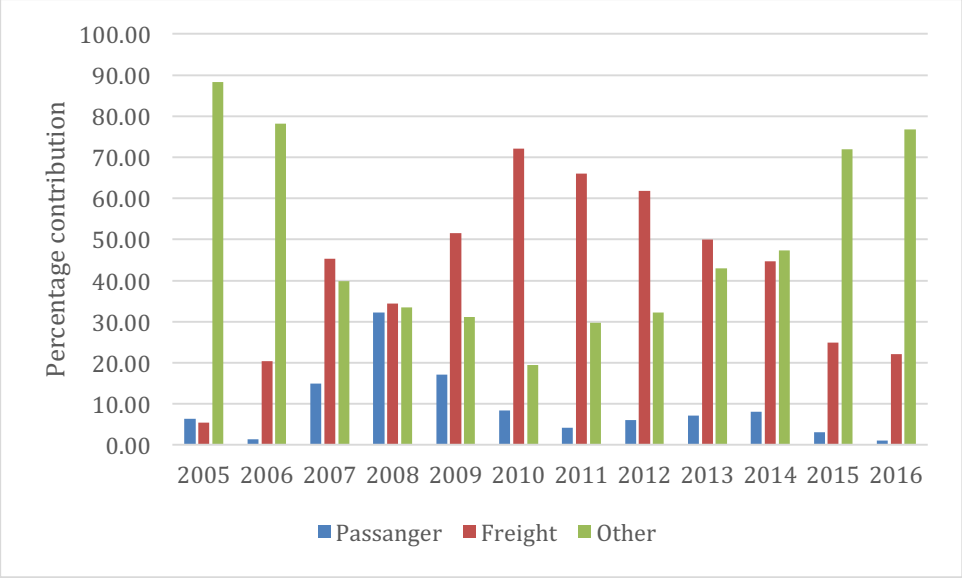

Figure 4. Compositing of transportation service export
(Author's computation from CBN Statistical Bulletin 2016)

Next to communication, and transportation services as major drivers of service export in Nigeria is travel related services. Falling behind communication services and transportation services by 4.59% and 53.30%, respectively in 2012-16, travel services as Table 1 shows, grew rapidly to become the single largest service export in 2017 accounting for slightly over half of total services export. The CBN divided travel services in the BoP into business travel, personal travel comprising education and health-related, and other personal travel. The total value for travel export comes only from other personal travel. The export of insurance and financial services in the last one decade weighed more on the side of financial services, which accounts for the average for 84.02% of financial and insurance services. On the growth side, export of insurance service had grown more steadily and higher than financial services except for 2008 when it recorded a negative growth rate and 2015 when financial services recovered from a previous year negative growth rate to post a growth of 21.40%. ICT services export did not commence in any significant measure until 2005.

One notable fact of services exports in Nigeria is its high concentration across service activities. In insurance and financial services, the latter holds sway. In travel services, it is entirely other personal travel, and transportation services are highly concentrated on auxiliary services. There is thus a great room for diversification in the services sector of the economy, especially to more high technology and high productivity service activities. The World Trade Organisation (1991) in its services sectoral classification list listed 12 main services sectors comprising over 120 services activities ranging from simple to complex-high technology activities. The classification opens a window of opportunities for developing countries to develop capabilities to deliver services for exports in any of the 12 sectors and over 120 service activities.

4. Data description, model specification, and analytical procedures

The data used for econometric analysis in this paper are annual values obtained in United State Dollars from the 2017 edition of the World Bank's World Development Indicators (WDI). Eight macroeconomic variables are selected for the analysis. *SXT* is the value of services export from Nigeria (BOP, current US$). Communication index (*CMM*) is the sum of fixed telephone and mobile cellular subscription par 100 people. Financial sector development (*DMC*) is measured by the domestic credit provided by the financial sector as a percentage of GDP. Foreign direct investment (*FDI)* is recorded as a percentage of GDP. *GXT* (BoP, current US$) measures the value of goods export from Nigeria. Real effective exchange rate index (*RXT*) is recorded in constant 2010 US dollars. Services valued added (*SVA*) is computed as a percentage of GDP. The world real gross domestic product (*WGP*) is net of Nigeria's GDP. We transform all the variables into natural logarithms except *CMM, DMC*, and *FDI*. The dataset cover 37 years from 1981 to 2017.

The hypothesised functional relationship of the eight variables for the determinants of services exports in Nigeria is:

$$SXT = \beta_0 + \beta_1 CMM + \beta_2 DMC + \beta_3 FDI + \beta_4 GXT + \beta_5 RXT + \beta_6 SVA + \beta_7 WGP + \upsilon \quad (1)$$

Taking the natural logarithms of some of the variables, the functional relationship specified for analysis is:

$$LSXT_t = \varpi_0 + \varpi_1 CMM_t + \varpi_2 DMC_t + \varpi_3 FDI_t + \varpi_4 LGXT_t + \varpi_5 LRXT_t + \varpi_6 LSVA_t + \varpi_7 LWGP_t + \varepsilon_t \quad (2)$$

Following the well-established tradition that the constancy of the means and variances cannot be assumed when analysing time series variables, we take preliminary measures to determine the stationarity and integration order properties of the eight macro-economic variables using the Augmented Dickey-Fuller (ADF, 1981) and the Kwiatkowski, Phillips, Schmidt and Shin (KPSS, 1992) test. Next, we conduct a co-integration check of the variables following the procedures of Pesaran, Shin, and Smith (2001) bounds testing within the framework of the auto-regressive distributed lag (ARDL) model. The ARDL approach to co-integration test is recommended in empirical studies when the variables in a model are not entirely first difference stationary. The F-statistic of the bounds test tests the joint null hypothesis of no cointegration among the variables against the alternative hypothesis of the presence of cointegration. A decision is reached regarding the existence of a cointegrating relationship among the variables of an ARDL model by comparing the calculated F-statistic with two sets of critical values (upper and lower) provided by Pesaran, Shin, and Smith (2001) for a given level of significance. If the computed F statistic exceeds the upper critical bound value, all the variables are I(1), and we reject the null

hypothesis of no cointegration. Alternatively, if the computed F statistic is less than the lower critical bounds value, we assume all variables are I(0), and we cannot reject the null hypothesis of no cointegration. If, however, the calculated F statistic falls between the bounds, we take the test as inconclusive. Given the existence of co-integration, we estimate the error correction form (ECM) of the ARDL model for the short-run dynamics of the variables. We expect the error correction term indicated by the ECM to have a negative sign. When negative and significant, the error correction term measures the speed of convergence to long-run equilibrium from previous deviations, as well as reinforces the presence of cointegration.

We complete our tests with four regression diagnostic checks examined by the ECM. The Lagrange Multiplier (LM) test checks whether the estimated ARDL model suffers from residual serial correlation. The null hypothesis of the LM test is that there is no serial correlation against the alternative that the estimated model includes both auto-regressive (AR) and moving average (MA) error processes. The LM test is applicable irrespective of the presence of lagged dependent variables in the model. The White test tests the null hypothesis that residuals are homoscedastic and independent of the regressors, against the alternate hypothesis of the presence of heteroscedasticity of unknown, general form. The histogram – normality (Jarque-Bera) test interrogates the null hypothesis that the residuals are normally distributed. The test statistic measures the difference between the skewness and kurtosis of the series with those from the distribution. Finally, we use the Ramsey RESET test to check for parameter instability in the estimated ARDL model. Results of the various test are reported in the next section.

5. Results and discussions

Table 2 reports the results of the ADF test for unit roots for the levels and first differences of the eight macroeconomic variables in our model. All the variables tested are stationary at their first difference, except *FDI*, which is level stationary**.**

Table 2. ADF test results for unit roots

Variable	Level at 5%		First Difference at 5%		Order of integration
	Critical value	t-Statistic	Critical value	t-Statistic	
SXT	-2.945842	-0.876578	-2.948404	-4.789140*	I(1)
CMM	-3.548490	-2.844994	-3.595026	-4.747520*	I(1)
DMC	-2.945842	-2.228316	-2.954021	-5.467621*	I(1)
FDI	-2.945842	-3.475091**	-	-	I(0)
GXT	-2.945842	-1.160376	-2.948404	-6.402441*	I(1)
RRT	-2.945842	-2.129189	-2.948404	-4.504777*	I(1)
SVA	-2.945842	-1.893546	-2.948404	-6.400949*	I(1)
WGP	-3.540328	-2.225325	-3.544284	-5.212358*	I(1)

Note: *, ** indicate 0.01 and 0.05 level of significance respectively

Table 3 reports the results of the KPSS stationarity test. Four variables are stationary at their levels, and the rest four are stationary becomes stationary after taking their first difference. From both tests, we are certain that we have a combination of I(0) and I(1) variables.

Table 3. KPSS test results for stationarity

Variable	Level at 5%		First Difference at 5%		Order of integration
	Critical value	t-Statistic	Critical value	t-Statistic	
SXT	0.463000	0.643314	0.463000	0.109737*	I(1)
CMM	0.146000	0.181941	0.146000	0.092411*	I(1)
DMC	0.463000	0.455459**	-	-	I(0)
FDI	0.463000	0.170801*	-	-	I(0)
GXT	0.463000	0.507870	4.463000	0.147759*	I(1)
RRT	0.463000	0.255297*	-	-	I(0)
SVA	0.463000	0.614823	0.463000	0.165606*	I(1)
WGP	0.146000	0.099331*	-	-	I(0)

Note: *, ** indicate 0.01 and 0.05 level of significance respectively

We now proceed to test for the presence of a stable long-run relation using the ARDL Bounds testing procedure for cointegration. Maximum two lags are selected for the test with Akaike Information Criteria (AIC). The value of the F-statistic reported in Table 4 is at 0.05 level of significance. Based on the test, we reject the null hypothesis of no long-run relationship and uphold the existence of a stable long-run relationship among the variables.

Table 4. ARDL Bounds test for cointegration result

Test statistic	**Value**	**I(0)**	**I(1)**
F	7.407568*	2.32	3.5

* Significant at 0.01

Having satisfied the stationarity and cointegration requirements for the estimation of our model, we estimate the long-run levels model for the long-run coefficients using the ARDL procedure and report the results in Table 5

Table 5. Coefficients of the estimated long-run form

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CMM	0.005299	0.009928	0.533730	0.6019
DMC	-0.020278	0.022314	-0.908763	0.3789
FDI	-0.333560	0.065854	-5.065110	0.0002*
GXT	-0.500411	0.293477	-1.705112	0.1103
RXT	-1.055000	0.239426	-4.406369	0.0006*
SVA	1.941012	0.759663	2.555095	0.0229**
WGP	3.687860	0.942833	3.911467	0.0016*

*, ** indicates significance at 0.01 and 0.05 significance level

The long-run coefficients of services value added and real world GDP is positive and statistically significant at 5% and 1% significance level respectively. Expectedly, the real effective exchange rate is negative and significant at 1%. In magnitude, the real world income is the single largest significant determinant of foreign demand for Nigeria's services. A one percent increase in foreign real income increases demands for Nigeria's services by about 3.7%. Growth in services supply capacity is also shown to be positively related to service export growth, as a one percent growth in services value added induces almost 2% increase in services export. Given a growing world real GDP and increasing supply capacity, the relative prices measured in terms real exchange rate may ultimately determine the rest of the world's uptake of services from Nigeria as there appears to be a one-to-one correspondence between real exchange rate appreciations and lose of export volume.

Foreign direct investment and financial sector development both have a negative effect on services export in the long-run, with only the former being statistically significant. The large and sustained inflow of foreign direct

investment into a country is a contributory factor to financial sector development of the recipient country. However, many sectors within the economy may not benefit significantly from the expanding financial sector if domestic credit Sis skewed in favour of the sectors most attractive to foreign direct investment. If then domestic credit follows foreign direct investment, our result simply implies that the services sector is crowded out as it is presently less attractive to foreign direct investment. Our analysis in section 2.4 shows that Nigeria's services export predominantly comes from auxiliary transport services and other personal travels. These are no paramount destinations for foreign direct investment and domestic credit.

The long-run effect of communication, though positive, is not statistically significant as a determinant services exports. This may speak to the low level of sophistication of Nigeria's goods and services exports. Domestic credit and goods exports are both negative and statistically insignificant. Table 6 below presents the short-run dynamics of the variables. Lag-one period of domestic credit, foreign direct investment, and goods exports all have a significant positive effect on services exports. In the current period, they are each negative implying that policies or actions on these variables boost services exports one year after. The real effective exchange rate varies inversely with services export in the current period and directly one year after.

Table 6. Short-run restricted error correction regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-59.51718	6.346196	-9.378402	0.0000*
D(DMC)	-0.007067	0.006488	-1.089164	0.2945
D(DMC(-1))	0.024636	0.007158	3.441967	0.0040*
D(FDI)	-0.080117	0.018256	-4.388628	0.0006*
D(FDI(-1))	0.081072	0.019934	4.066972	0.0012**
D(GXT)	0.244814	0.086507	2.829998	0.0134**
D(GXT(-1))	0.462429	0.114283	4.046341	0.0012**
D(RXT)	-0.355683	0.126539	-2.810855	0.0139**
D(RXT(-1))	0.759607	0.166120	4.572639	0.0004*
D(SVA)	0.613719	0.379408	1.617569	0.1281
D(SVA(-1))	-1.880067	0.358108	-5.250001	0.0001*
D(WGP)	2.394798	3.864370	0.619713	0.5454
D(WGP(-1))	-14.99935	4.099022	-3.659252	0.0026*
CointEq(-1)*	-0.700125	0.074259	-9.428193	0.0000*

*, ** indicates significance at 0.01 and 0.05 significance level

Services value added is positive but insignificant in the current period and exerts a significant negative impact on services export a year after. It is reasonable in this circumstance to infer that if services export declines as production grow, then domestic consumption outweighs foreign demand for services. There is thus a large room to plug into the global services value chain and secure a share of the growing global demand for services. World real GDP does not immediately exert any significant positive influence on services export from Nigeria. The impact is however significantly negative with a one period lag. The error correction term [cointEq(-1)] is -0.700125 and significant at 1% level, implying that previous deviations from the steady-state equilibrium converge to long-run equilibrium in the current period at the rate of 70%.

The diagnostic tests results in Table 7 show that the restricted ECM satisfied all necessary conditions for valid inference and reliable conclusions.

Table 7. Diagnostics tests from the ECM

Test	Test Statistic	p-value
Normality	JB = 0.129570	0.9373
Serial Correlation LM	F = 2.626019	0.1291
Heteroscedasticity - White	F = 0.525725	0.9079
Ramsey RESET (df) = 13	F = 1.069405	0.3199

6. Conclusion

In the long run, growing real-world income, increasing local capacity for service production, and appropriately priced exchange rate are the paramount determinants of Nigeria's services export. The current state of affairs in services export from Nigeria points to a comparative advantage in low technology, low productivity services in transport and travel services. In travel services, for instance, Nigeria holds no share of the more sophisticated business, education, and health-related services export. In transport services, Nigeria's exports are exclusively in services auxiliary to all modes of transport with no export representation in the more technology intensive maritime, air, rail, and pipeline transport services. These service areas are capital intensive and long-term in nature, which makes them attractive to FDI inflows and a good share of domestic credit.

A huge natural gas deposit and the expanding global market for clean energy should provide the impetus for pipeline transport services. Maritime transport may leverage on Nigeria's crude oil deposit and the ongoing efforts at increasing domestic refining capacity. A re-industrialisation policy with outward orientation should provide additional stimulus for maritime and air transport services development. The ongoing steps in the reintroduction of a national air carrier for Nigeria with private sector participation hold good potential for an additional source of sophisticated services export. High productivity and productivity-enhancing services are human, technological and financial capital intensive. FDI has proved as a veritable conduit of these essentials. A business-friendly environment with an appropriate incentive structure will stimulate the required development in these services area diversifying services export away from low to high technology exports.

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The Role of Good Corporate Governance in the Association of Family Ownership Structure and Financial Performance- Indonesia Context

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Abstract
In emerging countries like Indonesia, family ownership has greater discretion than those in developed nations in choosing policies to maximize their interest. Moreover, family ownership as a backbone of Indonesia listed companies, more than 95% of registered companies in Indonesia controlled by the family. It is essential to interested parties including government to discern the role of GCG level to minimize the bad side of family ownership. Prior research only assumed the level of GCG as general. This study measures the GCG level in each of the firms to avoid the misleading inferences of the superiority of family ownership in achieving a sound firm performance. All the listed companies in Indonesia Stock Exchange, excluding bank and financial institution sectors, are selected as the research sample. There are 1261 firm-year-observation from the six years of 2010 to 2015. The results support that GCG level has a significant role in the association between family ownership and firm performance.

Key Words: Family Ownership, Firm Performance, GCG Level

1. Introduction

A survey conducted by Price Water House and Coopers (PwC) on 2,800 family-owned firms in 50 countries exposed that about 64% of these companies have recorded the staggering growth at least for the recent year (Barlian, 2016). Family ownership firms have a concern to transmit their firms to their descendants. The companies will act conservatively to avoid the impairment of the firm's reputation. The continuity of the business is the primary focus of the family members so that they endeavor to maximize the long-term value of the firm (Casson, 1999; Chami, 2001). Family ownership firms eliminate the conflict of interest between manager and owner by increasing their monitoring activities to ensure that the management actions align with the owner interest (Fama and Jensen, 1983; Chami, 2001; Lee, 2004). Prior empirical results confirmed the superiority of family ownership over non-family ownership. Among others are (Poutziouris et al., 2015; Komalari and Nor, 2014; Chu, 2009; Martinez et al., 2007; Demsetz and Lehn, 1985; McConaughy et al., 1998; Anderson and Reeb, 2003; Maury and Pajuste, 2005). They found that family ownership has a positive association with the firm performance.

However, these results are still inconclusive, and several other researchers proved the opposite findings in which family firms have a negative association with the performance. Miller et al. (2007) using Fortune 1000 samples for the period 1996 to 2000; Jiang and Peng (2011) using 744 big listed companies in 8 Asia countries; Connelly et al (2012) using go-public companies listed on Stock Exchange of Thailand for the year of 2005 and Juniarti (2015) using big cap companies listed on Indonesia Stock Exchange (IDX) found the negative association between family ownership structure and performance.

Indeed the difference results of the prior studies can be explained by Agency theory. According to the Type I of Agency Theory, family ownership can mitigate the conflict of interest between owner and managers and finally reduce agency cost. Therefore family firms will have superior performance than non-family firms. On the other hand, there is a severe side of family ownership since as the majority; they have an opportunity to expropriate the minority as implied by Agency Theory Type II (Lewis, 1935; Jensen and Meckling, 1976). The majority will exploit minority interest by making policies that maximize their benefit at the expense of others. In the condition where the level of corporate governance is low, the chance of the majority to expropriate minority will be higher and vice versa (Juniarti, 2015). Corporate governance (CG) is as one of the mechanisms that be able to mitigate the negative impact of agency conflict.

Higher quality of CG practices will better disciplines managers and concentrated owners to expropriate insubstantial parties (Byun et al., 2008). According to them, sound CG practices will reduce the cost of equity. The role of corporate governance in the association of family firms and firm performance has been overlooked in some prior studies. Suspecting the conflicting results of previous researchers caused by agency problem type I or type II will be misleading, because of the results potentially different when the CG level is weak or strong. Besides that, it cannot directly be observed which agency problems type that exists. This research fills this gap by proposing Good Corporate Governance (GCG) level in investigating the association between family ownership and firm performance. The probability of GCG level in moderating this relationship should be considered to achieve the robust results.

Compared to the developed countries where the CG level is quite high, the level of GCG in developing countries is relatively low. Firms in emerging countries like Indonesia have greater discretion than those in developed nations in choosing policies to maximize their interest. Prior research only assumes the level of GCG as general (Juniarti, 2015), this study will measure the GCG level in each of firm to avoid the misleading inferences of the superiority of family ownership performance. Moreover, family ownership as a backbone of Indonesia listed companies, more than 95% of registered companies in Indonesia controlled by family (Barlian, 2016). It is essential to interested parties including government to discern the role of GCG level in the association of family ownership and firm performance.

2. Literature review

2.1 Agency Theory

Agency theory assumes that there is a conflict of interest between principal and agent, where each party wants to maximize their benefit at the expense of another party (Jensen and Meckling, 1976). The principal has an authority to mandate the agent, whereas the agent, as the parties carrying out this order (Eisenhardt, 1989). Agency conflict produces agency cost, therefore it should be mitigated (Hill and Jones, 1992; Jensen and Meckling, 1976; Fama and Jensen, 1983). Agency cost includes monitoring cost, bonding cost, and residual loss (Jensen and Meckling, 1976; Fama and Jensen, 2003). Monitoring costs are as the expenses that be borne by the principal to monitor, measure, search and control agents'behavior. Bonding costs are costs to assure that the agents comply with the rules, policies and other regulations that have been established in contracts. The last is the residual loss as the sacrifice of the principal to let their

wealth reduced due to the different decisions between agent and principal (Jensen and Meckling, 1976). Villalonga and Amit (2006) distinguish agency conflicts as the type I and type II of agency conflict. The first one is the conflict between shareholders and management and the later, involves the majority and minority investors.

Agency conflicts can be minimized through the increase of insiders ownership (Bathala et al., 1994). Insiders ownership are as the owner who is also as the managers. Managers who are also the owners will be careful in deciding since they will bear the impact of their adverse decision (Dempsey and Laber, 1992; Jensen and Meckling, 1976). Insider ownership is expected to match the interest of the principal and the agent. The higher the insider ownership, the higher the alignment level and the control ability in the interest of managers and owners. Finally, it will reduce the level of conflict of interest between them (Jensen and Meckling, 1976; Dempsey and Laber, 1992).

In addition to insider ownership, family ownership can also be a useful tool to reduce the agency conflict between principal and agent. According to Anderson and Reeb (2003) and (Dyer, 2006), one of the advantages of family ownership is to reduce the agency conflict type I. The involvement of family in the company enabling them to effectively and efficiently monitor the activities of managers. The alignment of owner and manager can be achieved easily (Fama and Jensen, 1983). In the long-term, it will minimize the chance of managers to expropriate the owners'interests; the business will be operated efficiently, thus the companies performance boost (Jensen and Meckling, 1976).

Even though the family ownership is expected to reduce the agency problem type I, on the other hand, this ownership potentially produces agency conflict type II (Shleifer and Vishny, 1997; La Porta et al., 2002) The agency problem will switch from principal-agent to majority-minority. Families as the majority have the opportunity to maximize their interest in the minority expenses. They have a great chance to make a policy that aimed to maximize their wealth by sacrificing the minority welfare (La Porta et al., 2002; Villalonga and Amit, 2006). The potential of type II of agency conflict to worsen the company'performance should be considered in the firm where the family has the majority ownership (La Porta et al., 2002; 41; Claessens et al., 2000).

2.2 Family Ownership Structure and Firm Performance

The family firm is a firm where the family or family members own the majority of the substantial interests. Prior studies employed many proxies to define whether a business is a family firm or not, among others are family members hold a majority of company'assets (Lee, 2004), some of CEO or important positions are occupied by the family members (Claessens et al., 2000; Anderson and Reeb, 2003; Lee, 2004; Barontini and Caprio, 2006 Villalonga and Amit, 2006; Chu, 2011), and the significant control in companies are embedded in family (Morck and Yeung, 2004; Miller et al., 2007). This study uses the following criteria to identify whether a firm as family ownership or not, first, the family owns at least 10% of companies' interest and second, one of the family members are in managerial position.

The involvement of family will enhance the control of the firm managers and will align the interest of principal and agent; therefore, it will reduce the agency costs and ceteris paribus, the firm performance will increase. However, the good side of family ownership will go hand in hand with its negative side. Families as the majority have an opportunity to expropriate the minority to maximize their interest as stated by Agency Theory Type II. The family may keep their relatives in managerial position even though their competencies and capabilities are in question, in addition, they might be set up the discretion which benefits their interest but harms others. In the long term, it will undermine the firm performance and bring the companies to the sustainability problems.

Unlike developed have the high law enforcement, in Indonesia and many other developing countries, the law enforcement is quite low (Jiang and Peng, 2011; Shyu, 2011; Juniarti, 2015). The power of the majority to expropriate the minority is enormous. By ignoring the level of good corporate governance (GCG) in each company, the existence of family ownership would negatively affect the achievement of the company's performance. The probability of family ownership to diminish the firm performance is high in developing countries, mainly if the role of GCG is ignored. Therefore the first hypothesis is as follow:

Hypothesis 1: There is a negative association between family ownership and firm performance.

2.3 The Level of Good Corporate Governance, Family ownership, and Firm Performance

The essential factors that need to be considered in the association between family ownership and firm performance are the level of GCG. The inclusion of this variable in the model is expected to give a better explanation. The role of GCG is essential since it can be used to mitigate the bad side of the family firm. Managerial ownership and institutional ownership are the manifestations of the transparency principle of GCG. A manager who owns the company's stock will inevitably align interests with the importance of shareholders. The same mechanism is also occurred through the institutional ownership, according to (Chaganti and Damanpour, 1991) the institutional investors will reduce the selfish behavior of managers. Shleifer and Vishny (1997) stated that institutional investors have a critical role in enforcing the rule. In managing the company according to the general principles of GCG, the part of the commissioner independent is also indispensable. According to Vafeas (2000), the role of the board of commissioners is expected to improve the quality of profit by limiting the opportunity for managers to manage earnings for their purposes. Besides that, the existence of audit committees in the company is also expected to enhance the corporate governance level. Audit committees help the board of commissioners to oversight managers tightly. Their expertise and educational background in accounting and financial will sharp them to conduct effective and efficient monitoring of the company (Klein, 2006).

Companies with the high level of GCG imply that the level of control implementation is strong. It will minimize family members to act unproperly with other's expenses. Some prior research found that there is a positive association between the level of GCG implementation and firm performance (Sheikh et al., 2013; Needles et al., 2012; Morck et al., 1988). Therefore, companies with a higher level of GCG are expected to minimize the bad side of family ownership and boost its performance.

Thus, the interaction of GCG and family ownership are predicted to moderate the association between family ownership and firm performance.

Hypothesis 2: At the high level of implementation of good corporate governance, the better the performance of the firm.

3. Research Method

3.1 Data

All the public companies that have listed in Indonesia Stock Exchange (IDX) at least in 2010 are selected as the research sample. However, bank and financial institution are excluded from the samples, since they do not have some data needed in this study. There are 1261 firm-year-observation from the six years of 2010 to 2015. As many as 796 samples (63.1%) are family ownership firms, while the remaining 465 samples (36.9%) are identified as non-family firms.

3.2 Variables Operationalization

3.2.1 Family Ownership

Two criteria used to classify whether the firm is as a family firm or not, are the number of ownership, and the family position is managerial. If family own at least 10% of the total ownership or have one or more family members or their relatives in the managerial area, the company is grouped as family ownership. This identification is searched manually based on information available in the annual reporting, company's website and other publicly available information regarding the firm ownership. If the first criteria are fulfilled, no need to continue to search the second criteria. In this study, one of the two criteria is satisfied enough to classify whether companies as a family owned firm or not (La Porta et al., 2002; Faccio and Lang, 2002; Barontini and Caprio, 2006). Family ownership is binary variable in this study, score one if companies qualify one of the two criteria and 0, otherwise.

3.2.2 Firm Performance

Firm performance in this research is measured by return on assets (ROA) following the prior studies (Sraer and Thesmar, 2007; Allouche et al., 2008; Kowalewski et al., 2010). ROA is one of the general techniques to measure the capability of firms to generate financial performance since it collaborates two item of financial statements that is balance sheet and income statement simultaneously. The equation to calculate ROA is below:

$$\text{Return On Asset (ROA)} = \frac{Net\ Income\ After\ Tax}{Total\ Asset} \quad \ldots\ldots\ldots (1)$$

3.3.3 Good Corporate Governance (GCG) Level

GCG is measured using the self-assessment method. This method has been adopted by several institutions such as Bank of Indonesia, The Indonesia Financial Services Authority (IFSA), Ministry of State-Owned Enterprise. They usually adjust this method according to their particular need. Indonesia Corporate Governance Forum (FCGI) have designed the general self-assessment tool that can be applied to all companies (FCGI, 2010). This study employs self-assessment method to measure GCG score, following FCGI method and adjusted by the Act of Limited Corporation No. 40, 2007, by focusing on the three aspects of GCG, i.e., Ownership Structure, Board of Commissioners and Audit Committee.

Ownership structures (weight 40%)

Ownership structures are measured based on managerial and institutional ownership structure.

1. Managerial ownership is the proportion of share owned by managerial to total outstanding share. According to (Morck et al., 1988), the ownership of managerial in the range of 0% - 5% will align the interest of managers and owners. Therefore, if the managerial ownership in that range will be scored by 1 and 0, otherwise.
2. Institutional ownership. Institutional ownership is the proportion share ownership by institutional to total outstanding share. Morck et al. (1988) stated that the existing institutional ownership more than 25% will motivate the institutions to oversight tightly to the firms. Therefore, if the institutional ownership more than 25% will be scored by 1 and 0, otherwise.

Board of Commissioners (weight 35%)

1. The Proportion of Board to Directors

   The effectiveness of the board of commissioners in the company can be denoted from the composition of the number of being supervised and the number of those supervise or directors. According to Muntoro (2006), at least, the structure of them should be balanced, to assure the effectiveness of monitoring. Therefore, if the proportion of board of commissioner to the directors equal to or above one will be scored 1 and 0 if the percentage of them is below 1.

2. The proportion of Independent Board of Commissioners

   In the good corporate mechanism, the existence of independent commissioners in the Board of Commissioners is expected to enhance the effectiveness of the monitoring process. IFSA requires that the proportion of independent commissioners at least 30% of the number of Board of Commissioners. According to this requirement, score 1 is applied to the companies that satisfy the condition and 0,

otherwise.

Audit Committee (weight 25%)

Committee of Audit is one of the vital mechanism in good corporate governance, the existence of this committee is expected to strengthen the overall control of a company. Three items of Audit Committee will be scored that is the number of the audit committee, the proportion of independent audit committee and their competence.

1. The number of audit committee
   According to the guideline of GCG implementation, companies required to have at least 3 members of the audit committee, therefore if the amount of the audit committee of the firm equal to or above 3 will be scored 1 and 0, otherwise.
2. The proportion of independent audit committee
   Companies are also required to have at least one member of an independent audit committee. The portion of the independent audit committee should be equal to or above 0.33 if the requirement is satisfied, the score 1 is applied and 0, otherwise.
3. The competence of Audit Committee members
   The capability of audit committee members is also considered in this scoring. According to the Bapepam Decree No.29/PM/2004 article IX.1.5 stated at least that one member of the audit committee should have particular educational background or experience related to accounting or finance. If one of the members qualify, this requirement will be scored 1 and 0, otherwise.

Then, all the above assessment will be calculated using the following equation to get the score of GCG of each company. The higher the score implies, the higher the level of GCG implementation in an organization.

$$\boldsymbol{GCG\ score} = \left(\frac{\boldsymbol{score\ of\ \ ownership\ structure}}{\boldsymbol{maximum\ score}} \times \mathbf{40\%}\right) + \left(\frac{\boldsymbol{score\ of\ the\ board\ of\ directors}}{\boldsymbol{maximum\ score}} \times \mathbf{35\%}\right) + \left(\frac{\boldsymbol{score\ of\ audit\ committee}}{\boldsymbol{maximum\ score}}\ \boldsymbol{X}\ \mathbf{25\%}\right) \quad (2)$$

3.3.4 Control Variables

Firm Size. Firm size can be associated with the firm's capability to achieve the financial performance of companies. It usually related to one of the following indicators such as the number of assets owned by the company, the number of sales, number of employees or the amount of the net assets of the firm. Companies that have large size will be more accessible to achieve good performance compared with a small one. They can utilize their assets efficiently so that their financial performance increase (Andres, 2008; Chu, 2009; Shyu, 2011). Firm size is used to differentiate company as a big or small company [8]. This study uses natural log of assets to measure the firm size (Shyu, 2011; Hamberg et al. 2013; Poutziouris et al., 2015; Anderson and Reeb, 2003; Maury and Pajuste, 2005).

Firm Size: Ln (Total Asset) (3)

Industrial Sectors, this study includes the industrial sector in the model, to anticipate whether the industrial areas provide the different explanation. A dummy variable is applied to industrial sectors.

3.3 Analysis

To analyze panel data, several steps are run to determine the best model of panel data, whether pooled least square (PLS), fixed effect or random effect models. The fixed effects are dummy variables for each year of the sample and companies code. Panel data are finally satisfied with the fixed effect model. To detect heteroscedasticity, this study uses the Breusch-Pagan /Cook-Weisberg test for heteroscedasticity test. Generalized least square is also referred to resolve the problem of heteroscedasticity.

Below is model of analysis of this study:

$$ROA_{i,t} = \alpha + \beta_1 FMO_{i,t-1} + \beta_2 GCG_{i,t-1} + \beta_3 FMO * GCG_{i,t-1} - 1 + \beta_4 LOGTA_{i,t-1} + \beta_5 IDSEC_{i,t-1} + \varepsilon \quad (4)$$

Where:

$ROA_{i,t}$ = Return on asset firm i for the period of t
$FMO_{i,t-1}$ = Family ownership firm i for the period of t-1
$GCG_{i,t-1}$ = Score of good corporate governance firm i for the period of t-1
$LOGTA_{i,t-1}$= Firm size measured by natural log of total assets firm i for the period of t-1
$IDSEC_{i,t-1}$= Industrial sector firm i for the period of t-1
ε = *Error term.*

4. Results and Discussion

Data consist of 240 firms, each has five to six years of observations, so that the panel data is unbalanced. There are 1261 firm-year-observation from the six years of 2010 to 2015. In panel data, the time variant and individual variant is possible, by assuming that all the variants are constant, data are analyzed using PLS. Next, the fixed effect model is employed for data analysis. To decide whether common model (PLS) or uncommon model (fixed effect) is more fitting, then Chow test is applied. The result shows that the probability F test is less than 0.05, thus fixed effect model is more appropriate than PLS. A further test is run to determine whether a fixed effect or random effect model is the best for data analysis. Based on the Hausman test, H_0 cannot be rejected, since the probability of Chi2 is less than 0.05, it is mean that the fixed effect model is the best model in this study.

Table 1 presents the profile of sample firms. Family firms show different characteristic from those of non-family firm. The size of family firms, on average is relatively smaller than non-family firms. The performance of family firms is slightly lower than non-family firm, the mean, a minimum and maximum score of ROA is smaller than those on non-family firms. The level of GCG in both firms is equal to each other. However, family firms have the minimum score of GCG (0.25) higher than min score of GCG in the non-family firm (0.175). Family firms on average have more concern for the GCG implementation than non-family firm. Results of the hypothesis 1 testing, indicates the FMO variable.

Table 1. Descriptive Statistic
Panel A. Summary Statistic for The Full Sample

Variable	All Firms	FMO	Non FMO
ROA			
mean	0.04754	0.02843	0.08026
std dev	0.32543	0.16852	0.48707
min	-1.72905	-1.72905	-0.86921
max	9.74302	1.85171	9.74302
GCG			
mean	0.67871	0.68085	0.67534
std dev	0.17585	0.17133	0.18346
min	0.17500	0.25000	0.17500
max	1.00000	1.00000	1.00000
LOGTA			
mean	4.52465	3.99638	5.42897
std dev	1.80202	2.10060	0.95088
min	5.01650	5.01650	6.15216
max	13.96299	13.96299	13.91678
Obs	1261	796	465

Panel B. Correlation Data

	ROA	FMO	GCG	FMOGCG	LOGTA	IDSEC
ROA	1					
FMO	-0.0769	1				
GCG	-0.0449	0.0147	1			
FMOGCG	-0.0573	0.9239	0.3097	1		
LOGTA	0.0351	-0.1184	-0.1833	-0.1665	1	
IDSEC	-0.0564	0.0835	0.1942	0.1057	-0.8568	1

Table 2 shows that FMO has a negative and significant at level 1%, this result confirms the prior studies Shyu, 2011, Juniarti, 2015; Jiang and Peng, 2011) that in developing countries, the existence of family ownership harms the firm performance. The switching conflict of interest to the majority-minority interest has occurred as predicted by Agency Theory Type II. The incentive of the majority to abuse the minority for their benefit will be costly for the companies as a whole. Greediness to immediately attract short-term profits makes the majority justify ways to do it. The developing country situation that is weak minority protection, low law enforcement and lack of adequate internal control to protect all parties makes the majority have the discretion to prosper their own at the expense others.

The presence of family-dominated controls makes families more likely to retain family members in managerial positions even though they lack adequate competence (Andres, 2008; Dyer, 2006; Shleifer and Vishny, 1997). The family effort to keep family members in the managerial position will result in ineffective and inefficient decision making. Further, it will lead to other costs that are detrimental to the company and will decrease company performance (Andersen and Reeb, 2003).

It is also interesting to see that GCG alone, has a negative association with the firm performance. GCG implementation only burdens the company costs thus lowering firm performance. Overall, GCG practices have the negative relationship to the firm performance in both hypothesis 1 and 2; this result is possible to mislead the conclusion of the role of GCG, it seems that GCG just increase cost and has no impact to the performance. However, further testing in each of the sample groups (Table 3) proves that GCG has a positive effect on the performance of family firms. This result is opposed to what happened in non-family firms, where GCG consistent has a negative association with firm performance.

Table 2. Ownership, Firm Performance and GCG

	Hypothesis 1	Hypothesis 2
Variable	**ROA**	**ROA**
Intercept	0.24776	1.17896
	(3.09) ***	(0.81)
FMO	-0.05184	-0.84655
	(-2.28) **	(-3.05) ***
GCG	-0.10099 *	-1.23254
	(-1.68)	(-6.33) ***
FMOGCG		1.27980
		(5.23) ***
LOGTA	-0.00382	-0.01317
	(-1.06)	(-0.70)
IDSEC	-0.019239	-0.05909
	(-1.53)	(-0.17)
Rq-within	0.013	0.036
between	0.028	0.014
overall	0.011	0.013
F	11.55 ***	8.180 ***

Notes: *, * * and * * * denote statistical significance at the 10, 5 or 1 percent level, respectively.

Table 3. GCG and Performance in FMO and Non-FMO

	FMO	Non-FMO
Variable	**ROA**	**ROA**
Intercept	0.16500	0.33824
	(0.75)	(2.47) **
GCG	0.07673	-0.27653
	(-2.14) **	(-2.06) **
LOGTA	-0.02414	-0.00023
	(-0.93)	(-0.03)
IDSEC	-0.970404	-0.01722
	(0.75)	(-0.37)
Rq	0.0091	0.01840
F	2.41 *	2.88 **

As predicted, the interaction of GCG and FMO shows the positive association with firm performance and significant at level 1%, it means that GCG has been successfully reducing the negative impact of family ownership. The implementation of GCG in the family firms alter the negative side of family ownership into the positive side. The higher level of GCG practices reduces the opportunity for the majority to expropriate minority. Family behaves reasonably in decision making to avoid the negative consequences of their behavior. Besides, the majority is required to treat the minority. Equally, it will minimize the cost to expropriate minority. The mechanism of appointing the president director and other managerial positions must be through a transparent and accountable process. Family cannot keep underperformed family managers in the managerial position because the excellent governance practices make impossible to do that. It will cut unnecessary expenditures including irrational compensation to their relatives; thus the use of resources become efficient and effective, as a result, firm performance increases.

Family companies have a number of advantages in addition to some weaknesses. In such condition, GCG just shifts the bad side to reinforce the excellent of the family firm. Unlike non-family firms that have the scattered interests and even conflicting with each other, family firm has the same vision to prosper their families and to handover it to their successor. The favorable circumstances in the family firm make it easier to be controlled than non-family firm.

The authority of Indonesia should note this finding to lessen the negative impact of family ownership. Also, family ownership is the backbone of Indonesia listed companies; it is needed an integrated panacea to eliminate the adverse effects of family ownership.

5. Conclusion

The primary goal of this research is to highlight the role of GCG in the association between family ownership and firm performance. GCG is expected to reduce the bad side of family ownership in expropriating the minority. In developing countries like Indonesia, the negative impact of family ownership is more dominant than the positive ones. This study confirms the previous finding that family ownership tends to lower firm performance. Circumstances in developing countries such as the lack of law enforcement, low minority protection, and other various factors are inspiring family to expropriate minority. Interestingly, as it is hypothesized, the existence of GCG at the firm level successfully switches the negative side of family ownership to the positive one. The higher the level of GCG implementation the higher the chance of family firm achieves a sound financial performance. GCG has a significant role in limiting the family to expropriate the minority. IFSA should note this finding to lessen the negative impact of family ownership. As reported by the PWC survey, that family ownership is the backbone of Indonesia listed companies; it is needed an integrated panacea to eliminate the negative impact of family ownership.

This finding underlines the urgency to continuously support the implementation of GCG since a robust application implies that the control mechanisms in the entities are going well. Therefore, the policy of The Authority of Financial Services as the custodian of code and principles of GCG in Indonesia that required the companies to implement GCG is on the right track (IoD Report, 2016). This policy has also resulted in a good trend of GCG implementation in Indonesia. According to the IoD Report, Indonesia has been in a group of countries with a good implementation ranking.

This study does not differentiate the status of the family in family ownership, whether they are founder or successor. Their spirit could be different. Usually, the founders have more concern and struggle to make the companies exist and grow than that of their successors. Further exploration of the kind of family

whether as the founder or the successors can be considered in the future research, to have a comprehensive insight on the role of family ownership in keeping a higher firm performance.

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Importance of Monetary Policy in Côte d'Ivoire's Economic Growth

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Abstract
Studies analyzing the link between monetary policy and the growth of real production in WAEMU and particularly in Côte d'Ivoire are still very rare. This study analyzes the relationship between monetary policy and economic growth in Côte d'Ivoire.[1] The data come from the World Bank and the BCEAO[2] and cover the period 1980-2012. The ARDL approach and the Toda-Yamamoto causality test are used. The interest rate has a negative and significant influence on economic growth in Côte d'Ivoire, while inflation and the money supply ratio have a positive and significant effect. In addition, there is a two-way causality between these indicators and economic growth in Côte d'Ivoire. It is necessary to monitor the evolution of the fundamental macroeconomic variables of the Ivorian economy simultaneously and this within the overall framework of WAEMU.

Key Words: Monetary Policy, Economic Growth, ARDI

J.E.L. Classification: E52, O4, C01

1. INTRODUCTION

The relationship between money supply and economic growth has received particular attention in the area of the money economy. Since Fisher's (1911) work on the Quantitative Theory of Money (TQM), we have witnessed a plethora of theoretical works. It is among others, Keynes (1936) which challenges the point of view of Fisher (1911). Indeed, it has the merit of having highlighted the uncertainty that characterizes modern economies. Starting from the idea that money is active and must respond to the needs of the economy, he proposes the possibility of expansionary monetary policy to stimulate economic activity. But in 1968, Friedman and the monetarist school will challenge Keynesian thinking. This position will be further radicalized by Lucas (1970) with the new classical school (NEC) by asserting the neutrality of monetary policy even in the short term on production.

[1] The Republic of Côte d'Ivoire is a member country of the African Union. Covering an area of 322,462 km2, it is bordered on the north by Mali and Burkina Faso, on the west by Liberia and Guinea, on the east by Ghana and on the south by the Atlantic Ocean. The population was estimated at 26,578,367 inhabitants in 2015. Côte d'Ivoire's political and administrative capital is Yamoussoukro; Abidjan is its main economic center. Its official language is French and for currency, the CFA franc. The country is part of ECOWAS.
[2] The Central Bank of West African States (BCEAO) is the issuing institution common to the eight (8) member states of the West African Economic and Monetary Union (WAEMU).

This divergence at the theoretical level will also become empirically sustainable. In fact, Twinoburyo & Odhiambo (2018), looking through the existing literature both theoretical and empirical, note the relevance of monetary policy support for economic growth in financially developed economies with relatively independent central banks. While the relationship tends to be weaker in developing economies. But in general, their study concludes that monetary policy is important for short- and long-term growth despite the prevailing ambiguous relationship. Ayodeji & Oluwole (2018), in examining the impact of monetary policy on economic growth in Nigeria, find that the money supply and the exchange rate have a positive but relatively small impact on economic growth. Zhang & Shen (2017) show that economic growth is closely linked to monetary policy and that there is a stable, long-term equilibrium relationship between them in China. However, their study shows that the effect of monetary policy is less than fiscal policy. Studies by Srithilat & Sun (2017) show that monetary policy has a significant impact on real GDP per capita over the long term in Laos. Alavinasab (2016) shows that in the long term, economic growth has been significantly influenced by monetary policy in Iran in both the short and long term. The work of Nwoko, Ihemeje & Anumadu (2016) indicates that the money supply was not significant in Nigeria while the interest rate had a negative and statistically significant sign. Twinoburyo & Odhiambo (2016) support the neutrality of both short and long-term monetary policy in Kenya. Ahmad, D., Afzal & Ghani (2016) highlight the importance of monetary measures in promoting Pakistan's economic growth. Giblova (2015) highlights the negative aspects of the Bank of Russia's policy. Precious & Palesa (2014) show that monetary policy instruments such as money supply, the repo rate, and the exchange rate have a weak influence on growth in South Africa, in contrast to inflation. Sulaiman & Migiro (2014) report that in Nigeria, monetary policy has a significant influence on the growth of the economy, while the latter does not influence monetary policy significantly.

Regarding the franc zone, Mallaye (2009), studying the impact of monetary reforms on economic growth in the CEMAC zone, concludes that monetary reforms have mixed effects on economic growth. Evidently, empirical studies on the link between monetary policy and the growth of real output in WAEMU and particularly in Côte d'Ivoire are still very rare. Our study is, therefore, trying to fill this gap. It seeks to examine the causal relationship between monetary policy and economic growth. It is quite conceivable that this relationship is compatible with a long-term growth model where causality is bidirectional.

The rest of the article is then organized as follows: Section 2 is dedicated to the literature review. Section 3 presents the methodological approach. Section 4 highlights the results as well as their interpretations. Section 5 is devoted to the conclusion and the resulting economic policy recommendations.

2. REVIEW OF THE LITERATURE

The review of the economic literature highlights both theoretically and empirically a debate on the impact of monetary policy on economic activity. On the theoretical level, neoclassicals say that money has no influence on real variables. It would, therefore, be neutral so that any monetary action has no effect on activity and leads only to inflation. This position formalized by Fisher (1911) in the quantitative theory of money (TQM) will be disputed by Keynes (1936). Starting from the idea that money is active and must respond to the needs of the economy, Keynes (1936) suggests the possibility of expansionary monetary policy to stimulate economic activity. But in 1968, Keynesian thought will be challenged by Friedman and the monetarist school. Indeed, for Friedman (1968), the effects of monetary policy are only transitory and therefore neutral in the long run. He suggests the introduction of a monetary policy based on strict rules that tie the growth of the money supply to the growth of production (rule of %). Subsequently, Lucas (1970) and Sargent (1972) with the new classical school (NEC) introduce rational expectations. These authors will radicalise the monetarist position and affirm that monetary action has no effect even in the short term on production.

In addition, this divergence of the point of view will become empirically sustainable. Indeed, in reviewing the literature review, Twinoburyo & Odhiambo (2018) find that in most studies on the relationship between monetary policy and economic growth, very few highlights a link between the two. Overall, this study shows that the majority of the results support the relevance of monetary policy to support economic growth, mainly in financially developed economies with relatively independent central banks. On the other hand, the relationship

tends to be weaker in developing economies with structural weaknesses and underdeveloped financial markets that are poorly integrated into global markets. Their study concludes, however, that monetary policy is important for short- and long-term growth despite an ambiguous relationship. The paper, therefore, recommends an intensive financial development measure for developing countries as well as structural reforms to address supply shortfalls. Ayodeji & Oluwole (2018) examine the impact of monetary policy on economic growth in Nigeria by developing a model able to study the influence of the government's monetary policy on economic growth through the use of the analysis multi-variable regression. For this, they calculate the variables of the monetary policy instruments to include the money supply, the exchange rate, the interest rate, and the liquidity ratio. Economic growth was represented by gross domestic product (income) at constant prices. The unit root test was performed, and all the estimation variables were stationary at the first difference except the interest rate. The error correction model was used to have a parsimonious model. Their results show that the money supply and the exchange rate have a positive but relatively insignificant impact on economic growth. In addition, the Engle-Granger co-integration test was conducted and indicated the existence of a long-term relationship between monetary policy and economic growth in Nigeria. Finally, a Granger causality test was performed on the variables.

The results show a unidirectional causality between money supply and economic growth, the liquidity rate, and exchange rates, while a two-way causality exists between interest and economic growth. These authors, therefore, recommend that partial autonomy is replaced by full autonomy for Nigeria's central banks, which are invariably subject to government interference and policies. In addition, they want monetary policies to be used to create a favorable investment climate by facilitating the emergence of a market-based interest rate and exchange rate regimes to attract domestic and foreign investment. Zhang & Shen (2017), through the establishment of the VAR model, study the relationship between monetary policy, fiscal policy and economic growth in China. The research range is from 1990 to 2016. The results show that economic growth is closely linked to monetary policy and fiscal policy and that there is a stable long-run equilibrium relationship between them. The effect of monetary policy on economic growth is more noticeable than that of short-term fiscal policy, while in the long run, fiscal policy is more effective. However, the role of monetary policy is weaker than fiscal policy. Srithilat & Sun (2017) examine the impact of monetary policy on economic development using 1989-2016 annual time series in Laos. The result of the unit root test suggests that all variables are stationary at the first difference; allowing the use of an error correction model. It also shows that the money supply, the interest rate, and the inflation rate have a negative effect on real GDP per capita over the long term and that only the real exchange rate has a positive sign. The result of the error correction model indicates the existence of a short-term causality between the money supply, the real exchange rate and the real GDP per capita.

Alavinasab (2016) empirically examines the impact of monetary policy on economic growth in Iran over the period 1971-2011. The results show that in the long term, economic growth has been significantly influenced by the money supply, the exchange rate, and the inflation rate. In the short term, the results of the estimated error correction model indicate that the money supply and the exchange rate have a significant impact on economic growth. Nwoko, Ihemeje & Anumadu (2016) examine the extent to which the monetary policies of the Central Bank of Nigeria could actually be used to promote economic growth over the period 1990-2011. The influence of money supply, average price, interest rate, and the labor force was tested on the gross domestic product using multiple regression models. The empirical results of their study indicate that the average price and the labor force have a significant influence on the gross domestic product whereas the money supply was not significant. The sign of the interest rate was negative and statistically significant. They, therefore, recommend that the Central Bank's monetary policy be an effective tool to encourage investment, reduce unemployment, reduce interest rates and stabilize Nigeria's economy. As for Twinoburyo & Odhiambo (2016), they examine the short- and long-term impact of monetary policy on economic growth in Kenya over the period 1973-2013. The autoregressive phased delay approach (ARDL) is used.

The study uses both the broad money supply and the 3-month Treasury bill rate. The empirical results support the neutrality of monetary policy in the short and long term, implying the ineffectiveness of monetary policy on economic growth. The study recommends that policies improve the institutional and regulatory environment for the financial sector and the conduct of monetary policy be pursued in Kenya. In addition, the results highlight

the need to improve policy coordination, especially monetary and fiscal policies. Ahmad, Afzal & Ghani (2016) study the importance of monetary measures in promoting Pakistan's economic growth. The study uses annual time series data covering the period 1973 to 2014. The Autoregressive Ladder Delayed Approach (ARDL) is used. The empirical results mention a positive long-term influence between the money supply, the exchange rate, and economic growth. In addition, inflation and interest rates have a negative effect on economic growth. The study suggests that a stable exchange rate policy is ensured to strengthen the country's economic growth and that monetary policy is used to generate a business-friendly environment to stimulate economic growth.

Giblova (2015) seeks to identify the main trends in monetary management and analyze the main orientations of the monetary policy of the Bank of Russia and then assess their economic efficiency in Russia. During the course of the research, the statistical method was used as a basis as well as the methods of scientific abstraction, analogy, comparison and analysis of diagrams. The author highlights the negative aspects of the policy of the Bank of Russia. In line with international experience and major trends in this area, possible directions for improving Russia's monetary policy are proposed. Adigwe, Echekoba & Onyeagba (2015) examine the impact of monetary policy on the Nigerian economy. To do this, the ordinary least squares (OLS) method is used over the period 1980 to 2010. The result of the analysis shows that the monetary policy represented by the money supply has a positive impact on GDP growth. The recommendations made mention that monetary policy should foster a favorable investment climate through the appropriate interest rate, exchange rate, and liquidity mechanisms. In addition, they suggest that the money market provides more financial instruments that meet the requirements of sophisticated operators.

Precious & Palesa (2014) explore the role of monetary policy in promoting economic growth in the South African economy over the period 2000-2010. The study uses the Johansen co-integration test and the error correction mechanism to identify long-term and short-term dynamics among the variables. The study shows that a long-term relationship exists between the variables. In addition, the main conclusion of this study shows that monetary policy instruments, namely the money supply, the repo rate and the exchange rate, which are monetary policy instruments, have a weak influence on growth in South Africa. to inflation. The study, therefore, recommends that monetary policies be used to create a favorable investment climate that attracts both domestic and foreign investment to boost sustainable economic growth. Their study also recommends that the government increase public spending in the productive sectors of the economy to promote economic growth, as monetary policy alone can't effectively stimulate economic growth. Sulaiman & Migiro (2014) estimate the link between Nigerian economic growth and monetary policy from 1981 to 2012. They measure economic growth using the gross domestic product and monetary policy indices that include the ratio of reserves, the exchange rate, the money supply, and the interest rate. The result of the co-integration test shows that the variables are cointegrated with each other, and the causality test indicates that monetary policy has a significant influence on the growth of the economy, while economic growth does not influence monetary policy in a significative way. The study concludes that the transmission mechanisms of monetary policy contribute positively to the productivity of the Nigerian economy, thus improving economic growth.

The careful reading of the literature on the relationship between monetary policy and economic growth has allowed us to discover that there are very few studies in this area concerning the WAEMU countries. In addition, existing studies in the literature lead to divergent results. This, therefore, requires new research.

3. METHODOLOGICAL APPROACH

This section presents the model for determining growth on the one hand and the estimation method on the other hand.

3.1. MODEL SPECIFICATION

To capture the impact of monetary policy on economic growth, the empirical equation is based on the hypothesis of the Keynesian IS-LM function. Therefore, the functional form of the specified model is presented in Equation 1:

$$PIB = f(M2,\ EXR,\ INT,\ INF) \qquad (1)$$

Explicitly, equation 3 can be written as in Equation 2:

$$PIB = \beta_0 + \beta_1 M2 + \beta_2 EXR + \beta_3 INT + \beta_4 INF + \mu \qquad (2)$$

Equation 3 presents the logarithmic and operational form of Equation 2:

$$Log(PIB) = \beta_0 + \beta_1\, log(M2) + \beta_2\, log(EXR) + \beta_3\, log(INT) + \beta_4 INF + \mu \qquad (3)$$

Where: PIB = real gross domestic product, INT = interest rate, $M2$ = money supply, EXR = exchange rate, INF = inflation rate, and μ = error term.

Theoretically the signs of the parameters β_2 , β_3 , β_4 should be negative while that would be β_1 positive.

3.2. ESTIMATION METHOD

This subsection first describes the stages of the self-regressive approach with staggered delays, and secondly the Toda and Yamamoto causality test.

3.2.1. THE REGRESSIVE AUTO APPROACH WITH STAGGERED DELAYS (ARDL)

Most studies of causal relationships favor VAR modeling. However, the implementation of this method requires that the series be integrated in the same order. However, in most macroeconomic series this condition is not verified (Nelson & Plosser, 1982). Faced with this shortcoming, Pesaran, Shin & Smith (2001) defined the Auto-Regressive Distribution Lag (ARDL) approach.

Given the nature of our data and our working assumptions, we will use this model as part of this study. In addition, this approach provides better estimates for small samples. This method requires that the model's explained variables be at most I (1). Our ARDL model, considering real gross domestic product per capita as the variable explained, is presented in equation 4:

$$\begin{aligned}\Delta \log(PIB)_t = {} & \beta_0 + \sum_{i=1}^{p} \beta_{1i} \Delta \log(PIB)_{t-i} + \sum_{i=0}^{n} \beta_{2i} \Delta \log(M2)_{t-i} + \sum_{i=0}^{n} \beta_{3i} \Delta \log(EXR)_{t-i} + \sum_{i=0}^{n} \beta_{4i} \Delta \log(INT)_{t-i} \\ & + \sum_{i=0}^{n} \beta_{5i} \Delta INF_{t-1} + \alpha_1 \log(PIB)_{t-1} + \alpha_2 \log(M2)_{t-1} + \alpha_3 \log(EXR)_{t-1} + \alpha_4 \log(INT)_{t-1} + \alpha_5 INF_{t-1} + \varepsilon_t\end{aligned} \qquad (4)$$

In this equation, Δ denotes the first difference operator, ε_t represents the error term which is white noise, n is the optimal delay, β_0 is the constant. The parameters that go from α_1 to α_5 characterize the long-run equilibrium between the variables while the coefficients β_1 to β_5 represent the short-run equilibrium between the series studied. The delay p is determined by the information criteria AIC and SC. It corresponds to the delay that minimizes these criteria. To test the absence of cointegration, Pesaran, M.,H., Shin, Y., & Smith, R.,J., (2001) proceeded to the following test:

$H_0 = \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$ (No cointegration)

Against the alternative hypothesis

H1: (Presence of cointegration) using Fisher (or Wald) tests according to a non-standard law (Ghorbani & Motabelli, 2009).

The use of the Wald test or the F statistic makes it possible to test the significance of the delay of the variables by taking into account the constraint of an error correction model (ECM). The asymptotic distribution of this test (Fisher's respectively) is non-standardized under the null hypothesis of no cointegration between the variables. Therefore, the calculated value of this statistic must, to validate or invalidate one of the hypotheses, be compared to the critical values established by the procedure of Pesaran, Shin & Smith (2001).

It is important to note that critical values based on large samples differ significantly from those of small size. Narayan (2005) reports small critical values of the sample. The critical values of the upper bound are estimated assuming that all variables of the ARDL model are integrated by order one [I (1)], and the lower bound critical values are computed assuming the variables are built-in order zero [I (0)]. At any chosen level of significance, if the calculated F statistic is between the lower and upper critical values, the decision on cointegration between the underlying variables is inconclusive. However, if the calculated F statistic exceeds the critical value of the upper limit, the null hypothesis is rejected, and the decision is that the underlying variables are cointegrated. On the other hand, if the calculated F statistic is less than the critical value of the lower limit, the null hypothesis is not rejected, and it is concluded that the variables are not cointegrated.

If there is cointegration, we develop an error correction model (ECM) as presented in equation 5:

$$\Delta\log(PIB)_t = \beta_0 + \sum_{i=1}^{p}\beta_{1i}\Delta\log(M2)_{t-i} + \sum_{i=1}^{p}\beta_{2i}\Delta\log(EXR)_{t-i} + \sum_{i=0}^{n}\beta_{3i}\Delta\log(INT)_{t-i} + \sum_{i=0}^{n}\beta_{4i}\Delta INF_{t-1} + \lambda EC + \varepsilon_t \quad (5)$$

Where λ is the rate of adjustment of the parameter and represent the residuals obtained from the estimate of the equation of the cointegrated model. It is now necessary to examine the causal relationships between these variables through the approach of Toda & Yamamoto (1995).

3.2.2. THE TODA-YAMAMOTO CAUSALITY TEST

The most used approach in the economic literature is that proposed by Engle & Granger (1987). But, its implementation can lead to significant biases. The approach proposed by Toda & Yamamoto (1995) overcomes the shortcomings of this approach. Two steps are involved in the implementation of the procedure. The first step includes the determination of the offset duration (m) and the second is the selection of the maximum integration order (dmax) for the variables. Information criteria such as Akaike (AIC), Schwarz (SC) can be used to determine the appropriate delay order of the VAR. We use the Dickey-Fuller test (ADF) for which the null hypothesis is the non-stationarity as well as the Kwiatkowski-Phillips-Schmidt-Shin test (KPSS) for which the null hypothesis is stationarity to determine the maximum order of integration. In addition, the Toda and Yamamoto approach as applied to the Granger non-causality test could be performed by the SURE method which is an apparently unrelated equation system estimation technique. For example, a two-variable VAR (X and Y) can be expressed as the SURE (equation 6 and 7):

$$X_t = \omega + \sum_{i=1}^{m}\theta_i X_{t-i} + \sum_{i=m+1}^{m+d\max}\theta_i X_{t-i} + \sum_{i=1}^{m}\delta_i Y_{t-i} + \sum_{i=m+1}^{m+d\max}\theta_i Y_{t-i} + v_1 \quad (6)$$

$$Y_t = \psi + \sum_{i=1}^{m}\phi_i Y_{t-i} + \sum_{i=m+1}^{m+d\max}\phi_i Y_{t-i} + \sum_{i=1}^{m}\beta_i X_{t-i} + \sum_{i=m+1}^{m+d\max}\beta_i X_{t-i} + v_1 \quad (7)$$

Where X = growth rate of real gross domestic product per capita, Y: the effects of monetary policy; the ω, ψ, θ_i, δ_i, ϕ_i, β_i are the system parameters. The null hypothesis of non-causality of real per capita growth rate at the real exchange rate can be expressed in the form $H_0: \delta_i = 0, \forall i = 1,2,..., m.$

3.3. THE DATA

The data of the study cover the period 1980-2016. They come from the World Development Indicators of the World Bank website. Interest rate data were collected from the BCEAO. Table 1 summarizes the description of the variables, the source of the data and the expected signs.

Table 1: Description of Variables and Data Sources

Symbols	Description variables	Sources	Signs expected
PIB	Gross domestic product	Word Development Indicator from the World Bank	
$M2$	The money supply indicator	Word Development Indicator from the World Bank	+ ou -
INF	The inflation rate is measured on the basis of the GDP deflator as an annual percentage	Word Development Indicator from the World Bank	-
EXR	The official exchange rate	Word Development Indicator from the World Bank	-
INT	Debit interest rate	Central Bank of West Africa	-

Source: The author from the economic literature

In the analysis, it appears that the money supply seems to explain the level of production in Côte d'Ivoire (see Appendix). It is, therefore, reasonable to try to understand the reasons for this situation. How does monetary policy affect wealth creation in Côte d'Ivoire? What are the interactions between production and monetary policy in Côte d'Ivoire?

4. PRESENTATION AND INTERPRETATION OF THE RESULTS

We present the results of the model estimation and their interpretations.

4.1. UNIT ROOT AND COINTEGRATION TESTS

The requirement for time series econometric analysis is to submit each time series to stationary tests or unit root tests. The methods used for this test were the Augmented Dickey-Fuller (ADF) and Kwiatkowski, Phillips, Schmidt, Shin (KPSS) tests. The KPSS test assumes stationarity as a null hypothesis while the ADF test assumes the presence of unit roots as the null hypothesis. Thus, for the ADF test, if the calculated statistic is greater than the critical value, the series is non-stationary, while the series will be declared in the case of the stationary KPSS test. Table 3 summarizes the results of the ADF and KPSS tests. The results show that the variables are at most integrated of order one (1), as indicated by the critical values at the level of 5%. Only the variable *INT* is stationary in level whereas the series PIB, $M2$ *INF* and *EXR* are stationary in first difference. Therefore, VAR models will only add an additional offset (i.e., dmax = 1) for the implementation of the causality test.

Table 3: Stationarity test results

	In level		In first differences	
	ADF	**KPSS**	**ADF**	**KPSS**
PIB	-3,050** (-2,893)	0,279** (0,146)	-3,451** (-2,893)	0,0865 (0,164)
$M2$	-3,298** (-2,891)	0,257** (0,146)	-3,675** (-2,893)	0,0672 (0,164)
INF	-4,918** (-2,893)	0,307** (0,146)	-3,723** (-2,893)	0,0675 (0,164)
EXR	-6,511**	0,0534	-8,674**	0,0148

	(-2,893)	(0,146)	(-2,893)	(0,164)
INT	-2,596	0,112	-7,065**	0,0489
	(-2,893)	(0,146)	(-2,893)	(0,164)
Note: ** indicates the rejection of the null hypothesis at 5%				

Source: Author's estimate based on data from WDI (2017) and BCEAO (2017)

This result invites us to test the existence of a cointegrating relationship. After determining the optimal delay, we perform the cointegration test.

Table 4: Optimal VAR delay

Delays	LogL	LR	FPE	AIC	SC	HQ
0	-251,91	NA	145,44	17,80	16,52	17,53
1	-169,81	198,02*	0,58*	11,88*	10,04*	11,15*
2	-19,39	19,48	0,63	11,08	10,91	10,57

Source: Author's estimate based on data from WDI (2017) and BCEAO (2017)

Table 4 presents the results of the cointegration tests. The F statistics obtained from the equations were compared to the critical values of Narayan (2005). The results show that there is a long-term relationship between economic growth and the change in the real effective exchange rate and gross fixed capital formation (6.261 is above the critical limit greater than 1% critical values, 5 % and 10% From the results of Table 5, we can consider that there is a cointegration relationship between growth, inflation, the money supply indicator, changes in exchange rate misalignment and capital stock.

Table 5: Limit Testing for Cointegration Analysis

Dependent variables	**F-Statistic**	**CV à 10% [K=4, T=34]**		**CV à 5% [K=4, T=34]**		**CV à 1% [K=4, T=34]**		**Remarks**
		I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	
ΔPIB	6,261	2,465	3,472	2,957	4,117	4,165	5,650	Yes
$\Delta M2$	3,572	2,465	3,472	2,957	4,117	4,165	5,650	No
ΔINF	3,178	2,465	3,472	2,957	4,117	4,165	5,650	No
ΔEXR	3,657	2,465	3,472	2,957	4,117	4,165	5,650	No
ΔINT	2,644	2,465	3,472	2,957	4,117	4,165	5,650	No

Source: Author's estimate based on data from WDI (2017) and BCEAO (2017)

The results of the estimate are summarized in Table 6. They confirm the long-term relationship. The recovery force is negative and non-zero statistically. In addition, Fisher's p-value associated with the statistic indicates that our model is globally significant at the 95% confidence level. And finally, the model's exogenous variables account for 85% of GDP per capita.

Table 6: Result of the estimate

ARDL (1 1 1 0 1) selected based on AIC Dependent variable: economic growth			
Independent variables	Coefficients	T-Ratios	p-value
Constant	0,15	1,088	0,25
PIB (-1)	-0,09	-3,82	0,00
$M2$ (-1)	0,49	4,25	0,01
INF (-1)	0,51	3,54	0,01
EXR (-1)	-0,16	-0,45	0,65
INT (-1)	-3,27	-2,67	0,00
D. PIB (-1)	0,64	2,89	0,01

D. $M2$ (-1)	0,86	4,58	0,00
D. INF (-1)	0,32	3,65	0,00
D. EXR (-1)	0,66	0,80	0,52
D. INT (-1)	0,71	0,55	0,79
Model Criteria R-squared = 0, 85 AIC = -3,94* Adj R-squared = 0,63 SBC = -3.48* F(6, 25) = 6,10 Prob> F = 0,0023 DW = 1,87			

Source: Author's estimate based on data from WDI (2017) and BCEAO (2017)

Now, we will conduct a validation test of our model.

4.2. RESIDUE DIAGNOSTIC TESTS

For the validity of our model, the tests carried out (normality, homoscedasticity, the absence of autocorrelation and stationarity of our residues) confirm its robustness. They are summarized in Table 7.

Table 7: Diagnostic Tests

Test	Chi2	Prob> chi2
Normality test	0,00	0,77
heteroskedasticity (ARDL)	0,45	0,62
Breusch Godfrey LM test	0,37	0,82
Breusch-Pagan	0,01	0,99
Ramsey RESET	0,28	0,84

Source: Author's estimate based on data from WDI (2017) and BCEAO (2017)

4.3. TODA-YAMAMOTO'S CAUSALITY TEST

Once the VAR determined the optimal delay in level and the known maximum integration order, the estimation of equations (7) and (8) was done by the SURE method. Table 7 presents the results of our causality test for a delay.

The existence of a long-run relationship between exchange rate changes and economic growth suggests causality between these two variables in at least one direction. The p-value associated with the non-causality test ranging from long-term misalignment to economic growth and from economic growth to long-term misalignment is less than 5%. This reflects the presence of bidirectional causality between the two variables.

Table 8: Toda-Yamamoto's causality test

Null hypothesis	Stat du Khi-Deux	p-value
Growth does not cause the exchange rate	15,54	0,00**
The exchange rate does not cause growth	2,62	0,69
Growth does not cause the interest rate	16,76	0,00***
The interest rate does not cause growth	10,01	0,023**
Growth does not cause money supply	43,74	0,00***
Money supply does not cause growth	48,42	0,00***
Inflation does not cause growth	42,59	0,00***
Growth does not cause inflation	34,54	0,00***

NB: (**) (***) = significance at the 5% and 1% threshold respectively

Source: Author's estimate based on data from WDI (2017) and BCEAO (2017)

4.4. RESULTS INTERPRETATION

The results of the estimation of our model show that economic growth depends negatively on the interest rate at the 5% threshold (-3.27). These results confirm those of Ayodeji & Oluwole (2018) and Nwoko, Ihemeje & Anumadu (2016) who find a negative impact of the interest rate on growth in Nigeria. In addition, there is a two-

way causality between GDP per capita and the interest rate according to the study by Ayodeji & Oluwole (2018) on Nigeria. As for the money supply, it positively impacts economic growth at the 5% threshold in the short term (0.86) and long-term (0.49). Our results confirm those of Ahmad, Afzal, & Ghani (2016) in Pakistan. As for inflation, our results confirm those of Mundell (1965) and Tobin (1965) who predict a positive relationship between the rate of inflation and the rate of economic growth. Indeed, we get a positive and significant relationship in both short (0.32) and long-term (0.51). However, these results contradict those obtained by Srithilat & Sun (2017) in Laos. Thus, this result leads us to question the level of the optimal inflation rate for the WAEMU countries, given that the criteria adopted in the context of the conduct of the union's common monetary policy inflation target at 2%. It, therefore, appears that a relaxation of this criterion could constitute a way of revitalizing economic growth in Côte d'Ivoire but also in WAEMU. Also, we note a bidirectional causality between these two economic quantities in Côte d'Ivoire (p-value = 0.000).

5. CONCLUSION AND RECOMMENDATION

The main objective of this study is to analyze the relationship between monetary policy innovations and economic growth in Côte d'Ivoire. To do this, we used monetary policy indicators such as the exchange rate, inflation, the interest rate, and the money supply. The data on the money supply, the exchange rate, the inflation rate, and the Gross Domestic Product come from the World Bank. As for the interest rate, it was collected from the BCEAO. All these data cover the period 1980-2016. The ARDL approach and the Toda-Yamamoto causality test allowed us to overcome any bias that may be due to the size of our sample. The results show that there is a long-term relationship between inflation, money supply, and economic growth. In addition, the causality test confirms the existence of a two-way causality between these indicators and economic growth in Côte d'Ivoire. The Ivorian authorities must, therefore, observe and monitor the evolution of monetary policy through the control of the level and evolution of the fundamental macroeconomic variables of the Ivorian economy simultaneously and this within the overall framework of the Economic Union and West African currency.

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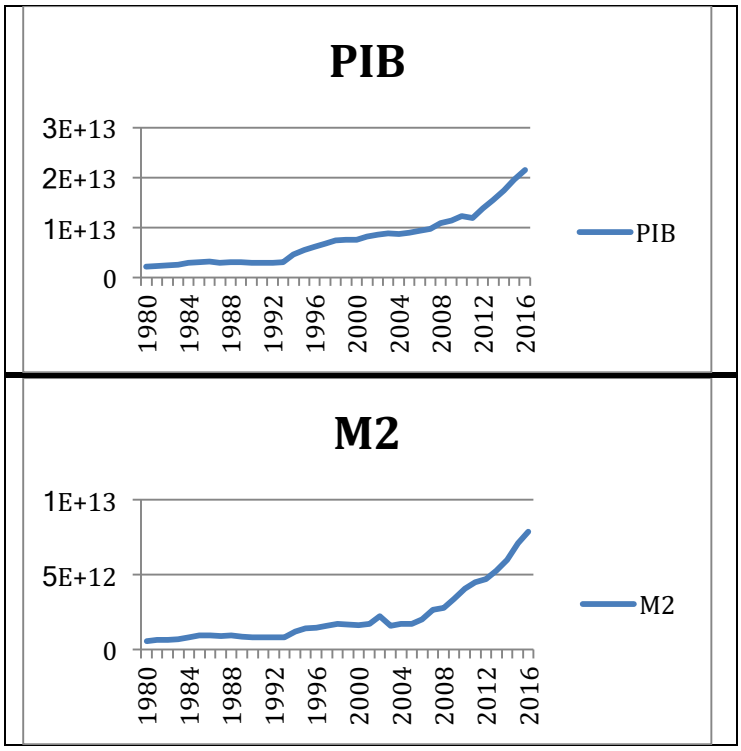
Appendix A: Changes in the money supply and the level of production



Source: Author's calculation based on WDI data (2017)

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Self-Employment through Organic Production for Young People in Montenegro

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Abstract
Every second young person in Montenegro is unemployed which makes unemployment an issue of great importance. Having in mind that Montenegro is a country of great agricultural prosperity, it is not clear why young people do not see it as a chance for employment. This research focuses on problems of unemployment with possible solutions in organic production and self-employment by starting small private businesses. In order to discover the main reasons for the current situation, a number of interviews and a questionnaire were conducted. Some recognize organic production as an opportunity for self-employment while for others it still remains a risky area of business because of the traditional work patterns where young people strive to be employed in government-owned companies which provide a secure monthly income. Results of the questionnaire, as well as interviews, showed that there is a lack of communication between three parties – government, producers, and customers. This gap needs to be bridged. Thus, the aim of this paper is to contribute to raising awareness of self-employment capabilities of young people by organizing small businesses in the field of organic production.

Key Words: Agriculture, Entrepreneurship, Self-Employment, Organic Farming, Unemployment

1. Introduction

Unemployment represents the global problem. The industrial revolution and technical advancement changed the perception and needed for human labor. These changes caused less need for traditional human work and shifted focus on ideas. 7.5 % Europeans between 15 and 45 are unemployed and not involved in education or training process (European Commission, Press release database). Being the economy in transition, Montenegrin economy is filled with challenges of the development process. Montenegrin GDP in 2016 was 3.954 million EUR, GDP per capita was 6.354 EUR and real GDP increase 2.9%, all showing that overall Montenegro is a poor country with very slow economic development(. The job market is facing great changes through the process of transition. This has led to the almost complete exclusion of some economic branches which used to create a lot of job opportunities. In 2017. There were almost 41.750 unemployed people in Montenegro (www.zzzcg.me). Agricultural share in the national economy is reduced to a minimum. A reduced number of employees and people interested in agriculture is a trend expected with the process of urbanization which can be explained with

the constant migrations from rural to urban places, as well as the closing of factories in Montenegro (Katnic, M. 2017).[1]

Young people represent a mismatch between supply and demand at the labor market in Montenegro. One of the main reasons of youth unemployment is traditionally a choice in professions that guarantee long-term jobs in the state-owned firms with safe salary, e.g., economists, doctors, lawyers, etc. which results in too many young people educated in the same professions. This has led to a deficit position of people educated and interested in the fields such as agriculture or forestry. Job policy created by the Government is also a problem which is why most young people do not see future in entrepreneurship because of the risk it carries. The educational system and poor educational opportunities could also bear the blame for this high rate of unemployment (Katnic, M. 2017). Thus, in this research we will focus on the problem of unemployment and its possible solution through self-employment in the field of organic production, hoping to raise awareness of young people to start their own business in this still unexploited business area in Montenegro.

2. Literature review

2.1. Self-employment reducing unemployment

"Self-employment is defined as the employment of employers, workers who work for themselves, members of producers' co-operatives, and unpaid family workers. The latter are unpaid in the sense that they lack a formal contract to receive a fixed amount of income at regular intervals, but they share in the income generated by the enterprise. Unpaid family workers are particularly important in farming and retail trade."

If you consider that there's a link between unemployment and self-employment, we have to go back to Oxenfeldt (1943), who argued that individuals tend to turn to self-employment and see it as an alternative when facing low prospects for wage-employment and of course, unemployment itself. The job crises all over the world urged the Government to find alternatives in order to promote entrepreneurial spirit. Therefore, the main trend in many government programs in reducing unemployment is the encouragement of entrepreneurial spirit. Entrepreneurial promotion programs help in expanding the level of happiness in individuals and through it create healthy civil society. By creating individual companies, people will be able not just to employ themselves but to engage others in the process of production which will also reduce the number of unemployed.

Peter Vogel, Founder of The Entrepreneurs' Ship, says that "fostering entrepreneurship as a viable career option can have a transformative effect on young people's goals and motivations, especially in areas where "high levels of unemployment or difficult employment situations leave little room for individuals with high ambitions."[2] This would mean that self-employment can backfire and cause unfulfillment and disappointment which could lead to social exclusion. This is also confirmed by Steve Mariotti, Founder of the Network for Teaching Entrepreneurship who says that "successful entrepreneurship programs help young people build skills that are useful not only in the workforce but for life, including respect for one`s own mental and physical health, empathy for and listening to others, social skills and leadership."

There are some theories suggesting that higher figures of unemployment tend to result in incensement of new, entrepreneurial activities because the opportunity cost of starting a firm has decreased (Blau, 1987; Evans and Jovanovic, 1989; Evans and Leighton, 1990; Blanchflower and Meyer, 1994). We refer to this occurrence as the unemployment push, refugee or desperation effect. Nevertheless, a counterargument exists, and it has to be taken into consideration: a low degree of self-employment may have a correlation with higher unemployment. Reason for this is found in empirical and theoretical examples. High rates of unemployment imply less personal wealth which reduces the chance of being self-employed. We have to bear in mind that certain entrepreneurial talent is

[1] Translated by the author

needed to sustain a new firm, as well as human capital which thus, reaffirms the counterargument (Johansson, 2000; Hurst and Lusardi, 2004).

2.2 Organic farming reduces unemployment and poverty

Agriculture could have a significant impact on employing people but thanks to modernization and the fast lifestyle it seems that there is a decreasing number of people interested. People tend to stay in the cities seeking employment in other, already crowded branches of the economy which leads to an increased number of unemployed. This is why we need to turn to other sources such as agriculture.

According to Buckwell rural development includes rural areas, history, people living in these areas, their way of life, their incomes, employment rate and other. Therefore, the agriculture is an inexhaustible source of employment opportunities. In order for settlements and villages to stay alive, agriculture, as an occupation, should have a strong increase because the family income is one of the main reasons why people would be willing to stay in rural areas.

Fighting poverty in developing countries is very hard and time-consuming. In recent years many studies have shown that agriculture growth can produce more job opportunities, which has led EU to develop specific programs (CAP) in this field to reduce poverty rate (EU Commission database). Ever since 1962, CAP policies have been oriented towards sustainable production which would have a variety of benefits in terms of supporting farmers, sustaining rural life, using unexploited natural resources and creating job opportunities through different stages of production.

Bravo Ortega and Daniel Lederman (2005) calculated the positive effect that agricultural growth has on national welfare and an increase in GDP. They used the data collected from the World Bank, Food and Agriculture Organization (FAO), United Nations since 1960. They have come to the conclusion that GDP formed by increased agricultural labor growth has 2.9 times stronger effect in reducing poverty, affecting the poorest incomes, than the GDP formed by non-agricultural activities. Similar research was conducted by Ravalion and Chan (2007) in China, where they compared the poverty rate over 21 years, came to the same conclusion. Poverty was more affected (3.5 times more) by agricultural growth than the other branches of economy. According to their findings 3 and 4, they have come to the conclusion that provinces incorporating agriculture as their main field of interest have had a better outcome when it comes to reducing poverty and keeping people in rural areas by giving them a chance for employment. This has been significantly mitigated by the fact that the Chinese government adopted several agrarian reforms and lower taxes on farmers (notably through public procurement policies).

However, as the World Bank figures show, there is a significant drop of employment in agriculture compared to those employed in other areas of industry (dominantly, services). The biggest drop is seen in China, followed by Brazil and Russia. In Europe, the drop is noticeably smaller but still significant, e.g., Spain and Germany. We have to bear in mind that this drop happened mostly thanks to a technological breakthrough which prompted drops in employment in big agricultural companies.

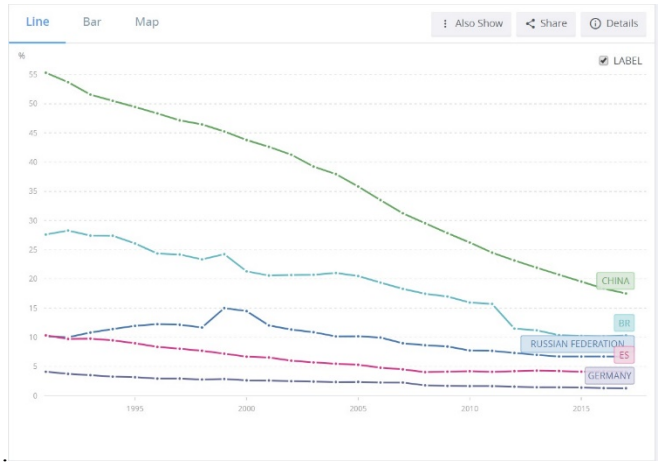

Figure 1 - Employment in agriculture (% of total employment) ILO estimate

For Montenegro, figures are different and are in constant fluctuation. As seen in Figure 2, during sanctions imposed by the international community, we can see that there is a significant rise in employment in agriculture, whereas, in other, more economically secure years, that figure decreases, reaching its lowest point in 2013, with just 4.57 percent of total employment employed in agriculture. After that year, employment in agriculture has increased to around 7.6 percent.

Figure 2 - Employment in agriculture (% of total employment) Montenegro ILO estimate

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The difference between organic and conventional farming is based on ecological principles conducted by organic production. Organic food consumption is 2.1 % of the total food consumption. The better and increased demand for organic products created more organic choices not only in food but also in cosmetics industries, as well as in greater demand for agro-touristic destinations.

Generally speaking, organic farming is a way of producing food using local, sustainable or where possible inexhaustible resources. The main aim of such production is to recycle nutrients according to their natural cycles so that we can maintain the structure and productivity of the soil we use. The idea of organic production is to focus on biological diversity having in mind preservation of nature and the best possible ways to gain the most of it. This way we can combine healthy and ecological principles through cultural awareness so as to include people in the whole system of organic farming. (Hold G., Reed M., 2006)

Organic production represents a significant part in the agricultural growth of most developed European countries. Development of small-sized enterprises in the agricultural field has a huge impact on village life and the survival of the population in them. Thus, European countries have made life in villages economically profitable by giving people great financial and legal support for their enterprises in order to develop rural areas.

Increased awareness of the environment care and climate made EU citizens shift to organic farming because of moral, social as well as economic benefits. Worldwide projects promoting organic farming suggest that organic farming can provide more job opportunities. The impact of these programs, especially of CAP has been researched in over 40 countries in Europe. This research showed that organic farming contributed to bigger labor demand, 10 to 20% higher than in conventional farming. Comparing and collecting data from different countries, these studies show an overall increase in job opportunities practicing organic farming, which included labor rejuvenation in rural areas (Offerman and Nieberg, 2000). The same research also shows a decrease in labor opportunities which is the case in big organic farms such as in Denmark and Germany. Therefore, small private farms can be a winning combination. A similar conclusion was found in the UK, with the survey conducted for Soil Association. The survey shows that organic farming created 32% more job opportunities in the UK. In the UK, this increase in organic farming shows that it has become almost a mainstream thing because it is mostly practiced by young people, while people still practicing conventional farming are over 50 years old. (Green, M., Maynard R., 2006)

In recent years, the idea of small private businesses has been revived in Montenegro, but such projects are mostly found in some suburban settlements, while in rural areas it is not the case.

3. Research method

The aim of this research is to find if there is a way to solve youth unemployment by raising awareness of possibilities for self-employment in the field of organic production. Research methods used in this work consist of a questionnaire, interviews and content analysis. We will now present, in short, each one of these methods.

3.1. Questionnaire

Researcher's targeted group consisted of 50 young people, ranging from 17 to 34 years old. This age group has been chosen because this is the time when young people graduate, some from secondary schools and others from graduate and post-graduate studies, and are looking for the first working engagement. This age group includes in itself the age group that faces the biggest unemployment among all age groups (persons ranging from 15 to 24 years of age).

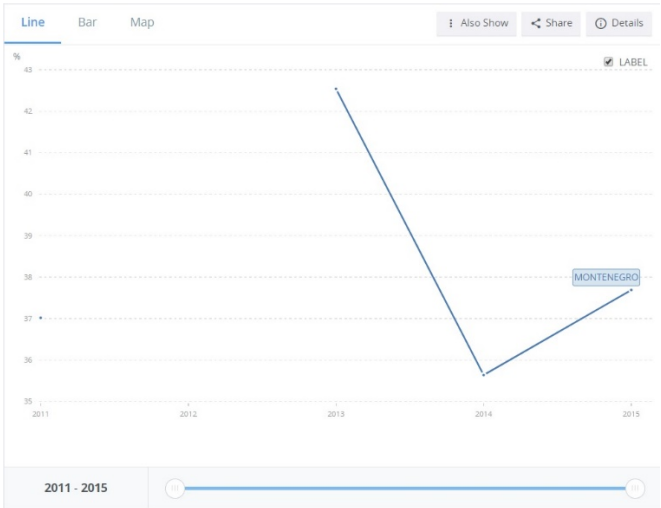

Figure 3 - Unemployment, youth total (% of total labor force ages 15-24) (national estimate)

It is important to note that Montenegro lacks proper channels of encouraging youth employment in sectors like agriculture. Another thing to be aware of is the fact that migrations from rural to urban areas are continuing and there are practically no young people left in rural areas who could work in agriculture even if their parents were doing so. Migrations are also continuing in the direction north-south with people leaving the fertile land in the north to work in tourism in the south, thus leaving huge areas of farmable land uninhabited. They answered in written form a questionnaire made of 12 questions related to our research topic. The aim of the questionnaire that was conducted is to describe the opinions of young people about self-employment and organic production. The questionnaire was conducted in January 2018, in person.

3.2 Interview

On the other hand, there are those that have decided to enroll themselves in organic production. Three interviews were conducted, one with an olive oil producer, Dragutin Martinovic in January 2018. The aim of the interview was to hear an entrepreneur perspective of the current situation and to give us some guidance when it comes to starting own business. The second interview was conducted with Radoje Backovic, owner of an ethno village in Niksic, and also produces organic food. The third person interviewed was Aleksandar Novovic, founder of Mareza commune, which aims to promote a pro-ecological way of life.
This paper claims one main hypothesis:
*Self-employment in organic production would reduce the unemployment rate in Montenegro

4. Results

The villages in Montenegro are lagging behind when it comes to shifting from the traditional mode of production to modern ones due to deeply rooted traditional cultural patterns that are resisting everything that is new. The establishment of small and medium-sized enterprises do not have sufficient support from villagers because of their traditional view of life. Most of the farmsteads in Montenegro have small agricultural holdings. Therefore small businesses with their small income cannot compete in the market game and are therefore vanishing.

This kind of entrepreneurship can only be sustained by people who own large estates, businessmen, and returnees from abroad who retired. These findings are confirmed during the interview with Dragutin Martinovic. He pointed out that one of the main reasons his company was on the edge of existence is non-sufficient support of the local people and Government. In his career as an entrepreneur, he said that he had received more foreign support. He mentioned that very few people are familiar with the quality of organic products and its value, therefore don't appreciate domestic organic production. He would suggest that the Government should invest more in organic production, like to expand the budget in this area referring to the difference in budget Montenegro government hold for these projects and other European countries.

Deficiency in official support is also stated by Radoje Backovic. One of the biggest obstacles for the development of agribusiness is the lacking infrastructure. Many villages do not have developed roads nor do they have steady water supply and sewage network, which is necessary. This strongly affects hillside villages and makes them almost totally deprived of these basic needs. He also stated that there is an intimate limitation affecting youth self-employment in agriculture, noting that young people feel ashamed to say that they work on farms. Speaking of young people, he said that they look for steady jobs in bigger state-owned companies in order to feel more job security. Although Mr. Backovic is not yet able to completely make his business self-sustainable, he has recently found out that there are possibilities for applying to domestic subsidies and grants for youth operating in this fields of business. However, before he started his business, he never knew about this possibility, and thus notes that not enough information is passed from the Ministry of Agriculture towards young people.

The third person interviewed, Aleksandar Novovic, also stated that he received no official support, through bank loans or government subsidies, but it was never his intention to organize his commune in that fashion. He also decided not to yet register as an official organic producer and is waiting for the right time to do so. His experience supports the thesis of the need for more official support.

This research was conducted in order to try to raise awareness of potential Montenegro has when it comes to expanding organic farming which can lead Montenegro to reduce the unemployment rate as one of the main reasons of poverty. This awareness was also raised through the questionnaire conducted with 50 people.

The questionnaire has shown us that a significant part of young people recognizes organic production as a possibly very successful self-employment opportunity. On the other hand, 78% of them expects government support in starting their own business in organic production even though there is a high level of distrust in possible official aid. Almost 90% of people interviewed stated that they would prefer food produced organically in Montenegro than its conventional, imported, counterpart. This counters findings in the interview and shows us the need for communication between three parties – producer, consumer and government as the regulator.

The young people are not afraid because 50% of them would start their own business in organic production, but two main problems are put on the table: government financial support and adequate education for leading organic production.

5. Discussion

In order to solve these problems, the systemic approach from the government is needed. The first step should be at secondary schools where adolescents should be directed in time to prepare themselves and choose study programs which can ensure they have a proper education for starting their own business in organic production. This is a very sensitive process, but it is the very source of enlargement possibilities for self-employment in this area. This is because organic production needs serious dedication and knowledge from various areas in order to be lead successfully. In the previous year's interest in organic production grows and in 2011 it included 100s of new producers. Increase in a number of registered organic producers is a result of project activity „Organic Agricultural Development Program "(OADP) presented by Ministry of Agriculture, financially supported by Government of Denmark Kingdom and support for organic production through Agro budget.
Besides that, the situation on the market shows a low level of Montenegrin organic products and a very low number of young people starting their own business in organic agricultural production. It can be said that Montenegrin organic production at this moment is at the very beginning with barely 200 registered producers and with a very low level of Montenegrin organic products on the market. In the previous 10 years a lot of activities were performed with the aim to develop organic production, and for now, it has created a modest base for further development.

As we can conclude from our research main reasons for this current situation is the lack of:

1. **Government financial and administrative support**
2. **Adequate education for starting and implementing organic production**
3. **A personal initiative by young people**
4. **Better communication between three parties – producers, consumers, and the government**
5. **Activities of ecology-oriented NGOs in order to promote “green” way of life**

Government financial and administrative support

First, we ought to give a short retrospective regarding the support government gave through financial and administrative means in recent years. Until 2009 financial support for producers for adopting technological requests for organic production was up to 3.000 EUR, for project expenses, up to 50% of the project value and strengthening capacities for development of organic production, education, and promotion, the maximum

amount was 165.000EUR. From 2009. Support for organic production is performed through direct payment in each agricultural segment, together with basic payments from direct support to livestock breeding and herbal production. Support has a direct form of payment per hectare or per conditional throat cattle. Apart from this way of support and with the aim to improve quality of products, through measurements of strengthening agricultural competition, it is given support for including agricultural producers into organic production, and it refers to the standard of introducing expenses, certification and participation in the quality scheme, all for first five years. That support is standardized with the maximum amount of 1000 EUR per producer. Within this, OADP project investments in organic productions are supported through grant scheme. It is the grant scheme "with equal participation" which means that the producers need to provide 50% of financial participation and the other 50% should be provided through a grant (75% participation from Government of Kingdom of Denmark and 25% from Ministry of Agriculture). This support is pretty modest, and as a result, it had such a small response from existing agricultural produces. What is obvious is that government hadn't even considered support for a startup business in organic production by young people. Also, bearing in mind that main agricultural project of the state is 75% financially supported by another country is also very clear sign that the government of Montenegro doesn't have enough awareness about the benefits of organic agricultural production, nor it calculates their ROE and other benefits that it can bring to the country and citizens' overall welfare. Without government being aware that in this production lays a great solution for keeping young people in the country and providing them a possibility for a sustainable business, it is difficult to expect significant development in both of these areas. Existing legal frame created conditions for supporting organic production through measurement of agricultural politics and especially through measures for the sustainable leading of natural resources where organic production has a special place. Still, there is a lot of space for further steps in developing legal and administrative support, marketing campaigns and other instruments for raising awareness. As one of the best examples of government support to organic production, we have Denmark being a country which support a very high percentage of organic production and products. Although it is possible to start a business of organic production without government support, it cannot be expected that this kind of production will happen on a larger scale without said support. This support is thus necessary if we want to produce better and healthier food, to better sustain our environment and keep young people in the country. This is why government support is the first and most important step.

Adequate education for starting and implementing organic production

Lack of Montenegrin organic products on the market can be explained by the fact that processes of transitioning into organic production last from 1 to 3 years and, there is an expressive need for improving knowledge about rules of production and labeling of organic products as well as promoting organic producers. Even though consumers have a positive attitude towards organic products, they are not sufficiently introduced with advantages of organic production, and they mainly identify it with traditional ones. This is also one of the signs that there is not enough education among users but also among producers. As previously stated, one modest project is led by the government and its results cannot be marked as favorable. It is necessary to have a serious theoretic and practical preparation in order to start up this kind of business and make it sustainable. Currently, there is no government (or non-government) program for providing education to existing agriculturists or too young people who could see their chance in it, nor is there any other adequate education program which should support young people who finished their studies or for those who are in educational crossroads. In addition to this, Montenegro has no university in the field of agriculture. This is a serious problem, and we should look to Denmark as European and world leader in organic production as an example of how to develop educational programs. Namely, Denmark developed unique education program, the MSc program in Organic Agriculture and Food Systems (EUR-Organic) where students learn how to develop the solutions for the future, focusing on goals such as high crop yields, high animal welfare, low environmental impact and how agriculture systems and current methods of food production work. This program is a collaboration between four leading European universities in the field of agriculture and life sciences. Having this program as an example, Montenegrin government could make a program in collaboration with regional universities such as those in Serbia, Croatia, Slovenia, and other regional countries in order to prepare young people for leading their own business in organic

agriculture production. Ensuring proper education is even more important than financial aid since that aid would be wasted on those not properly educated in organic production, its benefits, and impacts for the environment.

A personal initiative by young people

The third problem is a personal initiative. It is already established that unemployment among young people is the highest out of all age groups but still, young people that are facing all these problems are trying to fix them in wrong places, like trying to find work in state administration. This is not just because of the lack of financial support from the government, of proper education but often, a lack of personal initiative. Then, because they cannot find a job in the government sector, a lot of young people decide to migrate to western European countries. Raising awareness and development of the favorable area for starting organic production is a process and not a onetime act. Montenegro as the ecologic country needs very little initiative for making great results of the process very fast. Young people have a responsibility as well to give essential impulse and show the readiness to start their own business and stop the unemployment. With this most significant impulse, every other problem will be just one milestone to pass on the way to successful agricultural organic production.

Better communication between three parties – producers, consumers, and the government

We have seen through the interviews that even those already engaged in organic production are not fully aware of all programs started by the government to support this production. This link needs to be mended, and programs need to be more transparent and better advertised. If those already engaged in organic production don't know about possible opportunities, what chance do the young have, who are still weighing in, what job path to take? The second link is the one between producers and consumers. There needs to be a large-scale marketing campaign teaching the general public about the benefits of organic production, about its impact on public health, ecology and the eco-system in general. There should be an isle dedicated only to organic foods in supermarkets, especially those locally produced. This tri-part coordination – producers-consumers-government needs to work together, maybe even establish a full time operating body that will inform, market, fund and ensure that more and more food that we eat comes from organic production and that our fertile land is used as well as it can.

Activities of ecology-oriented NGOs in order to promote “green” way of life

It is not just the government that should promote these lifestyles and help producers and consumers alike. There is a variety of ecology-oriented NGOs in Montenegro and in the region. They should also see how that most people, producers, and consumers, are not very well informed about the benefits of organic production and consumption of such projects. Not to mention that all of them are not at all informed about internationalist groups and movements, peasant movements such as La Via Campesina, where they could learn on experiences from other countries. All of it boils down to two things – proper education and financial support for starting up.

6. Conclusion

World population is growing each day and with it grows its need for food. It is our duty as humans to make food production sustainable for us and for future generations. This is why organic production is not only the solution to unemployment but also a dignified private business which provides benefits for all of us not only now but for the future. As our awareness about this grows organic agricultural production will be closer to its right position in our economic and social life, and market need for organic products would naturally increase. We will then have accelerating effects since the increased market need will request increased production needs, and this is the moment for which we have to be ready, in Montenegro or anywhere else in the world. This can be achieved by some of the things discussed in this paper and should only be a starting point for better production, healthier consumption, and an overall better lifestyle.

As stated before, the key solution is including young people in the process of organic agricultural production through self-employment. The main obstacles for achieving this goal are, as we previously concluded in this paper, the lack of:

government financial and administrative support, adequate education for starting and implementing organic production, a personal initiative by young people, better communication between three parties – producers, consumers, and the government, activities of ecology-oriented NGOs in order to promote "green" way of life.

This leaves us with a very important task of raising awareness of young people to try and do something different and important for themselves and others and even change the opinion of the government, state-owned companies and create a network based on mutual trust. At the same time, a similar network should exist between exist between a consumer and a producer in order to complete the chain of successful business.

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Software Exports and Market Value Analysis from India

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Abstract
Software export made from India is phenomenal; this paper discussed the revenue, exports, and domestic market of Indian information technology (IT) industry, as well as distribution and export market around the world. The researcher has indented to investigate the mode of software services export to other countries. Adopting the organizational and association evolutionary perspective to examine the market value of IT Industry and software export destination at present, and the potential market in future. Based on Findings the whole scenario of software exports and factual data has been analyzed market size. At last, collectively define the software export market and market value analysis of the Indian software Industry. Implications of the paradigm for software exports and research has examined.

JEL Classification: L80**,** L86, L89
Keywords: Indian software industry, software exports, IT performance, contribution in GDP

1. Introduction

Over the last three decades, there have been many research paper published related to the software industry in the Indian market. There have been extraordinary elaboration and discussion of the software businesses in India and software export market expansion all over the world(Arora, Arunachalam, Asundi, & Fernandes, 2001). India is competent for stand out in the world to produce the software services at low cost, therefore IT experts are abundant, and needs of resource deployments are more than enough (Prahalad & Hamid, 2007). India is leading in the software services export market, the reason behind an increment of IT export and overall growth rate transparent to understand. Government support, small IT companies setup, IT employees' movement on a large scale and open economy for welcoming all the companies around the world has given such overwhelming results in the software export market. (Athereye 2005), Today, India is one of the top suppliers of IT products and services in the world. Cloud computing and software maintenance services exports from India to all the western countries. Prior to 1984, India's software export policies were guided and guarded by the state-led planned development authorities, however, it got implemented and made some stringent rules to control the fraudulent in IT industry and safe business model(McDowell, 1995). Promotion of software exports and FDI has given importance to expand the Indian IT industry, Special Economic Zone (SEZ) allowed by the government of India to fulfill the basic needs of IT companies.

Comparing with the neighboring countries, India and China has huge potentials in terms of exporting IT services. However, differ in nature of work both countries applied to deal with MNC (Multi-national Companies) clients (Niosi & Tschang, 2008), and both countries are learning to outsource IT projects from advanced nations. Innovative works related to hardware sectors always welcomed in China; however, Information technology-enabled services and software products companies mostly engaged with Indian software companies for IT services to delivery within effective timeline with cheap labor cost. China is good at electronic commodities manufacturing and innovation in the sector of AI (Artificial Intelligence) since the language barrier and labor costing become an obstruction to divert the clients' attention, India favored a huge amount of advantages. India has always preferred by European and American countries for IT businesses and MNCs operations. Dramatically, machine learning has been taken the 2nd position after China in the Asian countries(Bishop, 2006), Since, last 10years, machine learning has been given new learning scope of data mining, algorithms, and techniques to use for next generation of the world. Compulsiveness has taken a place to learn these ideas and technologies to tackle with competitors in the software export sector. An education system has revamped and re-established under the new pattern of skill learning with new textbook reflected as per the requirements of the IT knowledge.

Among developing countries, India could be a unique example for all the developing nations to learn a fruitful lesson. All the developing nations like the Philippines, Myanmar, Bangladesh, Indonesia and Malaysia having the same trends to supply the labor to rest of the world(Heeks & Nicholson, 2004). India has stated top position among them to supply the best and cheap IT experts to the developed countries for their offshore projects(N. Kumar & Joseph, 2005), government policies and substitutional schemes and government interventions have supported the IT industry. In fact, IT growth has a large amount of contribution to the Indian economy (GDP). Hence, government intervention in the Indian IT industry for subsidies and land acquisitions, special economic zone (SEZ), and smart city development projects are the basic requirements. In the recent years, India has explored the opportunities in the Asian countries including China, which ultimately know for the AI producer and manufacturing hub for the world.

2. Related Literature

There is a large number of literature written by authors on 'software export and market value analyses.' The researcher has driven the key ideas from the IT department of India("The Information Technology Act,2008,") and Indian IT literature on software export. Journal has also linked with related thesis published in the area of Indian Software export and Market value analysis. The researcher has deeply studied the NASSCOM database sources and literature (2017th Edition). NASSCOM contributes an overall conceptual idea in the present journal. We have also discussed the Tier-1 published papers(Erumban & Das, 2016) of the IT industry scenario, and it helps to examine the source of Indian economic growth through the IT Industry development. Particularly focusing on the Information & communication technology growth, which is developing new ideas in the software export growth and indirectly contributing in the Indian economy. In the below section, the researcher would like to draw attention to a few literatures and publications for more understanding of the present journal.

In the journal of "Indian Software Industry: Growth patterns, Constraints and Government Initiatives"(Chakraborty & Jayachandran, 2001) researcher studies about the software products and services, export market significance & potential, organizational structure, employment potential, qualitative aspects of software, future opportunity and challenges, market constraints, government policies during 1990s and implementation. This paper has helped to understand the large scale of scenarios of the Indian IT industry, especially in the area of software export and government initiatives towards IT industry. Government policy drives innovation centers in India to increase the software export. It mainly focused on the area of innovation to help IT Industry, especially in the Institute of information technology. We have also captured the database and theoretical knowledge from the 'information technology impact on Indian firms' by(Sabharwal & Sabharwal, 2015) it has discussed India's surge in modern IT service exports. Influences of the exchange rate and microeconomic factors have elaborated economic growth and IT export in the Indian software industry.

In the paper of "Two Scenarios of Indian IT industry" published by(Shyam Sankar & Changat, 2017) in the University of Kerala, India, discussed the employment in Indian IT sector and its importance for economic growth. It also focused on IT shares contribution in the Indian GDP, India's shares in global sourcing market, a different sector of IT industry segment, India's shares in IT services export and overall development of Indian economy with the help of government initiatives. From related theories researcher focused on the government contribution and initiatives done through the various scheme of Information technology and policy amendment department in favor of the IT industry. Overall achievements obtain through the various segment of policies and rebate scheme. There are many more theories have been referenced in this paper to complete the Journal with abundant knowledge of software exports and market value analysis. National Association of software services and computer (NASSCOM, 2016)database references used in the journal as a secondary data model, which helps to elaborate the study in this paper.

3. Software Services Export from India-Recent Trends

Information technology and information technology-enabled services (IT/ITeS) providing companies becoming a largest IT cluster in Indian IT industry. Software export has contributed huge amount of country's positioning to attract the investment from around the world, it has created a number of jobs in India, as well as abroad, like; the USA and European countries(Vijayakumar, 2016), In the last decades Indian IT industry has grown five folds of revenue, meanwhile, it has contributed to country's GDP. In FY2017, IT Industry largely contributed to Indian GDP increased up to > 6.74 percent, and continuously contributing in the FY2018E (7.36%). Indian IT expert is cheaper than other developing countries. Compare to the USA, Indian IT experts are 3-4 times cheaper and effective in terms of process delivery. It has always been Unique Selling Proposition (USP) in the global market(REN21, 2017). Indian IT & ITeS business stands on four pillars: cost-effectiveness, great quality, speedy delivery, and high reliability these are the state art of software industry in India.

In the global market, India growing outsourcing process from western countries, IT-BPM sector booming on a yearly basis. During the FY2017-18, an estimated total value of India's IT & ITeS sector market will increase up to US$151 billion (excluding Hardware). India's IT-BPM increases up to US$28.4 billion (of the total IT exports 22% shares). It is a top sourcing destination for FDI, holding 55% of share. India has set up more than 1000 service centers in 200 cities of the 80 countries around the world. Ministry of information technology and electronic department are playing an important role in promoting and supporting the IT organizations with the initiatives of skill development programs and strategic activities. The government support into R&D reflects that investment has taken priority on the research centers and innovation organizations. The government has given full support to the FDI for exploring the opportunities in Indian IT hub(Shenvi, 2011), finance, medical, banking, and electronic products are emerging on the largest scale of BPO and BPM service centers around the world(D. Kumar, 2018). Since India has cheap labor and capable of fulfilling the Client's requirement, thus, engaging on large-scale with international BPOs projects to utilize the resources.

4. Performance of Information Technology & Information Technology Enabled Services

Revenue: Performance of the information technology and information technology-enabled services examined and analyzed through the data retrieve from NASSCOM organization and world economic forum. In the FY2016-17 could see the growth rate $US141.0 billion increased compare to the last few years(WEF, 2016) average IT growth percentage increased up to 7.0%, it is very obvious demonstration of revenue expenditure in IT & ITeS incredibly increased in 2016-17, as per the estimation (E) of FY2017-18 time period value would be reached up to USD151.0 billion.

Table 1: Revenue growth, IT Department of India-NASSCOM SR-2018, E-Estimate

Year/Description	Export (US$ billion)	Domestic (US$ billion)	Total (US$ billion)
2013-14	87.3	19	106.3
2014-15	97.8	21	118.8
2015-16	107.8	21.7	129.5
2016-17	117	24	141
2017-18	126	25	151
CAGR%(2013-18)	**9.60%**	**7.10%**	**9.17%**

As follows:

$$CAGR = \left(\frac{Ending\ Value}{Beginning\ Value}\right)^{\left(\frac{1}{\#of\ years}\right)} - 1$$

Calculation: $(126 / 87.3)^{1/4}-1$

$=1.44^{0.25} -1$

$=1.096 -1$

Export (US$ billion) CAGR= 0.96 or 9.60%

Above-mentioned data calculated as per the data availability on (meity.gov.in) database, as we can see the results of the export CAGR (compound annual growth rate) US$ 9.60% which is greater than domestic CAGR US$ 7.10%, (9.60 > 7.10). By looking at the data (Table 1), we can simply calculate the yearly CAGR, and it seems like export CAGR always higher than domestic CAGR. Total CAGR shows the calculation of export and domestic aggregate growth in the IT industry of India. As this paper elaborates the functioning and emphasis on export statistics, hereby, we can assume that export CAGR always higher than domestic demands and process required in IT and ITeS process. There could be many reasons for small and medium type of Indian IT companies, which are not getting domestic projects from government sectors, like; political loophole for development of infrastructure (smart cities) and not indulging in the digitalization of domestic projects, for more investigation on Indian government policies of IT industry, needs a deep research on Indian IT strategies.

Software export services could be a various mode of services, researcher unable to elaborate all types of services, therefore, it has categories into three parts, IT services, ER&D and software products, and BPO (Business Process Outsourcing). The most recorded IT services export positioned at first place in terms of exporting largest segment of IT services. It holds the 57% of IT export shares, revenue calculated up to US$ 86 billion; ER&D and software products stands on second position for contributing into the export market 22% of shares in India. BPO sector stands still at third place, sharing up to 21% in Indian IT export market; however, it is emerging faster than IT services, due to its capability of business delivery and coordination with overseas IT partners, it is grooming in all the IT and non-IT centers in India.

Export: IT & ITeS exports increased as per IT department sources(NASSCOM, 2016), in FY 2016-17, US$ 117.0 billion achieved a great milestone in Indian IT export sector, as per the sources and data analysis, NASSCOM has predicted FY2017-18 estimated growth, that is positively attainable for the IT industry. US$ 126.0 billion set as a goal of IT export market, which is 7.7% of growth rate compared to last year achieved the target. There are many new projects pouring into IT sector, SMAC (social media, mobility, analytics, and cloud) apart from embedded systems and artificial intelligence, and many new innovative technologies are increasing into IT process.

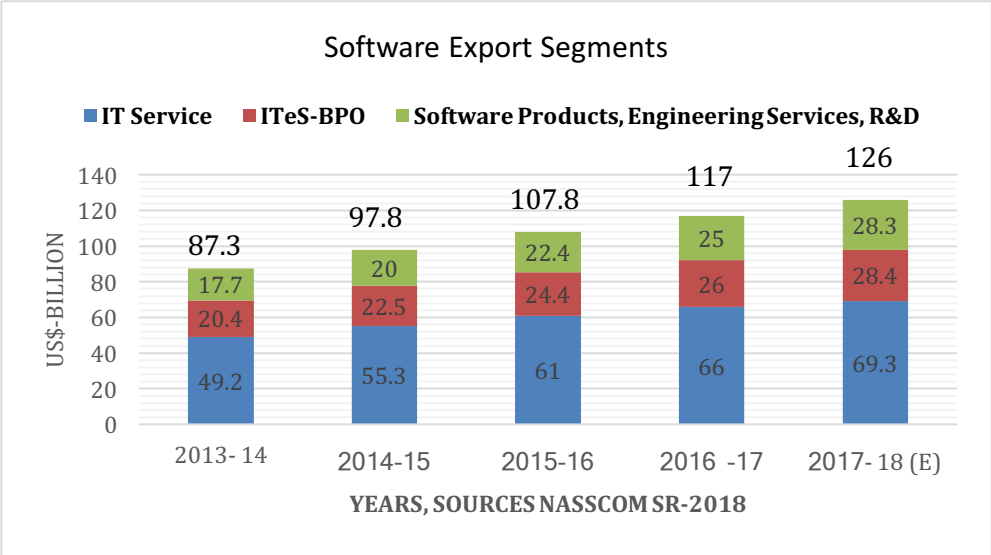

Figure 1: Export of various segments in IT/ITeS Sector-(Sources NASSCOM SR-2018, E: Estimated)

IT service is the fastest growing segment in the Indian IT industry, Since FY2013-14 it has been increasing faster, accordingly, the number of services and clients have increased in India (Figure1). We can take a couple of statistics FY2015-16 and FY2016-17 IT service export increased from US$61billion to US$ 66 billion. As per the consistent growth rate, NASSCOM has estimated IT service export amount up to US$ 69.3 billion (Figure 2). It is a convincing target for the Industry to achieve. ITeS-BPO and Software products, engineering services and R&D, all these services are burgeoning steadily with a positive remark for exporting IT products and services. As we can see above-mentioned (Figure 2), ITeS-BPO is reinventing itself by exploring the market scope on a yearly basis. Software products and engineering services are also productive and demanding in the export market. In the last five year, R&D centers have increased and reinvented with newly developed technologies to catch up with advanced technologies. R&D expansion has taken as a priority by the Indian government authorities to facilitate the researchers and IT export sector's skills requirement.

Table 2: Industry-Wise Share of ITES/BPO Services Exports (RBI Bulletin, Source-2016)

Activity	**Software services exports share in total (%)**				
	2010-11	2011-12	2012-13	2013-14	2014-15
	(1)	(2)	(3)	(4)	(5)
BPO Services	**82.0**	**84.7**	**82.5**	**81.9**	**77.6**
Customer interaction services	12.2	14.4	10.9	8.4	4.6
Finance and Accounting, auditing, book keeping, and tax consulting services	13.4	23.5	9.7	11.2	12.2
HR Administration	0.5	0.2	0.9	0.7	0.9
Procurements and logistics	0.5	0.0	0.4	0.3	0.5
Medical transcription	0.6	0.2	0.7	1.4	1.0
Document Management	0.6	0.4	0.5	0.9	0.7
Content development and management and publishing	0.8	0.7	1.4	0.9	0.9
Other BPO service	53.4	45.3	58.0	58.1	56.8
Engineering Services	**18.0**	**15.3**	**17.5**	**18.1**	**22.4**
Embedded Solutions	2.4	2.1	4.1	5.3	4.1
Product Design Engineering (mechanical, electronics excluding software)	8.6	7.0	5.9	5.5	5.9
Industrial automation and enterprise asset management	0.6	0.0	2.4	0.2	0.2
Other Engineering service	6.4	6.2	5.1	7.1	12.2
Total	**100**	**100**	**100**	**100**	**100**

As per the records of NASSCOM, BPO services expanded in many industries and growing rapidly to facilitate the other service sector by providing them engineering services and BPO services(NASSCOM 2016), In 2016 published Indian IT industry report in NASSCOM association has given a clear picture of the whole IT-BPO Industry. Occupational analysis of IT services written by NASSCOM elaborated on the segment of BPO that is limitless in terms of opportunities in any industry. Like, Finance and accounting, auditing, bookkeeping, and tax consulting services, procurement and logistic, HR administration, medical transcription and document management, etc.… (Table 2) Engineering product services are mainly relevant to the product designing and provide services to the industrial organizations. Engineering services could be in management sector as well for managing industrial assets and enterprise business for the backend process.

Table 3: Organisation-Wise Share of Software (NASSCOM Sources2016)

Organization	2010-11	2011-12	2012-13	2013-14	2014-15
	(1)	(2)	(3)	(4)	(5)
Private Limited Companies	38.5	41.2	35.3	36.0	43.1
Public Limited Companies	61.3	58.7	64.6	63.6	55.6
Others	0.2	0.1	0.1	0.4	1.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Organization wise contribution in Indian software services and product exports shows that public companies are having large market shares to contributing in Indian IT export services. Private companies are less active than public limited companies, therefore market shares also differ, and as we can see the yearly growth ratio, public companies seem to have more privileges to attract more IT clients in the Indian market. Since FY2010 until FY2015, public limited companies have done excellent work to facilitate overseas clients and fulfilled their requirements through IT services (Table 3). Public organizations would be stronger in future, however, private sectors will get advantages from IT market boom due to numerous projects pouring into Indian IT hubs(FRPT, 2016). There are a much public-private partnership (PPP) companies and projects initiated for better cooperation with small organizations to lift up its industrious work in IT sector. Knowledge Process Outsourcing(KPO) centers setup all over India dominated with domestic and international projects(NASSCOM, 2014), Jay Ruparel is CEO of Azure knowledge cooperation Pvt, has opened many service centers of KPO process in India and abroad as well. The Azure organization has setup an office in Guangzhou and Xi'an city of China, KPO process deals with all the cross-border projects, regardless of the language obstacles. In India, Azure has setup an office in all the metropolitan cities. There are thousands of employees working in these kinds of KPO process companies.

Since, the 2000s, India has continuously increased the amount of KPO and BPO process, both process having same nature of delivery work to provide the services to clients, however, different from the projects dealing with clients and requirement of IT solutions. KPO does not need much technical knowledge to solve the client's issues; however, it required process knowledge and a basic understanding of technical tools to grab the solution ideas and analytical abilities. BPO deals with two types of business, which categories into voice and non-voice process, non-voice required to have some technical knowledge to solve the technical process. Voice-based BPOs simply dealt with the customer, and resolve issues raised in the system. In these two segments, have lots of process divisions and subdivisions, which could deeply acknowledge through real experience in BPO organizations.

5. Country-Wise Distribution of Software Services Exports

Software services distribution from India is incredibly increasing in the USA, UK and European countries (Figure 3). Approximately 90% of the services exported to these western countries. However, there are new challenges and obstruction burgeoning in these traditional geographic countries. Since 2010, there is a new market emerging from the Asia Pacific, Latin America, and Middle East countries(Srinivasan & Lundqvist, 2010). From the Africa and Asia, opportunities are growing for the Indian IT Industry. Indian IT business expansion is continuously increasing for IT cooperation and collaboration, India has a huge exposure to expand

the IT business in China. Indian ambassador (Gautam Bambawale, 2018) at the launch of Guiyang IT corridor has present a strong case of Indian IT cooperation with China. NASSCOM members and Guiyang authorities have taken needful actions to support the Chinese IT companies to set up the IT business unit in India. China has also reciprocated to setup the IT corridors for cooperation with Indian IT companies.

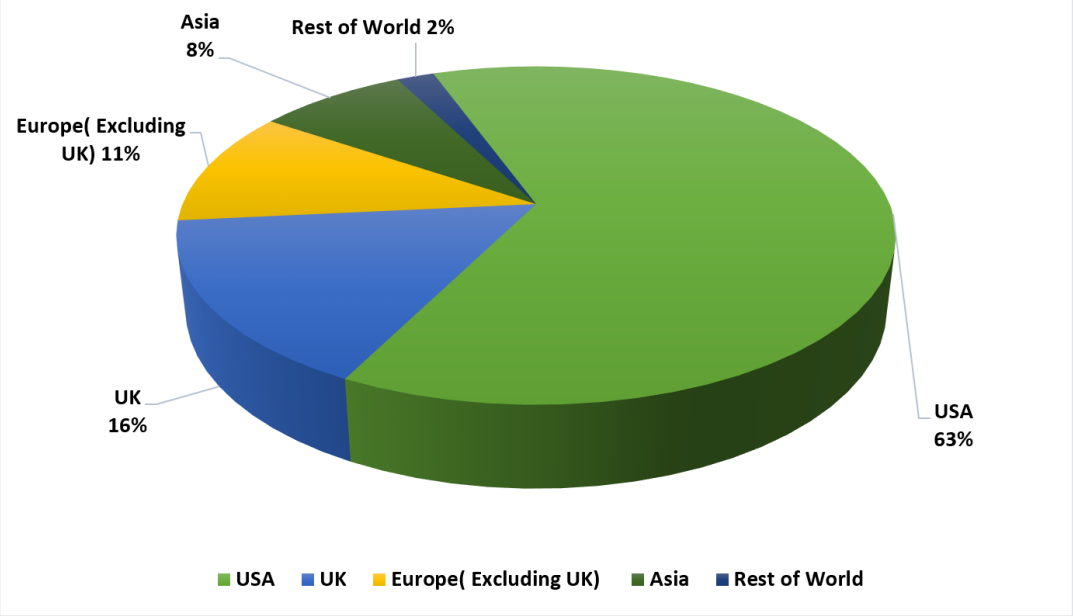

Figure 2: IT & ITeS exports across geographies (NASSCOM SR-2017-18E)

Indian IT companies have a presence in more than 75 countries in different continents. Most of these are setup in European, American and Asian countries. Generating employment up to 12 billion people around the world. In China more than 10 cities, Indian IT companies are operating IT-BPO projects, which is generating more than 25,000 employment. Both authorities believe that join hands cooperation needs more work and efforts to establish the large scale of India-China IT corridor. India's second largest IT service provider company (Infosys) has opened first overseas Campus in China and 'Zeta-V' IT Company working on artificial intelligence for language solutions to make a close deal of India and China IT business. 'Zeta-V' practicing innovative language solution for Chinese and Indian professionals to revamp the language barriers for Business requirements. In this way, both countries will join hands together for fulfilling the needs of IT experts and services. NASSCOM an Indian IT business group (China, 27th of May, 2018) has set up Sino-India Digital Collaborative Opportunities Plaza (SIDCOP) in the Tech-hub of Guiyang, southwest of China. IT businesses between both countries started with the milestone of US$ 6 billion. Final execution of SIDCOP will start in FY2019. Therefore, cooperation with other countries not only benefits Private companies, however, nations are also benefiting to fulfill people's needs and contribute to the economy.

Table 4: Software Business by Foreign Affiliates of Indian Companies (RBI Sources-2016)

Activity	2010-11			2011-12			2012-13			2013-14			2014-15		
	Locally	To India	Other Countries	Locally	To India	Other Countries	Locally	To India	Other Countries	Locally	To India	Other Countries	Locally	To India	Other Countries
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
IT Services	17.9	0.2	1.6	27.5	10.7	5.4	23.9	1.8	0.4	37.4	2	3	28.5	2.2	3.1
Software Product Development	4.7	0	0.6	1.6	0.7	8	5	2.3	11.2	0	0	14.1	7.4	0.6	16.4
BPO Services	15.2	0.6	9.1	31	4.4	12.3	15.9	0.4	3.6	7.1	0.1	0.2	17.4	2.3	6.2
Engineering Services	1.7	0.3	0	1.5	0.3	20.6	1.6	0.5	0	0.1	0	0	4.5	0	0.1

Other services	338.2	4.4	26.7	391.8	0.4	20.8	307.4	184.6	28.9	644.3	274.6	118.9	783.9	330.6	131.1
Total(₹ billion)	**377.7**	**5.5**	**38**	**453.4**	**16.5**	**67.1**	**353.8**	**189.6**	**44.1**	**688.9**	**276.7**	**136.2**	**841.7**	**335.7**	**156.9**
Total ($US billion)	**8.3**	**0.1**	**0.8**	**9.5**	**0.3**	**1.4**	**6.5**	**3.5**	**0.8**	**11.4**	**4.6**	**2.3**	**13.8**	**5.5**	**2.6**

6. Software Business of Subsidiaries/Associates

Foreign software companies affiliated under the heads of NASSCOM association, India. It has divided into three parts (locally, to India and other countries), foreign affiliates trade statistics (FATS) has owned total FATS businesses (excluding the services provided in Indian). Following the financial crisis in FY2008, it has moderated. IT business of foreign affiliates Indian companies increased by $US 5.5 billion compared with $US 4.6 billion in the previous year(FRPT, 2016). Indian companies provide the IT services in four sectors; IT services, Software product development, BPO services and Engineering services (Table 4), there is another classification 'others services.' Foreign-affiliated companies are the major sources to generate the business outside of India. As per the RBI Sources, foreign-affiliated IT services decrease, however, BPO services, engineering services and software product development emerging on large-scale business.

The USA accounted by the foreign affiliated IT business nearly two-thirds of shares in FY2014-15. Followed by the United Kingdom, Canada, Germany, Singapore, Netherland and other countries of foreign affiliates IT business declined slowly(Table 5, Source; RBI India, 2016).

Table 5: Software Business by Foreign Affiliates of Indian Companies (RBI, Source 2016)

Country	2010-11	2011-12	2012-13	2013-14	2014-15
	(1)	(2)	(3)	(4)	(5)
USA	67.5	65.0	71.3	65.4	66.7
United Kingdom	6.8	5.3	6.6	7.9	8.0
Canada	2.7	3.6	4.1	4.1	3.3
Germany	2.5	2.9	3.0	3.5	2.4
Singapore	3.4	4.4	2.7	3.3	3.3
Netherlands	3.6	4.3	2.1	3.2	2.3
Other Countries	13.5	14.5	10.2	12.5	14.0
Total (%)	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

In the recent software export statistics(Patil Roopa.s 2016), the traditional software export business model has changed, Middle East countries and Asian regions are burgeoning, countries like; China, Malaysia, Philippines, Indonesia has emerged as a leading IT market.

7. Market Value Analysis

Indian software industry grew up to 7.7% in FY2017, and It contributes 38% in the global outsourcing (IT business), However, future growth estimation (FY2018-E) does not seem to be growing as it should have emerged as a global player. Global businesses are driven by new technologies while traditional business model would be under pressure(Kakkar, 2006). New technology and innovative business model will bring huge disruption in Indian IT industry(Dave, Shelat, Patel, & Jhaveri, 2015). However, Indian IT companies have a decent year (FY2016-17) in terms of financial performance driven by Indian government initiatives like; Make in India and Digital India (digital and non-linear growth model). Indian IT companies more advanced to move up and provide the end-to-end IT service to the clients. The move toward digital technologies will minimize the internal costing in FY2017 and contribute more to generate the revenue(Barn, 2009). However, it will affect the employment sector; companies will not recruit significant numbers of engineers. Digital technologies expected to generate more revenue than traditional techniques of providing IT services to the clients. Indian IT service industry divided into six components (1) software products (2) IT services (3) Engineering and R&D services (4) ITES/BPO (IT-enabled services/Business process outsourcing) (5) Hardware and (6) e-commerce sector. IT services, BPM services, software products, and engineering services are the main IT business for the Indian

market, and the Indian government will benefit significantly from the scheme such a Digital India, Make in India and Start-up India. In the FY2016, the total export value recorded $US 117 billion, total export value categorized into IT services $US 66 billion, ITeS-BPO $US 26 billion and software products, engineering services, R&D $US 25 billion (NASSCOM-2018).

India's IT industry proposition value unmatched with the world, India's IT-BPO entry level of wages still much lower than in developed countries. India's global delivery centers have increased up to 670 around the world (approximately 78 countries) recorded in FY2017, and the digital-based talents are growing faster. New digital technologies SMAC has changed the way IT business dealt in last decades. Since the government has launched Make in India, Digital India, startup India and many more, IT projects. It is obvious that the government of India is practicing much more in the area of information technology sector to improve the facilities and upgrade the level of delivering services. In the Indian IT Industry, IT experts demands and supply has more gap, many IT experts are losing a job, because of process discontinuity and the expiring contract of clients with Indian IT firms. This is a worry for the all experts in the IT industry(Srinivasan, Lundqvist, & Norström, 2010). However, artificial intelligence and gaming industry is more confident about the future of IT professionals. Artificial intelligence and algorithms, engineering system, data mining, and machine learning have a bright future for IT experts(Sangeetha & Prakash, 2015). In terms of IT export shares, Indian IT services hold shares up to 52% and IT-BPM 38% as per the data recorded in FY2017 (Source RBI, FY2018).

8. Conclusions and Discussion

In the 21st century, the IT industry is an innovative firm for all the businesses input through online portals, particular software/apps. Therefore, Software exports revenue becoming extremely important for the Indian economy (GDP) and generating employment, This paper provides the information of Indian IT exports statistics, as researcher discussed in the section of 'recent trends of Indian IT Industry.' Indian software Industry not only exports the software products and IT services, however, but it also creates many job opportunities within the country and around the world. Aggregate IT exports from India has a huge amount of contribution in Indian economy (GDP), it helps to balance the country's trade deficit and generate the money flow in the domestic economy. Developed countries in America and Europe are utilizing the resource from India by importing IT products and services. In the last few years, traditional IT business model has replaced with new digital technologies, it is more effective for producing IT products and services. Moreover, minimize the cost of IT products and service delivery time. Statistics are the evidence of the growth rate of software export from India FY2016-17, total export revenue generated up to $US 117 billion as per the NASSCOM statistics. At present, FY2017-18E software exports revenue expected to increase by $US 126 billion. Total market value of IT industry in FY2017-18 Estimated up to $US 151 billion (NASSCOM-2018). Discussion of this paper contains a lot of new sources to prove the importance of software exports. In the section on the performance of Indian IT industry total revenue divided into two parts, export, and domestic market. The total expenditure of the IT revenue has calculated with the CAGR to figure out the individual percent of the export amount and domestic market of India. Entertainment and media industry emerged steadily in past few years(Entertainment Software Association 2015) it has reflected the habits of new generations for using media and entertainment products, SMAC developing new products based on the trends growing in media and entertainment industry.

The researcher has divided software service provider's background (Private Limited and Public limited) to know more about the IT service providers financial and production capability for delivering services to overseas clients. Following that researcher has captured the data for elaborating Country-Wise software service exports. We analysis the traditional geographical countries of software export business are taking a move to other countries, such as Africa and Asia continent. New market in China and Japan are continuously exploring the IT business cooperation (China SIPCOP establishment, 2018). It is a symbol of India-China IT collaboration and future cooperation of IT services. In view of overseas companies' settlement in India, the researcher has discussed the foreign affiliated IT companies in India, which all are growing rapidly and utilizing the cheapest resources, and facilities given under the IT policy amendments, the government of India. Therefore, it is obvious that why foreign affiliated companies are establishing in India. In the section of market value analysis, we have

deeply researched about the overall IT market value and its export statistics. In the FY2016, the total export value recorded $US 117 billion, total export value categories into IT services $US 66 billion, ITeS-BPO $US 26 billion and software products, engineering services, R&D $US 25 billion (NASSCOM-2018). Indian IT market value has huge scope for mutual benefits and IT business cooperation in the next decade. Overall, the study of the software export and market value analysis discovered another area of study in Indian IT Industry. There is a need to research on Indian government policies behind the growth rate of software exports and the FDI schemes to expand more MNCs in Indian IT industry. Finally, Investment revenue from the government sector and FDI will help to expand the Indian IT industry and indirectly increase the software export revenue; moreover, the government itself takes advantage in the various sector of Indian economy.

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Economic Impact of Newcastle Disease on Village Chickens – A Case of Bangladesh

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Abstract
Newcastle Disease (ND) is a highly contagious viral disease and makes up to 100 percent mortality in susceptible populations during devastating outbreaks. The households face huge economic losses throughout the year. Still, it is ranked 1st among other poultry diseases in village chickens. However, the study was undertaken to determine the profitability of village chicken and to estimate the direct and indirect economic loss due to ND as well as its impact on household dietary diversity. The study was encompassed four Upazilas from four Districts, i.e., Gopalpur from Tangail, Nilphamary Sadar from Nilphamary, Gowainghat from Sylhet and Barishal Sadar from Barishal District. Both primary and secondary data were used in this study. From each Upazila 75 sample farmers were interviewed randomly who reared the village chicken, and the total sample size was 300. Primary data were collected through a structured questionnaire during the months of October to January 2017. Total return was estimated at BDT 4530 and BDT 6099, respectively for affected and non-affected farm household. The study also found that due to ND outbreak, the average economic loss was calculated to BDT 2,561 per household per annum and average eight poultry birds were forgone per household per annum. On average, the country incurred economic loss BDT 2.43802765*1010 (US$ 288.49 million) per annum. Only 27% of household had access to Upazila Veterinary Hospital. The study found an adverse impact on household dietary diversity and in animal source food consumption. Swab and tissue sample result sowed its prevalence in study areas. In the light of research findings, the following steps should be considered: Flock size should not be higher than 20 birds, keep chicken and duck in the separate shade, training for scientific rearing system and diseases control method and mass vaccination program.

Keywords: Village Chicken, Newcastle Disease, Economic Loss, Animal Protein

1. Introduction

Bangladesh is an agriculture-based economic country with a small territory and large population. Most of the people directly depend on agriculture and live in rural and semi-urban areas. Livestock is a vital component of their farming system and an important source of animal protein. In the financial year 2011-12, Bangladesh had

produced 2428.66 lakh chickens (BBS, 2012). Avian Influenza and Newcastle Disease (ND) are the two prime fatal threats for destroying poultry sector not only in Bangladesh but also all over the globe. Undoubtedly, avian influenza is a great threat for commercial poultry sector, but in the case of village chickens, ND is a silent killer. Every year it kills millions of village chickens and takes away the last belongings of the rural poor women. From January to June/2014, there are 1408251 number chickens affected and 76337number chicken dead due to ND in Bangladesh (DLS, 2015). In developing, country like Bangladesh chickens are commonly reared by rural farm families in the traditional method that means scavenging system. Village chickens are also one of the few types of livestock that cause little impact on the environment and that require few inputs in order to yield a significant output in terms of meat and eggs (Alders and Spradbrow, 2001a). They are the livestock most likely to be owned and cared for by women and children (Gueye, 2000; Spradbrow, 1993-94). By common agreement of all but a very few of those who have studied village poultry, ND is the single greatest constraint on the production of village poultry (Alders and Spradbrow, 2001b; Alexander, 1988a, 2001; Kitalyi, 1998; Spradbrow, 1993-94). Newcastle Disease is one of the main constraints for village chicken production in Bangladesh.

In areas where ND is endemic, the disease is generally well-recognized by farmers, and it discourages them from investing time and money in improving the standard of their poultry husbandry (Spradbrow, 1996). In fact, it has been argued that ND may represent a bigger drain on the world economy than any other animal viral disease. Village chickens may be provided with rudimentary housing and occasional supplementary feed. Flocks are usually small, containing 5-20 birds per household (Gueye, 1997). ND in local scavenging chickens is very common. Rural women raise chickens under traditional management system. The majority of farmers keep their chickens in a scavenging system, where the main source of feed is household refuse and picking from the surrounding. Before the advent of avian influenza, ND was considered as the cause of the highest economic loss in village chickens in most developing countries including Bangladesh (Chowdhury *et al*., 1982; Alexander, 2001). Data on the epidemiology of ND and the impact of vaccination against ND in backyard production systems is limited (Otim *et al*., 2007). Chickens are the most significant livestock species in terms of the level of ownership, access to animal protein and the potential for earning cash income (SANDCP 2005). Village chickens play a vital role in the improvement of nutritional status and income of many poor rural households and a global asset for many millions who live below the poverty line (Copland and Alders 2005). Village poultry provides scarce animal protein in the form of meat and eggs and provides the owners with a form of saving which can help in times of need to meet essential family expenses such as medicines, clothing and school fees. Families can also increase their income by taking advantage of seasonal peaks in poultry demand, such as at religious festivals or celebrations. (Johnston and Cumming, 1991). The benefits of family poultry production include other functions for which it is difficult to assign any monetary value. These include pest control, provision of manure, and household contribution to traditional ceremonies and festivals. In addition, village chickens provide some benefits in terms of cleanliness and hygiene (Johnston and Cumming 1991). ND can cause up to 100 percent mortality in susceptible populations during devastating outbreaks. Several studies were conducted to assess the effects of vaccination against ND in village chickens. But there is no detailed research work regarding the economic loss for ND in Village Chickens.

3. Objectives of the Study:

- **i.** To assess the profitability of village chicken in traditional method;
- **ii.** To estimate the direct and indirect economic loss of the farmer and the nation as a whole due to Newcastle Disease in village chickens; and
- **iii.** To delineate the impact of Newcastle Disease on household dietary diversity status.

2. Methodology

The study was covered 4 Upazilas from 4 districts taking 75 sample farmers randomly comprised with 50 ND affected and 25 non-affected farmers were interviewed. The total sample size was 300, and simple random sampling technique was followed. Before preparing the final survey schedule, the draft schedule was pre-tested to verify the relevance of the questions and the nature of the response from farmers. After pre-testing and

necessary corrections, modifications, and adjustments, the final survey schedule was developed. Data were collected on mortality, morbidity, vaccine cost, medicine, veterinary service cost, feed, labour, and housing, etc.

Data were collected during the months of October 2016 to January 2017 by face-to-face interview. In the tabular research, technique was applied for the analysis of data using simple statistical tools like averages and percentages etc. Cost and returns analysis were done on both variable and fixed cost basis. The following profit function was used to assess the profitability of village chickens farming. The profit function, $\mu = PbQb + PLQL - \sum(PxiXi) - TFC$

Where,

μ = Profit or loss per farms per 10 village chickens

P_b = Per unit price of live village chicken (BDT/Kg)

P_L= Per unit price of used litter and excreta (BDT/sack)

Q_b= Quantity of live village chickens (BDT/Kg)

Q_L= Quantity of waste litter (sack/10 village chickens)

P_{xi} = Per unit piece of i^{th} (variable) inputs

X_i = Number / quantity of i^{th} inputs

TFC = Total fixed costs.

Economic Loss Estimation: Economic loss was estimated comprising direct loss and indirect loss. The direct loss was estimated by summation of the value of chicken which was died due to ND attacked and treatment cost (medicine & vaccination and doctor's fee). On the other hand, the indirect loss was calculated adding up two components that mean additional time spent on taking care of affected chicken and production loss such as less egg laying. Formula written as follows:

Total Loss = Direct Loss + Indirect Loss

Direct Loss = Value chicken (dead) + Treatment Cost (medicine & vaccine + doctor's fee)

Indirect Loss = Additional time spent for taking care of affected chicken + production loss such as less egg laying

So, Total Loss = Value chicken (dead) + Treatment Cost (medicine & vaccine + doctor's fee) + Additional time spent for taking care of affected chicken + production loss such as less egg laying

$$T_c = V_c + M_c + A_c + P_c$$

Statistical Techniques: Variance and co-variance were measured to determine the relationship between household income loss from native chicken and other socioeconomic factors. Furthermore, to find out the factors influencing the household income from native chicken, the following OLS analysis was adopted. In this study, 'Multiple Regression Model' was estimated using a binary independent variable. The independent variables were household, education, family size, farm size, knowledge on ND, ND transfer, experience, training and disposal of dead chicken, etc. Multiple regression model could be written as:

$$Y = a + ß_1X_1 + ß_2X_2 + ß_3X_3 + ß_4X_4 + ß_5X + ß_6X_6 + ß_7X_7 + \beta_8X_8 + \beta_9X_9$$

Where,

Y = HH income from native chicken

X_1 = Household (1= affected, 0 = non-affected)

X_2 = Education

X_3 = Family size

X_4 = Farm size (Hectare)

X_5 = Knowledge on ND (1= Yes, 0 = otherwise)

X_6 = ND transfer (1= Yes, 0 = otherwise)

X_7 = Experience

X_8 = Training (1= Yes, 0 = otherwise)

X_9 = Disposal of dead chicken (1= if bury, 0 = otherwise)

a = Intercept
ß = Coefficient

To find out the factors influencing the household income, the following OLS analysis was adopted. In this study, 'Multiple Regression Model' was estimated using a binary independent variable. The independent variables were education, family size, farm size, knowledge on ND, ND transfer, experience, training, treatment opportunity, disposal of a dead chicken and ND outbreak, etc. Multiple regression model could be written as:

$$Y = a + ß_1X_1 + ß_2X_2 + ß_3X_3 + ß_4X_4 + ß_5X + ß_6X_6 + ß_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10}$$

Where,
Y = HH income loss from native chicken
X_1 = Education
X_2 = Family size
X_3 = Farm size (Hectare)
X_4 = Knowledge on ND (1= Yes, 0 = otherwise)
X_5 = ND transfer (1= Yes, 0 = otherwise)
X_6 = Experience (Year)
X_7 = Training (1= Yes, 0 = otherwise)
X_8 = Treatment opportunity (1= Yes, 0 = otherwise)
X_9 = Disposal of dead chicken (1= if bury, 0 = otherwise)
X_{10} = ND outbreak (1= if winter, 0 = otherwise)
a = Intercept
ß = Coefficient

To find out the factors influencing the household dietary diversity score, the following OLS analysis was adopted. In this study, 'Multiple Regression Model' was estimated using a binary independent variable. The independent variables were household, education, family size, farm size, total HH income, knowledge on ND, ND transfer, experience, training, treatment opportunity, disposal of a dead chicken and ND outbreak, etc. Multiple regression model could be written as:

$$Y = a + ß_1X_1 + ß_2X_2 + ß_3X_3 + ß_4X_4 + ß_5X + ß_6X_6 + ß_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12}$$

Where,
Y = HH dietary diversity score
X_1 = Household (1= affected, 0 = non-affected)
X_2 = Education
X_3 = Family size
X_4 = Farm size (Hectare)
X_5 = Total HH income
X_6 = Knowledge on ND (1= Yes, 0 = otherwise)
X_7 = ND transfer (1= Yes, 0 = otherwise)
X_8 = Experience
X_9 = Training (1= Yes, 0 = otherwise)
X_{10} = Treatment opportunity (1= Yes, 0 = otherwise)
X_{11} = Disposal of dead chicken (1= if bury, 0 = otherwise)
X_{12} = ND outbreak (1= if winter, 0 = otherwise)
a = Intercept
ß = Coefficient

3. Results

Rearing cost of village chicken

Costs are the spend expenditure for operating and managing the production system. The cost of production comprised of various variable cost items like feed cost, treatment cost, labour and shade preparation. Both cash expenditure and imputed value of family supplied inputs were included. The feed was the major cost item incurred by the affected and non-affected both. Feed cost was estimated for 10 birds per year BDT 531 and 542 for affected and non-affected farm household, respectively and those were 55% and 47% of the total cost. The total cost was estimated at BDT 957 and BDT 1145, respectively for affected and non-affected farm household (Table 1).

Table 1. Rearing cost of village chicken

Cost items		10 bird/ year			
		Affected		Non-affected	
		BDT	Percentage (%)	BDT	Percentage (%)
Treatment	Medicine & vaccine	133	14	169	15
	Doctor's fee	22	2	68	6
Feed		531	55	542	47
Labour wage (family supplied)		52	5	175	15
Shade		219	23	190	17
Total		957	100	1145	100

Source: Field survey, 2017.

Return from village chicken

The study identified some cash inflow streams those were chicken sold, egg sold, chicken and egg consumption in the family and gift or donation of chicken to relatives or to others. Among those cash inflow stream to the household income, chicken consumption was calculated highest for the followed by chicken sold both in affected and non-affected farm families. Total return was estimated at BDT 4530 and BDT 6099, respectively for affected and non-affected farm household (Table 2).

Table 2. Return from village chicken

Income items	10 bird/year			
	Affected		Non-affected	
	BDT	Percentage (%)	BDT	Percentage (%)
Chicken sold	1208	27	1496	25
Egg sold	1030	23	1463	24
Chicken consumption	1345	30	2036	33
Egg consumption	939	21	1079	17
Gift/donation	8	0.18	25	0.41
Total	4530	100	6099	100

Source: Field survey, 2017.

Coefficients of household income from village chicken

The independent variables were the household type, education, family size, farm size, knowledge on ND, ND transfer, experience, training and disposal of a dead chicken. It was predicted that household type, education, family size, farm size, knowledge on ND, ND transfer, experience, training and disposal of dead chicken might have positive influence to household income from native chicken. It was apparent from the value of coefficient that most of the prediction was justified and statistically significant at different levels of confidence intervals (Table 3). So, it could be concluded that non- affected farm families had better income form village chicken.

Table 3. Income from native chicken

Explanatory variable	Coefficients	Std. Error	Probability	Sig. Level
Household type	-0.219***	0.093	-0.036	0.019
Education	0.042***	0.011	0.065	0.000
Family size	0.016	0.020	0.056	0.406
Farm size (Hectare)	0.281**	0.131	0.539	0.032
Knowledge on ND	0.034	0.099	0.229	0.730
ND transfer	0.081	0.095	0.270	0.395
Experience (Year)	0.007	0.005	0.018	0.162
Training	0.227**	0.112	0.448	0.044
Disposal of dead chicken	0.175	0.094	0.362	0.065
Constant	7.410***	0.171	7.748	0.000
R^2	0.160	-	-	-
F value	6.150***	-	-	0.000

Source: author's calculation. (*,**,*** represent significant level of 10, 5 and 1 percent, respectively)

Household incurred an economic loss due to ND outbreak

In a study in India, a total of 13 flocks of 11 layer farms, total economic losses were calculated 3,719,223 rupees where mortality contributed 2,998,105 rupees (Khorajiya *et al*., 2017). In this study, due to ND outbreak, the average economic loss was calculated to BDT 2,561 per household per annum and average eight poultry birds were forgone per household per annum. In the year (2017), 37.29 percent household was affected by ND. On an average, we estimated, the country incurred economic loss BDT 2.43802765 $*10^{10}$ (US$ 288.49 million) per annum (Table 4).

Table 4. Household incurred an economic loss due to ND outbreak

Items	Tangail	Nilphamari	Barishal	Sylhet	Average
Direct Loss	1998	1651	2344	1940	1983
Indirect Loss	674	525	770	341	578
Total Loss	2672	2176	3114	2282	2561
Death chicken (no.)	7.44	9.48	8.64	7	8

Source: Field survey, 2017. (1 US$ = 84.5105 BDT)

Coefficients of Income Loss of the affected household

The most devastating disease of village poultry is ND and is responsible for a great economic loss (Awan, *et al*., 1994). For a model of economic loss, the independent variables were education, family size, farm size, knowledge on ND, ND transfer, experience, training, treatment opportunity, disposal of a dead chicken and ND outbreak, etc. It was predicted that education, family size, farm size, knowledge on ND, ND transfer, experience, training, treatment opportunity, disposal of a dead chicken and ND outbreak might have positive influence to household income from native chicken. It was apparent from the value of coefficient that most of the prediction was justified and statistically significant at different levels of confidence intervals (Table 5). So, it could be concluded that non- affected farm families had a better income than the affected families from the village chicken.

Table 5. Coefficient of income loss

Explanatory variables	Coefficients	Std. Error	Probability	Sig. Level
Education	0.012	0.012	0.037	0.318
Family size	0.030	0.021	0.072	0.164
Farm size (Hectare)	-0.089	0.131	0.169	0.497
Knowledge on ND	-0.245***	0.103	-0.042	0.018
ND transfer	-0.206**	0.099	-0.009	0.040
Experience (Year)	0.005	0.005	0.016	0.292

Training	-0.439***	0.120	-0.201	0.000
Treatment opportunity	-0.385***	0.105	-0.177	0.000
Disposal of dead chicken	-0.207**	0.103	-0.002	0.047
ND outbreak	-0.279**	0.131	-0.019	0.035
Constant	8.369***	0.205	8.774	0.000
R^2	0.307	-	-	-
F value	8.410***			0.000

Source: author's calculation. (*,**,*** represent significant level of 10, 5 and 1 percent, respectively)

Farmers' get treatment facility

Farmers had taken treatment from various sources in the study areas. Upazila Veterinary Hospital was the only means of authentic animal medical services. Only 27% of household had access to Upazila Veterinary Hospital for the treatment of ND affected poultry bird to curb the fatal disease (Table 6).

Table 6. From where farmers' get treatment

Organizations	Affected HH	Non-affected HH
Upazila Veterinary Hospital	28 (14%)	39 (39%)
Quack	151 (76%)	51 (51%)
Research Organization	0 (Nil)	0 (Nil)
Own	21 (11%)	10 (10%)

Source: Field survey, 2017.

Impact on household dietary diversity

The study found an adverse impact on household dietary diversity showing the score for affected 8.79 and non-affected 9.11 meaning that the affected farm families had consumed less amount than the non-affected farm families because the affected household had got less income or incurred loss due to chicken died for ND attacked and the purchasing capacity become squished too. They also faced a problem of safe family supplied chicken because chicken was infected by ND (Table 7).

Table 7. Impact on household dietary diversity

Sl. No.	Items	Affected	Non-affected
1	Food grains	198	100
2	Pulses	137	61
3	Edible oil	195	97
4	Leafless vegetables	163	69
5	Leafy vegetables	164	70
6	Meat	115	64
7	Egg	118	60
8	Milk	90	53
9	Fruits	111	64
10	Fish	119	63
11	Spices	126	74
12	Beverage	120	66
13	Others	102	70
	Average (**HDDS**)	**8.79**	**9.11**

Source: Field survey, 2017.

Animal source food consumption

In a household, had a wide range of animal source food items such as meat, egg, fish, and milk. But the consumption depends on the availability of the food, purchasing capacity and demand. As we know that we have demand but supply is limited. Most of the time village people tried to manage by producing them. When their

livestock specifically village chicken affected by ND and had died, simultaneously they counted loss both in cash and animal loss. It was a huge loss for a marginal farmer. It affects their consumption pattern. In case of animal source food consumption, the study found that affected household consumed 4.82 kg per week and on the other hand, non-affected household taken 5.76 kg per week (Table 8).

Table 8. Animal source food consumption

Items	Affected (n=200)			Non-affected (n=100)		
	Amount (kg.)	Sources		Amount (kg.)	Sources	
		Own	Purchase		Own	Purchase
Red meat	52.5	-	52.5	36	-	36
Goat Meat	13.5	-	13.5	8	-	8
Chicken	179.75	27	152.75	114	19	95
Duck	7	1.5	5.5	3	-	3
Pigeon	4	1	3	2.5	1.5	1
Quail	2	-	2	-	-	-
Liver	1	-	1	1.5	-	1.5
Egg	1650 (78.4)	638 (30.3)	1012 (48.1)	872 (41.5)	335(16)	537 (25.5)
Fish	285	31	254	147.5	15	132.5
Milk	341.5	139	202.5	221.5	97.5	124
Total	964.63	229.81	734.82	575.5	149	426.5
Average		1.15	3.67		1.49	4.27

Source: Field survey, 2017. Egg in number and value in the parentheses indicate Kg.

Coefficients for household dietary diversity score

The independent variables were household, education, family size, farm size, total HH income, knowledge on ND, ND transfer, experience, training, treatment opportunity, disposal of a dead chicken and ND outbreak, etc. It was predicted that education, family size, farm size, knowledge on ND, ND transfer, experience, training, treatment opportunity, disposal of a dead chicken and ND outbreak might have positive influence to household dietary diversity score. It was apparent from the value of coefficient that most of the prediction was justified and statistically significant at different levels of confidence intervals (Table 9). So, it could be concluded that non-affected farm families had a better score than the affected families.

Table 9. Coefficients of household dietary diversity score

Explanatory variable	Coefficients	Std. Error	Probability	Sig. Level
Affect HH	-0.131***	0.033	-0.064	0.000
Education	0.003	0.004	0.012	0.380
Family size	-0.010	0.007	0.003	0.129
Farm size (Hectare)	-0.045	0.049	0.052	0.359
Total HH income	2.49E	1.34E	5.12E	0.063
Knowledge on ND	0.062	0.034	0.130	0.077
ND transfer	0.072**	0.034	0.140	0.036
Experience (Year)	0.001	0.001	0.005	0.365
Training	-0.029	0.039	0.048	0.453
Treatment opportunity	-0.031	0.035	0.037	0.373
Disposal of dead chicken	0.016	0.035	0.086	0.655
ND outbreak	0.008	0.038	0.084	0.827

Constant	2.145***	0.063	2.270	0.000
R^2	0.109	-	-	-
F value	2.930***	-	-	0.000

Source: author's calculation. (*,**,*** represent a significant level of 10, 5 and 1 percent, respectively)

Swab sample and tissue sample result

ND has devastating consequences on poultry for high morbidity and mortality rates. The morbidity and mortality rates may reach up to 100% for unvaccinated flocks (Ashraf and Shah, 2014). A study in Chad, due to ND mortality was found at 55% (Antipas, *et al*. 2012). Swab sample result showed about 7% live village chicken carried ND and the tissue sample (sample was taken from the dead bird) result showed 100% carried ND indicating that ND is a fatal disease and causes huge economic loss to the household (Table 10). For this, government along with other organizations should come forward to curb the disease and protect the very enterprise of farm household.

Table 10. Swab sample and tissue sample result

	Districts	Sample size	Positive	Percentage (%)
Swab sample	Tangail	30	3	10
	Sylhet	42	0	0
	Barishal	36	6	16.67
	Nilphamary	33	0	0
	Grand total	141	9	6.38
	Districts	Sample size	Positive	Percentage (%)
Tissue sample	Barishal	21	21	100
	Nilphamary	9	9	100
	Grand total	30	30	100

Source: Field survey, 2017.

4. Conclusion

In conclusion, Native chicken might be an important source of safe animal protein supply cradle to the human dietary menu. As it is one of the primary income sources of village housewives and they deprived of a good amount of cash income every year. So, the government along with other organizations should come forward to protect this very cute enterprise of livestock and ensure sustainable development of village chicken throughout the country. In the light of research findings, the following steps should be considered:

- Flock size should not be higher than 20 birds
- Keep chicken and duck in separate shade
- Hands-on training for scientific rearing system and diseases control method
- The mass vaccination program is needed for sustainable growth and development of all livestock species

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Role of Audit Committee in Tax Avoidance of Family and Non-Family Firms: Evidence from Indonesia

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Abstract
Companies often use tax avoidance and cost of debt substitutionally to achieve the desired marginal tax rate, without attracting the attention of the Tax Department of the State. We examine the role of the audit committee in supervising and reducing the trade-off practices of 222 public companies with 1.101 observations in Indonesia from 2011 – 2015 (before the tax amnesty program in 2016). We also examine the structure of company ownership (family and non-family firms) determines the effectiveness of the role of the audit committee in reducing the trade-off between tax avoidance and cost of debt. Data were analyzed using multiple regression data panel with pooled least square. Proxy of tax avoidance in this study uses Lim (2011), while the indicator of the audit committee uses the proportion of the audit committee compared to the number boards of commissioners, in dummy variable. The results suggest that the role of the audit committee is moderated the trade-off between tax avoidance and cost of debt, but in a contrary way. The role of the audit committee is not proved to reduce the trade-off practices, on the contrary increase the cost of debt which can result in reducing tax payments and increasing tax risks. After the advanced analysis, we found evidence that the role of the audit committee is stronger in non-family firms than in family firms. The moderation effect of audit committee found not significant in family companies, though have a significant effect on non-family companies.

Keywords: Tax Avoidance, Cost of Debt, Audit Committee, Firm Ownership Structure, Family Firms

INTRODUCTION

Companies often use tax avoidance and cost of debt substitutionally to achieve the desired marginal tax rate, without attracting the attention of the Tax Department of the State, by minimizing the possibility of higher tax risk (DeAngelo and Masulis, 1980).This raises an opportunity for management to do moral hazard, consequently, the reliability and transparency of the company's financial statements will be sacrificed. Another negative impact is that companies that do the trade-off practice are viewed by the public as riskier. Hanlon & Slemrod (2009) find news related to a company's tax avoidance causing the stock market to react negatively to the news. DeAngelo and Masulis (1980) also found that as the income tax rate increased, the company will substitute with a more significant cost of debt. But companies with lower tax rates tend to lower the amount of debt, so the cost of debt is also reduced. Graham & Tucker (2006) found companies that involved in tax avoidance experience decreasing in debt or have the cost of debt three times smaller than other companies. This finding supported Lim (2011) also found that most companies in Korea substitute tax avoidance and cost of debt.

Lim (2012) who examined public companies in Korea in 2000 - 2006 found that tax avoidance negatively affects the cost of debt, and the substitution effect is stronger in conditions where taxation sanctions are more severe.

Companies in Indonesia appropriate used as the object of this research because of several conditions: (1) the rate of corporate tax is more than double the bank credit rate. If the corporate income tax rate since 2010 is 25% flat rate, while the interest rate of the corporate bank is 10.25% -11.50% (Indonesia Investment, 2016). Significant tariff differences between corporate income tax and cost of debt result in more significant possibility of substitution between tax avoidance and cost of debt; (2) the Indonesia's banking policy to lower bank loan interest rate from two digits to single digits at the beginning of 2016, widening the difference between the income tax rate and cost of debt. This is not immediately followed by the decrease of company's income tax rate, which is planned to be reduced from 25% to 17% (Indrastiti, 2016); (3) Enforcement of tax laws in Indonesia is ongoing and restrict the opportunity of tax evasion in Indonesia. In Indonesia sanctions of the tax increases of up to 150% of unpaid taxes (Act KUP No. 28 of 2007 Article 13 paragraph 3). Under conditions of a country with strict tax rules, the trade-off between tax avoidance and cost of debt will raise the risk of the companies.

The second objective of this study is to examine the role of the audit committee as a moderator of the trade-off between tax avoidance and cost of debt. Research conducted by Desai and Dharmapala (2009) argues that tax avoidance led to opportunistic actions of managers and this factor was increasing in companies with low corporate governance. Izma (2013) wrote the audit committee as the key to effective corporate governance, particularly in public companies. In the analysis of the effect of tax avoidance on the cost of debt, the audit committee is expected to moderate this relationship. The more effective of the performance of the audit committee, the trade-off between tax avoidance and cost of debt will be weakened. According to the Decree of the Chairman of the Indonesia Capital Market Supervisory Board of KEP-643 / BL / 2012, the responsibilities of the audit committee shall, among others, review the compliance with prevailing laws and regulations in the company's activities, reviewing the activities of risk management performed by the Board of Directors. It is seen that the audit committee is responsible for reducing the trade-off practices in the company, therefore the tax risk of the company even decrease.

Nevertheless, the structure of company ownership determines the effectiveness of the audit committee to mitigate the adverse effect of trade-off practices. Izma (2013) argues that audit committees in family-dominated ownership firms are more likely to lose their voting power and independence than companies with public-dominated ownership structures. The audit committee's role is allegedly stronger in non-family firms. The indicator used to measure family ownership is the percentage of ownership controlling families. Controlling families is determined by looking at the most significant shareholder percentage, at least 10% ownership (Faccio and Lang, 2002). Indonesian public companies dominated by family companies. Carney & Hamilton-hart (2015) conducted a study on the structure of ownership of Indonesian public corporations in 1996 and 2008 found that the ownership structure of Indonesian firms is still dominated by families with a very high percentage of ownership. The dominance of the family in the ownership structure of the company results in the "dwarfing" of the audit committee's role in improving corporate compliance, particularly with regard to tax regulations. Audit committees, especially in Malaysia, also face challenges related to transparency of financial statements, litigation risks, pressure from shareholders especially public companies whose majority shareholder is family (Izma, 2013).

The first contribution of this study is the first study using the audit committee as a moderator that moderate trade-off between tax avoidance and cost of debt in Indonesia. The audit committee is expected to be an agent that can reduce trade-off practice in Indonesia in the long term. The second contribution is the first study to reveal that effect moderation of audit committee is higher in firms with a smaller percentage of family ownership (non-family ownership).

LITERATURE REVIEW AND HYPOTHESES

Effect of Tax Avoidance on Cost of Debt (Trade-off Practice)

According to Schallheim and Wells (2008), firms prefer tax avoidance over cost of debt because (1) tax avoidance cheaper than cost of debt, (2) credit agreements often need requirements that companies must meet, such as asset security, cash restriction, and dividend restriction, therefore the cost is higher than tax avoidance, (3) tax shield exploit provision in the accounting rules that allow the firm to reduce the tax without affecting the income statement. In the high tax law enforcement condition, the company will reduce tax avoidance and increase the cost of debt, to minimalization tax risk. According to KPMG (2007) tax risk is the risk of non-compliance with tax rules, combined with unintended tax consequences of company transactions. Elgood et al. (2004) divided tax risks into two categories of internal and external tax risk. External tax risk occurs through new tax laws, regulatory and legislative changes that sometimes are hard to manage by companies. Internal tax risk classified as transactional, operational, compliance, and financial accounting risks (Erasmus, 2014). Tax avoidance measurements in this study use proxies in Lim (2011) which uses book-tax difference (BTD) and discretionary accrual (Dechow et al., 1995). The indicator of tax avoidance (Lim, 2011) limits the tax avoidance only on BTD which cannot be explained by the discretionary accrual. The research that has been done by Graham & Tucker (2006) and Lim (2011) shows that tax avoidance reduces the tendency of companies to owe. Tax avoidance has an adverse effect on the cost of debt or support trade-off theory. The greater tax avoidance, it will reduce the cost of debt, so the hypothesis proposed as follows:

H1: Tax Avoidance negatively affects the cost of debt

The Audit Committee as Moderator to The Trade-Off between Tax Avoidance and Cost of Debt

Corporate governance arises by reason of the separation between ownership and corporate management that can cause agency problem. One of the pillars of good corporate governance is through an audit committee. The Audit Committee is a committee established by and responsible to the Board of Commissioners in assisting with the duties and functions of the Board of Commissioners (Decision of the Chairman of Bapepam and LK Number: Kep643 / BL / 2012). One of the tasks of the audit committee is to review the financial information to be issued to the issuer or public company to the public and/or the authority, among others, financial reports, projections and other reports relating to the issuer or public company's financial information. The audit committee has a very important and strategic role in the company's oversight mechanism. Audit Committee is one of the company's organs that oversees the effectiveness of corporate governance. Anderson et al. (2004) prove that the size of the audit committee is negatively related to the cost of debt. The existence of the audit committee is expected to give a positive effect to the company which is the trust of the creditors, therefore provide a lower level of debt costs. In large companies, the audit committee is required to comprise between three to six members (Burke & Guy (2002) in Ferreira (2008)). KPMG and the Institute of Director's Audit Committee Forum (KPMG's ACF, 2006) proposed a guideline, that committee should be large enough to represent a balance of views and experience, but small enough to operate efficiently. According to the Indonesia regulation, the minimum number of audit committee members is three people.

H2: The audit committee weakens the trade-off between tax avoidance and cost of debt

Moderation Effect of Audit Committee on Trade-off Practice in Family Vs Non-family Firms

Caselli and Gennaioli (2003) and Burkart et al. (2003) state that ownership concentration empowers family members to achieve their goals better than other shareholders. Family control may eliminate agency problems from the conflict between shareholders and managers. Family members tend to have a longer horizon investment compared to other investors (James, 1999; Stein, 1989). According to Demsetz (1983), family firms may choose non-monetary benefits and remove resources from profitable projects consequently damage firm performance. Because families are motivated to pass on their ownership to future generations (Casson, 1999; Chami, 2001; James, 1999), they may act to reduce the risky capital structures or investment projects.

As we know about family firms and the effect on the effectiveness of audit committee, we suspect that the role of the audit committee in family firms is going to be less dominant than in non-family firms. Rather than experiencing the traditional manager-owner conflict, the conflict between shareholder groups is the prevalent

agency problem in East Asian companies as compared to the US and UK (Shleifer and Vishny, 1997; Claessens et al., 2000, 2002). Members of the controlling family can exercise control over the board (Anderson et al., 2004) which in turn may provide them with opportunities to expropriate minority shareholders.
H3: Audit committee moderation on trade-off is stronger in non-family companies than in family companies

RESEARCH METHODOLOGY

The model in this research is modification of Lim (2011) model by adding audit committee variable (AC) as moderator and family variable (Fam) as the independent variable. The cost of debt indicator in this study uses the ratio of cost of debt to the average short-term and long-term debt that resulted in a cost of debt (Lim, 2011). The audit committee's effectiveness proxy uses a ratio of the number of audit committees to the number of commissioners.

The family indicator in this research use dummy variable that is number 1 if controlled by family and number 0 if not controlled by the family. The criteria of a company controlled by the family are (1) one of the shareholders and the board of directors is held by the same family, judging by the name of the family, (2) controlling shareholders are individuals or private, non-listed companies (Faccio and Lang, 2002 and Maury, 2006) with minimum ownership of 10%, (3) to identify the tax heaven company which is actually a non-listed firm, is viewed from the shareholder's name or whether the directors are held by foreigners. When held foreigners, it includes non-family firm, if a not occupied foreigner, then the family firm.

The control variable in this study is the company's age listing on BEI, leverage, cash flow from operation, company size, plant and equipment property, and negative equity. The following are the model equations formed in this study:

$$COD_{it} = \alpha + \alpha_1 TA_{it} + \alpha_2 AU_{it} + \alpha_3 Age_{it} + \alpha_4 Lev_{it} + \alpha_5 CFO_{it} + \alpha_6 Size_{it} + \alpha_7 PPE_{it} + \alpha_8 Negequity_{it} + \alpha_9 BigFour_{it} \quad \text{.....(1)}$$

$$COD_{it} = \alpha + \alpha_1 TA_{it} + \alpha_2 AU_{it} + \alpha_3 TA*AU_{it} + \alpha_4 Age_{it} + \alpha_5 Lev_{it} + \alpha_6 CFO + \alpha_7 Size_{it} + \alpha_8 PPE_{it} + \alpha_9 Negequity_{it} + \alpha_{10} BigFour_{it} \quad \text{.....(2)}$$

Measure Tax Avoidance, Cost of Debt, Audit Committee
Tax avoidance measurement uses the tax avoidance measurement scale used by Lim (2011). The first step of tax avoidance measurement is to find the value of discretionary accrual with modified jones (Dechow et al., 1995). The residual value of model 1 is Discretionary Accrual (DA).

$$Accruals_{it}/Assets_{it-1} = \alpha(1/Assets_{it-1}) + \beta_{1it}\{(\Delta REV_{it} - \Delta AR_{it})/Assets_{it-1}\} + \beta_{2it}(PPE_{it}/Assets_{it-1}) + e_{it} \quad (1)$$

$Accrual_{it}$: total accrual, whereas *Accruals= Net Income – Cash Flow from Operations*
ΔREV_{it} : Changes in revenues
ΔAR_{it} : Changes in receivables
PPE_{it} : *Property, plant, equipment*
e_{it} : Residual Value

The second step is to seek tax avoidance (Lim, 2011) which is a representation of tax avoidance. How to separate the book-tax-different components that are not caused by earnings management, and identify these components as tax avoidance. The residual value of model 2 is tax avoidance indicator.

$$BTD_{it} = b_1 DA_{it} + \mu + e_{it}$$

BTD_{it} *: Book-tax difference*
DA_{it} *: Discretionary accrual*
μ *: Average value of residual*

e_{it} : *deviation from average residual* μ

In this study, a proxy of the audit committee is a dummy variable. I measured the effectiveness of audit committee using a proportion of audit committee compare with numbers of the board of commissioners. If the proportion is more than 1, then the value is 1, otherwise, the value is 0.

Variables	Indicators	Scale
Cost of Debt (COD)	$\frac{\text{Interest Expense}}{\text{Average short term and long term loans and bonds}}$	Ratio
Audit Committee (AC)	$Prop = \frac{\text{Numbers of audit committee}}{\text{numbers of the board of commissioner}}$ If the proportion of audit committee > 1, then value = 1, otherwise value = 0	Dummy
Age	Ln (age) = number of years since the company go public	Ratio
Leverage (Lev)	$\text{Leverage} = \frac{\text{Total Debt}}{\text{Total Asset}}$	Ratio
Cash Flow Operation (CFO)	$CFO = \frac{Cash\ flow\ from\ Operation}{Total\ Asset}$	Ratio
Size	Size = Ln (total asset)	Ratio
Property Plant Equipment (PPE)	$PPE = \frac{\text{Total PPE}}{\text{Total Asset}}$	Ratio
Negative Equity (NegEq)	If book value of equity is negative, then value = 1, otherwise value = 0.	Dummy
BigFour	If the external auditor of a company is Big Four Public Accountant, then value = 1, otherwise value = 0.	Dummy
Industry Dummies	Industry Dummies	Dummy

Sample Determination

The population of this study are companies listed on the Indonesia Stock Exchange in 2011 - 2015. Sample selection criteria used are:

1. The company does not include financial institutions.
2. The company excludes construction and property services firms which income tax is not based on net income, therefore it is not relevance with the tax avoidance indicator in this study.
3. The company has complete data for at least 4 years.

ANALYSIS AND INTERPRETATION

Based on the predetermined criteria, the number of samples used are 222 companies from totals of 383 companies. The total sample in this study is 1110 observations obtained from 222 companies for five periods (2011-2015). However, due to the process of data reduction, outlier, therefore, removed 9 observations, and produce total data 1101 observations to be analyzed.

Table 2. Sample Selection

Criteria	Number of Companies
Companies listed on the Indonesia Stock Exchange respectively during the period 2011-2015	539
Financial companies, Property-Real Estate and construction services	(160)
The company that conducted the Initial Public Offering after 2011	(84)
Companies that do not have a cost of debt during the period 2011-2015	(39)
Companies that have incomplete financial reports during 2011-2015	(34)
Number of sample companies used	222
Research period (years)	5
Number of observed data	1110
Outlier data reduction	(9)
Number of observed data after outlier	1101

Hypothesis Testing Results

Table 3. Variable Descriptive Statistics

Variables	Mean	SD	Min	Max
COD	0.091	0.062	0.000	0.526
TA	0.001	1.056	-8.880	14.973
AC	0.450	0.498	0	1
TA*AC	0.024	0.201	-1.414	4.611
Age	2.575	0.660	0.000	3.5835
Lev	28.330	458.611	0.000	10602.969
CFO	0.060	0.159	-2.346	0.799
Size	7.826	1.766	2.207	14.506
PPE	0.394	0.501	0.0002	13.861
NegEq	0.030	0.225	0	1
BigFour	0.440	0.496	0	1

Table 3 presents the descriptive statistics of variables. It shows that on average COD is 0.091, TA is 0.001, moderation TA*AC is 0.024. The standard deviation for all variables shows that COD is 0.062, TA is 1.056, TA*AC is 0.201.

Table 4. The result of Pooled Least Square (PLS) Model 1 and Model 2

Model	R	R Square	Std Error of The Estimate	df	F	Sig
1	0,308	0,095	0,0592038808	15	7,589	0,000
2	0,328	0,107	0,0588252303	16	8,145	0,000

The initial phase of the test was conducted to determine the regression analysis model in this study, whether it is Pooled Least Square (PLS), Fixed Effect (FE) or Random Effect (RE). Chow-test testing is performed to determine whether the regression model is Pooled Least Square (PLS) or Fixed Effect (FE). The test results indicate that this research model is PLS. The Lagrange Multiplier (LM) test also strengthens the Chow-test test results that the model includes PLS. The determination of this regression model is done by Stata program. Based

on the test results of both models in table 4, shows the result that model 1 has R Square of 9.5%, with a significance level of 0.000, meaning that model 1 meets the goodness of fit test. The result of testing model 2 has R Square equal to 10,7% with significance level equal to 0.00, and then model 2 also fulfill the goodness of fit. The comparison of R Square of both models shows that model 2 has a higher R Square, meaning the ability to explain predictor to criterion variable in model 2, higher than model 1. It shows the audit committee as the moderating variable in model 2 can improve the prediction result of the cost of debt.

Table 5 Output Regression for Model 1 VS Model 2

	Model 1	**Model 2**
R Square	9,5%	10,7%
No. of obs.	1101	1101
Constant	0.158	0.16
TA	-0.002**	-0.004**
AC	-0.003	-0.005
TA*AC		0.035***
AGE	-0.002	-0.001
LEV	-1.03E-06	9.94E-07
CFO	0.02*	0.02*
SIZE	-0.008***	-0.009***
PPE	0.001	0.001
NegEq	0.023***	0.022***
BigFour	-0.006	-0.004
Industry Dummies:		
Consumption	0.009	0.009
Trading & Servc	0.007	0.007
Mining	-0.003	-0.003
Infrastructure	0.018**	0.019**
BasicChemicals	-0.004	-0.003
Agriculture	-0.019*	-0.019**

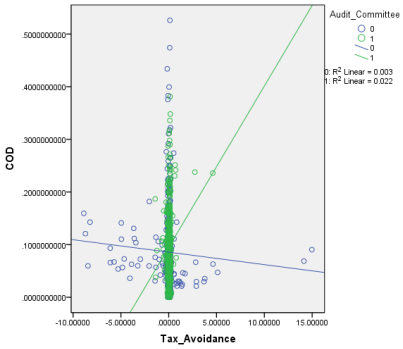
*** Significant at 1%, **significant at 5%, *significant at 10%

Table 5 shows the result of regression testing for both models. The result of regression test of model 2 as a whole shows tax avoidance has a negative effect on the cost of debt in Indonesia (significant at 5%), meaning that the company practices trade-off between tax avoidance and cost of debt in tax avoidance framework, therefore H1 is received. These results support the Lim (2011) study that proves tax avoidance lowers the cost of debt of firms through trade-off practices. The results of moderation testing found that tax avoidance and audit committee have a positive effect on the cost of debt, meaning that tax avoidance and audit committee increase cost of debt. The results are shown in Table 3 where TA*AC moderation is significant at the 1% level. This result did not prove the hypothesis (H2), because of the better quality of corporate governance, it proved unable to reduce (weaken) trade-off between tax avoidance and cost of debt (H2 is rejected). The audit committee's moderation effect causes tax avoidance and cost of debt to be positive, meaning that when tax avoidance is high, and the audit committee's proportion is high, the cost of debt becomes higher. The higher cost of debt gives an indication of the greater deductible expense deducted in the tax financial statements, thus reducing the tax payable. The greater proportion of audit committees to the board of commissioners leads the audit committee to have greater "power" to influence decisions in shareholder meetings, including decisions relating to tax avoidance.

The positive effect of the moderation tax avoidance-audit committee on the cost of debt is tested again with graphs to determine the positive influence of both variables. The results of the moderation effect are shown in

Figure 1. The blue line in Figure 1 shows the increase in tax avoidance (TA) resulting in a lower cost of debt (COD). The green line shows an increase in TA and audit committee, resulting in higher COD.

Figure 1. Moderation Effect of Audit Committee on Tax Avoidance (TA) Effect on Cost of Debt (COD)



There are several reasons why this hypothesis is rejected. First, the audit committee in Indonesia views tax avoidance and cost of debt tools as an efficient perspective for the company as a taxpayer. The utilitarian approach to tax avoidance states that to determine whether the right or wrong of action needs to measure the number of utilities or disutility to taxpayers, government, and society (Filho, 2014). For taxpayers when using both tools, the utility value increases, moreover the company's performance looks better than last year. On the other hand, it is also necessary to evaluate whether these practice increases or decreases the utility of the state and the society. These schemes can reduce the value of government and community utilities if causes state revenues to fall and the government cannot provide benefits to the community. However, if the quality of the government is not as expected and the state income is not effectively utilized to increase social utility, then the efficient perspective of these taxpayers can be justified (Filho, 2014). In this case, the quality of public administration and state politics is the main key for the measurement of government and community utilities (Filho, 2014).

Second, the audit committee considers tax risk for companies in Indonesia to be low, thus they do not make this matter as a priority to be assessed or evaluated. This point issues the opportunistic behavior for management. In Indonesia, this view is supported by the survey that was conducted by KPMG (2014). Based on the result of the survey of tax executives in Indonesia, tax risk is not the biggest challenge faced by Indonesian companies. They mention the biggest risk challenges are (1) uncertainty and volatility in economics, regulatory, and political, (2) government regulation or public policy. The survey results show that only 3% of 30 respondents rated tax risk as the company's most significant risk, besides 27% said they needed less time to discuss tax risk in meetings, while 33% said they did not need additional time to discuss tax risks (KPMG, 2014).

Third, some people view tax avoidance as a natural law or universal law. Deontological approach to tax avoidance states right or wrong an action is measured by norms that are trusted by society, meaning that tax avoidance can be a universal law for individual taxpayers (Filho, 2014). However, Prebble and Prebble (2010) stated that universal tax avoidance could not be justified if all parties (taxpayers, government, and society) will experience adverse effects if all people do the tax avoidance. The declining state revenue has caused the state not able to provide benefits to the society who also impact on the creation of new taxes which ultimately have a negative impact on the company as a taxpayer.

In model 2 (Table 5), in addition to tax avoidance and TA*AC moderation, size, cash flow from operations, negative equity, and infrastructure and agriculture industry affect the cost of debt. The TA*AC, size, and negative equity variables are the three variables with the most substantial influence on the cost of debt (significant at 1%), and the TA*AC moderation variable has the most substantial influence on the cost of debt. This shows that the moderation of audit committee impacts strongly on tax avoidance and cost of debt relationships.

Figure 2 (Appendix 1) shows the moderate effects of the audit committee on each industry sector. This study divided industry sectors into seven sectors, consumer goods, basic and chemical, infrastructure, retail and services, mining, agriculture, and others sectors. Based on the moderating effects of all industry sectors in figure 2, it can be concluded that the audit committee moderation effects are strongest in the basic chemical and mining industry sectors, while the weakest effects are agriculture. This means that the audit committees in basic chemical and mining industry sectors have the highest power in influencing management decisions related to tax avoidance compared to other sectors.

The results of regression testing related to ownership structures on the audit committee moderation effects can be seen in table 6. It shows that trade-off practices are not found in companies with family ownership, otherwise found in non-family enterprises with a significance of 5%. The moderation effect of audit committees on trade-off practices is also not found in family firms, but significant in non-family enterprises (significant at 1%). Non-family companies in this study dominated foreign companies, with the composition of 75 foreign companies and 3 government companies. This finding is consistent with Casson's 1999 study; Chami, 2001; James, 1999, who found family companies more intergenerational stewardship-oriented and more risk-averse than non-family firms. James (1999) and Stein (1989) found family companies tend to make long-term investments compared to other types of investors. Demsetz (1983) found that family firms prefer to avoid profitable projects that can destroy company performance. A strong vision of a family firm leads to the insignificant role of the audit committee, especially in the practice of trade-off (Table 6). The biggest decision is for the family members who are leaders of the company. Anderson et al., 2004; Shleifer and Vishny, 1997; Claessens et al., 2000 also support the results of this study.

Table 6. Output Regression for Family VS Non-Family Ownership

	Family Ownership	**Non-Family Ownership**
R Square	10,2%	17,8%
Adjust R Square	8,1%	14,3%
N	709	387
Constant	0.138	0.206
TA	-0.002	-0.011**
AC	-0.004	-0.001
TA*AC	0.007	0.052***
AGE	-0.001	-0.007
LEV	1.21E-03	-0.006
CFO	0.019	0.008
SIZE	-0.006***	-0.013***
PPE	0.002	0.015
NegEq	-0.002	0.023*
BigFour	-0.011**	0.002
Consumption	0.001	0.022
TradingServc	0.012*	-0.008
Mining	-0.013	-0.005
Infrastructure	-0.001	0.042***
BasicChemicals	-0.006	-0.006
Agriculture	-0.025***	-0.005

*** Significant at 1%, **significant at 5%, *significant at 10%

CONCLUSION

In this paper, we examine the role of the audit committee on moderating trade-off between tax avoidance and cost of debt in Indonesia public companies around 2011 – 2015. Using sample from all industries, excluding financial institution, property, real estate, and constructions, I find that audit committee not proved to reduce trade-off between tax avoidance and cost of debt, otherwise makes the cost of debt higher. This finding suggests that the greater the number of audit committees, the greater the cost of debt, thereby affecting the overall reduction in tax payments. The greater tax avoidance and cost of debt indicate that companies use both to minimize tax payments. The reasons are the audit committee in Indonesia views tax avoidance and cost of debt tools as an efficient perspective for the company as a taxpayer. This view is supported by the utilitarian approach. The other reason, in Indonesia audit committee, considers tax risk for companies to be low, therefore they do not focus on tax risk when evaluating the financial information. This study also finds the most powerful audit committee in influencing management decisions is in basic chemicals and mining industries.

To our knowledge, this is the first study uses the audit committee as a moderator on the relationship between tax avoidance and cost of debt. The minimum number of audit committees required for public companies is at least three people. The reality is that the number of the audit committee is five to six persons per company, even in many companies number of the audit committee nearly as many as the number of board of commissioners. This study found that a large number of audit committees were not proven to be able to reduce trade-off practices in Indonesia, but found that tax avoidance and cost of debt showed a significant increase together. Our result suggests that the audit committee in Indonesia is tolerant of tax avoidance and does not assess tax risk as the company's biggest challenge. This shows that tax law enforcement is carried out by the government before the 2016 tax amnesty program has not adequate to reduce tax avoidance practices in public companies. The cost and benefits between tax risk and the benefit obtained by the company by engaging in trade-off practices are still considered to be more significant. We recommend that the government immediately reduce the corporate income tax rate to 18% (as planned) to reduce the gap between income tax rates and credit rates so that trade-off practices in Indonesia are reduced.

We also find that the role of the audit committee in moderating trade-off practice stronger in non-family ownership than family ownership. A strong vision of a family firm leads to an insignificant role of the audit committee, especially in the practice of trade-off. However, these findings should be treated with caution as it may not be robust to changes in sample selection, variable measurement, and changes to estimation approach.

For further research, further research is needed to compare whether there are differences before and after the implementation of the 2016 tax amnesty program to simultaneously assess the effectiveness of the program in reducing trade-off practices in Indonesia. Given the fact that tax policy has changed dramatically in Indonesia over the years, future studies should be conducted to explore audit committee's awareness in tax policy and regulation changes, and how they react to this changes.

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Appendix 1

Figure 2.1 Consumer Goods Industry

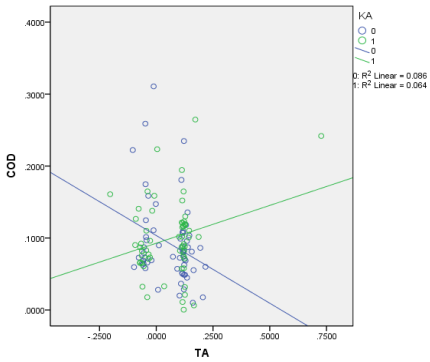

Figure 2.2 Basic and Chemical Industry

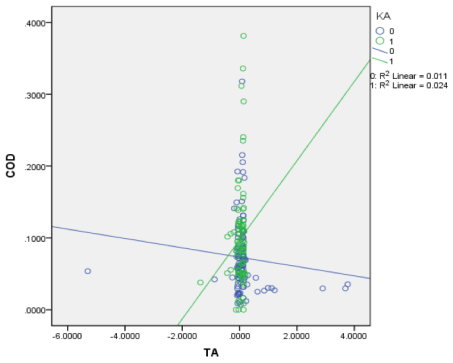

Figure 2.3 Infrastructure Industry

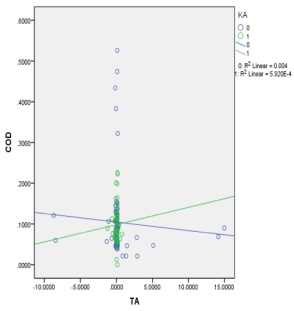

Figure 2.4 Retail and Services Industry

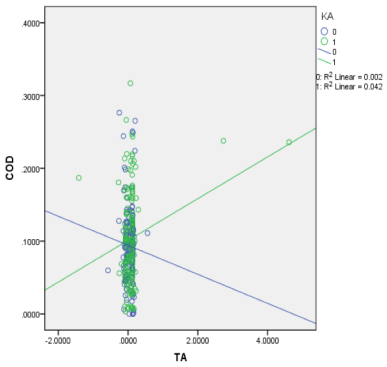

Figure 2.5 Mining Industry

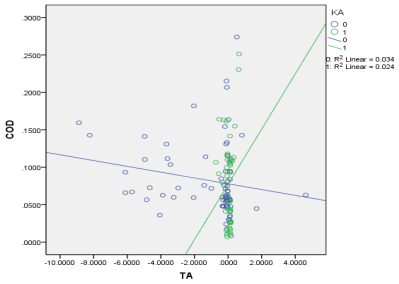

Figure 2.6 Agriculture Industry

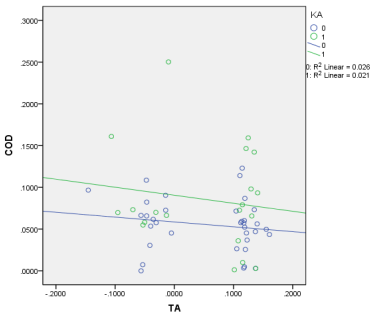

Figure 2.7 Others Industry