An Econometric Time-Series Analysis of the Dynamic Relationship between Foreign Trade and Economic Growth in a Developing Country: Evidence from Namibia

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Abstract: Economists have an inclination for quantifying the relationships amongst variables at both micro and macro levels. In this study, the possibility of a long-run relationship between foreign trade and economic growth in Namibia is assessed. Exports, foreign direct investment and exchange rates were used as potential predictors of economic growth, while real gross domestic product served as a proxy to economic growth. Quarterly time-series macro-economic secondary data sets were utilised from the period 1990 to 2013. Firstly, the study found positive relationships amongst the four variables used in the study. Indeed, this positive relationship suggests that the economy of Namibia can potentially be expanded by means of foreign trade. The result is also in line with broad economic theory. Secondly, the study found that economic growth responds stronger to changes in exports and foreign direct investment compared to changes in exchange rates. Thirdly, co-integrating relationships were found amongst the variables used in the study, implying a long-run relationship amongst these variables. Lastly, the study found that exports indeed Granger-cause economic growth. The implications of the research are that the results of the research could be used to improve economic policy for Namibia and other developing countries.

Keywords: Foreign trade; economic growth; co-integration; causality; time-series analysis; developing countries; Namibia

JEL Classification: C5; E6; O5

1. Introduction

Trade, especially foreign trade is a potent tool in the process of promoting and stimulating economic growth in contemporary economies due mainly to globalisation (Ogbokor, 2002). In the face of increasing globalisation, the arguments in favour of closed economies are limited (Ogbokor, 2001). Thirwall

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(2011), further strengthening the case for trade, using econometric procedures and a data-set based on 133 countries covering the years 1995 to 2006, observed the growth rates of individual countries to be positively related to their export performance than with any other single economic parameter. In addition, Thirwall noted that for a greater part of the period after 1950, the export performance of developing countries lagged behind that of the developed industrial countries, with their market share of the global trade declining. He, however, acknowledged that in recent years a number of developing countries, especially the Asian economic miracle countries, also referred to as the Asian "Tigers", have successfully reversed this trend as a result of a "big push" in their manufacturing activities, which has resulted mainly from government incentives.

Historically, trade is and has remained a powerful propeller of economic growth. Trade has contributed significantly to the effectiveness and efficiency of allocation of resources, as well as, transmitting growth from one part of the world to another (Thirwall, 2000). In specific terms, the strong demand in Europe, and in Britain in particular, for food and raw materials in the nineteenth century led to a "big push" in economic activities on the part of countries such as Canada, Argentina, South Africa, Australia and New Zealand just to mention a few (Love, 1987). It was also consistently observed that as the demand for these countries' exports increased, investment in these economies also rose. Trade was considered to be beneficial to both countries that are involved in international trade. These facts have also been widely acknowledged in the work of Marshall (1890). Unfortunately, countries belonging to the southern hemisphere are not getting an equitable share of the anticipated benefits from trade. This is mainly due to a weakening demand for developing countries' traditional exports, including the uncompetitive nature of a majority of their exports in foreign markets (Schipke, 2005).

Other studies in the literature have attempted to investigate the possibility of a relation between exports, in particular and economic growth in general (Edwards, 1993). Most of the early studies in this regard, linked various measures of export growth with growth in income, suggesting that these two variables were significantly positively correlated (Appleyard, 2006). Furthermore, exports' are regarded as the "engine of growth" (Sharer, 1999). Simultaneously, several other studies that focussed on individual countries over time using econometric time series techniques have suggested statistically significant relationships between growth in both exports and imports, including income growth (Greenaway et al, 2002). In a number of such studies, particularly for middle-income countries seems to suggest a strong positive correlation between trade and economic growth. This is as a result of the direct effect of export earnings on Gross National Product (GNP), as well as, the indirect effects arising from balance-of-payments often associated with the increased capacity to import needed capital and intermediate inputs.

There is also the possibility that increased income could lead to greater imports and increased efficiency could also lead to greater exports. Thus, the causality may run from growth to trade rather than from trade to growth (Chow, 1987). Another argument in the literature concerning the relationship between trade and growth points to the fact that growth in exports generally has a positive effect on a country's growth and development, since it stimulates increased saving and investment (Krueger, 1998). These effects on aggregate saving could arise in two ways. First, it could arise from a higher inclination to save in the export sector. Second, it could also result from the impacts on total saving of any changes in the distribution of income tied to the growth in the export sector.

With respect to the Southern African Development Community (SADC), including Namibia, trade will continue to play an important role in the growth of these economies. This is so, for the following interrelated reasons: trade is pertinent to these economies in view of the wealth it generates through receipts and various specialized taxes for the state treasury. Besides, it creates jobs for a number of people, and therefore supports livelihood for many households. With the concepts of globalisation and export-led industrialism gaining increased popularity in the world, there is the urgent need for Namibia to give more vigorous and appropriate attention to its export sector.

In consideration of the research background, the driving objective of this study is to empirically assess the relationship between foreign trade and economic growth in Namibia through the use of the Vector Auto-regression (VAR) approach. The study is considered to be vital for the following reasons: Firstly, the study will assist the Namibian government with a strategy, which it can consider adopting that may in turn lead to export-led growth. Secondly, the study will contribute to the existing literature concerning foreign trade and economic growth. Thirdly, the study will shed light on the connection between trade and economic growth in Namibia, which policy makers could in turn capitalise on, when it comes to trade policy formulation and implementation. Further, in recognition of the deficiency in modelling, the study will invoke and apply Vector Auto-regression technique so as to ensure robustness of results. The study could also be replicated in other developing countries.

2. Socio-Economic Facts about Namibia

Namibia became an independent country on 21 March 1990 after a protracted struggle that lasted for close to one hundred and six (106) years. In geographic terms, the country is surrounded by Angola and Zambia to the north, Botswana and Zimbabwe to the east, South Africa to the south, with the Atlantic Ocean constituting its western frontier. Namibia covers a landmass of approximately 24,268 square kilometres (Ministry of Land and Resettlements, 2013). Namibia is

classified as an upper middle-income country. It has a per capital income of approximately USD 6,800 per annum based on 2012 data (Government of Namibia, 2013). The economic system of Namibia is anchored on the principles of free market forces. Namibia is often described as a mineral paradise. This is because of the presence of a lot of minerals, especially solid minerals such as diamond, gold, copper, uranium and zinc. Namibia is heavily dependent on the extraction and processing of these minerals for export. The mining sector is the main propeller of its economy (Ogbokor, 2005). The mining sector alone accounts for about 50% of the revenue accruing to the government treasury. However, its contribution of about 8% to the country's total gross domestic product (GDP) is rather low. The sector also employs only about 3% of the country's total labour force (Government of Namibia, 2009).

Namibia is the fourth leading producer of uranium in the world. Fishing and tourism are two other pertinent sectors in the economy of Namibia. Namibia depends heavily on international trade, especially imports for the continuity of its economy. Over 50% of its cereal needs are imported (Schlettwein, 2013). This is even higher during drought years. The country's Gini coefficient of 0.7 makes income gap a fundamental development issue in its economy. Surprisingly, the country also has a high per capita income, especially when compared to the rest of Africa (Government of Namibia, 2010). The current unemployment figure of 29.2% is very high and has been opened to a series of debates (Government of Namibia, 2011). Classifying subsistence farmers, as well as, those in the informal sector as part of the unemployed is highly controversial and lacks economic reasoning. The leading sectors in Namibia, namely, mining, tourism, livestock and meat production, as well as, fisheries are highly vulnerable to external economic cum ecological shocks. Foreign demands in all these sectors, is cyclical, seasonal and highly unpredictable (Government of Namibia, 2012).

As a result of historical factors, the Namibian economy is still very much connected to the South Africa's economy. For instance, the Namibia dollar is pegged to the South African Rand on the basis of one-to-one, making monetary policy management a very tricky issue for the Bank of Namibia (BoN) to handle (Bank of Namibia, 2010). Namibia, including South Africa, Botswana, Lesotho and Swaziland are all bona fide members of the Southern African Customs Union (SACU). Namibia obtains about 40% of its budget revenues from the common revenue pool of SACU (Sherbourne, 2010). In 2007, Namibia for the first time, since attaining an independent status achieved a budget surplus. However, Namibia could not sustain this development in the subsequent years that followed mainly as a result of the global recession that inevitably led to a reduction of its income from the common SACU revenue pool.

Namibia's major trading partners are South Africa, European Union (EU), Angola, Botswana, Germany, the United States of America and more recently China. Its

imports are principally made-up of food products, construction materials and manufactured goods. Similarly, the country's exports are essentially solid minerals, beef, cattle, fish, karakul pelts and grapes. Population-wise, Namibia is made-up of about 2.2 million people with a labour force of approximately 870,000. Its government is increasingly relying on the strategy of Export Processing Zones (EPZs) as a way of boosting industrialisation activities, especially manufacturing. However, the imbursement from this process is still highly unsatisfactory and unstable (Bank of Namibia, 2012).

Other major socio-economic challenges currently facing the economy of Namibia, besides low industrialisation activities are: poverty, natural disasters, especially drought and flooding; rural–urban dichotomy, heavy dependence on mining, high capital outflows, highly skewed income distribution, exchange rate volatility, HIV/Aids pandemic, inflation, especially imported inflation; cross border smuggling, especially Tobacco products and Marijuana, and human capital constraints just to mention a few of them (Government of Namibia, 2014). The various efforts on the part of the Namibian government, so far, in order to respond to these challenges through its various National Developments Plans (NDPs) seem not to be yielding fruitful results.

3. Literature Review

A number of studies have been conducted over the years relating to the relationship between foreign trade and economic growth for many countries. One of the earliest empirical studies that is widely acknowledged is that of Emery (1967). He investigated the relationship between exports and economic growth for 48 developed, as well as, 48 developing countries. He made use of time series macroeconomic annual data covering the period 1953 to 1963. He relied upon a simple regression model in pursuing his investigating. In addition, he treated gross national product (GNP) as the dependent variable and total exports as the independent variable. The results indicate that there is a strong positive relationship between exports growth and economic growth. Further, his results suggest that, in order to increase economic performance, countries should emphasise export-oriented policies as against an import substitution policy. One would have expected the researcher to have also made use of a multiple regression model in his study, in order to find out the effect of other macroeconomic variables that influences economic growth. The period covered by the study also seems to be rather too short. There is a strong possibility that, the results of the study would have been different, if the period of the study is extended to cover more years.

Maizels (1968) tested the relationship between the rate of change in exports and the rate of change in the GDP for nine developing countries for the period between 1951 and 1962. He observed a significant relationship between export and growth

rate and GDP growth rate. However, the study did not shed light on the issue of causality. In addition, the period covered by this study should have been extended to cover more years. Mathews (1973) probed into the relationship between Britain's economic growth, foreign trade and her payments problem. He used time series data covering one hundred years for the study. He observed that, a number of factors, particularly institutional factors have suffocated productivity growth in the economy. The period covered by the study seems to be too lengthy. One would have expected the author to have possibly divided the period covered by the study into two or more periods in order to effectively analyse the changes occurring over time, as well as, to carry out a comparative analysis between each of the identified sub-periods.

Papanek (1973) in his study of 85 developing countries estimated the impact of foreign capital, foreign aid, foreign private investment and domestic savings on economic growth. His study confirmed the existence of a positive relationship between economic growth and domestic savings. Further, he observed that both foreign aid and foreign private investment positively influenced economic growth. All the independent variables taken together accounted for approximately 37 percent of the systematic variation in economic growth; implying that the explanatory power of the model used for the study is weak.

Syron & Walsh (1975) argued that Emery's approach is rather too simplistic. They attempted to extend Emery's analysis and to show that the relationship between exports and economic growth is more complex than he suggests. In light of this reasoning, they divided Emery's sample of 50 countries into two categories, namely, developed countries (DC) and less developed countries (LDC). They relied on the percentage growth in real GNP per capita and percentage growth in real exports. They concluded that the DCs and the LDCs had different growth-exports relationships, and that about 85 percent of the growth in LDCs is induced by exports, while 62 percent of growth in the DCs arises from export stimulation. The study also suggested the need to disaggregate exports into meaningful categories, and subsequently determine the impact of each of the various identified sub-sectors on the economic growth of the domestic economy.

Gupta (1975) examined the impact of foreign capital inflows on economic growth of forty developing countries. His findings indicate that economic growth as measured by growth rate of GDP is directly related to all forms of foreign capital inflows. Also, contributing to the literature on trade and economic growth, Ram (1976) estimated this relationship for India for the period 1950 to 1971. He claimed that exports performed a dominant role in the economic growth of India during the period under consideration. By utilizing a double-log transformation regression model, he was able to generate elasticity values. He noted that a 1 percent increase in the earnings of total exports is associated with a 0.73 percent rise in economic growth. The use of double-log transformation regression models, which allowed

the researcher to determine the responsiveness of economic growth to changes relating to the independent variables used in the model is highly commendable.

Fajana (1979) observed the existence of a positive and strong relationship between export and output changes, and hence provides empirical support for the thesis that trade has been an important factor in Nigeria's growth. Also, his results suggest that exports have greater impact on the economic growth of Nigeria in relation to the inflow of foreign capital. His model used visible trade balances, and current account balances as measures of foreign capital inflow. However, the use of net capital inflow as a proxy to foreign capital inflow would have most likely produced a more robust result.

Feder (1982) estimated the impact of the export sector, as well as, the non-export sector on economic growth for a sample of 31 semi-industrialized countries over the period 1964 to 1973. He dichotomised the national economy into two main sectors. The first sector produces export goods for international markets, while the second sector produces goods exclusively for the domestic market. Feder employed a simple production function model to test the marginal factor productivities in the two sectors that were identified in the study. He noted that the factor productivity obtained in the export sector was higher compared to the one that was obtained for the non-export sector. Feder maintained that international competition and foreign investment were mainly accountable for this difference. Therefore, a higher economic growth in the economy can arise by encouraging the relocation of economic resources from a less productive sector into a more productive sector.

Jung & Marshall (1985) used Granger causality test procedures to analyse the relationship between export growth and economic growth. The authors did not perform stationary and co-integration tests throughout the study. They found that export-led growth was supported in 4 of the 37 countries studied, namely, Indonesia, Egypt, Costa Rica and Ecuador. Further, Iran, Kenya and Thailand supported the growth-led export hypothesis. In addition, Greece and Israel supported the growth reducing exports hypothesis. Countries with rapid growth rate, such as, South Korea, Taiwan and Brazil provided no statistical evidence to support the export-led growth hypothesis.

Chow (1987) explored the causality between export growth and industrial development in eight Newly Industrializing Countries (NICs): Argentina, Brazil, Hong Kong, Israel, Korea, Mexico, Singapore and Taiwan. He used time-series data covering the period 1960 to 1980. The results indicate that there was no causality between export growth and industrial development for Argentina, while in Mexico there is a unidirectional causality running from manufactured goods exports to manufactured output. In addition, there is bidirectional causality between the growth of exports and industrial development in Brazil, Hong Kong, Israel, Korea, Singapore, and Taiwan.

Also, contributing to the discussion, Ahmad & Kwan (1991) investigated the relationship between exports and national income for 47 African developing countries during the period covering 1981 to 1987. The study uses both pooled time-series and cross-sectional data. Their finding suggests that, there is no evidence of causality for most of the countries that were investigated. However, in some cases, the study observed a rather weak causality running from economic growth to exports in some of the countries used in their study.

Jin (1995) probed into the export-led growth hypothesis for the "Four Little Dragons", namely, Hong Kong, Singapore, South Korea and Taiwan, using quarterly data from 1973 to 1993. He used a five-variable VAR model and the relationship between exports and economic growth was analysed though Variance Decomposition (VDC), Impulse Response Function (IRF) and integration. All variables were found to be of integration one. Since there was no existing co-integration, no error correction terms needed to be included in the VAR model. The result also indicated that exports have a significant effect on the growth of the four economies that were investigated. Furthermore, a bidirectional relationship from economic growth to export growth was found significant in all these countries, except Taiwan. IRF's also provided feedback from export growth to economic growth and vice versa in all four countries. Therefore, the results, indeed, supported the export-led growth hypothesis.

Baharumshah & Rashid (1999) measured the connection between export and income in respect of Malaysia by employing quarterly data. They included imports in the system equation in order to explain Malaysia's economic growth. The Johansen procedure and vector error correction model (VECM) also came into play in the study. The authors tested the long-run relationship between export, imports and GDP as a result of multivariate co-integration. VECM also suggests that export causes economic growth. The hypothesis that growth in exports doesn't Granger cause growth in GDP is rejected for both agriculture and manufacturing exports. In addition, the hypothesis that growth in output does not Granger cause exports is also rejected. Hence, the results have a two-way Granger causality relationship between growth rate of exports and growth rate of output. Granger causality tests also rejected non-causality from exports to imports, as well as, from imports to exports. This means that, there is a feedback relationship between all categories of exports and imports in the long-run.

Love & Chandra (2004) investigated the relationship between exports and economic growth over the periods 1950 to 1998, 1970 to 2000 and 1965 to 1997 for India, Pakistan and Sri Lanka respectively. They use Johansen's multivariate co-integration framework for testing the causality. Their findings conclude that export growth effects economic growth positively in the case of India and Pakistan, and that; there is bidirectional causality between exports and growth in the case of India. However, there is no evidence of causality in the case of Sri Lanka, since the

terms-of-trade coefficient has a negative sign, indicating that any increase in exports and income will affect the terms-of-trade negatively.

Yang (2008) examined the relationship between exports and economic growth over the period 1958 to 2004 based on 44 countries. The results from most of the countries used in the study gave credence to the export-led growth hypothesis, while a few of them proved otherwise. The author also observed that, due to the problem of data availability in the developing countries, the real exchange rate can serve as a good tool for distinguishing between situations of exports-driving growth and growth-driving exports' situations.

Kehinde et al., (2012) studied empirically the impact of international trade on economic growth in Nigeria from 1970 to 2010. The study made use of multiple regression models, co-integration and error correction procedures. The study revealed that three variables, namely, export, foreign direct investment and exchange rate are statistically significant at 5%. These variables were also observed to be positively related to real GDP, while other variables such as import, inflation rate, openness exert a negative influence on real GDP. The study demonstrates that increase participation in global trade helps Nigeria to reap static and dynamic benefits of international trade. Both international trade volume and trade structure towards high technology exports resulted in positive effect on Nigeria economy. In addition, the authors recommended that the government of Nigeria should design appropriate strategies that can boost exports, stimulate foreign direct investment and maintain exchange rate stability in order for its economy to achieve greater growth rates.

Arodoye and Iyoha (2014) econometrically assessed the relationship between foreign trade and economic growth in Nigeria by employing quarterly time-series data-sets for the period 1981 to 2010. A vector autoregressive model was used, in order, to account for feedbacks. The result of the study confirms a stable, long-run connection between foreign trade and economic growth. The result also confirms that the principal sources of Nigeria's economic growth variation are largely propelled by foreign trade innovations and "own shocks". The study, therefore, considers the adoption of trade as a potent policy instrument for catalyzing the process of economic growth in Nigeria. The technical procedures used by the authors of this study are highly penetrating, and therefore, commendable.

The inferences that could be drawn from the existing literature reviewed, so far, are the following. In a number of countries foreign trade, indeed, contributed to economic growth in various ways. However, the extent to which foreign trade will boost economic growth varies from country to country. The fundamental question that follows is: Will Namibia necessarily enjoys greater economic growth as a result of increased foreign trade? This is an empirical issue that needs further probing. To the best of the knowledge of the researchers, no study based on

Namibia has specifically investigated the possibility of a dynamic relationship between foreign trade and economic growth through the use of Vector Auto-Regression (VAR) technique. This further justifies the need for this kind of study so as to produce high level econometric analysis for the country.

4. Methodology

4.1. Methodological Framework

The study employed the Vector Auto-regression (VAR) approach. VAR is a system of dynamic linear equations where all the variables in the system are treated as endogenous. The reduced form of the system gives one equation for each variable, which specifies that variable as a function of the lagged values of its own and all other variables in the system (Gujarati, 2004). In general, a VAR model describes the evolution of a set of k variables (endogenous variables) over the same sample period (t = 1,T) as a linear function of their past evolution. The variables are collected in a k x 1 vector y_t, which it has as the ith element $y_{i,t}$ the time t observation of variable y_i.

Let $Y_t = (y_{1t},\ y_{2t},\ ...y_{nt})'$ denotes an *(n x 1)* vector of time series variables.

A reduced form ρ – lag vector autoregressive (VAR(ρ)) model has the form;

$$Y_t = c + \Phi_1 Y_{t-1} + \Phi_2 Y_{t-2} + ... + \Phi_\rho Y_{t-\rho} + \varepsilon_t \qquad (4.1)$$

Where there is a vector of endogenous variables, c is k x 1 vector of constants (intercept), Φ_i are (k x k) coefficient matrices (for every i=1,…,p) and ε_t is an (k x 1) vector of error terms satisfying the following conditions;

$E(e_t) = 0$ −error term has mean zero

$E(e_t e_t') = \Omega$ − the contemporaneous covariance matrix of error terms is Ω (n x n positive definite matrix) and

$E(e_t e_{t-k}') = 0$ for any non-zero k – there is no correlation across time; i.e. no serial correlation in individual error terms.

Therefore, the vector Y_t is defined using an unrestricted vector auto-regression (VAR):

$$z_t = A_1 z_{t-1} + ... + A_k z_{t-k} + \mu_t \qquad (4.2)$$

where; z_t is ($n \times 1$) vector of variables; A_i is an ($n \times n$) matrix of parameters, u_t denotes residuals or ($n \times 1$) vector of innovations. The vector, z_t, consists of (n) potentially endogenous variables. Each variable in the model is regressed on both its lagged values and the lagged values of other variables in the system. From the

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existing literature, the following variables has been identified; real gross domestic product (RGDP), exports (XPORT), foreign direct investment (FDI) and exchange rate (EX). The benefit of this approach is its ability to model all endogenous variables jointly as opposed to one equation at a time.

4.2. Data Sources

The study utilised secondary data-sets. More elaborately, the study uses macro-economic time-series annual data-set for the period 1990 to 2013. The explanatory variables used in this study are exports, foreign direct investment and exchange rate, while real gross domestic product serves as the dependent variable. The macro-economic data-set used in this study are sourced from the Bank of Namibia, National Planning Commission of Namibia and the Namibia Statistical Agency.

5. Econometric Results

5.1. Testing for Unit Roots

This test is used to establish either the presence or absence of unit roots in the model. Estimations based on time-series data will in most cases either produce spurious or nonsensical results if the datasets are not stationary over time, hence the necessity of this procedure. In this regard, the Augmented Dickey-Fuller (ADF) test is employed because of its technical superiority over most of the other techniques of testing for univariate characteristics of time series. Table 1 presents the results of the unit root tests for the time-series as utilized. The results show that all the variables are stationary in levels with the exception of real GDP and exports. This implies that foreign direct investment and exchange rate are of order of integration I (0) processes as confirmed by both the ADF and PP tests. Upon establishing that some series are non-stationary in levels, the next step was to difference them once. Taking the first difference resulted in real GDP and exports variables becoming stationary, suggesting that they are of I (1) processes. Against this background, the hypothesis of the presence of a unit root was rejected.

Table 1. Unit root tests; ADF and PP in levels and difference

Variable	Model Specification	ADF	PP	ADF	PP	Order of Integration
		Levels	Levels	First Difference	First difference	
	Intercept and trend	-2.257	-2.024	-3.670**	-5.043**	1
$\ln RGDP_t$	Intercept	-0.469	-0.456	-3.670**	-5.067**	1

$\ln XPORT_t$	Intercept and trend	-2.126	-1.562	-1.834	-4.818**	1
	Intercept	-0.759	-0.386	-1.914	-4.857**	1
$\ln FDI_t$	Intercept and trend	-3.029	-5.338**	-5.955**	-7.940**	0
	Intercept	-2.666**	-5.386**	-6.237**	-8.154**	0
$\ln EX_t$	Intercept and trend	-3.735**	-4.353**	-4.006**	-6.262**	0
	Intercept	-3.836**	-4.368**	-3.972**	-6.318**	0

Notes: ** means the rejection of the null hypothesis at 5%

Source: Author's compilation

5.2. Testing for Co-integration and Vector Error Correction Model Estimation

Table 2 displays the results for the Johansen co-integration test based on a VAR system of four variables. The null hypothesis is that there is no co-integration among the variables. Both the Trace and Maximum Eigen value tests show that there is co-integration among the variables. This is because the calculated t-statistics are consistently greater than the critical value at 5 percent significance level. In this regard, the null hypothesis of no co-integration is rejected and that indeed, there are co-integrating vectors amongst these variables. This provides a prima facie justification for the estimation of a vector error correction model. The long-run relationship equation is obtained and the coefficients are normalized in order to express one endogenous variable as a function of the rest. The result of the normalized co-integrating equation is as follow:

$$\Delta \ln RGDP = 1.011 + 0.163\Delta \ln XPORT + 0.167\Delta \ln FDI + 0.840\Delta \ln EX$$
(5.1)

From the above results, the null hypothesis of no long-run relationship between the dependent and independent variables is rejected. In fact, there is a positive relationship between economic growth, exports, foreign direct investment and exchange rate. In particular, a 1 percent increase in export results in a 16.3 percent jump in economic growth, while a 1 percent increase in foreign direct investment leads to a 16.7 percent rise in economic growth. Similarly, a 1 percent change in exchange rate will result in a rise in economic growth to the tune of 8.4 percent.

Table 2. Johansen Co-integration Test

Note: Both the Maximum-Eigen and Trace tests indicate 1 co-integrating equation at the 0.05 level.

Source: Author's compilation

5.3. Stability Tests

This study adopts various diagnostic tests in order to confirm the stability of the econometric model used in the study. In this regard, the study tested for serial correlation, heteroscedasticity and normality. The results confirmed the absence of autocorrelation and conditional heteroscedasticity. Further, the model was also found to be normally distributed and, indeed, stable. These results are displayed in Table 3.

Table 3. Diagnostic Checks

Test	Null hypothesis	t-statistic	Probability
Langrange Multiplier (LM)	No serial correlation	33.823	0.411
Jarque-Bera (JB)	There is normality	11.290	0.504
White (Chi-square)	No conditional heteroscedasticity	40.591	0.179

Source: Author's compilation

5.4. Granger-Causality Test

Since the estimations concerns foreign trade-economic growth nexus, and are carried out within a dynamic configuration, it is of utmost importance to establish whether these variables can predict one another using the Granger-causality test. In particular, the Granger-causality statistics are examined to determine whether lagged values of one variable do help to predict another variable. Table 4 summarizes the results of the Granger-causality tests for the four-variable VAR. It should be noted that the p-values associated with the F-statistics helps to determine whether the relevant sets of coefficients equals to zero. The results show that exports, indeed, assists in predicting output. This suggests Granger-causality running from exports to economic growth. In other words, Namibia government, through amended policy implementation, would need to increase its export activities in order to experience economic growth.

Table 4. Granger-Causality Test

	Dependent Variable in Regression			
Regressor	RGDP	XPORT	FDI	EX
RGDP	0.00	0.379	0.296	0.839
XPORT	0.004**	0.00	0.550	0.834
FDI	0.250	0.755	0.00	0.974
EX	0.353	0.985	0.847	0.00

Notes: (a) ** means the rejection of the null hypothesis at 5%.

Source: Author's compilation

6. Conclusion and Recommendations

This study investigated the dynamic relationship between foreign trade and economic growth in Namibia, using modern econometric time-series procedures. Firstly, the study found positive relationships amongst the four variables used in the study. This positive relationship suggests that the economy of Namibia can potentially be expanded by means of foreign trade. The result is also in line with economic theory as analysed in the study. Secondly, the study found that economic growth responds stronger to changes in exports and foreign direct investment compared to changes in exchange rates. Thirdly, co-integrating relationships were observed amongst the variables used in the study. This suggests a long-run relationship amongst these variables. Lastly, the study found that exports indeed Granger-cause economic growth.

The main recommendations flowing from the results of the study which are applicable to Namibia and similar developing countries are the following:

Diversification strategy: Although diversification of the economy has been the driving objective of the country's trade policy, Namibia is still far from realising this noble objective. Namibia should as a matter of priority, commit more logistical and financial resources towards the fulfilment of this important objective.

Exports and value-addition activities: Over the years, most of the exports of Namibia consisted of primary products namely solid minerals, fish, meat and fruits. These products normally attract low rewards in terms of their value in foreign markets. Besides, they are also not competitive at this stage. Further, in most cases their prices and demand are externally determined. It is recommended that value-addition centres be set-up in order to add some degree of value to these exports by way of processing before these products are exported. In this regard, the country needs to consider establishing polishing factories for purposes of polishing its solid minerals, as well as strengthening its manufacturing capacity to process items like fruits into drinkable forms just to mention a few processes.

Trade and investment promotion: Investment whether domestic or foreign direct investment (FDI) could be used to increase a country's economic activities and further induce more trade with the possibility of positively affecting a host country's economic growth. Therefore, Namibia should aggressively encourage both domestic investment and FDI in its export-oriented industries by providing the necessary incentives and support.

Regional trade agreements and economic blocs: Regional economic blocks are increasingly playing a useful role when it comes to the promotion of trade, especially foreign trade. Analogously, trade agreements can help smaller economies like Namibia to attract domestic and foreign investment by creating larger markets and reaping dynamic gains from trade. In this regard, Namibia should explore in greater terms the opportunities that its membership of SACU and SADC offers, while correspondingly breaking new grounds for its exports through new trade agreements and partnerships.

Transport infrastructure development: Infrastructure in the form of a reliable transportation system/network (air, road, sea, railways) serves as an impetus, when it comes to trade, especially foreign trade. There is an urgent need for the Government of Namibia to overhaul its transportation system, while correspondingly considering expanding it.

Trade facilitation through efficient customs' procedures: Efficient customs procedures will help a country to offer a business-friendly environment for companies. In addition, export procedures and which are efficient, will facilitate export-oriented projects. In Namibia, export procedures and clearance systems are inefficient. In order for Namibia to realise the full benefits from participating in foreign trade, it must be ready to eliminate these bottlenecks through a general overhauling of its customs clearance systems.

Import tariffs reduction: High barriers to imports can induce tariff jumping, as well as negate the competitive advantages offered by a host country and consequently affect investors' choice of location. Tariffs on goods entering into Namibia are generally considered to be on the high side. Given this situation, Namibia should consider a general downward revision of its tariffs system. In this regard, preference should be given particularly to capital imports and intermediate inputs meant for manufacturing.

Export promotion strategies and investment: Export promotion strategies can positively contribute to export competitiveness. This is even considered to be more important in the launching of new exports. In this context, Namibia should actively participate in forums such as trade fairs, trade shows and trade exhibitions within and outside its territory.

Access to banking services: Access to banking services also matters to encourage a country's export-oriented industries. In this regard, there is a strong need for Namibia to improve upon its banking system/infrastructures in order to make it efficient, competitive and responsive, when it comes to providing various banking services to its export-oriented industries.

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Monetary Policy, Business Cycles and Sectoral Response in Pakistan

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Abstract: The study takes a first step in investigating the monetary transmission mechanism in Pakistan at a sectoral level in relation with business cycles. The key **objective** of the study is to empirically investigate the impact of monetary shocks on output of major sectors. Using VAR approach on quarterly data spanning from 1990:1 to 2012:4, we examine whether monetary policy shocks have different sectoral effects. We also incorporated business cycles to analyze weather sectoral effects of monetary policy undergone any changes during different phases of business cycles. Results obtained from VAR framework confirm the presence of sector-specific variation in the real effects of monetary policy. Our results also suggest that variation in output is more interest sensitive in recovery as compared to recessionary time periods. The results, therefore, seem to confirm potential disparities in the effect of monetary policy on real sectoral activities. It is a very unique contribution in empirical literature while at the same time it is a valuable input for accessing monetary policy implications for real sector growth in Pakistan.

Keywords: CMR; Sectors; output; Recession; Recovery

JEL Classification: E500; E520

1. Introduction

Monetary policy is one of the key policy issues in any economy. The effects of monetary policy on real economic variables have extensively debated in theory as well as in empirical research. In recent times however, monetary economist as well as policy makers have agreed upon the fact that monetary policy affects the real economic activities at least in the short run (Ibrahim, 2005). Subsequently recent focus of monetary authorities have shifted towards other aspects of monetary policy, rather than addressing the question of whether money matters in the determination of real economic variables like output and employment level. One important aspect that has captured the interest of both policy makers and monetary

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economists is the disaggregated effects of monetary policy (Peersman & Smets, 2005).

Generally there are two main options for disaggregating an economy, either on regional basis or on the basis of major sectors contributing in the aggregate production of that economy. Being conducted in a small open economy, this study focused on second option i.e. the sectoral impacts of monetary policy. Since economy of Pakistan does not show smooth trend in output growth, therefore we extended our analysis by incorporating business cycles in our study. After completing three business cycles since independence, economy of Pakistan is currently passing through the recessionary phase of fourth business cycle (Mahmood & Arby, 2012).

Although the impacts of monetary shocks on aggregate production abound in the literature, an analysis of the sectoral response to monetary impulses had suffered neglect. For Pakistan it is vital to empirically investigate the transmission mechanism of monetary policy at the sectoral level for two important reasons. First, except Alam and Waheed (2006) we found not any other study that has been conducted by utilizing the latest data from major sectors. Therefore there is a need to incorporate the emerging sectors in analysis based on their contribution in aggregate production. Secondly, our analysis of sectoral response would assist in explaining the transmission mechanism of monetary policy to major sectors of the economy, and ultimately enhance the understanding of the monetary policy mix to be implemented in order to ensure balanced and sustainable growth in the economy.

Monetary policy affects the different sectors of an economy differently. There are many reasons for differences in sectoral response to monetary shocks including nature and volume of production, and access to credit markets of a specific sector (Ahmed *et al* 2005). A number of studies have justified the sectoral differences in response to monetary policy both in developing as well as developed countries. Leading explanations include Gertler and Gilchrist (1994), Ganley and Salmon (1997), Domac (1999), Serju (2003) and Ibrahim (2005). The general conclusion from this literature is that there exists heterogeneity across sectors in response to monetary shocks. Therefore there is a need to analyze the impact of monetary policy shocks on real output of different sectors in Pakistan economy.

We examine the sectoral impacts of monetary policy by utilizing quarterly data spanning from 1990:1 to 2012:4 from six major sectors. These sectors are: Livestock (S1), large scale manufacturing (S2), small scale manufacturing (S3), transport, storage, and communication (S4), wholesale and retail business (S5), and finance and insurance (S6). To this end, we utilized Vector Auto Regressive (VAR) framework to access the dynamic response of sectoral output to monetary shocks. Our study is based on following key objectives:

• To empirically investigate the impact of monetary policy shocks on sectoral output

• To analyze the changes in the sectoral effects during different phases of business cycle in response to monetary policy

This study is organized as follows. Coming section presents a brief and relevant literature on current research issues, while section three provides background information about monetary policy, business cycles and contribution of major sectors in Pakistan economy. Fourth section presents research methodology along with data sources and variables included in study. Results and discussions are included in section five, while section six concludes the study by discussing key outcomes and recommendations.

2. Related Work

Previous research on monetary issues has conducted on investigating the impacts of monetary shocks on aggregate variables. In recent years, however the focus of researchers and policy makers has shifted to disaggregated impacts of monetary impulses, especially on regional and sectoral impacts of monetary shocks. One of the first remarkable attempts to investigate the monetary transmission mechanism at the disaggregated level was the study conducted by Gertler and Gilchrist (1994). Study compared the cyclical behavior of large and small manufacturing firms, and responsiveness of these two types of firms to monetary shocks in UK economy. Data obtained from quarterly financial reports were estimated over the period of 1958 to 1993 by using bivariate VAR methodology. Empirical findings revealed that in response to tight monetary policy, small firms face substantial contraction as compared to large scale manufacturing firms due to their liquidity constraints.

In order to investigate the possible asymmetric effects of monetary transmission mechanism at disaggregated level, Hayo and Uhlenbrock (1995) empirically investigated the output of major industries in Germany. Study utilized the macroeconomic setting by mean of a Vector Auto Regressive (VAR) framework and estimated the monthly output from above mentioned industries over the period of 1978 to 1994. Empirical results revealed that eight industries showed significant and positive output reaction while four industries exhibited negative and significant price effects.

Ganley and Salmon (1997) empirically estimated the output of different industries from 24 different sectors of UK economy. In line with existing literature on this issue, study utilized VAR framework for empirical analysis. Different industries were selected from four major sectors of economy including production, services, agriculture and construction. Results provided the evidences of sectoral

heterogeneity in response to unpredictable monetary impulses. Moreover interest rate channel was found significant in affecting the output of major industries.

For analyzing the transmission mechanism of monetary policy to different sectors, Cimadomo (2002) empirically estimated the systematic effects of monetary policy to different sectors in US economy. Study included the output of industry, primary metals, food industry, textile, and electrical machinery for empirical analysis. Results obtained from factor model framework revealed that systematic monetary policy affects the different sectors of economy heterogeneously. Serju (2003) analyzed the response of the different sector to monetary policy shocks in Jamaica. The results obtained from a structural VAR model indicated that monetary shocks generate a cumulative deterioration in the value added of the economy. Empirical findings revealed that most of goods producing sectors affected negatively by tightening of monetary policy. On the other hand financial sector was found vulnerable to such interest rate shocks in the short term. Study confirms the presence of sectoral disparities in response to monetary shocks.

Most of the studies in the literature of monetary economics used VAR framework for analyzing the disaggregated impacts of monetary policy. Bernanke *et al* (2003) took an early step in modifying the traditional VAR methodology used for monetary transmission mechanism. Results revealed that for properly identifying the monetary transmission mechanism the information obtained from factor-augmented VAR (FAVAR) methodology is indeed important. Overall results of study provided a comprehensive picture of the effects of monetary policy on the economic performance of different sectors of an economy.

Ibrahim (2005) empirically estimated the effects of monetary policy shocks on aggregate output as well as on output of eight different sectors in Malaysia. Empirical estimations obtained from VAR framework revealed that output of manufacturing, construction, business services sectors, finance, insurance, and real estate decline more than total output in response to positive interest rate shocks. By contrast, agriculture, mining and quarrying, electricity, forestry and fishing, gas and water were found relatively less sensitive to interest rate changes. Study confirmed the existence potential disparities in the effect of monetary shocks on the real output of different sectors within an economy.

In case of Pakistan economy, Alam and Waheed (2006) took first step in investigating the monetary transmission mechanism at sectoral level. Study also incorporated the structural reforms of economy taken in 1990s. Following the literature, study estimated the VAR model by using quarterly output of major sectors over the period of 1973:1 to 2003:4. Empirical results confirmed the existence of sectoral differences in response to monetary shocks. Specifically results indicated that output of wholesale and retail trade, large scale

manufacturing, and insurance and finance decline significantly in response to tight monetary policy.

Fuentes and Marrero (2010) empirically analyzed the sectoral asymmetries in response to monetary shocks in Spain over the period of 1988 to 1998. For the identification of monetary shocks quarterly data was estimated from different industries by employing VAR model. Results of the study were consistent with literature and confirmed the presence of sectoral differences in response to national monetary shocks. On the other hand Gabor (2012) used a structural factor model for analyzing the sectoral heterogeneity in response to monetary policy shocks in Hungary. In line with previous VAR based studies, aggregate variables indicated similar results for impulse responses. However, the sectoral responses to monetary policy shocks revealed considerable heterogeneity. In particular, sectors which are more dependent on external finance showed larger output responses, while healthier corporate balance sheet sectors implied weaker price responses.

3. Background Information

Monetary management is the responsibility of central bank in any economy. The State bank of Pakistan (SBP) was established in July 1948 under the State bank of Pakistan order 1948. The prime objective for the establishment of central bank was to manage the monetary and credit system of the country. Central Bank was assigned broad macroeconomic management objectives including stability of prices, sustainable economic growth, minimum unemployment rate, stable exchange rate, effective management of financial market, and appropriate level of foreign exchange reserves. Before 1990s monetary policy was designed and implemented by controlling credit and interest rate in the economy. At that time banking and financial sectors were not playing active role in Pakistan due to the fact that almost seventy percent of commercial banks and financial institutions were operating under public sector. Subsequently in 1990s government of Pakistan introduced reforms in financial and banking sectors and reconsidered the monetary policy by focusing on indirect approach by introducing market instruments to achieve stable and sustainable macroeconomic environment in the economy. In order to maintain liquidity position in financial sector, after 1995 SBP switched towards different policy instruments including window discount borrowing, open market operation, Stationary legal reserve (SLR), and Cash reserve ratio (CRR) (Ahmed et al, 2005).

Following figures shows call money rates during overall as well as recession and recovery time periods:
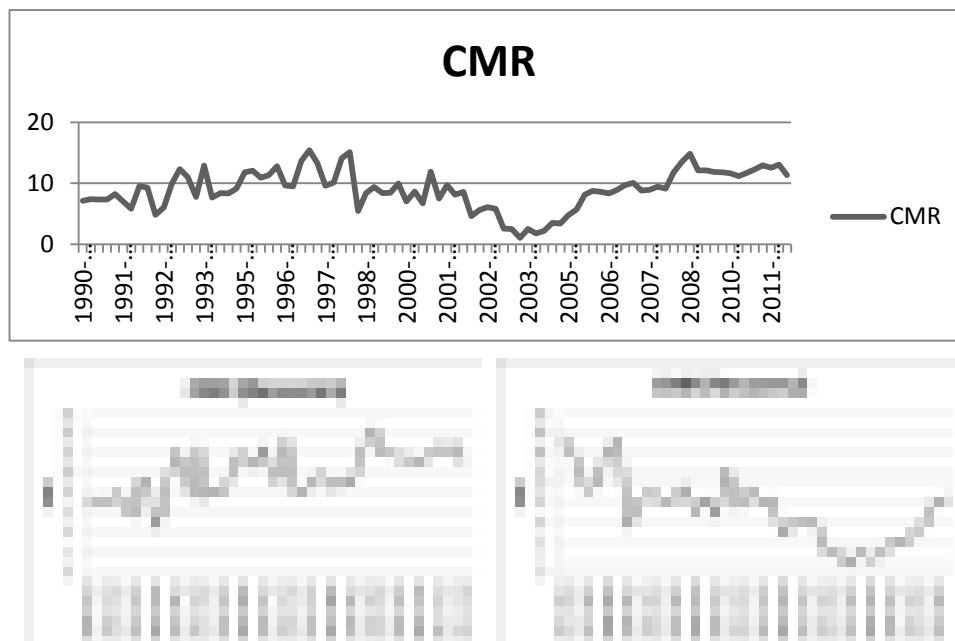
Figure 3.1. Call money rate (CMR) during 1990Q1 to 2012Q4

Above figures are obtained from quarterly data used for current study. Call money rate remain in the range of 2% to 15% from 1990 to 2012. However it is evident from above figures that central bank adopted tight monetary policy in recession while loose monetary policy in recovery time periods. As an economy is comprised of different sectors, with every sector having different financing needs, no inference can be drawn from aggregate results about sectoral effects of monetary policy. This is an emerging research area and current study is in line with investigating disaggregated effects of monetary policy on major sectors of Pakistan economy. Following table shows the contribution of major sectors in Pakistan economy as well as borrowing of these sectors from different banks and financial institutions.

Table 3.1. Contribution of major Sectors in Pakistan Economy

S/No	Sectors	%Contribution in GDP	Credit Borrowing (Million Rs) 2013
1	Live Stock	11.8	34271
2	Manufacturing (Large + Small)	12	1407763
3	Transport, S&C	13.7	88540
4	Wholesale and Retail	18.15	187169
5	Finance and Insurance	3	47626

To this end we can say that there exists sectoral heterogeneity with regard to credit requirements as well as their contribution in aggregate economy. GDP being generally accepted indicator of economic growth comprises of four types of variations including short run fluctuations, long run trend, seasonal variations and business cycles. During a complete business cycle economy goes through four different phases i.e. recession, trough, recovery and peak. During different phases of business cycles macroeconomic variable react differently to monetary policy shocks. Moreover effectiveness of monetary policy fluctuates during different phases of business cycles. Current study will empirically test this line of argument in coming chapters. If we look at long run growth trend of Pakistan economy, there seems no sustainable path for economic progress. Following tables shows duration of different business cycles in Pakistan.

Table 3.2. Business Cycles in Pakistan

Business Cycle	Recession	Trough	Recovery	Peak
First cycle: 1949-1965	1949-58 (9 years)	1958	1959-65 (7 years)	1965
Second cycle: 1966-1985	1966-75 (10 years)	1975	1976-8 (10 years)	1985
Third cycle: 1986-2005	1986-97 (12 years)	1997	1998-2005 (8 years)	2005
Fourth cycle:	2006-12	2012		

Source: Mahmood and Arby 2012.

4. Our Approach

In line with existing literature our research model includes three variables i.e. sectoral output, monetary policy indicator, and price level. We included six major sectors based on their contribution in GDP as discussed earlier. These sectors are: Livestock (S1), large scale manufacturing (S2), small scale manufacturing (S3), transport, storage, and communication (S4), wholesale and retail business (S5), and finance and insurance (S6). Following Alam and Waheed (2006), Ibrahim (2005), and many other studies, we represented price level by consumer price index (CPI), while call money rate has been used as monetary policy indicator in current study. Study utilized quarterly data spanning from 1990:1 to 2012:4. Business cycles have been incorporated by introducing dummy variables in model.

In line with existing literature on subject matter, we utilized Vector Auto Regressive (VAR) framework to access the dynamic response of sectoral output to monetary shocks. VAR is one of the methods that can be used for regression-based forecasting (one step ahead forecasting or multi step ahead forecasting). VAR models are also appropriate models for describing the data generation process

(DGP) of time series variables (small or moderate data set) and all variables are often treated as endogenous (Sims 1980). Restrictions are usually imposed with the help of some statistical techniques instead of prior beliefs based on uncertain theoretical considerations. When we have several time series and we want to check the interrelationship between them, then VAR an also be used. Sims (1980) proposed this model and it is time series generalization of AR model and it is easy to estimate as it uses the OLS estimation technique. In VAR models each variable is expressed as a linear combination of lagged values of itself and lagged values of all other variables in the group. In other words when a dependent variable has its own lagged variable on RHS and lagged independent variables then this model is called VAR model and number of independent variables are indigenous variables and there is no exogenous variables in the system of equations. The term Auto regressive is used due to presence of lagged values of dependent variable on RHS. The term vector is used because of presence of vector of all the variables (Stock & Watson, 1990).

The critical part of VAR model is estimation and there are two approaches to the estimation of VARS; one is the direct estimation of the system of equations (Unrestricted VAR) and it can be valid only when all the series are stationary. According to Ramaswamy and Slok (1998) the second approach is to determine the number of possible co-integration vectors (restricted VAR, where number of restrictions has been applied on the concerning co-integration vector) and this method is appropriate when the independent variables are not stationary.

Another important issue concerning with the estimation strategy is about selection of the appropriate specification of the VAR. Specification involves decision about whether the VAR should be estimated in pure differences, or in levels without imposing any restriction, or as a vector error correction model (VECM) to allow for the presence of co-integration. If the variables are non-stationary and are not co-integrated suggest a VAR model in first differences and if the dynamic interactions among co-integrated variables exist then VAR should be modeled using a VECM. In other words VECM will be used only if co-integration exists between the variables, and the true co-integrating relationship is known and should have an economic interpretation. And if the impulse response functions generated from VECM, then those will imply that the impacts of monetary shocks are permanent. If the impulse response function are generate from simple VAR (unrestricted VAR) then those will be decided by data whether the effects of monetary shocks are permanent or not (Ibrahim 2005). The goal of VAR analysis is not only to obtain estimates of parameter, but to assess the interrelationship among the variables.

This study is concerned with the finding the monetary transmission mechanism for Pakistan at a sectors output level by using the quarterly data of different sectors. VAR is effective to use because of the simultaneous effect of each of the concerned

variables on each other; like Sectors outputs are affected by Money Market rate (Call Money rate) and money market rate is affected by sector output, and inflation (CPI) potentially affect the sectors output and sectors output potentially affect the inflation, similarly the call money rate and inflation can potentially effect each other. So the system of equations will be as follows:

$$Si_t = \sigma_0 + \sum_{j=1}^{k} \beta_j CMR_{t-j} + \sum_{j=1}^{k} \gamma_j Si_{t-j} + \sum_{j=1}^{k} \theta_j CPI_{t-j} + \mu_t \, ... \, (1)$$

$$CPI_t = \alpha_0 + \sum_{j=1}^{k} \beta_j CMR_{t-j} + \sum_{j=1}^{k} \gamma_j Si_{t-j} + \sum_{j=1}^{k} \theta_j CPI_{t-j} + \mu'_t \, ... \, (2)$$

$$CMR_t = \delta_0 + \sum_{j=1}^{k} \beta_j CMR_{t-j} + \sum_{j=1}^{k} \gamma_j Si_{t-j} + \sum_{j=1}^{k} \theta_j CPI_{t-j} + \mu''_t \, ... \, (3)$$

Where

CPI is consumer price index (Price variable), Si is the sectoral output (i = 1, 2… 6)

CMR is the call money rate (money market rate), K is the number of lags, t is the time period (22years, 88 Quarters), and μ, μ', μ'' error terms.

and each equation contains an error term (μ, μ', μ'') that has zero expected value given past information on all the variables and called Impulses or shocks or innovation.

Another important issue faced while estimating the VAR model is the selection of lag length because appropriate lag length selection is very important otherwise inclusion of too many lag lengths can lead to loss of degree of freedom and can also cause multicollinearity. And inclusion of less lag lengths may cause specification errors. One way to avoid these problems is to select the lag length with the help of certain criterion like AIC criteria, Beysian Criteria, Akaike criteria or Schwarz criteria. Some of these methods favor the trial and error methods and Akiake and Schwarz criteria favor the model with the lowest values of these criterions (Gujarati & Porter, 2008). Finally one can estimate the VAR model with the help of OLS by using certain Econometric packages and an interpret the results of coefficients and Impulse Response Functions and Variance Decomposition can also be obtained for forecasting purposes for any event of specific time series.

VAR model has many advantages and disadvantages as well. Advantages include that it's a simple methods having all the variables set as indigenous and we don't have to specify the indigenous and exogenous variables. It uses OLS method to estimate the coefficients which is the simplest and one of best econometric techniques of estimation that can be used for estimation of each equation separately. Results of VAR model are better than complex nature simultaneous equations methods. It gives us the methods for forecasting like Impulse Response Functions and Variance Decomposition with a single click.

Everything has some goods and some bad and VAR is no exception to them. Disadvantages of VAR are such that it is a theory based method which requires existing information where simultaneous equation model does not need it. VAR is better for forecasting than policy analysis. One of the critical issues faced while employing VAR is selection of lag length and if more lags are used then problem of loss of degree of freedom can be faced, and if less number of lag lengths are used then we may face the issues regarding specification of VAR model. Unless the sample size is large enough or some appropriate selection criterion is used, these problems will persist with VAR models. If we have large number of independent variables and all the variables are not stationary then problem of infinite vector of co-integration will exist and that lead to no solution model. Coefficients of VAR are difficult to interpret some times and need to estimate the Impulse response function, which traces out the response of dependent variable on the error term (Gujarati & Porter, 2008).

Following Alam and Waheed (2006) the unrestricted VAR model is applied and identified using Cholesky decomposition. For each system of equation, the following ordering was used: consumer prices, real output of sectors, and call money rate. The basic argument which is backed here is that a shock to interest rate has no contemporaneous effect on output. This assumption is implemented by enlisting real output and prices before call money rate. Technically, this assumption involves identification of monetary policy by using the residuals from the reduced form equation of interest rate and after that regress them on the residuals from the output and price equations. From the VAR estimates, we generate Impulse Response Functions which trace the response of shock on a variable through time to an unanticipated change in itself or other interrelated variables.

The main objective of this study is to find the reaction of real output of different sector of Pakistan economy to a monetary shock, so we only intend to derive the impulse-response functions which trace the reaction of real sectoral output to a one standard deviation shock to the interest rate (call money rate). In other words we use standard vector auto regression (VAR) framework and generate impulse-response functions of different variables and variance decompositions to assess

dynamic responses of sectoral production as well as sectoral production to monetary policy shocks.

5. Results and Discussions

5.1. Unit Root Analysis

As our research is based on time series data, therefore before proceeding we tested the stationarity of each variable. We subject each variable to standard augmented Dickey-Fuller (ADF) test. This is most commonly used unit root test in applied research. Results obtained from ADF test are summarized in table 5.1 below:

Table 5.1. Unit root (ADF) Results

Variables	Definition	t-stat	P-value	Level
S1	Livestock	-3.568	0.0085	I(1)
S2	Large scale manufacturing	-4.925	0.0001	I(1)
S3	Small scale manufacturing	-18.58	0.0001	I(1)
S4	Transport, S&C	-4.941	0.0006	I(0)
S5	Wholesale and Retail	-29.89	0.0001	I(1)
S6	Finance and Insurance	-11.97	0.0001	I(1)
CPI	Consumer Price Index	-4.339	0.0007	I(1)
CMR	Call Money Rate	-8.977	0.0000	I(1)
Critical values of ADF test for model with 'c, t' are (-3.96, -3.41, -3.13) respectively for 1%, 5% and 10%; Mackinnon (1991). Critical values of ADF test for model with 'c' are (-3.43, -2.86, -2.57) respectively for 1%, 5% and 10%; Mackinnon (1991).				

Based on the critical values for both constant and, constant and trend models of ADF test obtained from Mackinnon (1991), it is observed that all variables are stationary at 1% level of significance. Moreover our unit root test provided mixed results regarding the stationarity of variables. All variables are stationary at first difference levels with the exception of S4, which is stationary at levels. Data temporal properties presented in above table are necessary for selecting appropriate VAR specification. Based on these results we estimated unrestricted VAR model for each sector and results of VAR estimates are presented in next section.

5.2. VAR Results of Sectoral Output

Based on data temporal properties, we estimated unrestricted VAR model for each sector by following the strategy used by Ramaswamy and Slok (1998). As objective of the study is to analyze the impact of monetary shocks on sectoral output, we classify six sectors under consideration into two bases. First, we categorized the sectors according to magnitude of response to one standard deviation shock to interest rate shown by variance decomposition. Secondly we

also classified the sectors according to duration of response shown by impulse response functions.

Table 5.2. Variance Decompositions of Sectoral Output (% Response to CMR)

Period	S1 (LS)	S2 (LSM)	S3 (SSM)	S4 (TSC)	S5 (W&R)	S6 (F&I)
1	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	2.143232	0.536655	1.962947	0.438290	3.563529	1.338378
3	2.423996	0.504443	5.948705	2.034429	4.926051	2.987797
4	3.792436	1.086293	9.827771	4.762503	11.06028	3.329253
5	6.688344	3.442445	11.36721	7.666191	7.832588	3.731412
6	9.839859	4.544201	15.95144	10.66013	17.01449	3.702588
7	12.74996	6.793507	18.56723	12.10300	17.08250	4.611819
8	15.88609	6.932076	21.38911	12.42856	17.66951	4.565550
9	16.83455	6.656781	19.72183	12.48672	14.82073	7.032169
10	18.88759	6.396326	20.88762	**12.58609**	19.44173	6.794854
11	20.25314	**6.779684**	22.26994	12.37407	19.52830	8.446414
12	21.96673	6.310716	**23.30041**	11.88119	19.77638	8.355062
13	21.21882	5.592030	21.70007	11.27212	17.39664	10.11374
14	21.80734	5.079904	21.95955	10.73304	**20.49584**	9.939128
15	22.71317	4.818586	22.43289	10.27224	19.73430	11.48169
16	23.97736	4.477433	22.36126	9.863586	19.60003	11.21313
17	23.30818	3.977329	20.81933	9.498292	18.10104	12.49617
18	23.82808	3.566655	20.28544	9.138243	19.89222	12.26003
19	24.53185	3.311906	20.30641	8.777529	19.41963	12.96067
20	25.49753	3.151197	20.04751	8.410387	19.28658	12.87235
21	24.85624	2.920250	18.78029	8.050544	18.11221	13.58284
22	25.13085	2.696862	18.17040	7.720270	19.24535	13.62238
23	25.64780	2.547367	18.09171	7.439265	18.68516	14.22216
24	**26.34562**	2.500980	17.74832	7.228959	18.47990	14.17041
25	25.61780	2.414549	16.77257	7.085784	17.62111	**14.60363**

Variance decomposition confirms the existence of heterogeneity among the sectors in response to interest rate shocks. Among six sectors included in study, output of livestock (S1), small scale manufacturing (S3), and wholesale and retail business (S5) seem to be affected more as compared to output of large scale manufacturing (S2) transport, storage and communication (S4), and finance and insurance (S6). Moreover more than 20 percent variation in the output of livestock, small scale manufacturing, and wholesale and retail business is explained by interest rate shocks. Finally large scale manufacturing is the least affected sector due to monetary policy shocks.

Our results are consistent with other studies conducted in developing as well as developed studies suggesting that there exist potential disparities among different sectors in response to monetary policy shocks. Specifically our results are in line with Bouakez et al (2009). From above results we are inclined to agree with existing literature on subject matter which provides significant evidences for the presence of sectoral heterogeneity in response to interest rate shocks. As mentioned in chapter three, in case of Pakistan economy, manufacturing, wholesale and retail business, and livestock sectors are heavily dependent on bank loans. Therefore these sectors are more interest sensitive as compared to other sectors included in our analysis. Following the Ibrahim (2005) we believe that credit dependency is the major reason for the existence of potential disparities among sectors in the effects of interest rate shocks. Finally, based on above results we can conclude that credit channel is dominant in transmission mechanism of monetary policy in Pakistan.

5.3. Impulse Response Functions:

While variance decomposition shows the magnitude of response, impulse response function obtained from VAR estimates shows the duration of response of sectoral output to a one standard deviation shock in interest rate. Note that impulse response functions obtained from VECM suggest that monetary shocks are permanent. As we generated impulse response functions from unrestricted VAR model, therefore decision about whether effects of monetary shocks are permanent or temporary is based on actual data set. Impulse responses of different sectors included in study are shown below:
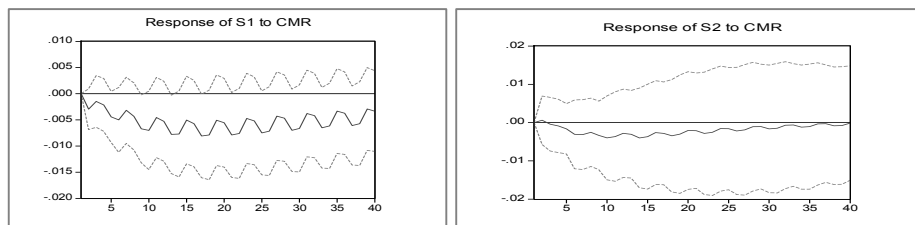

Figure 5.1. Livestock (S1) Figure 5.2: Large Scale Manufacturing (S2)
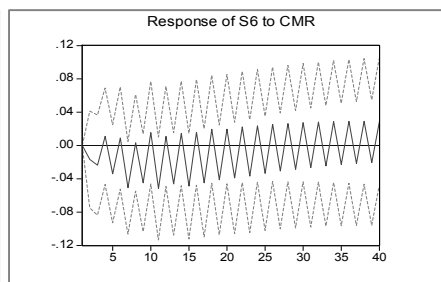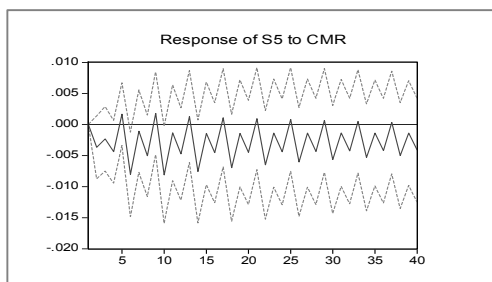
Above figure shows that interest rate shocks are persistent on Livestock for 25 quarters, and showed no convergence even after 40 quarters, which indicate that monetary policy affects the output of livestock in the long run. One possible explanation for this outcome is that this sector takes bank credit for developmental purpose rather than for financing working capital and short term business expenditures. Although magnitude of response is high in case of large scale manufacturing, during of response is comparatively low for this sector as shown in figure 5.2. After reaching its minimum in 13th quarter, interest rate shock starts convergence and it bottoms out at 36th quarter. From this result it can be concluded

that monetary policy does not effects the real output of large scale manufacturing in long run.
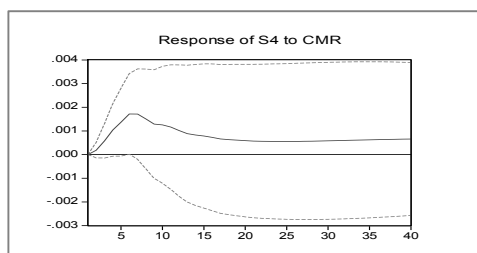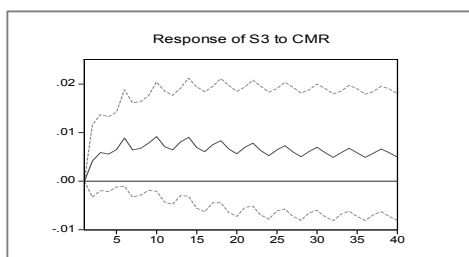
Figure 5.3. Small Scale Manufacturing (S3) Figure 5.4. Transport S&C (S4)

Interest rate shocks affect the output of small scale manufacturing for longer period of time as compared to large scale manufacturing. After reaching its maximum in 13th quarter, interest rate shocks starts to converge but do not bottom out even after 40 quarters. Since small scale manufacturing heavily depends on bank credit as mentioned in chapter 3, our results are in line with the argument of credit channel of monetary transmission mechanism. Figure 5.4 shows the duration of interest rate shock's response on transport, storage and communication sector. Results indicate that output response reaches its maximum in 6th quarter and then starts convergence. Duration of response is comparatively low for this sector as compared to livestock, large scale manufacturing, and small scale manufacturing.

Figure 5.5. Wholesale and Retail (S5) Figure 5.6. Finance and Insurance (S6)

Figure 5.5 shows the duration of response of the wholesale and retail businesses to interest rate shocks. Impulse response function generated from unrestricted VAR model reveal that although there is no consistent response in the output of this sector, but deviation of output due to monetary shocks start decreasing after 10th quarter. Finance and Insurance (S6) also follow the similar trend as shown in figure 5.6. From these results we can conclude that duration of response is comparatively low for these sectors as compared to other sectors included in study.

5.4. Business Cycles and Sectoral Response

For incorporating the impact of different phases of business cycles on real output of sectors we used two dummy variables i.e. D1 representing recession period while D2 shows recovery. We estimated unrestricted VAR model for each sectors while treating dummy variables as exogenous variable. From VAR we estimated variance decompositions to analyze the response of sectoral output to interest rate shocks in recession as well as in recovery. As mentioned earlier, in our study recession prevailed from 1990 to 1997 and from 2006 to 2012, while recovery period spanned from 1998 to 2005. We generated variance decompositions for 40 quarters and summarized maximum response of each sector in each phase of business cycle in following table.

Table 5.3. Maximum sectoral response during Recession and Recovery time periods

Sectors	Recession	Recovery
S1	17.85366	15.66884
S2	17.13609	36.64514
S3	40.95158	48.16958
S4	12.47741	13.32728
S5	18.90389	34.21617
S6	16.13043	16.24379

Values are obtained from variance decomposition and show % response to CMR.

Results obtained from Variance decomposition indicated several interesting outcomes. First, magnitude of response in the output of different sectors is different in different phases of business cycles. Secondly, magnitude of response is higher in recovery as compared to recession for all sectors with the exception of livestock. This outcome is mainly due to the fact that central bank of Pakistan has adopted loose monetary policy during recovery time periods as compared to recessionary time periods. Due to low interest rate and appropriate investment climate during recovery time periods, loose monetary policy shows higher and significant impact on growth rates of real output in different sectors. Thirdly, our results also indicated that large scale manufacturing (S2), and wholesale and retail businesses (S5) are those sectors which derived the economy from recession to recovery; since output differential is almost double between recession and recovery time periods for these sectors. Although other sectors also showed higher output response in recovery time periods, but difference in the output during different phases of business cycles is much higher for above mentioned sectors as compared to other sectors included in study. As discussed in chapter 3, these two sectors are mostly dependent on bank borrowings, therefore a little decrease in interest rate provide

significant opportunity to increase output for these sectors. Finally, we can conclude that credit channel is more dominant in monetary transmission mechanism in case of Pakistan economy.

Duration of sectoral response during recession and recovery time periods:

As mentioned earlier, impulse response function obtained from VAR framework can be used to analyze the duration of output response to interest rate shocks. For incorporating the different phases of business cycles, we generated impulse response functions for recession as well as recovery time periods. Results are shown in following figures:
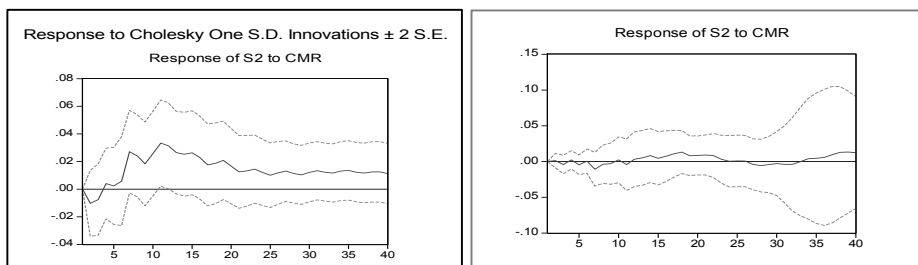
Figure 5.7. Livestock (S1)
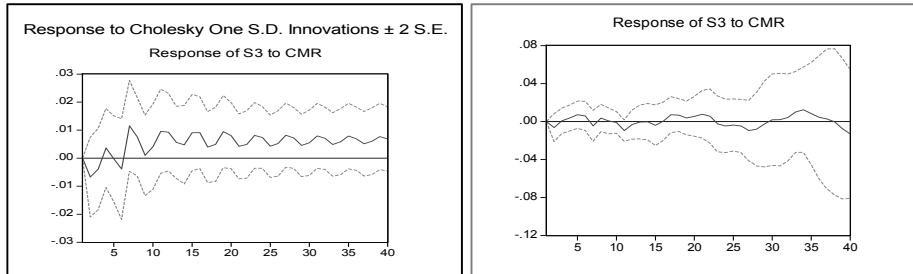
5.7A. Recession, 5.7B. Recovery
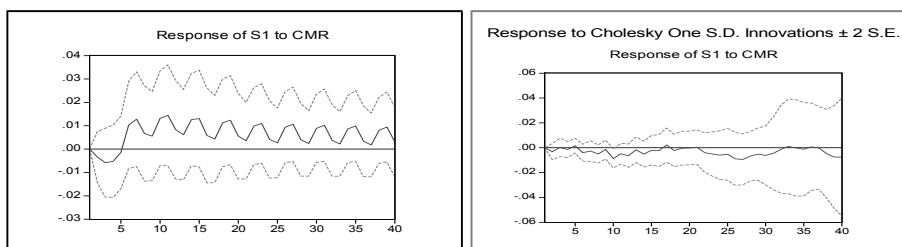
Figure 5.8. Large Scale Manufacturing (S2)

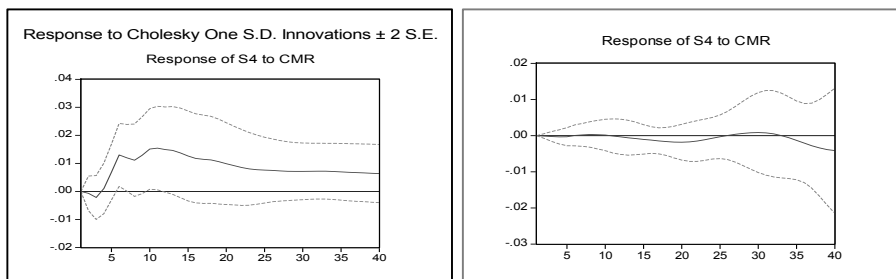**5.8A. Recession, 5.8B. Recovery**

Figure 5.9. Small Scale Manufacturing (S3)

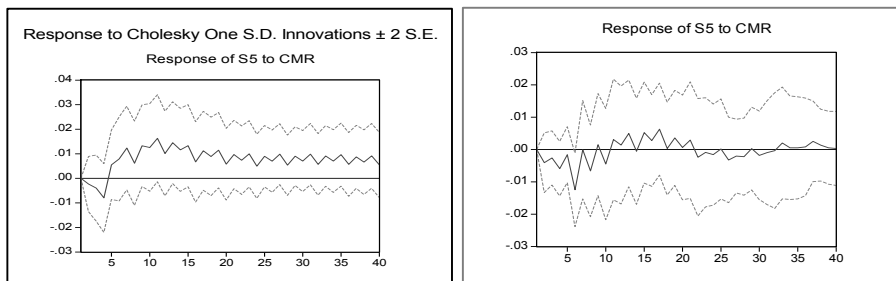**5.9A. Recession, 5.9B. Recovery**

Figure 5.10. Transport, Storage, and Communication (S4)

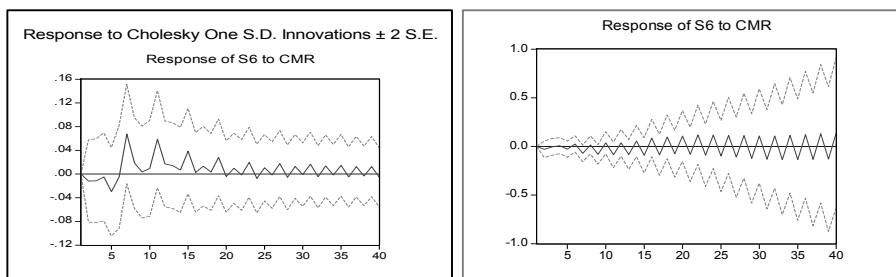**5.10A. Recession 5.10B. Recovery**

Figure 5.11. Wholesale and retail businesses (S5)

5.11A. Recession, 5.11B. Recovery

Figure 5.12. Finance and Insurance (S6)

5.12A. Recession 5.12B. Recovery

All sectors included in our study showed similar results regarding duration of response during different phases of business cycles. It is quite clear from figures 5.7 to 5.12 that duration of response is higher in recession as compared to recovery time periods. As mentioned earlier, duration of response can be analyzed by the convergence of output deviation toward horizontal axis within upper and lower bounds. Earlier the convergence in graph; less will be the duration of response and vice versa (Jansen et al, 2004). Since convergence occurred at latter quarters in recession as compared to recovery time period, therefore it can be concluded that interest rate shocks prevailed for longer period of time during recessionary time periods. Although there may be other logical reasons for this sort of outcome, for current study higher duration of response during recession is due to the fact that our data set consisted of total 88 observations (Quarters) out of which 58 observations fall under recessionary time periods.

6. Conclusion

The present study for the first time investigated the monetary transmission mechanism in Pakistan at sectoral level in relation to the business cycles. Study on one hand analyzed the sectoral impacts of monetary policy while on the other hand incorporated business cycles in order to investigate monetary policy stance during different phases of business cycles. For empirical analysis we included real output of six major sectors over the period of 1990 to 2012. Empirical analysis is based on Vector Auto Regressive (VAR) framework. From VAR we obtained variance decompositions and impulse response functions. For incorporating business cycles we used dummy variables. Our data set comprises of one recovery while two recession time periods. In line with existing literature on monetary issues, results obtained from empirical analysis confirmed the presence of sectoral differences in response to interest rate shocks. Among six sectors included in study, output of livestock (S1), small scale manufacturing (S3), and wholesale and retail business (S5) seem to be affected more as compared to output of large scale manufacturing (S2) transport, storage and communication (S4), and finance and insurance (S6). As these sectors are heavily dependent on borrowings from banks, it can be concluded that credit channel is prominent in transmitting monetary impulses to real economic activities.

As for as duration of response is concerned, we find evidence that livestock and small scale manufacturing are affected for longer time period as compared to other sectors included in study. We found no consistent response in the output of wholesale and retail businesses and finance and insurance. The disparities among sectors in the effects of interest rate shocks were also present when we incorporated business cycles in our study. Magnitude of response is higher in recovery as compared to recession time periods. This outcome is mainly due to the

fact that central bank of Pakistan has adopted loose monetary policy during recovery time periods as compared to recessionary time periods.

Our results also indicated that large scale manufacturing and wholesale and retail businesses are those sectors which derived the economy from recession to recovery. Moreover duration of response is higher in recession as compared to recovery time periods due to long lasting recessions in our economy. The differential effects of monetary policy across the sectors and different phases of business cycles are important for designing and implementation of monetary policy in Pakistan economy. As we have observed from data, monetary policy stance does not follow the standard theory of business cycles in our economy. Monetary Policy remained loose in the periods of booms when it was supposed to be tight while it remained tight in recessions when it was supposed to be loose.

Finally results of the study also raise a very important question regarding the reasons underlying sectoral differences in response to monetary policy shocks. One possible explanation may be the dominance of credit channel as sectors which are affected more are those that heavily depend on bank loans and therefore seems to be more interest sensitive. However this explanation is not enough for describing monetary transmission mechanism. A concrete analysis of this issue in the context of a small open economy is an important avenue for future research.

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Economic Costs of Patients Attending the Prevention of Mother-to-Child Transmission of HIV/AIDS (PMTCT) Services in Ethiopia: Urban-Rural Settings

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Abstract: Economic analyses of patients' costs are pertinent to improve effective healthcare services including the prevention of mother-to-child HIV/AIDS transmission (PMTCT). This study assessed the direct and non-direct medical costs borne by pregnant women attending PMTCT services in urban (high-HIV prevalence) and rural (low-HIV prevalence) settings, in Ethiopia. Patient-level direct medical costs and direct non-medical data were collected from HIV-positive pregnant women in six regions. The cost estimation was classified as direct medical (service fee, drugs and laboratory) and direct non-medical (food, transportation and accommodation). The mean direct medical expense per patient per year was Ethiopian birr (ETB) 746 (US$ 38) in the urban settings, as compared to ETB 368 (US$ 19) in the rural settings. On average, a pregnant woman from urban and rural catchments incurred direct non-medical costs of ETB 6,435 (US$ 327) and ETB 2,154 (US$ 110) per year, respectively. On average, non-medical costs of friend/relative/guardian were ETB 2,595 (US$ 132) and ETB 2,919 (US$ 148.39) in the urban and rural settings, respectively. Although the PMTCT service is provided free of charge, HIV-positive pregnant women and infant pairs still face a substantial amount of out-of-pocket spending due to direct medical and non-medical costs.

Keywords: Economic cost; patient cost; direct medical costs; direct non-medical costs; PMTCT service

JEL Classification: D01; D12; I14; I18

1. Introduction

HIV/AIDS continues to challenge socio-economic progress across the globe. In particular, the disease has been affecting the socio-economic development of most sub-Saharan African (SSA) countries. In the region, the disease has caused a high

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number of new HIV infections posing serious threats to the lives of current and future generations (UNAIDS, 2013). It also eroded the productive labor force in low-income countries. Especially, the epidemic has impacted on the most vulnerable sections of society, such as children and women (Foster & Williamson, 2000). Globally, almost 90% of mother-to-child transmission of HIV/AIDS was reported in African countries (Vitoria et al., 2009). The vertical transmissions of HIV/AIDS from mother-to-infant accounts for a significant proportion of the total number of new HIV infection reported in SSA countries. It is documented that 15-30% of these vertical transmissions of HIV infections from mother-to-child occur during labor, delivery, pregnancy and breastfeeding (De Cock et al., 2000; World Health Organization [WHO], 2004, 2007b). Prevailing numbers of infant infections and low antiretroviral treatment coverage for pregnant women and infants, coupled with low domestic financial resources in these countries have made it difficult to achieve zero mother-to-child HIV infections by 2015 (Joint United Nations Programme on HIV and AIDS [UNAIDS], 2013).

Part of this failure could be due to limited PMTCT services access and utilization, which in turn possibly arise from the economic out-of-pocket spending by patients while seeking PMTCT services. To date, most of the evidence on economic costs of HIV/AIDS and usage of HIV services in low-income countries has been produced at a macro level and studies have not focused on HIV-positive pregnant women. The most prominent of these macro-level analyses was conducted by the Institute of Health Metric Evaluation (IHME, 2013), which analyzed and reported on the regional and global burden of disease report, and included some disaggregated analysis for low-income countries. However, the report was not detailed enough to provide relevant evidence at the household economy level. A similar study consisted of a case study in Mozambique by Pessane and Soloman (2010), which reported on the impact of HIV/AIDS on economic growth through the erosion of human capital, an increase in absenteeism and a decline in workers' productivity.The study further found that, beyond its short-term impact, HIV/AIDS was significantly hampering the country's long-term economic growth, and led to a long-term threat to stability and development. In South Africa, a study reported on the overall impact of HIV/AIDS on the household economy, agriculture, other economic sectors and macro economy (Lori & Stover, 1999).

At a micro-level, a study in Kenya compared the out-of-pocket payments among HIV-positive and HIV-negative patients in Kenyatta National Hospital (Guinness et al., 2002) and found that there was no cost variation irrespective of a patient's HIV sero-status, suggesting that the cost factor was irrelevant to HIV status. In contrast, in the review of the literature on factors affecting HIV/AIDS service in low income countries, Souteyrand, Collard, Moatti, Grubb, and Guerma (2008) noted user fees as a critical barrier affecting antiretroviral treatment adherence. In Malawi, Pinto, van Lettow, Rachlis, Chan, and Sodhi (2013) compared patient

costs differences among those who attended centralized and decentralized health facility settings. According to Pinto et al. (2013), travel-related patients' costs were significantly different across these two groups. In Ethiopia, related studies reported qualitative, descriptive and specific-context findings on the impact of out-of-pocket spending for effective HIV/AIDS prevention, care and treatment (Biadgilign, Deribew, Amberbir, & Deribe, 2009; Bollinger, Stover, & Seyoum, 1999; Federal Ministry [FMOH], 2013; Tekola, Reniers, Haile Mariam, Araya, & Davey, 2008), but did not estimate the direct medical costs, direct non-medical costs and productivity loss of HIV-positive pregnant women attending the PMTCT services.

The economic cost of mother-to-child infection in sub-Saharan Africa can be best grasped through an understanding of the role played by women in the region. African women perform an active poverty reduction role in food crop processing, various levels of household chores, food storage and transportation, hoeing and weeding. Given women's contribution to the economy of the households, the burden of HIV/AIDS on the HIV-positive pregnant women (attending their antiretroviral treatment) is likely to result in severe economic losses. However, little evidence exists from the perspective of HIV-positive pregnant women attending their lifelong antiretroviral treatment. In particular, this evidence is pertinent in light of the recent changing international PMTCT treatment protocol (WHO, 2007a, 2012). For instance, the recent PMTCT service protocol for the option B+ treatment regimen requires more frequent visits and consultations, and could probably cause excess out-of-pocket spending for transportation, food and accommodation for HIV-positive pregnant women. In addition, these high medical expenses could in turn hamper effective utilization of PMTCT services, in particular for poor pregnant women from the rural country-side.

The deficiency of evidence is particularly high in Ethiopia as no study has specifically analyzed the economic impact of HIV/AIDS at patient and household levels in the context of the PMTCT, as well as from heterogeneous HIV-prevalence and socio-economic (urban-rural) settings. Studies reporting the impact of HIV/AIDS in Ethiopia were conducted by Tekola et al. (2008) and Kloos and Mariam (2000), and reported the socio-economic burden of HIV/AIDS in specific parts of the country. Another study highlighted the broader economic impact of the disease on the households, agriculture, firms, other economic sectors and the macro economy (Bollinger et al., 1999). None of these studies analyzed the patient's perspective on costing among HIV-positive pregnant women attending their lifelong antiretroviral treatment. To fill this gap, this study aimed to analyze the direct medical and direct non-medical costs among HIV-positive pregnant women attending health facilities in Ethiopia, and comparing the costs across urban-rural settings.

2. Methods

2.1 Data collection

Patient cost data were collected from 85 HIV-positive pregnant women attending their antiretroviral treatment, 17 Mother Support Groups (MSGs) and 12 healthcare professionals who were closely working with the patients. The patients attending their life-long antiretroviral treatment were recruited from the twelve health facilities (six urban high HIV-prevalence and six rural low HIV-prevalence facilities) across six regions in Ethiopia. Heterogeneity in HIV prevalence and urban-rural location were used as criteria to select twelve health facilities from the 2012 antenatal-based sentinel surveillance sites (Ethiopian Public Health Institute [EPHI], 2014). The survey was conducted from Aug 17 to Oct 2, 2015. The surveyed health facilitates are located in six regions of Ethiopia: Oromia, Amhara, South Nations and Nationality of People (SNNP), Harari, Addis Ababa and Dire Dawa. In accordance with the 2012 antenatal-based sentinel HIV surveillance data (EPHI, 2014), patients were recruited from six urban health facilities (Bahir Dar Hospital, Hiwot Fana Hospital, Dile Chora Hospital, Armed Forces Referral and Teaching Hospital (AFRTH), Soddo Health Center and Teklehaimanot Health Center), which had the highest HIV prevalence (8.8 to 17.3) across the country. Other groups of patients were interviewed from the rural and low-HIV prevalence health facilities (0.0 to 0.1), namely, Limuseka Health Center, Daddim Health Center, Toke Health Center, Chewaka Health Center, Kokosa Health Center and Hasange Health Center.

As shown in Figure 1, patient perspective costing was analyzed and categorized into direct medical costs and direct non-medical costs. Direct medical costs included the direct expenses incurred by HIV-positive pregnant women while attending their antiretroviral treatment services such as: HIV counseling and testing, hospital admission, antiretroviral option B+ treatment follow-up and early infant diagnosis (EID) services. The analysis also considered the cost incurred by guardian/relatives/friends during the patient consultation visits. The second costing category was direct non-medical costs, which covered the cost of purchasing non-medical supplies/equipment, which were not typically linked with the diagnosis or treatment. This comprised costing items such as: transportation, food and accommodation costs incurred by patients; and transportation, food and accommodation costs incurred by caregivers/friends/guardians.
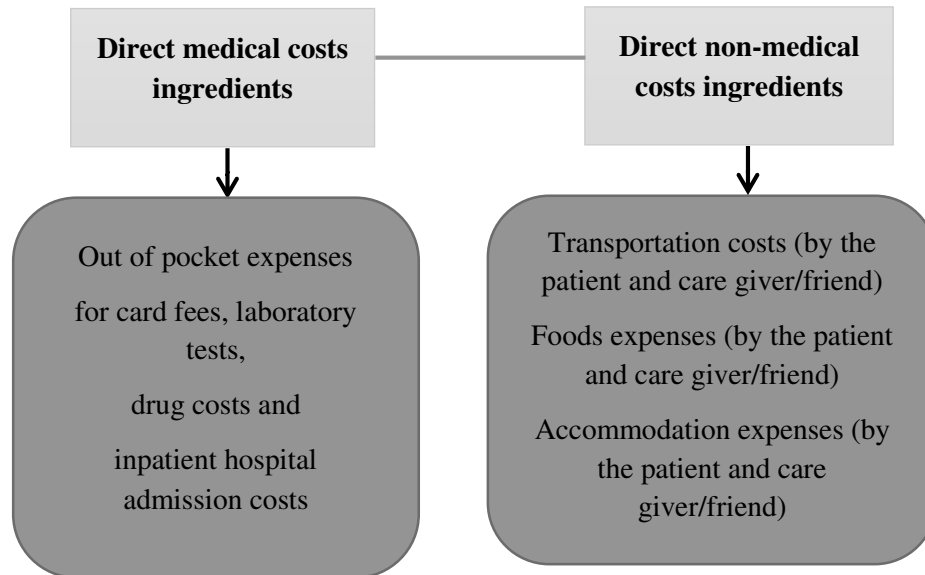
Figure 1. Patient costing framework for direct medical costs and direct non-medical costs

The economic and financial costs attributed to HIV morbidity incurred by HIV-infected mothers and their households were analyzed through a retrospective bottom-up diagnostic-specific method (Akobundu, Ju, Blatt, & Mullins, 2006; Tarricone, 2006). Patients attending the surveyed health facilities were requested to provide all the costing ingredients paid (during outpatient consultation and inpatient admission) retrospectively. Applying the bottom-up retrospective approach, the patient-level costing was conducted to estimate direct medical and direct non-medical costs paid by guardian/relatives/friends. The national-level patient perspective costs were estimated considering the final cost summary measure (per patient per year [PPY]) and country wide estimated number of HIV-positive pregnant women who were in need of treatment in urban and rural settings (Ethiopian Health and Nutrition Research Institute [EHNRI], 2012). A sensitivity analysis was conducted to estimate the national-patient cost using three scenarios: at the 57% current coverage level, at the 75% coverage level, and at 100% coverage level. The data were first entered using EpiData 3.1 software and transferred for analysis to the Statistical Package for the Social Sciences (SPSS) software version 22. Relevant statistical tests, t-tests (equal or non-equal variance assumptions) and Pearson chi-square tests were applied to compare results across urban-rural settings.

The patients' costing tool was adopted from the KNCV tuberculosis foundation, WHO and Japan's anti-tuberculosis association (Tuberclusosis Coalition for Techncial Assistance [TBCTA], 2007). It was piloted in two health facilities (Gandhi Memorial Hospital and Beletsheachew Health Center) in Addis Ababa. The tool comprised different sections: patient information, diagnostic costs, total time spent for HIV counseling and testing, treatment, care and support, costs related to the follow-up tests, guardian costs, hospitalization costs, food supplements, coping costs and productivity loss attributed to the HIV/AIDS illness. A supplementary interview guide was prepared to interview MSGs and health care professionals. National-level patient data were extracted from the Federal Ministry of Health (FMOH)/ Ethiopian Public Health Institute (EPHI) data base (EPHI, 2014), and further checked using the Health Management Information System (HMIS) database in six regional health bureaus (Oromia, Amhara, SNNP, Harari, Addis Ababa and Dire Dawa).

2.2 Ethical Consideration

The research project was approved by the University of KwaZulu-Natal (UKZN) Biomedical Research and Ethics Committee (BREC REF: BE385/14) and the Federal Ministry of Health/ Ethiopian Public Health Institute Scientific and Ethical Review Office (SERO REF: 6.13/80). An official letter of permission was obtained from the Federal Ministry of Health (FMOH) and Ethiopian Public Health Institute (EPHI) to the respective selected regional health bureaus and surveyed health facilities. An informed consent form was obtained from the HIV-positive pregnant women, Mother Support Groups and health professionals, before starting the data collection.

3. Results and Discussion

A total of 85 HIV-positive pregnant women were interviewed. As a way of exhausting all costs information (outpatient and inpatient) from women attending PMTCT services, additional costing inputs to be included in the costing sheets were solicited from 17 MSGs and 12 healthcare professionals who were closely working with the patients. Of all the HIV-positive pregnant women respondents interviewed in rural and urban facilities, the majority (66%) were from urban high-prevalence settings.

3.1 Socio-demographic Characteristics

Table 1 describes the socio-demographic characteristics of the respondents, notably age, educational status, occupation, marital status and household income earnings. The mean age of the respondents was 29 and 28, in urban and rural settings, respectively. Of the respondents from rural low-HIV settings, 62% were illiterate,

while 43% had attained primary education in the urban high-HIV prevalence settings. The data showed a statistical difference in the education status across urban-rural settings ($p < 0.001$). In the urban settings, 68% of urban high-HIV prevalence respondents were permanently paid employees or had a trade/ business occupation, while 59% of the rural study participants were farmers, and engaged in various small-scale business activities (not shown in Table 1). A statistical difference was reported in the type of occupation among the urban-rural respondents ($p < 0.001$). Married patients comprised 66% in urban settings, and 34% in rural settings. Of all single participants, 100% were from urban settings against 0% in rural settings. The corresponding numbers of married and divorced people were 66% against 34%, 57% against 43%, respectively.

A relatively higher proportion of the household income earners (across different categories), were reported in urban settings, as compared to the rural respondents. However, there was no statistical difference reported between the study participants across the urban and rural settings, respectively. Of the listed groups of the primary income earners, father/husband had a primary income role for 70% of respondents in urban settings and 30% in rural settings. The woman/wife was the primary income earner for 55% and 45% in urban and rural contexts, respectively. Most respondents had a monthly income of Ethiopian birr (ETB) 500 (United States dollar (USD) 25.42) [1] and above in the urban settings, while the majority of rural respondents earned below ETB 500 (USD 25.42). Urban patients' earned a relatively higher proportion of the household income as compared to those in the rural settings (Chi-square, $p < 0.001$). This may be linked with the continuous low economic empowerment and primary income role played by women in rural settings, as compared to the educated, empowered women who are living in the commercial urban cities.

Table 1. Socio-demographic characteristics of the respondents in urban and rural settings

Socio-demographic variables	Urban high-HIV prevalence settings	Rural low-HIV	P-value
N	n= 56	n=29	
Age	29.39 (SD: 5.38)	28.07 (SD: 7.89)	0.085
Educational status			0.000[†]
Illiterate	5 (22%)	18 (78%)	
Basic Education	10 (83%)	2 (17%)	
Primary (grade 1-8)	24 (77%)	7 (23%)	
Secondary (grade 9-10)	9 (90%)	1 (10%)	
Preparatory (11-12)	3 (100%)	0 (0%)	
10+TVET	1 (100%)	0 (0%)	

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[1] Prices are reported in 2014 Ethiopian birr (ETB) and converted to United States Dollar (USD) at the weighted exchange rate (1 US$ = 19.6705 ETB) from www.oanda.com, retrieved on 05 Nov 2015.

College/university	4 (80%)	1(20%)	
Occupation			
Farming	2 (15%)	11 (85%)	0.000†
Wage labor	6 (60%)	4 (40%)	
Permanent paid employee	18 (100%)	0 (0%)	
Trade/business	20 (77%)	6 (23%)	
Student	2 (100%)	0 (0%)	
Housewife	1 (25%)	3 (75%)	
No occupation	7 (58%)	5 (42%)	
Marital status			
Single	4 (100%)	0 (0%)	0.346
Married	47 (66%)	24 (34%)	
Divorced	4 (57%)	3 (43%)	
Widowed	1 (50%)	1 (50%)	
Live with partner	0 (0%)	1 (100%)	
Household income earner			0.634
Patient	6 (55%)	5 (45 %)	
Wife/Mother	6 (55 %)	5 (45 %)	
Husband/ Father	42 (70 %)	18 (30 %)	
Extended family	2 (67 %)	1 (33 %)	
Household income (per month)			0.000†
Under 500 ETB per month	6 (30 %)	14 (70 %)	
500 ETB to 750 ETB per month	10 (56 %)	8 (44 %)	
750 ETB to 1000 ETB per month	4 (57 %)	3 (43 %)	
More than 1000 ETB per month	23 (100 %)	0 (0 %)	
Don't earn	13 (76 %)	4 (24 %)	

NB. Because of the decimal rounding, the total does not sum up to 100%.
† = Significant at $p < 0.001$

A total of 131 respondents were recruited for the cost-of-illness questionnaires from three different groups: HIV-positive pregnant women attending the health facilities (n=85), MSG members (n=34) and health care workers (n=12). This was due to low PMTCT attendance by HIV-positive pregnant women in surveyed health facilities. According to the previously conducted surveys by the FMOH and UNAIDS (FMOH, 2012, 2014, 2015; UNAIDS, 2013), a low service uptake exists among the expected HIV-positive pregnant women across the country. For instance, in 2011/12, of the targeted HIV-positive pregnant women only 25.5% accessed and accepted the service (FMOH, 2012). In particular, two interview sessions (with MSGs and health care workers) were considered to substantiate whether or not any patients' cost data were missed or ignored during interview sessions with HIV-positive pregnant women (option B+ regimen) respondents. In addition, the interview sessions with MSGs and health workers were used to gain

more insight into the relevant patient costing ingredients to include in the questionnaire to be given to the pregnant women and to use in the datasheet.

3.2 Direct Medical Costs

An HIV-positive pregnant woman-infant attending lifelong antiretroviral treatment (ART) incurred direct medical costs of ETB 746.00 (US$ 37.92) per year in urban high HIV-prevalence settings and ETB 368.40 (US$ 18.73) per year in rural low HIV-prevalence areas. The urban direct medical spending per pregnant women cost twice the amount spent in the rural settings. Of the listed direct medical cost categories, antibiotic drug costs, health facility sheets (patient admission), drugs costs during inpatient admission and laboratory test costs (during patient admission) were significantly higher in urban settings, relative to the rural settings ($p < 0.05$). However, there was no statistical significance between urban-rural respondents for the direct medical costing ingredients notably: HIV counseling and testing fees (card fee/consultative), health facility administration fees (for the admitted patients), other co-infections tests (including TB) costs and other co-infections drugs.

The detailed list of direct medical cost findings is described in Table 2. Similarly, a study by Pearson, Gandhi, Admasu, and Keyes (2011) indicated that, although service utilization was at a low level in Ethiopia, pregnant women still incurred costs for drugs and supplies. The study further finds that 65% of the surveyed health facilities in Ethiopia still charge user fees for maternity services. In South Africa, similar findings were reported on the additional cost of purchasing non-prescriptive drugs and food for 60% of patients on ART (Rosen, Ketlhapile, Sanne, and DeSilva (2007), while high costs of medical HIV/AIDS services affecting the household economy were reported in Kenya (Guinness. et al., 2002).

Table 2. Direct medical costs per patient per year in urban-rural settings

Direct Medical Cost Variables	Settings	Mean (ETB)	Std. Deviation	Std. Error Mean	F	Sig.	t	df
HIV counseling & testing fees (card fee, consultative)	Urban settings	1.18	6.74	0.90	0.07	0.79	-0.02	83.00
	Rural settings	1.21	2.18	0.40			-0.03	73.54
Antibiotic drug costs (relevant for ART treatment and to treat other-co-infections)	Urban settings	29.11	73.05	9.76	21.92	0.00†	2.14	83.00
							2.98	55.00
	Rural settings	0.00	0.00	0.00				
Health facility administration	Urban settings	48.97	134.39	23.05	0.35	0.56	-1.21	49.00

fees (for the admitted patients)	Rural settings	92.06	84.00	20.37			-1.40	46.35
Health facility Sheets/Linnen fees (for the admitted patients)	Urban settings	132.06	116.80	20.03	13.54	0.00†	3.75	50.00
	Rural settings	22.78	54.64	12.88			4.59	49.50
Drugs cost (during the inpatient admission)	Urban settings	249.45	252.59	45.37	10.09	0.00†	2.24	45.00
	Rural settings	104.00	77.33	19.33			2.95	39.29
Tests cost (during the inpatient admission)	Urban settings	67.03	87.99	15.80	4.40	0.04††	0.70	44.00
	Rural settings	50.07	47.91	12.37			0.85	43.24
Other co-infections tests costs	Urban settings	74.25	213.73	47.79	2.53	0.12	0.70	30.00
	Rural settings	30.42	45.10	13.02			0.88	21.72
Other co-infection drugs costs	Urban settings	53.25	199.96	44.71	1.80	0.19	0.75	30.00
	Rural settings	9.58	19.36	5.59			0.97	19.59
Fees (related with the follow up tests)	Urban settings	13.80	33.39	6.68	2.17	0.15	0.06	41.00
	Rural settings	13.33	14.75	3.48			0.06	35.13
Total direct medical costs per pregnant women-infant pair	Urban settings	746.00	749.68	207.92	1.77	0.20	1.10	16.00
	Rural settings	368.40	161.91	72.41			1.72	14.45

† Statistical significance at P < 0.001

††Statistical significance at P < 0.05

3.3 Direct Non-medical Costs

The mean transportation cost per pregnant women per year was ETB 1,276.07 (US$ 64.87) and ETB 636.67 (US$ 32.37) in urban and rural settings, respectively. The transportation cost by patient in the urban settings was double compared to the one in the rural settings. This may be related to the fact that urban HIV-positive pregnant women pay more for available transportation to the health facilities than do rural respondents who are more likely to have to walk to reach the facilities. Of the different transportation-linked activities, travel costs due to other co-infectious diseases and ART treatment follow-up activities contributed the lion's share in both the urban and rural settings. These findings line up with the evidence in

Malawi where travel expense was the major contributor to patient costs to access HIV/AIDS care services (Pinto et al., 2013).

As for the transportation cost paid by patients, the travel expenses paid by the friends/guardians/partners were high. Friends/guardians/partners spent the means cost of ETB 1,783.73 (US$ 90.68) and ETB 2,066.44 (US$ 105.05) in urban and rural settings, respectively. A relatively higher travel cost was incurred in rural as compared to the urban settings. This may be related to more solidarity and companionship in the rural countryside, as compared to in the urban settings. Of the listed transportation cost breakdown, friends/guardians/partners spent more than 85% of the cost proportion, in both the urban and rural settings, during the inpatient health facility admission. This was due to a significantly higher frequency of visits in rural settings (Mean = 20), as compared to the rural settings (Mean=14) ($p < 0.05$). Moreover, there was also a significant cost variation estimated on the transportation costs paid by relatives in urban-rural settings, during the inpatient admission.

With respect to food expenditure, an average pregnant women per year (attending option B+ treatment regimen) from the urban settings spent ETB 4,700.50 (US$ 238.96) for food items in the urban settings, while it was ETB 1,510.83 (US$ 76.81) in the rural settings. Food cost (per PPY) in a household (attributed to HIV illness) in the urban settings was more than twice the expense estimated in the rural settings ($p < 0.05$). This may be explained by the increased awareness of the HIV-positive population of the need for a nutritionally balanced diet in the urban settings, and relatively higher household income. Moreover, there was also a statistical variation reported on food expenses (during ART initiation and counseling), food costs (during the CD4 blood sample testing service), food costs (during the monthly ART drug refilling and counseling) and food costs (during linking the patient to care and support services).

Friends/relatives/guardians spent non-medical costs on food items for accompanying the HIV-positive pregnant women, starting from HIV/AIDS counseling and testing to the antiretroviral treatment follow-up. These costs included food expenses during the HIV/AIDS counseling and testing, during the CD4 count blood sample service, during the early infant diagnosis/ dry blood testing, during ART initiation and follow-up, and during the inpatient admission. The mean cost of food by friends/relatives/guardians was ETB 811.29 (US$ 41.24) (SD = 403.72) and ETB 832.78 (US$ 42.34) (SD = 783.64) in urban and rural settings, respectively. The mean food expense of ETB 253.36 (US$ 12.88) was estimated per patient per year (during ART initiation, drug refilling and follow-up) in the urban settings as compared to ETB 140.74 (US$ 7.15) expenses in the rural settings ($p < 0.001$). During the inpatient hospital admission, the mean food cost by relatives was ETB 670.88 (US$ 34.11) in the rural areas, as compared to ETB 482.06 (US$ 24.51) in the urban areas.

The mean accommodation expense per patient per year was ETB 458.54 (US$ 23.31) in urban settings, as compared to ETB 6.90 (US$ 0.35) in rural settings (p < 0.001). Of all the accommodation costing categories in the urban settings, the accommodation expense by patients (during the monthly ART drug refilling and counseling) accounts for the highest proportion of costs. This was due to the frequent monthly visit (including hospital admissions) by the patients for drug refilling, treatment and counseling services. As compared to the urban settings, patients from the rural areas did not incur any accommodation expense during ART initiation and counseling, during the Early Infant Diagnosis (EID) testing, during the monthly ART drug refilling and counseling and while linking care and support services. The cost variation reported in the urban and rural settings was possibly related to the relatively higher hospital admission fees, as compared to the insignificant (or almost free of charge) costs in the remote rural health facilities.

Unlike the expense for food and transportation, friends/relatives/guardians incurred a significantly lower proportion of the cost for accommodation expenses, both in the urban and rural settings. The mean accommodation cost (by friends/guardians/partners) per PPY was ETB 19.67 (US$ 1.01) in rural settings, as compared to ETB 0.00 (US$ 0.0) in the urban settings (p < 0.001). None of the respondents indicated the accommodation-related expense during the patient's outpatient consultation for HIV/AIDS counseling and testing, the CD4 count service, EID service, and ART initiation, drug refilling and follow-up. Most of these activities were conducted during the daily consultation visits, without incurring additional accommodation-related expenses by the third parties. Notably, a higher accommodation cost was estimated in the rural settings, as compared to the urban settings. This was probably due to higher solidarity from friends/guardians/partners and closer companionship during the inpatient admission in the rural settings, as compared to the urban.

3.4 Summary Cost Estimate

Table 3 indicates the direct medical and direct non-medical cost estimate per HIV-positive pregnant women per year. Analyzed from within each setting, food cost was the cost driver in the urban settings, while transportation cost (by friends/relatives/guardians) was the main contributor in rural settings. Of the listed non-medical cost items, food costs and transport costs were the main cost contributor in both the urban and rural settings. As compared to patients, friends/relatives/guardians spent the highest proportion of expenses for transportation in both settings. This was probably due to the higher frequency of friends/relatives/guardians visits and companionship. The detailed unit cost evidences in Table 3 provides good evidence for budget planning and cost efficiency. Similarly, in this respect, also highlighted that cost-of-illness evidence significant role in resource allocation, priority setting (Rice, 2000) and budget management (Rice, 1994). For instance, Tarricone (2006) highlighted its relevance

in terms of estimating the amount of resource consumption, cost identification, cost containment, clinical illness management and cost variability.

Table 3. Summary cost estimate for direct medical and direct non-medical per patient per year

Cost per patient per year	Urban Mean (SD)	Rural Mean (SD)
Direct medical cost	746.00 (749.68)	368.4 (161.91)
Direct non-medical costs		
Transport cost (paid by the patient)	1,276.07 (3,099.38)	636.67 (349.31)
Transport cost (paid by friends/ relatives/guardians)	1,783.73 (1,470.39)	2,066.44 (2,193.88)
Food costs (paid by the patient)	4,700.5 (4,226.35)	1,510.83 (376.18)
Food costs (paid by friends/relatives/guardians)	811.29 (403.72)	832.78 (783.64)
Accommodation expense (paid by the patient)	458.54 (1,157.1)	6.9 (37.14)
Accommodation expense (paid by friends/ relatives/ guardians)	0.0 (0.0)	19.67 (44.5)
Total cost per patient per year	9,776.13 (US$ 496.99)	5,441.7 (US$ 276.6)

SD = standard deviation

3.5 National Cost Estimate

Nationally, in 2014, at the current coverage and program uptake level, the estimated patient level cost was US$ 7,756,763.7 in urban settings, while it was US$ 2,730,825 in rural areas. As shown in Figure 2, the estimated national patient cost increased with an increase in service coverage. In other words, when more HIV-positive pregnant women access the service, the estimated national patient-level cost for direct medical and non-medical costs increased. However, during the period 2011 to 2016, there was an estimated decline in the number of HIV-positive pregnant women due to a lower HIV incidence (EPHI, 2014). As a result of the estimated decline in HIV prevalence, the national patient spending (for direct medical costs and direct non-medical costs) declined over time. Understanding the national perspective patient-level costs (in Figure 2) is important to highlight the overall economic burden on the society. There is already some evidence in Ethiopia that this information is needed as a number of studies (by Biadgilign et al., 2009; Pearson et al., 2011; Tekola et al., 2008; Ghailan et al., 2010)) have alluded to the consequences of the high costs of using HIV/AIDS services in the country.
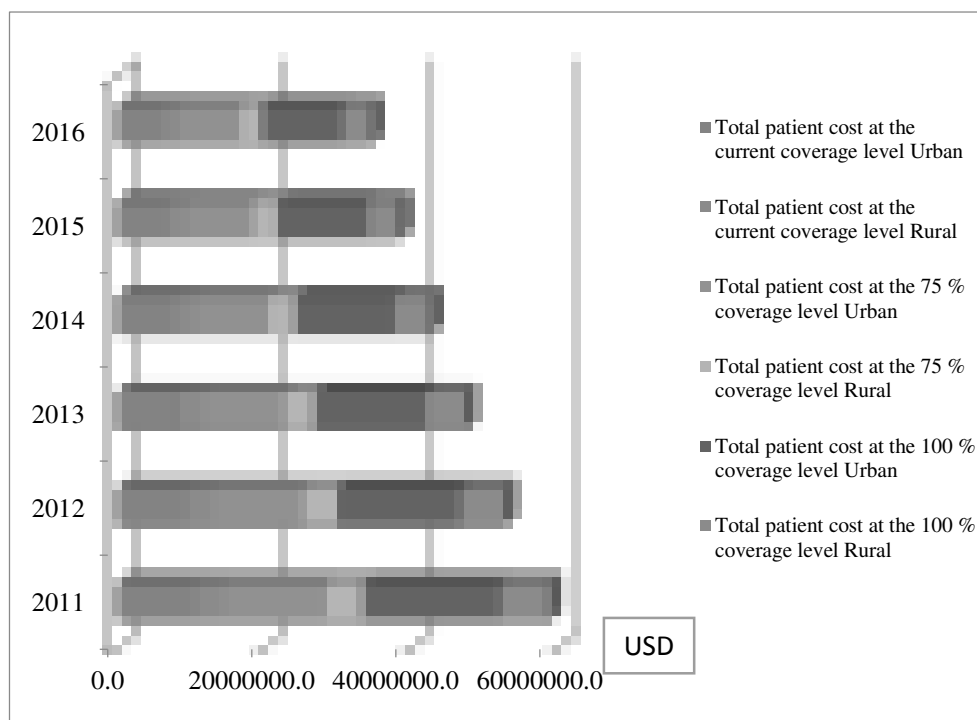
Figure 2. National patient perspective cost in urban and rural settings, 2011- 2016

4.   Conclusion and Recommendation

Although the HIV/AIDS care services are provided free of charge in Ethiopia, patients incurred substantial direct medical and direct non-medical costs, which probably affects the intended public health outcome for the HIV-positive pregnant women and pediatrics attending antiretroviral lifelong treatment. According to our analysis, an average pregnant woman (per year) attending the surveyed health facilities estimated to incur ETB 9,776.13 (US$ 496.99) and 5,441.7 (US$ 276.6) cost due to direct medical costs and direct non-medical costs, in urban and rural settings, respectively. Of these costs, transportation and food expenses were the main cost drivers, in both the urban and rural settings. In addition, the significance patient-level cost differences across urban and rural settings also provide policy makers with important information on costs planning, priority-setting, budgeting, resource allocation and distribution. The evidences in this study is crucial for Ethiopian health sector policy makers and program implementers seeking to improve access to PMTCT services, as well as on the current effort towards universal health coverage (UHC).

The study reports also a significant extra cost to friends/guardians/relatives while visiting the admitted patients or accompanying them to outpatient PMTCT treatment follow-up services. The estimated transportation costs paid by friends/guardians/relatives was ranged from ETB 1,783.73 (US $90.68) and 2,066.44 (US$ 105.05) in urban and rural settings, respectively. In addition, the mean costs for food was ETB 811.29 (US$ 41.24) and ETB 832.78 (US$ 42.34) in urban and rural settings, respectively. Adding to the non-medical costs the direct costs per patient per year of ETB 746 (US$ 37.92) in the urban settings, and ETB 368.4 (US$ 18.72) in the rural settings, increases even further the burden of HIV suffered by pregnant women and the household. Projecting its impact at the current national PMTCT coverage level, the patient level costs ranged from US$ 2,730,825 to US$ 7,756,763.7 in rural and rural settings, respectively.

It is finally worthwhile to acknowledge the limitation of this study. Due to the low PMTCT service uptake at the surveyed health facilities, this analysis depended on a limited sample size (85 HIV-positive pregnant women, 17 MSGs and 12 health care professionals). The sample makes it difficult to generalize the findings to the general population. The unit cost per pregnant women-infant pairs was used to estimate the national-patient perspective cost associated with mother-to-child HIV infection. However, this projection may be improved applying adequate and nationally representative sample size. A related shortcoming is that the study targeted HIV-positive pregnant women accessing PMTCT services and did not include those who had not started or had defaulted on using the treatment. These limitations should be well taken into consideration along the study findings and interpretation.

Despite these shortcomings, we believe that the findings are instrumental in highlighting the patient perspective costs resulting from HIV/AIDS transmission from mother-to-child in urban and rural settings. The analysis reported the direct medical and direct non-medical costs across the different contexts (urban high-HIV prevalence versus rural low-HIV prevalence), which could potentially inform the current country strategy towards the elimination of new mother-to-child HIV infections and current universal health coverage agenda. Finally the finding from this study is also crucial to provide relevant economic input evidence for further cost effectiveness analysis studies, considering the societal perspective.

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Does Fiscal Deficit Granger Cause
Impulsiveness in Inflation Rate in Nigeria?

Oseni Isiaq Olasunkanmi[1], Sanni Hauwa Yetunde[2]

Abstract: This study examines the direction of causality between fiscal policy and inflation volatility in Nigeria for the periods 1981 to 2014. Studies have examined the relationship between fiscal policy and inflation volatility without taking cognizant of the direction of relationship that exist between the two variables, hence this study. The study employs quarterly time series data on fiscal deficit and consumer price index (measure of inflation rate) from 1981:1 to 2013:3 and obtains from the central bank of Nigeria statistical bulletin 2014 while the volatility data is generated through GARCH (1,1) method and analyze using the Pairwise Granger Causality Test. The results of the study showed that there is bi-directional causality between fiscal deficit ($F-statistic = 5.86 \& 3.96; P < 0.05$) and inflation volatility. The implication of this result is that volatility in inflation rate is traceable to the persistent nature of the excess government expenditure over revenue of the Nigerian economy and vice versa; this will inform the government, policy makers and individual the reasons for continuous fluctuation in the prices of goods and services in the country. The paper contributes to knowledge by providing information on the causes of fluctuation in inflation rate in Nigeria.

Keywords: Inflation Volatility; Fiscal Deficit; GARCH; Bivariate Granger Causality Test

JEL Classification: E 31; E62

1. Introduction

Over the years, studies have argued on the reason why either developed or developing countries have found it difficult to maintain single digit inflation rate and this has been a major macroeconomic problem of achieving steady growth in the world economy. Meanwhile, a steady and single digit inflation rate enhances the growth rate of the economy irrespectively of her structure. However, the major cause of disparities in the figure of inflation rate is subject to different opinions. The quantity theory of money by Irving fisher is of the belief that increase in money supply leads to inflation while the classical economists are of the view that

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increase in money supply at full employment level leads to increase in price level while increase in money supply does not increase output, create employment but rather leads to an increase in the price level. Opposing the classical is Keynes that argued that increase in money supply increases aggregate demand and supply, and creates employment opportunities. This was why he recommended government intervention in terms of fiscal deficit during the great depression. Keynes believed that there was need for some form of government intervention in an economy in order to achieve macroeconomic objectives. This government intervention comes inform of fiscal policy which entails the use of the government's expenditure, taxation and its borrowing policies to achieve macroeconomic objectives like full employment of resources, price stability and host of others. Hence, government uses her fiscal deficit to evaluate the direction of any economy's fiscal policy. Huge fiscal deficits which results from an increase in government spending relative to the revenue generated have been recorded over the years in Nigeria. The economic consequences of this deficit could be severe for a nation that lacks the required management abilities. Similarly, fiscal deficits could escalate the supply of money in an economy and when there is excess money supply it can result to higher general price level which may have negative effect on the purchasing power per unit of money spent i.e. the amount of goods and service that a naira can purchase becomes reduced.

Both inflation and fiscal deficits are major macroeconomic problem which are associated with developing countries however despite the much attention that inflation has attracted, one area that has remained vague and has received little or no attention is the volatility in inflation rate in one hand and the direction of the relationship between fiscal deficit and fluctuations in inflation rate on the other hand. Volatility in inflation rate is the fluctuations, instability and flexibility in the inflation rate. The Nigerian inflation rate has showed instability, no two years sequentially have been recorded to have the same inflation rate (CBN, 2014). According to Rother (2004) high volatility of inflation over time raises price level uncertainty, raises costs for hedging against inflation risks and leads to unanticipated redistribution of wealth. Thus, inflation volatility can impede growth even if inflation on average remains restrained. In the literature, studies in Nigeria have focused on fiscal deficit-inflation relationship and their findings have been contradicting studies like (Oyejide, 1972; Adeyeye & Fakiyesi, 1980; Osakwe, 1983; Asogu, 1991; Onwioduokit, 1999; Oladipo & Akinbobola, 2011; Medee & Nenbee, 2012) believe that there exist a relationship between fiscal deficit and inflation. On the other hand, some studies that have built on the Ricardian equivalence hypothesis (Barro, 1989) have found either no correlation or only a weak correlation between fiscal deficits and inflation like (Niskanen, 1978; McMillin & Beard, 1982; Ahking & Miller; 1985; Landon & Reid, 1990; Fiani, 1991).

Basically, volatility in inflation has been barely considered in Nigeria. Studies that have considered inflation volatility in Nigeria have focused on its relationship with other variables like trade openness, economic development.[1]. Basically since volatility in inflation possess more threat than inflation on the average and this volatility is noticeable in the Nigerian inflation rate (see figure 1 below) there is need to determine whether it is a cause or caused by fiscal deficit. Similarly, large deficits are now the addictive nature of the federal government leading to instability and increase in the amount of deficits incurred on yearly basis. Therefore since the existence of fiscal deficit- inflation relationship has been supported by some studies in Nigeria[2] but the direction of its causality has been missed in the literature, this study intends to fill this gap using Nigerian data from 1981 to 2014.
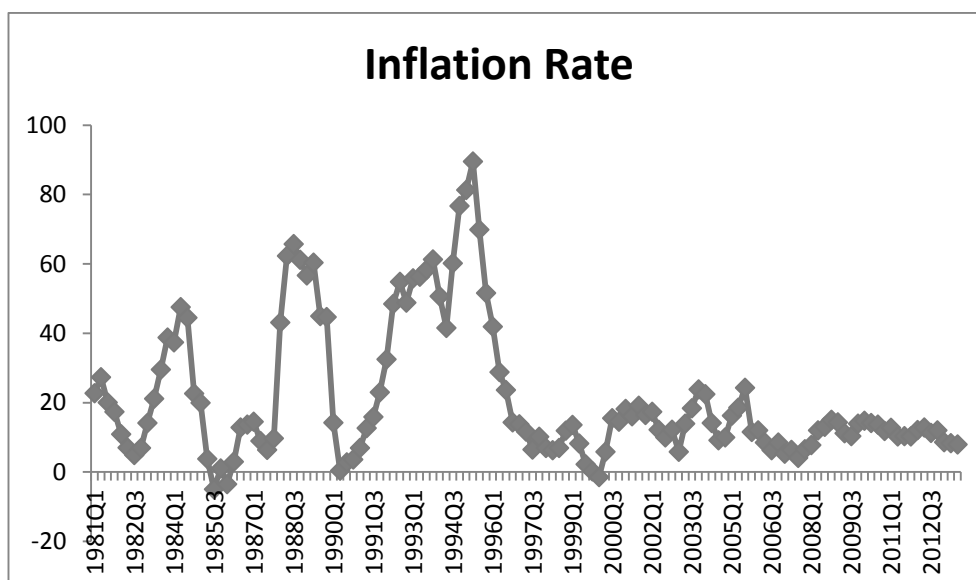
Figure 1. Trend of Inflation Rate in Nigeria, 1981:1-2013:3

Source: Authors, 2015

2. Literature Review

A number of research works has been conducted on fiscal deficit and inflation rates in developing, developed and Nigeria economy in particular. Hermantha (2012) examined the validity of the hypothesis that suggests that there is a link between fiscal deficit and inflation in Sri-Lanka and he discovered that a one percent point

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[1] See (Fielding, 2008).
[2] See (Oladipo & Akinbobola, 2011; Onwiduokit, 1999; Ezeabasili et al 2012).

increase in ratio of fiscal deficits to narrow money is associated with about an eleven percent point increase in inflation. However, he concluded that the inflation in Sri Lanka was not only a monetary phenomenon. Catao and Terones (2005) used a dynamic estimation method for 107 countries and he discovered that there is a strong and positive relationship between fiscal deficits and inflation. A study by Fischer et al (2002) classified a sample of 94 countries into high-inflation and low-inflation countries. They showed that fiscal deficits are main drivers of inflation. They also found out that a change in budget balance has no significant effect on inflation in low inflation countries. Alfrin (2013) examined the fiscal-deficit inflation relationship in Bangladesh and she discovered that fiscal deficit has an effect on inflation and she however suggested that demand management policies such as government revenue and expenditure have an important role in controlling inflation. Habibulah et al (2011) examined the long-run relationship between budget deficits and Inflation in thirteen developing Asian countries, namely; Indonesia, Malaysia, the Philippines, Myanmar, Singapore, Thailand, India, South Korea, Pakistan, Sri Lanka, Taiwan, Nepal and Bangladesh. However, annual data for the period 1950 – 1999 was used and co-integration, the error-correction model approach were applied to conduct the long-run and short-run Granger causality tests. The study however showed that budget deficits are inflationary in the thirteen developing Asian countries examined by the study. Fianni (1991) discovered that inflation tends to be subdued despite the presence of large budget deficit in Morocco. However, his findings were contradictory to the theoretical postulation that budget deficit has an effect on inflation.

Rother (2004) examined the effect of discretionary fiscal policies on inflation volatility in range of OECD countries between 1967 and 2001.the empirical results suggested that volatility in discretionary fiscal policy has contributed to volatility in inflation. Ramona (2011) examined the impact of fiscal policy on inflation volatility in Romania during the economic crises context and he discovered that budget deficit has quite a powerful impact on inflation volatility and the study suggested that a limited budget deficit would be a good measure for maintaining price stability.

In Nigeria, Ezeabasili et al (2011) examined empirically the fiscal deficit- inflation relationship during the period of persistent inflationary trends i.e. from 1960 -2006. They adopted a modeling which incorporated the co-integration technique as well as the structural analysis and discovered that there is a positive but insignificant relationship between fiscal deficit and inflation in Nigeria. However, they specified that past levels of deficit do not have any positive or significant role to play with respect to inflation. Oladipo and Akinbobola (2011) examined the relative causal relationship between budget deficit and inflation as well as the economic implications of fiscal deficit financing in Nigeria and their findings however suggested uni-directional causality between inflation and budget deficit in Nigeria.

The study recommended that monetary policy should be made to complement fiscal policy measures. Also there was need for fiscal discipline to be maintained at every level of government.

Onwiduokit (1999) examined the nature of causality between fiscal deficit and inflation i.e. if inflation causes fiscal deficit or fiscal deficit causes inflation and the empirical findings confirmed that fiscal deficit/gross domestic product (which proxy the absorptive capacity of the economy) causes inflation however there empirical results did not confirm a feedback effect between inflation and fiscal deficit in absolute terms. Abel and Olalere (2012) examined whether budget deficit was inflationary or not in Nigeria within the period of 1980 to 2009. The study made use of time series data and employed vector Error correction Mechanism (VECM) to determine the correlation that existed between the two macroeconomic variables. The study also investigated the existence of long run relationship between budget deficit and inflation. The findings of the study suggested uni-directional causality between budget deficit and inflation. The study recommended that government should cut down its expenditure in order to keep the inflation rate low and when fiscal deficits were to be incurred it should be channeled to productive investments in the country. Oseni (2015) examined the empirical relationship between fiscal policy and inflation volatility in Nigeria using error correction mechanism framework and found that discretionary fiscal policy has a temporary effect on inflation volatility in the short-run and a significant negative effect on inflation volatility in the long-run. The study further noted that the fluctuation caused by the level of inflation to its volatility is minimal in the long-run compared to the short-run effect. This study also neglects the direction of causality between fiscal policy and inflation volatility. Thus, the neglect of this crucial issue may mislead the government on the area to tackle the causes of inflation volatility in Nigeria, hence this study.

3. Methodology

This study adopted the Keynesian theory of inflation for analyzing the direction of causality between fiscal deficit and inflation volatility in Nigeria. The Keynesian theory is a short run analysis theory. It is based on the assumption that there exist unemployed resources in the economy. Fiscal deficit can be linked to inflation under the Keynesian theory since it supports the use of fiscal deficit to sustain the economy in periods of economic meltdown (recession), Keynes advocated fiscal deficit i.e. excess spending relative to revenue generated in an economy in periods of recession. Also the fiscal deficit advocated by Keynes if not properly channeled into productive activities in an economy could generate inflation.

To examine the causal relationship between fiscal deficit and inflation volatility using the VAR model, a pairwise granger causality test was utilized. The advantage

of this model is that it allows any variable to have the tendency of being a dependent or independent variable. The model is specified as follows:

$$U(VAR) = (FID, \sigma^{INF}) \qquad\qquad 1$$

$$\sigma_t^{INF} = \sum_{i=1}^{n} \alpha_{11}\sigma_{t-1}^{INF} + \sum_{j=1}^{m} \alpha_{12}FID_{t-1} + \varepsilon_{1t} \qquad\qquad 2$$

$$FID_t = \sum_{i=1}^{n} \alpha_{21}\sigma_{t-1}^{INF} + \sum_{j=1}^{m} \alpha_{22}FID_{t-1} + \varepsilon_{2t} \qquad\qquad 3$$

Where FID represents fiscal deficit, σ^{INF} stands for variance of inflation rate and this is used to measure volatility in inflation rate using GARCH (1, 1) technique.

4. Results and Discussions

Table 1. Unit Root Test using Augmented Dickey Fuller Technique

Source: Author, 2016
Note: C.V indicates Critical Values

Table 1 shows the results of the unit-root test using Augmented Dickey Fuller (ADF) technique. The paper employed this technique to avoid the problem of autocorrelation in the variables. The rule stated that a variable can be stationary if all the three models are satisfied: constant, constant and Trend, and none; otherwise, the variable has unit root problem. In the table 1 above, at 5% significance level, the inflation volatility is stationary at level using constant, constant and trend but not stationary at none indicating that the variables are not stationary at level based on the rule. However, based on the prescribed rule, all the variables are stationary at first difference at 5% significance level. This implies that all the variables are integrated of order one I (1) series. The variables are also tested for autocorrelation problem using correlogram. The results also confirmed that all the variables are I (1) series since the spikes are within the lines and the Q-statistic at ten lag is statistically not significant at 5% level. Based on this, the paper further subjected the variables to long-run test using Engle and Granger Co-integration technique. The result of the cointegration test shows that the two

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variables have long-run co-movement as evidence from the unit-root test of the '***ecm'*** in table 1 which is stationary at level at 5% significance level. The short-run relationship using Error Correction Mechanism (ECM) is presented in tables 2 below.

Table 3. Error Correction Mechanism (Short-Run Relationship)

Dependent Variable: $d(\sigma^{INF})$				
Explanatory Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.022909	0.038282	-0.598439	0.5507
ECM(-1)	-0.212038	0.056999	-3.720065	0.0003
D(FID)	0.023932	0.031930	0.749503	0.4550
R-squared	0.707581	Durbin-Watson stat		1.887305
Adjusted R-squared	0.670649	F-statistic		27.546427

Source: Author, 2016

The table 2 shows the results of the short-run relationship between fiscal policy and inflation volatility in Nigeria. The results confirmed the existence of the long-run equilibrium relationship between fiscal policy and inflation volatility since the coefficient of error correction mechanism is negative and statistically significant at 5% level. However, the coefficient of error term is 21.2% indicating that the Nigerian economy corrects its previous dis-equilibrium at a speed of 21.2% quarterly.

Table 3. Empirical Analysis of Bivariate Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
FID does not Granger Cause INFV	128	5.86313	0.0037
INFV does not Granger Cause FID		3.96412	0.0215

Source: Authors, 2016

The granger causality test results showed that there was bi-directional causality between fiscal deficit and inflation volatility. This indicates that volatility of inflation influences the fiscal deficit while fiscal deficit also influences inflation volatility implying that both variables Granger cause each other. However, the implication of the results is that changes in fiscal policy (measured by fiscal deficit) actually influence the fluctuations in inflation rate in the Nigerian economy. That is, an increase or decrease in the fiscal deficit of the economy is capable of generating instability in the inflation rate.

5. Conclusion and Recommendation

Based on the findings of this study, it has been determined that fiscal deficit and inflation volatility have a bi-directional causality. Fiscal deficit influences inflation volatility and inflation volatility also influences fiscal deficit.

Therefore, this study recommends that appropriate policies should be put in place to check the extra budgetary expenditure of the government since they have been found to be inflationary. Appropriate combination of the monetary and fiscal policies should be used in other to regulate all unnecessary money supply, channel expenditures to capital projects that would increase investment opportunities and generate economic growth in the long run.

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Quality of Life across the European Union: a Regional Approach

Romeo-Victor Ionescu[1]

Abstract: It is very interesting to find the country which is able to offer the best quality of life to its inhabitants. The paper is focused on quantifying and analyzing the quality of life in the EU in the context of the latest global changes. Two scientific approaches are used in the paper: the classical one, which is based on the better index of life and a step by step analysis of the different statistical indicators able to quantify the quality of life. A distinct part of the paper covers the analysis of the quality of life by degree of urbanization at regional level. The analysis in the paper covers comparative analysis and cluster analysis, in order to point out the disparities between EU28 and Euro area on one hand and between Member States, on the other hand. The paper proposes a more scientifically approach by using a set of connected statistical variables able to express the quality of life. The differences between the Member States lead to building separate clusters for each indicator. The main conclusion of the paper is that EU28 faces to high disparities related to the quality of life which can be analysed and solved only under a three clusters approach. The whole analysis and the conclusions of the papers are supported by the latest official statistical data and pertinent diagrams.

Keywords: Life index; safety index; degree of urbanization; risk of poverty; pollution index

JEL Classification: R10; R13; R19

1. Introduction

The latest social and political events put into a new light the need of high quality of life. The goals of the EU are closed linked to the quality of life for the European citizens. Unfortunately, it is very difficult to quantify the quality of life. Some scientific approaches are based on different statistical indicators and can lead to different results.

On the other hand, it is very difficult to obtain those indicators able to quantify the quality of life. This is why the latest official statistical data cover only 2014.

Despite these situations, the analysis of the quality of life is necessary and very important. The paper is focused on the analysis of the quality of life across the EU28 and Euro area. A distinct part of the paper deals with the regional approach of the quality of life.

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The comparative analysis between the Member States and between cities, suburban and rural areas are important as well.

A two-step cluster analysis is used in order to point out the disparities related to the quality of life in the Member States. The continuous variables are the urbanizations degrees from each country, the distance between the entities is log-likelihood and the number of clusters is three.

2. Literature – Critical Overview

The quality of life became a sensible target for all local, regional and macro socio-economic policies. Finally, the result of all public policies has to be the improvement of the quality of life.

This is why OECD defined its policies as "better policies for better lives". Moreover, OECD built its own system of indicators able to quantify Your Better Life Index. Moreover, OECD members as UK, France, USA, Italy, Netherlands, Japan and Korea built national indexes for the quality of life using the support of their national statistical organisations or specialised research institutes. Finally, three concepts of well-being were defined: life evaluation, affect and psychological "flourishing". The life evaluation was supported by Personal Wellbeing Index, which consists of 8 questions related to different aspects of the life, which have equal weights in the final result. Affect is quantified using a balance between the positive and negative human feelings, while psychological "flourishing" is connected to personal experiences (OECD, 2013, pp. 30-32).

A very interesting research considers the quality of life a concept "larger" than economic production and living standards. The authors focused their analysis on: health, education, personal activities, political voice and governance, social connections, environment conditions, personal insecurity and economic insecurity. They concluded that all inequalities between peoples, ethnic groups, regions and countries lead to decreasing quality of life (Stiglitz, Sen & Fitoussi, 2009).

A distinct approach quantifies the quality of life index using eight other representative indexes, as the following: purchasing power index, safety index, health care index, consumer price index, property price to income ratio, traffic commute time index, pollution index and climate index. The result of the analysis is a top of quality of life for 56 countries in the world (NUMBEO, 2016).

From the Economist Intelligence Unit's point of view, the quality of life index (QLI) can be quantified using an empirical formula:

QLI = 65 + purchasing power and rent index - (price to income ratio × 2) - (CPI index ÷ 5) + (safety index × 0.75) + (public health index ÷ 2) - (traffic time index ÷ 2) - pollution index   (1)

where: 65 - a range modifier (Nixon, 2015).

According to the latest world political and military developments, personal safety becomes a key factor in quantifying the quality of life. This is why a distinct approach puts into account the quality of life in different cities of the world. The main conclusion of this analysis is that some European cities, especially from Western Europe, are able to offer high quality of life and personal safety. As a result, Vienna, Zurich and Munich are ranked in world top 4 according to their quality of life conditions (Andersen & Reilly, 2016).

3. Quality of Life Disparities between EU Member States

22 EU Member States cover the first 40 ranks in the latest world quality of life top. Moreover, 6 Member States are ranked in the first 10 in the world. Denmark achieved the best rank (2nd), while Lithuania faced to 40th rank in the same top which covers 56 countries.

The situation of the quality of life in EU Member States compared to the best and the worst ranks is presented in Figure 1.
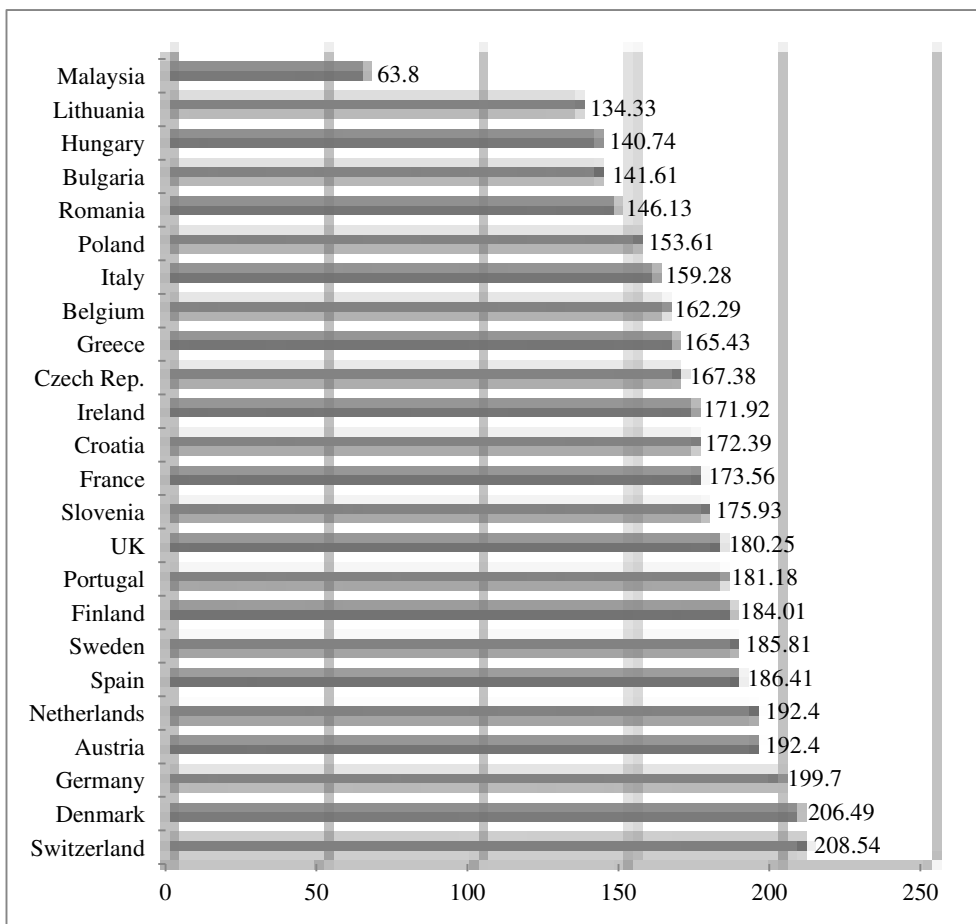
Figure 1. Quality of life index on countries

Source: Personal contribution

According to Figure 1, Romania faced to 70.07 % from the quality of life index in Switzerland and ranks 32nd position in the world top.

A different top can be built using the safety index, which became essential nowadays (see Figure 2).
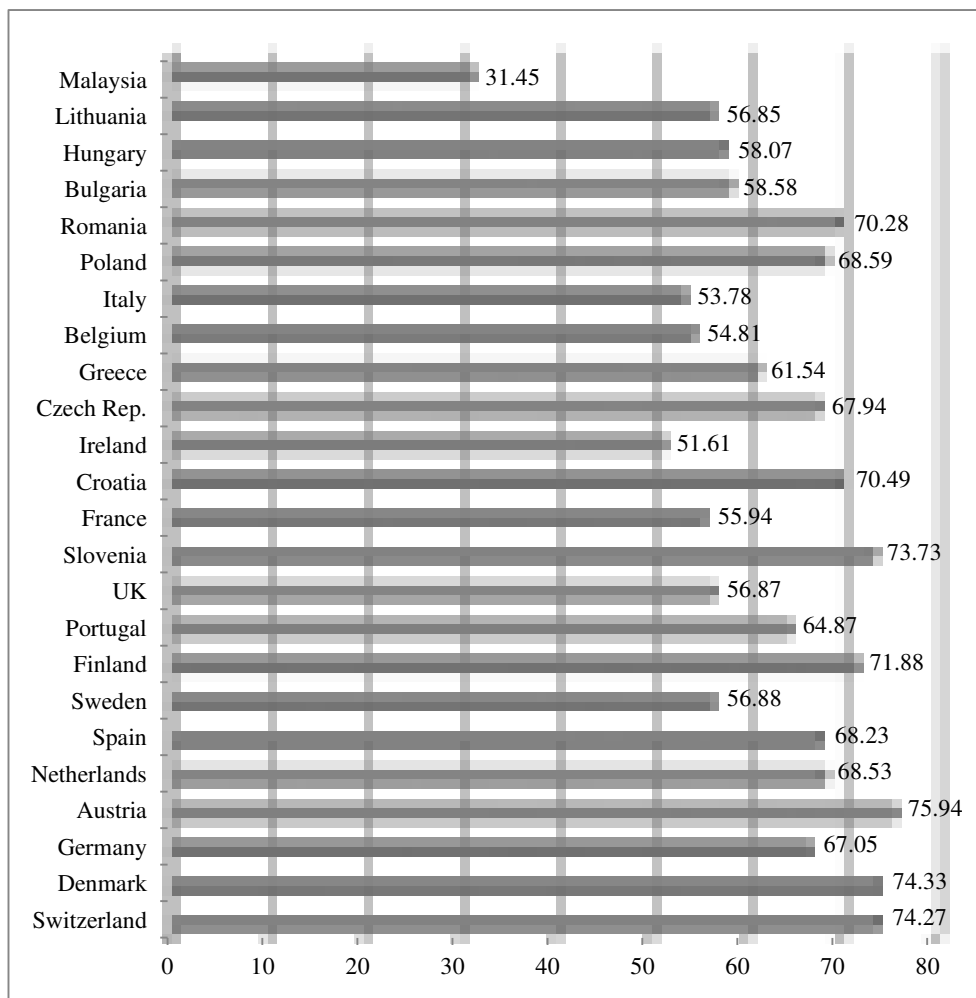
Figure 2. Safety index on countries

Source: Personal contribution

Austria, Denmark and Slovenia are the safest Member States, while Ireland, Italy and France face to the lowest safety indexes.

In order to obtain better image on the quality of life across the EU, the pollution index becomes usefully. Moreover, the quality of life index and the safety index can support a cluster approach in order to point out the disparities between the Member States (see Figure 3).
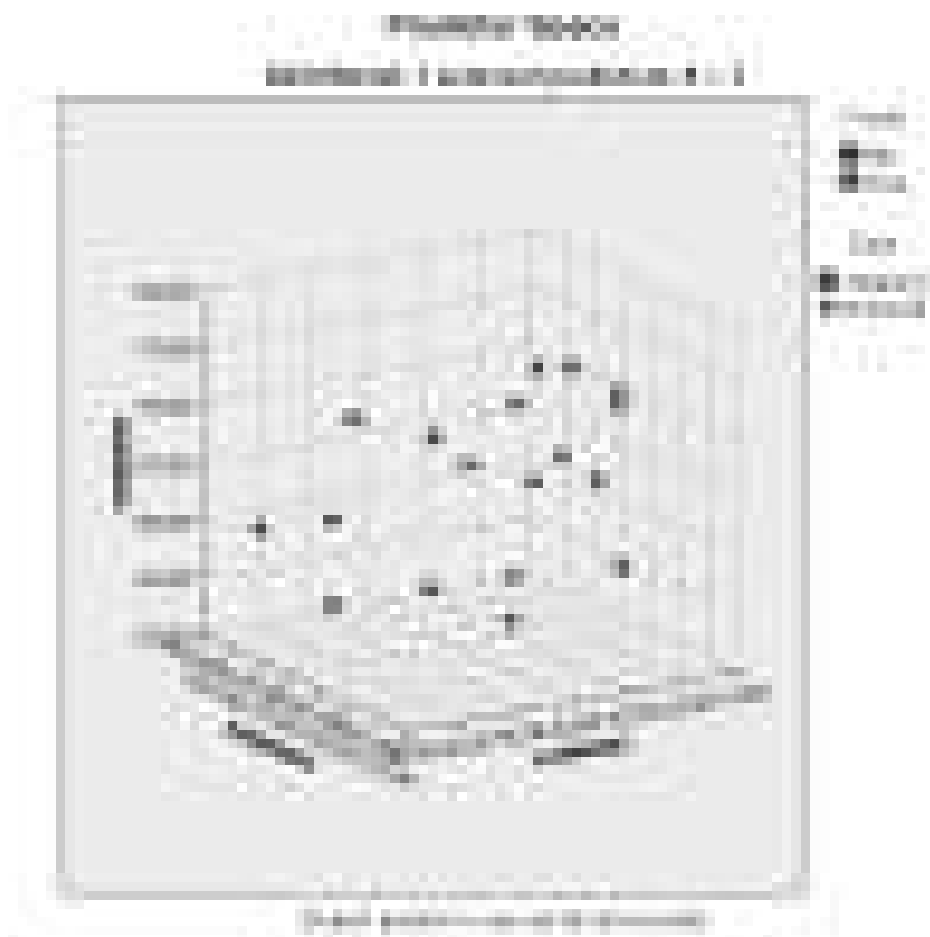
Figure 3. Quality of life's disparities (selected Member States)

Source: personal contribution using IBM-SPSS software

According to Figure 3, the quality of life supports the increase of the disparities between the Member States. As a result, EU is far away of socio-economic homogeneity and this goal isn't viable on short and medium terms.

4. EU Regional Approach on Quality of Life

Nowadays, the European Commission is more focused on the researches related to the quality of life across the Member States. In order to realize it, some dedicated indicators become usefully. One of these is distribution of population by degree of urbanization (Eurostat 1, 2016). During the latest five years, the trend of this indicator is decreasing both for EU28 and Euro area, as well (see Figure 4).
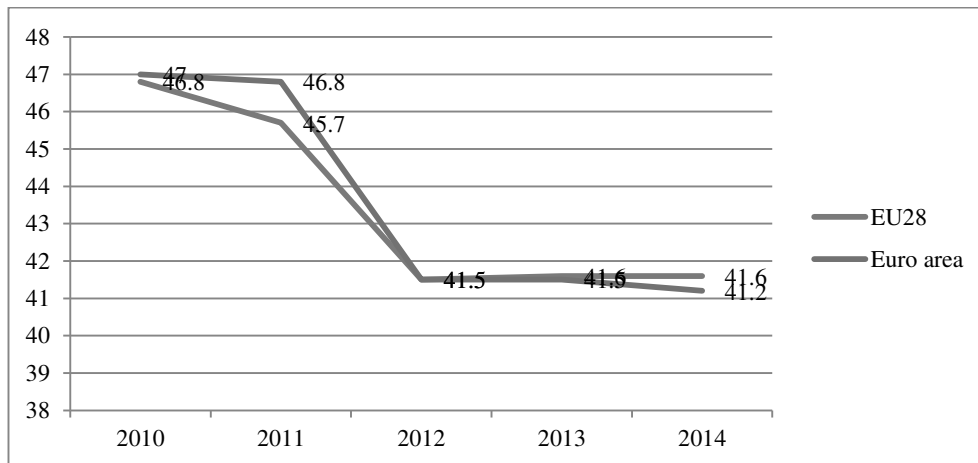
Figure 4. Distribution of population by degree of urbanization (%)

Source: Personal contribution

The European average urbanization degree of about 41.0% varies a lot in different Member States. Malta (98.5%) and UK (57.2%) achieved the highest urbanization degrees, while Luxembourg (14.5%) and Slovenia (18.8%) faced to the lowest ones. This indicator supports the building of three clusters. First covers those countries with a degree of urbanization less than 35% (Belgium, Czech Republic, Denmark, Croatia, Luxembourg, Hungary, Austria, Poland, Romania, Slovenia, Finland and Slovakia). The second cluster is built by the countries which achieve urbanization degrees between 35.0% and 42.0% (Bulgaria, Germany, Ireland, Greece and Sweden). Finally, the third cluster covers countries which achieved urbanization degrees greater than 42.0% (Estonia, Spain, France, Italy, Cyprus, Latvia, Lithuania, Malta, Netherlands, Portugal and UK). The cluster approach is supported by the cluster analysis' results (see Figure 5).

Figure 5. Cluster approach by degree of urbanization (%)

Source: Personal contribution using IBM-SPSS software

In Figure 5, the average silhouette is 0.7. It is good enough to support the above three built clusters.

The quality of life is powerfully affected by the risk of poverty and social exclusion (Eurostat 2, 2016). This risk varies enough on urban, suburban and rural areas (see Figure 6).
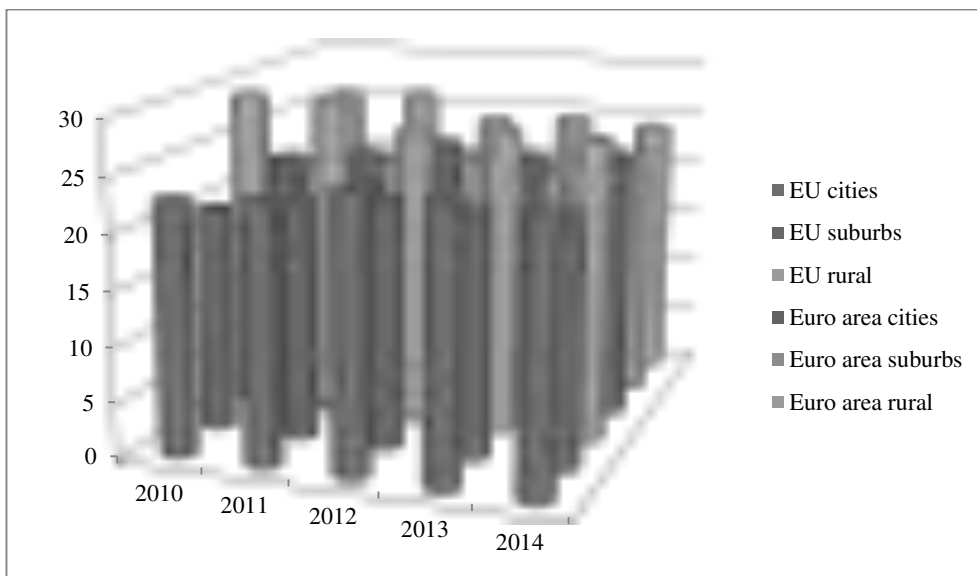
Figure 6. People at risk of poverty or social exclusion by degree of urbanization (% of total population)

Source: Personal contribution

According to Figure 6, the risk of poverty or social exclusion is higher in the rural

areas than in the cities and lower in the Euro area than in the EU28. The latest official statistical data point out that Greece and Bulgaria faced to the greatest risk of poverty or social exclusion rates in the cities, while Czech Republic and Luxembourg achieved the lowest ones. Other three clusters can be built using this indicator. The first cluster covers countries with risk of poverty or social exclusion rates less that 20.0% (Czech Republic, France, Luxembourg, Netherlands, Poland, Slovakia, Finland and Sweden). The second cluster is built with those countries with achieved rates between 20.0% and 24.0% (Croatia, Lithuania, Hungary, Malta and Slovenia). The third cluster covers: Belgium, Bulgaria, Denmark, Germany, Estonia, Ireland, Greece, Spain, Italy, Cyprus, Latvia, Austria, Portugal, Romania and UK.

The Two step cluster analysis leads to the same average silhouette of 0.7 and more equilibrated cluster divisions (see Figure 7).
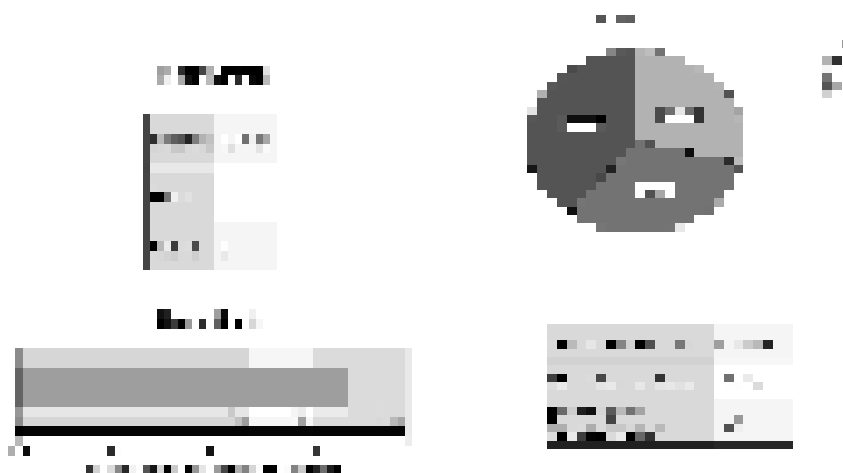
Figure 7. Cluster approach by people at risk of poverty or social exclusion by degree of urbanization

Source: Personal contribution using IBM-SPSS software

The employment rate represents other interesting indicator able to quantify the regional disparities across the EU28 (Eurostat 3, 2016). There are just little differences between the employment rates in EU 28 and Euro area, even that this indicator had a fluctuant trend (see Figure 8). The fluctuations of this indicator by degree of urbanization are not significant.
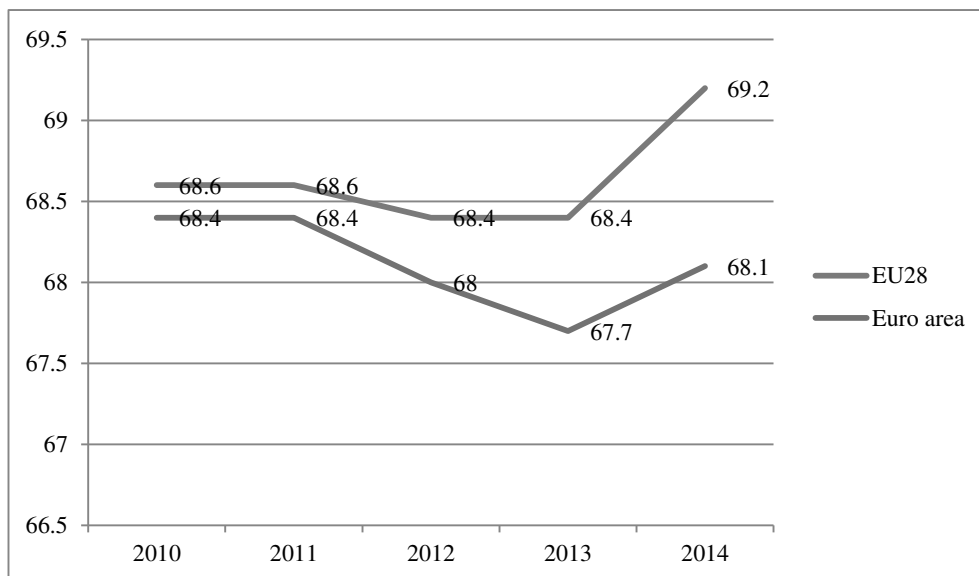
Figure 8. Employment rate by degree of urbanization (%)

Source: Personal contribution

On the other hand, the latest statistical data for the above indicator lead to the following cluster division: countries with employment rates less than 67.0% (Bulgaria, Greece, Spain, Croatia, Italy, Hungary, Malta, Poland, Romania and Slovakia), countries with employment rates between 67.0% and 69.0% (Belgium, Ireland, Cyprus, Portugal and Slovenia) and those with employment rates greater than 69.0% (Czech Republic, Denmark, Germany, Estonia, France, Latvia, Lithuania, Luxembourg, Netherlands, Austria, Finland, Sweden and UK) (see Figure 9).

Figure 9. Cluster approach by employment rate by degree of urbanization

Source: Personal contribution using IBM-SPSS software

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The best cluster quality (0.8) till now supports the idea of using the same three clusters approach.
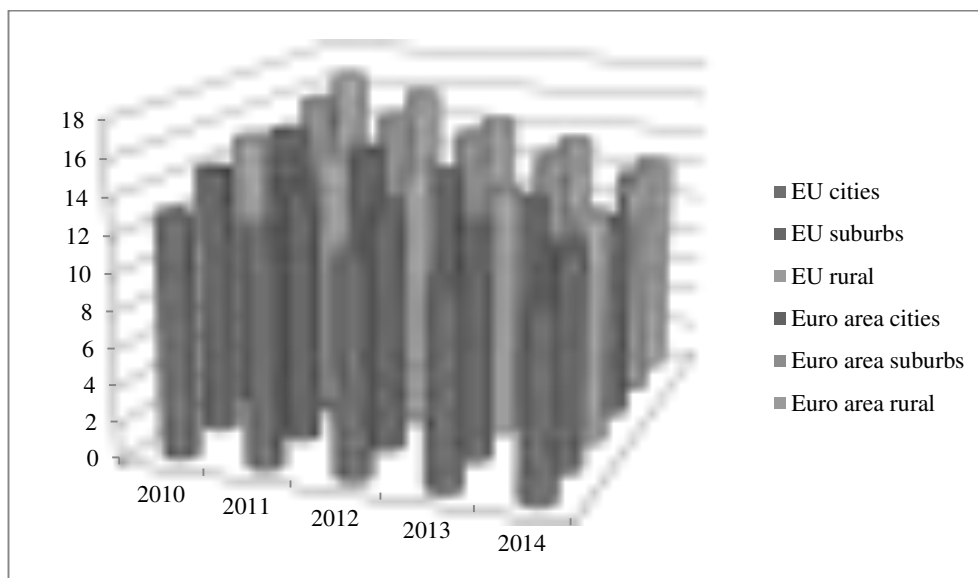
Figure 10. Early leavers from education and training by degree of urbanization (% of 18 to 24 years)

Source: Personal contribution

The employment rate and structure is a result of the early leavers from education and training. A relative low EU average early leaving rate in the cities (10.0%) is followed by a greater one in the rural areas (12.4%). The trend of this indicator is presented in Figure 10 (Eurostat 4, 2016).

Under the common cluster approach, the available statistical data lead to the following clusters: countries with early leavers rates less than 5.0% (Bulgaria, Czech Republic, Estonia, Ireland, Croatia, Lithuania, Poland and Slovakia), countries with rates between 5.0% and 8.0% (Denmark, Greece, Cyprus, Latvia, Hungary, Netherlands, Romania, Slovenia and Sweden) and countries which face to rates greater than 8.0% (Germany, Spain, France, Italy, Luxembourg, Malta, Austria, Portugal, Finland and UK). The cluster approach viability is presented in Figure 11. It supports a good cluster quality (0.8).
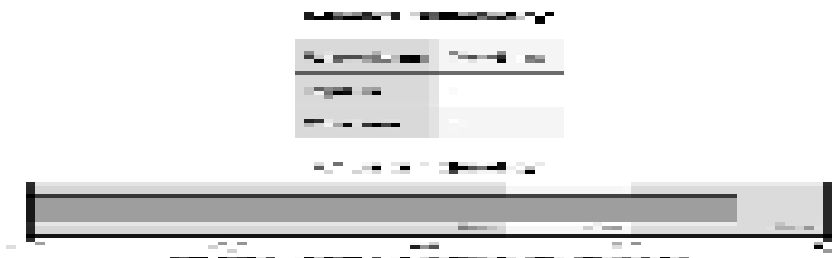
Figure 11. Cluster approach by early leavers from education and training by degree of urbanization

Source: Personal contribution using IBM-SPSS software

Pollution and other environmental problems represent a great challenge not only for the EU28. The Euro area faces to worst situation than EU28 (Eurostat 5, 2016). On the other hand, pollution is higher in the cities than in suburban and rural areas (see Figure 12).

The "classical" three clusters approach leads to the following clusters: countries with environment problems' rates less than 18.0% (Ireland, Spain, Croatia, Cyprus, Austria, Slovenia, Finland, Sweden and UK), with rates between 18.0% and 25.0% (Czech Republic, Denmark, Estonia, France, Lithuania, Netherlands, Portugal, Romania and Slovakia) and with rates greater than 25.0% (Belgium, Bulgaria, Germany, Greece, Italy, Latvia, Luxembourg, Hungary, Malta and Poland). A quality of 0.7 and a ratio of the clusters size of 1: 1.57 support the above cluster division (see Figure 13).
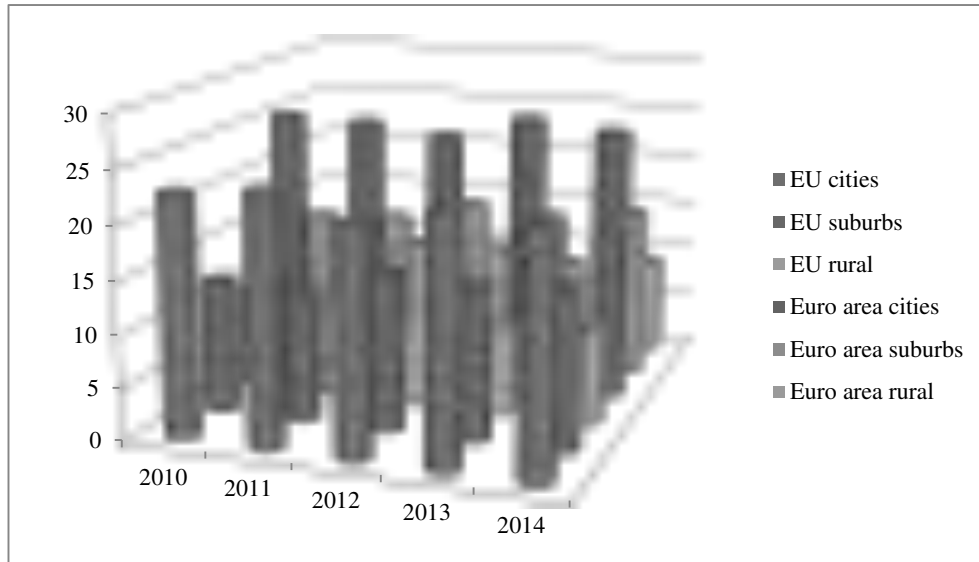
Figure 12. Pollution grime or other environmental problems by degree of urbanization (% total population)

Source: Personal contribution

Figure 13. Cluster approach by pollution grime or other environmental problems by degree of urbanization

Source: Personal contribution using IBM-SPSS software

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Last but not the least, crime, violence or vandalism make their mark on the quality of life. The indicator is more than three times higher in the cities than in the rural areas (Eurostat 6, 2016).
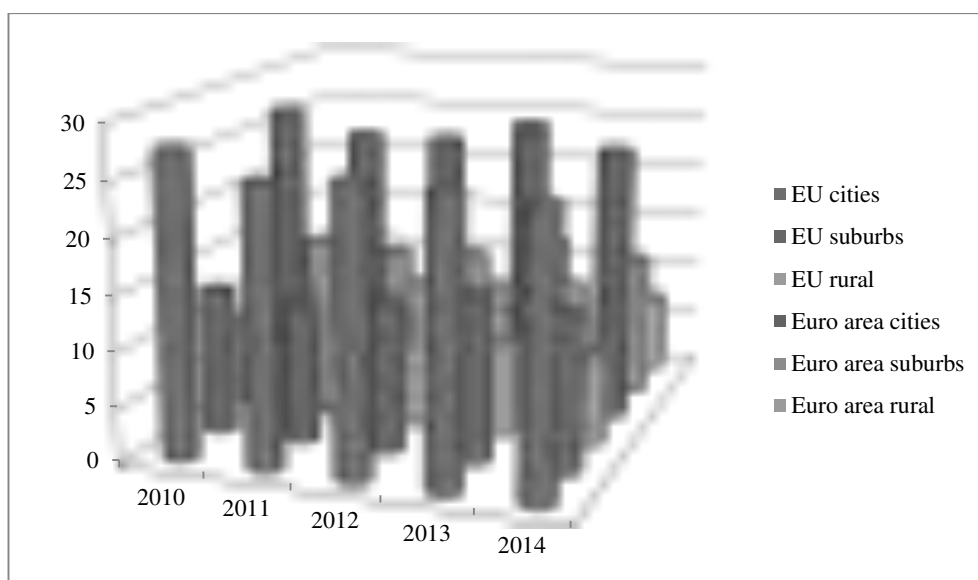
Figure 14. Crime, violence or vandalism by degree of urbanization (% total population)

Source: Personal contribution

According to Figure 14, some Member States achieved rates less than 20.0% (Estonia, Ireland, Spain, Croatia, Cyprus, Lithuania, Malta, Austria, Portugal, Romania, Slovenia, Slovakia and Finland). Other countries cover rates between 20.0% and 25.0% (Denmark, Greece, Latvia, Luxembourg, Poland and Sweden), while a third group of countries face to rates higher than 25.0% (Belgium, Bulgaria, Czech Republic, Germany, France, Italy, Hungary, Netherlands and UK). In order to check this clusters' viability, the cluster analysis leads to the following results:
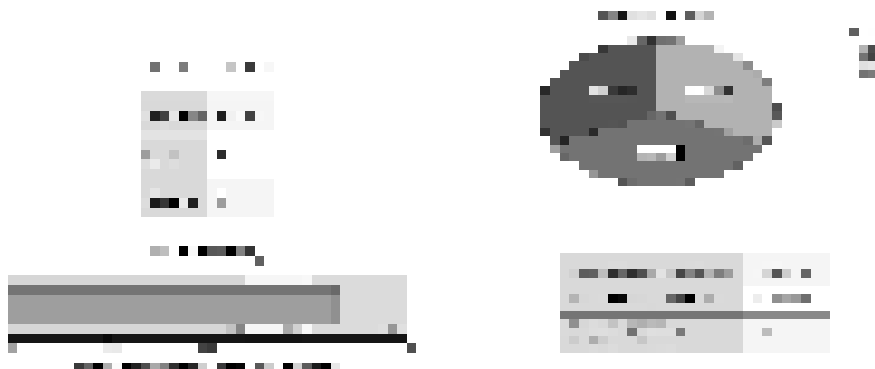
Figure 15. Cluster approach by crime, violence or vandalism by degree of urbanization

Source: Personal contribution using IBM-SPSS software

A good cluster quality (0.6) is supported by clusters ratio of sizes of 1:1.11. Both elements consist of argues for the above cluster division.

5. Conclusions

It is not easy to conclude that a Member State achieved higher quality of life than another. As a general point of view, those Member States with the best economic performances have the best quality of life.

On the other hand, this general conclusion is not the same if the analysis is focused on specific indicators. A developed economy can face to high rates of criminality or pollution with direct impact on the quality of life.

The analysis in the paper uses a lot of indicators able to support the quality of life improvement. This scientific approach leads to the idea that the Member States can be divided into three clusters. The use of these three clusters is covered by high disparities between Member States related to the quality of life.

As a result, the present EU is more heterogeneous than homogenous under the analysis of the quality of life.

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Tax Incentives in Kosovo Tax System

Bedri Peci[1]

Abstract: The aim of this research is to analyze and find out the major issue of tax incentives in Kosovo tax law. In this analysis we have used the research method of case study. The results of research show that Balkan countries in their tax systems have applied various mitigating measures that in tax theory are known as tax incentives. Taking into account that Kosovo regarding the application of tax incentives of CIT, compared with other countries is the last, designers by using the experiences of other countries should apply more tax incentives in order that tax policy to be more in function economic development. The study is of particular relevance to scholars, tax practitioners, expatriates who work and invest in Kosovo, etc.

Keywords: tax incentives; CIT; tax rates; foreign investment

JEL Classification: H25; H50

1. Introduction

The Balkan countries are competing with each other in attracting foreign direct investment (FDI) because of the positive effects that host (receiving) countries have expected. The Balkan countries (Kosovo, Albania, Bosnia and Herzegovina, Croatia, the Former Yugoslav Republic of Macedonia, Montenegro and Serbia) have gone through a process of transition, accompanied by liberalization and privatization, where foreign capital has played a very important role. Not all Balkan countries have been equally successful in attracting foreign capital, and their position depends on the specific location and institutional characteristics of each country (Škabić, 2015, p. 1). In function of accomplishing such intensions, Balkan countries in their tax systems have applied various mitigating measures that in tax theory are known as tax incentives. (Zee & Stotsky & Ley, 2002, Easson, 2004, UNCTAD, 2000, Simović & Zaja, 2010).

Taxing incentives are included in various reforms which are presented as tax relief, tax holidays, and reduction of tax base, or relief from tax obligation. Tax incentives are instruments with which countries are served aiming in favoring specific

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categories of tax payers (specific sector, enterprise or individual) and in function of simulating specific economic activities.

Through tax incentives, the state intentionally accords for reduction of public incomes which will have in disposition. This for the fact that state achieves the same effect if it would gather this portion of taxes, and which later through budgeting costs in indirect manner it would share through subventions for sectors and specific activities. The incentives' application causes decrease of budgeting incomes and this phenomenon in tax theory is called tax expenditure. In tax theory, doesn't exist single and accepted definition related with tax expenditures. In this context, most proper definition would be that tax expenditures include all the measures which are undertaken in the existing tax form with which loss of budgeting income are caused due to decreasing of taxing base or tax obligation. In this case a portion of incomes aren't calculated at all, as it flows from specific tax form. This part of incomes that is not calculated and isn't gathered from this specific taxing represents that which is called tax expenditure.

While according to the classic tax theory, tax incentives doesn't have any important role in simulating investments and in economic developing, contemporary tax theory, tax incentives are seen as very important and influential in this direction. More specifically, in old tax theory exists conclusion that role of tax incentives in relation with foreign investments is secondary compare with basic determinants, as it is the size of a state, approach in unwrought materials and availability of a qualified working force. Investors in general attempt to adapt two-steps process in the case of evaluation of one state, as a country for investments. In the first phase, they analyze country based in its basic determinants. Just those states which have been through these criteria are taken into consideration in the future phase of evaluation, where tax norms, grants and other incentives can be important. Therefore, tax incentives in relation with foreign investments have only the secondary importance. Different from classical theory, contemporary theory sees tax incentives as a very important factor and decisive in this direction. (UNCTAD, 1996, OECD, 1998, Shah, 1995, Alm & Martinez-Vazquez & Rieder, 2016, Mutti, 2003, Peci, 2011) As a base of such stance is the fact that in globalization area the whole countries have undertaken the same measures as states with full investments, as well as also for economical-regional intentions they have undertaken same measures with those of European Union, where the process of tax harmonization and mutual economical politics are more intensive than ever. Another issue that is needed to be states is lacking of proper analysis and reports for tax expenditures that Balkan countries have in the moment of application of tax incentives. While analysis and reporting of tax incentives in developed countries is done regularly in budget process, this doesn't happen in developing countries. And even if this is done by Balkan countries these analysis and reports are not adequate and are not described in details.

Therefore, the aim of this analysis is highlighting some of basic specifics which characterize policy and tax system in Kosovo, after proclamation of its independence in the case of its reformation. For this purpose we have made these questions: which is tax structure of Kosovo Tax System and which are tax incentive measures which are applied in tax system of Kosovo?

In this analysis we have used the research method of case study, based on theoretical and empirical data. Furthermore, the methodology of the research is based on analyzing taxing laws based on which the system and fiscal politics are developed, as well as reports of Ministry of Finances. For comprehensive purposes the analysis of case in Kosovo was made based on different papers which talked about transition countries, as well as other secondary sources.

Except introduction paper is laid out as follows. Part II presents an analysis of tax structure of Kosovo tax system. Part III analyzes the tax incentives through reducing tax rates. Part IV belongs to overview of tax incentives related to Corporate Income Tax**.** At the end conclusions are given.

2. Tax Structure of Kosovo Tax System

The countries in transition have applied different tax forms as far as the selection of their tax structure is concerned. Countries with higher per capita income and with a more developed tax administration have a tax structure resembling more to the European Union countries. This was a result of the efforts of these countries to become the EU members through the harmonization of their tax systems, whereas countries with lower income (revenues) and with a poorer tax administration have built their tax structure on the basis of indirect taxes (Peci, 2009, p.46). For the purpose of analyzing the development of Kosovo tax structure after independence, we have analyzed it for the years 2012 and 2014.

Table 1. Structure of Kosovo Tax System for the Years 2014 and 2012

Tax forms and other source of income	Incomes 2014	Structure 2014	Incomes 2012	Structure 2012
Border Taxes:-Customs, VAT and Excise	870.978	60.11%	844.861	55%
Returns from Customs	2.408	6.01%	2.074	0%
Internal taxes:-Personal Income Tax, Corporate income Tax, VAT	303.695	20.95%	283.915	18%
Returns from TAK	31.108	0.46%	32.763	2%
Non-tax revenues central level	47.386	0.30%	41.145	3%
Municipal Own Source income	60.955	0.23%	59.448	4%

Central Own Source Income	36.49	2.51%	44.835	3%
Concession fee	5.293	2.73%		
Royalties	26.539	0.54%		
Dividend	15	9.65%	45000	3%
Privatization proceeds			23.934	2%
PAK dedicated revenue	2.3	6.29%	16.245	1%
One-off financing of PAK				
Repayment of loans by POEs				
Receipts from emission of securities	104.007	0.13%	73.313	5%
Borrowing from IFIs	9.829	1.47%	93.677	6%
Budget support grants			37.417	2%
Total incomes	1.448.957	100%	1.537.955	100%

Source: Annual Financial Report 2014, Ministry of Finance, 2015

From the analysis of the structure of general public incomes of Kosovo, it appears that as before also and after the proclamation of the independence, indirect taxes have dominated as well as custom and VAT. In the year 2012 and 2014 we had the same report of participation for direct and indirect taxes such as also in previous years.

3. Tax Incentives through Reducing Tax Rates

The Balkan countries, similar to the European countries and other countries of South-Eastern Europe constantly reformed their tax systems by reducing the rates (Peci, 2013, p. 6). This was done mainly aimed at attracting foreign investors, respectively to create a competitive taxing system in Balkan region. The comparison of Corporate Income Tax (CIT) norms of Serbia, Montenegro, Macedonia, Albania, Kosovo and Bosnia & Herzegovina, with average norms of EU CIT, we might say that Balkan countries have lower norms and that low norms of CIT can be qualified as tax incentive.

Regarding Kosovo case, creators of tax policy in January of the year 2009 did a reduction of tax norms in two main forms of direct taxing, CIT from 20% to 10% and Personal Income Tax from 0%, 5%, 10% and 20% to 0%, 4%, 8% and 10%. At CIT, creator's aim was that through reduction of tax norm, to increase the competition capacity of Kosovo vis-à-vis foreign direct investments, respectively CIT norm to be harmonized in the level of existing norms of CIT that were already existing in Balkan countries.

At the case of PIT creator's aim was to achieve another objective; that of fighting

fiscal evasion, respectively attracting tax subjects so that by stimulating with tax burden they move from subjects of gray economy to subjects that manage to carry out their tax obligations. In difference from two ahead mentioned forms, at the increase of VAT norm from 15% to 16% designers had fiscal intentions, respectively the aim was to be done the compensation of public incomes that would be lacking along with decreasing of tax norms of CIT and PIT.

On 1 September 2015, the amendments to the Law No. 05/L-037 on Value Added Tax entered into force. Changes to VAT are consisting to rate. The standard rate is 18% (previously, 16%) and for first time is applied reduced rate of 8% which applies to the supply of: water, utilities, specific food products and medical equipment. This represents a 50% decrease from the initial standard rate of 16%. Considering the importance of VAT on budget revenues, in order to make up for the lost revenues with the introduction of the reduced rate, the Draft Law on VAT foresees an increase of the standard rate from 16 to 18% for all other remaining categories. In the meantime the rate of 0% is applied to exports with the aim of stimulating export-oriented companies. At VAT, creator's aim was that through reduced rate of 8% tax policy to be more in realizing social equality. VAT is one of the most efficient tools of the government for revenue collection given that it constitutes for more than 45% of tax revenues (TAK, 2004). Except decreasing of tax norms, Kosovo have applied few numbers of tax incentives to CIT in order to simulate foreign investors which we will treat in following.

4. Tax Incentives Related to Corporate Income Tax

As in other Balkan countries, in Kosovo since the beginning of the process of tax reforms an important number of tax incentives are applied and are still applied with added intensity. In this context, tax incentives mainly are related to CIT.

Relevant literature about tax incentives to CIT, have grouped the tax incentives in few groups such as: reduced norms of CIT, taxes decreasing, incentives for investments in a wide concept, which covers tax incentives as an accelerated amortization, tax credits in disposition for investments, decrease for qualified expenditures, decrease or zero norm, amortization based on employment, etc.

The role of tax incentives of CIT at the foreign direct investments promotion has been the object of various studies, but their disadvantages and advantages never have been clearly defined. In practice, spectacular successes have happened as well as important deviations in the application moment of tax incentives of CIT in attracting foreign investments.

In the context of this analysis for comparison of Kosovo case the main emphasizing will be done just upon tax incentives to CIT. A great number of tax incentives are applied inside of this tax form in contemporary tax systems of the

world, excluding Kosovo that still applies them in very poorly (Table no. 2).

Table 2. Types of tax incentives applied in the world and Kosovo case

Tax incentives	Developing countries (52)	Developed countries (51)	Total (103)	Kosovo
Reduced CIT rates	43	40	83	Doesn't apply
Tax holidays	37	30	67	Doesn't apply
Accelerated depreciation	26	21	47	Doesn't apply
Investment allowance	18	8	26	Is applied to CIT
Social security reductions	5	7	12	Is applied to CIT
Import duty exemptions	39	24	63	Are applied
Other	32	13	45	2

Source: Easson (2004) cited by (Simovic & Zaja, 2010) "Tax Incentives in Western Balkan Countries", World Academy of Science, Engineering and Technology (2070-376x)4,6; 111-116, Kosovo case is prepared by author according to Kosovo Tax Law.

The majority of more than hundred existing types of tax incentives presented above are actually CIT incentives. In the case of Kosovo tax incentives are presented by referring exclusively to CIT. From the table can be seen that Kosovo in comparison to the compared countries, it very little applies tax incentives, by making that policy and tax system in this segment not being in function of economic development.

From the study done by the American Chamber of Trade through surveying companies which have invested in Western Balkan and Southeast Europe it shows up that one of the main causes of hesitations to invest in Kosovo are the non-existence of enough tax incentives, respectively disadvantaged tax environment (Zeka & Hapciu & Cakuli, 2010, pp. 1-20).

5. Conclusions

Tax incentives are instruments with which countries are served aiming in favoring specific categories of tax payers (specific sector, enterprise or individual) and in function of simulating specific economic activities. Regarding Kosovo case, creators of tax policy did a reduction of tax norms in main tax forms with aim to increase the competition capacity of Kosovo vis-à-vis foreign direct investments, respectively CIT norm to be harmonized in the level of existing norms of CIT that were already exist in Balkan countries. However, Kosovo compared with other

countries is the last, regarding the application of tax incentives of CIT.

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Managers' Perception of Internal Factors and their Effect on Corporate Entrepreneurship: The Case of Nigerian Manufacturing Industry

Emmanuel Tsado[1], Umar Gunu[2]

Abstract: This study was designed to investigate the specific internal factors that influence Corporate Entrepreneurship in Nigerian manufacturing industry. Previous studies have shown inconsistence findings regarding internal factors and Corporate Entrepreneurship. A survey research design was adopted. Simple random sampling technique was used to select 328 companies. Primary data were obtained using questionnaire. Data were analysed using hierarchical regression analysis. The result revealed that internal factors account for 33.9% variations in the Corporate Entrepreneurship in Nigerian manufacturing industry. All the five factors namely organizational boundary; management support; reward/re-enforcement; work discretion and time availability were found to have significant positive effect on Corporate Entrepreneurship at 5 % level of significance. The low value of R^2 recorded in the model was an indication that despite the usefulness of the instruments used in the study, there were other variables that also influence Corporate Entrepreneurship and needed to be included which still need to be investigated. Finding from this study has shown that manufacturing industry can serve as alternative means of economic growth for Nigeria.

Keywords: employees; environment; innovation; organization; reward

JEL Classification: M130; M190; O310; O140

1. Introduction

Interest in Corporate Entrepreneurship (CE) is on the increase by both the academics and business organizations all over the world. Business organizations' interest in CE arises as a result of the dynamic nature of the business environment couple with the effect of globalization. Notable among several factor responsible for dynamism of business environment include: change in the market, change in

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consumers' taste, competition and technological changes (Scheepers, 2007; Olughor, 2014).

For example, economic recession such as the one witnessed in 2008 – 2009 creates market disturbances for business organizations. In such periods, organizations usually suffer huge losses as a result of decline in demand for their products. However, as the economy begins to progress or revive, the surviving organizations have to renew and revitalize their products. They have to struggle to regain their market position.

Similarly, change in consumer taste and fashion also affect the survival of business organizations as it can easily renders the products or services of an organization obsolete or outdated. Consumers would always want products or services that are safe, fast and convenience, thus creating room for specifications. While these factors joined together with other factors such as continuous technological changes and globalization have increased competition among business organizations, particularly manufacturing organizations.

The only way to cope with these challenges of environmental uncertainties according to existing literatures (Kuratko, 2009; Kuratko, Hornsby & Covin, 2014) is for the organizations to keep on improving on their products or services and introducing new ones i.e constant innovations which can be achieved through Corporate Entrepreneurship. CE is recognized to have much importance which is not limited to business organizations only. It also has the potentials to contribute greatly to the overall economy of a nation by making different varieties of goods and services available for both domestic consumption and export purpose and creating job opportunities (Sathe, 2003).

However, for CE to flourish in any organization, there must be a favourable internal environment. In this situation, the upper management must be willing to support the employees and encourage them to come up with new ideas. In addition, this requires giving the employees adequate time in order to come up with new ideas and employees must be given enough freedom to take decisions with respect to their work. Furthermore, there must be a good reward system that will motivate the employees to have interest in CE, and management should be willing to remove all the bureaucratic processes in the organization (Kuratko, Montagno, & Hornsby, 1990; Hornsby, Kuratko & Montagno, 1999; Hornsby, Kuratko & Zahra, 2002; Kuratko et al., 2014).

Considering Nigerian internal business environment, most business organizations operate a management style which most employees perceived indifferently (Olughor, 2014). Most employers do not regard labour laws and ethics, thus giving room for unfair practices by the employers (Ugwudioha, 2004). Oke and Dawson (2008) describe Nigerian work environment as impersonal and task oriented, which uses close supervision and operates within a strict disciplinary code; thus, there is

no or little autonomy among the employees. This management system represents Nigerian post colonial heritage, in which there is no room for employees' initiative. Oke and Dawson (2008, p. 9) further describe such system as risk averse, centralised, hierarchical, non consultative and authoritarian.

While, in terms of rewarding employees, the reward system in most private organizations in Nigeria is not encouraging, because till today, some employers pay their employees as low as $75 a month or even less than that in some cases. Most employers hide under the depressed economic condition of the country and claim they are not breaking even, thereby giving just little amount to their employees as salary. What added to this problem is that either there is no law regulating private sector wage in Nigeria, or the law is not functioning. Another problem regarding reward system in Nigeria is the issue of wage disparity between a foreign expatriate and Nigerian staff. Ugwudioha (2004) claims that foreign expatriate with the same qualification with Nigerian staff receives 12 times more in most cases than Nigerian expatriate. Thus, the following questions are raised:

i.   What is the effect of organizational boundary on CE?

ii. What influence does time availability have on CE?

iii. What is the nature of CE dependence on the support of the management?

iv. What is the effect of reward/re-enforcement on CE?

v.   What influence does work discretion have on CE?

2. Literature Review, Theoretical Framework and Empirical Review

2.1. Internal Factors

Over the last three decades (see Kuratko, Hornsby & Bishop, 2005, p. 280), research has tried to develop our knowledge on the factors in the internal environment that can drive managers and employees to participate in entrepreneurial activities within an existing enterprise. Internal factors or organizational context or internal climate has been described as a set of social and administrative procedures that motivate or shape the behaviour of employees toward taking part in entrepreneurial activities (Birkinshaw apud Sebora & Theerapatvong, 2009).

A review of literature indicates that five factors are considered to be critical drivers of managers and employees entrepreneurial behaviour and these include support by the top management, the structure of the organization, the reward system of the organization, availability of time and resources and work freedom (Kuratko et al., 1990; Hornsby et al., 1999; Kuratko et al., 2005; Honsby et al., 2002; Hornsby, Holt & Kuratko, 2008).

Research has built a consensus around these five factors as antecedent to or motivating factors for managers and individual entrepreneurial behaviour within an existing organization (Rutherford & Holt, 2004). Thus, a team of researchers in 2002 (Hornsby et. al., 2002) developed a psychometric instrument known as Corporate Entrepreneurship Assessment Instrument (CEAI) on these five factors which can be used to assess organizational readiness in terms of internal environment to adopt CE.

However, as good as this psychometric instrument, CEAI is, there is yet problem of inconsistence findings in most CE literatures and empirical studies (see for example the validity assessment of CEAI in Kuratko et al., 2014, p. 42). This problem of inconsistence findings is as a result of differences in environment in terms of social and cultural factors. As argued by Hisrich, Peters and Schepherd (2009), a corporate interest in entrepreneurship varies with social, cultural and business level. Similarly, Wyk and Adonisi (2011) argue that 'the portability of psychometric instruments developed in one culture and applied in another culture is often questioned'. Wyk and Adonisi (2011) further observe that most of the psychometric instruments (CEAI for example) were developed in USA, which their applications in South African culture has showed lack of content validity. This observation was supported by Chaka (2006) who also argue that culture is an important determinant factor for individual willingness to accept entrepreneurial change.

In addition to the arguments and observations of Hisrich et al., (2009), Wyk and Adonisi, (2011) and Chaka (2006), it is important to note that differences in factors such as economic, educational and technological developments would limit generalization and application of most of the earlier empirical findings on factors in the internal environment and CE to a particular environment. For example, many Countries in Africa are still developing, underdeveloped or undeveloped compared to USA, Canada and other developed countries where most of the studies on internal factors and CE were done. Illiteracy level is still very high in most African countries, and this can affect the quality of employees who are expected to play a major role in CE process.

2.2. Theoretical Framework

There is no specific theory on Corporate Entrepreneurship. However, many theories are found useful from its mother field, 'entrepreneurship' in explaining the rationale behind CE. In addition, a number of theories from the field of organizational behaviour especially as it relate to employees' motivation and involvement in organizational decision making processes can also be use to better explain CE (Robbins, Judge & Vohra, 2013). Therefore in this study, we considered Technology-Organization-Environment Framework (TOE) and Job Characteristics Model as theoretical foundations.

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TOE: The frame work was based on three components: the external environment, the technology and the organization. However, present study is mainly concerned with the organizational component. The organizational context explains the nature of an organization such as the size of the firm, the extent of centralization, formalization, the complexity of its managerial structure, and the amount of free resources (time) available within the firm (Arpaci, Yardinci, Ozkan & Turetken, 2012). It is assumed that the extent to which employees will participate in CE activities will largely depend upon the degree of centralization and amount of free time they have in their respective organizations.

Job Characteristics Theory: The theory is based on five job dimensions. These include skill variety, task identity, task significance, autonomy and feedback. These job dimensions are assumed to trigger three different psychological states which in turn will lead to different outcomes (Hackman & Oldham, 1976). However, in this study, we are only concerned with only one dimension of the model, and that is autonomy. Autonomy refers to the extent to which a job allows the employee independency, discretion or freedom in terms of schedule of work or determination of procedures in execution of the work (Robbins et al., 2013, p. 254). It is assumed in present study that if employees are given substantial autonomy on their work, it will lead them to take entrepreneurial risks on behalf of their organization.

2.3. Empirical Review on Factors in the Internal Environment and CE

Since the development of CEAI, many scholars have empirically applied it in different environment and have come up with different findings[1]. Few among many other scholars that examined factors in the internal environment and CE using CEAI include: La Nafie, Nimran, Al Musadieq and Suyadi (2014); Olughor (2014); Chen and Cangahuala (2010); Hornsby, Kuratko, Shephered and Bott (2009) and Hornsby et al. (2008).

La Nafie et al. (2014) in their study reported that management support; reward system and work discretion each has positive significant effect on CE, while organizational structure and resource availability each does not have significant effect on CE. However, La Nafie et al. (2014) focused on selected Banks in Indonisia which are service providing organizations. CE may be more important in any organization that requires use of technical skills such as production, designing etc.

Olughor (2014) carried out a study on corporate entrepreneurship and employee retention strategies in Nigerian telecommunication industry used multiple regression analysis for the data analysis. His result shows a low value of $R^2 = 29.3\%$. The author reported that except time availability, other factors in the internal environment: management support, work discretion, reward/re-

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[1] See (Kuratko et al., 2014, p. 42).

enforcement and organizational boundary each had a significant effect on CE with t values = -4. 044, -3.141, 2.511 and 8.074 and sig values =.000,002,.012 and.000 respectively. Just like La Nafie et al. (2014), Olughor (2014) focussed on telecommunication companies which are also service providing organizations.

Chen and Cangahuala (2010) in their study focusing on manufacturing sector in Taiwan reported that management support, work discretion and reward each has significant relationship with each of the three dimensions of CE (innovativeness, proactiveness and risk-taking), while organizational boundary has significant relationship with innovativeness and proactiveness, time availability on the other hand has significant relationship only with risk-taking. Similarly, Hornsby et al. (2009) found a low significant relationship between new idea implemented and top management support (r = 0.19), work discretion (r = 0.11) and reward/reinforcement (r = 0.15), only time availability has negative relationship with new ideas implemented and is not significant (r = -.02).

Furthermore, Scheepers (2007) reported that only internal factors (management support (r = 0.43), autonomy (r = 0.31) and reward (r = 0.31)) each has significant relationship with corporate entrepreneurial intensity among e-business firms in South Africa. In Hornsby et al. (2008) it was reported that support by the management has the strongest relationship with entrepreneurial orientation (*r* =.45). However, entrepreneurial orientation has moderate positive significant relationship with work discretion (r =.17), time availability (r =.13) and rewards/reinforcement (r =.15). Hornsby et al. (2008) failed to include organizational boundary in their study.

3. Methodology

We adopted a survey research design for this study; therefore we made use of primary data. The population of this study is 1,826 manufacturing companies registered with Manufacturers Association Nigeria (MAN) as at August, 2014.

The sample size was determined by Guilford and Flruchter (1973) formula for estimating sample size, and was calculated to be 328 companies. We selected companies across the various sectors using random sampling techniques. The names of the companies were written each on a paper, wrapped and picked at random.

Questionnaire was used as instrument of data collection. Questionnaires were administered directly to the companies by the researcher based on the sample size. However, we issued two questionnaires to each company which were filled by functional managers such as branch's customer care manger, head of productions/operations, marketing manager, store manager, accounts and finance manager. Therefore, a total of 628 questionnaires were distributed.

We considered those employees lower level (those at the branch level). We excluded the top management staff i.e the Directors and the Chief Executive Officers (CEOs). Furthermore, this study did not cover unskilled employees such as cleaners, security guards, drivers etc.

Dependent Variable

Corporate Entrepreneurship was used as dependent variable. This was measured proxy by risk-taking propensity of manufacturing companies in Nigeria. Most previous studies have used other dimensions as a proxy for CE. For example, Antoncic and Hisrich (2001) in their study used the following four dimensions: innovativeness, self-renewal, pro-activeness and new business venturing to measure CE. Also, Kuratko et al. (2005) used a dimension which can also be referred to as innovativeness (number of new ideas suggested, the number of new ideas implemented, and the number of improvements implemented without official organizational approval) to measure entrepreneurial actions of the managers. Since previous studies mostly used other dimensions, present research used risk-taking dimension as a proxy to CE. Thus we adapted some questions from the work of many scholars including Scheepers (2007) to measure risk-taking propensity of manufacturing companies in Nigeria.

Independent Variables

Factors in the internal environment as identified in the literature: management support for entrepreneurship, work discretion, time availability, organizational boundaries and reward/re-enforcement were used as independent variables. In order to ensure validity of the instruments, Corporate Entrepreneurship Assessment Instrument (CEAI) originally developed by Hornsby et al. (2002) was used to measure internal organizational factors that either promote or impede CE. The CEAI is a 5 point likert scale measuring instrument with 48 items on internal environmental factors that can promote CE in an organization. The CEAI was used by many authors including (Kuratko et al, 2005; Chaka, 2006; Davis, 2006; Wyk & Adonisi, 2011). However, a 7 point likert's scale was used in present research.

We used hierarchical regression analysis to analyse the data. The regression model below was used for the objectives and hypotheses of the study:

$$CORPENT = \alpha + \beta_1 MtS + \beta_2 OgB + \beta_3 RwS + \beta_4 FrT + \beta_5 WdS + \varepsilon$$

Where:

CORPENT = Corporate Entrepreneurship

MtS = Management Support

OgB = Organizational Boundary

RwS = Reward Structure

FrT = Free Time

WdS = Work Discretion

α = The intercept (constant term)

$β_1$, $β_2$, $β_3$, $β_4$, and $β_5$ = Slope parameter

ε = Error term

4. Results and Analysis

Table 1. Results of Model Summary on Internal Factors and CE

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.432a	.187	.186	.90249043	.187	128.092	1	557	.000	
2	.454b	.206	.203	.89285125	.019	13.092	1	556	.000	
3	.512c	.262	.258	.86120610	.057	42.611	1	555	.000	
4	.565d	.319	.314	.82821814	.057	46.092	1	554	.000	
5	.583e	.339	.334	.81638637	.021	17.174	1	553	.000	1.765

a. Predictors: (Constant), Organizational Boundary

b. Predictors: (Constant), Organizational Boundary, Management Support

c. Predictors: (Constant), Organizational Boundary, Management Support, Reward/Re-enforcement

d. Predictors: (Constant), Organizational Boundary, Management Support, Reward/Re-enforcement, Job Discretion

e. Predictors: (Constant), Organizational Boundary, Management Support, Reward/Re-enforcement, Job Discretion, Time Availability

f. Dependent Variable: Corporate Entrepreneurship

Source: Author's Computation, 2015

Table 1 provides the results of model summary on the factors in the internal environment that influence CE. From the above table, the result of Durbin-Watson statistic tests for the presence of autocorrelation among the residuals shows that *d* =

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1.765. As a general rule of thumb, the residuals are not correlated if the Durbin-Watson statistic is approximately 2, and an acceptable range is 1.50 - 2.50[1]. Since d > 1.50, this result satisfies the assumption of independence of errors. This means that there was no autocorrelation problems in the data used for independent variables.

Furthermore, the result (Table 1) shows the contribution of each factor to the value of R^2. It can be observed that all the factors each: organizational boundary, management support, reward/re-enforcement, job discretion and time availability has significant contributions to the value of R^2, as indicated by R^2 Change (187,.019,.057,.057 and 021 respectively). This indicates the proportion of dependent variable that can be explained by each independent variable. It shows that organizational boundary explained the highest variation 18.7% of the proportion of dependent variable. The result reveals that overall, these factors in the internal environment account for 33.9% variations in the Corporate Entrepreneurship in Nigerian manufacturing industry. The result reveals that organizational boundary explains more variation in CE than every other factors; it has R^2 of 18%.

The result as further indicated by the change statistics shows that for organizational boundary, the value of F – change = 128.092 being significant with *p value* of 0.00 < 0.05, while for management support, F-change = 13.092 which is significant with *p value* = 0.00 < 0.05, for reward/re-enforcement, the value of F-change = 42.611 also being significant, *p value* = 0.00 < 0.05, the result shows that for job discretion, the value of F – change = 46.092 which is significant, *p value* = 0.000 < 0.05.and for time availability, the value of F-change = 17.174 also being significant with *p value* = 0.00 < 0.05. This means that all the factors in the internal environment have significant contribution to the overall relationship with the dependent variable (CE).

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[1] See (Abdulkadir, 2012).

Table 2. Results of Coefficients on Internal Factors and CE

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	1.221E-16	.038		.000	1.000		
Organizational Boundary	.432	.038	.432	11.318	.000	1.000	1.000
2 (Constant)	1.316E-16	.038		.000	1.000		
Organizational Boundary	.432	.038	.432	11.440	.000	1.000	1.000
Management Support	.137	.038	.137	3.618	.000	1.000	1.000
3 (Constant)	1.439E-16	.036		.000	1.000		
Organizational Boundary	.432	.036	.432	11.860	.000	1.000	1.000
Management Support	.137	.036	.137	3.751	.000	1.000	1.000
Reward/Re-enforcement	.238	.036	.238	6.528	.000	1.000	1.000
4 (Constant)	1.914E-16	.035		.000	1.000		
Organizational Boundary	.432	.035	.432	12.333	.000	1.000	1.000
Management Support	.137	.035	.137	3.901	.000	1.000	1.000
Reward/Re-enforcement	.238	.035	.238	6.788	.000	1.000	1.000
Job Discretion	.238	.035	.238	6.789	.000	1.000	1.000
5 (Constant)	1.393E-16	.035		.000	1.000		
Organizational Boundary	.432	.035	.432	12.511	.000	1.000	1.000
Management Support	.137	.035	.137	3.957	.000	1.000	1.000
Reward/Re-enforcement	.238	.035	.238	6.886	.000	1.000	1.000
Job Discretion	.238	.035	.238	6.887	.000	1.000	1.000
Time Availability	.143	.035	.143	4.144	.000	1.000	1.000

a. Dependent Variable: Corporate Entrepreneurship

Source. Author's Computation, 2015

From the results in Table 2 presented above, the test for multicollinearity indicates that a low level of multicollinearity was present, because tolerance levels = 1.0 and Variance Inflation Factor (VIF) = 1.0 for all the five factors in the internal environment. Thus, the variables selected for assessing independent variables (factors in the internal environment) in this research do not reach the level that will indicate multicollinearity.

Organizational boundary was the first variable entered, followed by management support, reward/re-enforcement, job discretion and time availability. The results show that for the first predictor, beta coefficient is substantial, positive and significant; β =.432, t = 11.318 and *p value* =0.000 < 0.05. This means that organizational boundary has significant effect on CE. Beta coefficient for the second predictor, management support is also moderately substantial, positive and significant; β = 0.137, t = 3.618, and *p value* = 0.000 < 0.05. In essence, management support has significant effect on CE. Similarly, beta value for the third predictor, reward/re-enforcement is substantial, positive and significant; β =.238, t = 6.528, and *p value* = 0.000 which is less than 0.05. This implies that reward/re-enforcement has significant effect on CE. Furthermore, beta coefficient for the forth predictor is substantial, positive and significant; it has standardized coefficient value of 0.238, *t value* of 6.789 and *p value* of 0.00 which is less than 0.05. This also means that job discretion has significant effect on CE. The fifth predictor equally has a substantial and positive beta value; β = 0.143, t = 4.144 and *p value* of 0.000 < 0.05. This equally implies that job discretion has positive effect on CE. On the strength of relationship, organizational boundary showed the strongest statistical relationship with CE. This was followed by reward- re enforcement and job discretion.

The prediction equation for model can be written as:

CORPENT= 0.0000393 + 0.432OgB + 0.137MtS + 0.238RwD + 0.238TrT + 0.143WdS + 0.035ε

5. Discussion of Findings

Based on theory, factors in the internal environment, namely organizational boundary, management support, reward/re-enforcement, work discretion and time availability influence CE activities in a business organization. It was reported in this research that all these five factors showed significant effect on CE. Interestingly, these findings support existing theory and literatures on CE, especially on the application of CEAI. Particularly, these findings are in line with the recent findings of Olughor (2014). The interesting thing about present research and that of Olughor, (2014) is that both are carried out in Nigeria, but each focused on different industry which gave opportunity for comparison. However, in his

submission, Olughor, (2014) reported that time availability have no significant effect on CE. The reason may be that Olughor's study focused on telecommunication industry which is a service providing industry while, present study focused on manufacturing industry. Workers in the service providing industry may be less busy compared to those in the manufacturing industry.

Findings from this study are supported by Job characteristics theory as discussed in the literature section, and are also in consistence with findings of most previous studies from other countries[1] but, with slight differences in some. For example in the work of La Nafie et al. (2014), management support; reward system and work discretion each has positive significant effect on CE, but organizational resources and organizational structure has no significant relationship with CE. In Scheepers (2007), it was reported that only management support, autonomy and reward were found to have significant effect on CE intensity.

However the differences that were observed between present research and La Nafie et al. (2014) and Scheepers (2007) can be attributed to differences in the business environment. This result implies that business organizations in Nigeria have a better internal environment that fosters CE than those in South Africa, Taiwan[2] and Indonisia[3].

6. Conclusion and Recommendations

The low value of R^2 recorded in the model was an indication that despite the usefulness of the instruments used in the study, there were other variables that also influence CE and needed to be included which still need to be researched. Therefore, suffix to say that these psychometric instruments (CEAI for example) cannot be adopted as universally accepted instrument for measuring factors in the internal environment that determine CE. For example, there are some variables that may be peculiar to African business environment such as leadership style of the management, communication system in the organization and issues relating to staff training and development etc which were not captured in CEAI. These variables may also explain a share of CE activities in African business environment.

Since factors in the internal environment are in direct control of business organizations, respective management of every business organizations should develop a means of improving upon these factors especially the organizational boundary, reward system and time availability. They should try as much as possible to remove all the bureaucratic procedures that can hinder employees from participating in CE activities. They should also keep on reviewing their reward

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[1] See (La Nafie et al., 2014; Hornsby et al., 2008; Scheepers, 2007).
[2] See (Chen & Cangahuala, 2010).
[3] See also (La Nafie, 2014).

system if they really want to sustain CE strategy; because the economic situation in Nigeria keeps on fluctuating every day. A reward that is considered substantial today may not be seen as appropriate in near future by the employees as a results of bad economic condition. Also, time is very necessary when it comes to creative thinking, thus manufacturing companies should consider giving their employees adequate time.

6.1. Contributions to Knowledge and Suggestions for Future Research

The study made significant contributions to knowledge as it found one factor in the internal environment to be significant predictor of CE in addition to the remaining four factors found by the previous study. Despite this significant contribution, there are some areas that still need be investigated. We therefore suggest that similar study should be replicated in other sectors of Nigerian economy and other African countries in order to ensure generalization of its findings.

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The Role of Fashion Style in Creating the First Impression

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Abstract: The article discusses how young people believe they are perceived by society depending on how their dress. It is also studied an interesting aspect relative to one factor of employability, namely on how to present to an interview.

Keywords: fashion; normal distribution; employment

1. Introduction

The labor market recorded in the last years an increasingly unemployment level in the young people. If in ([2]) 2007 the long term unemployment rate for youth (6 months and over) was 13.3%, it had after this year an oscillating evolution: 10.5% - 2008, 10.3% - 2009, 13% - 2010, 15% - 2011, 13.9% - 2012.

The employability of young people is difficult, most employers asking for a number of years of experience, which is obviously impossible.

A problem that is serious is represented by the professional orientation of youth who continue their studies in fields that are not in demand on the Romanian market, after graduation still clinging to finding a suitable job.

The study that follows, after a survey conducted by one of the authors, aims to give an answer to one of the factors that can accelerate employability namely attire candidate obtaining a job.

The study was conducted on a sample of 136 people surveyed online.

The gender distribution was 19.12% men and 80.88% women.

By age, 73.53% were in the range 19-25 years and 26.47% between 26-35 years.

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Distribution by education level of respondents was 91.91%- higher education and 8.09%-secondary education.

Finally, after residency, the distribution of respondents was 94.12%- urban and 5.88%-rural.

2. The Analysis of Statistical Survey

Question 1: In your opinion, everyday clothing is (You can tick more than one answer):

1. A non-verbal way of expression;

2. An indicator of personality;

3. Textile industry

At this question, most of the respondents stated that the everyday clothing is a crucial sign of personality – 72.79%. In the same time, 55.15% appreciated that the manner of dress complements the expression in society.
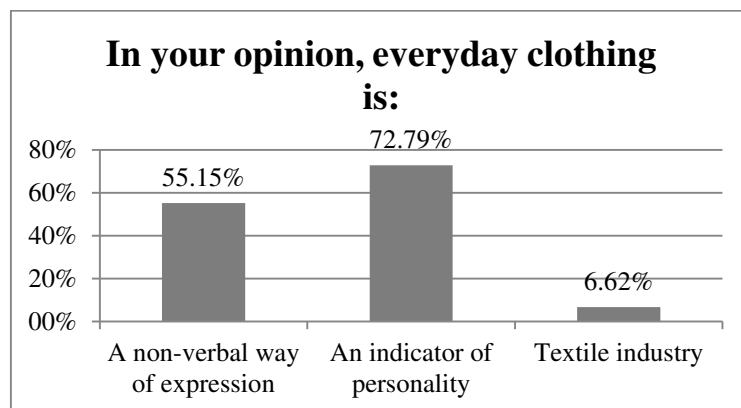
Figure 1

Question 2: How would you define your fashion style? (one option answer):

1. Informal (casual);

2. Sport;

3. Formal (business);

4. Classical;

5. Modern (trendy);

6. Another

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At this question, most of the respondents stated that like the casual style (51.47%), following of modern – 24.26% which is normal due to the age of respondents. Let note that the formal (business) style is preferred only by 8.09% which, after the following questions, is in contradiction with what the employers expected from them.
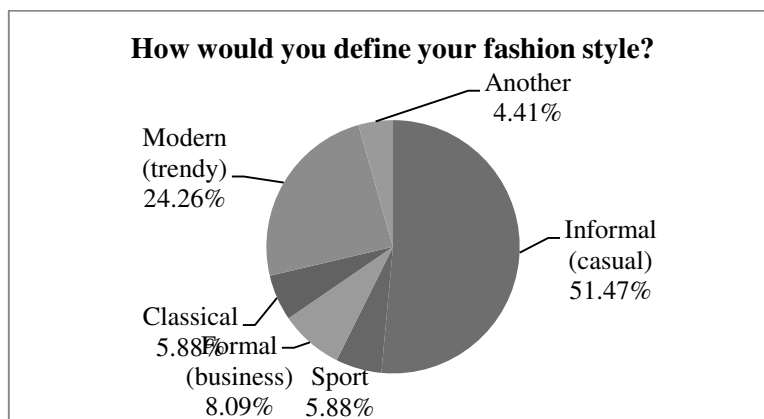
Figure 2.

Considering that the answers follows a normal distribution we obtain an average of 2.59 (relative to the indexes of answers possiblities), and a mean square error of 1.84. Therefore with a probability 0.68 the answers lie in the interval (in integer numbers): (1,4) that is most of the respondents prefer a well-defined style.

Because the skewness is γ_1=0.519341291 we have that the mass of the distribution is concentrated on the left of the graph. The kurtosis γ_2=1.54264837 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 3: Which of the following daily attire characterizes you? (one option answer):

1. Business attire, dress shoes;

2. Jeans, T-shirt, sneakers;

3. Casual attire (dress, shirt, jeans), casual shoes (flats, sneakers, sandals, moccasins);

4. Another

At this question, most of the respondents stated that like the casual attire and shoes (72.06%), following of jeans, T-shirt, sneakers – 16.91 % which is normal due to the age of respondents. Let note that the formal (business) style is preferred only by 8.82 % which, after the following questions, is in contradiction with what the employers expected from them.

Which of the following daily attire characterizes you?

Figure 3.

Considering that the answers follows a normal distribution we obtain an average of 2.68 (relative to the indexes of answers possiblities), and a mean square error of 0.66. Therefore with a probability 0.68 the answers lie in the interval (in integer numbers): (2,3) that is most of the respondents prefer a convenient style (jeans, shirts etc.).

Because the skewness is γ_1=-1.381613903 we have that the mass of the distribution is concentrated on the right of the graph (toward the convenient style). The kurtosis γ_2=4.287608881 implies that the distribution of answers is leptokurtic that means a fat-tailed distribution.

Question 4: To what extent do you think the first impression counts the formulation of opinions about a person?

1. Very little;

2. To a small extent;

3. Nor small nor large extent;

4. Largely;

5. Heavily;

6. I do not know/No answer.

At this question, most of the respondents stated that the first impression counts more – 91.17% (largely & heavily) which, after the following questions, is in agree with what the employers expected from them.

To what extent do you think the first impression counts the formulation of opinions about a person?

- To a small extent 0.74%
- Nor small nor large extent 7.35%
- Very little 0.74%
- Heavily 32.35%
- Largely 58.82%

Figure 4.

Considering that the answers follows a normal distribution we obtain an average of 4.21 (relative to the indexes of answers possiblities), and a mean square error of 0.67. Therefore with a probability 0.68 the answers lie in the interval (in integer numbers): (4,5) that is most of the respondents think that the first impression counts largely & heavily.

Because the skewness is $\gamma_1 = -0.99337538$ we have that the mass of the distribution is concentrated on the right of the graph. The kurtosis $\gamma_2 = 6.15782478$ implies that the distribution of answers is very leptokurtic that means a fat-tailed distribution.

Question 5: You think clothes can help a person to form an impression about that person?

1. Yes

2. No

At this question, most of the respondents stated that the clothes can help a person to form an impression – 92.65% which, after the following questions, is in agree with what the employers expected from them.

Figure 5.

The next questions are a common general statement: Please express your agreement or disagreement with the following statements by ticking the corresponding figure your answer, where 1 means "very little" and 5 "very much".

Question 6: I believe that a person's appearance is very important (1 to 5)

At this question, most of the respondents stated that person's appearance is very important (over 4) – 73.53% which, after the following questions, is in agree with what the employers expected from them.
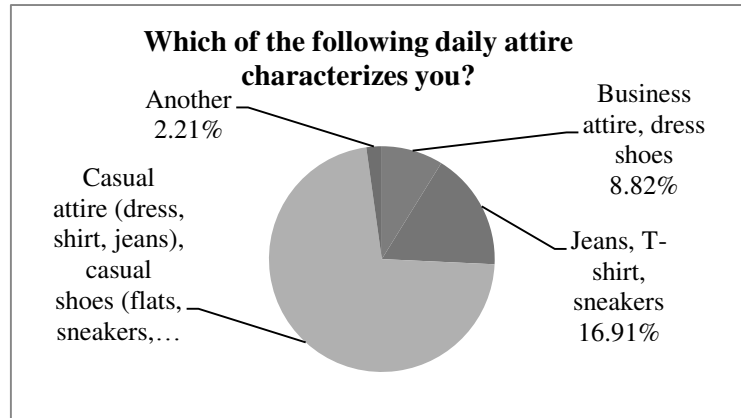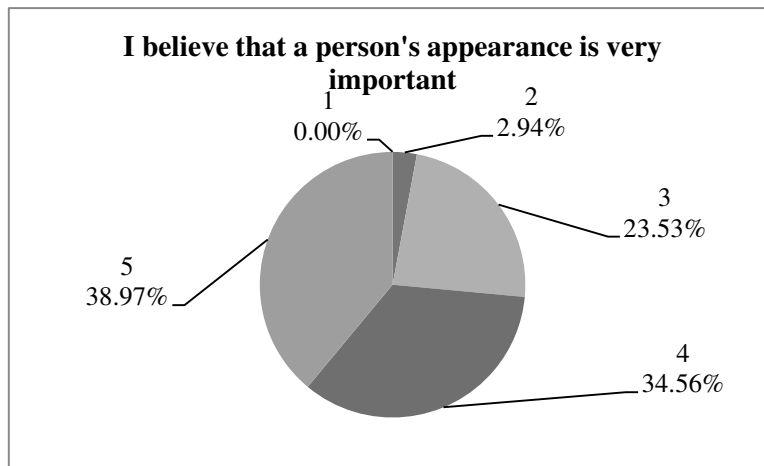

Figure 6.

Considering that the answers follows a normal distribution we obtain an average of 4.1 (relative to the scale), and a mean square error of 0.86. Therefore with a

probability 0.68 the answers lie in the interval (in integer numbers): (3,5) that is most of the respondents think that the person's appearance is very important.

Because the skewness is γ_1=-0.4745004 we have that the mass of the distribution is concentrated on the right of the graph. The kurtosis γ_2=2.1429619 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 7: I'm interested in how I look and dress (1 to 5)

At this question, most of the respondents stated that person's look and dress is very important (over 4) – 89.71% which, after the following questions, is in agree with what the employers expected from them.

Figure 7.
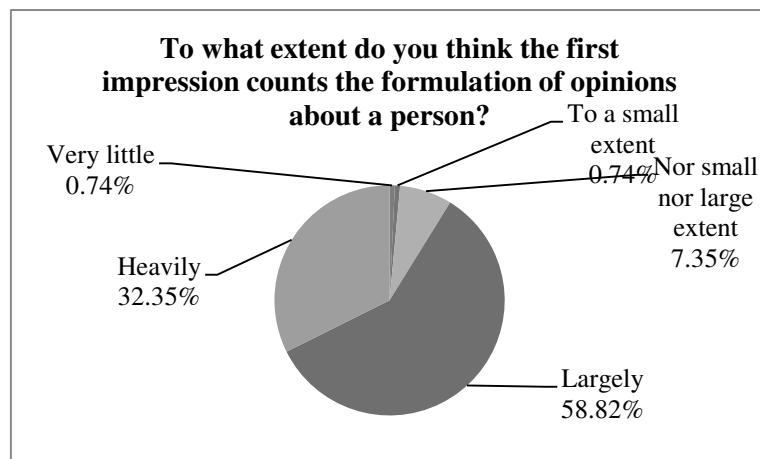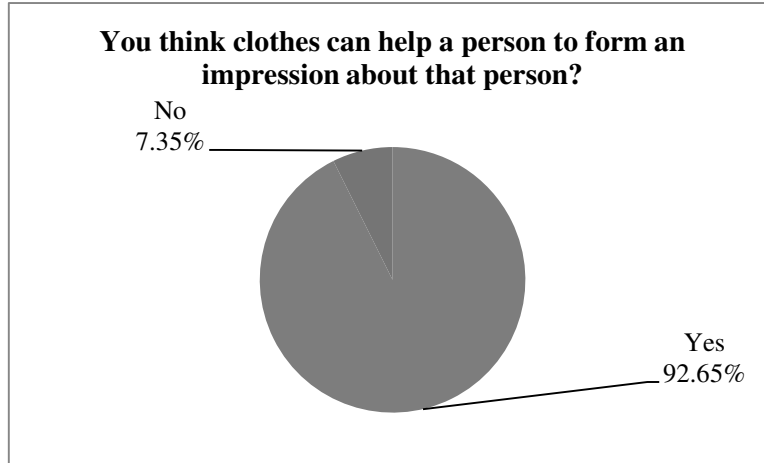
Considering that the answers follows a normal distribution we obtain an average of 4.39 (relative to the scale), and a mean square error of 0.71. Therefore with a probability 0.68 the answers lie in the interval (in integer numbers): (4,5) that is most of the respondents think that the person's look and dress is very important.

Because the skewness is γ_1=-0.96584733 we have that the mass of the distribution is concentrated on the right of the graph. The kurtosis γ_2=3.49630931 implies that the distribution of answers is leptokurtic that means a little fat-tailed distribution.

Question 8: I agree a large importance to every day clothing (1 to 5)

At this question, most of the respondents stated that person's importance to every day clothing is high (over 4) – 73.53% which, after the following questions, is in agree with what the employers expected from them.

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Figure 8.

Considering that the answers follows a normal distribution we obtain an average of 3.95 (relative to the scale), and a mean square error of 0.88. Therefore with a probability 0.68 the answers lie in the interval (in integer numbers): (3,5) that is most of the respondents think that the importance granted to every day clothing is high.

Because the skewness is $\gamma_1=-0.74757614$ we have that the mass of the distribution is concentrated on the right of the graph. The kurtosis $\gamma_2=3.59952797$ implies that the distribution of answers is leptokurtic that means a little fat-tailed distribution.

Question 9: I try to adjust my wardrobe as fashion and latest trends (1 to 5)

At this question, the answers of the respondents are uniformly distributed between 2 and 5 maybe because the financial restrictions at their age.

Figure 9.

Considering that the answers follows a normal distribution we obtain an average of 3.38 (relative to the scale), and a mean square error of 1.24. Therefore with a probability 0.68 the answers lie in the interval (in integer numbers): (2,4) that is most of the respondents think that the importance granted to wardrobe adaptation is moderate.

Because the skewness is γ_1=-0.09458262 we have that the mass of the distribution is centered to the graph. Also, the kurtosis γ_2=2.32505418 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 10: I tend to observe and analyze how other people dress (1 to 5)

At this question, most of the answers of the respondents are distributed between 3 and 5 – 88.24%.
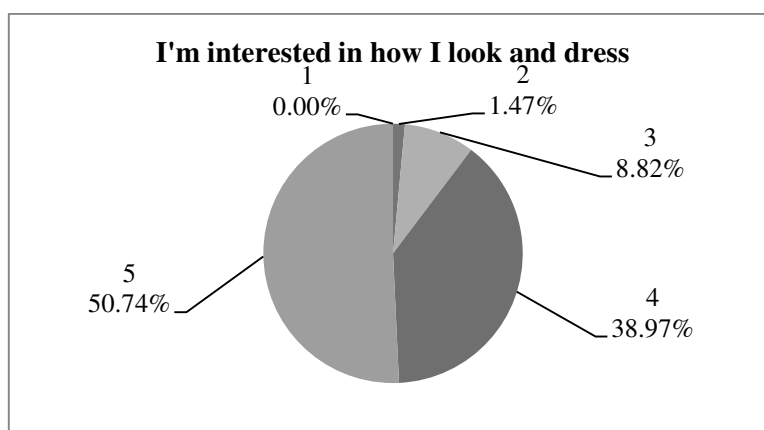

Figure 10.

Considering that the answers follows a normal distribution we obtain an average of 3.74 (relative to the scale), and a mean square error of 0.98. Therefore with a probability 0.68 the answers lie in the interval (in integer numbers): (3,5) that is most of the respondents think that the spirit of observation and analysis characterizes them.

Because the skewness is γ_1=-0.49772979 we have that the mass of the distribution is concentrated on the right of the graph. Also, the kurtosis γ_2=2.64787199 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 11: When I trust the way I dress, I like to socialize (1 to 5)

At this question, most of the answers of the respondents are distributed at the middle and upper level between 3 and 5 – 89.71 %.

When I trust the way I dress, I like to socialize

1
2.94%

2
7.35%

5
36.03%

3
23.53%

4
30.15%

Figure 11.

Considering that the answers follows a normal distribution we obtain an average of 3.89 (relative to the scale), and a mean square error of 1.07. Therefore with a probability 0.68 the answers lie in the interval (in integer numbers): (3,5) that is most of the respondents think that they like to socialize when they trust in their clothes.

Because the skewness is $\gamma_1=-0.71758276$ we have that the mass of the distribution is concentrated on the right of the graph. Also, the kurtosis $\gamma_2=2.81092248$ implies that the distribution of answers is platykurtic that means a little thin-tailed distribution.

Question 12: When I am confident in the way I dress, I like being in the spotlight (1 to 5)

At this question, most of the answers of the respondents are distributed uniformly between 2 and 5.

When I am confident in the way I dress, I like being in the spotlight
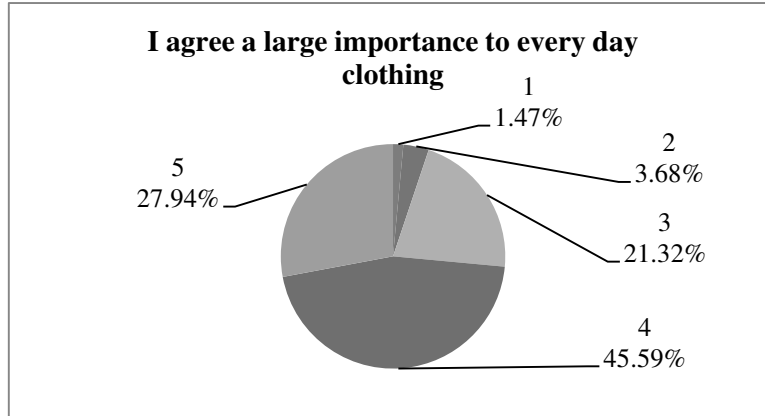
1
5.15%

5
21.32%

2
21.32%

4
31.62%

3
20.59%

Figure 12.

Considering that the answers follows a normal distribution we obtain an average of 3.43 (relative to the scale), and a mean square error of 1.19. Therefore with a probability 0.68 the answers lie in the interval (in integer numbers): (2,5) that is most the respondents are not mandatory, in the sense of social affirmation, from the how they dressed.

Because the skewness is γ_1=-0.29356783 we have that the mass of the distribution is concentrated on the middle of the graph. Also, the kurtosis γ_2=2.00580099 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 13: I tend to isolate myself when I'm not satisfied with the style of dress adopted a certain day (1 to 5)

At this question, most of the answers of the respondents are distributed between 2 and 3 – 59.56% that is respondents are not terribly addicted to socializing from the way they dress.
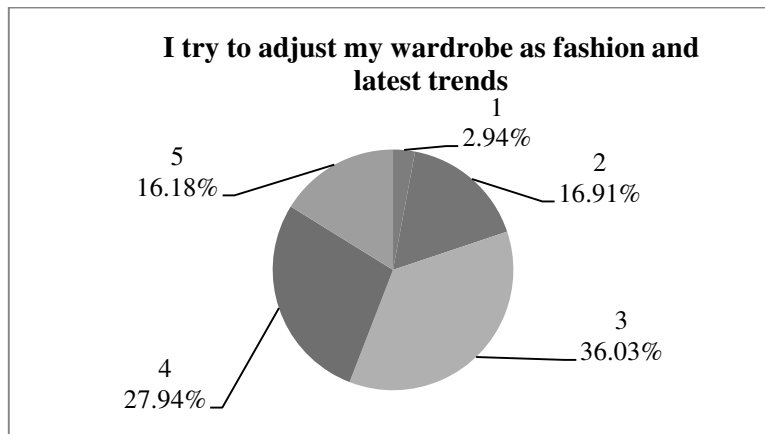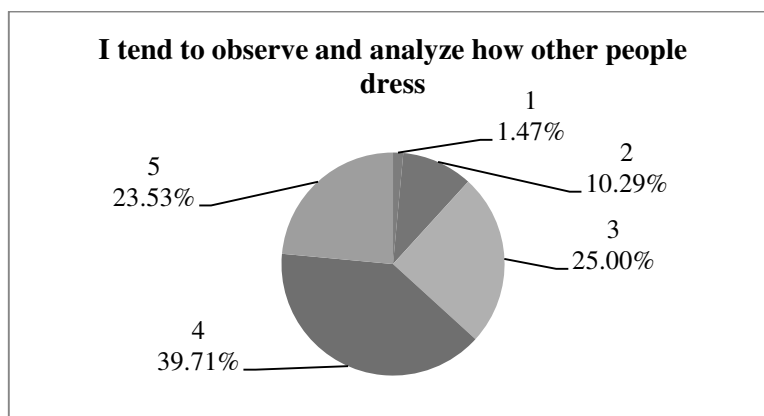

Figure 13.

Considering that the answers follows a normal distribution we obtain an average of 2.79 (relative to the scale), and a mean square error of 1.17. Therefore with a probability 0.68 the answers lie in the interval (in integer numbers): (2,4) that is most the respondents are not mandatory, in the sense of the isolation, from the how they dressed.

Because the skewness is γ_1=0.32482325 we have that the mass of the distribution is concentrated on the left of the graph. Also, the kurtosis γ_2=2.15519602 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 14: Usually I dress according to my mood of the day (1 to 5)

At this question, most of the answers of the respondents are distributed at the middle and upper level between 3 and 5 – 79.41%.

Usually I dress according to my mood of the day

1
2.21%

2
18.38%

3
18.38%

4
38.97%

5
22.06%

Figure 14.

Considering that the answers follows a normal distribution we obtain an average of 3.6 (relative to the scale), and a mean square error of 1.09. With a probability 0.68 the answers lie in the interval (in integer numbers): (3,5) that is most the respondents dress according to their mood of the day.

Because the skewness is γ_1=-0.42479176 we have that the mass of the distribution is concentrated on the right of the graph. Also, the kurtosis γ_2=2.19183427 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 15: The clothes that I wear can affect the mood of the day (1 to 5)

At this question, most of the answers of the respondents are distributed uniformly between 2 and 5 – 92.65%.

The clothes that I wear can affect the mood of the day
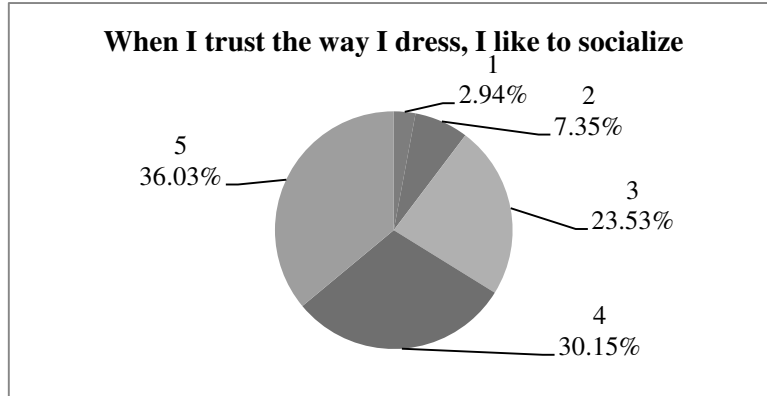
1
7.35%

2
13.24%

3
24.26%

4
30.15%

5
25.00%

Figure 15.

Considering that the answers follows a normal distribution we obtain an average of 3.52 (relative to the scale), and a mean square error of 1.21. With a probability 0.68 the answers lie in the interval (in integer numbers): (2,5).

Because the skewness is γ_1=-0.46954057 we have that the mass of the distribution is concentrated on the right of the graph. Also, the kurtosis γ_2=2.28820198 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 16: Usually I dress according to the weather (1 to 5)

At this question, most of the answers of the respondents are distributed at the middle and upper level between 3 and 5 – 94.11% but it is interesting that only 21.32% take into account very seriously the weather (maybe because of the age of the respondents).
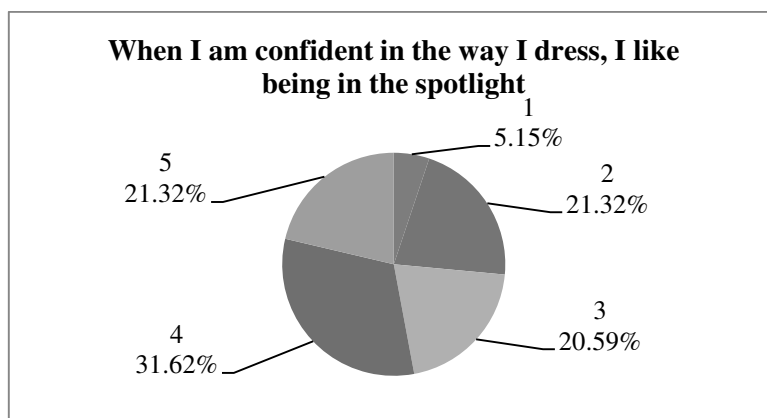

Figure 16.

Considering that the answers follows a normal distribution we obtain an average of 3.81 (relative to the scale), and a mean square error of 0.89. With a probability 0.68 the answers lie in the interval (in integer numbers): (3,5).

Because the skewness is γ_1=-0.68883897 we have that the mass of the distribution is concentrated on the right of the graph. Also, the kurtosis γ_2=3.68504788 implies that the distribution of answers is leptokurtic that means a fat-tailed distribution.

Question 17: Usually I dress according to the group I belong (college team sports, certain music clubs, fraternities, including groups of friends with the same style of dress etc.) (1 to 5)

At this question, most of the answers of the respondents are distributed at the middle level between 2 and 4 – 69.86% - answers correlated with their mood (as in the upper questions).

Usually I dress according to the group I belong (college team sports, certain music clubs, fraternities, including groups of friends with the same style of dress etc.)
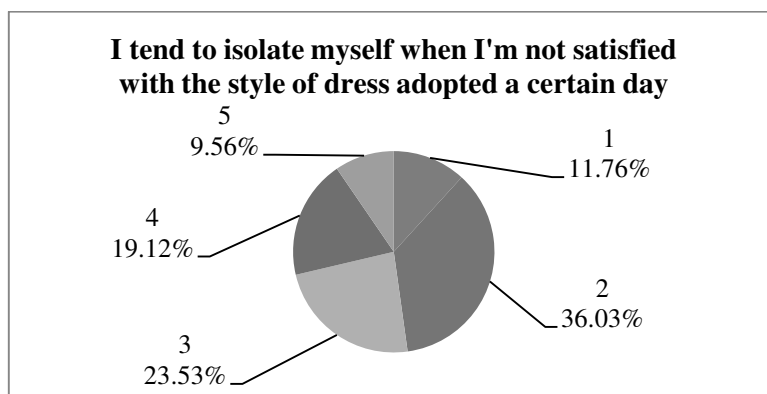

Figure 17.

Considering that the answers follows a normal distribution we obtain an average of 3.16 (relative to the scale), and a mean square error of 1.26. With a probability 0.68 the answers lie in the interval (in integer numbers): (2,4).

Because the skewness is $\gamma_1=0.02768797$ we have that the mass of the distribution is concentrated on the middle of the graph. Also, the kurtosis $\gamma_2=1.96578555$ implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

The next ten questions investigates how respondents perceive visual three persons dressed: picture no.1 – style business, picture no.2 – style sport, picture no.3 – shirt, short jeans, slippers

Question 18: On a scale of 1 to 5, how you perceive the person in the picture no.1? (1-negative to 5 positive)

At this question, most of the answers of the respondents are distributed at the upper level between 3 and 5 – 84.56% which shows that the style business send an agreeable image.

On a scale of 1 to 5, how you perceive the person in the picture no.1? (1-negative to 5 positive)

Figure 18.

Considering that the answers follows a normal distribution we obtain an average of 3.71 (relative to the scale), and a mean square error of 1.05. With a probability 0.68 the answers lie in the interval (in integer numbers): (3,5).

Because the skewness is γ_1=-0.31653992 we have that the mass of the distribution is concentrated on the right of the graph. Also, the kurtosis γ_2=2.05291406 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 19: On a scale of 1 to 5, how you perceive the person in the picture no.2? (1-negative to 5 positive)

At this question, most of the answers of the respondents are distributed also at the upper level between 3 and 5 – 86.77% which shows that the style sport send an agreeable image, probably more close to respondents' age.
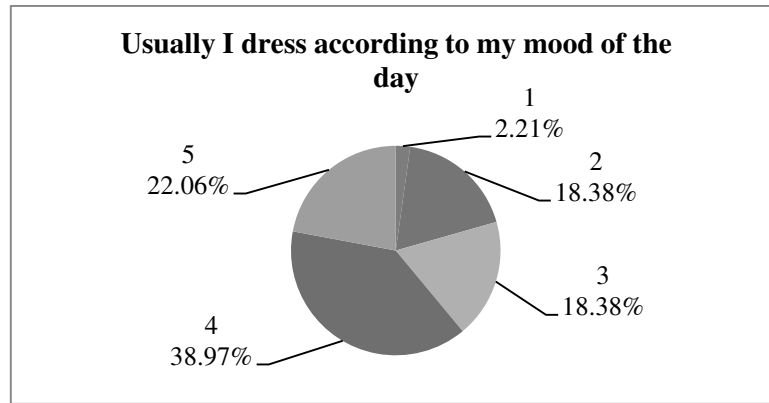

Figure 19.

Considering that the answers follows a normal distribution we obtain an average of 3.46 (relative to the scale), and a mean square error of 0.96. With a probability 0.68 the answers lie in the interval (in integer numbers): (3,4).

Because the skewness is γ_1=-0.38562597 we have that the mass of the distribution is concentrated on the right of the graph. Also, the kurtosis γ_2=3.02887181 implies that the distribution of answers is mesokurtic that means a normal distribution.

Question 20: On a scale of 1 to 5, how you perceive the person in the picture no.3? (1-negative to 5 positive)

At this question, most of the answers of the respondents are distributed also at the lower level between 1 and 3 – 81.62% which shows that the style suited for the holiday send not an agreeable image, probably because of survey objective in perspective of employment.

On a scale of 1 to 5, how you perceive the person in the picture no.3? (1-negative to 5 positive)

5
2.94%

4
15.44%
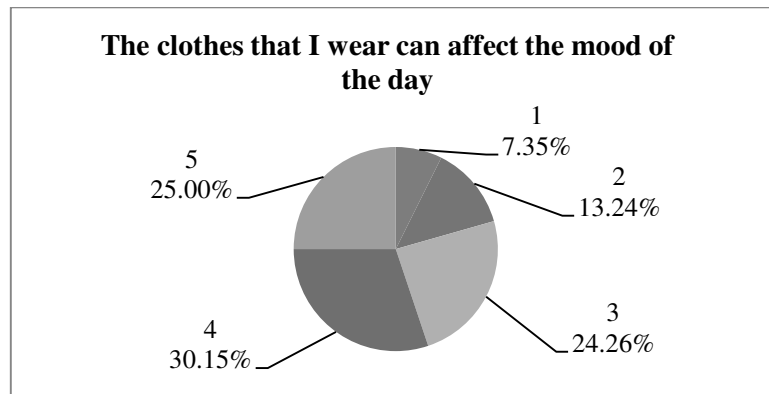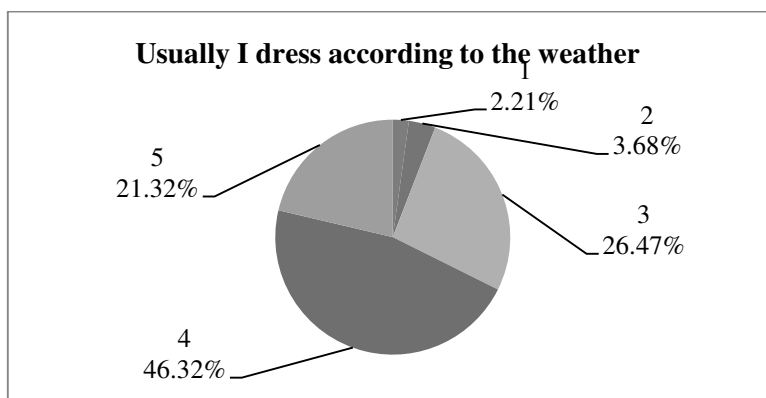
3
40.44%

1
16.18%

2
25.00%

Figure 20.

Considering that the answers follows a normal distribution we obtain an average of 2.64 (relative to the scale), and a mean square error of 1.02. With a probability 0.68 the answers lie in the interval (in integer numbers): (2,4).

Because the skewness is γ_1=0.0139548 we have that the mass of the distribution is concentrated on the middle of the graph. Also, the kurtosis γ_2=2.45700836 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 21: Which of these three people you employ in an interview?

At this question, most of the answers of the respondents are distributed to the persons 1 and 2 – 98.52% which shows that the conventional style is preferred to one unusual.

Which of these three people you employ in an interview?
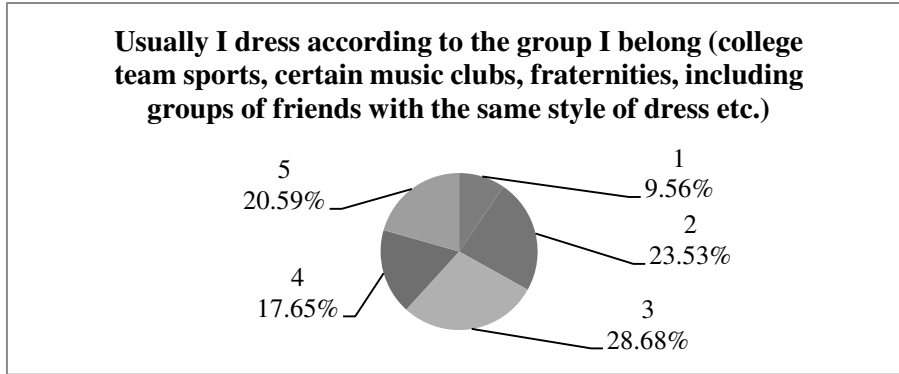
3
1.48%

2
12.59%

1
85.93%

Figure 21.

Considering that the answers follows a normal distribution we obtain an average of 1.16 (relative to the scale), and a mean square error of 0.4. With a probability 0.68 the answers lie in the interval (in integer numbers): (1,2). Because the skewness is γ_1=2.35511765 we have that the mass of the distribution is concentrated on the left

of the graph. Also, the kurtosis γ_2=9.55740147 implies that the distribution of answers is leptokurtic that means a very fat-tailed distribution.

Question 22: Which of the people in the pictures above you interact more easily?

At this question, the answers are more interesting. Even the respondents prefer to employ the person 1 (business style), they agree that the best interaction is with the second category – 60%. The difference can comes from the fact that the person 2 is more close with their personal style and not one imposed by society.
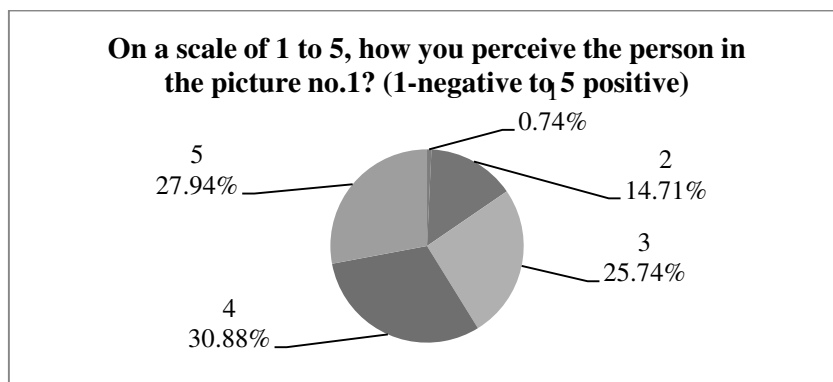

Figure 22.

Considering that the answers follows a normal distribution we obtain an average of 1.87 (relative to the scale), and a mean square error of 0.62. With a probability 0.68 the answers lie in the interval (in integer numbers): (1,2). Because the skewness is γ_1=-2.12780804 we have that the mass of the distribution is concentrated on the right of the graph. Also, the kurtosis γ_2=9.01463719 implies that the distribution of answers is leptokurtic that means a very fat-tailed distribution.

Question 23: Which of the characters you consider most attractive?

At this question, the answers are again interesting. Even the respondents prefer to employ the person 1 (business style) and they consider attractive, they also agree the person 3 dressed unconventionally.
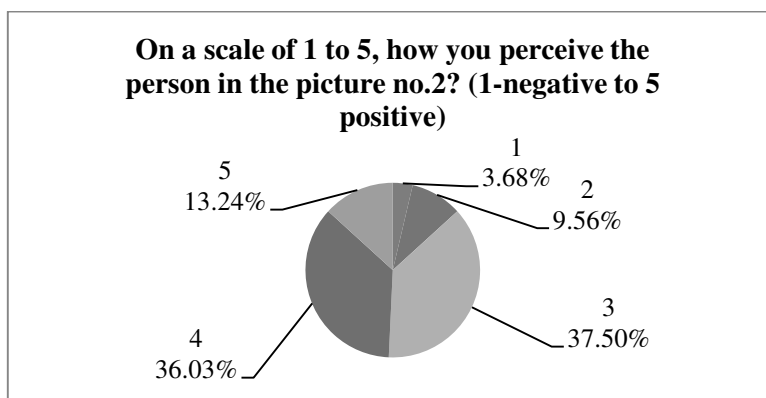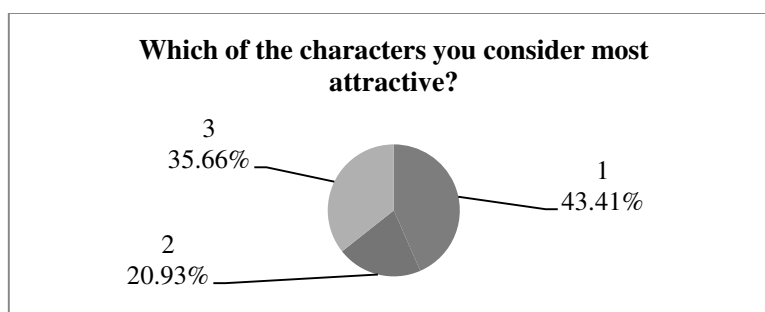

Figure 23.

270

Considering that the answers follows a normal distribution we obtain an average of 1.92 (relative to the scale), and a mean square error of 0.89. With a probability 0.68 the answers lie in the interval (in integer numbers): (1,3).

Because the skewness is γ_1=-0.3670496 we have that the mass of the distribution is concentrated almost on the middle of the graph. Also, the kurtosis γ_2=2.31840735 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 24: Which of people in photos you think should be or could be a successful person?

At this question, most of the answers of the respondents are distributed to the persons 1 and 2 – 96.32% which shows that the conventional style is preferred to one unusual.

Which of people in photos you think should be or could be a successful person?
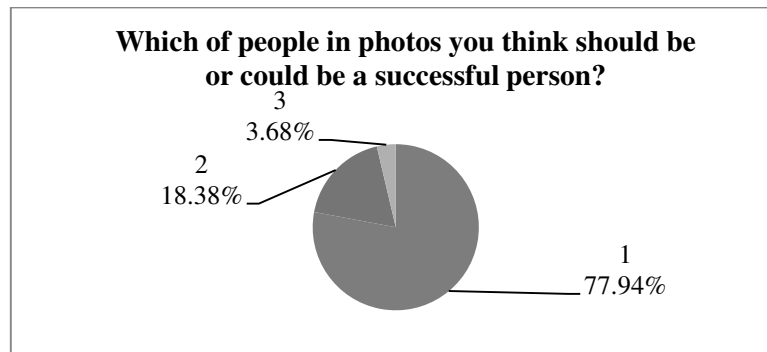
Figure 24.

Considering that the answers follows a normal distribution we obtain an average of 1.26 (relative to the scale), and a mean square error of 0.51. With a probability 0.68 the answers lie in the interval (in integer numbers): (1,2).

Because the skewness is γ_1=1.91832793 we have that the mass of the distribution is concentrated on the left of the graph. Also, the kurtosis γ_2=5.84879446 implies that the distribution of answers is leptokurtic that means a very fat-tailed distribution.

Question 25: Which of people in photos you think should have a high self-confidence?

At this question, the answers are again interesting. Even the respondents think that person 1 (business style) has a high self-confidence – 47.79%, they respect also the person 3 – 33.82%. From the percentage of 18.38%, person 2 is perceived as a common person.
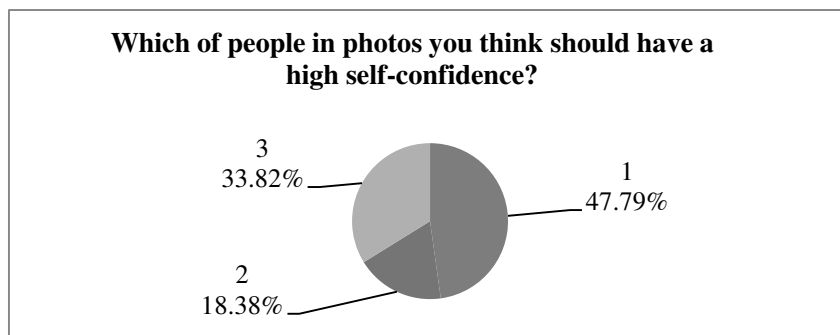
Figure 25.

Considering that the answers follows a normal distribution we obtain an average of 1.86 (relative to the scale), and a mean square error of 0.89. With a probability 0.68 the answers lie in the interval (in integer numbers): (1,3).

Because the skewness is γ_1=0.28032088 we have that the mass of the distribution is concentrated on the middle of the graph. Also, the kurtosis γ_2=1.32729444 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

Question 26: Which of these people feel that conveys a higher level of intelligence?

At this question, most of the answers of the respondents are distributed to the person 1 – 83.09% which shows that the business style induces the appearance of a higher level of intelligence.
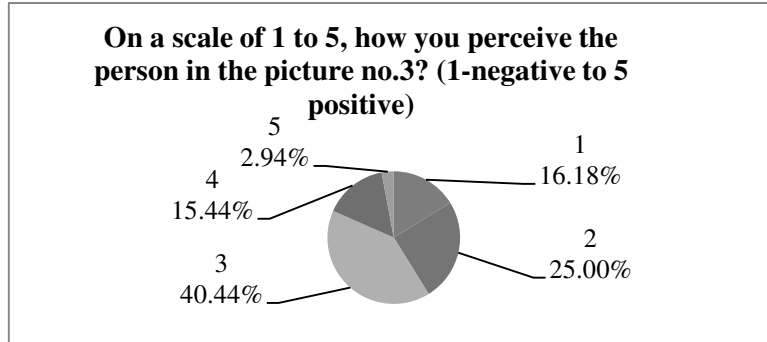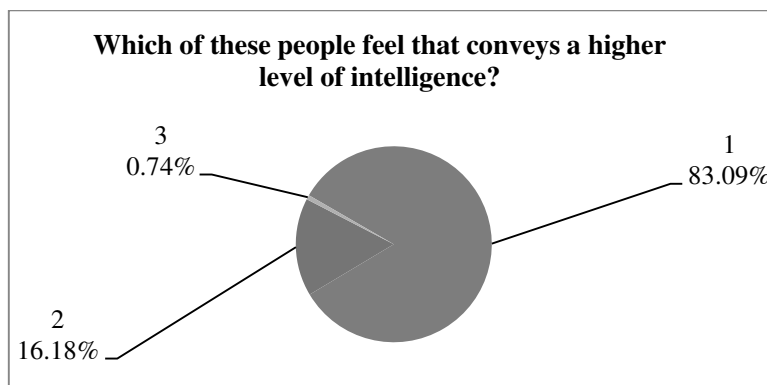

Figure 26.

Considering that the answers follows a normal distribution we obtain an average of 1.18 (relative to the scale), and a mean square error of 0.4. With a probability 0.68 the answers lie in the interval (in integer numbers): (1,2).

Because the skewness is γ_1=2.01052941 we have that the mass of the distribution is concentrated on the left of the graph. Also, the kurtosis γ_2=6.04242169 implies that the distribution of answers is leptokurtic that means a very fat-tailed distribution.

Question 27: Which of these people find it reliable?

At this question, most of the answers of the respondents are distributed to the persons 1 and 2 – 97.06% which shows that the conventional style is preferred to one unusual.
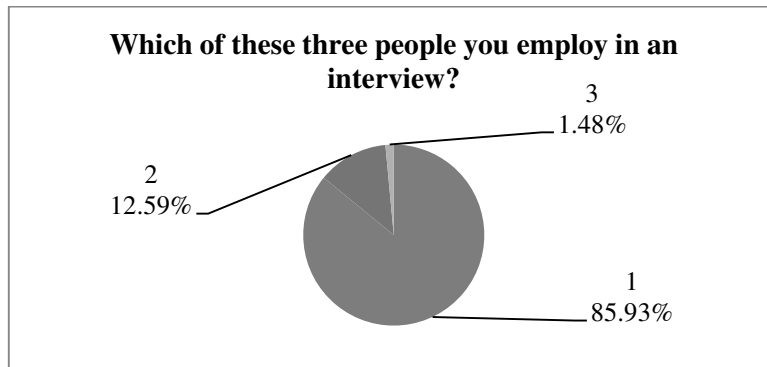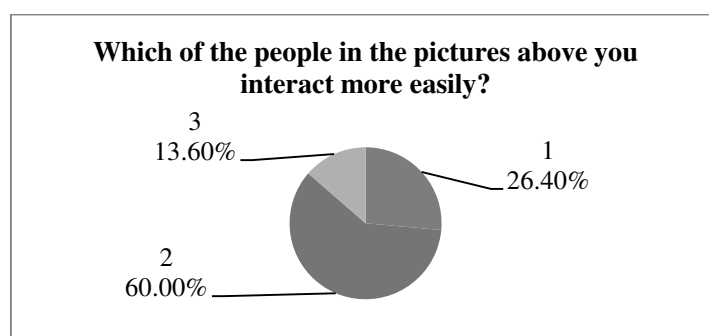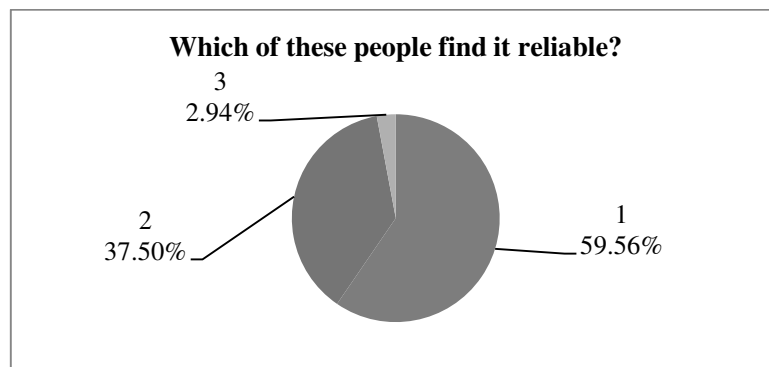

Figure 27.

Considering that the answers follows a normal distribution we obtain an average of 1.43 (relative to the scale), and a mean square error of 0.55. With a probability 0.68 the answers lie in the interval (in integer numbers): (1,2).

Because the skewness is γ_1=0.81691554 we have that the mass of the distribution is concentrated on the left of the graph. Also, the kurtosis γ_2=2.60796372 implies that the distribution of answers is platykurtic that means a thin-tailed distribution.

3. Conclusions

Following statistical analysis we can conclude that, in the hiring process, young people have a conscious attitude of usages and requirements of most employers.

Even though many prefer casual attire and communicate well with people wearing unconventional, recognize that "clothes make the man" and say they have much greater confidence in people wearing business style, that they seem to be intelligent and, above all, that will more easily find a job.

Also, the dress style that depends largely on the mood, entourage, the selected destination is definitely separated at those occasioned by work.

4. References

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Banking Crisis Early Warning Model based on a Bayesian Model Averaging Approach

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Abstract: The succession of banking crises in which most have resulted in huge economic and financial losses, prompted several authors to study their determinants. These authors constructed early warning models to prevent their occurring. It is in this same vein as our study takes its inspiration. In particular, we have developed a warning model of banking crises based on a Bayesian approach. The results of this approach have allowed us to identify the involvement of the decline in bank profitability, deterioration of the competitiveness of the traditional intermediation, banking concentration and higher real interest rates in triggering bank crisis.

Keywords: banking crisis; early warning model; bayesian model averaging

JEL Classification: G01; C11

1. Introduction

Après la survenue de la crise Mexicaine (1994-1995) et asiatique (1997-1998), la nécessité de prévenir les crises a été vivement ressenti, en particulier parmi les pays développés, émergents et les institutions financières internationales. La crise économique mondiale qui a commencé par la crise du marché hypothécaire américain, sans équivoque montre que les économies développées ne paient même pas assez d'attention aux modèles d'alerte précoce des crises bancaires. Ce pendant, ces modèles, même lorsque mis en œuvre, ne sont pas utilisés de manière adéquate. De plus, ils ne prennent pas en considération certains variables jugées responsables des mutations des comportements des banques qui adoptent des positions de plus en plus à risque. Encore, il est à remarquer qu'au cours des décennies précédentes ces modèles sont principalement appliqués à la détection des crises de change et rarement aux crises bancaires. Par exemple, le fond monétaire internationale (FMI), utilise un système d'alerte avancée (MAA) pour contrôler les crise de changes, mais n'a pas un MAA explicite pour les crises bancaires. De même, les institutions du secteur privé se concentrent seulement sur les crises de changes. Cela reflète en partie le niveau historiquement élevé de la prévalence des crises de

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change; dans une étude sur 20 pays, Kaminsky et Reinhart (1999) ont constaté que pendant les années 1970 il y' avait 26 crises de change et seulement 3 crises bancaires en raison de la répression financière. Mais, durant la période pots-libéralisation des années 1980 et 1990, les crises bancaires ont quadruplé. D'autant plus que d'autres crises sont à prévoir dans les pays émergents qui subissent la libéralisation financière, tandis que dans les économies développées, les marchés financiers titrisés développaient de nouveaux produits d'ingénierie financière dont le comportement n'est pas encore pris en compte.

Ce travail est composé de quatre sections. Dans ce qui suit nous présentons une revue de littérature des principaux modèles d'alerte avancée antérieurs ainsi que leurs limites respectives. Puis nous proposons notre méthodologie en suite, les données et les variables. En fin nous présentons les résultats empiriques.

2. Revue de la littérature

La vaste littérature empirique indique en général, l'existence de deux approches pour la conception de systèmes d'alerte précoce et qui sont les plus couramment utilisés. La première approche est une approche non-paramétrique et dite de signaux, elle compare le comportement des indicateurs économiques pour la période avant et pendant la crise. Cette approche développée par Kaminsky et Reinhart (1996), et Kaminsky, Reinhart et Lizondo (1998), est également connu comme la méthode KLR. La seconde approche est paramétrique, elle calcule la probabilité de survenance de la crise bancaire en utilisant des modèles à variables dépendantes discrètes, estimant généralement une régression probit ou logit (Demirgüç-Kunt et Detragiache, 1998; Eichengreen et Rose, 1998). Outre que ses deux approches, il y' à celles basées sur les modèles d'intelligence artificielle et d'apprentissage automatique qui prennent le devant par leur capacité supérieure en terme de prédiction tel que les réseaux de neurones artificielles (RNA) et les machines à vecteurs supports (SVM) que nous avons testé empiriquement dans le troisième chapitre de cette thèse. Malgré leurs supériorité, ces modèles d'apprentissage automatiques ne produisent pas d'inférences statistiques interprétables des variables explicatives d'où leur appellation de " boite noire ".

La plupart des modèles non-paramétriques et paramétriques utilisent une représentation discrète des crises, principalement les modèles basés sur l'approche des signaux et les modèles logit et probit. Avec ces modèles à choix discret, une alarme de survenance de crise est émise quand la probabilité atteint un certain seuil. Par la suite, ces modèles à repense binaire logit ou probit appliqués à l'origine par Berg et Pattillo (1999) ont été remplacés par des modèles multinomiaux par Bussière et Fratzscher (2006). Ces derniers auteurs ont étendu le choix discret de deux États (oui/non) à plusieurs, tels que crise, post-crise, et des périodes tranquilles. D'autre part, et selon l'approche de signalisation proposé par Kaminsky

et al. (1998), une alarme de crise est émise si le voyant d'avertissement atteint un certain seuil. Le seuil peut être définit en fonction du rapport signal-sur-bruit pour réduire au minimum les erreurs de type I et de type II (fausses alarmes). Ce pendant, un inconvenant de taille heurte la performance de ses modèles qu'est le caractère discret de la variable explicative. Cette dernière est souvent crée à partir d'un indice simple ou composé dans une première étape, et dans une seconde subit une transformation pour la rendre binaire. Du reste, un problème d'èchelle ou de seuil suite au quel on décide du critère discret à mettre oui ou non 1 ou 0.

Récemment, des indicateurs continus des crises ont été proposées par Rose et Spiegel (2011); Frankel et Saravelos (2012). Ces nouveaux indicateurs donnent au modèle d'alerte avancée la possibilité d'expliquer l'ampleur réelle des couts réels ou les mouvements nominaux sans la nécessité de décider si l'échelle est suffisamment élevée pour produire une valeur "1". De plus ces indicateurs continus ne souffrent pas d'un manque de variation de la variable dépendante lorsque trop peu de situations de crise sont observés dans l'échantillon de données. En outre, il n'y a pas de problème avec la datation des périodes de début et de fin exactes des crises, un problème qui est difficile à surmonter dans les approches discrètes.

D'autre part, les modèles d'alertes précoces basées sur les méthodes d'intelligences artificielles et apprentissage automatiques, ne permettent pas de fournir des résultats interprétables sur les variables explicatives du modèle étudié, malgré qu'elles surpassent les modèles classiques paramétriques et non paramétrique en terme de pouvoir prédictif. De plus, la performance de ses modèles est impérativement liée aux bon choix au préalable des paramètres d'apprentissages (Gamma, Cost) ainsi que la taille des données d'apprentissage et de test de faute à avoir un résultat moindre ou sur-ajuster.

3. Méthodologie

Comme l'a évoqué la littérature sur les modèles d'alertes avancées (MAA) dans la section 2, il existe un réel problème d'incertitude concernant le choix des bons variables qui doivent êtres inclus dans un MAA. Par conséquent, il est nécessaire de tenir compte systématiquement de cette incertitude du modèle. Koop (2003), montre qu'en présence d'un grand nombre de variables candidates dans un modèle de régression, induit deux importants inconvénients dans l'utilisation de l'approches traditionnelles. Tout d'abord, mettre toutes les variables possibles dans une régression n'est pas souhaitable, puisque les erreurs types augmentent si les variables pertinentes sont incluses. Deuxièmement, si nous testons séquentiellement la qualité d'ajustement du modèle avec les critères d'informations AIC-BIC afin d'exclure les variables sans importance, nous pourrions nous retrouver avec des résultats trompeurs car il y'a une possibilité d'exclure la variable pertinente chaque fois que le test est effectué.

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Le modèle Bayésien (BMA) tient compte de l'incertitude de modèle en passant par toutes les combinaisons du modèle qui peuvent survenir dans un ensemble donné de variables. Nous sollicitons le modèle BMA pour détecter les indicateurs d'alertes précoce les plus robustes parmi un panel de 25 variables potentiels. Nous considérons le modèle de régression linéaire suivante:

$$y = \alpha_i + X_i\beta_i + \varepsilon \sim (0, \sigma^2 I)................1$$

où y représente la variable de crise binaire, α_i la constante, β_i le vecteur des coefficients et ε le terme d'erreur bruit-blanc. X_i, désigne un sous-ensemble de toutes les variables explicatives pertinentes disponibles, dans notre cas d'étude ils représentent les indicateurs potentiels d'alerte avancée. le nombre k de variables explicatives potentielles donne 2^k modèles potentiels. L'indice i est utilisé pour se référer à un modèle spécifique de ces 2^k modèles. L'information provenant des modèles est ensuite réparti moyennement à l'aide des probabilités postérieure du modèle qui sont données par le théorème de Bayes:

$$p(M_i \mid y,X) \propto p(y \mid M_i,X)p(M_i)................2$$

avec $p(M_i\mid y,X)$ est la probabilité postérieure du modèle, qui est proportionnelle à la probabilité marginale du modèle $p(y \mid M_i,X)$ multipliée par la probabilité apriori du modèle $p(M_i)$.

La robustesse d'une variable dans l'explication de la variable dépendante peut être capturé par la probabilité qu'une variable donnée est incluse dans la régression. Pour ce faire nous calculons la probabilité postérieure d'inclusion (PIP), qui est donnée par:

$$\text{PIP} = p(\beta_i \neq 0 \mid y) = \sum_{\beta_i} p(M_i \mid y)................3$$

Le PIP capte la mesure par laquelle nous pouvons évaluer la robustesse de la relation d'une variable explicative potentielle avec la variable dépendante. Les variables ayant une grande PIP peuvent être considérés comme déterminants robustes de la variable dépendante, tandis que les variables ayant une faible PIP sont réputés ne pas être liées avec robustesse à la variable dépendante.

Par ailleurs, il serait impossible de passer par tout les modèles possibles si on a un nombre très élevé de variables explicatives potentielles, pour cela nous utilisons la méthode de comparaison des modèle par la chaine de Markov Monte Carlo (MC^3) développée par Madigan et York (1995). La méthode MC^3 est capable de se concentrer sur les régions du modèle où il y' à une forte probabilité de modèle postérieur et est donc en mesure de se rapprocher de la probabilité a postériori exacte d'une manière plus efficace.

4. Données et Variables

4.1. Les Données

Les données utilisés dans cette étude sont collectés à partir de quatre bases de données relativement, celles de la banque mondiale 2012-2013, le fond monétaire internationale, Bankscope et celle de Thorsten Beck, Asli Demirgüç-Kunt and Ross Levine, (2011). Ces données sont relatifs à un panel de 22 pays qui ont subit une crise bancaire entre 1990 et 2011: Argentine, Colombie, France, Allemagne, Gréce, Indonésie, Irlande, Italie, Japon, Corée du Sude, Malaisie, Mexique, Philippines, Pologne, Portugal, Espagne, Thailande, Tunisie, Turquie, Grande Bretagne, Les Etats Unis d'Amérique et l'Uruguay.

4.2. Variable Dépendante

Pour identifier les épisodes de crises bancaires, ils existent deux principales méthodes couramment utilisées dans la littérature. La première, se référe principalement aux dates des crises en accordant une valeur " 1 " à l'année de la crise et " 0 " lorsqu'il n'y à pas de crise. Mais cette méthode fixe ne reflète pas la réalité de la crise qui peut se prolonger sur plusieurs années. La seconde méthode se base sur la construction d'indice de crise. Cette dernière présente un réel problème qu'est le choix du seuil à partir du quel on transforme la variable continue en une réponse binaire " 1 " pour crise et " 0 " sinon.

Pour notre analyse empirique, la variable dépendante utilisée dans le modèle bayésien est l'indice (IXCR) donné par:

$$IXCR_i = \frac{(NPL_i - \overline{NPL})}{\sigma_{NPL}} \quad ....4$$

Cet indice est construit à partir de la variable relative au crédits non performant pour mesurer le niveau de prise de risque des banques. L'hypothèse est que durant la phase précédant une crise bancaire des comportement de prise excessive de risque élevée sont à enregistrer.

Par la suite l'identification d'une crise bancaire ne peut pas revêtir l'aspect binaire puisqu'elle n'est pas le résultat d'une naissance instantané mais plutôt le résultat d'un cumule d'évènements suspects précédant. C'est pourquoi dans ce qui suit et contrairement à la plupart des études précédentes sur les modèles d'alertes précoce des crises bancaire, nous allons utilisé une variable continue au lieux d'une binaire.

4.3. Variables éxplicatives

Multiples sont les indicateurs candidats pour la construction d'un système d'alerte des crises bancaires. On ce qui concerne notre présente étude nous sollicitons les principales variables macroéconomiques, microéconomiques et de prises de risques des banques, données par le tableau suivant:

Tableau 1. Variables explicatives

Indicateurs potentiels	Definition	Sources
GPIB	Taux de la croissance économique	World Bank
CAP	Capitalisation boursière	World Bank
INF	Taux d'inflation	World Bank
TIR	Taux d'intérêt réel	World Bank
M2R	Masse monétaire 2 sur réserves en devises	World Bank
SMTO	Rendement du marché des capitaux	Thorsten Beck, Asli Demirgüç-Kunt and Ross Levine database
LernerIndex	Compétitivité de l'intermédiation bancaire	Thorsten Beck, Asli Demirgüç-Kunt and Ross Levine database
PF	Produit net financier	IMF
SMtotTrade	Valeur totale des actions échangées sur le marché financier	Thorsten Beck, Asli Demirgüç-Kunt and Ross Levine database
ROA	Rentabilité des actifs nets	Bankscope
ROE	Rentabilité des capitaux propres	Bankscope
ProvNpl	Les provisions sur les créances douteuses	Bankscope
Zscore	La stabilité financière des banques	Bankscope
TCH	Le taux de change	World Bank
TCTD	Total crédits sur total des dépôts	Bankscope
LIQ	La liquidité bancaire	Wold Bank
KTA	Capitaux propres sur total actif bancaire	Bankscope
TD	Total dépôts	Bankscope
TDTA	Total dépôts sur total actif	Bankscope
Crp	Crédits accordés au secteur privé	Bankscope
CrPTD	Le volume des crédits accordés au secteur privé sur total dépôts	Thorsten Beck, Asli Demirgüç-Kunt and Ross Levine database
GDPperKa	PIB sur la capitalisation boursière	World Bank
IDE	Investissements directs étrangers	World Bank
CenBa	Crédits accordés par la banque centrale	World Bank
Bcon	Concentration bancaire	World Bank

En effet, la faiblesse du taux de croissance économique (GPIB) est susceptible de refléter des chocs macroéconomiques défavorables qui nuisent aux banques par des taux plus élevés de prêts non-performants (Demirgüç-Kunt & Detragiache, 1997).

Mais, dans une période de croissance économique assez favorable, les gestionnaires de crédits ont tendance au laxisme en accordant plus de crédits sans pour autant avoir des informations sur la capacité de solvabilité au préalable de leurs clients. De tels comportements augmentent le risque de crédit et accroit la probabilité de survenance d'une crise bancaire.

Par ailleurs, l'augmentation à court terme du taux d'intérêt réel (TIR) peut être un facteur nuisible aux banques lorsque celles-ci se trouvent incapables de répercuter cette hausse sur ses clients. Cependant, la baisse du taux d'intérêt réel peut attirer les investisseurs ainsi que les emprunteurs risqueurs. Ces derniers, malgré les faibles taux empruntent aujourd'hui tout en croyant réaliser des gains plu-tard, mais si ce n'est pas le cas ils deviennent insolvables et augmentent alors le taux des crédits non-performants des banques ainsi que la probabilité de faillite puis d'un effondrement systémique. En outre, et selon l'hypothèse de Reinhart et Rogoff, (2008), un taux élevé d'inflation (INF) signifie d'une part, l'imminence d'une mauvaise gestion macroéconomique et d'autre part, la création d'une bulle des prix.

D'un autre coté, le ratio relatif à la masse monétaire par rapport aux réserves de changes de la banque centrale (M2R) nous permet de détecter une possible sortie soudaine des capitaux étrangers ainsi que la vulnérabilité des pays aux problèmes de balance de payement. Ainsi, un ratio élevé de M2 à des réserves de change est supposée augmenter la probabilité d'une crise bancaire.

La croissance du taux des crédits accordés au secteur privé (Crp) et son volume par rapport aux avoirs en dépôts (TCTD, CrpTD), implique une augmentation du risque de sélection adverse ainsi qu'une hausse du volume des créances douteuses. En effet, le volume des prêts accordés par les banques témoigne souvent de la présence d'asymétrie d'information et d'une baisse considérable du contrôle sur les prêts. L'expansion des crédits reflète, d'une part, l'amélioration de la situation économique du pays dans une période de croissance économique qui est favorable, et d'autre part, la défaillance de gestion bancaire des prêts exposant les banques à des risques de contre partie et de crédit permettant la survenance de crise. C'est pourquoi l'étude du volume des prêt est nécessaire dans la mesure où elle nous permet d'évaluer le degré d'exposition des banque aux risques y afférents.

Toutefois, le risque d'illiquidité est souvent mis en premier rang des risques qui peuvent nuire à la santé d'un système bancaire tout entier. L'illiquidité est fréquemment responsable de plusieurs crises bancaires auparavant (l'Argentine, Mexique...) provoquées par une course effrénée aux guichets de la part des déposants pour retirer leurs avoirs en banque. Cet assèchement, dans tous les cas peut être estompé par le recours à l'aide des autorités monétaires et financières (PDR). Le préteur en dernier ressort comme son nom l'indique, prête aux établissements de crédits des prêts pour financer les crédits de leurs clients à fin

d'éviter une éventuelle fuite entrainant un mouvement de retrait de masse et de panique bancaire qui peut affecter tout le système bancaire.

Renseigner sur la santé des banques. Un système bancaire qui présente des carences en liquidité devrait se tourner vers la banque centrale pour financer ses crédits. Les banques en difficulté vont alors afficher une fréquence de recours au PDR un peut élevée que les autres banques, et pour mesurer cette fréquence, nous avons utilisé la variable (CenBa) qui devrait être élevée pour un système bancaire fragile.

Dans la phase qui précède une crise bancaire et après une ouverture de la finance, survient une période de croissance et de rentabilité forte. Les variables mesurant la rentabilité bancaire (ROE, ROA, PF), illustre l'hypothèse que les banques qui spéculent et qui se trouvent en difficulté au moment de la crise sont celles qui étaient les plus rentables avant la crise. De plus, les banques qui présentent une forte rentabilité sont les banques les plus liquides.

Avant la survenue de la crise, les banques qui étaient à l'abri d'une panique bancaire, peuvent se trouver en manque de liquidité. Les banques qui spéculaient sont les plus rentables avant la crise mais présentaient une carence en liquidité après. Aussi, les banques qui prennent de plus en plus de risque dans la recherche du profit sont les banques qui spéculent, principalement, celles qui accordent plus d'intérêt aux activités de hors bilan (PF, SMTO, SMtotTrade). De plus, les banques qui s'activent hors bilan sont généralement celles qui sont concurrencées par les marchés de capitaux en termes de financement de l'économie et elles deviennent de moins en moins compétitives (LernerIndex).

5. Résultats et Discussion

La figure 1 affiche les 2000 meilleurs modèles découlant de l'application du modèle bayésien. Les modèles sont classés en fonction de leurs probabilités des modèles postérieure, par la suite les meilleurs modèles sont affichés sur la gauche. La couleur grise indique un coefficient estimé positif, alors que la couleur noire indique un coefficient négatif et la couleur blanche indique que la variable n'est pas incluse dans le modèle respectif. D'après la figure 1 on remarque que la majeure partie de la masse du modèle comprend des variables qui ont une probabilité postérieure d'inclusion (PIP) supérieur à 0,5.
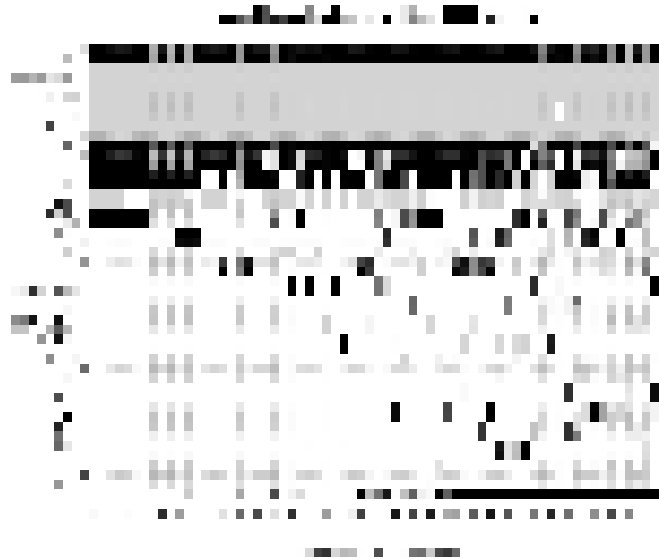
Figure 1. Selection des indicateurs potentiels d'alerte des crises bancaires.

Source: Calcul de l'auteur (R-output)

Le Tableau 2 affiche les résultats de l'estimation du modèle bayésien, principalement la probabilité postérieur incluse pour chaque indicateur, la moyenne postérieure, l'écart-type standardisé et le signe conditionnel postérieur.

Tableau 2. Estimation

Variables	PIP	Post Mean	Post SD	Cond.Pos.Sign	Idx
ROA	1.00000	-3.253830e-02	4.244807e-03	0.00000000	7
Lernerindex	1.00000	8.938866e-02	8.089334e-03	1.00000000	10
ProvNpl	1.00000	2.585490e-03	3.530887e-04	1.00000000	14
IDE	0.99413	2.127322e-02	5.440216e-03	1.00000000	25
Bcon	0.98858	2.993573e-03	7.809058e-04	1.00000000	9
Zscore	0.97686	-5.835223e-03	1.813897e-03	0.00000000	13
PF	0.86456	-2.802481e-03	1.456647e-03	0.00000000	23
TIR	0.71439	-2.598068e-03	1.964629e-03	0.00000000	22
INF	0.55294	2.013983e-04	2.083543e-04	1.00000000	20
TDTA	0.33889	-3.397488e-04	5.552591e-04	0.00008852	3
LIQ	0.16748	-1.791282e-04	5.745501e-04	0.00173155	5
SMtotTrade	0.16615	-1.668090e-14	4.509113e-14	0.00018056	16
ROE	0.15197	9.210689e-05	2.580281e-04	1.00000000	8
CrP	0.14192	-9.468734e-05	3.656530e-04	0.09653326	1
TD	0.08377	2.151552e-05	4.536223e-04	0.34284350	4
GDPperCap	0.08115	1.529442e-05	7.245582e-05	1.00000000	19
CrPTD	0.07556	6.180793e-06	2.198685e-04	0.50833774	6

GDP	0.06708	8.889442e-06	6.276395e-05	0.92695289	18
Cap	0.06269	-2.316322e-05	1.545825e-04	0.05088531	15
TCTD	0.06122	2.549382e-05	1.702665e-04	0.86899706	12
KTA	0.05342	-2.756236e-04	1.848696e-03	0.07431674	11
M2R	0.05015	2.357611e-06	7.811999e-05	0.63030907	21
SMTO	0.04315	-4.139284e-15	4.716505e-14	0.17589803	17
CenBA	0.03859	2.506692e-05	6.435114e-04	0.73050013	2
TCH	0.03239	1.053832e-05	1.808915e-04	0.83389935	24

Source: Calcul de l'auteur (R output)

Sur les 25 variables explicatives, 9 ont une probabilité postérieure d'inclusion supérieure à 0.5, ce sont les indicateurs les plus importants. Ces indicateurs potentiels sont la rentabilité net des actifs (ROA), la compétitivité de l'intermédiation bancaire (LernerIndex), les provisions sur les créances douteuses (ProvNpl), les investissement directs étrangers (IDE), la concentration bancaire (Bcon), la stabilité financière des banques (Zscore), les produits nets financiers (PF), le taux d'intérêt réel (TIR) et l'inflation (INF).

Les résultats de l'estimation du modèle BMA, montre que la plus haute probabilité postérieure d'inclusion est enregistrée par la rentabilité net des actifs (ROA). Cette dernière affiche un signe négatif donc si elle augmente, elle diminue la probabilité de survenance d'une crise bancaire. Principalement, les banques les plus rentables sont capables d'une part de colmater les trou financiers qui peuvent êtres créer par d'éventuels non remboursement et d'autre part d'honorer leurs engagements envers leurs clients et fournir à temps la liquidité demandé. De plus, l'indicateur exprimant les produits financiers net (PF) agit négativement sur la variable crise, puisque la plupart des banques utilisent les nouvelles méthodes issues de l'ingénieure financière tel que la titrisation pour faire disparaitre les créances à risques de leurs bilan tout en réalisant des profits. Ceci confirme la bonne distance par rapport au défaut des banques, enregistrée par les Zscores d'Altman (1968). Plus les Zscores sont élevées plus est la stabilité bancaire et donc moins est la probabilité de survenance d'une crise bancaire.

Par ailleurs, notre résultat confirme l'opinion commune que la détérioration de la compétitivité de l'intermédiation bancaire face aux marchés financiers mesurer par la variable LernerIndex joue un rôle important comme étant un indicateur d'alerte précoce des crises bancaires. L'augmentation de l'index de Lerner implique une baisse de la compétitivité bancaire en tant que financiers traditionnel de l'économie. Les investisseurs financent leurs projets d'investissement directement sur les marchés de capitaux, cette démarche incite les banquiers à prendre plus de risque en offrant plus de crédits à leurs clients de sorte à les retenir. Cette manœuvre et plutôt périlleuse puisque la probabilité de faire une sélection adverse des demandeurs de crédits sera élevée, principalement les investisseurs à risque seront les plus attirés par l'offre bancaire. Ce résultat s'aligne avec celui de G. Jiménez,

Jose A. Lopez et J. Saurina (2007) qui montrent dans leurs étude sur l'impacte de la compétition sur la prise de risque des banques qu'une augmentation de la compétitivité s'accouple généralement par une augmentation des crédits non performants et accroit ainsi le risque de crédit fragilisant les banques.

Outre, la compétitivité, les résultats de l'estimation montre que la concentration bancaire augmente la probabilité de survenance d'une crise bancaire. Ce résultat rejoint le camp des opposants à la thèse selon la quelle la concentration bancaire est synonyme de stabilité. Boyd et De Nicolò (2005) démontrent que l'argument classique de la vision " concentration-stabilité ", celle qui établit que la puissance de marché génère des profits plus élevés et, par conséquent, une plus grande stabilité, est au moins incomplète, et probablement fausse, parce qu'elle néglige les effets de pouvoir de marché et des couts des prêts sur le comportement de l'emprunteur. Selon ces auteurs, les taux d'intérêt élevés pratiqués par les banques incitent les entreprises qui prennent des prêts à assumer les risques plus élevés, ce qui finirait par augmenter le risque systémique. Par ailleurs, et selon Mishkin, (1999), en faisant une comparaison avec les systèmes moins concentrés, les structures plus concentrées reçoivent davantage de subventions publiques, ce qui pourrait créer un problème d'aléa moral en encourageant les banques d'une plus grande importance à assumer des risques plus élevés, ce qui augmente la fragilité du système.

Toutefois, la variable relative à l'investissement direct étranger (IDE) est paradoxalement significativement positive. C'est à dire que les IDE impacte positivement la probabilité de survenance d'une crise bancaire. Cela peut être expliqué par le fait que lorsque les IDE augmentent, l'activité économique ainsi que celle de crédit augmentent aussi, mais avec le passage du temps, la confiance des investisseurs s'atténue, ou ils anticipent une potentielle dépréciation des taux d'intérêt après une entrée massive de monnaies étrangère ou ils prévoient la survenue d'une crise financière dans le pays ce qui les poussent à retirer leurs avoirs en banque créant un reflux les rendant illiquides. Aussi, le ralentissement du rythme des activités économiques dans le pays, peut se traduire par l'incapacité des emprunteurs à rembourser les prêts. Du reste, et en raison de l'augmentation des IDE, les prêts domestiques augmentent plus que le revenu des ménages et des entreprises ce qui explique les résultats de la croissance des créances douteuses par le retrait soudain des investissements étrangers. Ce pendant notre résultat s'aligne avec celui dégagé par Calvo et Mendoza (2000) et Festi et al. (2011).

D'autre part, on remarque que l'augmentation du taux d'inflation et la baisse du taux d'intérêt réel impactent positivement la probabilité de survenance d'une crise bancaire. En effet, la crise financière et bancaire au États-Unis en 2007 a été précédé par une baisse du taux d'intérêt réel favorisant l'augmentation des crédits immobiliers et la formation d'une bulle immobilière qui a finit par s'éclater créant par la suite la crise mondialement reconnu par ses dégâts financiers et

économiques. Au premier abord, un effet de substitution vers des actifs plus risqués est produite après une période de faibles taux d'intérêt. En effet, le premier canal de prise de risque suppose que pendant une période de baisse du taux d'intérêt réel, les banques deviennent moins averse au risque et leur appétit pour le risque augmente. Cela se traduit par une multitude changements dans le comportement des banques dont, l'augmentation des investissements dans les actifs risqués. Selon Rajan (2005) des taux d'intérêt sur les placements sans risque pourrait pousser les banques à investir davantage dans l'investissement à rendement plus élevé qui sont aussi plus risqués.

D'un autre coté, le canal de la prise de risque met l'accent sur la relation entre les incitations des banques à sélectionner les emprunteurs et le niveau des taux. Plus précisément, il a été avancé que les banques deviennent de plus en plus laxistes vis-à-vis de l'offre de crédit en diminuant les processus de suivi et de contrôle pendant la période où les taux d'intérêts sont bas. Dell'Ariccia et al. (2010) affirment que la présence d'assouplissement monétaire produit une réduction du taux d'intérêt sur les prêts bancaires, la banque voit son retour de payement sur les prêts se réduit, ce qui à son tour diminue les incitations aux contrôle de la Banque. Ces revendications suggèrent que parce que la surveillance est une action couteuse, les banques sont confrontées à une réduction de retour de payement des prêts suite à une politique monétaire accommodante, décident de réduire leurs couts en réduisant les processus de suivi et de contrôle. La conséquence est que le risque de portefeuille bancaire tend à augmenter. Ioannidou et al., (2009), montrent empiriquement qu'à des taux d'intérêts bas, les banques accorde plus de crédit à des profils d'emprunteurs à risque, sans pour autant avoir une idée sur leurs historiques.

Du reste, par le dépistage et le tri des candidats emprunteurs qui ne respectent pas les normes de prêt satisfaisants, les banques jouent un rôle important pour limiter les problèmes de sélection adverse dans l'économie. Le défaut de remplir cette fonction conduit à des portefeuilles plus risqués et des bilans les plus vulnérables, avec des conséquences potentiellement négatives pour la stabilité du marché du crédit. Ce-ci affaiblit considérablement les banques et les rend de plus en plus exposées à la survenue d'une crise bancaire.

6. Conclusion

Dans cette étude nous avons développé un modèle d'alerte avancée des crises bancaires en combinant deux méthodes BMA. L'objectif est de déterminer les indicateurs potentiels qui sont capable de prédire la survenance d'une crise bancaire.

Les résultats du modèle, nous ont permis d'identifier 9 indicateurs d'alerte des crises bancaires. Nous citons, principalement, la baisse de la rentabilité des actifs

(ROA) qui a précédé la survenue d'une crise bancaire, la détérioration de la compétitivité de l'intermédiation bancaire (LernerIndex), la hausse des provisions sur les créances douteuses et l'augmentation des investissements directs étrangers (IDE). Nous soutenons aussi que la concentration (Bcon), la stabilité bancaire (Zscore), l'inflation (INF) et le taux d'intérêt réel (TIR) sont également des indicateurs d'alerte des crises bancaires.

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Testing the Expectations Hypothesis of the Term Structure of Interest Rates in BRICS Countries: A Multivariate Co-integration Approach

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Abstract: The BRICS is a group of major emerging economies in the world which have combined financial resources to form the New Development Bank in an effort to address economic challenges faced by these countries. Thus, the flow of funds among the BRICS countries are expected to increase and this has implication on interest rates changes in these countries. Employing monthly short and long term interest rates from June 2005 to June 2015, this study used a multivariate cointegration approach to test for the validity of the expectations hypothesis (EH) of the term structure of interest rates in BRICS countries. The results of the co-integration analysis revealed that the EH only holds in three of the five countries, namely China, India, and South Africa. Short and long term interest rates for these three countries converge to the long-run equilibrium at different speed, where the convergence was found to be quick in South Africa and slow in China. This study found no evidence of EH in Brazil and Russia. Findings of this study are relevant to current developments within BRICS financial markets and provide valuable information that can be used to forecast future changes in interest rates in BRICS countries.

Key words: Expectations hypothesis; term structure; interest rate; co-integration; BRICS

JEL Classification: E430; E470

1. Introduction

Monetary policy authorities and economists are constantly faced with the task of forecasting interest rate movements and in many cases, interest changes are induced by implantations of monetary policy. Changes in interest rates have implications for various market participants and understanding their dynamics becomes essential not only for economists and monetary policy, but also for risk management practices and for financial security valuations (Modena, 2008). Based on the market expectations regarding interest rates, participants are able to mitigate

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associated risks and maximise profits. Often when there is a downturn in an economy, interest rates are expected to fall and in such times investors are more likely to shift towards longer term maturity investments as they expect interest rates to fall (Rose & Hudgins, 2013). During times of economic prosperity, interest rates are expected to rise; investors thus expect a bullish market and are likely to shift to shorter term maturity investments as they may experience losses in longer term investments when interest rates are expected to rise (Rose & Hudgins, 2013). This can be explained by the expectations hypothesis (EH) which implies that investors are able to predict future changes in interest rates by simply observing the interest rate spread (Modena, 2008), that is, the difference between the short term and the long term interest rates (Guidolin & Tam, 2013). In addition to monetary policy conditions, a change in the outlook of interest rates in relation to current rates is thus reflected by changes in the expectations of market participants regarding future changes in interest rates (Shiller et al., 1983).

A common assumption made in macroeconomics regarding the EH is that the expectations of future short term interest rates shape the term structure of long interest rates (Beechey et al., 2008). This assumption proposes that long term rates reflect the expectations of future short term interest rates. A basic principle of the EH states that, under normal economic conditions, the long term rate is higher than the short term rate (Campbell & Shiller, 1991). The long term rate is therefore determined by the sum of current and future expected short term rates plus the risk premium (Campbell & Shiller, 1991). This then implies that the two rates will yield the same returns for the following year, even though the long term rate has a higher yield relative to the short term rate (Campbell & Shiller, 1991). The EH suggests that any two ways of transferring money across time, on average, ought to yield the same expected return provided that there are neutral traders in the market. This means that any difference between the two interest rates, in the long-run, may create arbitrage opportunities.

In the context of this paper, the EH is investigated within BRICS. BRICS is a group that consists of countries that are considered to be major emerging market economies. These are the economies of Brazil, Russia, India, China and South Africa that seek to enlarge influence among developed countries through combining financial resources (Shanming, 2013). The BRICS have set up a development bank which is now known as the New Development Bank (NDB) where the different countries intend to address the group's economic challenges with combined resources. Countries in the BRICS group have either undergone or are undergoing structural changes in their monetary policy frameworks (Shanming, 2013). The way in which interest rates in the different countries correlate is, to a certain extent, affected by structural changes. As emphasized by Shelile (2006), it becomes of great significance to consider not only the economic setting of the different countries, but to also consider the monetary policy regimes adopted by

each of these countries. This is important due to the possibility of the results being influenced by structural changes in these countries and also by the prevailing economic conditions.

With the slowdown in global economies due to the 2008/2009 financial crisis in the United States, Shanming (2013) asserts that financial cooperation is essential. Pointing to an observation made by Holmes et al. (2011) that proposes a compelling case for modelling domestic term structure at an international context. In recent times, domestic term structure is influenced mostly by external term structures and monetary policies due to the liberalization of international financial markets (Beechey et al., 2008) and this may be the case in BRICS. Thus, this paper aims to establish whether the expectations hypothesis of the term structure of interest rates holds in BRICS countries.

2. Literature Review

2.1. Conceptualisation of EH

Interest rates have a vital role in the economy, a movement up or down in interest rates has an impact on individual consumption, businesses and investment decisions, making it essential to understand the underlying dynamics of interest rates in an economy (Van der Merwe & Molletze, 2013). For years, economists have tried to determine the underlying variables of the term structure of interest rates; still, no consensus has been reached (Van der Merwe & Molletze, 2013). The EH is one of the theories that attempt to explain the relationship between interest rates of different maturities. According to Cox et al. (1985), the association between interest rates of different maturities has made it possible for market participants to forecast interest rate movements as well as how these movements would affect the term structure of interest rates.

The EH of the term structure of interest rates hypothesizes that the yield spread between the long term rate and the short term rate can be used to predict future changes in short term rates over the life of the longer maturity investment (Shivam & Jayadev, 2003). The EH suggests that long term interest rates are determined by current and expected short term rates; suggesting that the market's forecast of changes in rates is reflected by the slope of the term structure of interest rates, that is, the spread between long rates and short rates (Mankiw et al., 1986). Long term rates are, therefore, the average of the current and expected short term interest rates (Modena, 2008). According to the EH, monetary policy is able to affect the long term interest rates by influencing the short term interest rate and changing market expectations of future short term rates (Walsh, 2003). This suggests that short term interest rates are more volatile compared to the longer term interest rates, and the EH is able to clarify the reason for the variation in volatility (Van der Merwe &

Molletze, 2013). Individual components change faster than the average, and with long term interest rates being the average of current and expected future short term interest rates, then, they should be less volatile compared to short term interest rates (Van der Merwe & Molletze, 2013).

There are a few guidelines on how the term structure can be interpreted when used as a forecasting tool. According to Bonga-Bonga (2010), higher long term rates, in relation to short term rates, reflect the demand of higher risk premium on long term securities and this is an indication of normal economic conditions. Nel (1996) states the upward sloping yield curve is related to growth in the economy which is characterised by low short term rates to stimulate demand. Conversely, a negative or inverted yield curve reflects recession expectations, which are characterised by higher long term interest rates than the short term interest rates (Nel, 1996). These characteristics make the term structure beneficial in that it is able to forecast future economic developments (Van der Merwe & Molletze, 2013). Low short term rates become less appropriate in a debt fuelled demand; implying that, they lead to an increase in inflation and an expectation of an increase in short term rates is reflected by rising short term bond yield (Clay & Keeton, 2013). A positive relationship between the term structure of interest rates and economic activity thus exists. Hence, the behaviour of market participants is influenced by economic expectations, which in turn affect the term structure of interest rates (Modena, 2008). EH explains investor's aggressive maturity strategy of a shift to security investments of longer term maturity when there is an anticipated decline in interest rates in order to capitalise on the income potential of these securities when interest rates fall (Rose & Hudgins, 2013).

2.2. Empirical Literature Review

Over the years, studies on the EH of term structure of interest rates have been conducted using various methodologies to test whether EH would hold or not. Studies on EH have produced mixed results with some (e.g. Engle & Granger, 1987; Ghazali & Low, 2002; Shivam & Jayadev, 2003; Shelile, 2006; Guidolin & Thornton, 2008) providing empirical evidence to support the EH and its predictive ability; while other studies (Mankiw & Summers, 1984; Shiller et al.,1983; Taylor, 1992; Beechey et al., 2008) did not find any evidence to support it. With the use of co-integration methods to test for the validity of the EH, Engle & Granger (1987) highlight that the co-integration between yields of different maturities is a crucial condition for the validity of the expectations hypothesis if nominal interest rates are generated by a unit-root process. A stationary spread between yields is denoted by the expectations hypothesis if interest rates are integrated of order one, meaning that, the EH is valid after finding co-integration between long and short term rates (Engle & Granger, 1987). Guidolin & Thornton (2008) predicted short term rates and the EH of the term structure of interest rates and found empirical evidence supporting the validity of EH. Using five Indian money market benchmark rates,

Shivam & Jayadev (2003) assessed the operational efficiency of the Indian money market and examined its structure by testing the validity of the EH. Their results provide evidence that validates the EH in the Indian money market; implying that money market participants are able to predict changes in rates while choosing between various money market instruments (Shivam & Jayadev, 2003).

In testing the EH of the term structure in South Africa, Shelile (2006) employed the Generalized Method Moments technique between 1970 and 2004 to observe the ability of the term structure of interest rates to predict economic activity, and also effects of different monetary policy regimes on the predictive ability of the term structure. The author's findings were favourable, showing that economic activity was predicted by the term structure until the period of 2000 to 2004 (Shelile, 2006). South Africa went through different economic environments during the observed period; Shelile (2006) also finds that the term structure's ability to forecast economic activity improved after the liberalization of financial markets in the country. The predictive ability of the term structure of interest rates in future economic activities was also found by Ghazali & Low (2002) with the use of Malaysian rates.

A study by Beechey et al. (2008) made use of cointegration methods to test the EH of the term structure of interest rates in fourteen developed and developing countries. Ten of the 14 countries showed a co-integrating relationship between long and short interest rates, supporting the EH. However, Beechey et al. (2008) did not find evidence of the EH in emerging economies, which were India and South Africa in this case. According to Beechey et al. (2008), the likely reason for the absence of the EH in both countries is structural change. Post the apartheid era, interest rates in South Africa were accompanied by strong inflows of foreign capital and the shift to inflation targeting in 2000 and all of these changes are related to the decline in long term interest rates. The decline in long term interest rate over the life of the shorter term bond runs counter to the EH which insists that shorter term interest rates tend to rise over the life of the longer term interest rates (Campbell & Shiller, 1991). Thus, the ability of the term structure to anticipate future movements in short term rates depends on the level and the volatility of the term premia and this was confirmed by Fama (1984), Mishkin (1988) and Modena (2008) who provided evidence that the yield spread consists of valuable information that can be used to forecast future changes in interest rates.

Contrary to studies that conclude in favour of the EH, other studies (Mankiw & Summers, 1984; Shiller et al., 1983; Taylor, 1992) find inconsistencies in the EH of term structure and conclude that it can predict false information. Shiller et al. (1983) claim that the EH only becomes successful in forecasting interest rates; if there is a break in the historical interest rate pattern, without it, the EH does not hold. Shiller et al. (1983) compare the EH with an alternative model referred to as the "tail-wags-dog" theory where long term interest rates are said to react

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excessively to information that is only applicable to short term interest rates. Their model, the "tail-wags-dog", does support their theory; suggesting that there may be a psychological theory superior to the expectations theory (Shiller et al., 1983).

3. Methodology

3.1. Data and Sample Period

The data used in this study consists of short and long term interest rates from BRICS countries, namely Brazil, Russia, India, China and South Africa. The sample period consists of a panel of 605 (121 for each country) monthly observations from June 2005 to June 2015. Data was obtained from the Central Banks of the different countries, the Organization for Economic Co-operation and Development (OECD), World Bank and Bloomberg. The selection of the sample period was based mainly on the availability of data. For all five countries, the Treasury bill rate is used as the short term rate; while the 10 year government bond rate represents the long term rate.

3.2. Modelling the EH Term Structure

The link between short and long term interest rates under the EH of the term structure is expressed by Campbell and Shiller (1991) as follows:

$$R_t^{(n)} = \frac{1}{q} \sum_{i=0}^{q-1} E_t\, R_{t+mi}^{(m)} + c \qquad (1)$$

Equation 1 illustrates that the relationship between the *n*-period of the long term interest rate, $R_t^{(n)}$, and an *m*-period of short term interest rate. $R_t^{(m)}$, is defined by the single linear relationship of EH of term structure where *n* > *m*. The EH states that the expected return from investing in an *n*-period rate will be equal to the expected return from investing in *m*-period rates up to *n* – *m* periods in the future plus a constant risk premium, *c*, where *q* = *n/m*. Therefore, the longer-term interest rate, $R_t^{(n)}$, can be expressed as a weighted-average of current and expected short term rates, $R_t^{(m)}$, plus a risk premium, *c* (Brooks, 2014). Thus, by subtracting $R_t^{(m)}$ from both sides of Equation 1, we get:

$$R_t^{(n)} - R_t^{(m)} = \frac{1}{q} \sum_{i=0}^{q-1} \sum_{j=1}^{j=i} E_t\, [\Delta^{(m)} R_{t+jm}^{(m)}] + c \qquad (2)$$

Considering the broad acceptance that interest rates are well described at as I(1) processes (Campbell & Shiller, 1998), Equation 2 introduces interesting restrictions of stationarity. If the interest rates under analysis are I(1) series, then, by definition, $\Delta R_t^{(n)}$ and $\Delta R_t^{(m)}$ should be stationary, I(0). Moreover, since *c* is constant, then by definition it is a stationary series. Accordingly, if the EH is to hold, given that *c* and $\Delta R_t^{(m)}$ are I(0), the RHS of Equation 2 is stationary, then

$R_t^{(n)} - R_t^{(m)}$ should by definition be stationary, failing that, there will be an inconsistency in the order of integration between the relationship of the RHS and the LHS of Equation 2.

$R_t^{(n)} - R_t^{(m)}$ is generally known as the spread between the *n*-period and the *m*-period rates, represented by $S_t^{(n,m)}$, which gives an indication of the slope of the term structure. For that reason, if EH is to hold, then the spread will be found stationary, thus $R_t^{(n)}$ and $R_t^{(m)}$ will co-integrate with a co-integrating vector of (1, – 1) for $[R_t^{(n)}, R_t^{(m)}]$. Consequently, the integrating process driving the individual rates is common to both interest rates and hence it can be said that the rates have a common stochastic trend (Brooks, 2014). As the EH predicts that each interest rate series will co-integrate with the one period interest rate, it then should be true that the stochastic process driving all the rates is the same as that driving the one period rate (Brooks, 2014).

Equation 2 suggest testing the relationship between long term (n) and short term (m) interest rates using a single-equation standard regression would lead to the high chance of spurious regression as standard regression methods are unable to handle non-stationary variables (Brooks, 2014). Thus, the first step of test for the EH is to check if series are stationary. The augmented Dickey Fuller (ADF) unit root test was used to test for stationarity of the data. If variables are found to be not stationary at level, then the first difference is used to make them stationary. If the variables become stationary at the first difference I(1), it means that there is a possibility that such variables are co-integrated. Thus, the next step would be to conduct a co-integration test. In the context of this study the co-integration results would indicate whether the EH hold or not. A multivariate Johansen co-integration approach was used to test for a long run relationship between short- and long term interest rates in each of the countries of BRICS. The use of Johansen co-integration approach was based on other studies such as Diebold and Li (2006), Shelile (2006),and Koukouritakis (2010), which used a multivariate cointegration approach to test for the EH.

3.3. Johansen Co-integration Test

The Johansen's (1988 and 1991) multivariate co-integrating is derived from a VAR model as follows:

Considering unrestricted VAR model: $Z_t = \sum_{i=1}^{k} A_i Z_{t-i} + e_t$

(3)

Where: $Z_t = \begin{bmatrix} X_{1t} \\ X_{2t} \\ . \\ . \\ X_{nt} \end{bmatrix}$ is column vector of observations X_{1t} to X_{nt}; and,

e_t = a column vector of random errors which are usually assumed to be contemporaneously correlated but not auto-correlated. Assuming that all variables are co-integrated in the same order, the VAR model in Equation 3 can be presented as follows:

$$\Delta Z_t = \Pi Z_{t-k} + \sum_{i=1}^{k-1} \Gamma_i \Delta Z_{t-i} + e_t , \text{ for } k \geq 2 \qquad (4)$$

Where: $\Pi = - (I - A_1 - A_2 - \ldots A_k)$; and, $\Gamma_i = - (A_{i+1} + A_{i+2} + \ldots + A_k)$, i = 1,…, k-1

According to Johansen and Juselius (1990), the matrix Π can be expressed as a product of two matrices:

$\Pi = \alpha\beta'$ where α and β' are both the same since Π is a square matrix. (5)

The matrix β' gives the co-integrating vectors (a matrix of long run coefficients), while α stand for the adjustment of parameters that shows the level of speed with which the system responds to last period's deviations from the equilibrium (Brooks, 2014). Therefore, Johansen co-integration is based on the examination of the Π matrix. The test for co-integration is conducted by looking at the rank (r) of the Π matrix with the use of the *trace* and the *maximum eigenvalue* tests.

The trace test tests the hypothesis that there are at most r co-integrating vectors and is as follows:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i)$$
(6)

λ_{trace} is a joint test where:

H_0: the number of co-integrating vectors $\leq$ r and

H_a: the number of co-integrating vectors > r.

The maximum eigenvalue test tests the hypothesis that there are r+1 co-integrating vectors against the hypothesis that there are r co-integrating vectors and is a follows:

$$\lambda_{max}(r, r+1) = -T\ln(1 - \hat{\lambda}_{r+1}) \tag{7}$$

Where: r is the number of co-integrating vectors under the null hypothesis, $\hat{\lambda}_i$ is the estimated value for ith ordered eigenvalue from the Π matrix and T is the number of usable observations. λ_{max} conducts a separate test on each eigenvalue in sequence as follows:

H_0: r = 0 versus H_1: 0 < r ≤ n

H_0: r = 1 versus H_1: 1 < r ≤ n

H_0: r = 2 versus H_1: 2 < r ≤ n

…   … ...

H_0: r = n-1 versus H_1: r = n

The first test involves a H_0 of non-co-integrating vectors (corresponding to Π having zero rank). If the H_0 is not rejected, it would indicate that there are no co-integrating vectors and the cointegration test would be completed. Contrary, if the H_0 for r = 0 is rejected; the H_0 for r = 1 will be tested and so on. Hence, the value of r is repeatedly increased until the H_0 is no longer rejected. Since there are only two variables in each country's equation, the results are expected to have at most one co-integrating equation.

3.4. Optimal Lag Selection and Diagnostic Tests

To identify the number of optimum lags, this study used the information criteria namely, the Schwarz's Bayesian information criterion (SBIC), Akaike's information criterion (AIC), and Hannan–Quinn criterion (HQIC) (Brooks, 2014). Various diagnostic tests were conducted test the models used met the econometric assumptions. Tests conducted include autocorrelation, heteroscedasticity, parameter stability and normality tests.

4. Empirical Results

4.1. Preliminary Investigation

A graphical analysis is conducted (graphs are not reported on this paper) for preliminary investigation of long and short term rates in the five different BRICS countries. Between 2005 and 2009, Brazil and Russia reflect recession expectations for quite significant periods, as indicated by the long term rate that is lower than

the short term rate. While for South Africa, the recession expectation only begins in late 2006, with the actual recession beginning in 2008/09 (Venter, 2011). The spread between the interest rates' tends to widen, particularly after 2008 and 2009 when the world was hit by a financial crisis and most emerging market countries were faced with a depression (Venter, 2011). With a dampened demand for goods by developed countries from emerging market economies, an observation of a fall in short term rates relative to long term rates during the 2008-09 period in Brazil, India, and South Africa is made. In addition, these three countries illustrate fluctuating and persistent shocks in their rates during and shortly post the 2008-09 period. The fall in short term rates was possibly due to an attempt by monetary policy authorities in BRICS to stimulate market activities in their respective economies. Moreover, short term rates are left unchanged for relatively long periods; this is evident in countries like China, Russia and South Africa post 2009.

4.2. Testing for Unit Root

The results for ADF unit root test, with intercept and no trend, for each of the BRICS countries are summarised in Table 1. For both short and long term interest rates, the null hypothesis for a unit root is not rejected at levels for each country, implying that the two interest rates are not stationary at levels. At first differences, the H_0 for a unit root is rejected at the 1 percent level of significance; implying that both interest rates are I(1) as they become stationary after first differencing. This suggests that there is possibility that the two interest rates are co-integrated. Hence, the next step is to conduct the co-integration test.

Table 1. ADF Unit Root test results

Variable	At Level		First Difference		Order of Integration
	T-Stat	P-value	T-Stat	P-value	
Brazil-ST	0.789	0.3729	3.956	0.0001	I (1)
Brazil-LT	0.007	0.6783	11.557	0.0000	I(1)
Russia-ST	0.417	0.5311	8.875	0.0000	I (1)
Russia-LT	0.002	0.6815	9.164	0.0000	I (1)
India-ST	0.152	0.6293	10.620	0.0000	I (1)
India-LT	0.075	0.6556	11.615	0.0000	I (1)
China-ST	1.144	0.2290	10.530	0.0000	I (1)
China-LT	0.454	0.5161	7.442	0.0000	I (1)
South Africa-ST	0.662	0.4281	2.953	0.0034	I (1)
South Africa-LT	0.058	0.6613	8.196	0.0000	I (1)

H_0: A series has a unit root and H_a: A series has no unit root, stationary.

4.4. Co-integration Test Results

The Johansen co-integration test requires the indication of number of lags in the models. The number of optimal lags was selected using the three criteria of lag selection (AIC, SIC and HQC). For the VAR model of each of the countries the number of lags are depicted on Table 2.

Table 2. Summary of number of lags selected for each country

	Brazil	*Russia*	*India*	*China*	*South Africa*
No. of Lags	4	3	4	2	3

Using the number of lags from Table 2, the Johansen co-integration test was conducted with intercept and no trend and results are in Table 3. The null hypothesis of no co-integration equation is compared against the alternative hypothesis of one co-integration equation for each country. For Brazil and Russia, the null hypothesis, for no co-integrating equations, is not rejected at the 5 percent level of significance; meaning that, in these two countries, short and long term interest rates are not co-integrated. For the remainder of the countries, Trace and Max-Eigen statistics show that the null hypothesis of no co-integration is rejected at the 5percent level of significance, implying that there is at most one co-integrating equation. For China, India and South Africa there is a long-run relationship between short and long term interest rates and this provides evidence of the validity of EH in these countries.

Table 3. Summary of results for Johansen co-integration test

	Trace Statistic		P-value		Max-Eigen		P-value		Conclusion
	None	Most 1	None	Most 1	None	Most 1	None	Most 1	
B	12.329	2.30	0.141	0.129	10.026	2.302	0.210	0.129	No Co-integration
R	9.859	2.516	0.291	0.112	7.342	2.516	0.449	0.112	No Co-integration
I	20.534	3.418	0.008	0.064	17.115	3.418	0.017	0.064	T & E 1 Co-integrating
C	17.003	2.860	0.029	0.090	14.143	2.860	0.052	0.090	Trace, 1 Co-integrating
S	20.142	3.808	0.009	0.051	16.334	3.808	0.023	0.051	T & E 1 Co-integrating

*B = Brazil, R = Russia, I = India, C = China, S = South Africa.

The long-run equations for the three countries, with co-integrating equations, are in Equations 8, 9 and 10. For China, short term rates negatively influence long term rates, in the long run, an increase of short term rates by 1 percent will lead to a decrease of long term rates by 10.9 percent. Indian and South African short term rates positively influence the long term rate. Equation 9 indicates that a percentage change in short term rates will result in an increase in the long term rate by 21.1

percent in India. In South Africa, a percentage increase in the short term rate will lead to an increase of 12.7 percent in the long term rate.

$$China_{LT} = 3.786 - 0.109China_{ST} \qquad\qquad (8)$$

$$India_{LT} = 6.285 + 0.211India_{ST} \qquad\qquad (9)$$

$$South\ Africa_{LT} = 7.360 + 0.127South\ Africa_{ST} \qquad\qquad (10)$$

4.4. Vector Error Correction Model (VECM)

Table 4 reports the error correction terms (ECT), from the VECM, for the three countries. The ECT coefficients for these countries are negative and statistically significant at the 0.05 significance level. For China, the ECT coefficient of -0.10242 implies that about 10.24 percent of the disequilibrium in the model is corrected every month. Thus, changes in the short term interest rate take approximately 9.77 months to have a full effect on the long term interest rate. For India, the ECT coefficient of -0.16340 implies that about 16.34 percent of the disequilibrium in the model is corrected every month. Changes in the short term interest take roughly 6.12 months to have a full effect on the long term interest rate in India. Lastly, the ECT coefficient of -0.20447 for South Africa suggests about 20.45 percent of the disequilibrium in the model is corrected every month; implying that any changes in the short term interest rate take approximately 4.49 months to have a full effect on the long term interest rate. Therefore, both short and long term interest rates for these countries converge to the long-run equilibrium. However, the discrepancy between the two rates is corrected at different speeds, where it seems to be quick in South Africa and slow in China. These findings are consistent with Modena (2008), Shiller and Campbell (1991) who found that the two interest rates yield the same returns at some point in the future.

Table 4. VECM Error Correction Terms

Variables	Coefficients	Standard Error	T-Statistic
China (LT)	-0.10242	0.03433	-2.98350
India (LT)	-0.16340	0.06253	-2.61302
South Africa (LT)	-0.20447	0.05261	-3.88661

5. Discussion of Results

An observation made in the preliminary investigation is the relative decline in short term rates in China, Russia and SA from the year 2009. As emerging market economies were severely affected by the global recession after the 2008 financial crisis. Low short term interest rates are possibly a result of cautious lending activities due to lessened demand in the various economic activities. Moreover, it could be that monetary policy intervenes to stimulate demand in a dampened

economy by reducing interest rates in that way encouraging borrowing and spending. Although the two interest rates in India and Brazil were found to follow each other quite closely, after 2009; India was found to be the only country that seems to have relatively normal economic conditions, reflected by the long term rate that is higher than the short term rate, from 2005 to 2008. During the same period, long term rates were lower than short term rates for the other four countries signalling recession expectations which did occur in Brazil, Russia and SA (BIS, 2015). These findings agree with previous studies of Beechey et al. (2008), Bonga-Bonga (2010), Estrella and Hardouvelis (1991), and Nel (1996) on the EH.

An essential condition for the validity of the EH is co-integration between the long term and short term interest rates, as highlighted by Engle and Granger (1987). The Johansen co-integration test finds co-integration in three of the five countries namely, China, India and SA; thereby providing evidence of the expectations hypothesis for each of the three countries. This implies that market participants are able to forecast future interest rate movements and this makes the EH quite fundamental for clarifying monetary policy effectiveness. These findings are in line with those of previous studies (Beechey et al. (2008); Guidolin & Thornton (2008); Shivam & Jayadev, (2003) which found a co-integrating relationship between short and long term interest rates. The expectations about the direction of the of future short term interest rates and their association with long term interest rates guide market participants on long term interest rates' response to the central bank policies.

Findings have quite significant implications for investors especially after the establishment of the New Development Bank in BRICS countries. For investors, these findings are significant for investment decisions, particularly decisions involving longer term maturity investments, as the pricing of capital assets is normally done based on long term interest rates (Ghazali & Low, 2002). The existence of EH also means that central banks are able to influence long term interest rates using monetary policy through changes in short term rates, thereby influencing capital asset prices and investment decisions (Guney, 2013; Panigrahi, 1997; Walsh, 2003). Moreover, the EH gives the central bank and market participants the ability to predict recession and phases in the business cycle.

The absence of the EH in Brazil and Russia means that participants in the respective markets are unable to predict the movement of the short term rate, possibly due to structural changes in financial and economic conditions in the case of Russia (Bank for International Settlements, 2015). These findings on Brazil and Russia are in line with those of studies by Beechey et al. (2008) and Shiller et al. (1983). It is not surprising to find no long run relationship for Russian interest rates due to the weaknesses of the monetary policy stance highlighted in 2008 (Mohanty, 2011). In addition, Brazil and Russia interest rates fail to support the expectations hypothesis due to the times of high volatility, resulting in large deviations between

the expected and the actual spread. This is consistent with previous studies such as Beechey et al. (2008) and Shiller et al. (1983) which found that the EH did not hold in developing countries due to high volatility interest rates. However, in light of what the BRICS group is trying to accomplish with the New Development Bank, the absence of co-integration between the short and long term interest rates in Brazil and Russia could have substantial implications for the BRICS market, consequently creating arbitrage opportunities.

6. Conclusions

Variations in interest rates have implications for market participants, understanding interest rate dynamics becomes essential for economists, monetary policy, and also for risk management practices and for financial security valuations. Participants are able to mitigate risks associated with market's expectations of interest rates and hence maximise profits. This study employed monthly short and long term interest rates from June 2005 to June 2015 to test the validity of the EH within the block of emerging modern world economies known as BRICS countries. The results of a multivariate co-integration analysis indicate that the EH only holds in three of the five countries, namely China, India, and South Africa. Both short and long term interest rates for these three countries converge to the long-run equilibrium at different speed, where the convergence was found to be quick in South Africa and slow in China. This study found no evidence of EH in Brazil and Russia due to the times of high volatility, resulting in large deviations between the expected and the actual spread. The absence of EH in these two countries is also linked with change in monetary policies, experienced by these counties. Findings of this study are relevant to current developments within BRICS financial markets as they provide valuable information that can be used to forecast future changes in interest rates in BRICS countries. Hence, it is concluded that arbitrage opportunities may arise from the gaps among interest rates in BRICS countries.

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The Estimation of the Time Period Required to Achieve Real Economic Convergence between Romania and the Euro Area

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Abstract: The main objective of this research is to estimate the time needed for Romania to achieve real sustainable economic convergence with the euro area. In this regard, we will try to determine when the absolute level of GDP/capita in Romania will equalize the absolute level of GDP/capita in the euro area. This equalization occurs when the growth rate of GDP/capita (expressed in PPP) of Romania is higher than the growth rate of the same indicator in the euro area. To achieve this objective, there are used simple relationships of growing of the GDP/capita both for Romania and the euro area. The estimated results shows that the GDP/capita (expressed in PPP) in Romania will be able to equalize with GDP/capita in the euro approximately in the year 2030. This uniformity will occur only if the average growth rate of the Romanian economy will remain constant, ie at the same level as the average growth rate for GDP/capita in the analyzed period. If Romania will register higher growth rates, the period of time until the country will achieve real sustainable economic convergence with the euro area average will decrease.

Keywords: speed of convergence; economic growth; euro area

JEL Classification: F15; F63; O47

1. Introduction

Numerous studies have shown that the process of real convergence is influenced by several key factors, represented by population growth, the savings etc., wich leads to the reduction of structural disparities between states and generates a caching up process. A number of recent studies (Mink et al., 2007; Cavallero, 2010) have shown the importance of inter-regional convergence, mainly regarding the new Member States. Angeloni and Ehrmann in 2004, revealed that, during different periods of time, the reduction of the disparities between the developed and emerging countries have not made considerable progress. On the other hand,

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Aguiar and Soares, in 2009, noticed an important development in the process of real convergence, the emerging countries recorded a level of real convergence higher than planned.

From this point of view, in the case of some countries is widening the disparities in relation to developed countries, and other countries, which recorded significant evolutions in the process of real convergence, continue the progress achieved. Barro and Sala-i-Martin, in 1995, discovered the existence of conditional convergence, according to which, when in the case of structural conditions are achieved the same levels of development, the same situation also stands out in terms of GDP per capita. Egger et al. (2006b) show that in a monetary union, shock effects are determined by their degree of symmetry.

A very important aspect of the studies on this topic was to identify the best moment for the euro adoption. Many authors believe that the integration in the EMU must be done when the nominal and real convergence conditions are satisfied, even if the period is longer. On the other hand, other authors believe that fastest integration generates beneficial effects, by reducing the disparities between the developed and emerging countries. Lein-Ruprecht et al. (2007) showed that the process of real convergence produce structural changes leading ultimately to an increased international trade flows, an increased degree of qualification of the workforce and higher productivity. Pecican (2009) remarked a high degree of divergence across the EU, especially regarding the less developed countries. The determination of the GDP/capita over the last decade reflected a weak convergence at EU level.

Most empirical research for validation of the convergence hypotheses show that it can not be achieved the situation for all states to align to a real convergence. What is confirmed by the economic and social reality of the countries or regions is the group convergence in dynamics. Currently, the factors that have a significant role in the dynamics of economies are the intensification of knowledge and human capital development. These two factors determine higher growth rates in the states where they manifest. In these conditions, Romania's chance to achieve real convergence with the European Union is closely related to the stimulation of those factors and enhancing their contribution to achieve higher economic growth rates.

2. Research Methodology

The most common question regarding the convergence of economic growth is related to the length of time needed to achieve this process. When analyzing Romania's convergence with the euro area, the first issue that needs to be solved is related to the estimation of the time required to achieve the equalization of the absolute level of annual GDP per capita of Romania with the similar indicator in the euro area. In order to establish a realistic deadline for adopting the euro, should

be determined the timescale for reducing the difference between the absolute level of annual GDP per capita in Romania and the similar indicator in the euro area. This reduction of the difference can be achieved when the average rate of growth of GDP per capita in Romania is higher compared to the average rate of growth of GDP per capita in the euro area.

To determine the period of convergence between the two entities, we start from the simple relationships of GDP/capita growing, both in Romania and in the euro area, where initial values and annual average growth rates are different:

$Y_{tR} = Y_{0R}(1+\bar{r}_R)^t$ (1)

$Y_{tEZ} = Y_{0EZ}(1+\bar{r}_{EZ})^t$ (2)

Convergence between the two entities is done when the relationships (1) and (2) become equal, according to relationship (3):

$Y_{tR} = Y_{0R}(1+\bar{r}_R)^t = Y_{tEZ} = Y_{0EZ}(1+\bar{r}_{EZ})^t$ (3)

When we logarithm and rearrange the terms in the equation (3), we determine the time period necessary to achieve the convergence of the Romania with the euro area, in the terms of GDP/capita:

$t = \dfrac{log Y_{0EZ} - log Y_{0R}}{log(1+\bar{r}_R) - log(1+\bar{r}_{EZ})}$ (4)

Based on the relationship (4), we will calculate the number of years needed for Romania to achieve the convergence with the euro area in the terms of GDP/capita.

3. Empirical Results

Table 1 presents the data used in the calculation formula (4): target level of GDP per capita calculated on the basis of PPP (GDP/capita in the euro area in 2014) which should reach Romania and the annual average growth rates of the two entities, calculated based on the values recorded in the period 2000-2014. Also, Table 1 contains the results obtained, ie the number of years needed to achieve convergence with the euro area and various anticipations of this period of time, depending on different economic growth rates, similar to those recorded by Romania in 2000 - 2014.

Table 1. Input data and the results obtained regarding the number of years needed to achieve convergence between Romania and the euro area, in terms of GDP/capita

Target of GDP/capita (2014)		The average growth rate of GDP/capita in the period 2000 - 2014 (%)		Number of years required to achieve convergence
Euro area	Romania	Euro area	Romania	
39328.2903	20348.0696	0.78	4.50	18.18
		Anticipations		
		0.78	3.50	24.75
		0.78	6.00	13.05
		0.78	7.00	11.00
		0.78	8.00	9.52

Source: Author's calculations based WorldBank data

According to the results presented in Table 1, maintaining an annual average growth rate of GDP/capita of 4.5%, Romania would need about 18 years to reach the euro area.

Analyzing the results based on anticipated growth rates, there are obtained different possible scenarios. Thus, for a growth rate of GDP/capita of 3.5%, Romania would need about 24 years to reach the euro area. On the other hand, as growth rates are higher, it decreases the number of years needed to achieve the convergence of GDP/capita between the two entities.

Even if in certain periods of time Romania has registered higher growth rates compared to more developed countries, bridging the gap is still an essential problem for the Romanian economy. This decrease of the gap between the Romanian economy and the euro area economy can be achieved through policies of encouraging the investments, stimulating savings, growth in exports etc.

Romania's economy is currently quite tender and can easily act to endogenous and exogenous temporary factors. To keep up the pace of developed economies, in the moment of passing to the single currency, Romania needs to achieve real convergence with the euro area countries, as measured by annual average growth rates higher than those registered in the other states, and then to maintain these growth rates over long periods of time.

In terms of the GDP/capita calculated on the basis of PPP, Latvia is 64% of the EU27 average in 2012, two years before entering the EMU (2014), Estonia is 63% of average EU27 in the year prior to entry into the euro area and Slovakia to 73%.

Analyzing these circumstances, we conclude that Romania, which in 2014 was about 50% of the euro area average, would not currently have a high degree of real convergence to be considered a country with a sustainable economy in the euro area. Analyzing the example of countries like Estonia, Latvia or Slovakia, we conclude that the GDP/capita should be over 65% of the euro area average in the moment of Romania's accession.

The level of heterogeneity between Romania and the euro area can be assessed also, using the Dynamic Stochastic General Equilibrium model.

If Romania would not be part of EMU, increasing levels of consumption will increase the level of production and the number of workers, but the increase of the level of investment is uncertain. With increasing inputs of labor, the marginal cost increase, which will cause an increase in inflation. To mitigate the effects of higher inflation rate, the national bank will increase the interest rate. When Romania give up its own monetary policy, can record adverse effects, it is possible that a positive shock on consumption does not raise national production.

On the other hand, with Romania's entry into EMU will increase capital efficiency which will lead to increased production and investments. One positive effect of increased productivity is a lower level of inflation.

The transaction costs are absent in the case of monetary union, which would cause households to consume goods from abroad, resulting in a decrease in capital input, a decrease of local investment and a decrease of Romanian origin GDP.

A decreased production leads to lower exports but will increase imports to meet household consumption.

The main benefits of joining the EMU appear in the tradables sector. Thus, in case of an impact in the technology sector, Romania's GDP is expected to grow.

Euro adoption by Romania and giving up its own monetary policy could influence decisively the achievement of optimal capacity growth. After giving up the national currency, the only markets left to make various adjustments would be: goods market, labor market and fiscal policy. Armed with just these adjustment mechanisms, Romania would face the risk it can not ensure the price stability and the optimal labor employment.

4. Conclusions

This paper designs a possible route of Romania, in the direction of adopting the single currency.

Using the real GDP indicator, logarithmic calculation shows that it takes approximately 18 years for Romania to equalize the level of GDP/capita in the euro

area, if the annual average growth of the same indicator in Romania remains constant to 4.5%.

The possibility for Romania to achieve faster convergence with the euro area average, assumes that Romania to record higher growth rates of GDP/capita in the coming period. Romania was in 2014 about 50% of the euro area average. This shows that this country would not have currently a high degree of real convergence to be considered a country with a sustainable economy in the euro area.

It is very important that before joining the euro area to be studied several possible scenarios in terms of shocks that might generate imbalances or asymmetries, because there is a high degree of heterogeneity between the Romanian economy and the euro zone economy.

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Territorial Attractiveness of the Foreign Direct Investment: Empirical Evidence from Panel Data Analysis for the Case of Tunisia

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Abstract: The present article aims to evaluate the role of different macroeconomic variables that may promote the entry of the foreign direct investment (FDI) in the industrial sector in Tunisia. In recent decades, several researches indicate that despite the significant impact of the FDI as an important catalyst of development, its benefits remain unequally distributed between countries, sectors and communities. For this reason, the competition between countries becomes more intense and depends on a large set of factors having different importance. In the same order of ideas, we try to estimate the impact of these factors on the FDI attractiveness in Tunisia through an econometric modelling with panel data over the period 2000-2014. We found that the traditional economic factors have the greatest and more significant impact. Also, the results imply that the multinational companies adopt essentially the vertical implementation strategy to invest in Tunisia. The findings have a great value for the decision-makers in Tunisia who can concentrate their efforts on the most important variables to develop the competitiveness of Tunisia.

Key words: foreign direct investment; traditional factors; territorial attractiveness

JEL Classification: C31; F21

1. Introduction

Lipsey and Sjöholm (2003), Lipsey (2004) among others economists argue that the foreign direct investments (FDI) create jobs, improve productivity, facilitate transfers of skills and technology and contribute to long-term economic growth of the developing countries. More than ever, regardless of their level of development, countries seek to take advantages of FDI for development. The economists say that the importance of FDI is justified by their capacity to enrich national externalities offered to domestic companies, by their contribution to the improvement of domestic production and also by the spillover effect that they have on all of the economy.

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Ferrara and Henriot (2004), say that the question of foreign direct investment attractiveness (FDI) becomes in the heart of strategic reflections for the developing countries. In recent years, there has been a competition between Governments to attract the multinational companies. Some played on fiscal policies by offering exemptions during a given period. Others have proposed specific subsidies and reducing the restrictions habitually imposed as minimum local content or restrictions on the import of intermediate goods to an amount related to exports, a maximum level of exports, etc. For example, the code of investment incentives in Tunisia, which came into vigor in January 1994, provides many incentives in the form of tax exemptions, investment incentives, care of infrastructure costs or even employers' contributions to social security system (for a period of 5 to 10 years and for 25 to 100%).

The objective of this article is to try to assess the importance of certain macroeconomic variables in the determination of the localization of foreign companies operating in the industrial sector in Tunisia such as market size, the availability of labor factor, the free trade agreements, the geographical proximity etc, using an econometric model in panel data on the period 2000-2014. This will allow us to appreciate the nature of FDI implementation in the country. For this reason, we present first, the theoretical study of the key concepts of the work. We define the territorial attractiveness, the foreign direct investment and also the major factors that can determinate the implementation strategy adopted by the foreign investors and affect significantly the entry of these investments in the host countries. Then, we present the econometric model used and the results in the case of Tunisia.

2. Literature Review

According to the regional economy, the country may refer to the city, region, nation or economic union like the European Union (EU) or the Arab Maghreb Union (AMU). So, Coeuré and Rabaud (2003) define attractiveness as "the ability of a country to attract and retain businesses." For Mouriaux (2004) "the attractiveness of a country represents its ability to attract and retain business containing highly skilled work". In its report on the attractiveness of France, Charzat (2001) mentioned the importance of the skills of men and women, the quality of life and the vocational training as basis of the territorial attractiveness. In the same vein, Lamarche (2003) indicated that the territorial attractiveness can be defined as the ability of a territory to capture new foreign investments and retain the investments that are actually present and established on the territory. In this sense and to define the FDI, we retain the definition of the International Monetary Fund (IMF) according to which the FDI is "the action of an investor based in one country (country of origin), who acquires an interest of at least 10 % in a company

resident in another country". This percentage is expected to give the investor an effective role in the company's management.

For several reasons, the developing countries encourage the entry of the MNC. Firstly, the MNC generate positive impacts on the productivity of the local firm and the acquisition of advanced technologies. Then, these firms participate effectively in the enhancement of exports, in the creation of jobs and in the improvement of currency reserves. In the other side the multinational firms prefer the delocalization abroad to obtain several advantages. Among the first attempts to identify the various benefits that lead a company to invest abroad and thus to choose a particular territory as new localization, we find the paradigm of Dunning named also the paradigm OLI "ownership, localization, internationalization".

Focusing on the localization advantages of Dunning (1993), Mucchielli (1998) states that the decision of internationalization and the determination of optimal site depends not only on the comparative advantages of the territories, but also on the strategy adopted by the firm. Specifically, the company decided to locate in an area based on four key determinants: the size of the local market, the cost of production factors, the number of companies already present, and the different policies of local authorities. In other words, the choice of new localization follows the microeconomic logic of the firm that seeks a greater profitability determining the localization of its activities according to its own internal characteristics (production cost, potential market size).

Geographical distance has an ambiguous role. On one hand, it can be taken as a proxy of trade barriers (tariff and non tariff barriers, transport costs), in the same way as the products' exchange, the FDI depends on the distance between the two countries. Accordingly, pursuant to the horizontal model, FDI flows are expected to grow with the distance between investor and host countries and, in a vertical model, distance plays a role of repulsion. Conversely, the presence of cultural and legal differences can be an obstacle to the establishment of foreign firms in a country (and therefore to the appearance of FDI inflows). In this case, the expected effect of the distance is negative.

The traditional theory of the multinational activity (Markusen, 1984) showed that the differences between countries (transmitter and receiver) cause FDI flows. This traditional theory provides some explanation for FDI (mostly vertical type) that can be observed between developed and developing countries that are relatively different in terms of factor endowments, of market size and of consumer income, etc. In contrast, the modern theory (Brainard, 1997; Markusen & Maskus, 1999; Markusen & Venables, 2000; Bergstrand & Egger, 2004) argues that the existence of crossed flow of FDI is related to the similarity between the sending and receiving countries in terms of sizes of markets, factor endowments, production

technologies and consumer incomes. These similarities are generally characteristics of developed countries, which is in favor of horizontal FDI in both directions.

The works grouped under the name of "new economic geography" from Krugman (1991) contributed to the theoretical analysis of the location of production activities[1]. In general, in theoretical models, each firm belonging to a considered industry tries to locate its production activities in a limited number of regions (countries) where the demand is potentially high; access of goods to consumers is easier, lower production costs. Certain characteristics such as transport costs, economies of scale and the degree of production factors mobility lead to the concentration or geographic dispersion of production.

Several empirical studies, mostly on US data and on OECD countries data, attempted to validate the theoretical models mentioned above. Brainard (1997) found that the location of US companies abroad is positively correlated with the level of customs duties, transportation costs and economies of scale. Markusen and Maskus (1999) indicate that the size of the host country affects positively the localization of these companies. By against, the difference in terms of countries size has a negative impact such as the relative difference in the qualification of the workforce. Similarly, Gao (2003), by considering data on 16 OECD countries shows that the multinational activity is related to the similarity between the investing country and the host country regarding the market size and per capita income. The results of these studies argue in favor of the horizontal model.

A quick review of foreign investment demonstrates that the share of FDI inflows to developing countries is in a rapid increase. This confirms the increasing interest awarded by the multinational firms to the localization of their productive activities in the developing countries[2]. It is therefore necessary to explain why and in what form (horizontal or vertical) the multinational firms move increasingly to developing countries and to what extent the main determinants of implantation abroad[3] play in favor of the multinationals' attractiveness. In the same vein, it is interesting to consider a country like Tunisia, which has a growing local market and a preferential access to the European Union markets (following the free trade agreement signed in 1995) despite its little size. Tunisia is ranked, according to UNCTAD (2006), as attractive for FDI even though its performance in this area remains weak. In the following empirical section, we will try to evaluate the importance of the different factors of FDI previously presented for the Tunisian case for a period of 15 years (2000-2014).

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[1] For a detailed description see (Ottaviano & Puga, 1997).
[2] See (Bergstrand & Egger, 2004).
[3] Defined by (Dunning, 1988; Blonigen 2005; Mucchielli, 1998).

3. Empirical Study

3.1. The Econometric Model

Several studies have used econometric models to explain the international trade and FDI flows. Gao (2003); Ferrara and Henriot (2004) seek to identify the key determinants of multinational companies' localization and to provide empirical validations for the theoretical models. For the same purpose, we employ the Cobb–Douglas production function including capital and labor as additional factors of production. Anwar and Nguyen (2010), Anwar and Sun (2011), Bekhet and Othman (2011) use the Cobb–Douglas production function to analyze the relations between the FDI and other variables. Karray and Driss (2009); Sekkat and veganzones- Varoudakis (2004) among others, include qualitative and quantitative variables in their empirical models to examine the impact of economic factors on the FDI attractiveness to the developing countries. While, they find that the traditional factors stimulate significantly the territorial attractiveness of FDI. The empirical model (Eq1) that we develop in this study represents an attempt to study the main determinants of the FDI in the industrial sector in Tunisia.

$$\text{FDI} = \text{DiffGDP}, \text{DiffInc}, \text{Pop}_i, \text{Pop}_H, \text{Ump}_H, \text{Dist}_{Hi}, \text{ComNb}_H, \text{UE}_i \ \textbf{(1)}$$

Eq. (1) states that the FDI inflows in the Tunisian industrial sector may be affected directly by the differences between countries in terms of the gross domestic product (DiffGDP), income per capita (DiffInc) and the population size (POP). Also, the attraction of the multinationals may depend on the availability of the labor force (Ump), the presence of the companies, in the host country (Tunisia), operating in the same sector as the foreign ones (CompNb_t^H). Equation 1 denotes that the membership of the investor country to the European Union (EU) and the geographical proximity of Tunisia to the EU (Dist) are two variables that can determinate directly the final site of new affiliates. We write Eq. 1 with time series specification that giving Eq. 2 as follows:

$$\text{FDI}_t = \alpha_0 + \alpha_1 \text{DiffGDP}_t + \alpha_2 \text{DiffInc}_t + \alpha_3 \text{Pop}_t^i + \alpha_4 \text{Pop}_t^H +$$

$$\alpha_5 \text{Ump}_t^H + \alpha_6 \text{Dist}_t^{Hi} + \alpha_7 \text{CompNb}_t^H + \alpha_8 \text{UE}_t^i + \varepsilon_t \quad (2)$$

Since our work is a panel data study, Eq. (2) can be written in panel data form as follows:

$$\ln(\text{FDI})_t^{iH} = \alpha_0 + \alpha_1 \ln\left(\text{DiffGDP}_t^{iH}\right) + \alpha_2 \ln\left(\text{DiffInc}_t^{iH}\right) + \alpha_3 \ln\left(\text{POP}_t^i\right) +$$
$$\alpha_4 \ln\left(\text{POP}_t^H\right) + \alpha_5 \ln\left(\text{Ump}_t^H\right) +$$
$$\alpha_6 \ln\left(\text{Dist}_t^{iH}\right) + \alpha_7 \ln\left(\text{ComNb}_t^H\right) + \alpha_8 \ln\left(\text{EU}_t^i\right) + \lambda_t^i + \boldsymbol{\varepsilon_t^i} \qquad \textbf{(3)}$$

Where α_0 is a constant, i denotes the investor country, H the host country (the Tunisia), λ_t^i denotes the unobservable individual effects specific to the investor countries, ε_t^i is the classical error term, and where:

FDI_t^{iH} : means the FDI inflows (in thousands of current dollars) of an investor country i in Tunisia at time t.

POP_t^H and POP_t^i: denotes the size of the population of investor host country (in thousands) at time t. This variable reflects the size of the local market in these countries.

$ComNb_t^H$: is the number of companies (local and foreign), expressed in thousands, operating in the Tunisian industrial sector at time t.

Dis_t^{iH} : is the geographical distance between the investor country and Tunisia. It represents a proxy variable of trade barriers such as transportation costs. We assume that the distance between the investor country and the host one (Tunisia) is represented by the distance between the capitals.

$DiffGDP_t^{iH}$: denotes the absolute value of the difference in term of Gross Domestic Product (GDP) between the investor and host country, at time t, expressed by millions of current dollars. It is defined by the relationship: $DiffGDP_t^{iH} = |PIB_t^i - PIB_t^H|$. This is a proxy that can measure the difference between the two countries in terms of market size[1].

$DiffInc_t^{iH} = |Inc_t^i - Inc_t^H|$: means the absolute difference in terms of income per capita. It is considered as proxy of the difference in terms of capital factor endowments[2]. The income per capita is the Gross National Product (GNP) divided by the average population of that year, expressed in current dollar calculated using the Atlas method of the World Bank.

Ump_t^H : means the population in a situation of unemployment in Tunisia, at time t. This variable measures, by thousands of individuals, the availability of labor force in the host country.

UE_t^i **:** is a dummy variable equal to 1 for the countries of the European Union and 0 otherwise. This is a proxy of the trade liberalization policy of Tunisia appreciated by the association agreement and free trade signed in 1995 with the European Union.

3.2. Hypotheses

In the present case, the database retains just one host country, so we are required to adopt a model with specific effects only for the investor countries in Tunisia in order to reflect a global effect of these countries' size. Then, we will try to determine if they are fixed or random effects. For each investor country i, if the values of λ_t^i are significant and constant, we have a model with fixed-effects.

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[1] See (Gao, 2003; Markusen & Maskus, 1999)
[2] See (Helpman, 1987; Brainard, 1997).

However, if these are the achievements of random variables, we speak of model with random effects.

It should be noted that the different variables used does not presuppose the dominance of a particular theoretical model, horizontal or vertical. Thus, the populations of investor and host countries (POP_t^H and POP_t^i) are two variables related more to the horizontal model. Indeed, a given country with an important population represents a big market for the MNCs, hence the positive effect on the attractiveness to potential investors. As mentioned above and according to the objectives, the geographical distance ($Dist_t^{iH}$) exerts an ambiguous influence on the implementation strategies of the MNCs. The differences in terms of GDP ($DiffGDP_t^{iH}$) or income per capita ($DiffInc_t^{iH}$) play different roles depending on the nature of the implementation strategies. Indeed, horizontal FDI is negatively related to these differences, by against vertical FDI is positively related.

Regarding the number of companies, operating in the same industrial sector as the foreign ones, it is a variable that can play an ambiguous role. On one side, it can affect positively the FDI attractiveness by the imitation effects; also an important number, of companies, reflects the development of the local industry which may be accompanied by the presence of network effects. Moreover, it can play a negative role in the case of horizontal FDI, because the high number of these companies indicates that the local market is saturated and the competition is tough. By against, the variable concerning the availability of labor force (measured by the level of unemployment) should be positively related to FDI flows because more work is available more foreign firms are attracted to the host country. Finally, the dummy variable for the countries of the European Union EU_t^i must play a role of attraction because it is actually a proxy of trade liberalization policies. More the host country market is open, more the FDI flows are important.

Regarding the assumptions of the model given by equation (3), we assume that the specific effects λ_t^i and residuals ε_t^i are independent and identically distributed with null mean and respective unknowns' variances σ_t^2 and σ_ε^2. The hypothesis of no correlation between the explanatory variables and λ_t^i effects will be tested using the Hausman test[1]. The estimations were performed using STATA software.

3.3. Data Source

The data used to estimate the model covers the period from 2000 to 2014 and concern the 18 countries potentially investors in the industrial sector in Tunisia, which gives 270 observations in total. The specific countries selected for the study and the timeframe was dictated by data availability. These include Algeria, Austria, Belgium-Luxembourg, France, Great Britain, Greece, Italy, Japan, Malta,

[1] See e.g. (Greene, 1993).

Netherlands, Portugal, Saudi Arabia, Spain, Sweden, Switzerland, Turkey and USA.

The data used are from the foreign investment promotion agency (FIPA) database regarding the apportionment by country of origin of FDI inflows to Tunisia in the industrial sector. GDP, population and income per capita of the investor countries and Tunisia are from the World Bank database. The data related to the unemployment rate is taken from database of the International Labor Organization (ILO). Finally, the variable related to companies' number (local and foreign) in the Tunisian industrial sector is based on the database of the Industry Promotion Agency (API). It is important to note that in this work, we have not been able to integrate the variable directly related to differences in work costs since the data for Tunisia are not yet available.

3.4. Estimation Techniques

It should be noted that the variables POP_t^H and $ComNb_t^H$ are introduced alternately due to the high correlation between them. The first variable (POP_t^H) is introduced into models M1 (Eq 4) and M2 (Eq 5). It was replaced by that relating to the number of enterprises ($ComNb_t^H$) in the model M3 (Eq 6). Similarly, in a first model (M1), we measure the differences between countries in terms of GDP $\left(DiffGDP_t^{iH}\right)$, by against the variable related to differences in terms of income per capita $\left(DiffInc_t^{iH}\right)$ is introduced in other models (M2 and M3). Table 1 shows the results for this estimation. Practically, we have three models named M1, M2 and M3 presented as follow by Eq4, Eq5 and Eq6.

$$\ln(FDI)_t^{iH} = \alpha_0 + \alpha_1 \ln\left(DiffGDP_t^{iH}\right) + \alpha_3 \ln\left(POP_t^i\right) + \alpha_4 \ln\left(POP_t^H\right) +$$

$$\alpha_5 \ln\left(Ump_t^H\right) + \alpha_6 \ln\left(Dist_t^{iH}\right) + \alpha_8 \ln\left(EU_t^i\right) + \lambda_t^i + \varepsilon_t^i \quad \textbf{(4)}$$

$$\ln(FDI)_t^{iH} = \alpha_0 + \alpha_2 \ln\left(DiffInc_t^{iH}\right) + \alpha_3 \ln\left(POP_t^i\right) + \alpha_4 \ln\left(POP_t^H\right) +$$

$$\alpha_5 \ln\left(Ump_t^H\right) + \alpha_6 \ln\left(Dist_t^{iH}\right) + \alpha_8 \ln\left(EU_t^i\right) + \lambda_t^i + \varepsilon_t^i \quad \textbf{(5)}$$

$$\ln(FDI)_t^{iH} = \alpha_0 + \alpha_2 \ln\left(DiffInc_t^{iH}\right) + \alpha_3 \ln\left(POP_t^i\right) + \alpha_5 \ln\left(Ump_t^H\right) +$$

$$\ln\left(Dist_t^{iH}\right) + \alpha_7 \ln\left(ComNb_t^H\right) + \alpha_8 \ln\left(EU_t^i\right) + \lambda_t^i + \varepsilon_t^i \quad \textbf{(6)}$$

3.5. Empirical Results

In order to test the global significance of the models, we conducted a preliminary estimation by ordinary least squares (assuming that there are fixed-effects models where λ_t^i parameters are null). In this case, where we use the OLS method, a Student's test is performed on the coefficients relating to these variables in order to assess their degree of validity. The result indicates that the model is significant

according to the values of the coefficient of determination R^2 and that of the global Fisher test.

The obtained results in table 1 demonstrate that the variables related to differences in market size (model M1) and factor endowments (M2 and M3), the size of the investors' countries (M2 and M3) and geographical distance have a significant effect (at the 1 %) on FDI inflows in Tunisia. Also, we can say that more the market size of the investor country is higher, more its investment capacity is important. Similarly, more the differences in market size and in factor endowments are important more the FDI flows are greater. Conversely, the geographical distance effect is negative: more the distance is high (that is to say, more transport costs are significant) more investors are discouraged to invest in Tunisia; this is the negative impact of the long geographical distance. It must be noted that the coefficient on the variable of the Tunisian market size (measured by population) is not significant. These results support the vertical FDI model.

Table 1. Results of estimations by ordinary least squares (OLS)

	M1	M2	M3
CONSTANT	-6.4072	-19.5950	-24.1248
$Ln(Pop_t^i)$	0.1245 (0.1522)	0.5699 (0.7754)	0.6012 (0.0798)
$Ln(Pop_t^H)$	-2.6651 (4.8452)	-0.5996 (3.9925)	____
$Ln(DiffGDP_t^{iH})$	0.4015 (0.1552)	____	____
$Ln(DiffInc_t^{iH})$	____	0.4012 (0.0996)	0.4552 (0.0992)
$Ln(Ump_t^H)$	4.4001 (8.926)	4.0395 (8.887)	3.8826 (9.0021)
$Ln(Dist_t^{iH})$	-0.8222 (0.1901)	-0.8845 (0.2015)	-0.8997 (0.2201)
$Ln(ComNb_t^H)$	____	____	-0.10098 (0.7998)
$Ln(EU_t^i)$	0.8004*** (0.4007)	0.4004 (0.2645)	0.4122 (0.2552)
R^2	0.6654	0.6524	0.6901
F (Fisher)	11.004	11.478	12.877

Dependent variable: $ln(FDI)_t^{iH}$

Values in ( ) denote the estimated standard deviations.

* Coefficient significant at the 1% to the value of the Student test.

The variables related to the availability of work factor and to the number of firms in the industrial sector in Tunisia have insignificant effects in the variability of the

endogenous variable. This result is logical and not surprising because the MNCs attracted by Tunisia are implemented vertically at the large part. Indeed, the latter variable could have a significant effect in the case of a sectoral analysis (eg network effects). Finally, the result indicates that the membership of investors to the European Union has a significant effect only when introduced simultaneously with the variable related to differences in GDP (model M1). This result joins the one related to the geographical distance effect. It confirms that the countries of the European Union have the biggest number of industrial firms investing actually in Tunisia (for example, France, Italy and Spain). They are those that invest increasingly in Tunisia to take advantage of these special benefits (vertical FDI).

Secondly, we proceeded to estimate models M1, M2 and M3 assuming that they are models with fixed effects' in an one time and with random effects in a second one (Table 2). Firstly, for the different models with fixed effects, the value of the coefficient of determination R^2 (within) is too low and the statistics of Fisher test that tests the global significance of the explanatory variables appears insignificant.

It should be noted that in this type of model, unlike geographical distance, the dummy variable for membership of the investor countries to the European Union becomes an element of the set of explanatory variables because it is not constant in the time. This is because; Malta, as investors in Tunisia, is not part of the European Union until 2003. Also, the results indicate that the statistics relating to the Fisher test that tests the joint significance of introduced fixed effects is significant (at 1% level). This confirms the existence of specific or individual effects.

Table 2. Estimation results of models

	with fixed effects			with random effects		
	M1	M2	M3	M1	M2	M3
Constant	20.154	35.896	44.001	-5.026 (274)	-19.597 (2859)	-23.569 (3826)
$Ln(Pop_t^i)$	0.8552 (3.898)	20.115 (4.004)	2.015 (4.072)	0.056 (0.354)	0.6025[+] (0.205)	0.623[+] (0.214)
$Ln(Pop_t^H)$	-1.782 (5.074)	0.858 (5.127)	____	-2.546 (3.254)	-0.075 (3.015)	____
$Ln(DiffGDP_t^{iH})$	0.358 (0.589)	____	____	0.124[++] (0.259)	____	____
$Ln(DiffInc_t^{iH})$	____	-0.201 (0.412)	-0.245 (0.368)	____	0.326 (0.205)	0.348 (0.214)
$Ln(Ump_t^H)$	4.582 (5.878)	4.019 (5.782)	4.459 (5.869)	4.452 (5.986)	3.519 (5.642)	4.562 (5.996)
$Ln(ComNb_t^H)$	____	____	0.243 (0.814)	____	____	0.002 (0.548)
$Ln(EU_t^i)$	-0.558 (0.602)	-0.486 (0.625)	-0.427 (0.655)	0.145 (0.489)	0.091 (0.514)	0.092 (0.456)
σ_λ	2.510	3.048	3.182	1.261	0.103	0.103

σ_ε	1.845	1.981	1.829	0.744	0.775	0.778
R^2 (Within)	1.005	1.563	1.298	——	——	——
F (Fisher)	0.992	0.857	0.851	——	——	——
Test de Fisher (all $\lambda_t^i = 0$)	12.12*	11.93*	11952*	——	——	——
R^2 (Between)	——	——	——	0.456	0.449	0.448
Wald Chi2(6)	——	——	——	11.5[+++]	10.5[+++]	10.4[+++]
Breush-Pagan	——	——	——	152.99	145.62	145.59
Hausman χ^2	——	——	——	1.88 [0.865]	3.33 [0.663]	3.29 [0.654]

Dependent variable: $\ln(\text{FDI})_t^{iH}$,

Values in ( ) denote the estimated standard deviations,

Value in [ ] indicate the p-value,

* Coefficient significant at the 1% to the value of the Student test,

+, ++, +++ Coefficient significant at the 1%, 5%, 10% to the value of the Wald test.

In the next step, we proceeded to estimate the models defined by equations (4), (5) and (6) assuming the existence of random effects. Table 2 above shows the results for these estimations.

The estimation of a model with random effects requires the application of the test of Wald on the coefficients relating to the variables in order to appreciate their degree of validity. The obtained results argue that the model is significant according to results of the Wald test and the coefficient of determination R^2 (between) which measures the part of inter-individual variability of the dependent variable explained by those of explanatory variables. The results indicate that the FDI flows are positively related to the differences in terms of GDP (M1) and to the market size of the investing countries (M2 and M3), also they are negatively influenced by the geographical distance. Moreover, the probability of the Breush-Pagan test statistics shows that random effects are globally significant at 1%.

We must remember that the models with fixed and random effects allow taking into account the heterogeneity of the data but the assumptions about the nature of specific effects differ from one model to another. The Hausman specification test is used to test which of these two hypotheses is appropriate to our data. This test is based on the quadratic difference between the estimated parameters of the model with random effects and those of the model with fixed effects. Hausman statistics given by Greene (1993) is then calculated (Table 2). In each case, the probability of the test is well above 10%, which means that is very difficult to differentiate the model with fixed effects from those with random effects. However, previous results relating to estimations of the two categories of models widely justify the use of random-effects models for investor countries. Finally, to improve the quality of results and verify their degree of global validity, we proceeded to estimate the same

models by the method of quasi-generalized least squares (test of Wald). The results are presented in table 3.

The latter method gives us the tools to take into account the chronological characteristics of the series studied including, in particular, autocorrelation of random terms which are assumed to be independent within the framework of the estimation methods presented above.

Table 3 retraces results for this type of estimation. After these estimations and the obtained results, we can notice that FDI inflows in the manufacturing sector of the Tunisian economy, are positively related to market size of investors' origin country (M2, M3) and the differences in market sizes (M1) and in capital factor endowments (M2 and M3) between the country of investors and the host country. The effect of the availability of labor force (measured by the number of unemployment) appears significant at the 10% level (M1 and M3). Also, we can say that the FDI flows are negatively influenced by the geographical distance because most barriers to trade and transport costs are significant, less foreign firms are attracted to this country to set up their production units.

Finally, we can say that all these results argue again and even more significantly in favor of vertical investment model. The firms from countries with relatively large market size and closest geographically which primarily invest in Tunisia in the industrial sector. They are attracted to the benefits of the availability of a cheap labor force. We can confirm that the free trade agreements signed with the European Union helps to make Tunisia more attractive to foreign companies, mainly the European ones.

Table 3. Results of the model estimates by the method ofquasi-generalized least squares (QGLS)

	M1	M2	M3
CONSTANT	-14.2586 (20.4158)	-19.5546 (18.2245)	-15.4583 (10.1547)
$Ln(Pop_t^i)$	0.3014 (0.2001)	0.6256* (0.1102)	0.5523 (0.1220)
$Ln(Pop_t^H)$	0.0845 (2.1548)	0.3258 (2.1458)	____
$Ln(DiffGDP_t^{iH})$	0.3236 (0.1475)	____	____
$Ln(DiffInc_t^{iH})$	____	0.3325* (0.0992)	0.3256 (0.0958)
$Ln(Ump_t^H)$	2.7485*** (1.0014)	2.5147 (1.4582)	2.5698*** 1.2580
$Ln(ComNb_t^H)$	____	____	0.0158 (0.4144)
$Ln(EU_t^i)$	0.3256	0.2147	0.2258

	(0.2154)	(0.2516)	(0.2563)
-2ML	225.0148	223.1480	222.1447
WaldChi2 (6)	45.1248*	66.8459*	66.7481*

Dependent variable: $\ln(FDI)_t^{iH}$, Values in ( ) denote the estimated standard deviations.

*, **, *** Coefficient significant at the 1%, 5%, 10% to the value of the Wald test.

4. Conclusion

A multinational company can choose to implement a productive activity in a foreign country to obtain several advantages. Firstly, the MNC seeks the benefits of specific advantages of the selected territory (such as low production cost, availability and qualification of the workforce) and, secondly, to penetrate the local market and distribute a part of its production to domestic consumers. For this, we should try to incorporate into the analysis all the variables leading to investment decisions of multinational firms.

In this work, considering Tunisia as the only host country, we analyzed the factors of attractiveness for foreign companies in the industrial sector. From the application of an econometric model in log-linear panel data assuming the existence of specific effects for the investor countries, it appears that the market size, the differences in terms of GDP and income per capita, geographical proximity to Tunisia and the availability of labor force are the most significant factors of the attractiveness for FDI. This is a result consistent with the traditional theory of the implementation of multinational companies based on the differences between investor countries and the host country.

Besides the introduction of additional factors explaining the localization of production activities, such as the differences in labor costs, confirming certainly the traditional vertical model, several extensions can be suggested. For example, a sectoral analysis could be done using an econometric model on individual data and not on aggregated data. In this case, the variable representing the number of companies (local and foreign) operating in the sector in question can become a significant explanatory factor of the implementation of multinational enterprises in Tunisia.

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Financial Development and Inclusive Growth in Nigeria: A Threshold Analysis

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Abstract: This study investigates the relationship between financial development and inclusive growth in Nigeria for the period 1980 – 2013. The technique of analysis is the quantile regression; which is to obtain a threshold for which the former impacts on the latter. The result shows a threshold level of 90th percentile. Interestingly, the study also found that the impact of financial development on inclusive growth depends on the measure of the former up to the threshold level and not beyond. Through a granger causality test, the direction of causality is through the inclusive growth rather than through financial development; through the financial deepening measure. While the study found that either a low level or high level of openness on trade and capital investment are desirable for inclusive growth in Nigeria, the results also reveal that government involvement in the workings of the Nigeria economy and financial openness are sensitive to the pattern of financial development. With financial deepening, both are negatively related to inclusive growth but positively related to inclusive growth when financial widening is considered. This suggests that government intervention in the activities of the private sector is detrimental when the latter are to drive financial development process. However, the involvement of government in ensuring the appropriate level of financial widening, through the central bank operations, produces a positive impact on growth.

Keywords: financial development; growth; threshold analysis

JEL Classifications: D5; O4; C61

1. Problem Statement

The relationship between financial development and growth has since remained topical in the finance literature and till today, experts have not been able to reach consensus on this nexus. Beginning with the seminal studies of McKinnon (1973) and Shaw (1973), some economists (see Waqabaca, 2004; Chinaemerem & Chigbu, 2012; Nkoro & Uko, 2013 among others) have found positive relationship,

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results from other studies indicate that the relationship between the two concepts are negative (see inter alia Sunde, 2012; Damary, 2006; Gründler & Weitzel, 2013; Maduka & Onwukam, 2013); to some others, the relationship is neither positive nor negative but only due to other extraneous factors (see Pan & Wang, 2013). Interestingly, some studies found mixed results (see for example, Caporale, Rault & Sova, 2009). To make far-reaching policy suggestions, some authors (for example, Valíčková, Havránek & Horváth, 2013) have, even, conducted a meta-analysis of the finance-growth nexus. These dynamics of the finance-growth nexus are not only based on old evidences but new interrelationships also reveal the same trend (see Gründler & Weitzel, 2013). While the concept of financial development has not been disputed, the concept of growth has remains grossly controversial to development economists and has even make earlier view of financial development to be less holistic.

The conceptual issues revolving around growth has been evolutional; moving from traditional quantitative measure of economic progress to its modern and more encompassing measures. It began with the various paradigm shifts with which economic growth have undertaken and the new dimension with which it has recently assumed. The measure of economic growth in the literature of development economics is majorly the gross domestic products (GDP) and its variants (see Todaro and Smith, 2011) but having identified the various shortcomings of these measures in reducing the number of people that fall within the poverty-line, development economists began to query the suitability of these measures. The underlining assumption for the use of GDP; and its variants, as measure of economic progress and welfare was predicated on the trickle-down hypothesis but economists found that this assumption is not absolute and then suggested another concept of well-being of the growth variants known as the pro-poor growth. In effect, it was found that economic growth does not automatically translates into widely shared gains (Piece, 2012). The idea of this measure of growth is that growth must be poverty-alleviating. There should be an increasing reduction in the number of poor people. The issue is that the amount generated through expanding and increasing productive activities must be employed to get many people out of the poverty bracket through government interventionist policies of income redistribution and spending instruments.

Again, the increasing rent-seeking economy and expansive government portfolios; due to democratic governance suggested government policies directed towards poverty alleviation have either been ineffective or inadequate or both; therefore, necessitated another paradigm shift in the growth literature to inclusive growth. With inclusive growth, the growth generating process has an inbuilt mechanism to automatically cater for and include the poor in the society. Inclusive growth

requires, by definition, both economic growth and inclusion.[1] According to CAFOD (2014), inclusive growth ensures that everyone can participate in the growth process, both in terms of decision making for organizing the growth progression as well as participating in the growth itself. On the other hand, it makes sure that everyone shares equitably the benefits of growth. Inclusive growth implies participation and benefit sharing. Participation without benefit-sharing will make growth unjust and sharing benefits without participation will make it a welfare outcome (CAFOD, 2014).

To carpet a robust investigation and clarify the unending controversy trailing the empirical literature on financial development and economic growth, a threshold analysis of the finance-inclusive growth nexus becomes imperative as it seeks to clarify the possible controversy of empirical findings around this relationship. A threshold analysis is the minimum level which serves as the benchmark that financial development could translates to inclusive growth. The study of Adegboyega & Odusanya (2014) indicated that the extent to which the financial sector development ought to have developed has not been accentuated to the best optimum level. Essentially, this study contributes to the empirical literature in two major ways. Firstly, it is the first study that seeks to obtain new evidence of the finance-growth nexus with inclusive growth being the new indicator for capturing growth in the Nigerian contexts. Secondly and consequent upon the first objective, it is to our notice that there is no study that has conducted a threshold analysis of the nexus to find out what level of financial development is required for growth to be inclusive. In addition to this introductory section, this study is further discussed under four other sections. Section 2.0 review extant literature of the finance-inclusive growth nexus, section 3.0 focuses on the theoretical and methodological framework while section 4.0 estimates the empirical model for this study. Section 5.0; being the last, concludes and provides policy suggestions.

2. Literature Review

The concept 'inclusive growth' has not been unanimously defined in the literature; given the evolutional dimension of growth. In fact, some authors (for example, Raniere and Ramos, 2013) believe that inclusive growth is another term for pro-poor growth. A commonly used definition, however, is that inclusive growth is an absolute reduction in poverty associated with a creation of productive employment rather than direct income distribution schemes. It should accommodate both the pace and pattern of growth (World Bank, 2009). It is of shared growth and broad-based in nature. For growth to be inclusive, the nexus of both economic growth and income distribution need be achieved. This is unlike pro-poor growth that focuses

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[1] See (Hatlebakk, 2008; Commission on Growth & Development, 2008; Lanchovichima et. al., 2009).

largely on the growth-poverty nexus without any recourse to the distribution pattern. Inclusive growth addresses absolute poverty as against the case of relative poverty in pro-poor growth. In effect, inclusive growth is an ex-ante analysis of the growth generating process fused with outcomes of generated growth while pro-poor growth is only an ex-post analysis of the outcomes of growth generated (see Klasen, 2010). Putting these together, it suggests that a robust inclusive growth strategy will complement policies to stimulate economic growth with those that foster equality of opportunity, alongside a social security net to protect the most vulnerable. As such, economic policies to promote structural transformation and creative productive employment for the poor people will need be complemented by investments in human capital and other programmes to support social inclusion and equal access to jobs (see Alexander, 2015; McKinley, 2010).

There are numerous studies that have empirically examined the impact of financial development on growth. However, scanty studies have focus on inclusive growth. The available studies in the finance and growth literature have focus on components of inclusive growth such as income inequality and poverty reduction. Generally, there are two main strands of findings. The first strand of studies found support for the Greenwood & Jovanovich (1990) hypothesis that financial development help reduce income inequality between the rich and the poor. The second strands of studies documented positive relationship between financial development, income inequality and poverty reduction. The table below gives a cursory review of the extant literature in this regard.

Table 1. Cursory Review of Empirical Literature

Author	Methodology	Results/Findings
Greenwood & Janovich (1990); Shahbaz (2009); Honohan (2004); Clark et. al., (2002)	Error Correction Models	Negative relationship exists between financial development, income inequality and poverty reduction.
Ang (2008); Shahbaz & Islam (2011); Odhiambo (2010b); Azran et. al., (2012).	ARDL Bound Testing Cointegration	Generally, financial liberalisation helped reduced income inequality and poverty. However, this result is sensitive to measures of financial development such as ratio of M2 to GDP and the ratio of credit to the private sector to GDP
Odhiambo (2008); Quartey (2005); Odhiambo (2010a)	Causality Tests	Mixed results of unidirectional causality and feedback effects. Basically, financial development granger causes poverty reduction; both directly and indirectly through savings.
Uddin et. al., (2014)	OLS	Growth is weakly accelerated by financial development and poverty reduction.

Julilian & Kirkpatrick (2002);	Panel data regression model	Financial development reduced income inequality between the rich and the poor
Benjamin (2012); Dhrifi (2013)	2SLS; 3SLS	Financial development reduces poverty; both directly and indirectly but could not reduce income inequality
Khan et. al., (2010); Kenelo et. al., (2010)	Panel OLS; OLS and IV methods	Financial development reduces inter-gender inequalities and reduces poverty
Fowowe & Abidoye (2010); Inoune & Hamori (2010); Rewilak (2012)	GMM Estimator	Financial development does not significantly influence poverty in Sub-Saharan African economies but reduces poverty for a country-specific case such as India.

The foregoing review of empirical studies indicated that the relationship between financial development, income inequality and poverty reduction have been mixed and inconclusive with limited focus on inclusive growth. The empirical irregularities in the empirical literature informed the need for fresh empirical evidences on the interactions between financial development and inclusive growth in Nigeria. This forms the kernel of this study.

3. Methodology

3.1. Theoretical Framework and Model Specification

Analysis on the determinants of inclusive growth is a recent phenomenon and there has not been a well-developed modeling framework. Basically, however, the social welfare function and social opportunity function remain the two major indicators for capturing inclusive growth (see Anand, Mishra & Peiris, 2013; Ali & Hwa Son, 2007). While the former measure combined a fundamental integration of both growth and equity into one measure to form inclusive growth; the latter measure hinged on two factors of average opportunities available to the population and how these opportunities are distributed in the population.

Our measure of inclusive growth aligns with the latter measure as it captures participation; being the most important component of inclusive growth. This is reflected in the GDP per person employed (see WDI, 2014). More so, equity, as incorporated in the former measure, cannot properly be integrated with growth without loss of generality. We conduct a granger causality test to assess if feedback exists from inclusive growth to finance. Majorly, the technique of analysis would be the quantile regression; where we examine the threshold level with which finance would be beneficial to inclusive growth. Our study reformulated the modeling framework of the financial development – inclusive growth nexus

pioneered by Anand et. al., (2013). Anand et. al., (2013) developed a measure of inclusive growth by incorporating economic growth performance with that of distribution of economic growth within a panel regression model. The model they formulated is given as:

$$Y_{i,t}^* - Y_{i,t-1}^* = \alpha_0 + \beta_1^o \, \bar{Y}_{i,t} + \beta_1^o X_{i,t} + \eta_c + \gamma_t + \vartheta_{c,t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where; $Y_{i,t}^* - Y_{i,t-1}^*$ was taken as the log-difference of $\bar{y}^*$ or inclusive growth in country i at time t, $\bar{Y}_{i,t}$ was the initial level of per capita PPP-adjusted income at the start of 5-year panel period t to reflect conditional convergence, and $X_{i,t}$ was a set of growth and inequality determinants measured as averages of 5-year panel period t. The disturbance term in the regression consists of an unobserved country effect η_c that is constant over time and unobserved period effect (γ_t) that is common across countries, and a component ($\vartheta_{c,t}$) that varies across both countries and years which we assume to be uncorrelated over time. Anand et. al., (2013) identified a number of potential determinants of inclusive growth in their model. These are the initial level of income, education, trade openness, credit to GDP, fixed investments, government consumption, inflation, financial openness, foreign direct investment, ICT and REER deviations.

Predicated on the social opportunity function, however, we incorporate the productive employment opportunity of the Nigerian population as the single most important factor that allows for participations in the growth process (see Lledo & Garcia-Verdu, 2011). While our study will not be the first to adopt the social opportunity function as a framework to study inclusive growth (see Adedeji, Du & Opuku-Afari, 2013; Ali & Son, 2007), our study is about the first to use employment opportunities as an indicator to capture opportunity in contributing to the growth process. This study considered the employment opportunity provided by enabling infrastructure, sound government fiscal and macroeconomic policies more broad-based than education and health that other studies focused on (see Adedeji et. al., 2013). This lends credence to the submission that productive employment opportunity is a growth-sustaining parameter (Commission on Growth & Development, 2008); hence, a reformulation of the model stipulated in equation (1).

$$\bar{y}_t^* = \alpha_0 + \beta_1 \bar{Y}_t + \beta_2 X_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2)$$

Where; $\bar{y}_t^*$ is the GDP per person employed as a measure of productive employment; indicating inclusive growth in Nigeria; $\bar{Y}_t$ is the lagged Gross National Income which denotes the initial level of income; X_t is the vector of control variables while ε_t is the error term. In the case of the Nigerian economy, the control variables found essential are trade openness (TOP), credit to the private sector and broad money (M2) as ratios of GDP, (CPS_GDP) and (M2_GDP) respectively; an indicator for financial development, financial openness (FOP), government consumption (GCONS), FDI, gross fixed capital formation (GFCF) as a measure of fixed investment and inflation (INF) to reflects the internal stability. Therefore, equation (2) is reformulated as;

$$GDPE_t = \alpha_0 + \beta_1 GNI_{t-1} + \beta_2 TOP + \beta_3 FOP + \beta_4 FD + \beta_5 FDI + \beta_6 GFCF + \beta_7 INF + \beta_8 GCONS + \varepsilon_t \cdots (3)$$

For robustness sake, the variable of financial development (FD) is decomposed into two components of financial deepening (proxied as CPS_GDP) and financial widening (proxied M2_GDP) yield the following two empirical models of equations (4) and (5) respectively;

$$GDPE_t = \alpha_0 + \beta_1 GNI_{t-1} + \beta_2 TOP + \beta_3 FOP + \beta_4 CPS\_GDP + \beta_5 FDI + \beta_6 GFCF + \beta_7 INF + \beta_8 GCONS + \varepsilon_t \cdots (4)$$

$$GDPE_t = \alpha_0 + \beta_1 GNI_{t-1} + \beta_2 TOP + \beta_3 FOP + \beta_4 M2\_GDP + \beta_5 FDI + \beta_6 GFCF + \beta_7 INF + \beta_8 GCONS + \varepsilon_t \cdots (5)$$

Prior to this, we provide a systematic procedure of the inclusive growth analytics with three basic steps. Step 1 relates to the background analysis of growth and poverty-reducing trends in Nigeria, step 2 provides a profile of economic actors in the growth generating process while step 3 identifies various inclusive growth constrained factors in the country. The scope of analysis for this study span 1980-2013 and data are obtained from the World Development Indicator (WDI, 2014); the Central Bank of Nigeria Statistical Bulletin (various issues); SMEDAN and NBS Collaborative Survey (2013); National Bureau of Statistics (NBS, 2014). This period is found suitable for our study as it is considered long enough to trace the interaction between financial development and inclusive growth in Nigeria.

3.2. Technique of Analysis

The technique of analysis for this study is the quantile regression. We seek to undertake a threshold analysis of the financial development – inclusive growth nexus. It is this that assists us to ascertain the level that financial development in the Nigerian economy should be inclusive growth enhancing and otherwise.

Generally, the quantile regression is specified its simple form as;

$$y_t = X_t^{'} \beta_\tau + \mu_\tau \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(6)$$

and;

$$Quantile_\tau(y_t|X_t) = X_t^{'} \beta_\tau \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(7)$$

Where; y_t equals the dependent variable (GDPE – GDP per person employed; as an indicator for inclusive growth); $X_t^{'}$ equals a vector of independent variables; β_τ is the vector of parameters associated with the τth quantile (percentile), and μ_τ equals the unknown error term. The distribution of the error term, μ_τ, remains unspecified as indicated in equation (5). We only require that the conditional τ^{th} quantile of the error term equals zero, that is, $Quantile_\tau(\mu_\tau|X) = 0$. $Quantile_\tau(y_t|X_t) = X_t^{'} \beta_\tau$ equals the τth conditional quantile of inclusive growth given financial development with $\tau \in (0,1)$. By estimating β_τ, using different value of τ, quantile regression permits different parameters across different quantiles of financial development. In other words, repeating the estimation for different values of τ between 0 and 1, we trace the distribution of y conditional on X and generate a much more complete picture of how financial development affects inclusive growth in Nigeria.

Compactly, the quantile regression estimate β_τ solves the minimization problem of the form;

$$\min_\beta \left[\sum_{i \in \{i: y_t \geq X_t \beta\}} 2\tau |y_t \geq X_t \beta| + \sum_{i \in \{i: y_t < X_t \beta\}} 2(1-\tau) |y_t \geq X_t \beta| \right] \dots\dots\dots\dots\dots(8)$$

Equation (6) implies that the quantile regression minimizes a weighted sum of the absolute errors, where the weights depend on the quantile estimated. The solution involves linear programming, using a simple-based algorithm for quantile regression estimation (see Koenker & d'Orey, 1987).

4. Empirical Estimations

4.1. Trend Analyses of Financial Development and Inclusive Growth Dynamics

The conceptual literature on inclusive growth suggests that a complete inclusive growth analytics has the following components: productive jobs and labour;

economic transformation; infrastructure; human development; fiscal policy; social protection and institutions (see Alexander, 2015). This aligns with the systematic approach with which this study tends to follow for inclusive growth analysis. As depicted in figure 1 below, the extent of financial widening – being an indicator for financial development (measured as the ratio of money supply to the gross domestic products; proxied as M2_GDP) in Nigeria between the periods of 1970 – 1974 and 1990 – 1994 were barely at the same level; having shown a noticeable trend of inconsistency between the two periods. Since the period 2000 – 2004, however, the degree of financial widening consistently increased. However, another measure of financial development is the financial deepening; as measured by the ratio of credit to the private sector to the gross domestic product (proxied as CPS_GDP). The trend shows that the CPS_GSP continuously increased since the period 1970 – 1974 and stabilizes at an unnoticeable dip in the period 1985 – 1989. It is, however, instructive to note that both the financial widening and financial deepening have their highest levels in the period 2005 – 2009 and also that both recline appreciably in the period 2010 – 2013. The stock market development; which is indicated by market capitalization, also shows this trend. The various reforms that began in the financial sector around 2005 can explain for the noticeable increase in financial development in the country while the effects of the global financial cum economic crisis; beginning 2009, can account for the recline noticed afterwards (see Figure 1).
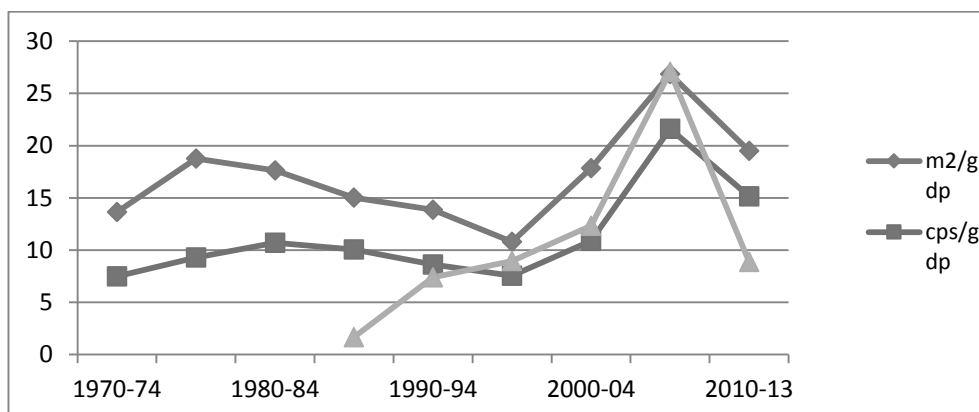
Figure 1. Trends of Financial Development in Nigeria (1970-2013)

Source: Authors

In the analysis of inclusive growth dynamics, we have considered a number of indicators. Since inclusive growth addresses both the patterns and pace of growth, it becomes imperative that the analysis of productive employment and labour market dynamics are undertaken. In doing this, we relied on the collaborative survey conducted by the Small and Medium Development Association of Nigeria

(SMEDAN) and the National Bureau of Statistics (NBS) in 2013; as detailed in Table 3 below. This survey shows that four major sectors drive the Nigerian economy; accounting for barely 85 percent of ownership distribution. These sectors are the education, wholesale/retail trade, manufacturing and accommodation and food services; in that successive order. Education accounts for 38.10 percent; wholesale/retail trade accounts for 20.58; 16.54 for manufacturing and 9.77 for accommodation and food services respectively. Other sectors that accounts for around 5 percent include administrative and support services and other services activities while the agriculture, construction, art, entertainment and recreation, information and communication; among others accounts for grossly negligible ownership distributions of the Nigeria economy; with a combined ownership distribution of less than 5 percent. The implication of these trends is that, except for manufacturing which has both forward and backward linkages and which is capable of employing substantial number of individuals in its value chains, the three other sectors that majorly drive the Nigeria economy and that account for substantial ownership distribution are not capable of making growth to be inclusive for the economy.

Table 2. Form of Ownership of Sectoral Distribution of Nigerian Economy

Ownership Status	Frequency	Percentage
Sole Proprietorship	53,074	72.9
Partnership	4,800	6.59
Private Limited Liability Company	10,281	14.1
Cooperative	511	7.01
Faith Based Organisation	3,361	4.61
Others	812	1.11
Total	**72,839**	**100.0**

Source: Authors' Computations and SMEDAN & NBS Collaborative Survey (2013)

The form of ownership of these sectoral distributions detailed in Table 2 substantiates the outlook of the ownership distribution of the Nigerian economy among the various sectors. This is quite revealing since the major sectoral drivers are owned by individuals; the sole proprietorships, who are often constrained by legal, regulatory, institutional frameworks in their employment contents. By law, the sole proprietorship business can only employ between 1 – 9 staff and are also usually financially constrained; as the sources of obtaining capital for maintenance and expansion are limited to friends, relatives and associates. This is distantly followed by the private limited liability company; accounting for 14.1 percent ownership (see Table 2). Basically, the trend on total employment lend credence to

the fact that only the manufacturing sector has both forward and backward linkages substantial enough to promote inclusive growth in Nigeria. The sector accounts for 27.72 percent of the total employment in the small and medium scale businesses in the country; which is closely followed by education and then wholesale/retail trade with 25.91 and 17.42 percents contributions respectively (see Table 4). Interestingly, financial intermediation does not account for any percent contribution to the total employment in the small and medium scale industry. But since the Nigerian economy is still considered to be a small open economy which is majorly driven by small and medium-scale enterprises (see Figure 2), this trend does not support that financial intermediation would drive inclusive growth in Nigeria.

Table 3. Sectoral Decomposition and Ownership Distribution of the Nigerian Economy

Economic Sector	Male		Female		Total	
	No.	%	No.	%	No.	%
Manufacturing	8.089	92.16	688	7.84	8,777	16.54
Minning and Quarrying	174	85.20	30	14.80	204	0.38
Accommodation and Food Services	4,075	78.62	1,108	21.38	5,183	9.77
Agriculture	1,165	93.02	87	6.98	1,253	2.36
Wholesale/Retail Trade	9,664	88.46	1,261	11.54	10,925	20.58
Construction	209	100.0	0	0.00	209	0.39
Transport & Storage	460	100.0	0	0.00	460	0.87
Information and Communication	280	89.07	34	10.93	314	0.59
Education	12,409	61.37	7,811	38.63	20,220	38.10
Administrative & Supportive Activities	2,409	82.32	440	17.68	2,489	4.69
Arts, Entertainment and Recreation	200	89.72	23	10.28	223	0.42
Other Services Activities	2,204	78.82	592	21.18	2,796	5.27
Water Supply, Sewerage, Waste Management & Remediation Act	21	95.24	1	4.76	22	0.04
Total	**40,998**	**77.25**	**12,076**	**22.75**	**53,074**	**100**

Source: SMEDAN and NBS Collaborative Survey (2013)

Table 4. Total Employment by Sex and Economic Sector

Economic Sector	Male	Female	Total	Percentage
Manufacturing	179,213	348,505	527,718	27.72
Minning & Quarrying	3,500	12,220	15,720	0.83
Accommodation & Food Services	106,525	55,989	162,514	8.54
Agriculture	21,952	67,326	89,279	4.69
Wholesale/Retail Trade	223,100	108,595	331,694	17.42
Construction	6,794	51,319	58,113	3.05
Transport and Storage	12,211	33,267	45,479	2.39
Financial Intermediation	0	0	0	0
Real Estate, Renting, Business Activities	0	0	0	0
Information and Communication	6,656	12,494	19,150	1.01
Education	388,981	104,210	493,191	25.91
Administrative and Support Activities	42,567	48,842	91,409	4.80
Health and Social Works	0	0		0
Arts, Entertainment and Recreation	3,714	2,278	5,992	0.31
Other Services Activities	38,322	24,304	62,626	3.29
Water Supply, Sewarage, Waste Management and Remediation Act	365	569	935	0.05
Total	**1,033,900**	**869,920**	**1,903,820**	**100.0**

Source: SMEDAN and NBS Collaborative Survey (2013)

Further, this study seeks to investigate if the low rate of total employment observed in the other sectors of the economy was due to lack of educational opportunities of the individuals in the country. The information detailed in Table 5 shows that the official rate of unemployment hovers around 20 percent for the periods of 2010 – 2014. However, the time-related unemployment and under-employment by education level is not specifically indicative but only shows that unemployment by education level increases from 2012 relative to the two earlier years of 2010 and 2011. Since 2012, the data trend shows that unemployment become more pronounced among individuals with secondary and post-secondary education.

Table 5. Unemployment and Underemployment Rates by Educational Level in Nigeria (2010-2014)

Labour Market Statistics	2010	2011	2012	2013	2014
Unemployed rate	21.4	23.9	23.3	20.1	24.3
Panel A: Unemployment rate by Educational Level					
Never Attended	4.3	5.9	8.8	7.9	6.8
Below Primary	5.6	0.0	6.0	6.7	4.1
Primary	5.2	5.7	6.6	5.5	4.6
Secondary	5.7	7.0	9.4	8.9	6.9
Post Secondary	5.3	4.7	11.4	10.1	7.0
Panel B: Underemployment rate by Educational Level					
Never Attended	13.7	17.8	14.2	13.3	19.8
Below Primary	18.1	0.0	10.7	9.2	11.1
Primary	16.7	17.1	10.9	8.8	13.1
Secondary	18.2	21.2	14.6	12.7	19.0
Post Secondary	16.9	14.1	17.8	11.9	17.7

Source: NBS (2014).

As such, lack of educational opportunities cannot be held responsive for non-inclusiveness. Interestingly, the rate of underemployment by educational level seems to provide more information. Generally, this rate is higher than the unemployment rate in all respect but it is not also indicative of the direction of unemployment due to lack of educational opportunities. Largely, it shows that it is due to lack of economic activities as people engaged in jobs that are less than their educational attainments. As such, we trend the growth process of the Nigeria economy as indicated by the real GDP growth rate and the trend of inclusive growth; as indicated by the growth rate of GDP per person employed (see figure 2 below). Figure 2 shows that the golden period of Nigeria real growth is during the 1970 – 1974 period. During this period, real GDP growth rate was about 10 percent while the periods of 1980 – 1984 records the worst growth rate of -6.342 (see Table 5). There occurs a downswing in the growth process from 1989 till 1999 where the real GDP growth rate got to a negligible level of 1.14 percent. Since the year 2000, however, there has been appreciable increase in the growth process with the highest increase recorded in the period 2010 – 2013 with 5.86 percent. This trend suggests that increasing growth rate does not automatically translates to inclusive growth as even when growth rate was appreciative in the period 1985 – 1989, growth was not inclusive. Also, between the period 1995 and 1999, growth is found non-inclusive but since the year 2000; except to a significant dip in the period 2010 – 2013, inclusive growth has continued increasing.
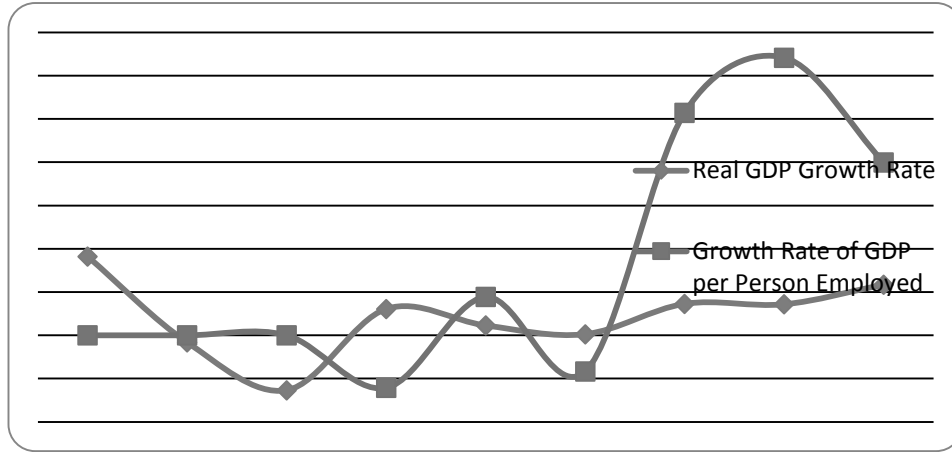
Figure 2. Graphical Trends of Real GDP Growth Rate and Inclusive Growth in Nigeria

Source: Authors

Table 6 essentially addresses the social inclusion and social safety nets programmes of the government to ensure that the vulnerable groups in the society are properly taken care of. When the human capacities of the marginalized and disadvantaged sections of the society are improved, they have more opportunities at their disposal and become socially included. Most of the respondents opined that majority of government policy that affect micro-enterprises are most favourably disposed to road maintenance (17.21 percent of the respondents) and environmental sanitary (16.17 percent of the respondents) and followed by job creation (10.27 of the respondents) with political stability (10.16 percent of the respondents) taking the fourth position in a role. Government effort on financial development indicator (the banking reform) is the least but one favourable as the respondents (of 5.54 percent) suggested. This suggests that there are no opportunities created by the government towards financial inclusion and its efforts on inclusive growth is not topmost since job creation that allows for productive employment is not considered a priority.

Table 6. Major Government Policy that Affects Micro-Entreprises Most Favourably

Policy	Frequency	Percentages
Environment Sanitary	18,505,191	16.17
Road Maintenance	19,701,440	17.21
Introduction of Raw Materials	9,752,374	8.52
Job Creation	11,754,288	10.27
Taxes	4,869,741	4.26

Exchange Rate	4,120,167	3.60
Intervention Fund	7,783,543	6.80
Power Supply	11,358,723	9.93
Political Stability	11,632,135	10.16
Banking Reform	6,340,532	5.54
Fertilizer Production	8,626,993	7.54

Source: SMEDAN and NBS Collaborative Survey (2013)

4.2   Descriptive Statistics

Table 7. Statistical Properties of Inclusive Growth Determinants in Nigeria (1980-2013)

Source: E-Views Output. Note: CPS_GDP is the ratio of credit to the private sector to the GDP; FDI_GDP is the ratio of foreign direct investment to GDP; FOP is the financial openness; GDPPE is the GDP per person employed; GFCF is the gross fixed capital formation; GNI_1 is the lagged gross national income; GOVCONS is the government final consumption; INF is the rate of inflation; M2_GDP is the ratio of broad money supply to the GDP while TOP is the trade openness.

The descriptive statistics show the statistical properties of the various determinants of inclusive growth; with reference to the Nigeria economy. The skewness shows the departure from the expected values and it indicates that, except for the financial openness which is negatively skewed (proxied as FOP), all the variables are positively skewed. Only the trade openness (proxied as TOP) is normally distributed with a value of 3.00. This is the threshold value for normally distributed series with which this series attained. Relatively too, the lagged gross national income (proxied GNI_1), the gross fixed capital formation (proxied as GFCF) and the involvement of government in the workings of the economy (proxied as GOVCONS) can be taken to be normally distributed. However, the ratio of credit to the private sector to the GDP (proxied CPS_GDP) and the ratio of money supply to the GDP (proxied as M2_GDP); being the two indicators of financial development – financial deepening and financial widening respectively, coupled

with the ratio of foreign direct investment to the GDP (proxied as FDI_GDP) are leptokurtic in nature while those of financial openness (proxied as FOP), GDP per person employed (proxied as GDPPE) are platykurtic in nature. While the kurtosis is an informal test of normality which cannot be taking solely for conclusion on normality, the Jarcque-bera test of normality is quite revealing. The probability values for the Jarcque-bera indicate that the null hypothesis of normally distributed cannot be rejected for the series of financial openness (proxied as FOP), lagged gross national income (proxied GNI_1) and the indicator of inclusive growth (proxied as GDPPE) at the 5 percent level with 0.12, 0.09 and 0.09 probability values respectively. But, for all other variables, the null hypothesis of normal distribution is rejected.

Table 8. Granger Causality between Financial Development and Inclusive Growth in Nigeria

Null Hypothesis	F-statistics	Prob.
GDPPE does not Granger cause CPS_GDP	6.491	0.016
CPS_GDP does not Granger cause GDPPE	0.152	0.700
M2_GDP does not Granger cause GDPPE	0.954	0.337
GDPPE does not Granger cause M2_GDP	0.179	0.191

Source: E-views Output. Note: The variables are of lag 1.

The estimates of the granger causality test detailed in table 8 suggests that the direction of causality moves from inclusive growth to financial development since the null hypothesis that GDPPE (an indicator of inclusive growth) does not granger cause CPS_GDP (as indicator of financial development) is rejected with 0.016 probability value but the reverse does not hold as the null hypothesis that CPS_GDP does not granger cause GDPPE cannot be rejected at the 5 percent level of significance. However, for financial widening; as another indicator for financial development, neither inclusive growth nor financial development granger causes one another as the null hypotheses in both cases cannot be rejected; not even at the 10 percent level of significance. This shows that it is rather inclusive growth that would engender financial development in Nigeria and not otherwise.

4.3. Discussion of findings on Quantile Regression Estimations

In estimating the quantile regression models, we considered the conventional quantiles such as the 25th, 50th, 75th, 85th, 90th and 95th percentiles. The 25th, 50th and 75th quartiles are the first, second and third quartiles respectively. The result obtained shows that financial deepening (indicated as the ratio of credit to the private sector to GDP and proxied as CPS_GDP) positively impact on inclusive

growth in Nigeria irrespective of the quantile level while financial widening (indicated as the ratio of broad money supply to the GDP and proxied as M2_GDP) only stabilizes at positive relationship when it got to the 90th percentile. This is the threshold level for financial development to impact on inclusive growth in Nigeria. This is so in that it is at the quantile level that the coefficients obtained for each of these inclusive growth determinants; including financial development indicators, become stationary. Further quantiles estimations at higher levels of 95th and 99th percentile could not yield any different coefficients; both in sign, size and significance (see Tables 9). The implication is that for government to engendered inclusive growth through financial development, the latter must peaked. At the threshold levels of 85th percentile for financial deepening and 90th percentile for financial widening respectively, we found that the pseudo-R^2 is 0.86. This lends lend credence to the overall fitness of the model that the explanatory variables substantially determine inclusive growth in Nigeria to the tune of 86 percent while only 14 percent is due to extraneous factors.

Instructively, our results suggest that the impact of financial development on inclusive growth depends on the measure of financial development (financial deepening or financial widening) used at the non-threshold level but at the point of threshold, a uniformity of positive significant impact of financial development indicators were found on inclusive growth. Although, we found that financial deepening tends to attains threshold level quite before financial widening does. The former reached its threshold at the 85th percentile level while the latter attains its threshold at the 90th percentile level. This study, therefore, resolves the contrasting results in empirical studies that the impact of financial development on inequality and poverty reduction largely depends on the measure used for the former (see Odhiambo, 2009a; Greenwood & Jovanovich, 1990).

Table 9. Quantile Regression Results

25th Quartile			50th Quartile			75th Quartile		
Variables	**CPS_GDP**	**M2_GDP**	**CPS_GDP**	**M2_GDP**	**CPS_GDP**	**M2_GDP**		
C	1612.26	1911.09**	2814.4	2258.7	3514.8**	3512.66**		
GNI_1	0.006	0.004	0.002	0.002	-0.0003	-0.0004		
TOP	66.27***	61.55*	68.4	62.28	71.05	65.96		
FOP	45.16	910.5	-1196.03	-1302.7	-1.82	18.30		
CPS_GDP/ M2_GDP	21.09	32.55	22.75	56.97	4.79	4.35		
FDI_GDP	63.21	37.18	24.96	-9.28	3.39	6.30		
GFCF	0.001**	0.002*	0.002***	0.001	0.001	0.001		

INF	-4.47	-5.01	-7.40	-3.74	-6.70	-6.92
GOVCONS	-0.001***	-0.001**	-0.001	-0.008	-0.0003	-0.0002
Pseudo-R^2	0.75	0.77	0.80	0.81	0.84	0.84

85th Percentile			**90th Quartile**	**95th Quartile**		
Variables	**CPS_GDP**	**M2_GDP**	**CPS_GDP**	**M2_GDP**	**CPS_GDP**	**M2_GDP**
C	3220.68**	3480.3	3220.68	3299.8*	3220.68	3299.8*
GNI_1	-0.001	-0.0001	-0.001*	-0.0012*	-0.001*	-0.0012*
TOP	93.55*	72.67	93.55*	79.5*	93.55***	79.5*
FOP	-408.40*	247.2	-408.40*	10.92*	-408.40*	10.92*
CPS_GDP/M2_GDP	48.18	-0.90	48.18*	29.3*	48.18*	29.3*
FDI_GDP	25.66	32.02	25.66*	38.4*	25.66*	38.4*
GFCF	0.002**	-0.0006	0.002*	0.0012*	0.002*	0.0012*
INF	-7.30	-7.70	-7.30*	-9.10	-7.30*	-9.10*
GOVCONS	-0.001***	-0.0003	-0.001*	0.001*	-0.001*	0.001*
Pseudo-R^2	0.86	0.86	0.87	0.87	0.88	0.87

Source: STATA Output on Quantile Regression Estimations. *,**,*** denotes significance at the 1%, 5% and 10% levels.

The results also show that trade openness (proxied as TOP), foreign direct investment (proxied as FDI_GDP) and gross fixed capital formation (proxied as GFCF) positively impact on inclusive growth in Nigeria after the threshold has been attained for both measures of financial development (see Tables 9). This is also the effect for both trade openness and gross fixed capital formation at the 25th percentile level. The implication is that only either a low level or high level of openness on trade and capital investment is desirable for inclusive growth. However, both the lagged gross national product (proxied as GNI_1) and the rate of inflation (proxied as INF) negatively and significantly impact on inclusive growth in Nigeria for both measures of financial development. Interestingly, government involvement in the workings of the Nigeria economy and financial openness are sensitive to the pattern of financial development. With financial deepening, both are negatively related to inclusive growth but positively related to inclusive growth when financial widening is considered. This suggests that regulating the activities of the private sector is not necessary when government engages them to facilitate financial development. However, the involvement of

government in financial widening through the central bank produces a positive impact on growth.

5. Conclusion and Policy Recommendation

It is evident that the findings from this study would address some of the controversy between the finance-growth nexus as the relationship appears to produce new evidence and more valid results. The study shows that the impact of financial development on inclusive growth depends on the measure of the former up to the threshold level of 90th percentile. We also found that government roles in financial intermediation should be definite and implemented through the activities of the central bank as the effects of government intervention on private financial development activities is detrimental in nature. Interestingly too, the direction of causality is found to be from inclusive growth rather than through financial development. As such, the following policy suggestions are recommended:

- Productive employment should be encouraged as this would reduce the pace of unemployment and underemployment in the country.

- There should be substantial drive towards financial development activities as more social and safety nets should be provided to financially include the vast majority of the populace.

- The government's focus should largely be concentrated on the micro, small and medium enterprises as these are the major drivers of inclusive growth in Nigeria as against the large scale businesses.

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A Re-Examination of Kaldor's Engine-of-Economic Growth Hypothesis for the Turkish Economy

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Abstract: The purpose of this study is to re-examine the validity of Kaldor's engine-of-economic growth hypothesis (1966) for the Turkish economy in the context of time series analyses. The data used in this study are quarterly and cover the period of 1998:Q1-2015:Q4. The Autoregressive Distributed Lag (ARDL) bounds testing approach to co-integration was used to investigate the long-run dynamic relationship between industrial and non-industrial aggregate outputs. The results identify the long-run relationship between industrial and non-industrial economic performance. The Toda-Yamamoto approach to Granger causality test was employed to detect the causal links between industrial output and non-industrial aggregate output. Causality test results also support the causal implication of the engine-of-growth hypothesis for the case of Turkey.

Keywords: ARDL Bounds Testing Approach; Kaldor's Engine-of-Economic Growth Hypothesis; Toda-Yamamoto Approach

JEL Classification: C32; O41

1. Introduction

In the growth and development literature, the hypothesis that industrial sector is the engine of the economic growth is known as Kaldor's engine-of-growth hypothesis. There has been a limited body of works which have attempted to test empirically the Kaldor hypothesis. Some early studies investigated the validity of the hypothesis simply by regressing industrial output on the aggregate output or the rest sectors' output, separately. If the coefficient of the growth of industrial output is found to be significant and positive, it is then concluded that the growth rate of industrial production totally or partially determines the growth rates of other sectorial outputs and, consequently determines the economic growth. Yamak (2000) has argued that this kind of methodology is not appropriate and sufficient to test the hypothesis especially for two reasons. First, the issue of the direction of bi-

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variate causality can not be identified using that kind of methodology. The regression equations constructed in the previous studies naturally imply causality running from the growth rate of industrial output to the growth rates of other sectors as well as aggregate output growth. However, it is important that this uni-directional causality is established if unambiguous support for the hypothesis is to be inferred. Secondly, the hypothesis to long-term economic growth can not be tested using the simple regression analysis[1]. This kind of regression analysis does not take into account the long-run relationship between the two variables. Instead of the simple regression analysis, co-integration techniques can be performed to determine whether there is a long-run relationship between industrial growth and aggregate output growth.

Another issue in this subject is related to the choice of the independent variable in the regression equation. In the literature, most studies such as Stoneman (1979), McCombie (1981), Drakopoulos and Theodossiou (1991), Dutt and Lee (1993), Yamak and Sivri (1997), Millin and Nichola (2005), Dasgupta and Singh (2006), Libanio and Moro (2006) and Arısoy (2013) regressed the growth rate of industrial output on the growth rate of aggregate output. It is important that the use of aggregate output as the dependent variable will probably produce the bias and spurious coefficient of the industrial output because aggregate output includes industrial output. Instead, to validity the Kaldor hypothesis, industrial output must be regressed on the non-industrial aggregate output or service and agricultural output. Briefly, in order to support the validity of the Kaldor hypothesis, we must observe that there must be a long-run relationship between industrial output and non-industrial output and then there must be a causal relationship running from industrial output to non-industrial aggregate output.

The aim of this study is to re-examine the Kaldor hypothesis for the case of Turkey, by focusing the long-run relationship and causality between industrial and non-industrial aggregate outputs. The long-run relationship between two variables was investigated by implementing Autoregressive Distributed Lag (ARDL) bounds test. After detecting the long-run relationship, Augmented Granger Causality test developed by Toda and Yamamoto was performed to determine the presence of the causal relationships between industrial and non-industrial aggregate outputs.

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[1]Atesoglu (1993) and Bairam (1991) constructed and utilized the long-term time series data instead of using the time series analysis such as co-integration that can capture the long-term relationship between two or more variables. Atesoglu (1993) simply smoothed the annual growth of each variable in time series analysis with a moving average while Bairam (1991) took averages of the growth rates of the sub-periods.

2. Methodology and Data

In this study, the ARDL co-integration approach developed by Pesaran and Shin (1999) was used to examine the long-run relationship between industrial and non-industrial aggregate outputs. The ARDL approach does not require prior knowledge on the order of integration of the variables. It can be easily used for the variables with different orders of integration. At this point, it should be noted that all variables must be I(0) or I(1), but not higher than I(1). The ARDL approach has some certain advantages in comparison with other conventional co-integration methods such as Engle-Granger (1987) and Johansen-Juselius (1990) methods. Among others, the most important advantage of this technique is that it gives the possibility of short and long run parameters of the model simultaneously by using the unrestricted ARDL error correction model. The ARDL bounds testing methodology to co-integration involves estimating the following regression.

$$\Delta LNIGDP_t = \alpha_0 + \sum_{i=1}^{k} \beta_i \Delta LNIGDP_{t-i} + \sum_{i=1}^{k} \gamma_i \Delta LIND_{t-i} + \delta_1 LNIGDP_{t-1} + \delta_2 LIND_{t-1} + \varepsilon_{1t} \quad \textbf{(1)}$$

where the coefficients β_i and γ_i represent the short-run dynamics of the variables and the coefficients δ_1 and δ_2 represent the long-run relationship between industrial output and non-industrial aggregate output. After estimation of the above regression, the following null hypothesis of no co-integration is tested against the alternative hypothesis of the presence of co-integration by using F-statistics.

$H_0 : \delta_1 = \delta_2 = 0$

$H_1: \delta_1 \neq 0, \delta_2 \neq 0$

After detecting the long-run relationship between the variables, the Augmented Granger causality test developed by Toda and Yamamoto (1995) is applied to investigate the causal relationship between the variables. The Toda and Yamamoto causality approach uses levels of the variables in a VAR system regardless of whether they are integrated, co-integrated, or not. This approach is based on estimation of an Augmented VAR model ($k+d_{max}$). The Augmented VAR model incorporates two types of lag lengths. The first one is the optimal lag length (k) of the standard VAR system. The second type of lag length is maximal order (d_{max}) of integration of the variables in the standard VAR system. (Sims, 1980). In the Toda and Yamamoto causality test, a bivariate VAR system is represented as follows:

$$LNIGDP_t = \beta_0 + \sum_{i=1}^{k} \beta_{1i} LNIGDP_{t-i} + \sum_{i=k+1}^{k+d_{max}} \beta_{2i} LNIGDP_{t-i} + \sum_{i=1}^{k} \delta_{1i} LIND_{t-i} + \sum_{i=k+1}^{k+d_{max}} \delta_{2i} LIND_{t-i} + \varepsilon_{1t}$$
(2)

$$LIND_t = \alpha_0 + \sum_{i=1}^{k} \alpha_{1i} LIND_{t-i} + \sum_{i=k+1}^{k+d_{max}} \alpha_{2i} LIND_{t-i} + \sum_{i=1}^{k} \emptyset_{1i} LNIGDP_{t-i} + \sum_{i=k+1}^{k+d_{max}} \emptyset_{2i} LNIGDP_{t-i} + \varepsilon_{2t} \quad \textbf{(3)}$$

After estimation of the VAR system, the Wald tests are applied to the first k coefficients of the right-hand side variables using the classic χ^2 statistics. The first null hypothesis indicates that industrial output, LIND, does not cause non-

industrial aggregate output, LNIGDP, whereas the second one specifies that non-industrial aggregate output, LNIGDP, does not cause industrial output, LIND.

For Equation 2; H$_0$: LIND$\nrightarrow$ LNIGDP

For Equation 3; H$_0$: LNIGDP$\nrightarrow$ LIND

The data used in this study are quarterly and cover the period of 1998:Q1-2015:Q4. All variables were measured in real terms and seasonally adjusted using Census X-12 process. After seasonal adjustment, a logarithmic transformation was done on the data. The letter "L" in front of each variable indicates logarithm form. The details of all variables are given in Table 1.

Table 1. Symbols Used for Variables

IND	*Level of Industrial Output*
AGR	*Level of Agricultural Output*
SER	*Level of Service Output*
GDP	*Gross Domestic Product*
NIGDP	*Non-Industry Gross Domestic Product*
NAGDP	*Non-Agriculture Gross Domestic Product*
NSGDP	*Non-Service Gross Domestic Product*

3. Empirical Findings

Even though the ARDL approach does not require prior knowledge on the order of integration of the variables, the order of integration must be determined for each variable in order to decide whether the use of the ARDL is appropriate. For this purpose, the Augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1979) unit root test was first performed for the level and first difference of each variable. Table 2 presents the results of the ADF test statistics with and without the inclusion of a trend detecting a unit root in the levels and first differences of the variables[1]. As seen from the table, the ADF- t statistics calculated for the levels of the variables indicate that the non-stationary of the levels of the variables can not be rejected at any significant level. However, the first difference of each variable, the growth rates of agricultural output, industrial output, the output of service sector and gross domestic product, appears to be stationary according to the ADF test statistics.

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[1]The number of lags used in the ADF regressions were selected using the information criterion provided by Akaike (1973).

Table 2. ADF Unit-Root Test Results

Variables	Level		First Difference	
	Constant	Constant+ Trend	Constant	Constant + Trend
LIND	-0.226	-2.734	-6.315 ***	-6.302 ***
LAGR	0.142	-3.906 ***	-6.299 ***	-6.334 ***
LSER	-0.031	-3.508 **	-5.572 ***	-7.579 ***
LGDP	-0.095	-2.905	-6.581 ***	-6.563 ***
LNIGDP	-0.074	-3.023	-7.025 ***	-6.996 ***
LNAGDP	-0.085	-3.289 *	-7.102 ***	-7.075 ***
LNSGDP	-0.434	-2.899	-5.477 ***	-5.435 ***

Note: Lag length was selected by using Akaike information criteria (AIC). The maximum lag length was set to 8. ***, ** and * denote significance level of 1%, 5% and 10%, respectively.

As noted before, in the ARDL approach all variables should be I(0) or I(1), but not higher than I(1). According to the ADF unit root test results, all variables are found to be stationary in their first differences. Thus, the ARDL approach can be easily employed to examine the possible long-run relationship between industrial and non-industrial aggregate outputs. As required by ARDL approach, firstly bounds test was applied to determine the presence of long-run relationship between the variables. The results of the ARDL bounds test are shown in Table 3. As seen from the table, only one of the F-statistics, calculated as 2.371, is not greater than the upper critical value bounds at 10% significance level. Thus, the null hypothesis of no long-run relationship between aggregate and agricultural outputs can not be rejected. For other co-integration regressions, the calculated F- statistics are greater than the upper critical value bounds, so the null hypotheses of no long-run relationship between the variables are rejected at least at 10% significance level. According to the ARDL bounds test results, all bi-variate relationships except the relationship between agricultural and aggregate outputs are co-integrated. In the other words, all bi-variates including the industrial and non-industrial aggregate outputs are linked in a common long-term equilibrium. The existence of long-run relationship between industrial and non-industrial outputs may not make a difference for the validity of Kaldor's hypothesis at least at this point. So, the same relationship also exists for other two sectors.

Table 3. ARDL Bounds Test Results

Variables Dependent Independent	F-Statistics	Conclusion
LGDP LIND	4.148 **	**Co-integrated**
LNIGDP LIND	4.192 **	**Co-integrated**
LGDP LAGR	2.371	Not co-integrated
LNAGDP LAGR	3.576 *	**Co-integrated**
LGDP LSER	8.234 ***	**Co-integrated**
LNSGDP LSER	8.257 ***	**Co-integrated**

Note: ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively. Critical value bounds are 5.58 for 1%, 4.16 for 5% and 3.51 for 10%, respectively.

After determining the presence of long-run relationship between the bi-variates, the long-run elasticity of sectorial output is estimated for each sector and the results are given in Table 4. As seen from the table, all estimated long-run elasticities are positive and statistically significant at 1% level. The size of the long-run elasticity coefficient is almost the same for industry and service sectors. For agriculture sector, it is about three times bigger than industrial output's. Especially, when industrial output is regressed on the non-industrial aggregate output, the estimated long-run elasticity coefficient is found to be 0.884. This coefficient implies that non-industrial aggregate output increases (decreases) by 8.84 percent if industrial output increases (decreases) by 10 percent. However, the rest sectors of the economy have also similar impact on aggregate output. There is no significant difference among three sectors. Even though the findings on the long-run elasticities support the validity of Kaldor's hypothesis, at this stage it is very difficult to differentiate the industrial sector from the rest sectors in terms of the sign and size of the elasticity.

Table 4. Long-Run Coefficients

Dependent Variable	*LIND*	*LAGR*	*LSER*	ARDL Model
Industry				
LGDP	0.924 ***			(3,2)
LNIGDP	0.884 ***			(3,1)
Agriculture				
LNAGDP		2.471 ***		(1,1)
Service				
LGDP			0.853 ***	(1, 2)
LNSGDP			0.661 ***	(1, 2)

Note: ***, denotes significance at the 1% levels. The optimum ARDL model order is determined by the information criteria based on Akaike information criteria (AIC).

The results of diagnostic tests on the residuals for serial correlation, normality, heteroscedasticity and stability are reported in Table 5. Firstly, there is no any model suffering from any autocorrelation problem. In all estimated models for three sectors, the calculated χ^2 is not greater than the critical value. Therefore, the null hypothesis that indicates non-existence of autocorrelation can not be rejected for each sector of the economy at any significant level. Secondly, the residuals of service sector suffer from heteroscedasticity. For both industry and agriculture sectors, heteroscedasticity does not appear to be a diagnostic problem on residuals. Thirdly, the JB tests indicate that the residuals only in two models are normally distributed. One of them is industrial and non-industrial aggregate outputs. The other is service and non-service aggregate outputs. At this point, we have only two sectors passing the diagnostic tests of the ARDL model. However, the ARDL model for service sector is not stable according to CUSUM and CUSUMSQ tests[1]. The ARDL model passing CUSUM and CUSUMSQ tests is the model of industry sector. Figures 1-2 present CUSUM and CUSUMSQ of industrial and non-industrial aggregate output models, respectively whereas Figures 3-4 demonstrate the same statistics for industrial and aggregate outputs, respectively. As can be seen from Figures 1-4, the plots of CUSUM and CUSUMSQ statistics stay within the critical bonds of 5% level of significance. Thus, the null hypothesis that all coefficients in the given regression are stable can not be rejected at the 5% level. After diagnostic tests of ARDL models, the only model which comes to the forefront is the model of industrial and non-industrial aggregate outputs in accordance with Kaldor's engine-of-economic growth hypothesis.

Table 5. Diagnostic Test Results of ARDL Model

Dependent Variable	Heteroscedasticity χ^2	Serial Correlation χ^2	Normality JB	Is model stable?
Industry				
LGDP	6.101	1.268	6.948 **	**YES**
LNIGDP	4.929	1.475	2.673	**YES**
Agriculture				
LNAGDP	5.981	1.484	7.068 **	NO
Service				
LGDP	12.717 **	1.741	5.618 *	NO
LNSGDP	11.985 **	2.438	3.028	NO

Note: ** and * denote significance at the 5% and 10% levels, respective

[1]Pesaran and Pesaran (1997) suggest using Brown et al. (1975) stability test. This technique is also known as cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ). The CUSUM and CUSUMSQ statistics are updated recursively and plotted against the breaks points (Jalil and Mahmud, 2009).
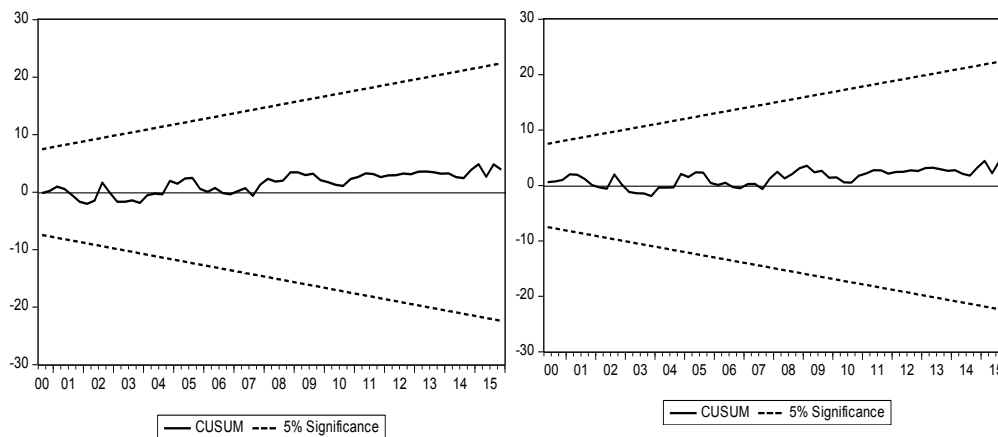
Figure 1. CUSUM

Figure 2. CUSUMSQ
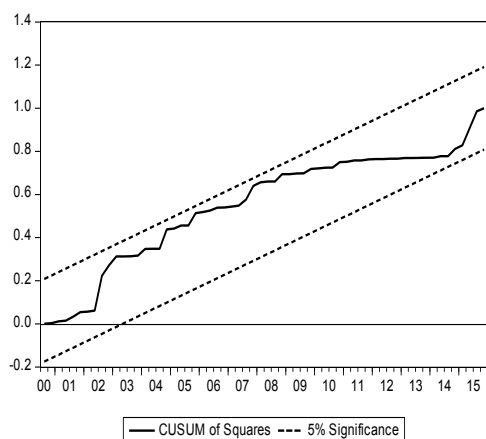
Figure 3. CUSUM
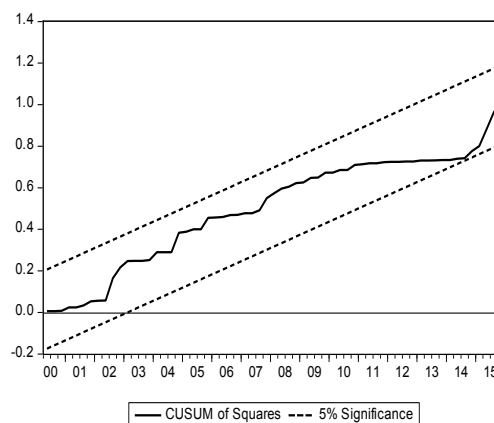
Figure 4. CUSUMSQ

Table 6 presents the results of Toda-Yamamoto causality test. As seen in Table 6, the null hypotheses of no-causality from industrial output to aggregate output and from industrial output to non-industrial aggregate output are rejected at the 5% level. In addition, the null hypotheses for the reverse causality between bi-variates are also rejected at the 5% level. Thus, there appears to be a two-way causality between industrial output and non-industrial aggregate output (also aggregate output). The fact that industrial output causes non-industrial aggregate output to rise supports the Kaldor hypothesis for Turkey during the period under consideration. The findings of causality for agriculture sectors indicate that there is no causal relationship between agricultural output and aggregate output. In all

cases, the null hypothesis of no-causal relationship between the bi-variates is not rejected at any significant level. Finally, the causality test results for service sector demonstrate a two-way relationship between service output and aggregate output.

Table 6. Toda-Yamamoto Causality Test Results

H_0	χ^2	df	Result
Industry			
$LIND \nrightarrow LGDP$	15.746 **	6	**REJECT**
$LIND \nrightarrow LNIGDP$	14.279 **	6	**REJECT**
$LGDP \nrightarrow LIND$	16.741 **	6	**REJECT**
$LNIGDP \nrightarrow LIND$	16.961 ***	6	**REJECT**
Agriculture			
$LAGR \nrightarrow LGDP$	0.227	1	**NOT REJECT**
$LAGR \nrightarrow LNAGDP$	0.017	1	**NOT REJECT**
$LGDP \nrightarrow LAGR$	1.719	1	**NOT REJECT**
$LNAGDP \nrightarrow LAGR$	1.179	1	**NOT REJECT**
Service			
$LSER \nrightarrow LGDP$	22.756 ***	5	**REJECT**
$LSER \nrightarrow LNSGDP$	19.457 ***	5	**REJECT**
$LGDP \nrightarrow LSER$	13.313 **	5	**REJECT**
$LNSGDP \nrightarrow LSER$	11.485 **	5	**REJECT**

Note: ***, ** denote significance at the 1%, 5% levels, respectively.

4. Conclusion

The hypothesis that industrial sector is the engine of the economic growth is known as Kaldor's engine-of-growth hypothesis. Most of the studies have investigated the validity of the hypothesis by regressing the growth rate of industrial output on the growth rates of aggregate and other sectors, separately ignoring both long-run and causal relationships between the variables. Another issue is related to the choice of the independent variable in the regression equation. Many studies have used aggregate output as dependent variable in their regression analyses. Since this dependent variable includes also industrial output, the estimated coefficient of the industrial output will probably bias and spurious. In order to support the validity of the Kaldor hypothesis, we must observe first that there must be a long-run relationship between industrial output and non-industrial output and then there must be a causal relationship running from industrial output to non-industrial aggregate output.

In this study, we re-examined the Kaldor hypothesis for the case of Turkey, by focusing the long-run and causal relationships between industrial and non-industrial aggregate outputs. The data used in this study are quarterly and cover the period of 1998:Q1-2015:Q4. The long-run relationship between two variables was

investigated by implementing ARDL bounds test. After detecting the long-run relationship between industrial and non-industrial aggregate outputs, Augmented Granger Causality test developed by Toda and Yamamoto was performed to determine the presence of the causal relationships between industrial and non-industrial aggregate outputs. The ARDL results identify strong long-run relationship especially between industrial sector and non-industrial economic performance, supporting the Kaldor hypothesis for the case of Turkey. The evidence on the Toda-Yamamoto approach to Granger causality shows that there exists a two-way causality between industrial and non-industrial aggregate outputs. Causality test results support also the causal implication of the engine-of-growth hypothesis for Turkey.

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Capital Investment Decisions on Entrepreneurial Agricultural Projects in Kwara State

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Abstract: The purpose of this study was to assess the adequacy of the capital investment decisions of Youth Integrated Agricultural Project in Kwara State. The project has two parts: Youth Integrated Farm Training Centre and Farm Settlements. The Youth Integrated Farm Training Centre has produced 650 farmer-graduates, who are now working in the three locations where Farm Settlements are. The sixth batch consisting of 66 farmer-graduates provided the population of the study. From this population a purposive sample of 46 potential respondents was selected. These people filled a researcher-developed questionnaire. Thirty six correctly filled copies of the questionnaire were collected from the respondents. The responses of the thirty six framer-graduates were analyzed based on four research questions derived from the four objectives of the study. The major findings from this analysis were: (i) The Kwara State Government has invested a total of N65, 408,129 on the Youth Integrated Agricultural Project in the last ten years; (ii) Seventy two percent of the respondents disagreed with the statements that the allowance paid to the trainees was sufficient. Moreover, ninety two percent of them disagreed with the statement that the empowerment packaged given to them to work in the Farm Settlements was adequate. In the same vein, seventy six percent disagreed that infrastructure in the Farm settlements were adequate; (iii) But the respondents agreed that infrastructure in the Farm Training Centre were adequate. In sum the State Government's capital investment decisions were not enough to make the Youth Integrated Agricultural project an unqualified success.

Keywords: Capital Investment; Decision Making; Agricultural Project

JEL Classification: C32; O41

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1. Introduction

1.1. Background to the Study

The potential sources of the capital expenditure on agriculture are private and public, both of foreign and domestic provenances. The way capital stocks are financed currently worldwide suggests that the largest part of total investments comes from private domestics sources (F.A.O., 2009). But in this study capital investment from the public (government) source was the focus.

The size of government expenditures and its effect on economic growth, and vice versa, has been an issue of sustained interest for over decades now (Okoro, 2013). Public expenditure on all sectors of the Nigerian economy is expected to lead to economic development in the sense that both capital and recurrent expenditure will boost the productive base of the economy which in turn will lead to economic growth and development (Modebe, Okaroro, Onwumere & Ibe, 2012). Current expenditure is spending on items that are consumed and only last for a limited period of time. These are items that are used up in the process of providing a good or service, including wages, salaries, stationery, drugs and soon. By contrast, capital expenditure is spending on assets. It is the purchase of items that will last and will be used time and time again in the provision of a good or service. In the case of the government, examples would be building a new hospital, spending on agricultural projects, spending on building, factories, and the purchase of a new computer system, building new roads, and training and development. Capital expenditure has a lasting impact on the economy and helps provide a more efficient productive economy (Barro, 1990). Aregbeyen (2007) established a positive and significant correlation between government capital and public investment and economic growth; while he found that current and consumption expenditures were negatively correlated with it. Government controls the economy through the use of public expenditure. This instrument of government control promotes economic growth in the sense that pubic investment contributes to capital accumulation.

Capital investment from both the private and public sectors has been used to boost agricultural production, foster food security and promote economic development (Butzer, Mundlak & Larson, 2010). Three components of agricultural capital are:

(a) Fixed capital in arable agriculture;

(b) Livestock capital; and

(c) Tree-stock capital.

Agricultural production needs to increase by at least 6% per annum in Africa to meet the rising demand for food, arising from population growth, higher income levels and life style changes. Given the limited scope for net area expansion, agricultural growth will rely mainly on new capital. Agricultural investment can

help contain upward pressure in food price in a context of rising land costs and water scarcity, thereby enhancing food security (Larson, Butzer, Mundlak & Crego, 2000). Agricultural in Nigeria is largely at the subsistence level. In recent times in this country modern agricultural is gaining ground and agriculture is run as a business. To run agriculture as a business, one must look at all indices of production and profitability (Azogu, 2014). Mechanization is one of the indices. It has been established that mechanized farming is capital intensive.

Agricultural financing is being seriously addressed. One source is banks, backed by the Central Bank of Nigeria (CBN) policy frameworks. Before now, the rate of bank lending to agriculture was low. With the intervention of the CBN, things have started to change for the better (Jiyah, 2012).

Efforts made in the past by the Federal Government include:

(a)   National Accelerated Food Production Programme, started in 1973;

(b)   River Basin Development Authority;

(c)   Agricultural Development Project;

(d)   Operation Feed the Nation;

(e)   Green Revolution Programme;

(f)   National Agricultural Land Development Authority;

(g)   Strategic Grain Reserve;

(h)   National Centre for Agricultural Mechanization.

Kwara State was one of the beneficiaries of the Agricultural Development Project (ADP) started in 1974 with a loan assistance from the World Bank. (Jiyah, 2012). Today, the ADP employees have been transferred to the Ministry of agriculture and Natural Resources. The ADP concept put the small farmers at the centre of Agricultural strategy. The CBN's contribution to ADP is indirect. Through the ADP farmers accessing CBN supported credits from the commercial banks.

1.2. Statement of the Problem

The Federal Government of Nigeria through the CBN has established credit schemes such as the Agricultural Credit Guarantee Scheme, the Agricultural Credit Support Scheme, Nigerian Agricultural, Co-operative and Rural Development Bank as well as CBN's agricultural facilities in the commercial and microfinance banks. These initiatives are also available to the farmers under the ADP to get access to guaranteed credit (Jiyah, 2012).

Jiyah, (2012) as well as Akramove (2009), Oyeyinka and Bolarinwa (2009) and the Enhancing Financial Innovation and Access (2008) found that only between 18 to 23 percent of the adult farming population in Nigeria has access to formal financial institutions. In place of the ADP, the Kwara State Government established the Youth Integrated Training Farm Centre at Malete, Moro Local Government area of the State, and Farm Settlements at Oke-oyi, Alateko and Aiyekale. The two complement each other as Youth Integrated Agricultural Project. However, this study examines the level of the funding of the integrated agricultural project to enhance capacity building and agricultural development in the State.

1.3. Objectives of the Study

The purpose of the study was to examine the level of capital investment on the integrated agricultural project by the State Government. The specific objectives were to:

i. examine whether the allowance given to the trainees in the Farm Centre are adequate;

ii. determine whether infrastructure in the Farm Training Centre is adequate;

iii. evaluate whether the money given to graduates of the Centre to empower them is adequate;

iv. establish whether the infrastructure in the Farm settlements is adequate.

2. Literature Review

The Youth Integrated Training Farm Training Farm Centre, Malete was set up in 2005 with the major aim of training youth to position them as successor-generation commercial farmers (State Government, 2013). The objectives of the project are to:

i. Bring about economic empowerment for youth in Kwara State;

ii. Train youth in modern farming methods to improve their lives and livelihoods;

iii. Generate a successor generation of commercial farmers, driven with a mindset of profitability; and

iv. Develop agricultural entrepreneurs for job and wealth creation.

2.1. Facilities in the Farm Training Centre

To ensure the implementation of the above objectives, the Farm Centre was provided with:

(a) A self-sustaining youth farm with potentials for internally generated revenue from the production of crops;

(b) Light and heavy equipment and implement;

(c) Accommodation and facilities to carry out their training with ease;

(d) Sheds to house equipment's and materials;

(e) A curriculum on 80: 20 practical: theory blend to provide students with skills and knowledge needed to be successful commercial;

(f) Farmers ICT Centre and a block of two classrooms;

(g) An advanced agricultural curriculum being prepared for intakes with higher education than the secondary;

(h) Two bedroom Guest House.

2.2. End Products of the Project

Each students-farm gets N8000 monthly allowance. The pioneer 100 trainees spent two years on the training farm and graduated in 2007. On graduation the Kwara State gave them already – prepared farm settlements at Oke Oyi, Alateko and Aiyekale. The total area cleared for their use was 490 hectares. The Farm Centre has since graduated five other batches making a total of 650 young farmers. The hectares prepared for their use were between 400 and 500 hectares at the farm settlements.

Each graduate trainee was empowered with and loan or grants as incentives. The trainees were mandated to form co-operatives. Five of these were:

(i) New Generation Commercial Farmers with 93 farmers;

(ii) New Face Co-operative Group Farmers with 64 farmers;

(iii) Real Image Commercial Farmers co-operatives, with 74 farmers;

(iv) Harmony Commercial Farmers Group, with 90 farmers;

(v) Unique Commercial Farmers Co-Operatives, with 97 farmers;

(vi) Excel Commercial Farmers Co-operatives, with 66 members.

2.3. Achievements of the Project

The Farm Centre and the Farm Settlements have achieved the following:

i.   Training of about 650 young farmers;

ii.   Generating manpower for the State's agriculture;

iii. Selling 800 tons of maize;

iv.   Selling 120 tons of cowpea;

v.   Selling 600 tons of cassava;

vi.   Selling 30 tons of rice;

vii.   Selling 400 tons of soya bean;

viii. All these sales were done either through the Ministry of Agricultural and Natural Resources or direct to the general public;

ix.   Assisting local farmers with knowledge and skills to improve their agricultural yields;

x.   A collaborative Memorandum of Understanding with Kwara State University, Malete to assist the University develop and sustain its practical training, teaching and research activities in 4 years and a decrease in 6 years. The decline is most pronounced in the last three years.

2.4. Capital Investment on the Project

Table 1. The trends in funding the project is shown below

YEAR	N	TREND %
2005	- 8,150,000	-
2006	- 10,500,000	+ 29
2007	- 5,372,997	- 49
2008	6,640,000	+ 24
2009	4,020,000	- 39
2010	6,640,000	+ 39
2011	6,365,277	+ 4
2012	6,000,000	- 6
2013	3,040,132	- 49
2014	2,040,000	- 33
Total	**65,408,129**	**-**

Source: Ministry of Agriculture and Natural Resources.

In ten years, capital expenditure on the project fluctuates. The trend shows a decrease.

3. Research Methodology

The sixth batch of graduate formed the population of this study. A purposive sample of 46 out of 66 graduates was selected in a captive audience in their co-operative meeting. The potential respondents filled a questionnaire which was designed by the researchers. At the end of the exercise, thirty six returned usable copies of the questionnaire.

4. Data Analysis, Findings and Discussion

4.1. Data Analysis

The responses of the questionnaire application were analyzed based on four research questions derived from the four objectives of the study.

Research Question 1. Do the farmer trainees find the monthly allowance adequate?

Table 2 was used to answer the research question.

Table 2. Adequacy of Monthly Allowance

S/NO RESPONDENTS	EXTENT OF AGREEMENT SCORE	INTERPRETATION
01	3	Agree (A)
02	2	Disagree (D)
03	2	D
04	1	Strongly Disagree (SD)
05	1	SD
06	1	SD
07	1	SD
08	2	D
09	1	SD
10	4	Strongly Agree (S.A)
11	3	A
12	2	D
13	2	D
14	1	SD
15	1	SD
16	3	A
17	3	A
18	3	A
19	3	A
20	2	D
21	4	SA
22	4	SA
23	4	A
24	2	D
25	2	D
26	2	D
27	2	D
28	2	D
29	2	D
30	2	D

31	2	D
32	2	D
33	2	D
34	2	D
35	1	SD
36	1	SD
	Mean = 1.7	SA = 3 (8%) A = 7 (20%) D = 17 (47%) SD = 9 (25%)

From table 2, it is seen that respondents perceived the allowance paid to be insufficient (mean = 1.7). Indeed 72% of them disagreed or strongly disagreed that the allowance was sufficient.

Research Question 2. Are the infrastructure in the Farm Centre adequate?

Table 3 was used to answer the research question.

Table 3. Adequacy of Infrastructure in the Farm Centre

S/NO RESPONDENTS	SCORE ON ADEQUACY	INTERPRETATION
01	3	Agree (A)
02	3	A
03	3	A
04	4	Strongly Agree (SA)
05	4	SA
06	4	SA
07	4	SA
08	4	SA
09	3	A
10	2	Disagree (D)
11	2	D
12	2	D
13	3	A
14	3	A
15	3	A
16	3	A
17	3	A
18	3	A
19	3	A
20	3	A
21	2	D
22	3	A
23	2	D
24	3	A

25	3	A
26	3	A
27	3	A
28	3	A
29	3	A
30	3	A
31	3	A
32	2	D
33	2	D
34	2	D
35	1	SD
36	2	D
	Mean = 3.6	**SA = 05 (14%)** **A = 22 (61%)** **D = 08 (22%)** **SD = 01 (03%)**

From table 3, it is seen that the respondents strongly agreed that the infrastructure in the Farm Centre are adequate (mean = 3.6), in fact 75% of them agreed or strongly agreed that this was 80.

Research Question 3. Are the monies paid to the farmer-graduates sufficient?

Table 4 was used to answer the question

Table 4. Adequacy of Monies Paid To Empower Farmer-Graduates

S/NO RESPONDENT	EXTENT ON ADEQUACY	INTERPRETATION
01	2	Disagree (D)
02	2	D
03	2	D
04	2	D
05	2	D
06	2	D
07	2	D
08	2	D
09	3	Agree (A)
10	3	A
11	3	A
12	3	A
13	3	A
14	2	D
15	2	D
16	3	A
17	3	A
18	3	A

19	3	A
20	3	A
21	2	D
22	2	D
23	3	A
24	2	D
25	3	A
26	2	D
27	2	D
28	2	D
29	2	D
30	2	D
31	2	D
32	2	D
33	2	D
34	2	D
35	2	D
36	3	A
	Mean = 1.8	**SA = 0 (0%)** **A = 13 (08%)** **D = 23 (92%)** **SD = 0 (0%)**

From table 4, it is clear that the respondents disagreed that the respondents disagreed that the monies paid to empower them was to empower them was sufficient (mean= 1.8). In fact 92% of the disagreed with the suggestion that the empowerment was adequate.

Research Question 4. Is the infrastructure in the farm settlements adequate?

Table 5 was used to answer the research question.

Table 5. Adequacy of Infrastructure in the Farm Settlements

S/No Respondent	Score on Adequacy	Interpretation
01	3	Agree (A)
02	3	A
03	3	A
04	2	Disagree (D)
05	2	D
06	2	D
07	2	D
08	2	D
09	2	D
10	2	D
11	2	D

12	2	D
13	2	D
14	2	D
15	2	D
16	2	D
17	2	D
18	3	A
19	3	A
20	3	A
21	1	Strongly Disagree (SD)
22	1	SD
23	1	SD
24	1	SD
25	2	D
26	2	D
27	2	D
28	2	D
29	2	D
30	2	D
31	3	A
32	3	A
33	3	A
34	3	A
35	2	D
36	1	D
	Mean = 2.2	**SA = 0 (0%)** **A = 11 (24%)** **D = 31 (67%)** **SD = 4 (9%)**

The farmer-graduates disagreed that the infrastructure in the farm settlements were adequate (mean = 2.2). Indeed 76% of the graduates said that the infrastructure were not adequate.

4.2. Findings

The following are the major findings of this study:

i.   While the defunct Kwara State Agricultural Development Project (ADP) focused on the small subsistence farmers; the current Kwara State Youth Integrated Agricultural Project focused on successor – generation commercial famers;

ii. The Farm Training Centre aspect of the project, established in 2005, has so far trained 650 modern farmers;

iii. The Farm settlement aspect has produced and sold 1,950 tons of maize, cowpea, cassava, rice and soya beans;

iv. The Kwara State Government has invested a total of N65, 408,129 on the integrated agricultural project in the last ten years;

v. Seventy two percent of the sixth batch of farmer-graduates disagreed that the allowance paid to trainees was sufficient;

vi. Seventy five percent of them agreed that the infrastructure in the Farm Training Centre were adequate;

vii. Ninety two percent of the respondents disagreed with the statement that the empowerment package given to them was adequate;

viii. Seventy percent of the respondents disagreed that the infrastructure in the farm settlements were adequate.

4.3. Discussion of the Findings

It is noteworthy to emphasize two groups of findings namely:

i. The allowance paid to trainees the monies paid to empower farmer-graduates and the infrastructure in the farm settlements was not adequate;

ii. The infrastructure in the Farm Training Centre were adequate.

It is not difficult to see that young people will not be satisfied with respect to allowances paid, which is N8,000 monthly. This is because N10,000 was earlier promised to them. As for empowerment which is in form of loans or grants the young farmers are in a hurry to put the theoretical knowledge and skills to work so they want a lot of money to establish themselves.

The findings that the infrastructure in the Farm Training Centre were adequate means that the State Government had invested adequate capital to acquire and prepared land appoint teachers, as well as buy light and heavy equipment to teach trainees theoretical and practical aspects of modern commercial farming.

5. Summary, Conclusion and Recommendations

5.1. Summary

The purpose of this study was to assess the adequacy of the capital investment decisions of the Kwara State Government on the Kwara State Youth Integrated Agricultural Project. The project has two parts: Youth Integrated Farm Training Centre and Farm Settlements. The Youth Integrated Farm Training Centre has produced 650 farmer-graduates, who are now working in the three locations where Farm Settlements are.

The sixth batch consisting of 66 farmer-graduates provided the population of the study. From this population a purposive sample of 46 potential respondents. These people filled a researcher-developed questionnaire. Thirty six correctly filled copies of the questionnaire were collected from the respondents.

The responses of the thirty six framer-graduates were analyzed based on four research questions derived from the four objectives of the study. The major findings from this analysis were:

i.   The Kwara State Government has invested a total of N65,408, 129 on the Youth Integrated Agricultural Project in the last ten years;

ii. Seventy two percent of the respondents disagreed with the statements that the allowance paid to the trainees was sufficient. Moreover, ninety two percent of them disagreed with the statement that the empowerment packaged given to them to work in the Farm Settlements was adequate. In the same vein, seventy six percent disagreed that infrastructure in the Farm settlements were adequate;

iii. But the respondents agreed that infrastructure in the Farm Training Centre were adequate.

In sum the State Government's capital investment decisions were not enough to make the Youth Integrated Agricultural project an unqualified success.

5.2. Recommendation

Arising from the findings, the following recommendation is made:

i.   The Kwara State Government should expand the scope of the Farm Settlements. This can be done by granting the Farmer-graduates adequate empowerment in form of soft loans and grants;

ii. The State Government should expand the scope of the Youth Integrated Farm Training Centre at Malete to offer courses in advanced modern commercial agriculture.

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Understanding Determinants of Organic Food Consumption: Turkey Example

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Abstract: The demand for organic products is growing, however in Turkey although the interest to organic products has grown; the growth of demand is relatively low. So it is important for producers of organic products to understand who the organic customers are, and what are their attitudes and behaviors regarding organic food products as well as why people do not prefer them. This is the main aim of this article. This study presents the results of a survey regarding consumer perceptions of organic foods in Turkey. The survey was conducted to determine consumer attitudes towards organic foods and the reasons for consumption or non-consumption of organic foods. A total of 882 consumers that makes food shopping for their families, living in İzmir participated the research. The results of the survey revealed that health issue is an important consideration in the consumption of organic products, however respondents stated that they find organic products expensive and hard to find everywhere, and they have some doubts about the reliability of the organic foods. Also five types of behaviour regarding organic food consumption behavior have been identified. The findings have practical implications especially for governments. More support and education should be given to organic producers so that supply of organic food products would increase, and there should be strict control on those products as to reduce consumers' negative attitudes.

Keywords: Organic food products; Consumer behavior; Turkey

JEL Classification: M30; M31

1. Introduction

Organic agriculture, is the application of environmentally and animal friendly farming methods to produce food (Soil Association, 2012). It is a way of agricultural production in which the use of chemical inputs or pesticides are avoided, and the production is carried out by using only the inputs permitted by the regulations. In organic farming, each stage of the process, from production to consumption, is supervised and certified. The aim of organic farming is to provide the maximum level of protection for the environment, plants, animals and human health without polluting the soil and water resources or the quality of air (Kirazlar,

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2001). It seeks to provide the consumer, with fresh, tasty and authentic food while respecting nature and animal welfare, and creating new opportunities for rural people (European Commission, 2012). Products of organic farming has many benefits for human health other than the stated ones. However organic products are not very widespread in Turkish market, and only a tiny fraction of organic production in Turkey is consumed domestically, and demand for organic products is rather unsteady (Demir, 2013; Eryılmaz et al., 2015). Thus despite its benefits organic products sales cannot reach their potential in the Turkish market.

"The future of organic agriculture will depend, to a large extent, on consumer demand" (Gracia & Magistris, 2008, p. 387). Hence, it is important for organic food producers to understand who really their consumers are, what their priorities are, and what their real motivation to use organic products is. Understanding potential factors that influence organic food buying behaviors, and attitudes of people toward organic food products, and why people do not prefer organic food products is the main aim of this exploratory study. Since uncovering those issues can directly help identify and implement marketing strategies to increase the primary demand for organic products it is expected that the results of the study would be subservient for practitioners.

Within this framework, the current study aims at revealing the attitudes and self-reported behavior of Turkish consumers with respect to organic foods consumption behavior and attitudes. Thus in the following part a literature review about consumers' attitudes of organic food consumption would be given and this will be followed by the methodology, findings and conclusions.

2. Why People Prefer to Consume Organic Food

Several studies have analyzed consumers' perception toward organic food products (e.g., Beaudreault, 2009) and environmentally sustainable products (e.g., Pickett-Baker & Ozaki, 2008). Also, there are several streams of work on organic food that focuses on who the organic food consumers are, and what their motives for consuming organic food products are. From a marketing perspective it is important to understand why consumers consume organic food, what motives they have, and how they consume organic food.

It is known that standards of living, education level, and age characteristics influence consumers' awareness of and knowledge about organic production and consumption (Pellegrini & Farinello, 2009). However, every group of customer may not share the same motivation to consume organic food products. Among the main motives for organic food consumption prominent ones have been found to be health considerations, and environmental concerns (Pellegrini & Farinello, 2009; Lockie et al., 2002; Magnusson et al., 2003; Chryssohoidis & Krystallis, 2005;

Gracia & Magistris, 2008; Hughner et al., 2007; Li et al., 2007; Wier et al., 2008; Zepeda & Deal, 2009; Bellows et al., 2010; Cerjak et al., 2010; Hasançebi, 2010; Ergin, et. all., 2011; Çabuk et. al, 2014). Health concern and health care through proper nutrition is among the most important considerations for consuming organic food and it has become a life style for some people. Some researchers further investigate health concern issue as personal health, and family health, stating that the strongest motivator for buying organic products is personal health (Smith & Paladino, 2010).

Specific product attributes as quality (Lockie et al., 2002; Smith & Paladino, 2010; Hamzaoui-Essoussi & Zahaf, 2012; Ergin, et. all., 2011), better taste (Lockie et al., 2002; Dahm et al., 2009; Hasançebi, 2010; Hughner et al., 2007; Stolz et al., 2010; Hamzaoui- Essoussi & Zahaf, 2012; Ergin, et. all., 2011), nutrition value and freshness (Fotopoulos & Chryssochoidis, 2000) has also found to be influential in organic food consumption.

Another factor that is known to influence consumption patterns is the family life cycle. It is also found to be influential in consumption of organic foods. Organic food consumption is thought to be an alternative lifestyle beginning with pregnancy (Pino et al., 2012), the arrival of a baby (Hamzaoui-Essoussi & Zahaf, 2012) and having children in the family (Hamzaoui-Essoussi & Zahaf, 2012). However, importance attached to various organic food purchasing motives is known to differ across countries (Cerjak et al., 2010; Quah & Tan, 2010) which makes it harder to generalize the findings.

3. Why People Do Not Prefer to Consume Organic Food

Another stream of work regarding organic food consumption is about the factors that hamper organic food consumption. Factors that makes people not to consume organic food have been found to be lack of or limited availability of organic products (Lockie et al., 2002; Chryssohoidis & Krystallis, 2005; Zepeda & Deal, 2009; Hasançebi, 2010; Smith & Paladino, 2010; Stolz et al., 2010; Hjelmar, 2011; Hamzaoui-Essoussi & Zahaf, 2012; Aygen, 2012), search costs involved (Li et al., 2007), perceived effort involved (Smith & Paladino, 2010), economic factors (Gracia & Magistris, 2008; Hjelmar, 2011), price premiums of organic food products compared to conventional food items, in other words high price (Zepeda & Deal, 2009; Cerjak et al., 2010; Hasançebi, 2010; Smith & Paladino, 2010; Stolz et al., 2010; Hamzaoui-Essoussi & Zahaf, 2012), lack of perceived value (Hamzaoui-Essoussi & Zahaf, 2012; Aygen, 2012), lack of awareness of the organic food label (Li et al., 2007; Stolz et al., 2010), lack of trust in organic food and authorities (Worner & Meier-Plogger, 1999; Sarıkaya, 2007; Lodorfos & Dennis, 2008; Zepeda & Deal, 2009; Hasançebi, 2010; Smith & Paladino , 2010;

Stolz et al., 2010; Hamzaoui-Essoussi & Zahaf, 2012), and existing habitual dietary patterns (Li et al., 2007).

4. Organic Food Consumers

Demographic characteristics of organic food buyers have been searched by many researchers in different countries, and research has led to mixed findings (Fotopoulos & Chryssochoidis, 2000; Lockie et al., 2002; Arvanitoyannis et al., 2003; Magnusson et al., 2003; Li et al., 2007; Gracia & Magistris, 2008; Lodorfos & Dennis, 2008; Teisl et al., 2009; Cerjak et al., 2010; Quah & Tan, 2010). Despite those contradictory findings, some consistent results have also emerged regarding demographic characteristics of organic food buyers throughout the world. Females (Davis et al., 1995; Reicks et al. 1997), older individuals, and households in which there are children tend to prefer organic food more compared to other groups (Hughner et al., 2007). Also, education and income were found to be significant factors in organic food consumption, and awareness by many researchers (Dettmann & Dimitri, 2010; Demirbaş et al., 2015).

In Turkey it has been found that individuals under 40 years of age with higher income levels (Akgüngör et al., 1999; Armağan & Özdoğan, 2005; Akgüngör et al., 2010), and families with one or two children, especially females and educated participants (İlyasoğlu et al., 2010), and married individuals compared to unmarried ones (Hasançebi, 2010) seemed to be more sensitive to organic food compared to groups with other socio-demographic characteristics (İnal et al., 2010).

5. Methodology

5.1. Data Collection

The purpose of this exploratory study is to examine the attitudes and self-reported behavior of Turkish consumers related to organic foods consumption. Based on a convenience sampling method, the questionnaires were administered by the help of a web server to people responsible from grocery shopping for their houses. The questionnaire was applied to 1000 people however, 118 of the questionnaires were eliminated resulting with 882 usable questionnaires. The survey instrument was pilot tested before the actual fieldwork, which ran between January and February 2016.

5.2. Instruments

The questionnaire included questions to measure demographic composition; knowledge and purchase behavior; attitude towards organic foods; reasons for not preferring organic goods, and intention to buy organic foods for the respondents.

Also, a nine-item measurement scale regarding why people do not purchase organic products; an eight-item scale regarding why people prefer organic products over conventional products and an eight item scale regarding the attitudes of people regarding organic products were used. Respondents were asked to rate the scales on a five -point Likert scale, with 1 indicating strong agreement and 5 indicating strong disagreement. The three scales were developed by a search of the extant literature and in-depth interviews with 10 organic food consumers and 10 non consumers.

5.3. Findings

Table 1. Organic Food Purchase of the Respondents

Do you purchase organic foods	n (882)	%
Always	15	1.7
Frequently	219	24.8
Rarely	388	44.0
None	260	29.5

Of the 882 respondents 260 (29.5%) of the respondents reported that they have never purchased organic foods, and most of the respondents (44%) stated that they rarely purchase organic product. Thus, here after the analyses would be conducted by grouping the respondents as, users (n=622) and non-users (n=260) of organic products.

Table 2. Frequencies of Demographics of the Respondents

	TOTAL (n:882)		ORGANIC PRODUCT USERS (n:622)		NON USERS OF ORGANIC PRODUCTS (n:260)	
	n	%	n	%	n	%
GENDER *						
Female	540	61.2	440	70.7	100	38.5
Male	342	38.8	182	29.3	160	61.5
AGE*						
	n	%	n	%	n	%
18-24	129	14.6	64	10.3	65	25.0
25-35	299	33.9	234	37.6	65	25.0
36-45	336	38.1	256	41.2	80	30.8
46-55	94	10.7	44	7.1	50	19.2
56-65	12	1.4	12	1.9	0	-

66-75	12	1.4	12	1.9	0	-
NUMBER OF PEOPLE LIVING IN THE SAME HOUSE *						
	n	**%**	**n**	**%**	**n**	**%**
1	206	23.4	121	19.5	85	32.7
2	246	27.9	201	32.3	45	17.3
3	257	29.1	172	27.7	85	32.7
4	160	18.1	115	18.5	45	17.3
5	13	1.5	13	2.1	-	-
MARITAL STATUS **						
	n	**%**	**n**	**%**	**n**	**%**
Single living with family	184	20.9	177	28.5	50	19.2
Married without children	140	15.9	134	21.5	45	17.3
Single living alone	262	29.7	95	15.3	85	32.7
Married with children	213	24.1	158	25.4	55	21.2
Empty nest	18	2.0	18	2.9	0	0
Divorced living with children	65	7.4	40	6.4	25	9.6
CHILDEREN UNDER SCHOOL AGE *						
	n	**%**	**n**	**%**	**n**	**%**
Yes	96	10.9	96	15.4	0	0
No	786	89.1	526	84.6	260	100.0
EDUCATION *						
	n	**%**	**n**	**%**	**n**	**%**
Primary School	25	2.8	0	0.0	25	9.6
High School	94	10.7	39	6.3	55	21.2
Two-year College	25	2,8	25	4.0	-	-
Bachelor Degree	354	40.1	289	46.5	65	25.0
Master's Degree	151	17,1	151	24.3	-	-
Ph.D.	233	26.4	118	19.0	115	44.2

* Significant for $p<0.001$; ** Significant for $p<0.01$

Regarding the respondents' organic product usage status, the demographic profile of users and non-users of organic products are given in Tables 2 and 3. The main statistical differences between users and non-users of organic products is analyzed by Chi-Square analyses. Significant differences between the user and non-user groups were found for all the demographic variables analyzed. It is seen that main customers of organic products are female and this finding also supports the extant literature (Hughner et al., 2007; Davis et al., 1995; Reicks et al., 1997), and mostly the users of organic products are between the ages of 25-45. Regarding the family life cycle it is seen that married people with children, and single people living with their families (which could also be considered as married with children category in Turkey, since in Turkish culture generally people do not leave their family house unless they are married to open up their own houses) are the groups that mostly consume organic food. The effect of family life cycle has also been stated in

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literature (Pino et al., 2012; Hamzaoui-Essoussi & Zahaf, 2012; Hamzaoui-Essoussi & Zahaf, 2012). This could also be seen in our findings. There is a significant difference between users and non-users of organic products regarding the presence of children under school age at home, which is considered to be stimulator of organic food usage. While participants that use organic food products (15%) have children under school age. None of the participants that do not consume organic food products have children under school age. Also, the number of people living in the same house and education seems to differ between users and non-users of organic products.

Table 3. Frequencies of Monthly Household Income and Perception of Income

	TOTAL (n=882)		ORGANIC PRODUCT USERS (n=622)		NON USERS OF ORGANIC PRODUCTS (n=260)	
	n	%	n	%	n	%
PERCEPTION OF INCOME*						
Very Low	25	2.8	0	0.0	25	9.6
Low1	32	3.6	7	1.1	25	9.6
Low2	39	4.4	39	6.3	0	0
Low3	185	21.0	90	14.5	95	36.5
Middle	250	28.3	220	35.4	30	11.5
High1	214	24.3	179	28.8	35	13.5
High2	112	12.7	87	14.0	25	9.6
High3	0	0	0	0.0	0	0
Very High	25	2.8	0	0.0	25	9.6
MONTHLY HOUSEHOLD INCOME (TRY)*						
	n	%	n	%	n	%
Between 0-1000 TRY	37	4.2	27	4.3	10	3.8
Between 1001-2000	162	18.4	47	7.6	115	44.2
Between 2001-3000	157	17.8	137	22.0	20	7.7
Between 3001-4000	101	11.5	71	11.4	30	11.5
Between 4001-5000	119	13.5	119	19.1	0	0
Between 5001-6000	75	8.5	75	12.1	0	0
6001+	231	26.2	146	23.5	85	32.7

*Significant for $p<0.001$, 1 Euro = 3.278 Turkish Lira (TRY)

Two questions regarding their income was asked to the respondents. As could be seen from the Table 3, both the actual income and perception of income was asked and results shows that the percentage of users of organic products in the middle and high 1 income are higher while the most of the non-users consider themselves to be in the low 3 income segment. This is not a surprising finding since the price of

organic products in Turkey is high and it is not easy for people to consume organic products unless they are producing them, or the product is coming from their families located in villages.

Table 4. Respondents Knowledge of Organic Food

Do you have knowledge of organic foods	N (882)	%
Yes	431	48.9
Partly	451	51.1
No	0	0

All the respondents stated that they have knowledge on organic foods. So we can say that stated awareness among respondents regarding organic food is 100%. However, more than half of the respondents needs further information since they just have partial information.

Table 5. Places Where People Shop for Organic Products

PURCHASING PLACES FOR ORGANIC FOODS (n= 622)		
	n	%
Market	240	38.6
Bazaar	163	26.2
Organic Markets	67	10.8
Organic Bazaar	94	15.1
Other*	58	9.3

Most of the respondents stated that they buy their organic food from markets (38.6%) followed by bazaars, organic bazaars, and organic markets. In fact, organic markets and bazaars are not very common in İzmir but Aegean region where İzmir is located is the main provider of organic food products for exports and domestic consumption. So it is not hard to find organically produced vegetables and fruits in local bazaars. Also some of the participants (9.3%) stated that they either go to nearby villages to buy organic products or, they produce and develop their own organic food in their own gardens

Table 6. Organic Food Preferences of Participants

	I always buy organic. %	I sometimes buy organic. %	It does not matter whether it is organic or not. %	I never buy organic. %	I have never met this product's organic version before. %	Mean
Fruit	20.1	61.6	11.9	4.3	2.1	2.0675
Vegetable	23.5	57.4	9.5	8.5	1.1	2.0643
Milk	24.9	44.4	16.6	10.9	3.2	2.2315
Egg	41.8	40.4	10.6	7.2	0.0	1.8328
Cheese	15.0	30.4	32.2	12.9	9.6	2.7186

Yoghurt	22.0	35.5	24.9	9.3	8.2	2.4614
Olive	31.0	28.1	21.9	13.5	5.5	2.3424
Meat	17.0	21.1	30.4	20.9	10.6	2.8698
Poultry	25.1	27.5	22.8	16.6	8.0	2.5498
Fish	30.4	19.9	26.0	13.3	10.3	2.5322
Pasta	4.0	19.5	33.0	24.8	18.8	3.3489
Bread	16.2	25.7	22.8	22.8	12.4	2.8939
Rice	8.7	22.8	26.8	22.0	19.6	3.2106
Dry legumes	9.8	26.7	28.1	19.9	15.4	3.0450
Oil*	24.0	27.2	20.9	15.4	12.5	2.6543
Butter	13.2	29.4	19.6	17.0	20.7	3.0273

n=622

Almost 42% of the participants that have stated a purchase of organic products said that they always prefer to buy organic eggs. Also as seen in Table 7 eggs are found to be the most frequently purchased organic food. This finding could be either related with the wide availability of the organic eggs and/or egg being one of the cheapest and widely used protein source of people in Turkey. The preference for organic eggs was also reported in previous studies (Armağan & Özdogan, 2005). This is followed by organic olive (31%), which is not surprising since many people living in Izmir and other places where olive agriculture is widespread, cultivate olive in their gardens and although their product may or may not be certificated, it is considered as organic olive oil. Further, 30,4% of the participants have stated that they always prefer organic fish. Considering the mean values, it can also be seen that organic eggs are the mostly preferred type of organic products followed by fruits and vegetables.

Table 7. Most Frequently Purchased Organic Food

	n	%
Egg	215	34.6
Fruit	95	15.3
Vegetable	89	14.3
Milk	59	9.5
Oil	40	6.4
Fish	32	5.1
Olive	25	4.0
Poultry	22	3.5
Yoghurt	15	2.4
Rice	7	1.1
Butter	7	1.1
Cheese	6	1.0
Bread	5	0.8
Dry legumes	5	0.8

n=622

Most frequently purchased organic foods by respondents were eggs, fruit, vegetables and milk followed by other products as could be seen in Table 7. This

finding is articulable since it is very easy to find organic eggs in market shelves. Also since this research is undertaken in a city where agriculture is widespread and people could easily reach fresh fruit or vegetables developed by villagers in bazaars and also produce their own vegetables. However, previous researches by Sarıkaya (2007), and İlyasoğlu et al. (2010) revealed that the main organic products purchased by consumers were fruits and vegetables. The difference in the findings could be attributed to the developments in poultry sector, and increased availability of organic eggs in the recent years.

Table 8. Why Do People Not Prefer Organic Food?

WHY DON'T YOU PREFER ORGANIC FOOD?	Completely Agree %	Agree %	Neither Agree nor Disagree %	Disagree %	Completely Disagree %	Mean
It is not different than conventional foods	11.5	26.9	34.6	26.9	0	2.7692
I do not believe that the so called organic food is in fact organic	34.6	3.8	51.9	9.6	0	2.3654
Organic food is expensive	78.8	21.2	0	0	0	1.2115
I can't find organic products where I shop	17.3	80.8	1.9	0	0	1.8462
I don't think that organic food is beneficial for my health	9.6	15.4	48.1	26.9	0	2.9231
I don't like the taste of organic food	0	0	50.0	13.5	36.5	3.8654
I don't like the appearance of organic food	1.9	32.7	23.1	32.7	9.6	3.1538
I think that they wait too long in market shelves	11.5	36.5	23.1	9.6	19.2	2.8846
I don't prefer organic food because their expiry dates are very short	13.5	36.5	21.2	0	28.8	2.9423

n=260

Most important reason why consumers do not prefer organic products is its expensive price (100%). This has been stated by all the participants. Second important reason for not preferring organic products has been stated as inability to find organic products in places where respondents shop (98.1%). Those findings support the foreign literature Zepeda and (Deal, 2009; Cerjak et al., 2010; Smith & Paladino, 2010; Stolz et al., 2010; Hjelmar, 2011; Hamzaoui-Essoussi & Zahaf, 2012; Lockie et al., 2002; Chryssohoidis & Krystallis, 2005; Zepeda & Deal, 2009; Hamzaoui-Essoussi & Zahaf, 2012) as well as Turkish literature (Hasançebi, 2010; Aygen, 2012, İlyaslıoğlu et al., 2010). Another important finding and at the same time an issue of importance that should be considered by governments and practitioners is that 34.6% of the respondents stated that they actually do not believe that "the so called organic food is in fact organic".

Table 9. Exploratory Factor Analyses Results of "Perception and Attitudes towards Organic Food" (both user and non-users of organic products)

	F1	F2	F3	Mean
Attitude and Intention(α= 0,807)				
In general I hold a positive attitude for organic produces	.845			1.8489
I will continue to buy organic products	.826			2.1114
I find it logical to consume organic food	.813			1.8250
The people I love have positive attitudes toward organic food	.658			2.5170
Price(α=0,627)				
I think organic products are only suitable for high income people		.837		2.0544
Organic food is too much expensive		.779		1.8175
If I would have an increase in my income I might think of consuming organic food		.571		1.9660
Consumption(α= 0,660)				
I cannot find organic products in places I shop			.908	3.1474
Even though I think organic products are healthy I do not buy them			.706	3.4002
Explained Variance (70,781)	33.073	21.077	16.631	

To run the exploratory factor analysis, KMO and Barlett's Test is conducted. KMO coefficient is 0.714 and the significance level of Barlett's Test is very significant (0.000). Items of the scale were grouped using principal component factor analysis with Varimax rotation with Kaiser Normalization, and 9 of the items were loaded under three factors explaining 70.781% of the total variance. The first factor containing 4 items is named as "Attitude and Intention". This factor explains 33.073% of the variance. It consists of items, reflecting positive attitudes regarding organic product purchase of the respondents. The second factor contains 3 items regarding price, thus this factor is named as "Price" factor. Price factor explains 21.077% of the variance. Finally, the last factor containing two items is named as "Consumption" and it explains16.631% of the total variance.

Table 11. Differences of Perception and Attitudes towards Organic Food among Users and Non-Users of Organic Products

	Users	Non-users	Overall
Attitude and Intention	Mean	Mean	Mean
In general I hold a positive attitude for organic produces	1.6323	2.3654	1.8489
I will continue to buy organic products	1.7637	2.9423	2.1114
I find it logical to consume organic food	1.6399	2.2692	1.8250
The people I love have positive attitudes toward organic food	2.2572	3.1346	2.5170

Price			
I think organic products are only suitable for high income people	2.2138	1.6731	2.0544
Organic food is too much expensive	1.8537	1.7308	1.8175
If I would have an increase in my income I might think of consuming organic food	1.8794	2.1731	1.9660
Consumption			
I cannot find organic products in places I shop	3.2170	2.9808	3.1474
Even though I think organic products are healthy I do not buy them	3.5514	3.0385	3.4002

(1= completely agree; 5= completely disagree)

As could be seen from Table 11, users of organic products hold much more positive attitude for organic products than non-users. Although both users and non-users consider organic products to be highly priced, non-users seem to be more price-sensitive, and consider them to be higher priced. However, convenience does not seem to be as problematic as price issues both for users and non-users.

Table 12. Exploratory Factor Analyses Results for "Why People Prefer to Consume Organic Food Products"

Reasons for buying organic food products (α= 0.766)	F1	F2	Mean
Health 1 (α= 0.842)			
They are healthier	.883		1.4486
They are better for my families health	.862		1.4678
They contain no additives	.781		1.3617
They do not make any harm to my health	.617		1.4662
They do not contain any GDO	.612		1.6463
Product related (α= 0.560)			
They taste better		.836	2.2460
Their nutritional value is higher		.706	2.2154
They look natural		.531	2.2444
Explained Variance (59.491)	37.869	21.622	

KMO coefficient is 0.806 and the significance level of Barlett's Test is very significant (0.000). Items of the scale were grouped using principal component factor analysis with Varimax rotation with Kaiser Normalization, and 8 of the items were loaded under two factors explaining 59.491% of the total variance. The first factor containing 5 items is named as "Health". This factor explains 37.869% of the variance. This finding is also supporting the existing literature as health being the main motivator of consuming organic food (Pellegrini and Farinello, 2009; Lockie et al., 2002; Magnusson et al., 2003; Chryssohoidis and Krystallis, 2005; Gracia & Magistris, 2008; Hughner et al., 2007; Li et al., 2007; Wier et al., 2008; Zepeda & Deal, 2009; Bellows et al., 2010; Cerjak et al., 2010; Hasançebi, 2010; Ergin et al., 2011; Çabuk et. al, 2014). The second factor contains three

items and it is named as "product related" factor. This factor explains 21.622% of the variance.

5.3.1. The Two-Step Cluster Analysis

Two-Step Cluster analyses has been used to group users and non-users of organic products into clusters (SPSS 23). The Two-Step Cluster Analysis procedure is an exploratory tool designed to reveal natural groupings (or clusters) within a data set that would otherwise not be apparent. This segmentation was based on demographical variables and the declaration to buy organic food. Categorical variables used for the cluster analyses were presence of little children at home, family life cycle, and gender. Continuous variables used were education, income, number of people living in the household and age. However, in further analyses family life cycle and number of people living in the house were eliminated from the cluster analyses due to their repressing impact covering other variables. In other word those variables were so effective in explaining purchase of organic food that it enabled to see the effect of other variables. To determine which number of clusters is "best", each of these cluster solutions is compared using Schwarz's Bayesian inference criterion (BIC). The final cluster analysis resulted into five segments with a Silhoutte measure of cohesion and separation very near to good (0.5).

Table 13. Clusters of Organic Food Consumption

Cluster	1	2	3	4	5
Label	Female users of organic products with no children	Male users of organic products with no children	Non users of organic products with high income and education	Non users of organic products with moderate income and education	Users of organic products with small children
Size	39.3%	23.4%	13.4%	13.0%	10.9%
Gender	Female	Male	Male	Female	Female
Number of children under school age	No children	No children	No children	No children	All of them have children
Income * (Median)	6	3	5	4	5
Education ** (Median)	6	5	6,99	3,1	6
Age Group ***	3	3	3,1	2	3
Purchase of organic food	Frequently 57.65%	Frequently 42.2%	Never 67.8%	Never 56.5%	Frequently 54.2%

* (1= 0-1.000; 2= 1.001-2.000; 3=2.001-3.000; 4= 3.001-4.000; 5=5.001-6.000; 6=6,001and over)
** (1= primary school; 2= secondary school; 3=high school; 4= associate degree; 5=university;

6= masters; 7=PhD)
*** (1=18-24; 2=25-35; 3=36-45; 4=46-55; 5=56-65; 6=66-74; 7=75 and over)

As a result of the cluster analysis five groups were identified. The first and largest group composes of females with no children. They have high income (5000-6000 TRY) and high education (master's degree or PhD) and the median of their ages are between 36-45. 57.65% of this group composes of frequent buyers of organic products.

Second group composes of male users of organic products with no children. The median of their ages are between 36-45 as the first group. However, this group has a medium income (2000-3000TRY) and mostly have a university degree. 42.2% of this group frequently consumes organic products.

Third group composes of non-users of organic products with high income (5.000-6.000 TRY) and education (master's degree or PhD). They are male, do not have children, the median of their ages are between 36-45, and even though they have high education and income 67.8% of this group has never purchased organic products.

Fourth group composes of non-user females. They have no children. They are younger (between 25-35), incomes are between 3000-4000 TRY and they are high school graduates. 56.5% of this group have never consumed organic food products.

The last group composes of females with small children who are frequent users of organic products (54.2%). They have high income (5000-6000 TRY) and high education (master's degree), and the median of their ages are between 36-45. Overall it could be stated that the clusters put forth a general picture of the segments for organic food marketers. Also, gender and having children under school age has been found to have the most predictor influence, and age the least predictor influence on the clusters.

6. Conclusions

Due to the increased number of illnesses resulting from unhealthy, genetically modified food products, consumers interest in healthy eating, and organic food products have been increasing and eating organic is in fact becoming a life style choice especially for health and environmentally conscious consumers. Our findings also show that people mainly consume organic food products due to health related issues. However, this increase of interest cannot directly be seen as an increase in organic food consumption in Turkey. The aim of this study was to achieve a better understanding of consumers' motivations and barriers for using organic food products, and draw a general picture for organic food consumers, attempting to offer more insights of Turkish consumers. Our results show that though all the respondents know something about organic food, more than half of

them just have a partial knowledge. So educating the market about organic products should be an important concern. Also it is seen that, females, families with children and higher income people are better customers for organic food products. Those findings also support the existing literature. Also five clusters of organic food consumers were identified. Of the five clusters three of them were users and two of them were non users. The cluster analyses also support our previous findings such that, gender and having children under school age has been found to have the most predictor influence, and age the least predictor influence on the clusters. Thus, targeting women, and families with children may be a better idea for organic food retailers. It is also seen that mostly consumed organic food products are eggs followed by fruits and vegetables.

The main barrier to increase consumption levels of existing customers and to increase primary demand by reaching non users is price factors and availability. Those findings have very important implications for practitioners and government. Even though Turkey has been an important agricultural country, it has been losing its competitiveness even in the production of conventional food products. Also, there seems to be a need to educate and support producers about organic farming, so that increased production would reflect itself in reduced prices and increased availability and convenience.

Another important finding, and at the same time an issue of importance that should be considered by governments and practitioners is that, 34.6 % of the respondents stated that they actually do not believe that "the so called organic food is in fact organic". The impact of food safety frauds, on people's opinion regarding organic foods can be two fold. Either it could motivate people to consume more organic products or it could damage the image of organic food by reducing the believability of organic claims. This could be the reason why 34.6% of the respondents' do not believe in organic products. This issue should be investigated further to see if this belief is in fact wrong or are there actually some misleading applications that creates this image. Whatever the real problem is, it should be solved since it may create an important barrier for organic food producers. Strict control of producers and retailers, and education of farmers and consumers may play an important role within this respect. Also informing customers about organic products, and the kind of labels and certifications that they should be seeking, might increase their awareness and consumers might make more conscious decisions. This is especially important for the attraction of non-users of organic products since they do not hold positive attitudes for organic products relative to the users. There may be opportunities to increase sales among people that currently buy no organic foods, but are considering buying organic foods in the future however, messages to different type of customers must be carefully targeted and build on their relevant values.

7. Limitations of the Study and Further Research

This study focuses on the intentions and stated behavior of the respondents regarding organic food purchases and also uses convenience sampling. Further studies can actually be applied to actual organic food consumers and to a much more representative sample.

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