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EDITORIAL NOTE

An important step in achieving economic diversification and industrial development lies in a well-designed industrial and banking policy which motivates sectors and industries where individual countries can invest with existing resources, capacities and prevailing multilateral agreements and other external conditions meant to support the industrial development process. In this connection, the current issue of *the Journal of Economic Cooperation and Development* – March 2018 includes seven main articles which analyze the contribution of information and communication technologies on transport, competition in the banking sector, effects of external debts and the mediating effect of products and services on growth rate on both the businesses and communities. These tend to influence the way governments can help secure and sustain their capital expenditure, income inequality, total population and economic growth.

The first article deals with how the modern transport systems manage traffic, travel scheduling and passenger reservation efficiently. It also aims to examine the effects of ICT on growth of transport value added among the selected Middle-East countries. Therefore, improving the ICT infrastructure and training the transport agents, besides physical investment in machinery and transport equipment can cause higher growth in transport and related services.

The second article aims to empirically analyze the competition in the banking sector in Pakistan during the period 1995-2014. Results of this competition have proven to be robust and reveal that the commercial banks in Pakistan generate revenues in the environment of monopolistic competition and this reflects the positive impact of banking sector reforms in creation of competition among banks.

The third article examines the effect of external debt on economic growth of Sudan by measuring economic growth as a function of the ratio of external debt to exports, exchange rate and foreign direct investments as the explanatory variables using annual time series for the period 1969-2015. Results show that external debt proxied by the external debt to exports ratio has contributed positively to the Sudan economy, while exchange rate and foreign direct investment have

negative effects on GDP growth which is consistent with findings of most empirical studies at the macroeconomic level.

The fourth article analyzes the relationship between capital expenditure, income inequality, total population and economic growth in 38 districts/cities in East Java Province, Indonesia during the period of 2011-2015. The findings prove the existence of a positive relationship between capital expenditure and economic growth in the district/city.

The fifth article empirically investigates the upshot of money supply on inflation in Nigeria using annual time series data spanning from 1970 to 2016. The results showed that money supply does not considerably influence inflation both in the long and short run possibly because the country is currently experiencing recession. The study recommends that the government should diversify the economy, minimize importation by encouraging local production of products and services.

The sixth article comprises three areas, namely, an examination of the specific factors of growth in the Islamic financial system, an assessment of the relationship between the development factors of an Islamic financial system, and the identification and analysis of the mediating role of banking assets and equity funds for financial development. The findings of the study generated greater awareness among organizations of Malaysia on the importance of strengthening the current Islamic financial system as a vehicle for organizational effectiveness.

The seventh and last article uses moral and ethical context of money and monetary policy in the creation of a stable and real growth perspective of the economy and wellbeing criterion. This derivation and casting it into a generalized analytical model is premised on the cardinal Islamic ontological law of unity of knowledge. This approach leads into the model of money, finance, and real economy model and its various ramifications within the comparative perspectives of money and monetary policy for the Islamic case.

In addition, I am delighted to inform the readers that SESRIC, in collaboration with its partners, will organize an International Symposium on "Financing for Development", under the

theme "*Thinking Innovative Solutions to Persist Development Challenges*". The Symposium will be held for two days either in October or November 2018, in Istanbul Turkey. Exact dates of this Symposium will soon be announced on our Website <http://www.sesric.org>. The Symposium will be attended by academicians, practitioners, public officials and policy-makers and will provide a platform for dialogues and discussion to address problems related to financing for development in OIC countries. Authors of high-quality papers will be invited to present their research during the Symposium and a selection of the papers will be made. The detailed information regarding the Symposium is available through: <http://www.sesric.org/activities-announcements-detail.Php?id=441>

Needless to say, any papers submitted both individually and collaboratively, will be much appreciated and add benefit to the progress and success of the journal.

Amb. Musa KULAKLIKAYA
Editor-in-chief

Impact of Information and Communication Technology on Transport among the Selected Middle East Countries

Lotfali Agheli¹ and Sara Hashemi

The modern transport systems manage traffic, travel scheduling and passenger reservation efficiently. These use information and communication technology (ICT) in order to increase demand for convenience, safety and speed. Therefore, investing in ICT has essential effect on transport sector. This article aims to examine the effects of ICT on growth of transport value added among the selected Middle- East countries. It applies a panel data model over the period 2000-2014 and uses ICT penetration ratio as proxy variable for ICT. The findings show that labor active in transport sector; machinery and transport equipment and ICT penetration ratio have significant positive effects on value added of transport sector. Thus, improving the ICT infrastructure and training the transport agents, besides physical investment in machinery and transport equipment cause higher growth in transport and related services.

Keywords: ICT, Value added, Transport, Panel data

JEL Classification: C23, R41

1. Introduction

As one of the most effective economic activities, transport links the supply to demand in different markets. In the previous economic researches, transport was considered as an intermediate sector to fulfill the primary needs such as trade, tourism, employment, etc. Currently, due to development of the global economy, all countries try to optimize the available capabilities and opportunities in a highly competitive environment. As a result, transport plays direct role in reducing production costs, making access to markets, and increasing competitiveness in the international trade. Therefore, this sector attracts attentions in management, planning, investment and research.

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Transport as an infrastructural sector stimulate economic development. It links together different factors influencing economic growth and development through handling cargo and passenger. In proportion to the development of communities, the need for fast, safe and cheap conveyance has become more widespread. The current transportation industry is resultant of the evolutionary process of human life and basic developments in production, distribution, consumption and technical progress. Transport makes linkages among economic, social and cultural subsectors faster and more extensive.

To demonstrate the economic importance of transport, we should pay attention to three effects of transport in the economic life of people including spatial specialization in production, mass production and expansion of habitats. In other words, development of transport result in mass production and productivity in exploiting natural resources through spatial specialization in terms of comparative advantage. Consequently, humans can improve quality of life by selecting habitats in terms of climatic and safety conditions.

Information and communication technology (ICT) potentially affects movements of people and goods. In other words, ICT can change social and organizational activities. Applying systems for managing transport and traffic, travel information and passenger reservation, this technology increases demand for convenience, safety and speed. Hence, investing in ICT has significant positive impact on transport sector.

Transport is an ICT-intensive sector. Selling e-ticket, networking, tracking shipments, managing passengers and informing people are of main functions of ICT in transportation (Mahmoodzadeh and Fathabadi, 2011). An ICT-based transport sector improves efficiency of transportation and reduces energy use.

As European Commission (2010) argues, the roads' safety has been a main issue in transport. ICT can help to safety of roads through expanding safety systems, and may reduce road accidents. In this regard, Black and van Geenhuizen (2006) claim that ICT innovations seem to be most effective in fatality reduction. They mention reductions on a level of 50 to 60% and on level of 30 to 40% for particular types of advanced divers' assistance in particular road network sections.

In addition, ICT may improve traffic management through introducing new systems. In general, five factors are considered as principal motives of adoption ICT in transportation: adoption of ICT in controlling transportation fleet, energy consumption, environment conservation, and optimization of traffic system and safety of transportation (Mahmoudzadeh and Fathabadi, 2011).

The effects of ICT on transportation can be examined in both micro- and macroeconomic levels. The firm-level empirical studies show that some firms pursue common goals such as improvement of customer services, integration of internal processes in organizations, supply chains, and reduction of costs. To achieve these goals, these firms make use of various ICT systems including radio frequency identification (RFID), e-ticket and electronic reservation, software systems, telematics, integrated selling system, open source programming system, smart transport system, inventory management system and so forth. According to industry-level studies, innovations and ICT systems used in transportation affect desirably performance of transport sector.

In examining the ICT role in transport sector, Black and van Geenhuizen (2009) argue that the extensibility impact of ICT use allows an acceleration of activities over both larger and smaller spatial scales, while serving an array of different purposes of households and business. In addition, trackability² is another attribute provided by ICT to persons, vehicles and goods, which refers to real-time dynamic mapping of activity paths and routes. Finally, intelligence is the most powerful attribute that ICT provides to persons and organizations. It refers to the capability to collect, process, distribute, steer and monitor value chain processes in distributed places.

Banister and Stead (2004) believe that the growth in the service and knowledge-based economy, the breakdown of trade barriers, and the development of new patterns of travel requires using ICT in transport, since ICT use increases transport efficiency.

Giannopoulos (2004) examined the various applications information and communication technologies in the fields of operation and management of networks (all modes), information and guidance to the users (of the transport systems), operation and management of freight transport systems. In this regard, he listed these applications: traffic data information collection and dissemination systems, network control and

² In some texts, “traceability”

traffic management strategies, vehicle control and driver assistance, systems for (Electronic or other) fee collection, freight resource management; terminal and port information and communication systems, freight and vehicle tracking and tracing, and “front” or “back-office” logistics systems.

The remainder of this article is organized in 4 sections. Section 2 reviews the literature. Section 3 devotes to theoretical basics. Section 4 refers to model specification, data, variables and estimation issues. Finally, section 5 concludes.

2. Review of literature

The literature is reviewed in three parts:

Part 1 devotes to examination of the effects of ICT on economic variables such as growth, productivity, and inequality.

Using panel data specification and generalized method of moments (GMM), Belorgey *et al* (2006) examined factors influencing economic growth with an emphasis on ICT across 25 countries. They found that both ICT supply and expenditure have positive effects on economic growth, while labor growth affects economic growth negatively.

Al-Khateeb *et al* (2007) studied the effect of human capital and ICT on economic growth of United Arab Emirates by using co-integration and error correction model. Their findings indicate appropriate training as a prerequisite for using new technologies.

Komijani and Mahmoodzadeh (2009) examined the effects of ICT on economic growth using two kinds of proxies for ICT. The first kinds of variables are fixed line phone penetration ratio as a proxy for ICT infrastructure, and internet penetration ratio for ICT users. The second kinds of variables are ORBICAM indicators, which present network indicator for ICT infrastructure, information user indicator for ICT users, and human capital indicator. The effect of ICT on economic growth was estimated in a steady-state situation using panel data of 51 countries over the period 1995-2003. The findings show that physical capital, fixed line phone penetration ratio, network indicator, information use, internet and trade openness have positive effects on

economic growth, while population growth and inflation rate have negative impacts on economic growth.

In Quah (2001) viewpoint, ICT has the same features—increasing returns, knowledge spillovers—that drive both growth and agglomeration of firms. However, European States show no special advantage in using ICT as a driver for economic growth; ICT clusters seamlessly transcend national borders.

Using a production function, Dimelis and Papaioannou (2010) studied the effects of FDI and ICT on productivity growth in both developing and developed countries during 1993-2001. They found that FDI affects significantly productivity growth in both groups.

The part-one studies entail significant positive relationship between ICT and productivity or growth.

Part 2 emphasizes on the impact of transport infrastructure on economic growth.

Boopen (2006) investigated the relationship between total investment (private and public investment) in transport sector and economic growth based on panel data and cross-sectional models for the selected Sub-Saharan Africa, including South and Central Africa, and some small developing islands such as Fiji, Haiti, Jamaica, during 1985-2000. He found that investment in transport contributed to economic growth.

Daeikarimzadeh et al (2009) examined the effect of public investment in transport on economic growth in Iran over the period 1973-2008. Using an Auto-Regressive Distributed Lags model, they found that public investment in transport has significant positive effect on gross domestic product (GDP). In addition, relationship between economic growth and other variables, such as public investment in non-transport sectors, private investment, and labor employed in whole economy, and exports were significantly positive.

Part 3 focuses on the effects of ICT on sector- level value added.

Yoshimoto and Nemoto (2005) examined the global trend toward e-commerce and computerization in the trucking industry and analyzed the

impact of information and communication technology on road freight transportation in terms of commerce, logistics and fleet management, and proposes hypothetical mechanisms of influence. They suggest that more sophisticated government management of transportation demand as well as freight fleet management systems could cancel out the negative impact of e-commerce on road transportation.

Wang et al (2015) investigated how information and communication technologies (ICT) can contribute to reduction of CO₂ emissions in road freight transport. They adopted a multiple case study approach with three leading UK grocery retailers and used multiple data collection techniques including interviews, system demonstrations, onsite observations and the use of archive information. They found that ICT has a direct positive impact on CO₂ emissions reduction.

3. Theoretical basics

ICT affects a given economy in both supply and demand sides. In the demand side, ICT influences consumer behavior through changes in his/her preferences. It also affects producer behavior in supply side by facilitating the communications.

This study focuses on supply side and examines ICT effect on transportation value-added growth. Besides complementary factors such as managerial and legislative experience, economic structure, public policies and human capital, ICT is included in production function as a capital input, and improves production cycle through deepening capital, stimulating technology progress, and increasing quality of labor. The result is to increase value-added in firm, sector and country levels. Finally, it makes growth in number and quality of labor, total productivity and economic growth. The technology revolution is known with indicators of fast improvement of quality of equipment and software along with reduction of prices. Looking at inputs' relative prices, a profit-maximizing firm responds by replacing equipment, software and ICT services (Forester, 1987; Pohjola, 2002).

Jalava and Pohjola (2002) examined the ICT role in economic growth. In order to study the effect of technology on productivity, they used an implicit production function with Hicks-neutral technology. Pohjola (2001) divided the effects of technology on economic growth into three

categories. In a classical context, technology is the sum of knowledge embodied in production tool and methods. In addition, the effect of technology is embodied in capital goods, which results in increasing capital productivity. In the second case, technology increases labor productivity. In the third case, technology increases total factor productivity, which is interpreted as Hicks-neutral technology.

The effects of investment in ICT are estimated using production function and growth accounting. We assume that production function takes the form of generalized Cobb-Douglas function:

$$Y = AC^{\alpha}K^{\beta}H^{\gamma}L^{\theta} \quad (1)$$

Where Y , K , H , C , and L denote total output, physical capital, human capital, ICT capital, and labor, respectively. Parameter A measures technical progress, and α, β, γ and θ denote input shares. By taking natural logarithm from equation (1), we reach the following equation:

$$\ln Y = \ln A + \alpha \ln C + \beta \ln K + \gamma \ln H + \theta \ln L \quad (2)$$

For available data on variables under consideration, parameters of equation (2) can be estimated within time series for a single-country case or panel data for a group of countries over time. Since the level of time series have unit root, i.e. they are often $I(1)$, we rewrite equation (2) in the form of growth of variables, by taking derivatives of variables with respect to time.

$$\dot{Y} = \dot{A} + \alpha \dot{C} + \beta \dot{K} + \gamma \dot{H} + \theta \dot{L} \quad (3)$$

The dots over variables denote the rate of changes over time. If a constant return to scale is accepted for the production function, and value of marginal product is paid for any input, the coefficients of variables give input shares in total output. This method indicates a standard growth accounting in determining input shares in output growth. From equation (3), changes in technology ($\frac{\dot{A}}{A}$), or Solow (1956) residual, is derived and called multi-factor productivity. The generalized neoclassical growth models consist of many kinds of capital (Mankiw et al, 1992).

4. Model and Estimation

4.1. Model specification

In this article, the effects of *ICT* on value added in transport sector among the selected Middle East countries using generalized neoclassical growth models, which consist of various kinds of capital (Mankiw et al, 1992). By assuming Jorgenson (2001) approach, first we write the following Cobb-Douglas production function.

$$Y_{it} = AK_{Non\ ICT,it}^{\alpha_1} K_{ICT,it}^{\alpha_2} L_{it}^{\alpha_3} \quad (4)$$

Where, value added, Y is a function of non-ICT capital ($K_{Non\ ICT}$), *ICT* capital (K_{ICT}) and labor, L . The subscripts i and t denote cross-section and time, respectively. By taking logarithms of equation (4), and writing the obtained equation in an econometric model, equation (5) is derived:

$$\begin{aligned} \ln Y_{it} &= \alpha_0 + \alpha_1 \ln K_{Non\ ICT,it} + \alpha_2 \ln K_{ICT,it} + \alpha_3 \ln L_{it} + u_{it}, \quad u_{it} \\ &= \alpha_i + v_t \end{aligned} \quad (5)$$

Where α_i represents country-specific effects, known as fixed effects, i.e., they indicate country-specific effects. v_t is disturbance term, which measures unobservable effects of each variable over time.

4.2. Statistical sample

According to the Iran Vision 2025, the statistical sample includes Iran's rivals in the selected Eurasia and MENA regions, including Armenia, Azerbaijan, Bahrain, United Arab Emirates, Oman, Saudi Arabia, Qatar, Afghanistan, Georgia, Iraq, Kuwait, Egypt, Israel, Jordan, Kazakhstan, Kirgizstan, Lebanon, Pakistan, Tajikistan, Syria, Yemen, Turkey, Turkmenistan, Uzbekistan, and Palestine. Of these, Armenia, Israel and Palestine were excluded of our study due to lack of reliable data. Thus, the statistical sample was confined to 24 countries, including Iran.

Since transportation value-added is usually not reported separately in the national accounts, the dependent variable refers to value-added of transportation, storage and telecommunications sector. In addition, explanatory variables are labor active in *ICT*, machinery and transport

equipment, length of road networks, expenditure on investment in *ICT*, *ICT* penetration ratios and *ICT* user indicators. The period of study covers 2000-2014.

4.3. Variables and data

Dependent variable

Value added of transport, storage and communication (TSC): For gathering data on this variable, the shares of TSP in GDPs were derived from the Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC)³, and were multiplied by corresponding GDPs. For non-Islamic countries such as Georgia, the share of *TSC* in *GDP* was extracted from Georgia Statistical office⁴, while its *GDP* was obtained from World Bank.

Explanatory variables:

Labor force active in TSC: labor force is an influential production input, which creates considerable value added proportional to its productivity. The number of workers employed in *TSC* sector was extracted from International Labor Organization (ILO), and national statistical yearbooks.

Non-ICT investment in TSC: physical capital in the form of road, motor vehicle, shipping fleet, aircrafts, ports, and so forth is an essential input in *TSC* sector. Since data on investment in *TSC* is not explicitly available, we focused on the length of paved roads and value added on machinery and transport equipment, but finally we included value added on transport equipment and machinery as share of total manufacturing value added in the model. This variable was extracted from World Bank.

ICT investment in TSC: there are various indicators to measure the investment in *ICT*. For instance, expenditure on *ICT*, internet penetration ratio, internet bandwidth, mobile and fixed telephone subscribers have been used in related studies (Pohjola, 2001, Moshiri and Jahangard, 2004; Komijani and Mahmoodzadeh, 2009). In this study, we use a composite *ICT* indicator, which aggregates cellular mobile telephone subscribers, internet subscribers, and telephone lines

³ www.sesric.org

⁴ www.geostat.ge

in operation per 100 persons. The other ICT indicators were also considered, however they were not included into model due to gap in data. Table 1 defines variables in brief.

All variables are in logarithms because of derivation and interpretation of elasticities.

Table 1: Variables under study

Variable	Definition
$Ln(Y)$	Logarithm of TSC value added
$Ln(LF)$	Logarithm of labor force in TSC sector
$Ln(EQP)$	Logarithm of expenditure on machinery and transport equipment
$Ln(ICT)$	Logarithm of ICT penetration ratio

Since data is not fully reported for all variables, we continue our analysis in two subsamples: subsample 1 in which we have data of 4 variables, and subsample 2 where data is available only for $Ln(Y)$, $Ln(LF)$ and $Ln(ICT)$. As a result, subsample 1 consists of a smaller sample: Azerbaijan, Egypt, Georgia, Iran, Jordan, Kyrgyz republic, Kuwait, Oman, Qatar, Turkey, Yemen, while subsample 2 includes larger sample with 9 other countries: Bahrain, Iraq, Kazakhstan, Lebanon, Pakistan, Saudi Arabia, Syrian Arab Republic, Tajikistan, and United Arab Emirates.

4.4. Econometric strategy

The first step for estimating model (5) is to test all variables against unit root in order to discard spurious regression. Due to nature of data, we exercise unit root test for our panel data. Table 2 reports the results of unit root test, which reject the common/individual unit root in the series.

Table 2: Pool unit root test

Subsample	Variable	Method	Statistic	Prob.**	Decision
1	Ln(Y)	LLC t-stat	-3.091	0.001	I(0)
		IPS W-stat	-3.521	0.000	I(0)
1	Ln(Labor)	LLC t-stat	-7.659	0.000	I(0)
		IPS W-stat	-3.254	0.0006	I(0)
1	Ln(ICT)	LLC t-stat	-9.198	0.000	I(0)
		IPS W-stat	-3.903	0.000	I(0)
1	Ln(EQP)	LLC t-stat	-9.464	0.000	I(0)
		IPS W-stat	-6.714	0.000	I(0)
2	Ln(Y)	LLC t-stat	-4.764	0.000	I(0)
		IPS W-stat	-2.199	0.014	I(0)
2	Ln(Labor)	LLC t-stat	-8.152	0.000	I(0)
		IPS W-stat	-3.977	0.000	I(0)
2	Ln(ICT)	LLC t-stat	-10.456	0.000	I(0)
		IPS W-stat	-3.646	0.000	I(0)

Note: Regarding unit root tests, LLC t-stat refers to t-statistic in Levin, Lin & Chu method, and IPS W-stat indicates Wald statistic based on Im, Pesaran and Shin method. LLC method assumes common unit root process, while IPS method assumes individual unit root process. d.f. means degree of freedom.

Source: Authors' calculations

The second step is to choose between pooled or panel specification. This selection is made by F-test. The null hypothesis assumes common effects in the form of pooled regression. In other words, intercepts of cross-sections and periods are assumed to be identical. If this hypothesis is rejected, then the decision is made in favor of its alternative. i.e., panel regression. For both cases, the F-tests confirm the panel specifications.

Table 3: Test for pool or panel specification

Subsample	Effects Test	Statistic	d.f.	Prob.
1	Cross-section F	518.922	(10,151)	0.000
	Cross-section Chi-square	588.347	10	0.000
2	Cross-section F	302.226	(19,274)	0.000
	Cross-section Chi-square	914.373	19	0.000

Source: Authors' calculations

The third step is to decide for using fixed effects (FE) or random effects (RE). This decision is made according to Hausman test, which assumes RE specification in estimating panel data model. Table 4 indicates the acceptance of alternative hypothesis. i.e. fixed effects.

Table 4: Hausman test for choosing Fixed or Random Effects

Subsample	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
1	13.531	3	0.0036
2	25.488	2	0.0000

Note: This test assumes Cross-section random effects.

Source: Authors' calculations

The final step is to estimate model (5) in fixed effects' format. Table 5 reports the estimation output. According to the results for subsample 1, the logarithms of labor force, ICT penetration ratio, and expenditure on machinery and transport equipment explain the changes in logarithm of TSC value added. All variables are statistically significant at 1% or 5% level of significance. In addition, adjusted R-squared ($\bar{R}^2$) and F-statistic are noticeably high. As a result, regression results are plausible.

For subsample 2, this table represents the similar results with slightly lower $\bar{R}^2$ and F-statistic than those of subsample 1. This is not

surprising since regression model in subsample 2 accounts for only two variables.

Table 5: Estimation Results

Variables	Subsample 1	Subsample 2
<i>Intercept</i>	14.633 (13.333)*	14.993 (20.456)*
<i>Ln(Labor)</i>	0.584 (6.397)*	0.563 (9.529)*
<i>Ln(ICT)</i>	0.201 (8.109)*	0.194 (11.640)*
<i>Ln(EQP)</i>	0.089 (2.409)**	-
$\bar{R}^2$	0.987	0.982
<i>F stat.</i>	921.717	726.445

Note: figures in parentheses indicate t statistics. * and ** denote statistical significance at 1% and 5% level of significance, respectively.

Magnitudes of coefficients in both regressions seem reasonable. The coefficients of *Ln(labor)* show that one percent increase in labor force, in terms of number of workers, results in about 0.5 percent increase in *TSC* value added on average. Similarly, one percent increase in *Ln(ICT)* boosts the *TSC* value added by nearly 0.2 percent, other thing being equal. The comparison of elasticities of *TSC* value-added with respect to labor force and ICT reveals the higher responsiveness of value-added to changes in labor force than ICT. This finding is compatible with results of Dewan and Kraemer (2000) and Pohjola (2001). In explaining the less effectiveness of ICT in developing countries, these studies refer to lack of complementary infrastructures for supporting ICT uses. In any way, increasing investment in *ICT* infrastructure may increase value-added of *TSC* sector. For subsample 1, sum of all elasticities denote decreasing returns to scale in supply of transportation and related services. This finding may be misleading. But, we should bear in mind that investments in different sectors across developing countries are of low efficiency due to managerial problems and financial barriers.

The coefficient of *Ln(EQP)* indicates inelastic supply of *TSC* services with respect to changes in share of machinery and transport equipment in *TSC* sector within subsample 1. In other words, if relative importance of such equipment increases by one percent, then the *TSC* value added will increase by nearly 0.1 percent. In subsample 1, the effectiveness of ICT on *TSC* value-added is greater than that of transport equipment, which reaffirms the conclusions made by Moshiri and Jahangard (2004),

who divided industries into 3 categories: ICT-producing firms, high ICT-intensive firms and low ICT-intensive firms. TSC sector belongs to high ICT-intensive category.

5. Conclusion

This study used ICT penetration ratio as a key ICT composite indicator to explain the TSC value-added. The estimation of panel data model in fixed effects framework indicates the positive effects of ICT use on TSC value-added for two groups as rival countries in Iran Vision 2020. Since ICT encourages TSC services, so the increase in ICT investment is a necessity for Iran, and its rivals. The final effect will be trade promotion within Middle East region through increasing TSC supply.

According to the findings, policy recommendations are presented as follows:

- Because of positive impact of ICT on TSC sector, investing in ICT may increase the supply of TSC services.
- Since TSC services are provided with employing skilled labor force, thus labor force should be trained in order to use ICT effectively.
- Investing in road and ICT infrastructure should be encouraged in both public and private sectors.
- In order to mitigate external effects of transportation, ICT-intensive activities such as E-training, E-tickets, E-customs, and webinars should be supplied as substitutes for face-to-face TSC services.

References

- Al-Khateeb, F. B., Darrat, A. F. and Elkhail, K. (2007), "The UAE Growth Surge: Have Information Technology and Human Capital Contributed?," *Studies in Economics and Finance*, 24(4), 297-306
- Banister, D. and Stead, D. (2004), "Impact of Information and Communications Technology on Transport," *Transport Reviews*, 24(5), 611-632.
- Belorgey, N., Lecat, R. and Maury, T. P. (2006), "Determinants of Productivity Per Employee: An Empirical Estimation Using Panel Data," *Economics Letters*, 91(2), 153-157.
- Black, W. R. and van Geenhuizen, M. (2006), "ICT Innovation and Sustainability of the Transport Sector," *European Journal of Transport and Infrastructure Research*, 6(1), 39-60.
- Boopen, S. (2006), "Transport Infrastructure and Economic Growth: Evidence from Africa Using Dynamic Panel Estimates," *The Empirical Economics Letters*, 5, 141-164.
- Daeikarimzadeh, S., Emadzadeh, M. and Kamkar, H. (2009), "Public Investment in the Transportation Sector and Economic Growth in Iran (1970-2008)," *Quarterly Journal of Economic Modeling*, 3(10), Page 63-82.
- Dewan, S. and Kraemer, K. L. (2000), "Information Technology and Productivity: Evidence from Country-Level Data," *Management Science*, 46(4), 548-562.
- Dimelis, S. P. and Papaioannou, S. K. (2010), "FDI and ICT Effects on Productivity Growth: A Comparative Analysis of Developing and Developed Countries," *The European Journal of Development Research*, 22(1), 79-96.
- European Commission (2010). Intelligent Transport Systems: EU-funded Research for Efficient, Clean and Safe Road Transport. Publications Office of the European Union, Luxembourg.

Forester, T. (1987), *“High-Tech Society: The Story of the Information Technology Revolution,”* MIT Press.

Giannopoulos, G. A. (2004), “The Application of Information and Communication Technologies in Transport,” *European Journal of Operational Research*, 152(2), 302-320.

Jalava, J. and Pohjola, M. (2002), “Economic Growth in the New Economy: Evidence from Advanced Economies,” *Information Economics and Policy*, 14(2), 189-210.

Jorgenson, D. W. (2001), “Information Technology in the US Economy,” *American Economic Review*, 91,1-32.

Komijani, A. and Mahmoodzadeh, M. (2009), “The Infrastructure, Usage and Spillover Impacts of Information and Communication Technology (ICT) on Economic Growth (EG) in Developing Countries,” *Iranian Journal of Trade Studies*, 13(49), 31-74.

Mahmoodzadeh, M. and Fathabadi, M. (2011), “The Impact of Information and Communication Technology (ICT) on the Value Added at the Road Transport Sector in Provinces of Iran: A Case Study in the Passenger Transport Subsector,” *The Journal of Economic Policy*, 3(5), 195-216.

Mankiw, G., Romer, D. and Weil, D. (1992), “A Contribution to the Empirics of Economics,” *Quarterly Journal of Economics*, 107, 407-437.

Moshiri, S. and Jahangard, E. (2004), “Information and Communication Technology and Iranian Economic Growth,” *Iranian Journal of Economic Research*, 6(19), 55-78.

Pohjola, M. (2001), “Information Technology and Economic Growth: A Cross-Country Analysis,” *Journal of Transforming Economies and Societies*, 8(2), 20-33.

Pohjola, M. (2002), “The New Economy: Facts, Impacts and Policies,” *Information Economics and Policy*, 14(2), 133-144.

Quah, D. (2001), "ICT Clusters in Development: Theory and Evidence," *EIB papers*, 6(1), 85-100.

Solow, R. (1956), "A Contribution to the Theory of Economic Growth," *The Quarterly Journal of Economics*, 70, 56-94.

Wang, Y., Sanchez Rodrigues, V. and Evans, L. (2015), "The Use of ICT in Road Freight Transport for CO2 Reduction – an Exploratory Study of UK's Grocery Retail Industry," *The International Journal of Logistics Management*, 26(1), 2–29.

Yoshimoto, R. and Nemoto, T. (2005), "The Impact of Information and Communication Technology on Road Freight Transportation," *IATSS Research*, 29(1), 16-21.

Websites:

www.geostat.ge

www.ilo.org

www.itu.int

www.sesric.org

www.worldbank.org

Competition in the Banking Sector of Pakistan: Evidence from Unscaled and Scaled Revenue Equations¹

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The objective of this paper is to empirically analyze the competition in the banking sector of Pakistan spanning the period 1995-2014. Two decades ago, banking sector reforms were initiated and implemented in Pakistan to spur competition in the banking sector. To examine competition, augmented Panzar and Rosse unscaled and scaled revenue equations is estimated by controlling risk and size of banks using balanced panel data of 22 commercial. Results are robust and reveal that the commercial banks in Pakistan generate revenues in the environment of monopolistic competition and this reflects the positive impact of banking sector reforms in creation of competition among banks.

Key words: Banking sector reforms; Market structure; Monopolistic Competition; Panzar and Rosse test; Panel data

Jel Classification: G20, G21, C23, L10

1. Introduction

Competition is at the heart of the banking industry because any type of non- competitive behavior has persistent adverse impact on productive efficiency, consumer social welfare and economic growth. Indeed, competition in the banking sector matters for the household and business sector to access the financial goods and services. At micro level, household and firms make transaction with banks for deposits, loans and other services while at the macro level banks mobilize savings from savors to investors and playing a vital role in the transmission mechanism of monetary policy and payment system (Goddard and Wilson, 2009).

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Like other industrial and developing countries, since 1989 the banking sector of Pakistan has also undergone privatization and restructuring process to create more sophisticated banking system. The prime purpose of the financial restructuring⁴ was to stimulate the competition in the banking sector by privatizing state-owned banks and mitigating the barriers for the entry of private and foreign banks, easing branch policy and interest rate liberalization. These have significant impact on efficiency, productivity of banks and also on economic growth. Indeed, more competitive, stable, and well capitalized banking sector would channel savings to the more productive projects to facilitate growth process. A number of studies have established a strong link between competition and economic growth (Levine et al., 2000; Bikker et al., 2012). The instrumental role of banks in the economy makes the competition in the banking sector an important issue. Therefore the objective of this paper is to examine the degree of competition in the banking sector of Pakistan. Many previous studies have investigated the competition in the banking sector and its specific structure such as perfect competition, monopoly, monopolistic competition and oligopoly (Apergis et al., 2016; Barros and Mendis, 2016; Bikker et al., 2012; Matthews et al., 2007; Al-Muharrami et al., 2006; Staikouras et al., 2006; Bochs and Mathisen, 2005; Gelos and Roldos et al., 2004; Coccoresse et al., 2004; Neath and Neave, 1989), but in Pakistan little attention has been paid on this area. Majority of the studies find that banking sector is monopolistically competitive in developing and developed countries. This implies that banks compete with each other by offering differentiated products to customers and hence banks are price taker due to large number of banks or producers in the market. Therefore none of the bank is able to set its own price due to its limited control over final price (Apergis et al., 2016). Practically knowledge of monopolistic competition is very important for policy makers and managers. Low entry barrier may affect the managerial decisions towards strategic alliance and merger and acquisition of banks. Similarly monopolistic competition forces the managers to diversify their products and assets to expend their sources of revenues.

Theory suggests that the competition in the banking sector prevails if markup of price is greater than marginal cost (Lerner, 1934). It is very

⁴ Levine (1997) mentions that financial development is the true predictor of future rate of growth and development, capital accumulation and technological innovations.

hard to apply this theory in banking sector where it is difficult to get information on cost and price of banking products. Therefore, structural and non-structural methods are used to assess the competition in the banking market (Bakker and Haaf, 2000). Structural methods consist of structural conduct performance (SCP) hypothesis and efficient structure hypothesis (ESH)⁵. These methods imply that more concentrated banking sector is more collusive. Herfindahl Hirschman index is used to measure competition in the market and it is a very poor measure of competition (Bikker et al, 2012).

Two non-structural models of competitive behavior are used within New Empirical Industrial Organization framework (Bresnahan, 1982; Panzar and Rosse, 1987). But here we focus on Panzar and Rosse (1987) model which is widely used for the empirical analysis of market competition in the banking industry. Panzar and Rosse construct competitive indicator known as 'H' statistic which provides quantitative assessment about the nature of competitive prevails in banking sector and it is calculated by summing up the coefficients of factor input prices in total revenue equation. If $H < 0$ then this represents that banks are earning revenues in monopoly environment. This happens because monopolist faces negatively sloped demand curve which has price elasticity greater than unity. If $0 < H < 1$, banks are working in monopolistically competitive environment. Banks attain the equilibrium at Chamberlin (1933) tangency solution that Individual bank maximizes the profit, where $MR = MC$ and $P = AR = AC$, as in the case of monopoly. Entry and exit of the banks take place until the banking industry achieve zero economic profit and price is equal to average cost (AC) of each bank. If $H = 1$, , then

⁵ Mason (1939) and Bain (1951) introduce the SCP paradigm to measure the competition in the banking industry by establishing link from industry performance to individual firm or bank performance and from bank performance to industry performance. They argue that if the industry is highly concentrated, more monopolistic profit is earned by charging higher prices for products subject to that banks in the industry ignore the potential competitors due to entry barriers of the firm in the industry. Therefore positive relationship exists between market concentration and profitability of the banks. SCP is criticized by Demsetz (1973) and Petzman (1977) and they presented efficient structure hypothesis (ESH). Banks with large market share are more efficient in making profit and profit is directly related to the efficiency whereas an inverse relation exists between bank concentration and prices. ESH suggests that performance of the big banks determine the structure of the banking industry and also emphasizes that higher efficiency leads to market concentration and profitability of the banks.

market would have perfect competition based on certain assumptions, such as there is large number of buyers and sellers, products are homogeneous, demand curve is horizontal, consumers have full information about market. However, Shaffer (1982) proposes that $H < 0$ for conjectural variation, oligopolistic market or for short run and $H = 1$ for natural monopoly; and $H = 0$ if firms maximize sales subject to breakeven investment. This methodology allows us to use bank level data and also consider the explicit productivity differences existing among banks. However it does not consider the explicit difference exist among banks such as large bank verses small banks; foreign bank verses domestic banks etc.

Bikker et al. (2006) criticize P-R revenue equation on the ground that it is misspecified because dependent variable in the form of ratio of total income to total assets along with natural logarithm of total assets as a scale covariate transforms the revenue equation into price equation. Most of the studies have been conducted to study the structure of the banking sector used misspecified revenue equation (Yildirim and Philippatos, 2003; Murjan and Rouza(2002), Buchs and Mathisen,2005; Matthews et al., 2007; Yildirim and Philippatos, 2007; Anzoategui et al., 2007; Majid et al.,2008; Rezitis, 2010). Some studies use total revenue as dependent variable and total assets as regressor to assess competition. Therefore there exists controversy between original Panzar and Rosse model and empirically estimated Panzar and Rosse equation. Many studies highlight that both price equation and revenue equation give different estimates of H-statistics (Goddard and Wilson, 2009). Therefore in this paper, we estimate scaled and unscaled revenue equations by controlling risk and size of the banks. In this respect this paper is different from the study of Khan (2009) on the measurement of competition in the banking sector of Pakistan.

This paper contributes in the literature by two ways using more reliable data set covering the period of deregulation; this paper also check the robustness of results of scaled and unscaled revenue equation controlling risk and size of banks using alternative econometric technique. We use the panel data of 22 commercial banks of Pakistan over the period 1995-2014. Static panel data techniques and system generalized method of Moment (SGMM) are used to estimate the revenue and profit functions. The remainder of paper is organized as. Section two presents methodology and data for the estimation of revenue equation. Section

three discusses the empirical results of revenue and profit function using random effect model and SGMM. Section fourth concludes the finding of the paper and also provides the limitation of the study.

2. Methodology and Data

A number of studies are available on the estimation of competition in the banking sector (Bikker and Spierdijk, 2010; Andries and Capraru, 2016). Mostly three measures are used to measure competition; first Herfindahl Hirschman index; seconds, regularity indicator measure to test the degree of contestability; third, regression analysis is used to measure competition in the form of H-statistic. In this paper, to measure the competition in the banking sector over the period 1995-2014, we estimate H-statistics developed by Panzar and Rosse (1987). Following revenue equation is estimated by using bank level data to measure competition in the industry.

$$\ln R_{it} = \alpha_i + \sum_{j=1}^n \alpha_j \ln P_{j,i,t} + \gamma_i \ln Y_{it} + u_{it} \quad (1)$$

Where R_{it} is the total income or total revenue of the bank; P_{it} is the vector of price of factor input j used to produce vector of quantity of output Y_{it} ; and u_{it} is idiosyncratic term which is normally distributed i.e. $u_{it} \sim N(0, \delta^2)$. Panzar and Rosse 'H' statistic is calculated by summing up the coefficients of factor input prices as⁶

$$H = \sum_{j=1}^n \alpha_j \quad (2)$$

In previous studies, interest income as a revenue is to capture the intermediation activities of banks. However, large firms earn more revenues in a way that input prices do not influence it. Some other studies use log of total assets and log of credit as control variable (Shaffar, 1982; Molyneux, Thornton and William, 1996; Coccoresse, 2004; Staikouras et al. 2006; Barros and Mendes, 2016).

⁶ Detailed derivation of Panzar and Rosse Revenue equation is given in Appendix. Also see Panzar and Rosse (1987) article for further informations

$$\ln R_{it} = \alpha_i + \sum_{j=1}^n \alpha_j \ln P_{j,i,t} + \beta_i \ln \text{Assets}_{it} + \gamma_i \text{Credit}_{it} + u_{it} \quad (3)$$

Similarly in banking literature, many studies use log of ratio of total revenues and total assets as dependent variable. This ratio (TR/TA) constitutes the price of output. Therefore log-log price equation is estimated. Previous studies have investigated the relationship between price, input price and other control variables (De Bandt and Davis, 2000; Barros and Mendes, 2016).

$$\ln \left(\frac{TR_{it}}{TA_{it}} \right) = \alpha_i + \sum_{j=1}^n \alpha_j \ln P_{j,i,t} + \gamma_i \ln Y_{it} + u_{it} \quad (4)$$

Moreover to control firm size, log of total assets is used as controlled variable in equation (4)

$$\ln \left(\frac{TR_{it}}{TA_{it}} \right) = \alpha_i + \sum_{j=1}^n \alpha_j \ln P_{j,i,t} + \beta_i \ln Y_{it} + \gamma \ln (TA_{it}) + u_{it} \quad (5)$$

This type of equation has been used in previous studies (Molyneux, Lloyd-Williams, and Thornton, 1994; Bikker and Groeneveld, 2000; Bikker and Haaf, 2002; Claessens and Laeven, 2004; Yildirim and Philippatos, 2007; and Schaeck, Cihak, and Wolfe, 2009, Bikker, Shaffer and Spierdijk, 2012; Barros and Mendes, 2016).

2.1 Long run Equilibrium

For accurate estimation of H-statistics, it is necessary to assume that market should be in long run equilibrium. This implies that no relation exists between factor input prices and profit in the long run. In other words, banks should equalize the risk adjusted returns in long run. Following profit function equation is estimated by using standard panel data techniques.

$$\ln(1 + \pi_{it}) = \alpha_i + \sum_{j=1}^n \beta_j \ln P_{j,i,t} + \gamma_i \ln Y_{it} + \theta_i X_{it} + u_{it} \quad (6)$$

Where π is the profit before tax of the commercial banks. Rest of the input and output variables are same as given in unscaled and scaled revenue equations. Shaffer's E-statistic for market equilibrium is calculated as

$$E = \sum_{j=1}^n \beta_j = 0 \quad (7)$$

Dummy variable least square (DVLS) method is used to estimate panel fixed effect model and generalized least square method is used to estimate random effect model. Decision to choice between fixed effect and random effect model is made on the basis of Hausman test. Moreover for robustness of results, we use system Generalized Method of Moment (SGMM) of Arellano and Bover (1995) and Blundell and Bond (1998). Reason to use this technique is the presence of endogeneity problem in input and output variables appearing on the right hand side of above mentioned equations to be estimated. We use the lagged values of level variables as instruments for differenced equation and differenced variables as instruments for level equation.

We use Intermediation approach for the selection of input and output variables. Indeed, there is consensus in literature that banks use deposits as input variables to produce goods and services. Deposits incur the cost but do not generate revenues during production process until change into assets (Molyneux et al., 1996). Total banking assets are used to control size of banks (Molyneux, Thornton and William, 1996; Coccorese, 1998; Bandt and Davis, 2000; Matthews et al., 2007; Yildirim and Philippatos, 2007; Rezitis, 2010). It is very important to consider total assets of banks, since large banks earn more revenues that are unrelated to variation in factor input prices compared to other banks. It is very unrealistic and hostile approach to measure total revenue equation without controlling size of the banks. Therefore we include total assets in the scaled and unscaled revenue equations to estimate the degree of competition.

Ratio of total loan and total assets represents credit risk and it is used as banking output variables because it generates interest income for banks (Molyneux, Thornton and William, 1996; Bandt and Davis, 2000; Yildirim and Philippatos, 2002; Coccorese, 2004; Staikouras et al. 2006 etc). total revenue is the sum of interest income and non-interest income.

We use labor, physical capital and funds as a factor inputs and calculate its price (w) by taking the ratio of administrative expenditures which includes salaries and other employment benefit to the number of employees (Molyneux et al., 1996; Bandt and Davis, 2000; Shaffer, 1982; and Coccoresse, 2004). We calculate price of funds by dividing interest expenses with total number of funds, and price of physical capital by taking ratio of depreciation of fixed assets to operating fixed assets (Molyneux et al., 1996; Bandt and Davis, 2005; Coccoresse, 2004; and Buchs and Mathisen, 2005). Data on fund rates are not easily available; therefore we use interest expenses to total funds as a proxy for price of funds. We express input and output variables in natural logarithm. We collect balanced data of 22 commercial banks from banking statistics issued by SBP and annual reports of banks over the period 1995-2014. Descriptive statistic of the variables are given in table 1.

3. Results and Discussion

We estimate equation 1 using fixed effect and random effect model. Moreover Hausman test is used to test the null hypothesis that random effect model is consistent against alternative hypothesis that fixed effect model is consistent. We obtain the Hausman statistic with P-value greater the 0.05. Therefore we accept null hypothesis that random effect model is suitable for our analysis.

Table1: Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min	Max
lnRevenue	440	8.608	1.654	0.766	11.991
Lnprofit	440	6.692	1.930	0.9163	10.790
lnDeposits	440	10.423	1.870	4.913	14.237
lnassets	440	10.943	1.541	7.824	13.758
Ln(loan/assets)	440	-0.926	0.646	-5.927	6.621
Ln(wages)	440	6.338	1.885	1.845	16.093
Ln(Price of physical capital)	440	-2.591	1.437	-9.837	7.550
Ln(Price of financial capital)	440	-2.527	1.655	-6.834	6.972

Source: Author's own calculations

We also use Breusch Pagan Lagrange Multiplier (LM) test to choice between random effect model and panel least square regression. We obtain the LM statistic distributed as chi-square 140.50 (P-value 0.0000). We reject the null hypothesis that variance across commercial banks are zero. Hence we use random effect model for total revenue equation and we estimate it through Generalized Least Square Method (GLS). The results are presented in table 2.

3.1 Unscaled Revenue Equation Results

Column 2, 3 and 4 of table 2 indicates that coefficient of price of financial capital has positive and significant impact on total revenues of the commercial banks while coefficient of price of physical negatively and significantly impact total revenues.

Coefficient of wage is negative but insignificant. It is very interesting finding that the magnitude of coefficient of price of financial capital is higher than the coefficient of price of physical capital and wages for both equations (2) and (4). This does clearly indicates that excess physical capital has negative impact on revenues. These results are consistent with previous studies (Molyneux et al., 1996; Delis, 2010; Barros and Mendes, 2016). Coefficient of total assets ($\ln(\text{assets})$) has positive and significant effect on unscaled revenue in all three specifications. However the coefficient of total loans to total assets ($\ln(\text{loans/assets})$) has positive impact on revenues of banks but it turns significant in 1 out of three models. The H-statistics is calculated and it is less than one in all specification. Therefore it reveals that monopolistic competition prevails in the banking sector of Pakistan. We observe that there is not existing variation in H-statistic reported in column 3. In column three, we use natural log of interest income in place of natural log of total revenues of the banks. Results reported in column 3 are not different from previous results. Column (5) of table 2 indicates the results of equation (5) using log of profit before tax as dependent variable. The results reveal that coefficients of factor input prices are insignificant and hence profit of the commercial banks is independent of factor input prices. Therefore this implies that in long run factor input prices are not correlated with the profit of the banks. These findings convince that the banking sector is in long run equilibrium in Pakistan.

Table 2: Results of Panzar and Rosse Unscaled Revenue Equation

Variables	Unscaled Revenue			
	LnTR	LnTR	Ln(interest Income)	LnProfit
Trend	0.126*	0.015*	0.004	0.159**
	(0.000)	(0.000)	(0.415)	(0.029)
Ln(assets)		0.843*	0.822*	0.889*
		(0.000)	(0.000)	(0.000)
Ln(loan/assets)	0.010	0.041	0.048***	0.077
	(0.851)	(0.185)	(0.090)	(0.308)
Ln(wages)	-0.003	-0.032**	-0.050*	0.022
	(0.900)	(0.050)	(0.003)	(0.484)
Ln(Price of financial capital)	0.176*	0.244*	0.230*	0.027
	(0.000)	(0.000)	(0.000)	(0.536)
Ln(Price of physical capital)	-0.074*	-0.052*	-0.083**	-0.046**
	(0.002)	(0.001)	(0.000)	(0.018)
Constant	7.590*	-2.054*	-2.344*	-4.796*
	(0.000)	(0.000)	(0.000)	(0.000)
R-square	0.620	86.5	89.431	0.676
H-statistic	0.099	0.160	0.097	
H=0	11.62*	9.597*	26.374*	0.034
	(0.001)	(0.002)	(0.000)	(0.853)
H=1	950.53*	24.248*	21.778*	
	(0.000)	(0.000)	(0.000)	

P-values are given in parenthesis. LnTR is the total revenues of the banks. *, ** and *** indicate the level of significance at 1%, 5% and 10% respectively. Source: Author's own calculations

Wald test is used to test the hypothesis that sum of elasticities ($H = \sum_{j=1}^n \alpha_j = 0$) are equal to zero against alternative not equal to zero. We accept the alternative hypothesis that sum of elasticities is not equal to zero. Similarly for long run equilibrium, we test the null hypothesis that sum of coefficient of factor inputs is equal to zero ($E=0$), against alternative not equal to zero. Chi-square statistic of Wald test is 0.034 with P-value 0.853. Therefore we accept null hypothesis that the banking sector is in long run equilibrium. Empirical results reveal that the banking sector of Pakistan is monopolistic competitive which is align with previous literature (Claessens and Laeven, 2004; Coccoresse, 2004; Barros and Mendes, 2016 among many others).

3.2 Scaled Revenue Equation Results

We estimated equation (4) and (5) to check the robustness of results that have obtained in unscaled revenue equations and results are reported in columns 2 and 3 of table 3. The results are similar with scaled revenue equation. The coefficients of physical capital and financial capital have significant impact on $\ln(\text{TR}/\text{TA})$. Again the magnitude of coefficient of price of financial capital is higher than the physical capital. Column 4 shows that the coefficient of $\ln(\text{loan}/\text{assets})$, a measure of risk, has positive and significant effect on scaled revenues.

Table 3: Results of Panzar and Rosse scaled Revenue Equation

Variables	Scaled Revenue	
	$\ln(\text{TR}/\text{TA})$	$\ln(\text{TR}/\text{TA})$
Trend	0.006	-0.002
	(0.254)	(0.254)
$\ln(\text{assets})$		0.127
		(0.000)
$\ln(\text{loan}/\text{assets})$	0.052***	0.057
	(0.093)	(0.078)
$\ln(\text{wages})$	-0.02	-0.013
	(0.326)	(0.326)
$\ln(\text{Price of financial capital})$	0.127*	0.138*
	(0.000)	(0.000)
$\ln(\text{Price of physical capital})$	-0.030**	-0.033**
	(0.050)	(0.029)
Constant	-2.385*	-1.864*
	(0.000)	(0.000)
R-square	0.870	0.870
H-statistic	0.077	0.092
H=0	19.270*	23.426*
	(0.000)	(0.000)
H=1	28.173*	28.173*
	(0.000)	(0.000)

P-values are given in parenthesis. *, ** and *** indicate the level of significance at 1%, 5% and 10% respectively. Source: Author's own calculations

Similarly column 5 indicates that the coefficient of $\ln(\text{assets})$ and the $\ln(\text{loans}/\text{assets})$, a measure of risk have positive and significant impact on scaled revenue. H-statistic is constructed and it is less than 1 which confirms the findings of previous results that the monopolistic

competition prevails in the banking sector of Pakistan. It is worth noting that the insignificant coefficient of $\ln wages$ does not affect the H-statistics in both scaled and unscaled revenue equations. Wald test results indicate that null hypothesis cannot be accepted which indicates that the banking sector in Pakistan is not characterized by oligopoly or any other non-competitive behavior.

Robustness techniques

To check the robustness of results, we also estimate the unscaled and scaled revenue equations by using SGMM due to endogeneity problem in financial variables and results are presented in table 4 and 5.

Table 4: SGMM Results of Panzar and Rosse Un-scaled Revenue Equation

Variables	Un-scaled Revenue			
	LnTR	LnTR	Ln(interest Income)	LnProfit
Lagged Dependent Variable	0.739*	0.257*	0.328*	0.365*
	(0.000)	(0.000)	(0.000)	(0.000)
Trend	0.579*	0.005	0.008	0.132*
	(0.005)	(0.817)	(0.343)	(0.006)
Ln(assets)		0.804*	0.556*	0.605*
		(0.000)	(0.000)	(0.000)
Ln(loan/assets)	0.204**		0.039	0.251**
	(0.027)		(0.147)	(0.021)
Ln(wages)	- 0.165***	0.016	-0.007	-0.248*
	(0.063)	(0.728)	(0.185)	(0.010)
Ln(Price of financial capital)	-0.071	0.111*	0.112*	-0.021
	(0.433)	(0.000)	(0.000)	(0.591)
Ln(Price of physical capital)	0.643*	-0.08**	-0.061***	0.277**
	(0.000)	(0.040)	(0.100)	(0.031)
Constant	10.748*	3.154*	1.898*	1.371
	(0.000)	(0.000)	(0.000)	(0.194)
R-square	0.620	0.915	0.912	0.770
H-statistic	0.407	0.047	0.044	
H=0	7.632*	3.980**	3.243***	3.981
	(0.006)	(0.047)	(0.072)	(0.046)
H=1	156.956*	160.91*	155.001*	
	(0.000)	(0.000)	(0.000)	

P-values are given in parenthesis. *, ** and *** indicate the level of significance at 1%, 5% and 10% respectively. Source: Author's own calculations

Perhaps, we have obtained the same results as by using static panel data technique. Most of the variables are significant with correct signs. Results from system GMM also ensure that the banking sector in Pakistan is monopolistically competitive. Table 4 and 5 show that values of H-statistic with alternative output variables are less than one but greater than zero. Magnitude of H-statistics from unscaled revenue equations estimated with SGMM is much closed to the random effect model result estimated with GLS. However magnitude of H-statistics from scaled revenue equation estimated with SGMM is greater than random effect model reported in table 3. Similarly, profit function estimation also reveals that the banking sector in Pakistan is in long run equilibrium.

Table 5: SGMM Results of Panzar and Rosse scaled Revenue Equation

Variables	Scaled Revenue	
	ln(TR/TA)	ln(TR/TA)
ln(TR/TA) _{t-1}	0.182**	0.156***
	(0.049)	(0.107)
Trend	-0.099*	-0.155
	(0.000)	(0.122)
Ln(assets)		0.235*
		(0.000)
Ln(loan/assets)	-0.074*	-0.132
	(0.000)	(0.138)
Ln(wages)	0.234*	0.274*
	(0.000)	(0.000)
Ln(Price of financial capital)	0.106*	0.147*
	(0.000)	(0.000)
Ln(Price of physical capital)	-0.0213*	-0.265*
	(0.000)	(0.000)
Constant	2.935*	-5.456*
	(0.000)	(0.000)
R-square	0.700	0.538
H-statistic	0.3187	0.156
H=0	13.932*	15.104*
	(0.000)	(0.000)
H=1	65.189*	44.53*
	(0.000)	(0.000)

P-values are given in parenthesis. *, ** and *** indicate the level of significance at 1%, 5% and 10% respectively. Source: Author's own calculations

Estimation of scaled and unscaled revenue equations with SGMM also confirmed that the banking sector in Pakistan is monopolistically competitive which is aligned with findings in previous section with GLS technique.

4. Conclusion

In this paper, we investigated the competition in the banking sector of Pakistan using scaled and unscaled revenue equations based on size and risk of banks. We used balanced panel data of 22 commercial banks over the period 1995-2014 by employing fixed effect and random effect models. Random effect model is selected on the basis of Hausman statistics. Random effect model is estimated by using generalized least square (GLS) method. For robustness check, we also employed SGMM due to endogeneity problem in the revenue equations.

Our results from scaled and unscaled revenue equations reveal that monopolistic competition is prevailing in the banking sector of Pakistan. These results are robust and consistent with the findings of previous studies. Empirical results do not show any significant difference in the magnitude of coefficients of input and output variables between scaled and unscaled revenue equations.

Monopolistic competition in the banking sector of Pakistan demonstrates that privatization and restructuring of banks have fostered competition in the banking industry. We can say that if further private banks will enter in the banking industry, it will create competition among banks that result in optimal allocation of resources.

4.1 Limitation and Scope of the Study

The banking sector in Pakistan has introduced many innovative product and services such as auto loans, credit cards as well as Islamic product but we have considered only few output due to lack of data. However for future research, broad category of products can be included to study competition in the banking sector.

Future research could extend this paper by examining the competition in the banking sector by disaggregating banks into private, public and foreign banks to see whether the privatization and deregulation policy have provided level playing field to these banks. Secondly, this paper

can be extended by assessing the impact of competition on the supply and demand of banking products such as saving accounts, debit cards, mortgage etc.

References

- Apergis, N., Fafaliou, I. and Polemis, M.L. (2016) New evidence on assessing the level of competition in the European banking sector: A panel data Approach, *International Business Review*, Vol. 25, pp. 395-407.
- Aktan, Bora and Masood, Omar (2010) The State of Competition of the Turkish Banking Industry: An Application of the Panzar-Rosse Model, *Journal of Business Economics and Management*, Vol. 11, pp. 131-145.
- Al-Muharrami, S., and Matthews, K. and Khabari, Y. (2006) Market Structure and Competitive Conditions in the Arab GCC Banking System, *Journal of Banking and Finance*, Vol. 30, pp. 3487-3501.
- Anzoategui, D., Peria, M. S. M., and Melecky, M. (2010) Banking Sector Competition in Russia, *Policy Research Working Paper*, No. 5449.
- Arellano, M. and Bover, O. (1995), Another Look at the Instrumental Variable Estimation of Error-Components Models, *Journal of Econometrics* Vol. 68, pp. 29-51.
- Bailey, Elizabeth E. (1981) Contestability and Design of Regulatory and Antitrust Policy, *The American Economic Review*, Vol. 71, No. 2, pp. 178-183.
- Bandt, O. D., and Davis, E. P. (2000) Competition, Contestability and Market Structure in European Banking Sectors on the eve of EMU, *Journal of Banking and Finance*, Vol. 24, pp. 1045-1066.
- Barros, Carlos P. and Mendes, Z. (2016) Assessing the competition in Angola's banking industry, *Applied economics*, Vol. 48, pp. 2785-2791.
- Baumol, William J., Panzor, J.C. and Willig, R. D. (1983) Contestable Market: An uprising in the theory of Industry Structure: Reply, *The American Economic Review*, Vol. 73, No. 3, pp. 491-496.

Bikker A. Jacob, and Haaf, K. (2002) Competition (2002) Concentration and their Relationship: An Empirical Analysis of the Banking Industry, *Journal of Banking and Finance*, Vol. 26, pp. 2191-2214.

Bikker A. Jacob, Shaffer, S., and Spierdijk, L. (2012) Assessing the competition with the Panzar- Rosee model: The role of scale, cost, and equilibrium, *Review of Economics and Statistics*, Vol. 94, pp. 1025-1044.

Buchs, T., and Mathisen, J. (2005) Competition and Efficiency in Banking: Behavioral Evidence from Ghana, *IMF Working Paper*, WP/05/17.

Blundell, R. and Bond, S. (1998), Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, Vol. 87(1), pp. 115-143.

Casu, Barbara, and Girardone, C. (2006), Bank Competition, Concentration and Efficiency in the Single European Market, *The Manchester School*, Vol. 74, No. 2, pp. 441-468

Casu, B., and Girardone, C. (2009) Competition Issues in European Banking, *Journal of Financial Regulation and Compliance*, Vol. 17, No. 2, pp. 1358-1988.

Claessens, S., and Laeven, L. (2003) What Drives Bank Competition? Some International Evidence, *Journal of Money, Credit and Banking*, Vol. 36, No. 3, pp. 563-583.

Coccorese, Paolo (2004) Banking Competition and Macroeconomic Conditions: A Disaggregate Analysis, *Journal International Financial Markets, Institutions and Money*, Vol. 14, pp. 203-219.

Delis, D. Manthos (2010) Competitive Conditions in Central and Eastern European Banking System, *The International Journal of Management Sciences*, Vol. 38(2010), pp. 268-274.

Gelos, R. G., and Roldos, J. (2004) Consolidation and Market Structure in Emerging Market Banking Systems, *Emerging Market Review*, Vol. 5, pp. 39-59.

Goddard, J., and Wilson, J.O.S., (2009). Competition in Banking: A Disequilibrium Approach., *Journal of Banking and Finance*, Vol. 33 (12), pp. 2282-2292.

Mamatzakis, E., Staikouras, C. and Koutsomanoli-Fillipaki, N. (2005), Competition and Concentration in the Banking Sector of the South Eastern European Region, *Emerging Market Review*, Vol. 6, pp. 192-209.

Matthews, K., Murinde, V. and Zhao, T. (2007) Competitive Conditions among the Major British Banks, *Journal of Banking and Finance*, Vol. 31, pp. 20252-2042.

Molyneux, Philip, Lloyd-Wilams, D. Michael and Thorton, J. (1994), Competitive Conditions in European Banking, *Journal of Banking and Finance*, Vol. 18, pp. 445-459.

Molyneux, Philip, D., Thorton, J. and Lloyd-Wilams, M. (1996) Competition and Contestability in Japanese Commercial Banks, *Journal of Banking and Finance*, Vol. 48, pp. 33-45

Murjan, Waleed and Ruza, C. (2002) The Competitive Nature of the Arab Middle Eastern Banking Market, *The American Economic Review*, Vol. 8, No. 4, pp. 267-274.

Panzor, J. C., and Rosse, J.N. (1987) Testing for Monopoly Equilibrium, *Journal of Industrial Economics*, Vol. 34, No. 4, pp. 443-456.

Prasad, A., and Ghosh, S. (2005) Competition in Indian Banking, *IMF Working Paper*, WP/05/141.

Rezitis, Anthony N. (2010), Evaluating State of Competition of the Greek Banking Industry, *Journal International Financial Markets, Institutions and Money*, Vol. 20, pp. 68-90.

Shaffer, Sherrill (1993) A Test of Competition in Canadian Banking, *Journal of Money, Credit and Banking*, Vol. 25, No. 1, pp. 49-61.

Shepherd. William G. (1984) Contestability vs. Competition, *The American Economic Review*, Vol. 74, No. 4, pp. 572-587.

Staikouras, C. K., and Koutsomanoli-Fillipaki, A. (2006) Competition and Concentration in the New European Banking Landscape, *Journal of European Financial Management*, Vol. 12, No. 3, pp. 443-482.

Uchida, Hirofumi, and Tsutsui, Y. (2005) Has Competition in the Japanese Banking Sector improved?, *Journal of Banking and Finance*, Vol. 29, pp. 419-439.

Vesala, J., and Pankki, S. (1995) Testing for Competition in Banking: Behavioral Evidence from Finland, *Bank of Finland Studies E*: 1.

Yildirim, H. S., and Philippatos, G. C. (2007) Restructuring, Consolidation and Competition in Latin American Banking Markets, *Journal of Banking and Finance*, Vol. 31, pp. 629-639.

Effect of External Debt on Economic Growth of Sudan: Empirical Analysis (1969-2015)

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This study examines the effect of external debt on economic growth of Sudan. The model built uses gross domestic product as the dependent variable to measure economic growth as a function of the ratio of external debt to exports, exchange rate and foreign direct investments as the explanatory variables using annual time series for the period 1969-2015. Empirically, the study employs the econometric techniques of the Augmented Dickey-Fuller (ADF) unit root test for stationarity, the Johansen cointegration method and the Vector Error Correction Method (VECM). The cointegration test shows that a long-run equilibrium relationship exists among the variables of the study. Findings from the VECM show that external debt proxied by the external debt to exports ratio has contributed positively to the Sudan economy, while exchange rate and foreign direct investment have negative effects on GDP growth which is consistent with findings of most empirical studies at the macroeconomic level. The study recommends that the government should ensure macroeconomic and price stability and maintaining access to foreign loans so that to supplement low the levels of domestic savings in order to enable long term economic growth. Exchange rate needs to be stabilized and perceived effect of foreign direct investments on economic growth needs be reinvestigated with enhancement of human capital and institutions.

Keywords: External Debt, Economic Growth, Gross Domestic Product, VECM, Sudan.

1. Introduction

Most of developing countries need external financial resources to support their internal and external balances and supplement low levels of domestic savings in order to promote economic growth. Sudan is not an exception and has been receiving international capital flows both in

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terms of foreign loans and aids for more than five decades and more recently increasing inflows of foreign direct investment. The major source of international capital flow to Sudan is foreign borrowing accumulating into external debt. The dual-gap analysis provides the framework which shows that the development of a nation may largely be dependent on investment financed through foreign aid and loans where domestic savings are lacking behind (Thirlwall, 1991, 2003). Hameed, Ashraf, and Chaudhary (2008) stated that external borrowing is ought to accelerate economic growth especially when domestic financial resources are inadequate. Within the orthodox macroeconomic framework in such cases foreign loans and external debt are expected to play a positive role on the growth process of the receiving economy. Soludo (2003) states that countries borrow for two broad reasons; macroeconomic reasons, either finance higher investment or higher consumption, and to circumvent hard budget constraint. This implies that an economy borrows to boost economic growth and alleviate poverty meanwhile. However, when debt reaches a certain level, it becomes to have adverse effect as debt servicing becomes a huge burden and countries find themselves on the wrong side of the debt-laffer curve, with debt crowding out investment and growth.

In special set of literature, external debt is understood to retard economic growth in the context of the debt overhang hypothesis and the crowding out of public investment resulting from debt services (Krugman, 1989). Alesina and Tabellini (1989) demonstrated that governments in Low Income Countries (LICs) with varying distributional goals and objectives often create fiscal uncertainty that generate capital flight, low investment and over-accumulation of external debts, which retard economic growth. Cohen (1993) found that the level of the debt had no important effect on investments during the debt crisis of the early 1980s although debt repayment is found to correlate negatively with investment, suggesting a crowding out effect. Also, Clements, Bhattacharya and Nguyen (2003) estimated a quadratic relation between debt and growth in some LICs finding that high levels of debt tended to crowd-out public investment.

However, one fact is that for many low income and middle income countries foreign loans are major sources of public receipts, which would reduce public deficit. If foreign loans are well utilized and managed, the accumulation of external debt should not lead to slow

economic growth. In particular payment and management of debt services play the crucial role in this interplay of external debt and economic growth. At what rate a country achieves economic growth and capital accumulation as compared with how fast it accumulates debt and debt services are the two main processes which determine the net effect of external debt on economic growth. However, foreign borrowing with poor external debt management causes a country to default and inability to meet its debt obligation caused for example by the lack of information on the nature, structure and magnitude of external debt (Were, 2001).

The roots of Sudan's external debt can be traced to 1961 and in 1969 total external debt amounted to US\$ 244 million compared with a GDP of US\$ 1,848 which makes Debt/GDP ratio 13.20%. In 1978, Sudan had to adopt a World Bank/International Monetary Fund (IMF) sponsored Structural Adjustment Programme (SAP), with a view to revamping the economy making the country better-able to service its external debt. In the same year external debt had already cumulated to US\$ 3,159 billion of which US\$ 1,895 billion were arrears with a GDP estimated at US\$ 8,074 (i.e., Debt/GDP ratio trebled to 39.13%) compared with 1969, with total exports value of 979.138 resulting in a ratio of debt/exports of goods and services of 332.84%. As a result of accumulated debt principal and services Sudan has become one of the highly indebted countries in Africa and ranks 46 in the world since the mid 2000s (World Bank 2004). Lack of government revenues coupled with massive debt arrears exerted a negative influence on government finances and it became even more necessary to borrow to correct public budget deficit and balance of payment distortions as well as financing development projects mostly agricultural projects with minor portion of financial resources allocated to industrial development (Elwasila SEM 2011). According to the External Debt Unit, Sudan external debt outstanding stood at US\$ 20,531 billion in 2000 increased to US\$ 27,005 billion, US\$ 37,845 billion in 2005 and 2010 respectively. By the end of 2015, Sudan's total external debt amounted to US\$ 45,350 billion, with a debt/GDP ratio of 53.99% and debt/exports of goods and services of 735.66%. Notably by end of 2011 (the year of South Sudan secession) Sudan's stock of external debt amounted to about US\$ 41,5 billion in nominal terms equivalent to 65 percent of GDP, of which 84 percent was in arrears. The structure of external debt had not changed since the early 2000s. In 2012 the bulk of the external debt was public and publicly guaranteed (PPG) representing US\$ 39,9 billion, with 84

percent in arrears, and almost the same structure remains as up to the end of 2015. From this total debt, Sudan owns 73 percent to bilateral creditors (roughly equally divided between Paris and non-Paris Club creditors) and 13 percent to multilateral and commercial creditors. Private external debt to suppliers amounted to US\$1.6 billion and almost the same structure of distribution of debt by creditor remains as up to the end of 2015 (IMF 2016). As of 2012, the increasing fiscal deficits and the massive drop of government revenues as result of sharp reduction in oil revenues with higher level of external debt servicing have become major threat to growth of the country, and continue to be up to date, with debt being unsustainable by all measures and indicators of sustainability, (IMF, 2014, 2016). The resultant effect of large accumulation of debt with major portion of it being arrears has been exposing the nation to high debt burden. The other major capital inflow to Sudan is foreign direct investment which in 2000 amounted to only 0.07% of GDP, increased to 3.20% in 2000, reaching 5.89% in 2005 but dropped to 3.17% in 2010 and to 2.07% in 2015.

Sudan is well endowed with diverse natural resources, but has been one of the poorest countries with numerous macroeconomic problems, such as persistent inflation, high unemployment rates, sole dependency on crude oil as a major source of revenue over the period 1999-2011, and more recently an increasing mining and role of gold. In addition, Sudan faces mounting external debt and debt service payment. As a result of these interactive economic development factors more than 45.6 percent of population fall below the poverty line far behind the target of 23 percent target by the end of 2015 MDG poverty reduction goal.

Upon this background, the objective of this paper is to undertake an empirical investigation of the impacts of external debt on economic growth of Sudan. The study provides a critical discussion of the inconclusive literature of the effects of external debt on economic growth and development against which the findings of this study are compared and placed, and recommendations provided accordingly. Another feature of this study is that it uses a relatively long time period spanning over 1969 to 2015 compared with other single country studies in the field and also the only one undertaken in the case of Sudan.

Section two provides inexhaustive review of the literature on external debt and economic growth with a discussion of its conclusiveness.

Section three describes the methodology, and section four presents the data analysis and interpretation. Section five provides the conclusion and recommendations.

2. Literature Review

Countries experiencing fiscal and current account deficits, especially the low income ones, have been historically in need to borrow to improve their economic growth. Government borrows in principle to finance public goods that increase welfare and contribute to promote economic growth. Due to the fact that domestic financial resources are not adequate in poor countries, borrowing is acquired from foreign sources. External debt is one of the main sources of financing capital formation in any country. The amount of fund provided by these foreign sources constitutes the external debt of a nation and creates about debt burden and the potential negative effects of external debt itself. External debt is defined as all external obligations of a maturity of one year or more and outstanding at a particular point in time and are payable in terms of reserves currency or goods and services.

Purposively external debt is acquired to contribute to the economy but the future debt service payment poses threats to sustainability of debt itself and to economic growth. A number of researchers have examined the effect of external debt on economic growth at least since the 1970s of the past century in both rich and poor countries. In econometric and simulation study, Iyoha (1999) investigated the impact of alternative debt stock reduction scenario packages of 5%, 10%, 20% and 50%, effective in 1986, on investment and economic growth in the subsequent years for Sub Saharan Africa countries. The study finds that mounting external debt depresses investment through both a “disincentive” effect and a “crowding out” effect and showed that 20% debt stock reduction would, on average, have increased investment by 18% and increased gross domestic product (GDP) growth by 1% during the 1987-1994 for Sub Saharan countries. Karogol (2002) investigated both the short-run and long-run relationships between economic growth and external debt service for Turkey during 1956 – 1996. The study employed a standard production function model analyzed using multivariate co-integration techniques with a vector autoregression estimates showing existence of only one cointegration equation. The study reveals that debt service is negatively related to economic growth in the long-run with

unidirectional causality between debt service and economic growth. Clements, Bhattacharya, and Nguyen (2003) examined the channels through which external debt affects growth in low income countries (LICs). Their results suggest that the substantial reduction in the stock of external debt projected for highly indebted poor countries (HIPC) would directly increase per capita income growth by about 1 percentage point per annum while reductions in external debt service could also provide an indirect boost to growth through their effects on public investment. Audu (2004) examined the impact of external debt on economic growth and public investment in Nigeria for the period 1970-2002 using co-integration test and an error correction model. The study shows that debt servicing pressure in the country has had a significant adverse effect on the growth process and past debt accumulation negatively affect public investment. Adepoju, Salau and Obayelu (2007) analyzed the effects of external debt management on economic growth of Nigeria for the period 1962 to 2006 using time series data of the various bilateral and multi lateral arrangements. Their study concluded that accumulation of external debt adversely affected Nigeria's economic growth. Also, Adesola (2009) empirically investigated the effect of external debt service payment practices on the economic growth of Nigeria. OLS method was used to examine how debt payment to multilateral financial creditors, Paris club creditors, London club creditors, Promissory Notes holders and other creditors relates to GDP and gross fixed capital formation (GFCF) using data from 1981 to 2004. The study provides mixed evidence in that debt payment to Paris club creditors and Promissory Notes holders are positively related to GDP and GFCF while debt payment to London club creditors and other creditors show a negative significant relation to GDP and GFCF. Comparatively, Ayadi and Ayadi (2008) examined the impact of the large external debt, with its servicing requirements on economic growth of the Nigerian and South African economies. They used the neoclassical growth model which incorporates external debt, debt burden indicators, and some macroeconomic variables analyzed it using both OLS and Generalized Least Square (GLS) methods. Their finding revealed negative impact of debt and its servicing requirement on the economic growth of Nigeria and South Africa. However, Ogunmuyiwa (2011) examined whether external debt promotes economic growth in Nigeria using time-series data for the period 1970-2007. The study estimated a regression equation using ADF test, Granger causality test, Johansen co-integration

test and a VECM. The results revealed that there is no causality between external debt and economic growth in Nigeria.

Hameed, Ashraf, and Chaudhary (2008) analyze dynamic the long run and short run relationships between external debt and economic growth for the case of Pakistan using annual time series data on the GDP, debt service, capital stock and labour force from 1970 to 2003. The study concludes that debt servicing burden has a negative effect on the productivity of labour and capital, thereby adversely affecting economic growth. Also, Malik, Hayat, and Hayat (2010) explored the relationship between external debt and economic growth in Pakistan for the period between 1972 – 2005 using time series econometric techniques. Their result shows that external debt is negatively and significantly related to economic growth suggesting that increase in external debt leads to decline in economic growth. Choong, Lau, Liew, and Pua (2010) examined the effect of different types of debts on the economic growth in Malaysia during the period 1970 – 2006. Using co-integration test, their findings suggest that all components of debts have a negative effect on long run economic growth. The Granger causality test reveals the existence of a short-run causality linkage between all debt measures and economic growth. Put together, the outcomes of these studies suggest that the relationship between external debt and economic growth is mostly negative but still inconclusive. This is despite of the similarities of methods employed and time series data used even in the same country context as it appears from studies' findings on Nigeria. Adding to this the mixed effects of FDI and exchange rate misalignment, make the effect of external debt on economic growth more complicated and more ambiguous. This also reveals a contradiction between theoretical predictions and empirical findings particularly with regard to theoretical contributions on the effect of FDI on economic growth which argues that the relationship is positive in that FDI inflows to poorer countries facilitate technological transfer and create positive spillover at all firms in the receiving countries translated at the macroeconomic level (Romer, 1992). In contrast, Boyd and Smith (1992) argue that FDI in the presence of preexisting trade, price, financial and other distortions will hurt resource allocation and slow economic growth. In fact, empirical studies at the macroeconomic level find that FDI alone does not boost economic growth (Maria C. and R. Levine 2005).

In Sudan, sources of external loans and debt are multilateral agencies, mainly the IMF and the World Bank, Paris and Non-Paris club creditors as well as the Islamic Development Bank, African Development Bank and Some Arab Funds. Empirical studies examining the relationship between external debt and economic growth in Sudan are rare. El Shiply M. (1986) showed that foreign capital, namely foreign aid has a positive impact on economic development of Sudan over the period 1961-1975. Abdelmawla and Mohammed (2005) show that debt services burden have negatively impacted Sudan economic development and worsened the social problems. They investigated the impact of external debt on economic growth of Sudan for the period 1978 – 2001 and showed that export earnings have a significant positive impact while external debt and inflation had negative impact on Sudan's economic growth. Elwasila SEM (2011) shows that external debts of Sudan by all known debt burden indicators are unsustainable in the long term. Investigations of the international monetary fund (IMF, 2014 and 2016) confirm this. In a model for estimating the green net national product, Elwasila SEM (2011) shows that external debt manifested in major current account deficit has negatively affected economic growth of Sudan over the period 1969-2009.

The accumulation of an enormous external debt in the Sudan coupled with substantial debt burden indicators could depress total and real per capita income growth and thus frustrate development and welfare of the people. Medani (2008) through different fitted regression equations shows negative relationships between the growth of real per capita income and the stock of the external debt in the Sudan for the period 1980-2006. The negative coefficient of external debt ranges from -0.20 to -0.89 indicating that persistence of this huge amount of external debts would reduce the growth rate of per capita income greatly and a full relief of those debts would likewise enhance growth of per capita income substantially. The debt overhang hypothesis argues that debt has uncontrolled effects on the growth only after it reaches certain threshold levels. These levels are estimated at around 50% of GDP for the face value of the external debts and at around 20%-25% of GDP of the Net Present Value (NPV). For the Sudan, as presented above these debt thresholds have been preached since a long time ago. Put together, external debt and FDI could be counteractive catalysts in the process of economic growth. However, empirical studies at the macroeconomic

level find that FDI alone does not boost economic growth (Maria C. and R. Levine 2005).

3. Methodology

3.1. Data Sources and Method of Analysis

This study is mainly empirical, though it highlighted some theoretical debates on the relationship between external debt, FDI and economic growth. It employs annual time series data obtained from the Central Bank of Sudan (CBOS) Annual Reports, Statistical and other reports of the External Debt Unit of the CBOS for the period 1969 – 2015. The methods of analysis and estimation techniques are the Augmented Dickey-Fuller (ADF) Unit Root to test for stationarity of the variables, Johansen Cointegration method for testing long-run relationships and a vector error correction model (VECM). The estimation technique follows a three-step modelling procedure outlined as follows:

- i. The stationarity of data would be established with the order of integration determined by using the (ADF) unit root test. For meaningful estimation, time series data are assumed to be stationary; therefore it is necessary to carry out the unit root test since a non-stationary data produce spurious results.
- ii. After establishing the stationarity of data, Johansen cointegration test is applied. The cointegration test determines whether a long run equilibrium relationship exist among the variables of the study.
- iii. When the variables are found to be co-integrated, a VECM is developed which involves lagging of the variables in order to introduce the short run dynamism into the model.

3.2. Model Specification

The study hypothesizes that external debt has a positive effect on the economic growth of Sudan given the low level of domestic savings. The model uses GDP as the dependent variable to measure economic growth explained by external debt represented by ratio of External debt to Exports (EDX), nominal official Exchange Rate (EXR) and Foreign Direct Investment (FDI) since these variables are interlinked to external

debt. The inclusion of FDI is thought of as to encounter any possible negative effect of external debt on economic growth of Sudan. Or otherwise, what role has been played by FDI in the growth process of Sudan given fluctuating but general declining trends of debt/exports ratio? The econometric model in a general neoclassical production function form is specified as;

$$GDP = f(EDX, EXR, FDI)$$

The econometric model in stochastic form to be estimated is written as;

$$GDP = \beta_0 (EDX)^{\beta_1} (EXR)^{\beta_2} (FDI)^{\beta_3} \mu_t \dots \dots (1)$$

Thus, the model in natural logarithm becomes:

$$\text{Log}(GDP) = \beta_0 + \beta_1 \text{Log}(EDX) + \beta_2 \text{Log}(EXR) + \beta_3 \text{Log}(FDI) + \mu_t \dots (2)$$

Where;

β_0 = the intercept of the relationship in the model (the constant).
 β_1, β_2 , and β_3 are the coefficients of EDX, EXR and FDI respectively,
and μ is the error term.

The a priori expectations for the coefficients in the model are $\beta_1, \beta_3 > 0$ while $\beta_2 < 0$. Stating equation (1) in terms of a general error correction method (ECM), the model in log lagged values becomes;

$$\Delta \text{Log} GDP_{t-i} = \beta_0 + \beta_1 \sum \text{Log} EDX_{t-i} + \beta_2 \sum \text{Log} EXR_{t-i} + \beta_3 \sum \text{Log} FDI_{t-i} + \sum VECT_{t-i} + \varepsilon_t \dots \dots (3)$$

Where;

$\sum VECT$ is the Vector Error Correction Term, $t-i$ means that the variable is lagged by i period and ε_t is the assumed white noise residual.

The long-run relationship is tested through the hypothesis for the co-integration stated as;

Null hypothesis (H_0): $\beta_1 = \beta_2 = \beta_3 = 0$ (No Co-integration) and the alternative hypothesis (H_1): $\beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ (Co-integration exists).

4. Data Analysis and Interpretation of Results

This section deals with the analysis of data and interpretation of results. The methods used for the analysis of data are descriptive statistics, the OLS method, ADF Unit Root test, Johansen Co-integration test and the VECM. The logarithms of the variables were obtained so as to bring the time-series data on the variables to the same base, reduce its variability and enable direct estimation of elasticities.

4.1. Analysis and Interpretation of Results

We start by a descriptive statistical analysis. As presented in table (1), the maximum value was US\$ 840667 billion and 4550.881 for GDP and EDX respectively. The minimum value was US\$ 1848 and 66.718 for GDP and EDX respectively. It is also observed that all variables are positively skewed to the right as indicated by Jarque-Bera statistics and the corresponding probity values, which means that time series are not normally distributed.

Table 1: Basic Descriptive Statistics

	GDP	EDX	EXR	FDI
Mean	2.13E+10	1159.710	1.225205	1.559615
Median	1.23E+10	630.8810	0.097432	0.110281
Maximum	8.41E+10	4550.480	6.025733	7.645651
Minimum	1.85E+09	66.71766	0.000348	0.000113
Std. Dev.	2.23E+10	1233.640	1.611666	2.115154
Skewness	1.484516	1.250809	1.251720	1.222604
Kurtosis	3.818777	3.563633	4.011834	3.532870
Jarque-Bera	18.57586	12.87757	14.27825	12.26504
Probability	0.000093	0.001598	0.000793	0.002171
Observations	47	47	47	47

Source: Authors' Computation

Table (2) presents the correlation matrix of the variables included in the study.

Table 2: Correlation Matrix

	GDP	EDX	EXR	FDI
GDP	1			
EDX	-0.28	1		
EXR	0.81	-0.20	1	
FDI	0.42	-0.19	0.67	1

Source: Authors' Computation

As from table (2), the diagonal entries show the correlation of the variable with itself which is perfectly unity. The off diagonal entries show the pair-wise correlation amongst the explanatory variables which is found to be less than 0.8 except the correlation coefficient between EXR and GDP. It is also clear from this simple test that EDX has a positive effect on GDP.

4.2. Stationarity of the Data

It is known that the OLS results are short run oriented and because of the possibility of the non stationarity of macroeconomic data, spurious regression is likely to occur. Furthermore, the stationarity of data is essential for carrying out a Johnson co-integration test and for estimating a vector error correction model. Hence, the stationarity of data needs to be established. The conventional test for stationarity of variables used in this study is (ADF) unit root test.

4.2.1. ADF Unit Root Test

In this study the stationarity of variables is established using the ADF test. The decision rule for the ADF unit root test states that the ADF test statistic value must be greater than the Mackinnon Critical Value at 5% at absolute term for stationarity to be established at level and if otherwise, differencing is needed using the same decision rule. Table (3) presents the summary results of the stationarity test on the logarithm (L) of the series and the order of integration.

Table 3: ADF Unit Root Test and Order of Integration (level)

Variable	ADF Test Statistic Value	1% Mackinnon Critical Value	5% Mackinnon Critical Value	P	Remark	Order of Integration
L(GDP)	-0.836103	-3.581152	-2.926622	0.7991	Nonstationary	1(0)
L(EDX)	-1.681279	-3.581152	-2.926622	0.4338	Nonstationary	1(0)
L(EXR)	-0.292623	-3.581152	-2.926622	0.9180	Nonstationary	1(0)
L(FDI)	-2.539289	-3.581152	-2.926622	0.1131	Nonstationary	1(0)

Source: Author's Computation

As from table (3) and according to ADF statistics, critical and p values all variables included in the study are found to be nonstationary at level. Thus stationarity is tested on first differencing of the variables and the results are reported in table (4).

Table 4: ADF Unit Root Test and Order of Integration (first difference)

Variable	ADF Test Statistic Value	1% Mackinnon Critical Value	5% Mackinnon Critical Value	P	Remark	Order of Integration
L(GDP)	-5.717966	-3.584743	-2.928142	0.0000	Stationary	1(1)
L(EDX)	-5.348218	-3.584743	-2.928142	0.0001	Stationary	1(1)
L(EXR)	-4.782800	-3.584743	-2.928142	0.0003	Stationary	1(1)
L(FDI)	-9.787254	-3.584743	-2.928142	0.0000	Stationary	1(1)

Source: Author's Computation

As from table (4) and according to ADF statistics, critical and p values all variables included in the study are found to be stationary at first difference.

4.3 Johansen Cointegration Test

The cointegration test establishes whether a long-run equilibrium relationship exist among the variables of the study. The well known rule is that in order to establish co-integration, the trace statistics must be

greater than the Mackinnon Critical Value at 1% and 5% levels of significance and the co-integrating equation is chosen as the normalized co-integrating coefficient with the lowest log likelihood. Table (5) and table (6) present the results of Johansen co-integration test and it indicates one cointegrating equation.

Table 5: Johansen Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.505001	51.45288	47.85613	0.0221
At most 1	0.265255	21.21532	29.79707	0.3444
At most 2	0.164653	7.961369	15.49471	0.4695
At most 3	0.005226	0.225317	3.841466	0.6350
Trace test indicates 1 cointegrating equation at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Author's Computation

**Table 6: Johansen Unrestricted Cointegration Rank Test
(Maximum Eigenvalue)**

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05Critical Value	Prob.**
None *	0.505001	30.23756	27.58434	0.0223
At most 1	0.265255	13.25395	21.13162	0.4291
At most 2	0.164653	7.736052	14.26460	0.4062
At most 3	0.005226	0.225317	3.841466	0.6350
Max-Eigen value test indicates 1 cointegrating equation at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Author's Computation

The Johansen cointegration test results indicate that there is only one cointegrating equation according to both the trace statistics and the maximum Eigen value statistics at 5% significance level. Thus, there exists a long run relationship amongst the variables of the model, which lead to the rejection of the hypothesis of no cointegration. The

cointegrating equation chosen from the normalized cointegrating coefficients with the minimum log likelihood of -20.80846 is:

$$\text{LogGDP} = 0.12\text{LogEDX} - 0.11\text{LogEXR} - 0.38\text{LogFDI} \dots \dots \dots (4)$$

STD (0.11721) (0.06350) (0.10826)

STD: Standard Error statistics

From the cointegrating equation, external debt to exports ratio EDX has a positive and significant relationship with GDP; 1 percentage increase (decrease) in EDX leads to 12 percentage decrease (increase) in GDP. Exchange rate EXR and foreign direct investment exert FDI negative and significant effects on GDP, which are in conformity with findings of other studies in the field.

4.4 Vector Error Correction Model (VECM)

Cointegration is a prerequisite for the application of the error correction mechanism. Since cointegration has been established at 1(1), it is pertinent to proceed to the VECM. From the unrestricted estimated VAR model a lag of 3 is selected based on LR, FPE, and AIC as shown table (7) since FPE and AIC give the minimum statistics.

Table 7: VAR Lag Order Selection Criteria

Sample (1969-2015); Included observations: 43						
Lag	LogL	LR	FPE	AIC	SC	HQ
1	-76.10844	NA	0.000854	4.284114	4.939444*	4.525779*
2	-60.26399	25.79329	0.000874	4.291348	5.602009	4.774679
3	-37.17273	33.29437*	0.000656*	3.961523*	5.927513	4.686519
4	-23.33437	17.37841	0.000793	4.062064	6.683385	5.028726

* indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion

Source: Author's Computation

The VECM specified in equation (2) is estimated and the results are presented in table (8) and represented by equation (5) where the dependent variable is DLOG(GDP) with a lag order of 3.

Table 8: Summary of VECM Results

Variable	D(LOG(GDP))	Standard errors	t-statistics	p. value
ECT _{t-1}	-0.176548	(0.04062)	[-4.34585]	0.0000*
D(LOG(GDP(-1)))	-0.026248	(0.16438)	[-0.15968]	0.8734
D(LOG(GDP(-2)))	0.612754	(0.14547)	[4.21220]	0.0001*
D(LOG(GDP(-3)))	-0.086291	(0.17891)	[-0.48231]	0.6305
D(LOG(EDX(-1)))	0.147021	(0.06795)	[2.16359]	0.0325**
D(LOG(EDX(-2)))	0.121174	(0.07055)	[1.71751]	0.0886***
D(LOG(EDX(-3)))	0.123574	(0.08037)	[1.53764]	0.1269
D(LOG(EXR(-1)))	-0.068996	(0.06687)	[-1.03172]	0.3043
D(LOG(EXR(-2)))	0.346783	(0.07320)	[4.73740]	0.0000*
D(LOG(EXR(-3)))	-0.002707	(0.11438)	[-0.02367]	0.9812
D(LOG(FDI(-1)))	-0.065642	(0.02400)	[-2.73476]	0.0072*
D(LOG(FDI(-2)))	-0.096775	(0.01860)	[-5.20396]	0.0000*
D(LOG(FDI(-3)))	-0.020582	(0.02014)	[-1.02183]	0.3090
C	-0.017156	(0.03951)	[-0.43425]	0.6649
R-squared 0.73; Adj. R-squared 0.61; SSR 0.3969; SEE 0.1169; F-statistic 5.9989; LL 39.7149; AIC -1.1960; SC -0.6226; Mean Dependent 0.0919; S.D. dependent 0.1867; DW 2.2				

*,**,*** indicate significance at 1%, 5% and 10% level of significance respectively

$$\begin{aligned}
 d\text{Log}(\text{GDP}) = & -0.18L(\text{GDP})_{t-1} + 0.12L(\text{EDX})_{t-1} \\
 & - 0.11L(\text{EXR})_{t-1} - 0.38L(\text{FDI})_{t-1} - 0.03d\text{Log}(\text{GDP})_{t-1} \\
 & + 0.61dL(\text{GDP})_{t-2} - 0.09d\text{Log}(\text{GDP})_{t-3} + 0.15dL(\text{EDX})_{t-1} \\
 & + 0.12dL(\text{EDX})_{t-2} + 0.12dL(\text{EDX})_{t-3} - 0.07dL(\text{EXR})_{t-1} \\
 & + 0.35dL(\text{EXR})_{t-2} - 0.003dL(\text{EXR})_{t-3} - 0.07dL(\text{FDI})_{t-1} \\
 & - 0.10dL(\text{FDI})_{t-2} - 0.02dL(\text{FDI})_{t-3} - 0.02\text{.....(5)}
 \end{aligned}$$

Where d is the difference operator and L stands for natural logarithm. All coefficients are the elasticities of GDP with respect to the respected regressors as the estimation is carried out on the natural logarithm of variables. The VECM equation shows that EDX has a positive and significant relationship on GDP growth at all time lags and also in the long run. A unit change in EDX means that GDP rises by 0.15, 0.12 and

0.12 in one, two and three time period respectively. The findings suggest that external borrowing have been beneficial and plays an important role in the growth process of Sudan. However, other external debt burden indicators such as the debt services may have crowded out the expected positive impact of FDI on the economy. The elasticity coefficients of the GDP with respect to FDI are found to be negative at the first, second and third lag. This could be due to a fact that FDI net inflows have not been adequate, inefficient or in sectors not stimulating economic growth and employment. Exchange rate effect is in conformity with the a priori expectation as it turns to be negatively related to GDP with time lag one and three but positively and significantly related to GDP at time lag two. A 10 percentage increase (i.e. depreciation) in EXR leads to 0.35 percent decrease in GDP. This implies that the depreciation policy of the Sudanese currency since 1978 has not been effective in stimulating exports and reducing imports. The coefficient of VECM is significant with the appropriate negative sign and it means that present value in GDP adjusts to an equilibrium position at speed of 18 percentages each year. The adjusted R^2 of the VECM is reasonable showing that the exogenous variables in the VECM equation explains 61% of total variation or changes in GDP. Also, the F-Statistic of 5.998937 with its probability value of 0.0032 provides a basis to logically conclude that the overall result of the VECM is statistically significant. Furthermore, the reliability of the estimated VECM is tested and the diagnosis test results are presented in table (10).

Table 9: VECM Diagnosis Tests

	Chi-sq	DF	Prob.	Conclusion
VEC Residual Normality tests:				Residuals are multivariate normally distributed
Skewness	4.1308	4	0.3886	
Kurtosis	5.2051	4	0.2669	
Jarque-Bera	9.3358	8	0.3148	
VEC Residual Heteroskedasticity Tests (Joint Test)	267.7032	260	0.3580	Residuals are Homoskedastic
VEC Residual Serial Correlation LM Tests (LM-Stat) at lag order 3	15.50644		0.4879	No autocorrelation

Source: Author's Computation

5. Conclusion and Recommendations

External debt plays a crucial and a critical role in low income and low domestic savings economies including Sudan. However, if not well utilized and optimally managed, external debt could lead to debt overhang and crowding out of public and private investments including FDI and thus retard economic growth. The objective of the study has been to examine the effect of external debt on economic growth of Sudan using annual time series data for the period 1969-2015, which seems reasonably long enough period to capture such complicated effect of foreign capital flows including the most conventional types of external debt and foreign direct investments, together with implicit examination of various macroeconomic policy changes such as economic liberalization declared and adopted since 1992, depreciation of exchange rate pursued since 1978 and more recently inflation targeting and expansionary monetary policies. The study established stationarity of the included variables and then employed the Johansen cointegration test followed by the VECM. The cointegration test shows the existence of long run equilibrium relationship among the variables of the study of GDP, EDX, EXR and FDI, which confirms the effect of external debt in terms of EDX on economic growth together with the effect of the control variables of FDI and exchange rate in the long term. On the other hand, the inflows of FDI have not been beneficial to economic growth of Sudan as the elasticity coefficients of the GDP with respect to FDI are found to be negative at the first, second and third lag. This could be due to a fact that FDI net inflows have not been adequate, or attracted into sectors not stimulating economic growth, on one hand. On the other hand, and interestingly, the effect of inflows of foreign loans has been more powerful in encountering such apparent negative effect of FDI probably due to lack of human capital and financial development in Sudan. Generally our finding is in line with Maria C. and R. Levine (2005) who find that after resolving biases in previous studies, the exogenous component of FDI does not exert a robust, independent influence on economic growth. However, Azman-Saini, Law and Ahmad (2009) used a minimum threshold model also found that FDI does not have an independent positive effect on economic growth, but once a minimum threshold for human capital stock and financial sector development are reached the effect turns positive. Exchange rate effect is found to be in conformity with the a priori expectation as it turns to be is negatively related to GDP but only

statistically significant at a time lag of 2. A 10 percentage increase (i.e. depreciation) in EXR leads to 0.35 percent decrease in GDP in two time periods. This implies that the depreciation policy of the Sudanese currency since 1978 has not been effective in either stimulating exports or reducing imports, or both. Or, in short the Marshall-Lerner condition – i.e., the sum of price elasticity of exports and imports should be greater than zero for effective exchange rate depreciation has not been met in Sudan. In other words, net exports haven't increased; prices haven't fallen while the value of national currency has been deteriorating. A negative effect of the depreciation of the national currency on economic growth could also be explained as a reflection of inflationary finance of government budget deficit through money printing particularly for countries facing unsustainable external debt and limited access to international credit market since 19972. The finding of this study is in line with other empirical studies suggesting that misaligned real exchange rate has had an adverse effect on economic indicators, such as economic growth and export performance (see for example, Cottani et al., 1990; Ghura & Grennes, 1993; Razin & Collins, 1997; Domaç & Shabsigh, 1999, and Ebaidalla, 2013). The VECM reveals that the lagged error correction term is significant judging from its negatively signed coefficient with speed of adjustment of 18% annually. The coefficient of multiple-determination (R²) of the VECM (61%) led to rejection of the null hypothesis which states that external debt does not have a significant effect on the economic growth of Sudan. Also, the F-statistics shows that the time to time behaviour of the ratio of external debt to exports, exchange rate and foreign direct investments all put together cause a significant change on the performance of Sudan economy.

Based on the findings of this study, recommendations were made. Firstly, the government should ensure economic and political stability in order to enjoy the benefits of sustained foreign capital flows namely foreign loans and foreign direct investments but debt burden should be made minimal particularly the debt/exports of goods and services ratio. Secondly, government should acquire external debt largely for stabilisation of the major economic indicators such as the general price level, exchange rate and the balance of payments, as they proved to

² For further discussions on the interplay of these macroeconomic variables see Stephanie S and Martin U. 2014.

interact together as determinants of economic growth. Thirdly, the government should diversify the nation's export base so as to increase export earnings and promote industrialization in order to reduce import dependency which if well managed together and in a consistent manner should lead to reduce the ratio of external debt to exports and stimulate further economic growth. Furthermore, stability in the exchange rate should be pursued and the depreciation of the Sudanese pound should be avoided by the government as the continuous depreciation of the national currency has been found to negatively impacts economic growth. This could be due to low response of both exports and imports of Sudan in the international market, or inability of the economy to produce large volume of import substitute goods. Lastly, the government should press with multilateral creditors and donors for permanent debt relief so as to avert potential negative effects of both the debt overhang and crowding out effects associated with unsustainable external debt. Importantly, foreign direct investment policy of the country needs to be revisited and revised seriously in order to redirect inflows FDI for more productive, more efficient, more labour-intensive and the most economic growth enhancing sectors, together with human capital and financial deepening indicators an issue call for urgent and sound further investigation.

References

- Abdelmawla and Mohammed (2005). The Impact of External Debt on Economic Growth: An Empirical Assessment of the Sudan: 1978 – 2001, *Eastern Social Science Research Review*, Vol. 21(2), 53-66.
- Adepoju, A.A., Salau, A.S., & Obayelu, A.E., (2007). The Effects of External Debt Management on Sustainable Economic Growth and Development: Lessons from Nigeria, *MPRA. Paper No.* 2147.
- Adesola, W.A. (2009). Debt Servicing and Economic Growth in Nigeria: An Empirical Investigation, *Global Journal of Social Sciences*, Vol. 8, No. 2, 1-11.
- Ajayi, L. B. and OKE, M. O. (2012). Effect of External Debt on Economic Growth and Development of Nigeria. *International Journal of Business and Social Science* Vol. 3 No. 12 [Special Issue – June 2012].
- Audu, I. (2004). The Impact of External Debt on Economic Growth and Public Investment: The Case of Nigeria, *African Institute for Economic Development and Planning (IDEP)*, Dakar.
- Ayadi, F.S., and Ayadi, F.O. (2008). The Impact of External Debt on Economic Growth: A Comparative Study of Nigeria and South Africa, *Journal of Sustainable Development in Africa*, Vol. 10, No.3, 234-264.
- Azman-Saini, W. N. W., Siong Hook Law, and Abd Halim Ahmad. FDI and economic growth: New evidence on the role of financial markets. *Economics letters* 107.2 (2010): 211-213.
- Boyd, John H. and Bruce D. Smith (1992), Intermediation and the Equilibrium Allocation of Investment Capital: Implications for Economic Development. *Journal of Monetary Economics*, 30: 409-32.
- Choong, C., Lau, E., Liew, V.K., & Pua, C. (2010). Does Debts Foster Economic Growth? The Experience of Malaysia, *African Journal of Business Management*, Vol. 4(8), 1564-1575.

Clements, B., Bhattacharya, R., & Nguyen, T.Q. (2003). External Debt, Public Investment, and Growth in Low-Income Countries, *IMF Working Paper WP/03/249*, International Monetary Fund, Washington D.C.

Domac, I. and Shabsigh, G. (1999). 'Real exchange rate behavior and economic growth: Evidence from Egypt, Jordan, Morocco and Tunisia', IMF Working Paper, no. 40.

Cottani, J., Cavallo, D. and Khan, S. (1990). 'Real exchange rate behavior and economic performance in LDCs', *Economic Development and Cultural Change*, vol. 39, no. 1, pp. 61–76.

Domac, I. and Shabsigh, G. (1999). 'Real exchange rate behavior and economic growth: Evidence from Egypt, Jordan, Morocco and Tunisia', IMF Working Paper, no. 40.

Ebiadalla M. Ebaidalla (2013). IMPACT OF EXCHANGE RATE VOLATILITY ON MACROECONOMIC PERFORMANCE IN SUDAN, *Economic Research Forum, Working Paper 789*, Cairo, Egypt.

Ghura, D. and Grennes, T. (1993). 'The real exchange rate and macroeconomic performance in sub-Saharan Africa', *Journal of Development Economics*, vol. 42, no. 1, pp. 155–174.

Elwasila SEM., (2011). Sustainability of Growth with a Non-renewable Resource and an External Debt Constraint: The Case of Sudan. Unpublished PhD Thesis, Graduate College, University of Khartoum.

Hameed, A., Ashraf, H., & Chaudhary, M.A. (2008). External Debt and Its Impact on Economic and Business Growth in Pakistan", *International Research Journal of Finance and Economics*, ISSN 1450-2887, Issue 20, 132-140.

International Monetary Fund, Sudan Staff Report for the 2016 Article IV Consultation – Debt Sustainability Analysis, July 25, 2016, IMF.

International Monetary Fund, Sudan Staff Report for the 2014 Article IV Consultation and Second Review under the Staff Monitored Program – Debt Sustainability Analysis, November 21, 2014, IMF.

Karagol, E. (2002). The Causality Analysis of External Debt Service and GNP: The Case of Turkey, *Central Bank Review*, 2(1), 39-64.

Malik, S., Hayat, M.K. & Hayat, M.U (2010), External Debt and Economic Growth: Empirical Evidence from Pakistan”, *International Research Journal of Finance and Economics*, ISSN 1450-2887, Issue 44, 88-97.

Maria, C. and Ross Levine, (2005). Does Foreign Direct Investment Accelerate Economic Growth? In Theodore H. Moran, Edward Montgomery Graham, Magnus Blomström, (Eds). Does Foreign Direct Investment Promote Development? Peterson Institute, 2005.

Medani M. Ahmed (2008). External Debts, Growth and Peace in the Sudan: Some Serious Challenges Facing the Country in the Post-Conflict Era.

Mekki El Shibly Foreign Capital Inflow, Domestic Savings and Economic Growth: The Experience of the Sudan (1960/61-1974/75), *Journal of Economic Development*.

Milton A. Iyoha, External debt and economic growth in sub-Saharan African countries: An econometric study AERC Research Paper 90 African Economic Research Consortium, Nairobi March 1999.

Ogunmuyiwa, M.S. (2011). Does External Debt Promote Economic Growth?, *Current Research Journal of Economic Theory* 3(1), 29 – 35.

Razin, O. and Collins, C. (1997). ‘Real exchange rate misalignments and growth’, NBER Working Paper, no. 6174. Available at http://www.nber.org/papers/w6174.pdf?new_ accessed 10 April 2015).

Romer, Paul, (1993), Idea gaps and object gaps in economic development. *Journal of Monetary Economics* 32, No.3. (December), pp.543-73.

Soludo, C.C. (2003). Debt Poverty and Inequality in Okonjo Iweala, Soludo, and Muntar (Eds), *The Debt Trap in Nigeria, Africa World Press NJ*, pp. 23-74.

Sulaiman, L.A., & Azzez, B.A. (2012). Effect of External Debt on Economic Growth of Nigeria. *Journal of Economics and Sustainable Development*, Vol. 3, No. 8, PP. 71-79.

Stephanie Schmitt-Grohe Martin Uribe (2014), International Macroeconomics, Lecture notes taken by Alberto Ramos in a course on International Finance that Mike Woodford taught at the University of Chicago in the Winter of 1994, updated March, 2014

Thirlwall, A.P., (2003). The Mobilisation of Savings for Growth and Development in Developing Countries. Departamento de Programación Monetaria e Investigación Económica Documento de trabajo 2004/02.

Were, M. (2001). The Impact of External Debt on Economic Growth in Kenya: An Empirical Assessment, *UNU-WIDER Research Paper*, DP2001/116.

The Relationship between Capital Expenditure, Income Inequality, Total Population and Economic Growth Post-Implementation of Local Autonomy in Indonesia

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This study aimed to analyze the relationship between capital expenditure, income inequality, total population and economic growth in 38 districts/cities in East Java Province, Indonesia during the period of 2011-2015. Panel data with fixed effect was employed as the analysis technique. The findings prove the existence of a positive relationship between capital expenditure and economic growth in the district/city. The relationship between income inequality and economic growth was in a negative correlation. While there was no significant relationship between total population and economic growth in East Java Province. Therefore, by referring to the results, we recommend the government to increase its allocation of capital expenditure, both spatial and sub-sectoral. Moreover, the government also need to expand its fiscal redistribution policy on public services needed by the citizens (education, health, and transportation). These improvements could eventually contribute to the achievement of income equality and economic growth in regional economy.

Keywords: Regional Government, Capital Expenditure, Income Inequality, Economic Growth, Panel Data

1. Introduction

Social welfare is at the main function of national development. The Indonesian Government has committed on achieving it by strengthening the financial management in local government. Since the year of 2000, the handling of financial matters has been done by referring to fiscal decentralization and local autonomy policies (Law No. 22 of 1999 on

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regional administration and Law No. 25 of 1999 on fiscal decentralization). As a consequence, the government must utilize its capacity on strengthening the financial foundation in the regions in order to reach social welfare. It is hoped that this will boost the capacity of the regions on economic development.

Although economic development is a much broader concept than economic growth, the two forms a connection that represents the whole dynamic of an economy. A high economic growth represents the increase in output of production. Moreover, high economic growth means a change in added value in the utilization of factors of production. To achieve high economic growth, the financial capacity of the region in the form of government spending is crucial. Government spending includes all budgets allocated by the government to support development in various sectors. The greater the local government capacity on financing for capital expenditure, the greater the potential to drive economic activity in the region. In Keynes' macroeconomic framework, government expenditure is an important component in the formation of aggregate demand. Government expenditure positively affected the aggregate demand. While the aggregate demand positively correlates with the total output (Mankiw, 2010:293).

Government spending is a part of fiscal policy. According to Norris *et.al.* (2015), fiscal policy plays a determining role on microfinancial stability, fiscal redistribution, good income distribution, which eventually leads to high economic growth. Oriakhi and Ajayi-Ojo (2015) conclude that government spending encourages long-term economic development. This is supported by the evidence in Nigeria where there is an improvement in economic development due to the government spending in the period of 1981-2013. Similarly, Sabir *et al.* (2015) found that government spending has a positive and significant impact on economic growth in North Sulawesi Province, Indonesia.

Aside from the financial capacity of regions in the form of capital expenditure, economic growth can also be affected by the degree of income inequality among members of the community. The inequality of income reflects the uneven distribution of economic activity as well as access to economic resources for the community. As a consequence, there is an economic disparity in the society. Since only a small

percentage of people dominate and control the whole economy, there is a distortion in the implementation of development programs.

Kuznets (1955) stresses the importance of analysing the relationship between inequality and economic growth. He further relates this to the dynamics of economic development in the globalization era. There is a significant difference between developed and developing countries' Gross Domestic Product (GDP). GDP is measured from the total value of final goods and services produced within a given's country borders. Economic inequality may occur if the economic activity is centralized. Numerous studies have been conducted to analyze the linkages between economic inequality and economic growth in various countries.

Barro (2000) discovered an important evidence on economic inequality and economic growth. He found that in developing countries, there is a positive relationship between the two, while the opposite happens in developed countries. In their study, Galor and Moav (2004) concluded that a high degree of inequality could reduce the economic growth through deprivation of the ability of lower income households to stay healthy and the accumulation of physical capital and human capital. Likewise, Qin *et al.* (2006) found that income inequality can lead to a decline in GDP and sectoral growth in China. Davtyan (2014) discovered that income inequality has a negative effect on economic growth in the UK. Conversely, it proved to have a positive influence on economic growth in the USA and Canada. Previous studies show a conflicting result on economic inequality and economic growth. Economic inequality is a very sensitive issue in a country as it relates to the social welfare and social justice for its population. A high degree of income equality represents a high degree of economic disparities in a society.

Population plays an important role in economic growth. Solow's (Solow growth model) economic growth theory explains the role of the population as a proxy of human capital in influencing the ratio of inputs (Jajri and Ismail, 2010). Population reflects the existence of human resources as human capital that can contribute to the country's development. Human capital can form the knowledge that can then generate spillover effect and externality for human resource development in a country (Scutt, 2003). In the words of Hanushek (2013), increased human capital can accelerate the economic growth of a country.

However, previous studies on the correlation between human resources and economic growth provide different results. Fernandez and Mauro (2000) found there is a positive influence of human capital on economic growth. In contrast, Shen (2015) explicitly concluded that population growth negatively affects economic development in China, India and Indonesia. The rationale behind this is because of the high rate of population growth and the failure of conversion of human capital to become skilled labors. Similarly, Sacerdoti *et al.* (1998) state that human capital negatively affected economic growth.

In East Java Province, the dynamics of development in the national economy is influential to the local economy. The implementation of local autonomy policy is responded by the local government by making adjustments in the management of local finance, both from the revenue and expenditure sides. Yet, the limited financial capacity of the local government has resulted on the inequality of budget allocations among local governments in a country. Therefore, there is a difference in budget allocation on personnel, goods and service, and capital expenditures, which tightly associated to the financial capacity of the regions and the ability of local governments to prioritize its usage of funds.

In the provincial and district level, the financing for capital expenditure is smaller than that for personnel and goods and services expenditures. To illustrate, in 2015, the amount of direct expenditure in the form of capital expenditure in the regional financial component (APBD) of East Java Province is IDR. 2,565,964,145,679.00 (30.86%), while direct spending in the form of personnel, goods and services expenditure is IDR. 5,749,413,361,298.00 (69.14%) (Provincial Regulation of East Java No. 14 of 2014 On Revenue and Expenditure Budget of East Java Province Fiscal Year 2015). Differences in the budget allocation can affect the distribution of local people's income. For instance, the gini ratio in East Java Province in 2015 increased from 0.37 in previous year to 0.42 (www.jatim.bps.go.id).

Limited capital expenditure, broadened income inequality and high number of population are the problems faced by the local government in East Java Province. The growing economic inequality is an early warning for stakeholders to be able to immediately implement an

expansionary-oriented policy in the expansion of economic activity in the region. The financial capacity and income inequality between local governments are vary. As a result, the local governments have dissimilar economic growth.

The 1945 constitution of the Republic of Indonesia stated that the independence of Indonesia is intended to achieve social justice and social welfare. In the implementation of development in the local areas, the strengthening of fiscal capacity becomes an important factor to consider in order to improve financial capability in financing of capital expenditure. To eliminate income inequality, population control is crucial. People need to be given the freedom to actively participate in the local economic development, either as a factor of production or the one who utilize the results of development.

Hence, this study aimed to analyze the relationship between capital expenditure of local governments, income inequality, total population and economic growth in various regions in the East Java Province, Indonesia.

2. Methodology

This research employed quantitative method to analyze the interaction of the variables. The research objects are districts/cities in East Java, Indonesia that is made up of 38 regions in the period of 2011-2015. The study employed secondary data of economic growth which is proxied by Gross Regional Domestic Product, capital expenditure, population and income inequality which all were obtained from the Regional Central Statistics Agency (BPS) in East Java Province (<http://jatim.bps.go.id>). This study employed Ordinary Least Square (OLS) with panel data approach to estimate empirical model. There are three models of panel data as follows (Baltagi, 2005):

a. Pooled Least Square Approach (PLS). The estimation of the model as follows:

b.

$$Y_{it} = \alpha_i + \beta_i + X_{it} + \varepsilon_{it} \quad (\varepsilon_{it}=0) \quad (1)$$

In which, Y variable is economic growth (proxied by Gross Regional Domestic Product), X variables are capital expenditure (regional

government budget), income inequality (measured by gini ratio coefficient), and population.

- c. Fixed Effect Approach (FE): An approach that measured the possibility of the researchers on facing omitted variables. The general model of FE as follows:

$$Y_{it} = (\alpha_{it} + u_i) + X'_{it} \beta + v_{it} \quad (2)$$

In panel data, fixed effect model assumed that the slope coefficient is constant. However, the intercept is varied in one time. The v_{it} notation represents the residual (disturbance) of panel data model

- d. Random Effect Approach (RE). The general model of RE as follows:

$$Y_{it} = \alpha_i + \beta X_{it} + u_{it} + \lambda_i \quad (3)$$

Where λ_i notation is the residual from crossection observation.

The estimation model used during panel data analysis as follows:

$$GRDP_{it} = \alpha_i + \beta_i + CAPITAL_{it} + GINI_R_{it} + POP_{it} + \varepsilon_{it} \quad (\varepsilon_{it}=0) \quad (4)$$

In the log natural form, the estimation model can be written as:

$$LGRDP_{it} = \alpha_i + \beta_i + LCAPITAL_{it} + GINI_R_{it} + LPOP_{it} + \varepsilon_{it} \quad (\varepsilon_{it}=0) \quad (5)$$

Where:

GRDP is Gross Regional Domestic Product

CAPITAL is capital expenditure

GINI_R is gini ratio

POP is total population

This study utilized the Hausman test to determine which method to choose between fixed effect and random effect. The Hausman test can

be done by using Chi Square formula. The hypothesis of the Hausman test is:

H0 = random effect model

H1 = fixed effect model

If the value of Chi Square count > Chi Square table, we reject the null hypothesis (H0). If the value of Chi Square count < Chi Square table, we accept H0. The decision on whether to accept or reject the null hypothesis can also be done using the p value of Chi Square coefficient. If the value is less than α (eg $\alpha = 1\%$), we accept the null hypothesis. Hence, we selected the fixed effect model as the approach.

3. Results And Discussion

3.1 Development in Gross Regional Domestic Product

The dynamics of economic development of East Java Province in the period 2011-2015 is indicated by economic indicators in 38 districts / municipalities. During that time, the Indonesian national economy was pressured by the global economic slowdown. As research have shown, external shocks in the international economy may badly affect the country's economic development. External shocks are marked by the volatility of US Dollars currency exchange, the slowdown of global economy, and low oil prices.

In the period of 2011-2015, the regional economic indicators (Gross Regional Domestic Product (GRDP), Capital Expenditure (CAPITAL), population (POP) and Gini Ratio (GINI_R) have experienced fluctuation. GRDP developments provide information on the achievement of outputs generated in the process of economic activity in various districts / cities in East Java Province. GRDP represents the economic growth of a region. The findings signify that output disparities (GRDP) are generated in the regional economy. Moreover, manufacturing sector has a positive influence on GRDP as areas without the support of industry excellence have slightly lower GRDP compared to those with industrial support (Surabaya City, Kediri City, Gresik Regency, Pasuruan Regency and Sidoarjo Regency). The development

of Gross Regional Domestic Product of regencies/cities in East Java is presented in Table 1.

Table 1: The Development of Gross Regional Domestic Product of Regencies/Cities in East Java, Indonesia for the Period of 2011-2015 (IDR Billion)

No	Region	2011	2015	No	Region	2011	2,015
1	Pacitan Regency	7,592	11,591	20	Magetan Regency	9,231	13,876
2	Ponorogo Regency	9,960	14,913	21	Ngawi Regency	9,535	14,995
3	Trenggalek Regency	8,944	13,632	22	Bojonegoro Regency	18,682	28,910
4	Tulungagung Regency	18,860	28,415	23	Tuban Regency	30,638	47,796
5	Blitar Regency	18,013	26,776	24	Lamongan Regency	18,265	28,831
6	Kediri Regency	20,422	30,479	25	Gresik Regency	58,,588	93,263
7	Malang Regency	46,975	73,843	26	Bangkalan Regency	9,429	14,,518
8	Lumajang Regency	16,079	24,457	27	Sampang Regency	8,511	12,930
9	Jember Regency	37,160	56,377	28	Pamekasan Regency	7,929	12,312
10	Banyuwangi Regency	36,951	60,219	29	Sumenep Regency	13,283	21,117
11	Bondowoso Regency	9,553	14,485	30	Kediri City	64,018	97,444
12	Situbondo Regency	9,536	14,796	31	Blitar City	3,183	4,819
13	Probolinggo Regency	16,875	25,678	32	Malang City	34,968	51,828
14	Pasuruan Regency	69,538	104,275	33	Probolinggo City	5,377	8,,072
15	Sidoarjo Regency	93,073	146,251	34	Pasuruan City	v3,989	5,949
16	Mojokerto Regency	38,692	58,818	35	Mojokerto City	3,312	4,881
17	Jombang Regency	19,472	29,148	36	Madiun City	6,813	10,192
18	Nganjuk Regency	12,715	19,125	37	Surabaya City	261,768	406,191
19	Madiun Regency	9,115	13,871	38	Batu City	7,315	11,510

Source: BPS of East Java, 2016

Table 1 shows that Surabaya has the greatest GRDP value in East Java. In 2015, Surabaya's GRDP reaches IDR 406,191 billion. Sidoarjo Regency is on the second place with IDR 146,251 billion. Whereas other districts/cities such as Blitar City has GRDP of 2015 amounting to IDR 4,819 billion. Similarly, GRDP of Mojokerto City only reached IDR 4,881 billion. This disparity in GRDP values illustrates the different economic capacities of districts/cities in East Java.

The inequality in GRDP occurs due to different endowment factors among districts/cities in East Java. Spatial-integrated cities with centralized economic growth have higher economic growth than areas that are far from the center of economic growth. The economic growth in East Java is largely supported by the manufacturing industry sector which is concentrated in the industrial area. Industrial areas are located in Pasuruan, Surabaya, Kediri, Gresik, and Sidoarjo. Growth in the industrial sector is still an important factor in increasing economic growth in various districts/cities in East Java.

3.2 The Development of Gini Ratio

The development of gini ratio reflects the income equalization among society. The higher the gini ratio value, the higher the income inequality happens among individuals. Meanwhile, the lower the gini ratio value, the lower the income inequality occurs among society. In the period of 2011 - 2015, the development of gini ratio in the economy of East Java is presented in the table 2:

Table 2: The Development of Gini Ratio of Regencies/Cities in East Java for the Period of 2011-2015

No	Region	2011	2015	No	Region	2011	2015
1	Pacitan Regency	0.34	0.33	20	Magetan Regency	0.31	0.34
2	Ponorogo Regency	0.29	0.36	21	Ngawi Regency	0.30	0.34
3	Trenggalek Regency	0.34	0.37	22	Bojonegoro Regency	0.27	0.32
4	Tulungagung Regency	0.32	0.36	23	Tuban Regency	0.28	0.29
5	Blitar Regency	0.33	0.33	24	Lamongan Regency	0.29	0.30
6	Kediri Regency	0.31	0.34	25	Gresik Regency	0.33	0.31
7	Malang Regency	0.33	0.38	26	Bangkalan Regency	0.30	0.32
8	Lumajang Regency	0.27	0.29	27	Sampang Regency	0.26	0.30
9	Jember Regency	0.31	0.33	28	Pamekasan Regency	0.28	0.34
10	Banyuwangi Regency	0.32	0.34	29	Sumenep Regency	0.27	0.26
11	Bondowoso Regency	0.29	0.32	30	Kediri City	0.39	0.40
12	Situbondo Regency	0.26	0.33	31	Blitar City	0.34	0.37
13	Probolinggo Regency	0.28	0.30	32	Malang City	0.36	0.38
14	Pasuruan Regency	0.28	0.32	33	Probolinggo City	0.33	0.36
15	Sidoarjo Regency	0.31	0.35	34	Pasuruan City	0.37	0.39
16	Mojokerto Regency	0.27	0.31	35	Mojokerto City	0.36	0.36
17	Jombang Regency	0.37	0.32	36	Madiun City	0.33	0.38
18	Nganjuk Regency	0.31	0.35	37	Surabaya City	0.37	0.42
19	Madiun Regency	0.29	0.32	38	Batu City	0.32	0.36

Source: BPS of East Java, 2016

The gini ratio of districts/cities in East Java Province in the period of 2011-2015 varies between 0.20-0.48. The economic and natural resources' difference between regions has resulted in dissimilar economic development. In 2011-2015, the income inequality fluctuates between 0.23 (Lumajang District in 2013) and 0.43 (Madiun City in 2013). The highest degree of inequality occurs in Surabaya and Kediri in 2015 with the gini ratio of 0.42 and 0.42, respectively. Low gini ratio can be found in agricultural-based areas. While high gini ratio can be found in large cities. This is due to the fact that they are supported by industrial and trade sectors.

Agricultural sector provides superior employment opportunities which can absorb the human capital in the rural areas. While urban areas, which tend to have more specific job requirements, could not fully absorb the human capital, which in the end results in high unemployment rate in the city. Urbanization occurs because people from the rural areas believe there are greater opportunities for them in the city. Since their competencies are not much needed in the urban areas, it leads to unemployment that eventually leads to income inequality.

3.3 The Development of Capital Expenditure

The capital expenditure in the regional finances (APBD) in the period 2011-2015 show disparities among districts in East Java. Figure 3 illustrates the development of capital expenditure.

Table 3: The Development of Capital Expenditure of Local Government in East Java for the Period of 2011-2015 (IDR Billion)

No	Region	2011	2015	No	Region	2011	2015
1	Pacitan Regency	144	132	20	Magetan Regency	148	214
2	Ponorogo Regency	128	286	21	Ngawi Regency	156	245
3	Trenggalek Regency	126	294	22	Bojonegoro Regency	119	624
4	Tulungagung Regency	97	356	23	Tuban Regency	210	313
5	Blitar Regency	160	364	24	Lamongan Regency	190	321
6	Kediri Regency	226	454	25	Gresik Regency	127	593
7	Malang Regency	185	544	26	Bangkalan Regency	290	409
8	Lumajang Regency	113	339	27	Sampang Regency	184	344
9	Jember Regency	210	544	28	Pamekasan Regency	162	448
10	Banyuwangi Regency	251	451	29	Sumenep Regency	132	336
11	Bondowoso Regency	170	319	30	Kediri City	106	354
12	Situbondo Regency	121	306	31	Blitar City	165	158
13	Probolinggo Regency	226	375	32	Malang City	160	306
14	Pasuruan Regency	236	429	33	Probolinggo City	107	151
15	Sidoarjo Regency	209	815	34	Pasuruan City	80	201
16	Mojokerto Regency	157	528	35	Mojokerto City	50	216
17	Jombang Regency	69	278	36	Madiun City	96	194
18	Nganjuk Regency	114	454	37	Surabaya City	308	2,132
19	Madiun Regency	121	250	38	Batu City	106	337

Source: BPS East Java, 2016

The amount of capital expenditure in local government budget financing reflects the fiscal capacity of the regions. High allocation of capital expenditure encourages the development of economic activities in all sectors. As depicted in Figure 3, Surabaya has the highest capital expenditure level compared with other regions in East Java. For instance, in 2015, the allocation for capital expenditure in Surabaya reaches IDR 2,132 trillion, while the other regions' allocation for capital expenditure is only in the range of IDR 200 - IDR 300 trillion.

The level of fiscal capacity has an impact on the capability in terms of financing capital expenditures. These are characterized by local

revenues sourced from large taxes and regional restitution. Districts/cities with high level of fiscal capacity usually have a comparative advantage such as manufacturing, trade, and service industries. Surabaya City became the region with the highest allocation of capital expenditure in East Java because it is supported by manufacturing, trade and hospitality, and financial services industry. Moreover, the local government ability on finding financial resources for development is also a major factor that contributed to the allocation of capital expenditure. On the other hand, the financial resources are derived from the development of economic activities in various sectors and in various regions.

3.4 The Development of Population

The distribution of population in East Java Province in the period of 2011-2015 is uneven. Surabaya has a larger number of population than other districts/cities in East Java Province. Several rationales of this phenomenon are the availability of natural resources, availability of economic activity, and location. This depicts the mobility of labor production factors across regions in the implementation of their economic activities. In 2011, from the total population in East Java Province amounted to 37,687,822 people, Surabaya accounted the largest percentage of the total population (7.4%) or 2,781,047 people. While Batu Town has the smallest number of population (0.5%) or 191,254 people. In 2015, from the total population of eastern Java province amounted to 38,847,561 people, Surabaya still possess the largest number of population (7.3%) or 2,848,583 people. While Batu Town has the smallest number of population of 200,485 people (0.5%).

Surabaya plays a role as the cause of urbanization in East Java Province. Due to its high economic development, manufacturing and service industries, as well as adequate infrastructures have put Surabaya into the 2nd largest city in Indonesia after Jakarta. Urbanization happens because of slow economic growth in the rural areas and the hope of having a more prosperous life in the urban areas. In 5 years period, the increase in the number of residents in East Java province amounted to 1,159,939 people spread in 38 districts / cities. On average, the population in East Java Province increased by 0.75% per year.

3.5 Data Analysis

This study utilized the Hausman test to determine which method to choose between fixed effect and random effect. The result shows that p value (chi square) is less than α equal 1% (probability 0.0000). Therefore, we accept the null hypothesis. Hence, the fixed effect model is selected as the approach for empirical estimation

After performing the Hausman test, we determined the estimation of panel data model using fixed effect method. The estimation results by using natural log model (Log) for fixed effect can be seen as follows.

$$\text{LGRDP} = 1918.53 + 22.005 \text{ LCAPITAL} - 0.115 \text{ GINI_R} - 0.073 \text{ LPOP}$$

$$\begin{array}{ccc} (0.084) & (0.037) & (0.185) \\ [260.77] * & [-3.11]** & [-0.40]*** \end{array}$$

Adjusted R square : 0.998

Prob (F-statistics) : 0.000000

Notes :

The number inside () is the standard of error

The number inside [] is the t statistic values.

*significant 1%

**significant at 5%

*** not significant

Table 4: Fixed Effect Coefficient

Fixed Effects (Cross)	Coefficient	Fixed Effects (Cross)	Coefficient	Fixed Effects (Cross)	Coefficient
_Pacitan—C	7.298573	_Pasuruan1—C	-13.74998	_Sampang--C	6.297016
_Ponorogo—C	4.843214	_Sidoarjo—C	-16.75981	_Pamekasan--C	6.820503
_Trenggalek—C	5.777586	_Mojokerto1—C	-8.218496	_Sumenep--C	1.759330
_Tulungagung—C	-1.316800	_Jombang--C	-1.571445	_Kediri2--C	-13.07895
_Blitar1—C	-0.743376	_Nganjuk--C	2.486639	_Blitar2--C	15.64931
_Kediri1—C	-2.010931	_Madiun--C	5.575545	_Malang2--C	-7.096612
_Malang1—C	-10.18012	_Magetan--C	5.537351	_Probolinggo2--C	10.70161
_Lumajang—C	0.207306	_Ngawi--C	5.014480	_Pasuruan2--C	13.60410
_Jember—C	-7.738919	_Bojonegoro--C	-1.364844	_Mojokerto2--C	15.38491
_Banyuwangi—C	-8.090597	_Tuban--C	-6.111153	_Madiun2--C	8.450349
_Bondowoso—C	5.173230	_Lamongan--C	-1.210411	_Surabaya2--C	-26.50580
_Situbondo—C	5.057268	_Gresik--C	-12.36734	_Batu2--C	7.582903
_Probolinggo1—C	-0.276416	_Bangkalan--C	5.170786		

As presented above, capital expenditure (CAPITAL) has a positive and significant impact on regional economic growth (GRDP) in East Java Province. Economic inequality (GINI_R) has a negative and significant effect on the economic growth of districts in East Java. While the number of residents (POP) does not affect the economic growth of districts/cities in East Java Province. The value of the determination coefficient (adjusted R square) of 99% indicates that the independent variables (capital expenditure, economic inequality, and population) can explain the variation of the dependent variable (economic growth). Altogether the independent variables significantly influence the dependent variable.

The results indicate that the implementation of regional autonomy policy in the form of discretion in local financial management encourages local governments to increase the allocation of capital expenditure budget in regional finance. The discretion relates to the delegation of authority from the central government to the local government in terms of financial management (both revenue and budgetary sources) referring to the relevant regulations. The local governments can determine which objects need to be taxed and the money can be used for retribution. In terms of the usage of financial budget, the local governments can determine the types of expenditures relevant to the priority of the local economic development. Although there is variation on regional capability in allocating capital expenditure, it can be the stimulus in the local economic development, which ultimately leads to the increase of GRDP.

As a barometer of East Java Province's economic performance, Surabaya is recorded as the region with the greatest fiscal ability compared with other districts / cities. The fiscal capability can be measured from local revenue, which is derived from taxes, retribution, and other sources of revenue which are considered as legitimate. The improvement on regional fiscal capability starts with the implementation of policy in the form of Law on Regional Autonomy in Indonesia. Fiscal capability is accompanied by an increase in the allocation of capital expenditures for the financing of development programs in districts/cities in East Java Province. The financial management process and budget allocation for financing of capital expenditure in regional development do likewise.

The results of this study are in line with the macroeconomic mainstream developed by John Maynard Keynes (Keynesian Macroeconomic Model), where government expenditure boosts the national income (Gross Domestic Product) through the increase of aggregate demand components, namely consumption, investment, government expenditure and net exports. Originally, the Keynesian model is only relatable to the situation where a country experiences financial crisis. After being developed over time, the model is relevant to any financial/economic circumstances. This means that the force of demand and supply, or so-called market mechanism, cannot solve the economic problems. The government needs to intervene in the form of government spending for the fulfillment of public goods.

In the context of regional development in Indonesia, the implementation of the Law on Regional Autonomy since 1999 increases the allocation of local government spending. Moreover, discretion and active participation of communities in local economic development can have a butterfly effect on financial performance and economic growth (Renyaaan *et al.*, 2012; Suwandi and Warokka, 2013). The capital expenditure must be distributed to various sectors in the local economy. Keynes' concept has become a theoretical reference in addressing the problem of low economic growth.

The findings of this study are in conformity with the research by Ajayi-Ojo (2015) and Sabir *et al.* (2015). Both studies link the impact of government spending on economic growth. While the present study used expenditure data for capital expenditure due its specificity, the previous studies (Ajayi-Ojo, 2015; Sabir *et al.*, 2015) only used aggregate expenditure data. Capital expenditure data is more relevant since higher capital expenditures would mean an increase in the economic growth.

The study findings confirm the results of previous studies on the relationship between economic inequality and economic growth (Barro, 2000; Galor and Moav, 2004; Qin *et al.*, 2006). The results indicate that the proxy of economic growth using GRDP data is capable on explaining the relationship between the two variables. Gini ratio can explain the correlation between high income inequality and the decline in GRDP in districts in East Java. Kuznet made the basic theory of the relationship between economic inequality and economic growth. He states that the two has an inverted U-shaped curve relationship. Initially,

economic development and income distribution tend to have the same direction (positive relationship), but after reaching a certain point, the relationship becomes unidirectional (negative relationship). In addition, the proxy for economic growth using GRDP indicators (in IDR nominal units) describes the performance of the real economy of the region.

The findings in this study are in accordance with previous studies on the negative relationship between income inequality and economic growth (Barro, 2000; Cingano, 2014). The present study provides empirical evidence of the negative influence between income inequality and economic growth. Increasing inequity leads to an increasingly expensive human and physical capital investments. As a result, the potential of economic resources on boosting the economic growth cannot be optimized.

In East Java, where the economy is supported by the industrial sectors, it has the positive effects on providing large employment opportunities and significant economic growth. However, the new employment opportunities cannot fully absorb all the human capital in the region. Urbanization happens because of slow economic growth in the rural areas and the hope of having a more prosperous life in the urban areas. For the same sector, the revenues received by an employee in the rural area is much smaller than in the urban area.

Yet, the present study results are in contradiction with the Solow Growth Model. We found that population, as a form of human capital, has not made a satisfactory contribution to the economic growth. The increase in unemployment rate happens because the economic activities are unable to provide employment to all human capital. This finding is dissimilar to those discovered by Hanushek (2013) and Scutt (2003). The excess of human capital can disrupt the economy and will produce negative effects on economic growth (Sacerdoti *et al.*, 1998; Shen, 2015) in East Java Province.

The local governments in districts in East Java have done their best on tackling the problem of income inequality. Several of their programs are providing free facilities on public services such as education and health, which are financed by the local government finances (APBD). In addition, food price control programs are continuously promoted to

ensure food availability and affordability for the population. Therefore, although income inequality tends to increase in various districts / cities in East Java within the period of 2011-2015, but policies in the context of fiscal redistribution can minimize the negative impact of income inequality. Likewise, population control needs to be improved in order to ensure the provision of employment to all the human capital.

4. Conclusion And Recommendation

Implementation of regional autonomy policy in Indonesia brings changes in financial management in local governments. Local governments have the flexibility to increase local revenue and allocate it in accordance with the priority scale in regional development. Economic growth is still one of the main indicators in measuring the performance of economic development. The level of economic growth is determined by internal and external factors. Based on classical growth theory, neo classical and endogenous, the main factor of economic growth is capital and human resources.

To conclude, the allocation of local government capital expenditure is positively affected economic growth in 38 districts/cities in East Java Indonesia during the period of 2011-2015. Income inequality is negatively affected economic growth in the region. While the population does not have a significant effect on economic growth in 38 districts/cities in East Java Province. Therefore, based on the findings, we recommend the government of East Java Province to increase the allocation of capital expenditure in all districts/cities. Moreover, the government also need to expand its fiscal redistribution policy on public services needed by the citizens (education, health, and transportation). These improvements could eventually contribute to the achievement of income equality and economic growth in regional economy. Conversely, we found that high taxation in low-income groups is less encouraging in increasing aggregate demand. Therefore, the imposition of the tax rate is expected to be categorized on the economic capacity and the level of people's welfare. Population control needs to be done to increase people's access to the improvements made. This effort can be done by intensifying the family planning program and dissemination of population to the community in various regions.

References

Baltagi, Badi H. (2005). *Econometric Analysis of Panel Data*, Third Edition, England: John Wiley & Sons Ltd

Barro, R. J. (2000). Inequality and Growth in a Panel of Countries, *Journal of Economic Growth*, 5, 5-32

Cingano, F. (2014). Trends in Income Inequality and its Impact on Economic Growth, *OECD Social, Employment and Migration Working Papers*, No. 163, OECD Publishing, 1-64, downloaded from <http://dx.doi.org/10.1787/5jxrjncwxv6j-en>, date, January 18th, 2017

Davtyan, Karen. (2014). Interrelation among Economic Growth, Income Inequality, and Fiscal Performance: Evidence from Anglo-Saxon Countries, *Research institute of Applied Economics*, Universitat de Barcelona, downloaded from http://www.ub.edu/irea/working_papers/2014/201405.pdf, date, January 10th, 2017

Fernandez, Enric, and Paulo Mauro. (2000). The Role of Human Capital in Economic Growth, The Case of Spain, *IMF Working Paper*, WP/00/8

Galor, O., and O. Moav. (2004). From Physical to Human Capital Accumulation: Inequality and the Process of Development. *Review of Economic Studies* 71 (4), 1001–26

Hanushek, Erick A. (2013). Economic Growth in Developing Countries: The Role of Human Capital, *Economics of Education Review*, 37, 204-212

Jajri, Idris and Rahmah Ismail. (2010). Impact of Labour Quality on Labour Productivity and Economic Growth, *African Journal of Business Management*, Vol. 4(4), 486-495

Kuznets, Simon. (1955). Economic Growth and Inequality, *The American Economic Review*, Volume XLV, Number One, March, 1-30

Mankiw, Gregory N. (2010). *Macroeconomics*, Seventh Edition, New York: Worth Publisher

Norris, Era Dabla, Kalpana Kochhar, Nujin Suphaphiphat, Frantisek Ricka, Evridiki Tsounta.(2015). Causes and Consequences of Income Inequality: A Global Perspective, *IMF, Staff Discussion Note*, June, 2-39, downloaded from <https://www.imf.org/external/pubs/ft/sdn/2015/sdn1513.pdf> , date, January, 14th, 2017

Oriakhi, Dickson dan Vincent Ajayi-Ojo. (2015). Does Public Spending Growth Stimulate Economic Development? Empirical Evidence From Nigeria, *20th International Academic Conference*, Madrid, October, 329-341, downloaded from www.iises.net/proceedings/20th-international-academic.../table-of-content?cid , date, January, 18th 2017

Qin, Duo, Marie Anne Cagas, Geoffrey Ducanes, Xinhua He, Rui Liu, and Shiguo Liu. (2006). Income Disparity And Economic Growth: Evidence From People's Republic Of China, ERD Working Paper Series No.84, *Economics And Research Department, Asian Development Bank*, 1-37

Renyaan, James Paul Alfred, Salim Ubud, M.S. Idrus, and Djumahir. (2012). Effect of Fiscal Autonomy and Economic Growth on Local Financial Performance (A Study on Local Government Of Papua Province), *International Journal of Business and Management Invention*, Volume 1 Issue 1, December, 16-21

Sabir, Ahmad Erani Yustika, Susilo, and Ghazali Maskie. (2015). Local Government Expenditure, Economic Growth and Income Inequality in South Sulawesi Province, *Journal of Applied Economics and Business*, Vol. 3, Issue 2 –June, 61-73

Sacerdoti E, Brunshwig S, and Tang J. (1998). The Impact of Human Capital on Growth: Evidence from West Africa. *IMF Working Paper*. WP/98/162:1-32

Scutt, Florian. (2003). The Importance of Human Capital for Economic Growth, IWIM - *Institute for World Economics and International Management*, downloaded from <http://www.iwim.uni-bremen.de/publikationen/pdf/W027.pdf> , date, January, 25th, 2018

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Total Population and Economic Growth Post-Implementation of
Local Autonomy in Indonesia

Shen, Zhang. (2015). Analysis of the Correlation Between Population Growth and Economic Development in Asian Countries, *Cross-Cultural Communication*, Vol. 11, No. 11,6-11

Suwandi and Ari Warokka. (2013).Fiscal Decentralization and Special Local Autonomy: Evidence from an Emerging Market, *Journal of Southeast Asian Research*, Vol. 2013,1-14
www.jatim.bps.go.id

The Upshot between Money Supply and Inflation in Nigeria

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This study empirically investigates the upshot of money supply on inflation in Nigeria using annual time series data spanning from 1970 to 2016. Co-integration and Autoregressive Dynamic Error Correction Model (ADLECM) approach was utilized. The results showed that money supply does not considerably influence inflation both in the long and short run possibly because the country is currently experiencing recession. The ECM has the correct sign of negative and it is significant meaning that about 21% of the errors are corrected yearly. The Granger causality outcome demonstrates that, there is no causality between money supply and inflation in Nigeria within the study period and vice-versa. The implication of this is often that there are different economic conditions which are key determinant of inflation in Nigeria. The study recommends that the government should diversify the economy, minimize importation by encouraging local production of products and services. The CBN should guarantee an exchange rate policy that is essentially determined by the state of the economy and not by speculators being a net importation economy. Also, the CBN should look inwards into the current interest rate and see how it can be regulated in such a way that will encourage private and foreign investors to be able to invest in the country. This in turn, successively increases income, infrastructure development and economic growth at large.

Keywords: ECM, Granger causality, CBN, Nigeria, Infrastructure.

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1. Introduction

In the last few years, the caption that covers the headline of newspapers, economic forums, one-to-one interviews, panel interviews, government

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agenda and so on has meandered around high inflation rate, high exchange rate i.e. the volatile nature of the Naira (Nigeria's currency) to dollar exchange rate, high interest rate, inadequacies in the forex market, low or negative gross domestic product (GDP) growth rate, corruption, political turbulence, insecurity to mention a few in Nigeria and few other African countries which include: Tanzania, Kenya, Ethiopia etc. Surprisingly, politicians across the world especially in developing countries which Nigeria is inclusive, look at inflation as if they are horrific visitation in the form of food shortages, self-inflicted hardship, poverty, foreign invasion or a plague, over which they have no control.

In Nigeria, the syndrome of inflation has been so alarming in the last decade when its value moved from single digits to double digits in the third quarter of 2008 at a rate of 11.5 according to (IMF 2011 World Economic Outlook). However, it became more prominent in the last two years when its value increased from 9.0% in the fourth quarters of 2015 to 18.3% in the first quarters of 2017 accounting for about 100 percent rise in price levels of commodities and facilities (FSDH, 2016). Meanwhile, it has put economic agents vis-à-vis private sector, households, and government at a disadvantage in that income declines in real terms due to rising prices; get worsen especially if such inflation is sustained by high level of uncertainty and after making the cost of living to be on the high side according to (Greenridge et.al, 2009).

On the other hand, money supply can be seen as notes and coins circulating outside the central bank. Such that, an increase in money supply is described as direct monetary transmission mechanism which connotes that when money supply rises, it makes people in an economy to spend more of such money over money demand thereby making demand to exceed supply according to Ragan (2014). Therefore, to reiterate the commonly used economic slogan that economists are interested in ascertaining how a particular term is related to other ones. Which in turn gives rise to a sixty-four million dollar (meaning, the big and essential) question which goes thus: 'is money supply the cause of high inflation?'

Nevertheless, efforts to study whether or not money supply is the cause of high inflation would be futile without first addressing a question posed by the Federal Reserve Bank of San Francisco (FRB, 2002) 'what are the factors that contribute to a rise in inflation in a nation?'

Otherwise asked as ‘What are the determinant of inflation?’ According to Bryan (2003), this is a great question because inflation rates and speculation are often mentioned in the media, pointing to their significance in stimulating or marring the economy with implications on individual’s per capita income. In Nigeria, this is made possible by the national media which sensitizes the public on the values of this economic indicator as published by National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN) respective on a monthly and quarterly basis. More so, an understanding of the sources of inflation will serve as a prerequisite to determine how effective economic policy that can be utilized to combat such inflationary pressure.

Meanwhile, before the above, it will not be out of place to first reckon with the most widely embraced theory of inflation known as the Quantity Theory of Money. This theory was first popularized by one of the foremost monetary economists called Milton Friedman, which stipulate that inflation is monetary therefore effort to trim it down should be ascribed to monetary policy. In particularly, when such inflation is at its first stage. Owing that, the growth of money is generally believed to have a profound influence on economic activities of any nation in the long run. The reason stems from the fact that a rise in money supply makes money more available in the hands of consumers and producers and thus generates consumption and investment as supported by the study of Bello and Saulawa (2013).

About the determinant of inflation, evidence from literatures accounted for the key determinant of inflation around the globe. For instance, Pinto (1990), argued that a rise in inflation can be attributed to the devaluation of currency possibly due to the unification of both the official and parallel exchange rate which in turn eliminate revenue from export earnings. To corroborate the above study, studies of Egwakhide (1994) and Imimole and Enoma (2011), emphasized that the devaluation of the currency could prompt up the general price level through an increase in the cost of production in the short run. Fakiyesi (1996) and Ajisafe (1996) analyzed the main determinant of inflation in Nigeria with a view to suggest the relevant policy that could be utilized to curb it. Consistently, their results found that money aggregate stands to be a fundamental factor that spurs inflation growth in Nigeria.

Pointedly, the subject matter under investigation have been researched from various perspectives in the literature, prominent of them are the studies by Fullerton and Ikhie (1993) who examined inflation dynamics in Nigeria. Their results suggested that, the acclaimed devaluation of naira in the late 1980s and 1990s, despite the rising prices of products, was responsible for further activates inflation in the country. Hence, emphasized that monetary factor is the sole component that can induce inflation without requiring for any reparation. More recently, Bawa et al., (2016), examined the dynamics of the inflationary process in Nigeria. Surprisingly, the results indicated that inflation in Nigeria exhibited a strong degree of inertia. Hence, stressing that past and average rainfall appears to be the main determinant of the inflationary process in Nigeria over the study period. In a similar but surprising study, Odusanya and Atanda (2010) analyzed the dynamics and simultaneous interrelationship between inflation and its determinants. Results showed that only GDP growth and inflation inertia are significant in explaining inflationary process in Nigeria. In developing countries like Mali, Mame (2007) investigated how consumer price inflation can be identified. The results revealed that money and external sector equilibrium were found to be the principal determinant of inflation in Mali. Similarly, in Egypt, Metwally and Al-Sowaidi (2004) employed a simultaneous equation to explain the nature and causes of inflation from 1986 to 2002. The results indicated that both demand pull and cost push factors are the core determinant of inflation in Egypt.

Therefore, after a brief examination of the determinants of inflation, it was discovered that variation in money aggregates, fiscal deficit, external sector equilibrium, oil prices, and currency devaluation among others is responsible for the inflationary process in Nigeria and other developing countries alike. Accordingly, monetary factors were found to be more prominent among the factors that trigger inflation thereby validating the submission of the monetarists' theorem. Worrisomely, in Nigeria despite, all attempts to increase government expenditure in order to stimulate aggregate demand have been unable to yield the required results. Instead, inflation keeps rising especially within the last decade. May be because key monetary variables like interest rate and overnight lending rates to mention a few have been on the high side in the name of 'cooling off' the economy by the central bank of Nigeria through their policy drive. It is in this context that this current study is interested in re-

examining the above raised question. 'Is money supply a cause of high inflation in Nigeria?' The essence of this is to determine the actual and immediate cause of the inflationary process in Nigeria. Furthermore, to confirm if inflation is connected with money supply or not and proffer the needed solution to enable the country to tread on a pathway of growth.

Meanwhile, the current economic restructuring that emanates from the economic condition Nigeria is facing calls for a study like this nature. Also, Nigeria just like other upward looking developing countries is going through a substantial process of liberalization with its major macroeconomic fundamentals in a muddled manner. Couple with the problem of political instability via terrorism, high inflation rates, high interest, and high exchange rate to mention few which in turn is currently causing financial meltdown and decline in the growth of real GDP at large. Recently, Nigerian economy has recorded an enviable stepping up in growth as real GDP grew by 6.27, 7.57, and 7.38 percent, in 2009, 2010 and 2011, respectively. In the same vein, growth in real per capita income was 2.78 percent, 3.76 and 4.78 percent in 2008, 2009 and 2010 which averaged 3.77 for 2008, 2009 and 2010 respectively. Just at the end of the first, second, third quarters of 2016 and first quarter of 2017, the GDP of Nigeria shrank by 0.36, 1.5, 0.8 and 0.5 percent in a year on year basis. Where the latter followed an upwardly revised 1.7 percent decrease in the earlier period. Therefore, it is the smallest fall in five quarters of contraction, as oil sector continued to decline although at a slower pace to mention a few as opined by NBS (2017) even though, economic growth highlighted above is not the core of this current study. Yet, it has an adverse effect on inflation rate in the country.

Furthermore, the reason for this current research is borne-out of the intent to contribute to the existing body of knowledge by re-examining empirically whether or not money supply is the cause of high inflation in Nigeria. Also, it plans to improve our knowledge about diverse explanation in the literature that has outlined money supply and inflation both in pragmatic and hypothetically as it relates to Nigeria. From the practical perspective, it is obvious that the contribution and findings of this study would be supportive to the government and policy makers in terms of helping them to understand the effect of money supply on inflation as well as building policies that will guarantee that stability and

sustainable development is achieved in the country. The rest of the inquiry is structured in four sections; the next section discusses the literature reviews. Section three showcases the research methodology; section four presents the empirical analysis and discussion of results. While section five, provides conclusion and recommends policy implication.

2. Literature Review

There is a growing disparity between developed and developing countries regarding the role money supply plays in an inflationary process around the globe especially in developing economies which Nigeria is inclusive, despite the pivotal task it performs in stabilizing the economy and guarantee a good standard of living among others. Consequently, this has resulted into numerous studies in the empirical literature on the impact of money supply on inflation both in developed and developing economies with mixed feelings.

Basically, as regarding quantity theory of money, which equation states that $MV = PT$ only holds when full-employment has been achieved by a country be it developed or developing as the case may be. From the identity, M stands for currency and others forms of money in circulation (i.e. M1, M2, M3), V refers to velocity of money, which is the number of times money changes hands, P is the prevailing price level and T represent the total volume of goods and services produced in an economy. As matter of fact, the left hand side of the stated equation symbolizes money supply while the right-hand side stands for demand for money, because money demand arises from transactions. In the short run, it is believed that both 'V' and 'T' are unchanged. Therefore, P is said to vary positively with M. In such a way that higher money supply leads to greater price level and vice versa. Consequently, a variation in money supply can result into a change in prices. Meaning that if a country is facing high rates of inflation, reducing the level of money supply would reduce inflation in a modest way and vice versa in case of disinflation and deflation. Although, critics have opposed the validity of this theory in the short run, while, some are of the opinion that it holds in the long run. For instance in developing countries like India, Turkey and Nigeria in the African region does not believe that the upheld assumption of the theory regarding the constant state of V and T holds.

Particularly in Nigeria, there is this belief that there are other dynamic prevalence in the country and political factors that triggers prices rather than just money supply. Moreover, it is believed that the theory works in one direction and not on the other. In the sense that, large volume of money supply may elevate prices but on the other hand, a reduction in money supply may not necessarily reduce prices as currently prevalence in Nigeria and India respective as buttressed by Shubhada-Sabade (2014). Hence, re-emphasizing the opinions of critics of the theory, ranging from Karl Marx, Keynes and monetarists counter position; all of which has agreed with the theory but with distinct and divergence opinion with respect to the driver of prices. For example, Marx points that, the driver of prices is production, Keynes emphasized on income and demand and Friedman dwells on the quantity of money.

On the other hand, according to the fiscal theory of price level, empirical evidence shows that government fiscal policy alters the price level, such that for prices to be stable, the government on its part ensure sustainable finances in the right direction; they must run a balanced budget, the business fluctuations must be without any record of deficit as opined by Leeper (1991) and Woodford (1994) among others. The question is that, in Nigeria has the country been able to meet up with all these requirements? The answer is 'No'. It is at this instance that the current study seeks to re-examination the question 'is money supply actually a cause of higher inflation' with particular reference to Nigeria. In Nigeria, there are several country-specific literatures regarding the relationship between money supply and inflation. For simplicity, these studies would be categorized into the following: those that believe that money supply causes inflation; money supply does not cause inflation and others.

With regards to those that are of the opinion that money supply cause inflation; for instance, Osakwe (1983) on the relationship between money supply and money wages. The study found that increase in money supply and money wages (with lag-in-effect) was the principal factors influencing price movements. Furthermore, they uphold that inflation is a part of the most important economic variables that can distort economic activities of any country. In consonance to the above, the study of Uduakobong (2014) empirically investigated the long-run causal relationship between money supply and inflation in Nigeria within the period 1970 to 2011. The study reveals that there exists a

long-run linear relationship between money supply and inflation in Nigeria. Bakare (2011) undertook an investigation of the determinants of money supply growth and its implication on inflation in Nigeria. The results demonstrated that there is an unequivocal connection between money supply growth and inflation in Nigeria. Thus, presuming that deviation in money supply is accompanying to inflation in Nigeria. Also, Olorunfemi and Adeleke (2013) explored on money supply and inflation in Nigeria. The results unfolds that money supply and exchange rate are key in stimulating inflation in the country.

On the studies that do not believe that money supply causes inflation in Nigeria. Ogunmuyiwa (2004), while conducting an enquiry into the factors that cause of inflation in Nigeria using time series data, noted that money supply is inconsequential in explaining inflation movements in Nigeria, although, marked that the Central Bank's monetary tools are more reactive to inflation and could be used to control it. Contrary to Ogunmuyiwa (2004), Chuku (2009), argued that monetary policy innovations carried out on the quantity-based nominal anchor money supply showed modest effects on output and prices with a very fast speed of adjustment. While, innovations on the price-based ostensible anchor (MRR and REER) have neutral and fleeting effects on output and infers that the administration of the quantity of money advocated money supply in the economy is the most powerful instrument for financial policy usage. In contrast, these studies like Onitiri and Awosika (1982), suggested that neither monetary nor structural phenomenon alone explained Nigeria's inflation. One striking conclusion from this study was that a combination of both factors precipitates the inflation process.

Another line of argument is the position that money supply has positive impact on inflation rate in Nigeria. Waingade (2011) examined the connection between money supply and inflation over a long-run period. The result of their outcomes demonstrates that there exists a positive connection between growth in the money supply and price level. The relationship between the two has however not been corresponding. The growth in money supply has more often than not surpassed the growth in inflation rate. The gap between the two is attributable to the growth in real national income. Sequel to the above, Oyejide (1972) examined the causes of inflation in Nigeria, with specific emphasis on the structuralist point of view. The author particularly, addresses the effect of deficit financing to stimulate inflation process in Nigeria and found that there is

an exceptionally solid positive connection amongst inflation and the different measures of deficit financing that was utilized in the vicinity of 1957 and 1970. Moreover, their outcomes exhibited that there is a long-run linear connection between the rate of inflation and its determinants. In addition, Gary (1994) used an error correction model to determine the factors that affect inflation in Nigeria. The result pinpoints that, money expansion, spurred up by fiscal policies explains to a large degree the inflationary process in Nigeria. Little wonder, did the study of Busari (2007) on the determinant of inflation in Nigeria confirm that inflation is positively related to money supply and marginally to the fiscal deficit.

Odusola and Akinlo (2001) employed unrestricted VAR technique and impulse response to examine a study on output, inflation and exchange rate in Nigeria. Evidence from VAR results indicated a negative influence of inflation on the output. However, output and parallel exchange rate were found to be the major determinants of inflation dynamics in Nigeria. This was also supported by the study of Iyabode (1999) who utilized a two stage least square model to estimate inflationary trend in Nigeria during the period 1971 – 1995. The results confirmed the importance of parallel market exchange rate dynamics in determining inflation. In the same vein, Maku et al, (2013), inspected the dynamic of inflation in Nigeria utilizing an autoregressive technique. The results demonstrate that there is a critical adjustment process of the dynamic of inflation rate while actual output growth rate and fiscal shortage are noteworthy determinants of the inflation rate in Nigeria. They concurred that the objective of the monetary authorities' had prompted a relentless increment in prices which constituted a major macroeconomic challenge.

From other developing economies, studies like that of Cevik and Teksoz (2013) employed co-integration and error correction models to investigate inflation dynamics in Libya. The study found inflation inertia to be key determinant of consumer price inflation in Libya. The result also indicated that government spending, money supply growth, global inflation, exchange rate pass-through and imposition and subsequent removal of international sanctions played central roles in the Libyan inflationary process. Also, Kabundi (2012) investigated with the use of the quantity theory of money to identify the main factors underlying inflation in Uganda. The study showed that both external and domestic

factors affects inflation in Uganda, amongst which are money growth, world food prices, domestic supply and demand effects in the agricultural sector, energy prices and inflation inertia.

In the same vein, Al-Fawwaz and Al-Sawai'e (2012) analyzed the short run relationship between money supply, price level, and the gross domestic product (GDP) for the Jordanian economy. The results show that price level negatively correlates with the output level. Much earlier, study like that of Tyrkalo and Adamyk (1990) investigated the relations between both the money supply and inflation and between money supply and GDP. Their outcomes recognize a long-run connection between money growth and inflation. Likewise, Tang and Lean (2007) analyzed the relation between money supply (MI) and inflation in Malaysia. Their regression outcome depicts that the impact of money supply (MI) on inflation in Malaysia is negative and statistically significant. The implication from their study did not support the monetarist's view which pinpoints that inflation is purely a monetary phenomenon.

With respect to studies from the western economies, a strand of studies has been carried out on this nexus. For instance, studies by Bernanke and Blinder (1992), Cristiano et al. (2008), Hall and Taylor (1997) and Zha et al. (2010) emphasized that increase in an unforeseen monetary policy tightening in form of monetary aggregates and various economic activities brings about a fall in the inflation rate in United States. In line with the aforementioned study, the Bank of Japan (BOJ) opines that inflationary expectations and nominal interest rates exhibit the tendency and hence leads to a downward pressure on prices of products (BOJ, 2000). In addition, Bozkurt (2014) finds that money supply and velocity of money are a cause of inflation in Turkey in the long run. Similarly, the study of McCandless and Weber (1995) and Rolnick and Weber (1998) confirmed that there is a high correlation between money supply growth and inflation, although unable to verify the relationship between inflation and growth in Turkey.

Remarkably, Ingolstadt and Weiden (2002), examined money, inflation and economic growth in Germany using a vector-error correction –P-star model. The results on the contrary showed that the apex bank causes inflation indirectly through the output gap. Thereby making the real effect of monetary policy variables to be temporary hence, affirming the

neutrality of money in the long run. In contrast, Bufman and Leiderman (1998) explored on monetary policy and inflation in Israel. Results from their study buttressed that there is a close association between movements in the rate of inflation and shifts in monetary policy variables in Israel. Studies like Geweke (1986), Lucas and Walsh (2001) verified that there is a strong relationship between inflation and the growth of money supply in the United States. The above study is a confirmation of the study of Fischer (1983) who affirmed that an increase in monetary growth results in an increase in anticipated inflation rate by decreasing real balances demand.

In the same vein, Bleaney (2001) claimed that there exist strong monetary policy responses on inflation shock in recent decades. His study discovers that monetary growth in the United States was strongly accommodative of immediate past inflation the Bretton Woods period, but much less so under the floating rates. As a follow up of the study Bleaney, Nicollela and Edward (2001) revised the Friedman's (1972) work through the support of the lag between monetary policy actions and the response of inflation using UK and US data as evidence from 1953 to 2001. Their results confirmed that, it takes over a period of one year before monetary policy actions can flaunt their climax effect on inflation.

On the other hand, in Taiwan studies by Perry (1980) and Sani (1982) showed no evidence that the money supply significantly impacts on prices of goods and services via inflation. More recently, study by the Bundesbank (2016) supported the assertion of the above authors by pinpointing that the effect of money supply on inflation emanating from the prices of bond's rise / fall has an inconsequential effect on inflation in the U.S.

Next is the examination of studies that researched on the causality between money supply and inflation. Remarkably, the study by Lahiri (1991) investigated the causal relationship between money and inflation in Yugoslavia and Argentina respectively despite the different in time lag. Their empirical results showed bi-directional relationship between money stock and inflation in Argentina and Yugoslavia. In contrast to the above, the study of Makinen (1989) revealed from their empirical studies on hyper-inflation in Taiwan that, there exists uni-directional causality between money supply and inflation with the causality running

from inflation to money growth in the nation's economy. More so, Mbonge et al., (2014) and Sabade (2014), posed a question 'is money supply the cause of inflation?' using an alternative postulate to understand inflation to test the validity of quantity theory of money in India. Their results pinpoints that the inflation dynamics playing out in developing economies are different from those of the developed ones and hence requires necessary re-visit. It is on this note that this current study seeks to re-investigate the upshot of money supply on inflation in Nigeria. In addition, the study intends to capture both the short and long run dynamic relationship in the model and equally find out if causality exist between them and if does, then, know the direction of causality.

3. Research Methodology

Sources of Data and Model Specification

For the purpose of re-investigating if money supply is the cause of inflation in Nigeria or not. We employed data from Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank Development indicators. The data used for this study spans from 1970 – 2016. Based on previous studies like in the literature, about various arguments on the determinants of inflation, we specify that Inflation proxy by consumer price index (CPI) is a function of money supply (MS), output (GDP), real exchange rate (RER), domestic oil price (DOP), and monetary policy rate (MPR), government expenditure (GE) according to authors like; Mbonge et al., (2014) and Sabade (2014) etc. Our model is as specified in equation 1.

$$CPI_t = f(MS, MPR, EXR, RGDP, DOP)_t \quad (1)$$

Equation (1) is written in an econometric form as seen in equation (2) below:

$$CPI_t = \beta_0 + \beta_1(MS)_t + \beta_2(MPR)_t + \beta_3(RGDP)_t + \beta_4(RER)_t + \beta_5(DOP)_t + \varepsilon_t \quad (2)$$

Furthermore, in order to produce the most appropriate coefficient for the CPI with respect to the independent variables, we transform the model in equation (2) on a log-log econometric form as seen in equation (3) below.

$$\ln CPI_t = \beta_0 + \ln \beta_1 (MS)_t + \ln \beta_2 (MPR)_t + \ln \beta_3 (RGDP)_t + \ln \beta_4 (RER)_t + \ln \beta_5 (DOP)_t + \varepsilon_t \quad (3)$$

Where; ‘*ln*’ represents natural log. More so, the reason for log – log transformation among others is that, it will be helpful in following ways; to reduce the problem of multicollinearity, heteroskedasticity, achieve a better fit which in turn ensures actualizing elasticity’s rather than slope hence making the variables to appear more symmetric according to Gujarati and Porter (2009). Since, we are interested in examining the impact of money supply and inflation and their long run interaction as well. We rely on an Autoregressive Dynamic Lag Error Correction Model (ADLECM). This approach has been used by Mbonge et al., (2014) to test the relationship between money supply and inflation in Tanzania. After testing for the existence of long run linear relationship between the variable, with the null hypothesis of no Cointegration among the variables in equation (3) specified thus: $H_0: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ against the alternative hypothesis $H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0$. Accordingly, if the results show the existence of co-integration, then we can proceed to estimate the error correction model according to Sorensen (2005). Therefore, the need for disequilibrium in the short run necessitate the use of a Dynamic Error Correction mechanism (ADLECM) in this study, so that one can treat the error term from eqn (3) as the equilibrium error which can then be used to tie the short run behaviour of the dependent variable to its long run value. Thus, the ADLECM model of this study is presented as follows:

$$\mu_t = \ln CPI_t - \beta_0 - \beta_1 \ln MS_t - \beta_2 \ln MPR_t - \beta_3 \ln RGDP_t - \beta_4 \ln RER_t - \beta_5 \ln DOP_t + \beta_6 \mu_t \quad (4)$$

$$\Delta \ln CPI_t = \alpha_0 + \alpha_1 \Delta \ln MS_t + \alpha_2 \Delta \ln RER_t + \alpha_3 \Delta \ln RGDP_t + \alpha_4 \Delta \ln DOP_t + \alpha_5 \Delta \ln MPR_t + \alpha_6 \Delta \mu_{t-1} + \varepsilon_t \quad (5)$$

Where; ε_t is the white noise disturbance and μ_{t-1} is the lagged value of the error term in the previous model when the error term is non-zero, meaning that the model is in disequilibrium. More so, the value of α_6 shows how fast the equilibrium converges. Furthermore, this study intends to use the Granger causality test to ascertain the direction of causality between money supply and inflation in Nigeria. The reason for this is owing to the postulation of the Quantity theory of money which critics presumes a causal relation between money supply and inflation to

be one-sided. Consequently, the need establish the exact direction of causality between these variables. This in turn, would prompt policy makers to point out the avenues of influence and outcomes after implementation of the policy. The granger causality for this study is expressed as follows:

$$\begin{aligned} Incpi_t = & \sum_{i=1}^p \alpha_{1i} Inms_{t-i} + \sum_{i=1}^p \beta_{1i} Incpi_{t-i} + \sum_{i=1}^p \phi_{1i} Indop_{t-i} + \sum_{i=1}^p \Omega_{1i} \\ & Inrgdp_{t-i} + \sum_{i=1}^p \sigma_{1i} Inrer_{t-i} + \sum_{i=1}^p \psi_{1i} Inmpr_{t-i} + \mu_{1t} \end{aligned} \quad (6)$$

$$\begin{aligned} Inms_t = & \sum_{i=1}^p \alpha_{1i} Inms_{t-i} + \sum_{i=1}^p \beta_{1i} Incpi_{t-i} + \sum_{i=1}^p \Omega_{1i} Inrgdp_{t-i} + \sum_{i=1}^p \\ & \sigma_{1i} Inrer_{t-i} + \sum_{i=1}^p \phi_{1i} Indop_{t-i} + \sum_{i=1}^p \psi_{1i} Inmpr_{t-i} + \mu_{1t} \end{aligned} \quad (7)$$

Where; ‘*In*’ denotes natural logarithm, *p* is the maximum lag length, μ_{1t} , stochastic error terms (normally distributed with zero mean and constant variance).

Variable Measurements

Data used in this paper are annual figures which spans from 1975 to 2016 and include: consumer price index (headline consumer price index), money supply (narrow money), real exchange rate, domestic oil price, output proxy by real GDP, and monetary policy rate respectively are sourced from National Bureau of Statistics and Central Bank of Nigeria statistics bulletin (2016). All of which were measured in naira except the rates. CPI was used to proxy inflation due to the fact that quantity theory of money though, accepted but criticized on the ground that there are different drivers of prices in an economy. Gross domestic product was used to proxy for output, while, the volatile nature of the Naira (Nigeria’s currency) to dollar exchange rate serves as the real exchange rate, monetary policy rate was used to proxy money market rate. Lastly, the money supply data is proxy by narrow money and is in billions of naira.

4. Results and Discussion

In an attempt to examine whether money supply is the cause of high inflation in Nigeria, this section begins by conducting some preliminary analysis (descriptive statistics, Unit root test and co-integration test) on the variables employed in the study. The result is presented in Table's 1, 2 and 3 below.

Preliminary Analysis

Table 1: Descriptive Statistics of Variables in the study model

	LCPI	LMS	LDOP	LRER	LRGDP	LMPR
Mean	1.667085	12.49025	1.111717	2.423160	13.93486	2.277053
Median	1.834180	12.19844	1.178655	3.085852	14.04588	2.484907
Maximum	5.364105	19.31790	4.976734	5.717028	18.43547	3.258097
Minimum	-2.302585	6.885714	-2.471004	-0.604404	8.347353	1.252763
Std. Dev.	2.532786	3.675899	2.620173	2.346094	3.167716	0.513162
Skewness	-0.118016	0.403930	-0.013838	-0.121182	-0.184820	-0.424360
Kurtosis	1.488367	2.176371	1.353424	1.351085	1.794918	2.055003
Jarque-Bera	4.583958	2.606548	5.310957	5.439588	3.111512	3.159470
Probability	0.101066	0.271641	0.070265	0.065888	0.211030	0.206030
Sum	78.35302	587.0415	52.25069	113.8885	654.9385	107.0215
Sum Sq. Dev.	295.0901	621.5628	315.8040	253.1912	461.5835	12.11344
Observations	47	47	47	47	47	47

Source: Authors Computation From E-Views 7

Descriptive statistics demonstrate the unique features of the data used. For instance, in Table 1, the average mean and median value of LRGDP (13.93486) i.e. real gross domestic product is the highest among others (i.e. LCPI =1.667085, LMS =12.49025, LDOP =1.111717, LRER = 2.423160, LMPR = 2.277053) respectively. Table 1, also confirms that 19.31790 is the maximum and – 0.604404 the minimum. It is clear that LMS is highly volatile with the highest standard deviation. The values of skewness and kurtosis were also computed for 47 observations. Results exhibit that all variables are negatively skewed except the value of LMS which is positive thereby implying that they are left long tail. Evidence from the Jarque – Bera (JB) test indicates that all variables

utilized in the model are normally distributed. More so, that the variables are first differenced and computed by the ratio relative to prior observation.

Unit Root Test

Table 2: Result of Unit Root Test

Variable	AT LEVEL				AT FIRST DIFFERENCED			
	ADF-t stat	PP-t stat	CV at 5%	Decision	ADF-t stat	PP-t stat	CV at 5%	Decision
LMS	0.470090	0.605112	-2.926622	NS	-7.260224	-7.26191	-.2928142	S
LDOP	0.166940	0.166940	-2.926622	NS	-5.663817	-5.620572	-.2928142	S
LMPR	-2.296816	-2.083082	-2.960411	NS	-7.059619	-8.850366	-.2929734	S
LRER	-1.723612	-1.840679	-2.926622	NS	-3.250133	-3.250133	-.2918853	S
LCPI	-0.830764	-0.596874	-2.926622	NS	-3.523589	-3.403172	-.2928142	S
LRGDP	-1.287820	-2.990516	-2.926622	NS	-6.292812	-6.740605	-.2928142	S

Source: Authors computation from E-views 7

To perform the unit root test, the researchers employed both Augmented Dickey Fuller and Philip Perron test. To achieve this, a null hypothesis that the variables have a unit root was set. Expectedly, after performing the test, it was discovered based on the p-Value and t-statistics that the null hypothesis of a unit root was not rejected. Meaning that, all the variables of interest are not stationary at level. But, after taking the first difference of these variables, they now became stationary using both (ADF and PP) test as presented in Table 2 above. Since, the variables are stationary at first differencing; we proceed to test the existence of long run relationship among the variables. The result of the Johansen co-integration test is presented in Table 3 below.

Johansen Co-integration Test

Cointegration is a crucial test for the existence of long relationship among variables. As a matter of fact, this procedure relies heavily on the relationship between the rank of a matrix and its characteristic roots as

buttressed by Johansen (1991). The result of the co-integration test is presented in Table 3 below.

Table 3: Result of Johansen Co-integration Test

Trace Test				Maximum Eigen Value Test			
Null	Alternative	Statistics	95% Critical Values	Null	Alternative	Statistics	95% Critical Values
$r = 0$	$r \geq 1$	205.744	95.7537	$r = 0$	$r = 1$	78.0476	40.0776
$r \leq 1$	$r \geq 2$	127.697	69.8189	$r \leq 1$	$r = 2$	58.9120	33.8769
$r \leq 2$	$r \geq 3$	68.7846	47.8561	$r \leq 2$	$r = 3$	33.7870	27.5843
$r \leq 3$	$r \geq 4$	34.9976	29.7971	$r \leq 3$	$r = 4$	18.2019	21.1316
$r \leq 4$	$r \geq 5$	16.7958	15.4947	$r \leq 4$	$r = 5$	12.5170	14.2646
$r \leq 5$	$r \geq 6$	4.27878	3.84147	$r \leq 5$	$r = 6$	4.27878	3.84147

Source: Authors computation from E-views 7

From the above table, it was observed that, the null hypothesis of no co-integration for $r=0$, $r \leq 1$, $r \leq 2$, $r \leq 3$, $r \leq 4$ and $r \leq 5$ were rejected by the trace statistics method. Although, the null hypothesis $r \leq 3$ and $r \leq 4$ were accepted by the maximum Eigen values statistics due to the fact that, their statistical value was less than their critical values. The implication is that, there is a long run relationship among the variables with 3 cointegrating equations at 5% level of significance in the model.

Empirical Analysis

Table 4: Ordinary Least Square Results

Variables	Coefficient	Std Error	t-stat	Prob.
LMPR	0.130411	0.091388	1.427006	0.1611
LMS	-0.022516	0.036837	-0.611228	0.5444
LPOF	0.245136	0.043510	5.634014	0.0000
LRER	0.074117	0.067590	1.096576	0.2792
LRGDP	0.565444	0.054304	10.41247	0.0000
C	-6.680139	0.365495	-18.27695	0.0000
R ² = 0.995, Adj. R ² = 0.994 F-statistic=1628.813,prob>F=0.0000, Root MSE= 0.189874				

The result of the long run estimate in Table 4 clearly proves that money supply has a negative but insignificant relationship with price inflation in Nigeria although; this result was consistent with the study of Tang and Lean (2007).

Table 5: Residual Stationarity test results

Variable	ADF Test	PP Test	Order of Integration
Residual	-3.90888	-3.07362	$I(0)$

Error Correction Model

Co-integration and non-spurious regression are the fundamental requirements of ECM. Consequently, the results of co-integration test (Table 3) and regression residual test (Table 5, above) provide enough evidence of long run relationship among the variables under consideration as there are three cointegrating vectors and Stationarity of residual at level, therefore, the basis to estimate ECM. The result is presented in Table 6 below.

Table 6: Results of the ADLECM

Variable	Coefficient	Std Error	t-Statistic	Prob.
C	0.041139	0.024522	1.677675	0.1021
ECT (-1)	-0.206566	0.074042	-2.789842	0.0084
DLRGDP	0.179743	0.051017	3.523205	0.0012
DLDOP	0.114849	0.032010	3.587967	0.0010
DLCPI(-1)	0.427565	0.104490	4.091918	0.0002
DLRER(-2)	0.103789	0.047783	2.172087	0.0365
DLMPR(-1)	-0.134612	0.062627	-2.149434	0.0384
DLMS(-1)	-0.017618	0.033000	-0.533861	0.5967
R ² =0.64, Adj. R ² =0.58				
F-Stat = 9.286, Prob. <F (0.0001), DW= 1.68				

Source: Authors computation from E-views 7

The ECM results show that there is mixed impact of the exogenous variables on inflation between the captured period. Meaning that, some of the exogenous variables indicated a positive influence on inflation,

while others had a negative influence on it in the short run. Evidence from the F-statistics indicates that the explanatory variables are jointly significant. R^2 value of 0.64 indicates that 64% of the variations in the response variables are accounted for by the changes in the explanatory variables. The value of DW statistics which is approximately (2.0) shows the absence of serial autocorrelation. For example, the coefficient of the past values of MPR (-0.135) and MS (-0.018) has a negative influence on the current value of inflation in Nigeria. Although, the former was found to be statistically significant while the latter statistically insignificant in the current value of inflation. This in turn, contradicted the popular monetary postulation which buttress that, the general price levels of goods and services is directly proportional to the amount of money supply leads an increase in the price level vis-à-vis inflation (Moses et al. (2015). Similarly, the current value of real GDP and the domestic oil price (DOP) were found to impact the current inflation figure in the economy. In addition, it was discovered that the first lagged value of inflation and second lagged value of the real exchange rate was found to exert influence on the current value of inflation in Nigeria positively.

Over and above, the adjustment coefficient error term was found to be non-zero and negative as expected and statistically significant at the 5% level shows the dynamic stability of inflation. Consequently, it can be inferred that in the short run, the model diverges from the equilibrium. In such a way that, any variation in the inflation via CPI can be regulated by adjusting the money supply, the real exchange rate, monetary policy rate, output and price of fuel respectively towards convergence in the equilibrium. More particularly, the coefficient of the ecm_{t-1} (-0.2065) in Table 6 pinpoints the adjustment mechanism of the equilibrium with the break of the model at 0.27 units. The implication from the aforementioned is that there is 21% of errors are corrected yearly from the previous periods in to the short run dynamic process. Despite, the appropriateness of the model, it was further verified by carrying out various diagnostic tests on the residual of the ECM model. They include: Normality test, Serial correlation LM test and Heteroskedasticity test respectively. Evidence from their results showed that the residuals of model passed the three tests based on their probability values (see appendix).

4.7 The Granger Causality Test

Table 7: The Result of Granger Causality Test

Direction of causality	F- value	Observation	Probability	Decision
CPI → MS	0.1594	43	0.9574	Do not reject the null
MS → CPI	0.9170	43	0.4653	Do not reject the null
RER → CPI	2.6932	43	0.0473	Reject the null
CPI → RER	2.9820	43	0.0326	Reject the null
RGDP → DOP	6.3466	43	0.0006	Reject the null
DOP → RGDP	3.4751	43	0.0175	Reject the null

Source: Authors computation from E-views 7

The result of the causality test as shown in Table 7 reveal that the null hypothesis of no causality was not rejected at 5% level of significance. Meaning that, there is no causality between money supply and inflation, which outcome is consistent with the study of Koyuncu (2014). Hence, money supply does not granger cause inflation and vice-versa in Nigeria.

5. Conclusion and Policy Implication Recommendation

This study investigates the upshot of money supply on inflation in Nigeria. After exploring on all the needful theoretically and empirically literatures, the study concludes that money supply does not impact on inflation both in the short and long run in Nigeria. This is evidence from the results obtained from both the long and short run analysis. However, the outcome of this study tends to support the work of Akinbobola (2012) who posited that inflation seems to find no explanation on money supply in Nigeria. As a result, the government of Nigeria should put in place other measure that triggers up inflation in Nigeria which includes: high exchange rate, interest rate and high domestic fuel price respectively in order to achieve low inflation rate. The study also revealed that monetary policy rate has an impact on money expansion that is accompanied with a reduced interest rate. This in turn will make it possible for banks to provide credit to private sectors at a low lending rate; thereby fostering the economy and vice-versa. In this wise, the government can use inflation as a watch dog on the efficacy of monetary policy since, it is generally known as a monetary phenomenon. The

above result was also supported by the result of our Granger causality test, that there is no causality between money supply and inflation during the periods under study. Meaning that, money supply is not a major cause of inflation; rather it is caused by some structural factors in the country. Therefore, the study recommends that the federal government through the monetary authorities should regulate the monetary policy rate downwardly to encourage foreign and private investment in the country which in turn boosts economic growth at large. In addition, the government should reduce her outrageous expenditures and control the incessant budget deficit that has been recorded in Nigeria while the central bank should desist from creating cheap currency so as to curb excess supply of money in the economy. In addition, the government should diversify the economy; enact easy export policy, subsidize fuel price because they turn out to be among the factors that triggers high inflation in Nigeria possibly because of the ripple effect they exhibit on economic activities at large vis-a-vis transportation, prices of food, necessity items to mention few.

References

Ahmed, A. E. M. and S. Z. Suliman (2011); “The Long- Run Relationship between Money Supply, Real GDP, and Price Level; Empirical Evidence from Sudan”. *Journal of Business Studies Quarterly*, Vol. 2, No. 2, Pp 68-79.

Ajisafe, R.A & Folorunso, B.A. (2002); The relative effectiveness of fiscal and monetary policy in macroeconomic management in Nigeria; *African Economic and Business Review*, vol.3, no.1.

Akinbobola, T. O. (2012); The dynamics of money supply, exchange rate and inflation in Nigeria; *Journal of Applied Finance and Banking*; vol.2, no. 4, Pp 117-141.

Akinnifesi E.O. (1984). Inflation in Nigeria: Causes, Consequences and Control. CBN Bull. 1(3):61-75.

Al-Fawwaz T. M. and K. M. Al-Sawai’e (2012); “Output, Money, and Prices: The Case of Jordan”; *Journal of International Business Research*, Vol. 5, No. 12, Canadian Center of Science and Education.

Babatunde M.A. and Shuaibu M.I. (2011); Money Supply, Inflation and Economic Growth in Nigeria; *Asian-African Journal of Economics and Econometrics*; Vol. 11, No. 1, 2011: Pp 147-163.

Bakare, A.S. (2011); An Empirical Study of the Determinants of Money Supply Growth and its Effects on Inflation Rate in Nigeria; *Journal of Research in International Business and Management*; Pp 124-129.

Bello, M.Z. M. A. Saulawa (2013), Relationship between Inflation, Money Supply, Interest Rate and Income Growth in Nigeria 1980-2010: An Empirical Investigation. *Journal of Economics and Sustainable Development*, 4(8), 23 – 39.

Bozkurt C. (2014); “Money, Inflation and Growth Relationship: The Turkish Case”, *International Journal of Economics and Financial Issues*; Vol. 4, No. 2, Pp 309.

Cagan P (1956); “*The Monetary Dynamics of Hyperinflation*”; Milton Friedman (ed) *Studies in the Quantity Theory of Money*; University Press, Chicago.

Central Bank of Nigeria, 2010; *CBN Publications*, Statistical bulletin; Abuja: Central Bank of Nigeria; vol. 4; No. 5

Chuku, A.C. (2009); “Measuring the Effect of Monetary Policy Innovations in Nigeria: A Structural Vector Autoregression (SVAR) Approach”; *African Journal of Accounting, Economics, Finance and Banking Research*, Vol. 5, No.5.

Dineka, J. (2015), Money Supply and Inflation: Evidence from Sri Lanka, *Asian Studies International Journal - Vol. 1, No. 1, January 2015 - ISSN: 2279-1949*.

Dutton, D.S. (1971), A model of Self Generating inflation, *Journal of money, credit and Banking*, 3(2), 245p

Egwaikhide, F.O. Chete, L.N. and Falokun G.O. (1994); “Exchange Rate, Money Supply and Inflation of Nigeria: An Empirical Investigation”; *African Journal of Economic Policy*; Vol. 1 (1).

Fisher, I. (1911); “*The Purchasing Power of Money*”, New York: Macmillan.

Friedman, M. (1968); *The Quantity theory of money*, London: Harvard Publisher limited.

Fitsum, S.D., Yilkal, W.A. and Teshome, A. R. (2016). The Relationship between Inflation, Money Supply and Economic Growth in Ethiopia: Co integration and Causality Analysis, *International Journal of Scientific and Research Publications*, 6(1), 556 – 565.

Greenidge K. and Dacosta D. (2009); *Determinants of Inflation in Selected Caribbean Countries*, Business, Finance and Economics in Emerging Economies; Vol.4 No.2; Pp 28 – 31.

Gujarati, D.N. and Porter, D. (2009) 3 edn. *Basic Econometrics*. US: The McGraw-Hill.

Itua, G. (2000) "Structural Determinants of Inflation in Nigeria (1981-1990)," An Unpublished M.Sc. Thesis, Department of Economics, Ahmadu Bello University, Zaria, 2000.

Iyabode Masha, New Perspectives on Inflation in Nigeria in Central Bank of Nigeria, *CBN Economic and Financial Review*, **38**(2), (June, 2000).

Koyuncu F. T. (2014); "Causality Network between Budget Deficit, Money Supply and Inflation: An Application to Turkey"; *International Journal of Business and Social Science* Vol. 5, No. 10(1); Center for Promoting Ideas, USA.

Lahiri, A.K. "Money and Inflation in Yugoslavia" *IMF Staff Papers*, Vol.38. No.4: (1991) pp.751-788.

Makinen G. E. and Woodward (1989); The Taiwanese Hyperinflation and Stabilization of 1945 – 1952; *Journal of Money, Credit and Banking*, 21(1): Pp 90.

Mbongo J. E.; F. Mutasa and R. E. Msigwa (2014); "The Effects of Money Supply on Inflation in Tanzania"; *Economics*, 3(2): Pp 19-26.

Musibau and Isa (2011), Money Supply, Inflation and Economic Growth in Nigeria. *Asian-African Journal of Economics and Econometrics*, 11(1), 147-163.

Odusanya, I. A. and A. A., Atanda (2010); Analysis of Inflation and Its Determinants in Nigeria; *Pakistan Journal of Social Sciences*; Volume 7, No. 2. Pp. 97-100.

Ogunmuyiwa, M. S. & Francis, E. A. (2010). Money supply - economic growth nexus in Nigeria. *Journal of Social Sciences*, 22(3),199-204

Olorunfemi, P. & Adeleke, P. (2013); *Money supply and inflation in Nigeria: Implications for national development*; *Modern Economy* 4, Pp 161- 170.

Omanukwue P. N. (2010); “*The Quantity Theory of Money: Evidence from Nigeria*”, Central Bank of Nigeria Economic and Financial Review; Volume 48/2.

Omotor, D. G. (2010), “The Nigerian Economy and Monetary Policy: Some Simple Empirics” MPRA Paper No. 22672, pp. 127,

Onitiri, M. A. and K. Awosika, “Inflation in Nigeria,” Proceedings of a National Conference convened by the Nigerian Institute of Social and Economic Research, Ibadan, 1982.

Orubu, C. O. (2009), Inflation in Nigeria: concept, measurement and control. *Central Bank of Nigeria (CBN) Bullion*, 33(1) , 19- 30, .

Osakwe, J.O. (1983); “Government Expenditures, Money Supply and Prices 1970-1980”; *Journal of CBN Economic and Financial Review*; Vol 21 (2).

Oyejide, T.A. (1972); Deficit Financing, Inflation and Capital Formation: An Analysis of the Nigerian Experience 1957-1970”; *Nigeria Journal of Economic and Social Studies*; Vol. 14, No 1, Pp 27-43

Proshare Intelligent Investment (2016).

Sheffrin, S. M. (2003) [January 2002]. *Economics: Principles in Action*. The Wall Street Journal (Classroom Edition, 2nd ed.). Upper Saddle River, New Jersey: Pearson Prentice Hall. (Retrieved May 3, 2009).

Sorensen, Eric H. (1982) "Rational Expectations and the Impact of Money upon Stock Prices."
Journal of Financial and Quantitative Analysis 17(5) 649-62.

Tang CF (2008); *Is Inflation always a Monetary Phenomenon in Malaysia*; Online at <http://mpa.ub.uni-muenchen.de/19778/> MPRA Paper No. 19778, posted 11. January 2010 02:17 UTC.

Tyrkalo R. and Adamyk, B. (1999); *Monetary Policy Transmission and Its Meaning to the Effectiveness of NBU activity*; Herald of NBU, 7,6,11.

Uduakobong, S.I. (2014), An empirical investigation of the relationship between money supply and inflation in Nigeria: An Econometric Analysis. *Journal of Economics and Sustainable Development*, 5(12), 149 – 155.

Uduakobong, S.I. (2014), Budget deficit and inflation in Nigeria: An Empirical Analysis, *Journal of Economics and Sustainable Development*, 5(4), 26 – 32.

Waingade, R. A. (2011); Money Supply and Inflation; An Historical Analysis; *The IUP Journal of Monetary Economics*; Vol. IX, No. 1, Pp 22-45.

Woodford, M., (2002), Interest and Prices: Foundations of a Theory of Monetary Policy, Princeton University Press, Princeton, p.543

Yahaya, K. (2000); Structural disequilibrium and inflation in Nigeria; A theoretical and empirical analysis; *Centre for Economic Research on Africa*; School of Business, Montclair State University, New Jersey.

The Mediating Effect of Products and Services on Growth Rate of Malaysian Islamic Financial System

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The purpose of this research comprises three areas, namely, an examination of the specific factors of growth in the Islamic financial system, an assessment of the relationship between the development factors of an Islamic financial system, and the identification and analysis of the mediating role of banking assets and equity funds for financial development. To investigate the factors of growth, a structural equation model is developed that incorporates the main determinants of growth of banking assets and equity funds. The empirical investigation by a structural model revealed that the mediating variables, financial assets, and Islamic equity fund are significant at a level of .05 for the outcome variable of growth. The findings of the study generated greater awareness among organizations of Malaysia on the importance of strengthening the current Islamic financial system as a vehicle for organizational effectiveness.

Keywords: Economic growth, Islamic financial System, Islamic products and services, Growth; Islamic banking, Islamic equity fund, Islamic Finance.

Jel code: A12; P4; G41;G10; G14; G15;G17; G21

1. Introduction

A number of market trends suggest a growing role for Islamic finance as a financial sector development. Islamic finance is a growing industry in many countries, such as Malaysia, the UAE, Turkey and Pakistan.

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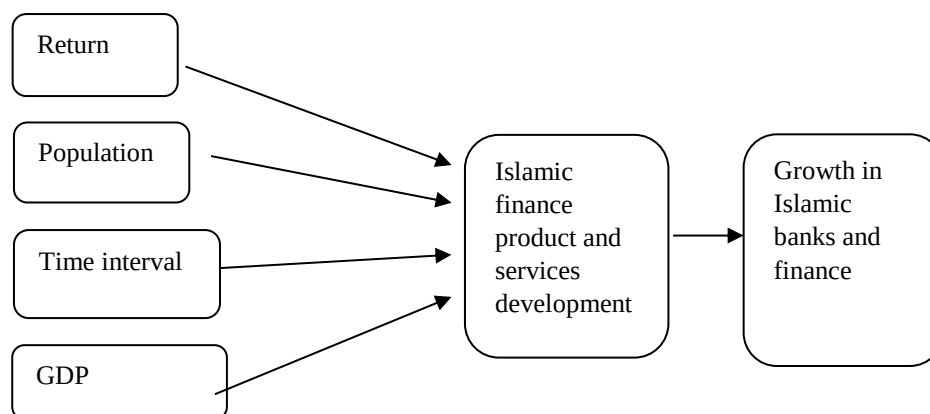
Evidence of the validity of the development of Islamic finance is derived from the studies of (Ayaydin, 2016; Hannan, 1995; Sadeghi, 2008).

In Malaysia, an Islamic financial system theoretically could not be established as the only financial system due to many economic policies that are based on unethical decisions. Financial development determines the strength of economy and the country's standard of livelihood. Therefore, the determinants of financial growth need further evaluation for consistent progress in creating a policy decision for an economic system.

Very little literature can be found on the relationship between growth factors of Islamic financial institutions (IFI's) in Malaysia. This research attempts to cover and include this aspect to fill the research gap. Due to the implementation of the Shari'ah principles of Islamic finance, Islamic products and services are emerging as a more inspiring and resilient choice for ending the recession. An Islamic financial system, also called ethical financial system, is independent and has its own separate place in global financial markets.

In addressing the growth scenario of banking assets and equity funds, the performance of the Islamic banking system and Islamic equity funds(IEF) was examined in terms of conventional financial indicators at the international and national level, comparison with the conventional financial system growth indicators, and perceptions about the Islamic financial system(Figure 1).

In terms of the geographical and resources scenario, Shari'ah compliance infrastructure, financial growth indicators, and the central bank database assisted in understanding the critical growth determinants particular to Malaysian industry. In addition, the use of path analysis coefficients in this research may explore in depth analysis of the relationship between variables in the Islamic finance industry.

Figure 1:Conceptual Model**Independent variables****Mediating variable****Dependent variable**

1.1. Hypothesis for statistical investigation

Ten hypotheses were developed in this research study. Each hypothesis was stated for a dataset of sample respondents, i.e., Malaysia. The four independent variables look at the effects of return, population, time interval and GDP (Gross domestic product) on Islamic banking assets and Islamic equity funds (mediating variable).

Hence, hypothesis i, hypothesis ii, hypothesis iii, hypothesis iv, hypothesis v, hypothesis vi, hypothesis vii and hypothesis viii investigate the relationship between banking assets and return, banking assets and population, banking assets and time interval, banking assets and the GDP rate, Islamic equity fund and return, Islamic equity fund and population, Islamic equity fund and time interval, Islamic equity fund and the GDP rate, respectively. To examine the mediating role of Islamic banking assets and Islamic equity funds on annual growth of the Islamic financial system, the direct effect of mediating variables on annual growth of Islamic finance will be tested in hypotheses xi and x.

2. Relevant Theories

In an Islamic financial system framework, all the principles, laws, and processes follow a commitment to Allah (الله). Moral soundness is applied as a standard for the acceptance of financial transactions,

contract, or instruments (Z. H. Khan & Watson, 2006). Methodology for theory-building in Islamic economics based on economic statements of the Quran, Hadith, and Sunnah lead to method that arrives at the real and undeniable meanings for development of the Islamic economic system (Khan, 2014)

Islamic values such as justice, equality, truth, faith, kindness, honesty, and responsibility has ensured Islamic Banking spreads competency over traditional interest rate spreads (Shaikh, 2013). Hassan & Lewis (2007) found that the absence of a uniform interpretation of Islamic law leads to viewed permissible activities by location and time. The imperfect markets with diverse banking structures are evaluated using a criterion to test the difference in performance. Generically, different theories including capital market theory for the criterion of performance are developed. However, a services demand for banking activities is an important factor in the growth of banks products markets.

Recent literature draws on theoretical aspects of Islamic banking and finance for depositors, regulators, owners, managers, and borrowers of the Islamic financial system. A number of researchers used economic theory, socioeconomic theory, agency theory, stakeholder theory, and institutional theory to augment operational aspects of Islamic financing (Zamil, 2014).

It may be helpful to review briefly the relevant theories such as socioeconomic theory, modern financial theory, and agency theory, which provide support for this study on Islamic banking and finance.

2.1. Socioeconomic theory

Islamic economic theory and traditional economic theory are two different approaches. Both theories have different perspectives. The principle of contractual fairness could counterbalance the principle of permissibility with the objective of attaining social justice or equity between the parties (Balala, 2011).

Prohibition of Riba is a core component of Islamic economic theory. For financial matters, gains through fair trade are legitimized in the canon but are offset by the prohibitions of Riba (interest/usury), maysir (gambling) and gharar (excessive risk or uncertainty)(Vogel & Hayes, 1998).

The macroeconomic variable, the inflation rate (INF), has a negative and statistically significant impact on the ROE for both domestic and foreign banks. Therefore, high INF is associated with low ROE of banks.

There are many reasons for the study based on the determinants of growth of the Islamic financial system. According to the socioeconomic theory, the income and well-being of the people are components of social economy perspectives (Cant, 1975). The demand for social justice and economic opportunity have led to the developmental growth of Islamic economic and financial ideas (Hegazy, 2006).

As applied to this theory in the study, it was expected to include macroeconomic variables to explain influence of independent variables on the dependent variable of growth of the Islamic financial system.

2.2. Agency theory

Many types of research have explained agency theory as a principal-agent relationship in the Islamic economic field. Principal-agent problems still exist in the Islamic banking model with many agents and principals. The principal would do slightly better if she could contract for effort and not output, and the agent does the same either way (Ismail, 2011).

Abdullah & Rahman (2007) implied agency theory in Islamic business contracts and firms. Agency theory can analyse profit-and-loss sharing contracts in Islamic finance by using profit sharing as a variable. Islamic financing would complement profit sharing (that is, outcome-based monitoring) with additional incentives for appropriate behaviour (Mirakhor & Zaidi, 2007).

To determine actual governance practices of Islamic financial institutions (IFI's) and their effectiveness in mitigating agency issues, Safieddine surveyed Islamic financial institutions that operate in five of the GCC countries. The researcher analysed data from over 75 Islamic financial institutions of Saudi Arabia, Kuwait, Qatar, Bahrain, and the United Arab Emirates.

The researcher found the importance of the mandatory and binding decisions of the Sharia supervisory board (Safieddine, 2009).

For the variations in agency cost of contract structure, the administration is responsible for agency problems. In equity funds, managers' negligence in performing their duties to maximize shareholders' wealth has led to agency problems in traditional companies, but in the case of Islamic financial institutions, any divergence by managers from placing all supplied funds in Sharia-compliant investments results in creating an agency problem (Chapra & Ahmed, 2002).

The authors examined how a difficulty in meeting capital requirements known as Capital Crunch is relevant to banking activities. This shows that stricter capital enforcement is important only for the Islamic banking system. The research has explored the important role of the risk-reducing and value enhancing of financial institutions by reducing agency problems and increasing profit, market values and stock returns (Harjoto, Yi, & Chotigeat, 2012).

All financial contracts are based on the firm's reported earnings. The deviation from Islamic principles in financial contracts leads to different dimensions of agency problems. Islamic institutions have various forms of agency problems. However, the nature of the financial contract that has an Islamic moral code and ethical values is considered an important factor for the agency relationship, so it is important to distinguish banks by agency relationships associated with particular banking scenarios.

Normally, the method and reason for financing in the agency relationship are considered a major cause for agency problems. When financing is undertaken for the sake of financing, without the full involvement of the financier, several issues relating to the agency relationship arise (Aljifri & Kumar Khandelwal, 2013).

To determine the impact of principal-principal (PP) conflicts on the performance of Islamic banking, Banchit, Boulanouar, Wellalage, and Zainal Abidin (2013) surveyed and compared Islamic banks in a study entitled "Do principal-principal or principal-agent conflicts impact the performance of Islamic banking"? The researchers analysed data from over 37 banks that have adopted Islamic banking in ten countries. They found principle-agent conflicts were prominent and recommended that this should be the main concern in Islamic banking. Next, the authors examined how principle agent and principal-principal conflicts have an impact on the performance of Islamic banks all over the world.

However, the existence of principal-principal conflicts could not be proven conclusively due to the partial ownership of large shareholders. The unethical actions by contracting parties in a financial contract provide deep insight into an agency problem of both ethical banking systems (Islamic banking) and conventional banking systems. Generally, the agency problems are responsible for the instability and growth of banks. However, standard agency models are not an important factor in distinguishing specific organization related agency problems.

This study investigated the performance of Pakistani and Malaysian Islamic financial institutional contracts to find the impact of the principle-agent relationship on the growth of the Islamic financial system.

The nature of the contract is considered an important component for the issue of the agency problem, so it is important to distinguish financial contracts by agency problems associated with particular contract scenarios (Shamsuddin & Ismail, 2013).

2.3. Modern financial theory

The theories of Elton & Gruber (1997) and Markowitz (1999) form the foundations of financial economics, particularly in the analysis of asset allocation strategies for investment portfolios. The presented framework has also been widely used for analysing the impact of bank activity and asset diversification on performance. Under this approach, interest income and non-interest income activities are treated as though they are two different asset classes within the portfolio of a banking organization. Nevertheless, research on portfolio performance valuation theory continues to grow and has benefited particularly from the works of (Jensen, 1968; Sharpe, 1966; Treynor, 1965). Central to the modern financial theory, including the asset pricing theory and the portfolio theory, are the vital assumptions, namely, markets are highly efficient; investors exploit potential arbitrage opportunities; and, investors are rational (Dimson & Mussavian, 1999). The Shari'ah constraints raise yet another daunting issue that poses a challenge to Islam-based investment. As far as modern portfolio theory is concerned, it has been argued that such restrictions, although religiously or ethically correct, will not be acceptable (Kurtz, 2005).

Under modern portfolio theory, an investor is deemed to be rational and concerned only with the return and risk relationship of the chosen securities in the portfolio; subsequently he/she shall have unlimited choices of assets at his/her disposal whenever he/she intends to diversify that would allow him/her to achieve the optimum mean-variance portfolio. Therefore, putting certain restrictions on the choice of securities would have a considerable impact on the analysis of the performance of an Islamic-based investment portfolio since the portfolio arguably might not be able to achieve the status of an optimal portfolio as defined by Markowitz's theory.

Consequently, any results from analysis related to the optimality of Islamic funds under the framework of the modern portfolio theory should be interpreted cautiously.

3. Research Methods

This research employed a quantitative method and primary data gathered through time-series data (2005-2015). Quantitative data analysis is helpful in the evaluation of data because it provides a quantifiable and a simple, easy way to understand the results (Singh, 2009).

To investigate the factors of growth, a simple structural equation model is developed that incorporates the main determinants of the growth of banking assets and equity funds. This model was inspired by the model described by (Mallinckrodt, Abraham, Wei, & Russell, 2006). The analysis focuses on the structural equation model. The theoretical framework builds on the basis of external and internal variables that effect an Islamic financial system, with many variables, including banking as the dependent variable and four constructs of the independent variable, i.e., Return, Population, Time interval, and GDP (Gross domestic product) growth rate. An empirical study will be conducted to the measure variables. Data analysis is based on statistical processes and techniques.

The following simple statistical model based on the growth of the Islamic finance industry in particular sectors will be generalized:

$$G = \beta_0 + \beta_1 E + \beta_2 BA \text{ eit}$$

Equation I

The dependent variable in the above model is the growth of the Islamic finance industry from time (i) and period (t), while independent or explanatory variables are Islamic equity funds and banking assets. The software for processing the data comprises SPSS 22 and SPSS AMOS 21 software based on regression models.

3.1. Data Analysis

For this study, a time series data of 11 years of (2005-2015) growth factors, including time interval, GDP, income (Return) and population, specific for this study was selected to analyse their impact on the development of Islamic finance in Malaysia. The randomly selected respondents who participated in this work were:

1. CIMB Islamic Bank Berhad
2. Bank Islam Malaysia Berhad
3. AmBank Islamic Berhad
4. Maybank Islamic Berhad
5. RHB Islamic Bank Berhad

Equity funds

1. CIMB Islamic Asia pacific equity fund
2. Affin Hwang Aiiman Growth Fund
3. CIMB Islamic Dali Equity Fund
4. CIMB Islamic Equity Aggressive Fund
5. Affin Hwang Aiiman PRS Shari'ah growth fund
6. AMB Dana Yakin
7. Public Islamic Equity Fund (PIEF)
8. BSN Dana Dividend Al - Ifrah
9. AmASEAN Equity
10. Aberdeen Islamic Malaysia equity fund

The statistical process for calculation and analysis given in Appendix was based on the following equations:

$$IB(M) = \beta_0 + \beta_1 R + \beta_2 P + \beta_3 T + \beta_4 GDP + e_{it} \quad \text{Equation II}$$

$$E(M) = \beta_0 + \beta_1 R + \beta_2 P + \beta_3 T + \beta_4 GDP + e_{it} \quad \text{Equation III}$$

$$G(M) = \beta_0 + \beta_1 IB(M) + \beta_2 E(M) + \epsilon_{it} \quad \text{Equation IV}$$

where GP is the Growth of Islamic financial system in Malaysia and IB(M) and E(M) are Islamic banks product and services (asset and equity fund NAV) development of Malaysia.

Independent variables are:

R = Return

P = Population

T = Time interval

GDP = GDP

Mediating Variables are:

IB(M) = Banking assets of Islamic banking of Malaysia

E(M) = NAV/Unit of Islamic Equity fund of Malaysia

Dependent Variable is:

G(M) = Growth of Islamic financial system of Malaysia

3.2. Results

Table 1 (descriptive statistics of Malaysian dataset) shows the descriptive statistics for the variables of this study.

Descriptive statistics suggest that the impact of variation in return ($M=7.61$, $SD=2.69$) is more than the variations in GDP growth ($M=.673$, $SD=.230$). The coefficient of skewness reflects the direction as the (+) sign indicates that data are positively skewed and (0) sign reveals the data are stable.

Table 1: Descriptive statistics

Variables	Mean (M)	Std. Deviation (SD)	Variance	Skewness
	Statistic	Statistic	Statistic	Statistic
Time	.656	.318	.101	-1.04
Growth	18.67	.660	.436	-.046
Population	7.44	.023	.001	-.093
Assets	8.15	.388	.151	-1.306
Return	7.61	2.69	7.283	-2.679
Equity	.414	.345	.119	-1.731
GDP	.673	.230	.053	-2.923

The sound evaluation of quantitative research depends on the validity and reliability of the test in an underline study. To demonstrate the reliability and validity of overall Malaysian data, specifications of the test are necessary.

Table 2:Reliability Statistics of the Scales, a result of an analysis of the underlying Variables of dataset

Variables	Cronbach's Alpha Coefficient
Time	.506
Population	.694
Return	.519
GDP	.698
Assets	.646
Equity	.659
Growth	.615

Table 2 shows the reliability coefficients of the data collected for each variable of Malaysian data sample. The Overall value of Cronbach's alpha is 0.678, greater than .6, which indicates an adequate level of internal consistency for scale with this study sample.

The validity test for all underlying items of Malaysian study sample is done by using factor analysis as the basis. To condense the underlying variables of this study sample, principle component analysis was

performed by undergoing KMO and Bartlett's test of sphericity to test its adaptability. The results show that the KMO (Kaiser-Meyer-Olkin) Measure of Sampling Adequacy =0.543, which indicates that the analysis is reasonable (Williams, Onsman, & Brown, 2010).

Hair J et al. (1995) regards KMO=0.5 as suitable for factor analysis (Hair, 1995). For Bartlett's test of sphericity, the results in terms of Chi-square distribution $\chi^2=99.95$ (df=21, Sig.=.000) are evident and indicate that correlational matrix of study sample has common factors. Moreover, some scope for reducing the dimension exists for this study sample dataset. After utilizing principle component analysis, the information in the third column of the Table 3 indicates that all variables have a communality or variance of 1.

Table 3:Total Variance explained by variables

Variables	Communalities		Initial Eigenvalues		
	Factors	Initial	Total	% of Variance	Cumulative %
Time	1	1.000	5.129	73.276	73.276
Population	2	1.000	1.085	15.495	88.771
Return	3	1.000	.480	6.851	95.621
GDP	4	1.000	.251	3.582	99.203
Assets	5	1.000	.044	.633	99.836
Equity	6	1.000	.010	.143	99.979
Growth	7	1.000	.001	.021	100.000
Method: Principal Component Analysis					

Bivariate correlation between the two variables of this study provides basic ground for relationship measurement. Table 4 depicts the correlation matrix between dependent and independent variables of this study. With Malaysian data, there is a convincing evidence of a close correlation between growth and growth factors [including Time interval (T), Population (P), Return (R), Assets (IB)] specific for this research

Table 4:Bivariate Correlation

		Time	Population	Return	GDP	Assets	Equity	Growth
Time	Pearson Correlation	1	.950**	.896**	-.031	.824**	.846**	.840**
	Sig. (2-tailed)		.000	.000	.929	.002	.001	.001
Population	Pearson Correlation	.950**	1	.960**	.032	.871**	.781**	.931**
	Sig. (2-tailed)	.000		.000	.925	.000	.005	.000
Return	Pearson Correlation	.896**	.960**	1	.068	.789**	.684*	.966**
	Sig. (2-tailed)	.000	.000		.842	.004	.020	.000
GDP	Pearson Correlation	-.031	.032	.068	1	.064	-.016	.305
	Sig. (2-tailed)	.929	.925	.842		.852	.962	.361
Assets	Pearson Correlation	.824**	.871**	.789**	.064	1	.541	.773**
	Sig. (2-tailed)	.002	.000	.004	.852		.085	.005
Equity	Pearson Correlation	.846**	.781**	.684*	-.016	.541	1	.641*
	Sig. (2-tailed)	.001	.005	.020	.962	.085		.034
Growth	Pearson Correlation	.840**	.931**	.966**	.305	.773**	.641*	1
	Sig. (2-tailed)	.001	.000	.000	.361	.005	.034	
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

Moreover, some of the correlations results for this study could be examined and interpreted more rigorously by the structural equation model.

Model measurement with the AMOS software was done to estimate and assess the constructed model of the dataset of this study. First, a measurement model of this dataset is depicted in Appendix.

For the structural equation modelling, 7 observed variables (Time, Return, Population, GDP, banking assets, NAV of equity and growth of

Islamic financial system) were used while variables, i.e., Time, return, population and GDP were exogenous variables. Endogenous variables in this study were banking assets, NAV of equity and growth with 3 error terms.

The model of dataset was identified with df of 2.

No. of Observations-No. of parameters=Degree of freedom

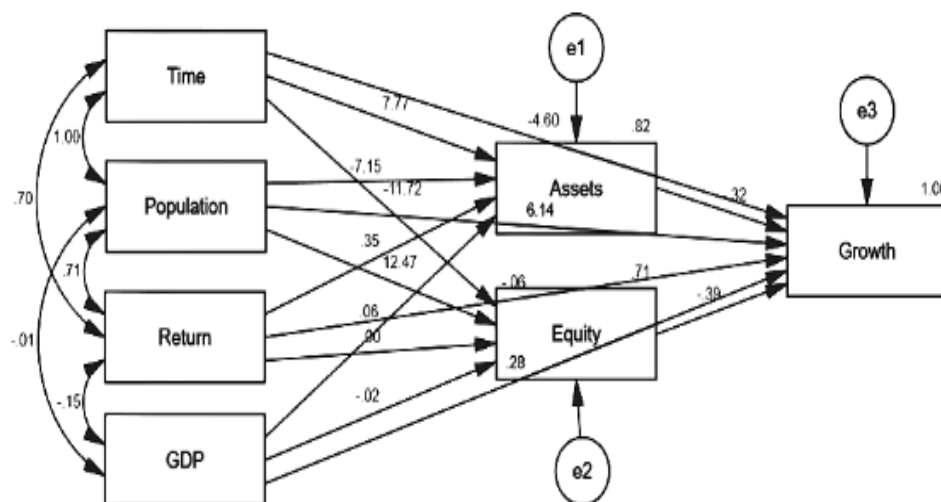
Degrees of freedom

$$-(28 - 26) = 2$$

The covariance between the variable helps to improve the model output (Rosseel, 2011), i.e., Variables including GDP and return, Time and population, GDP and population, Return and time, return and population.

To test and interpret the structural model fit for data, the path diagram, including 23 parameters with standardized regression coefficients appears below .

Figure 2:Path diagram of model of Malaysian dataset



The significant path of the coefficient is with-

- i. Equity and population (.05)
- ii. Time and growth (.000)*
- iii. Population and growth (.000)*
- iv. GDP and growth (.000)*
- v. Return and growth (.000)*
- vi. Asset and growth (.000)*
- vii. Equity and growth (.000)*

While all of the above variables were significant at a level of .01* and .05 respectively.

To report the hypothesized path, a model of the Malaysian data fulfils the model fit requirement. All of the fit indices, specific for this study, crossed the minimum cap of good fit indices. The chi-square value of 1.138 specifies a better model. The (CMIN/DF) with a score of .569, GFI of .970, and RMSEA of .000 is acceptable (Table 5).

Table 5:Level Of Model Fit Of Malaysian Dataset For Model

Level of Model Fit	Recommended for Further Analysis if	Model Fit
relative chi-square to degree of freedom χ^2/df (CMIN/DF)	>2	.569
Goodness-of-Fit Index (GFI)	< .90	.970
Normed fit index (NFI)	< .90	.993
Incremental fit index (IFI)	< .90	1.005
Tucker-Lewis index (TLI)	< .90	1.062
Comparative fit index (CFI)	< .90	1.000
Root mean square error of approximation (RMSEA)	> .05	.000

The research model for the Malaysian dataset is in parallel to the research goals. The results of the model for this study indicate that only one direct path and one of the eight original indirect paths were significant. For a meaningful result, the indirect effect for Malaysia was determined by the SPSS AMOS.

The analysis revealed that no partial mediation and no full mediation were achieved for the dataset of Malaysia.

Before the mediation:

$$G(M) = \beta_0 + \beta_1 R + \beta_2 P + \beta_3 T + \beta_4 GDP + \text{eit} \quad \text{Equation a}$$

$$G(M) = \beta_0 - \beta_1.174 + \beta_2 3.51 - \beta_3 2.46 + \beta_4.272 + \text{eit} \quad \text{Equation b}$$

After the mediation:

$$G(M) = \beta_0 + \beta_1 R + \beta_2 P + \beta_3 T + \beta_4 GDP + \text{eit} \quad \text{Equation c}$$

$$G(M) = \beta_0 - \beta_1.063 + \beta_2 6.14 - \beta_3 4.6 + \beta_4.279 + \text{eit} \quad \text{Equation d}$$

4. Discussion on Hypothesis Testing

4.1. Banking assets and Return

The coefficients for the SEM path between financial assets and return (estimated standardized β coefficient .346, with $p = .122$) in model did not provide significant support for H_1 .

H_1 : There is a relationship between the volatility of Islamic banking assets and Return.

This implied that the volatility of Islamic financial institutions return has a no effect on the growth of financial assets of Islamic financial institutions. This may have implied that efficiency of return is an invaluable internal factor to measure the determinant of growth of financial assets. However, specific geographical or territorial factors influence the assets.

These results weaken the conceptual theories of literature related to the relationship between variable or return and assets. The results are not consistent with the findings of (Kuo & Wu, 2007; Shahimi, Ismail, & Ahmed, 2006). In the case of Malaysia, these results empirically proved the non-valuable relationship of return and asset to influence the outward operations of the institutions. However, the resulting findings are consistent with (Short, 1979).

Moreover, the SEM model specifies the direct significant relationship between return and growth with a significance value of $p=.000$. This finding rejects the mediating role of asset growth to strengthen the relationship between return and growth of IF.

4.2. Banking assets and Population

The coefficients for the SEM path between financial assets and population (estimated standardized β coefficient -7.1), with non-significant value $p=.161$, did not support hypothesis H_2 .

H₂: Muslim Population (P) has a direct effect on Islamic banking assets.

The result of the model for the relationship between asset and population is not in accordance with expectations for the Malaysian dataset. This implied that the percentage of Muslim population in a particular geographical area has no impact on increasing the investment in ethical and Islamic products. The study supported the argument that people of Malaysia did not give importance to many investment options.

The research study strengthens the conceptual theories of literature related to the relationship between assets and population. These findings are consistent with Erol and El-Bdour (1989), who analysed the effect of religion on Islamic finance. However, these findings are inconsistent with the findings of (Amin, 2009), who considered the religious factor as an important factor to attract Muslim investors and increase the institutional size. These empirical research findings provide a unique research endeavour in the area of Islamic finance of Malaysia.

Moreover, the results of bivariate correlation implied a significant relationship between assets and population with a p-value of .000 while the beta coefficient of .871 presented a positive relationship between variables, i.e., greater population led to an increase in the volume of assets. The SEM model specifies the direct significant relationship between asset and population with a significance value of $p=.000$. This finding rejects the mediating role of products and services to strengthen the relationship between population and growth of IF.

4.3. Banking assets and Time interval

The beta coefficients for the SEM path between variables of financial assets and time interval (estimated standardized β coefficient 7.7), with non-significant value $p=.06$, did not support hypothesis H_3 .

H₃: Time interval (T) has a direct effect on Islamic banking assets.

The result of the model for the relationship between assets and time interval is quite valuable. This implied that the matter of time on Islamic institutions has no impact on increasing and decreasing the size of assets of Islamic financial institutions. These findings support the effectiveness and efficiency of other macroeconomic factors. These results also validate that instead of the time factor, efficiency and effectiveness of other factors of growth are important to boost the growth of the Islamic financial system.

The results of bivariate correlation conferred a significant relationship between asset and time interval with a p-value of .002 while the beta coefficient of .824 presented a positive relationship between variables, i.e., higher span of time interval led to an increase in the volume of assets. The SEM model specifies the direct significant relationship between the time variable and growth variable with a significance value of $p=.000$. This finding rejects the mediating role of products and services to strengthen the relationship between time and growth of IF.

4.4. Banking assets and GDP rate

The hypothesized relationship between assets and GDP (estimated standardized β coefficient .060), of this study, is not significant at a

level of .05 with a p-value of .670. The findings of the SEM model did not support H_4 .

H₄: GDP (D) has a direct effect on Islamic banking assets.

The result of the model for the relationship between assets and GDP is quite usual with a perspective of the Malaysia dataset. This implied that the external environment factor, GDP, has no impact on increasing and decreasing the volume of assets of Islamic financial institutions.

The study implied that economic indicators have no influence on investors' confidence and development of assets. This SEM finding rejects the mediating role of products and services to strengthen the relationship between GDP and growth of Islamic finance (IF).

These results also validate that instead of GDP, efficiency and the effectiveness of other factors of growth need to be evaluated to study their impact on the growth of the Islamic financial system.

Moreover, the results of bivariate correlation also did not imply a significant relationship between assets and GDP at a level of .05. However, the SEM model specifies the direct significant relationship between GDP and growth with a significance value of $p=.000$.

4.5. Banking assets and Growth of Islamic finance (IF)

The coefficients for the SEM path between financial assets and growth variable of IF (estimated standardized β coefficient $-.317$, with $p = .000$) in the model of the Malaysia dataset provide strong significant support for H_5 .

H₁₀: Islamic banking assets have a direct effect on the growth of the Islamic financial system.

These results strengthen the conceptual theories of the previous literature. It is consistent with the findings of (Bourke, 1989; Molyneux & Thornton, 1992). These results also validate the impact of an internal factor of growth to the growth of financial institutions' profitability. This also implied that bigger volume of the assets of Malaysian IFIs has

a positive impact on the overall industry and likewise implies more strength to the Islamic financial institutions.

This result empirically proved the relationship of the growth of assets and IF to influence the outward operations of the Malaysian institutions. Moreover, the results of bivariate correlation also implied a significant relationship between assets and the IF variable with a p-value of .005 while the beta coefficient of .773 presented a positive relationship between variables, i.e., higher volume of assets led to an increase in growth of IFS of Malaysia.

4.6. Islamic equity fund and Return

The coefficients for the SEM path between IEF and return (estimated standardized β coefficient -.001, with $p = .998$) in model did not provide significant support for H_5 .

H₅: There is a relationship between the volatility of NAV of Islamic equity funds and Return.

This implied that the volatility of Islamic financial institutions return has no effect on the growth of IEF sector.

These results weaken the previous conceptual theories of the literature built by many authors. Many authors, including Kamil, Alhabshi, Bacha, & Masih (2014) and Nainggolan (2011), concluded positive results towards the performance of Islamic equity funds. These results also validate that the efficiency of external factors is important to boost the performance of the IF industry. These findings strongly support this argument that the success at the country level did act as a significant factor to compensate for the failure of regional institutions at the micro-level (Kamil et al., 2014; Nainggolan, 2011; Pramanik, 2002).

This also implied that the bigger size of the overall industry was likewise important and implies more strength to the specific sector of an industry. However, these findings are consistent with Bashir & Nawang (2011), who contend the negative Performance of IEF.

These results did not empirically provide the evidence regarding the relationship of return and IEF to influence the outward operations of the institutions.

However, the results of bivariate correlation implied a significant relationship between assets and return with a p-value of .004 while the beta coefficient of .789 presented a positive relationship between variables, i.e., higher profitability led to an increase in investment in IEF. Moreover, the SEM model specifies the direct significant relationship between return and growth with a significance value of $p=.000$. This finding also rejected the mediating role of products and services to strengthen the relationship between return and IEFs of IFIs.

4.7. Islamic equity fund and Population

The coefficients for the SEM path between IEF and population (estimated standardized β coefficient 12.4), with a significant value of $p=.05$, supported hypothesis H_6 .

H₆: Population (P) has a direct effect on the NAV of Islamic equity funds.

The result of the model for the relationship between IEF and population is according to expectations. This implied that the percentage of Muslims and the confidence of investors in a particular geographical area have a strong impact on increasing the size of IEF.

The research study weakens the conceptual theories of the previous literature related to the relationship between IEF and population. These findings are not consistent with Erol & El-Bdour (1989), who analysed the effect of religion on investment in Islamic products and services. The study supported the argument that people of Malaysia give importance to ethical and Islamic products and service for investment.

However, these findings are consistent with the findings of Arabi (2008); the researcher contends that the growing population of Muslims in the world is considered an important force behind the establishment and growth of Islamic finance products and services (Imam & Kpodar, 2010).

These results also validate that religious and ethical beliefs are important to boost the growth of Islamic products and services in Malaysia.

Moreover, the results of bivariate correlation also implied a strong significant relationship between IEF and IF variable with a p-value of .005 while the beta coefficient of .781 presented a positive relationship between variables, i.e., higher volume of IEF investment led to an increase in investment in IEF. However, the SEM model specifies the direct significant relationship between population and growth with a significance value of $p=.000$ and a coefficient value of .279. This finding accepts the mediating role of products and services to strengthen the relationship between population and growth of IF.

4.8. Islamic equity fund and Time interval

The beta coefficients for the SEM path between variables of IEF and time interval (estimated standardized β coefficient -.11), with non-significant value $p=.062$, did not support hypothesis H_3 .

H₇: Time interval (T) has a direct effect on the NAV of Islamic equity funds.

The result of the model for the relationship between IEF and time interval is quite unique. This implied that the matter of time on Islamic institutions has no impact on increasing and decreasing the size of investment on IEF sector of Malaysia.

Again, these findings are inconsistent with the findings of Elfakhani, Hassan, & Sidani (2005), who considered the passage of time as a meaningful variable to obtain deep insight into determinants of growth of financial products and services. These empirical research findings also have an impact on the confidence of investors to invest in IEF. The research findings indicate that investors have no confidence in IEF. So far, this study signifies the invaluable relationship of time and IEF.

These results also validate that instead of time factors, efficiency and the effectiveness of other factors might have an impact on the growth of Islamic equity funds.

However, the results of bivariate correlation implied a strong significant relationship between IEF and time interval variable with a p-value of .00 while the beta coefficient of .846 presented a strong positive relationship between the variables. The increase in time span led to an increase in investment in IEF.

4.9. Islamic equity fund and GDP rate

The hypothesized relationship between IEF and GDP (estimated standardized β coefficient -.28) of this study is not significant at a level of .05. The findings of the SEM model did not support H_8 .

H₈: GDP (D) has a direct effect on the NAV of Islamic equity funds.

The result of the model for the relationship between IEF and GDP is unexpected. This implied that the external environment factor, GDP, has no impact on increasing and decreasing the size of investment in Islamic equity fund sector of Malaysia.

The research study did not strengthen the already studied conceptual theories of literature, including Nguena (2013), that is related to the relationship between Islamic products and GDP. The study implied that GDP, an external factor of growth, has no influence on investors' confidence and the development of IEF.

However, again, this research finding is consistent with Johnson (2013) who refuted the impact of GDP on the growth of Islamic financial products and services.

However, the SEM model specifies the direct significant relationship between GDP and growth with a significance value of $p=.000$ with a coefficient value of .279. This finding rejects the mediating role of IEFs to strengthen the relationship between GDP and growth of IF.

These findings signify that the Islamic financial system of Malaysia is evoking distinct factors of growth for a consistent performance. Moreover, distinct operations, functionality, jurisprudence, and services created inconsistencies in its development. The reason behind this could be explained by the differences in certain rules and regulations such as

accounting standards and Shari'ah supervisory boards. Therefore, there is a challenging environment for the growth factors of an Islamic financial system.

4.10. Islamic equity fund and Growth of IF

The coefficients for the SEM path between financial assets and growth variable of IF (estimated standardized β coefficient $-.317$, with $p = .000$) in the model provide strong significant support for H_9 .

H₉: The NAV of Islamic equity funds has a direct effect on the growth of the Islamic financial system.

These results strengthen the conceptual theories of previous literature with a new empirical finding. It is consistent with the findings of Kamil et al., (2014) and Failaka international Inc., (2002) about the relationship of financial products and services to financial institutions (Inc, 2002; Kamil et al., 2014). These results also validate the impact of institutional products and services to the profitability of the overall industry. These results empirically proved the relationship of growth of IEF and IF to influence the outward operations of the institutions of Malaysia. This also implied that investors prefer to have many innovative choices of investment in an Islamic finance industry.

5. Conclusion

This study involved an empirical analysis of the external and internal factors and their impact on the growth of IFIs in the context of Malaysia. The major question of this research was: What are the development factors of growth of Islamic financial system, and how do they influence the Islamic financial system?

Overall, the findings achieve the objectives of this research and answered the central research question. The empirical findings of this research particularly based on advance statistical method, structural equation model, conferred the impact of significant development factors to strengthen the relationships and control the barriers in Islamic finance industry growth.

These results strengthen the conceptual theories of literature. It is consistent with the findings of (Kuo & Wu, 2007; Shahimi et al., 2006). These results also validate that regardless of religious factors as stressed in Islamic finance literature, the efficiency of macroeconomic factors is also important to boost the growth of Islamic financial system. This also implied that bigger share of the overall industry likewise implies more strength to the bank of controlling the costs and benefits it offers to keep customers (Haron, 2004).

For the dataset, only the hypothesis relationship of population to equity, equity to growth and asset to growth are supported as a positive predictor to the growth variable of the Islamic financial system. In contrast, the study did not support the significant impact of Return to assets, Population to assets, time to assets, GDP to assets, return on equity, time to equity and GDP to equity. This study shows that the industry products and services are acquiring momentum and are at a level to give strong support to the Islamic financial system.

Managers and regulators of the IF industry should take timely action to enhance the efficiency of existing services of financial institutions. Future research work can be extended to other Muslim countries including Qatar, Bahrain, and Turkey etc for new horizons of research.

References

Abdullah, R. F. S., & Rahman, A. R. A. (2007). Factors influencing knowledge of Islamic banking services: the case of Malaysian bank managers. *Review of Islamic Economics*, 11(2), 31.

Aljifri, K., & Kumar Khandelwal, S. (2013). Financial Contracts in Conventional and Islamic Financial Institutions: An Agency Theory Perspective. *Review of Business & Finance Studies*, 4(2), 79-88.

Amin, M. (2009). Would Islamic finance have prevented the global financial crisis? *New Horizon*, 173, 40-44.

Arabi, A. (2008). *Submitted to*. KDI School of Public Policy and Management,

Ayaydin, H. (2016). Conference on Islamic Accounting and Finance. *Journal of Economic and Social Thought*, 3(4), 534.

Balala, M.-H. (2011). Islamic Finance and Law. *Theory and Practice in a Globalized World*, Tauris, London.

Banchit, A., Boulanouar, Z., Wellalage, N. H., & Zainal Abidin, S. (2013). Relationship principal-agent or principal-principal conflicts and Islamic Banks performances.

Bashir, M. S., & Nawang, W. R. W. (2011). Islamic and Conventional Unit Trusts in Malaysia: A Performance Comparison. *Journal of Islamic Economics, Banking and Finance*, 7(10), 4.

Bourke, P. (1989). Concentration and other determinants of bank profitability in Europe, North America and Australia. *Journal of Banking & Finance*, 13(1), 65-79.

Cant, R. G. (1975). Socio-economic indicators: theories and applications. *International social science journal*, XXVII,.

Chapra, M. U., & Ahmed, H. (2002). Corporate governance in Islamic financial institutions. *Occasional paper*, 6.

Dimson, E., & Mussavian, M. (1999). Three centuries of asset pricing. *Journal of Banking & Finance*, 23(12), 1745-1769.

Elfakhani, S., Hassan, M. K., & Sidani, Y. (2005). *Comparative performance of Islamic versus secular mutual funds*. Paper presented at the 12th Economic Research Forum Conference in Cairo, Egypt.

Elton, E. J., & Gruber, M. J. (1997). Modern portfolio theory, 1950 to date. *Journal of Banking & Finance*, 21(11), 1743-1759.

Erol, C., & El-Bdour, R. (1989). Attitudes, behaviour, and patronage factors of bank customers towards Islamic banks. *International Journal of Bank Marketing*, 7(6), 31-37.

Hair, J. (1995). et alii. Multivariate data analysis with readings. In: Englewood Cliffs, NJ: Prentice Hall.

Hannan, S. A. (1995). Islamic Banking: Problems and Prospects. *Shah Foundation*. Retrieved from <http://www.shahfoundationbd.org/hannan/article10.html>

Harjoto, M. A., Yi, H.-C., & Chotigeat, T. (2012). Why do banks acquire non-banks? *Journal of Economics and Finance*, 36(3), 587-612.

Haron, S. (2004). Determinants of Islamic bank profitability. *Global Journal of Finance and Economics*, 1(1), 11-33.

Hassan, M. K., & Lewis, M. K. (2007). Product development and Shariah issues in Islamic finance. *Thunderbird International Business Review*, 49(3), 281-284.

Hegazy, W. S. (2006). Contemporary Islamic finance: From socioeconomic idealism to pure legalism. *Chi. J. Int'l L.*, 7, 581.

Imam, P. A., & Kpodar, K. (2010). *Islamic banking: how has it diffused?* : International Monetary Fund.

Inc, F. i. (2002). [Islamic equity funds, An analysis of the current state of an industry].

Ismail, A. G. (2011). The Theory of Islamic Banking: look back to original idea. *Journal of Islamic Economics, Banking & Finance*, 7(3), 9-22.

Jensen, M. C. (1968). The performance of mutual funds in the period 1945–1964. *The Journal of Finance*, 23(2), 389-416.

Johnson, K. (2013). The Role of Islamic Banking in Economic Growth.

Kamil, N. K., Alhabshi, S. O., Bacha, O. I., & Masih, M. (2014). Heads we win, tails you lose: Is there equity in Islamic equity funds? *Pacific-Basin Finance Journal*, 28, 7-28.

Khan, A. (2014). Sharia stock index and economic activity in Malaysia: Is there a connection?

Khan, M. A. Methodology for Theory Building in Islamic Economics.

Khan, Z. H., & Watson, P. J. (2006). RESEARCH:" Construction of the Pakistani Religious Coping Practices Scale: Correlations With Religious Coping, Religious Orientation, and Reactions to Stress Among Muslim University Students". *The International Journal for the Psychology of Religion*, 16(2), 101-112.

Kuo, T., & Wu, A. (2007). *The determinants of organizational innovation and performance: An examination of Taiwanese electronics industry*.

Kurtz, L. (2005). Answers to four questions. *The Journal of Investing*, 14(3), 125-140.

Mallinckrodt, B., Abraham, W. T., Wei, M., & Russell, D. W. (2006). Advances in testing the statistical significance of mediation effects. *Journal of Counseling Psychology*, 53(3), 372.

Markowitz, H. M. (1999). The early history of portfolio theory: 1600-1960. *Financial Analysts Journal*, 5-16.

Mirakhor, A., & Zaidi, I. (2007). Profit-and-loss sharing contracts in Islamic finance. *Handbook of Islamic Banking*, 49.

Molyneux, P., & Thornton, J. (1992). Determinants of European bank profitability: A note. *Journal of Banking & Finance*, 16(6), 1173-1178.

Nainggolan, Y. A. (2011). Taking a leap of faith: are investors left short changed?

Nguena, C. L. (2013). *Inclusive and Pro-Poor Financial System in Africa: Does Islamic Finance Development Matter?* Retrieved from

Pramanik, A. (2002). Islam and Development Revisited with Evidences from Malaysia. *Islamic Economic Studies*, 10(1), 40.

Rosseel, Y. (2011). lavaan: an R package for structural equation modeling and more Version 0.4-9 (BETA). Retrieved from.

Sadeghi, M. (2008). Financial performance of Shariah-compliant investment: evidence from Malaysian stock market. *International Research Journal of Finance and Economics*, 20, 15-26.

Safieddine, A. (2009). Islamic financial institutions and corporate governance: New insights for agency theory. *Corporate Governance: An International Review*, 17(2), 142-158.

Shahimi, S., Ismail, A., & Ahmed, S. (2006). A panel data analysis of fee income activities in Islamic banks. *Islamic Economics*, 19(2).

Shaikh, S. A. (2013). Islamic Banking in Pakistan: A Critical Analysis. *Journal of Islamic Economics, Banking and Finance*, Forthcoming.

Shamsuddin, Z., & Ismail, A. G. (2013). Agency Theory in Explaining Islamic Financial Contracts. *Middle-East Journal of Scientific Research*, 15(4), 530-545.

Sharpe, W. F. (1966). Mutual fund performance. *The Journal of business*, 39(1), 119-138.

Short, B. K. (1979). The relation between commercial bank profit rates and banking concentration in Canada, Western Europe, and Japan. *Journal of Banking & Finance*, 3(3), 209-219.

Singh, R. (2009). Does my structural model represent the real phenomenon?: a review of the appropriate use of Structural Equation Modelling (SEM) model fit indices. *The Marketing Review*, 9(3), 199-212.

Treynor, J. L. (1965). How to rate management of investment funds. *Harvard business review*, 43(1), 63-75.

Vogel, F. E., & Hayes, S. L. (1998). *Islamic law and finance: religion, risk, and return* (Vol. 16): Brill.

Williams, B., Onsman, A., & Brown, T. (2010). Exploratory factor analysis: A five-step guide for novices. *Australasian Journal of Paramedicine*, 8(3).

Zamil, N. A. M. (2014). *An empirical investigation into the problems and challenges facing islamic banking in Malaysia*. Cardiff Business School,

Appendix

Summary of statistical analysis for Malaysian dataset

$$IB(M) = \beta_0 + \beta_1 R + \beta_2 P + \beta_3 T + \beta_4 GDP + \text{eit}$$

$$E(M) = \beta_0 + \beta_1 1.346 + \beta_2 7.1 + \beta_3 7.7 + \beta_4 0.060 + \text{eit}$$

$$E(M) = \beta_0 + \beta_1 R + \beta_2 P + \beta_3 T + \beta_4 GDP + \text{eit}$$

$$E(M) = \beta_0 - \beta_1 0.001 + \beta_2 12.4 - \beta_3 11.7 - \beta_4 0.023 + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 IB(M) + \beta_2 E(M) + \text{eit}$$

$$G(M) = \beta_0 - \beta_1 1.395 - \beta_2 3.17 + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 R + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 P + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 T + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 GDP + \text{eit}$$

$$M_e IB(M) = \beta_0 + \beta_1 R + \text{eit}$$

$$M_e IB(M) = \beta_0 + \beta_1 P + \text{eit}$$

$$M_e IB(M) = \beta_0 + \beta_1 T + \text{eit}$$

$$M_e IB(M) = \beta_0 + \beta_1 GDP + \text{eit}$$

$$M_e E(M) = \beta_0 + \beta_1 R + \text{eit}$$

$$M_e E(M) = \beta_0 + \beta_1 P + \text{eit}$$

$$M_e E(M) = \beta_0 + \beta_1 T + \text{eit}$$

$$M_e E(M) = \beta_0 + \beta_1 GDP + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 R + \beta_2 M_e IB(M) + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 P + \beta_2 M_e IB(M) + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 T + \beta_2 M_e IB(M) + \text{eit}$$

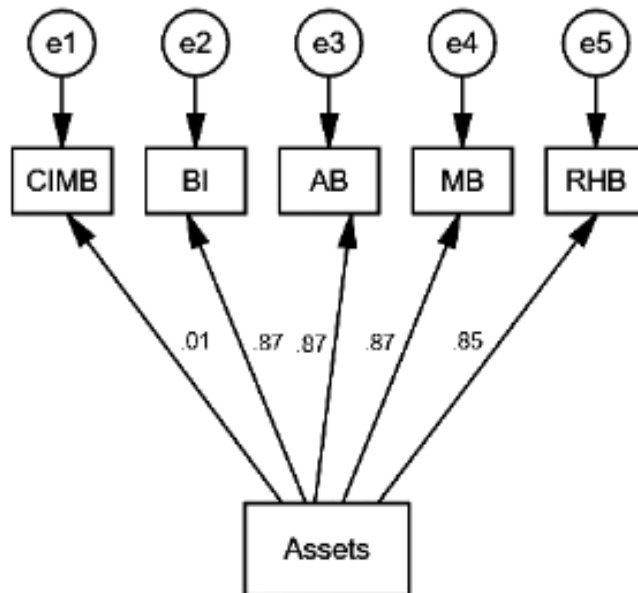
$$G(M) = \beta_0 + \beta_1 GDP + \beta_2 M_e IB(M) + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 R + \beta_2 M_e E(M) + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 P + \beta_2 M_e E(M) + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 T + \beta_2 M_e E(M) + \text{eit}$$

$$G(M) = \beta_0 + \beta_1 GDP + \beta_2 M_e E(M) + \text{eit}$$

Initial Finding: Measurement Model for Malaysian dataset*Islamic banks of Malaysia*

The path terms used in the above diagram are:

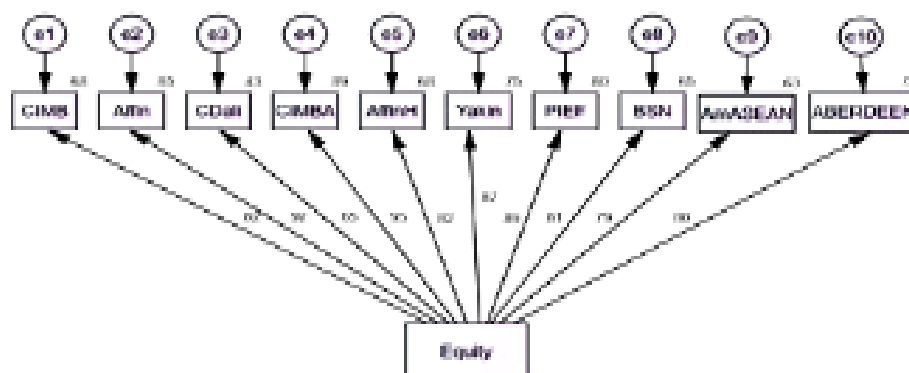
CIMB=CIMB Islamic Bank Berhad

BI=Bank Islam Malaysia Berhad

AB=AmIslamic Bank Berhad

MB=MayBank Islamic Berhad

RHB=RHB Islamic Bank Berhad

Islamic equity funds of Malaysia

The path terms used in the above diagram are:

CIMB=CIMB Islamic Equity Fund

Affin=Affin Hwang Aiiman Growth Fund

CDali=CIMB Islamic Dali Equity Fund

CIMBA=CIMB Islamic Equity Aggressive Fund

AffinH=Affin hwang aiiman PRS Shariah growth fund

Yakin=AMB Dana Yakin

PIEF=Public Islamic Equity Fund (PIEF)

BSN=BSN Dana Dividen Al – Ifrah

AmASEAN=AmASEAN Equity

ABERDEEN =Aberdeen Islamic Malaysia equity fund

Comparative Islamic Perspectives in Money, Monetary Policy, and Social Wellbeing

Masudul Alam Choudhury¹

Moral and ethical context of money and monetary policy in the creation of a stable and real growth perspective of the economy and wellbeing criterion is formalized. This derivation and casting it into a generalized analytical model is premised on the cardinal Islamic ontological law of unity of knowledge. This spells out the essence of pervasive complementarities between the good things of life as the life-sustaining possibilities of maqasid as-shari'ah, the purpose and objective of shari'ah in term of its direct relationship with the ontological law of Tawhid, oneness of God spelled out in terms of the unity of knowledge and pervasive organic complementarities between the maqasid-goods. The paper thereby makes a distinct difference between the essential reference to Tawhid, thus shari'ah at-Tawhid. This primal conception and methodological worldview is distinctly contrary to the man-made vagaries of what is called 'shari'ah compliance'. Against such background this paper undertakes a comparative study of the nature of money and monetary policy. This approach leads into the model of money, finance, and real economy model and its various ramifications. An analytical approach is adopted within the comparative perspectives of money and monetary policy for the Islamic case.

Keywords: micro-money; comparative monetary theories; money and wellbeing in Islamic framework

Introduction

The history of money and monetary applications has for ever remained unsettled even to date. The reason for this unsettled state is the yet questioned interrelationship that exists between money, economy, finance, and society at large in a sustainable way. The Austrian School of Economics (Yeager, 1997) was the nearest that it came to understand

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the endogenous nature of money with the economy as a system of relationships concerning good money and its epistemological enterprise (Hayek, 1967; von-Mises, 1976). The Austrians disdained the destabilizing role that interest rate plays in economy and society at large, being the school that leaned on the views of Thomas Aquinas with regards to avoidance of interest and the social economy comprising stability, wellbeing in its distinctive composition, and sustainability over time (Schumpeter, 1961). The Austrian School comprising economic epistemologists was also a seriously analytical approach to the construction of an evolutionary learning way of explaining economic reasoning. Thereby, the role of relationship between money and the economy became foundational in the Austrian epistemological understanding of money, monetary policy, monetary organization, and the economy (Hayek, 1967; Kirzner, 1997).

Leon Walras (trans. Jaffe, 1954) thought of money as the economic numeraire in cementing the various elements of the economy and society, such as production, consumption, labour market, prices of various kinds of inputs and outputs. If the monetary numeraire was not stable; exogenously given, and well defined in Walrasian general equilibrium conception then the economic and social relationship of money and the social economy was intrinsically unstable. The general equilibrium model in a perfectly competitive market economy could not be attainable. Indeed, Walras was equally a mathematical analyst and a social thinker as he was a profound economist (Walras, L. trans. W. Jaffe, 1954). Thus the interrelationship between economy and society was deeply an analytical functioning of money and monetary organization.

In recent economic history, Keynes was predominantly a fiscalist. But his theory of money has to explain a significant relationship between price level, employment, and output in a desired framework of economic sustainability. Being a general equilibrium thinker in an economy that remains permanently in underemployment equilibrium state, Keynes inquired on the interaction between monetary and fiscal arrangements that leaves the economy in a stable state and wellbeing. The function of money was thus one of attaining macroeconomic fundamental goals. These were to allocate money and fiscal expenditure in ways so as to attain price stabilization, full-employment, economic growth, international competitiveness, and macroeconomic welfare in terms of

growth, price level, employment, and distributive justice. Such a social economy of Keynes in terms of money, fiscalism, economy, and social welfare also points to a deeply epistemological socio-ethical question with which Keynes was deeply influenced by the ethical theory of Moore (1962), O'Donnell (1989).

Contrary to Keynes as a social economist bringing to prominence the role of money, fiscal spending in economic stabilization and economic welfare, Milton Friedman (1956, 1989) was a diehard monetarist and an originator of the theory of monetarism who vouched regarding the sensitive effect of fiscalism on inflation and thereby claimed the impossibility of fiscal policy in stabilizing the economy state. This was a natural consequence of Friedman as a new classicist who stood undeterred for the establishment of a market economy. Friedman's monetarism is explained in Bordo (1989). See also Cagan (1989) on monetarism. This was contrary to Keynes' emphasis on large government to apply monetary and fiscal policies, but not at the total absence of the private sector and market economic transformation.

The problem of aggregation and attenuating to the ethical issues of a social economy surfaced in both Keynes and Friedman. Keynes' aggregate economic analysis suffered from a number of analytical problems. Firstly, morality, ethics, and the social economy are behavioural in nature, and therefore appertain to microeconomics. From the microeconomic level no sound approach is found to aggregate explanatory variables to the macroeconomic level. Equally, it is not the macroeconomic aggregates that can be disaggregated into microeconomic level. Microeconomics and macroeconomics remain to be distinct areas of analytical inquiry. The result of this anomaly is that ethics and morality, which are behavioural and epistemic concepts cannot be carried into functioning to realize socio-ethical transformation of economy with society.

Take the example of government expenditure (G) as an aggregate macroeconomic fiscal variable in Keynes. G is used by Keynes as an instrument to stabilize the economy of underemployment equilibrium into the full employment level of real output (real GDP) and full utilization of factor inputs. G is not a variable for the ethical financing of issues like poverty alleviation, microenterprises, and social security. Preference functions therefore do not exist in Keynesian

macroeconomics. Besides, the aggregate production function is not the aggregation of microeconomic production function; similarly with any of the aggregate variables in terms of their microeconomic terminologies.

Another analytical problem in Keynesian macroeconomics vis-à-vis microeconomics was the presence of exogenous variables in econometric formulation of general equilibrium. The resulting absence of endogenous relations, such as of government expenditure in terms of real output, employment, price level, and money, cannot explain social issues in terms of economic issues by continuous interrelations between the variables. Monetary policy as the rate of change in the quantity of money to be supplied by the central bank to the real economy is an exogenous variable. Consequently, Keynesian general equilibrium establishes various economic equilibrium levels by way of exogenous expansion of money and fiscal expansion. Contrarily, the rate of change in the quantity of money being a controlling policy variable of economic stabilization is not determined by the array of endogenous and exogenous variables in Keynesian general equilibrium model. The entire Keynesian general equilibrium system is thus not explained in a comprehensive way by inter-variable interrelations.

The third of many other analytical problems in Keynesian economics concerning money and monetary policy recognized in heterodox economics (Lawson, 2003; Choudhury, 2016) is the questionably explained relationship between money, interest rate, savings, and economic growth in the macroeconomic form of these variables. Central banks supply money to commercial banks by way of relaxing the statutory reserve requirement ratio. Consequently, the positive role of savings in capital accumulation in commercial bank deposits releases more money into the economy to finance economic growth. The macroeconomic output multiplier increases the effect of savings as capital accumulation turned into resource mobilization, as monetary expansion increases with relaxed monetary policy, such as lower rate of interest, lower reserve ratio, and incentive to buy bonds in exchange for money in cash balances. Yet this is not the true scenario of money and monetary policy in relation to savings and economic growth (Ventelou, 2005). The fact of economic system is that capital accumulation requires long term savings to accumulate. Thus money as released savings into the economy is perpetually divided between the opposite functions of

bank-savings by holding any increase from the spending effect in economic growth, and on the other side, not by capital accumulation but capital formation caused by savings being turned continuously into financial resource mobilization. These opposite sides denote over time the respective results, savings greater than investment (spending) for capital accumulation; savings equals investment (spending) continuously over the life of the economy.

Milton Friedman's Quantity Theory of Money runs into problems, as Laidler (1989) says, almost always. The quantity theory equation has a *post-hoc* error in terms of its indeterminacy of causal relations between prices and money supply. That is, it remains indeterminate as to which causes which – money on prices level; or price level on money; thus reducing the quantity theory of money equation of exchange into an identity, not an equation to explain money-economy relationship precisely. Now by holding the velocity of money supply constant, it can be seen that monetary policy as the rate of change in the quantity of money is determined by the contribution of each unit of output to inflationary pressure; and by the contribution of each unit of inflation to real economic growth.² These effects yield negative effect on the rate of change in money supply (monetary policy). Thereby, the effectiveness of increased money supply on economic growth as vouched by the monetarists and Keynesians is contradicted.

In his later version of the equation of exchange, Friedman included the financial sector along with the real output sector. According to this equation the aggregate monetary policy is divided up between the two sectors. Thereby, the optimal monetary policy indicated by $d(dM) = 0$ causes the two sectors to be perfect substitutes of each other. In such a situation any of the two sectoral effect on the relationship between money supply and economic growth can be neutralized by the other sectoral effect. This result agrees with Friedman epistemological orientation that is deeply in favour of the development of the market economy towards perfect competition, and against the presence of governments and public policy in money and growth relationship. These

² Equation of exchange is $Mv = P.y$; M denotes quantity of money; v is the velocity of money circulation assumed to be constant; P denotes the price level; y denotes real output. This equation is written in terms of monetary policy (rate of change of money supply) as, $v.(dM) = (y.dp) + (p.dy)$.

inclinations in Friedman's new classical orientation in the quantity theory of money and prices annul a focus on the use of money and monetary policy in social wellbeing.

THE MCM model critique of neoclassical money and monetary theory

The nature of money and monetary policy as an interactive circular causality between money, financial instruments, and socioeconomic variables is explained by the process definition of the money-commodity-money model (MCM) in a dynamic evolutionary dialectical relationship. The answer to the important question on the growth of money is explained by the dynamic form of the MCM model written as (Heilbroner, 1985),

$$M_0C_0M_1 - M_1C_1M_2 - \text{etc. Over time } t=0,1,2 \quad (1)$$

such that any two or a combination of them can be functional in the above expression:

1. The intervening **Commodity** can denote financial interest, so that money is implied to change in respect of interest rate or its shadow rates that remain contrary to a productive way of accumulating capital, which the banks and financial sector turns into savings and a financial return of interest on bank-savings.
2. The intervening **Commodity** can be the real productive assets, the return on which is the productive yield. Money thereby changes by the compounding effect of the yield as the productive return on capital formation, instead of the interest rate on capital accumulation via money denoting bank-savings.
3. The intervening **Commodity** is a mix of money formed by capital accumulation by the interest rates on bank-savings; and by capital formation caused by productive investment. The implication then is that, some of the capital accumulation formed by bank-savings flows into the real productive assets. Thus real

productive capital formation is not independent of bank-savings and thereby of real rates of interest.³

The footnote here also explains the essential nature of monetary allocations between competing projects for the objective of optimization in neoclassical economic theory (Henderson & Quandt, 1971). The neoclassical implication is particularly borne out by the point (3) mentioned above. The inference thereby is that, the interrelationship between the rate(s) of interest and rate(s) of return in real assets explains the neoclassical idea of marginal rate of substitution (opportunity cost) between real rate of interest and real productive rate. Consequently, the switching points between the trajectories of capital accumulation (interest rate bearing bank-saving) and of capital formation (real productive rates of return) (switching points) remain to be discontinuous historical points of substitutions between speculative growth and productive growth regimes. Such discontinuities expand over space and time in the neoclassical equilibrium economic framework. Thus, sustainability and continuous resource mobilization of resources in the real productive sector are unattainable, although this is an enforced desired perspective of neoclassical economic theory (Daly, 1992).

In respect of translating the above neoclassical implications of the opposing interrelationship between real rate of interest and real productive rate of return and thus between capital accumulation and capital formation, respectively, the monetary derivation of MCM-model implies the dual use and definition of money in relation to assets, and growth. The definition of money and its use in changing regimes of assets and growth is therefore not straightforward. The definition of money is differentiated between the speculative and real productive sectors. In the speculative the structure of money is based on financial debt as is the case with interest on bank-savings. In the real productive sector the structure of money is the case of real sector resource mobilization in terms of the continuous intertemporal linkages between money, finance, and real productive assets. The Modigliani-Miller (see Jeans, 1970) theorem is an example of the neoclassical result of

3. $M_t = \int_0^T M(i,r)dt$. 'i' denotes the real rate of interest. 'r' denotes real rate of return. The compounding of these factors influences the quantity of money M_t intertemporally in terms of money formed and changed by capital accumulation and capital formation. The nature of money is accordingly explained by the interpretation of money as commodity in terms of the two forms of capital accumulation as marginalist opposites.

marginal rate of substitution between debt and equity for maximization the corporate investment utility function.

The Fundamental Islamic Methodological Worldview for Everything

The great change in money, finance, and real productive sectoral development that resolves the problems of the MCM-model in respect to points (1)-(3) has been offered in a methodological, analytical, and applied ways by the Islamic conception of money, finance, and real economy in the absence of interest rates and debt financing. This leads us to focus on the first aspect of the worldview conception that has given mankind and the world-systems distinctive ways of understanding, applying, and organizing everything in an objective framework. This because of the universal and unique methodological worldview of Tawhid as the Ontological Law of unity of knowledge derived from the Oneness of God that Islam has bestowed for the wellbeing (maslaha) objective criterion for all of mankind. The wellbeing in intra-systemic and inter-systemic and spans across the knowledge of unity, space of being and becoming, and evolution intertemporally. In this way the wellbeing criterion encompasses the non-physicalist and physicalist order in a mix of unity of knowledge within and between all (Wilson, 1998).

The fundamental methodological worldview of unity of knowledge within which all problems and issues, and thereby money and monetary policy in their concepts, applications, and organization is formalized in Figure 1.

The same generalized methodology of the Islamic worldview is particularized for the case of Islamic conception of money and monetary policy by an extension of the methodological worldview of unity of knowledge presented in Figure 1. We explain these generalized and particularized features of the methodological model in the case of money and monetary policy in Islam (Choudhury, 2016, pp. 368-402).

Figure 1: generalized multi-system scientific inquiry by the precept of unity of knowledge

1	2	3	4	5	6	7
Tawhid (monotheism) As Primalof Ontological Law	Epistemology	Formation of world-system unity of knowledge with Multi-systems	Evaluation of Wellbeing Criterion in terms of Unity of knowledge By circular causation Between the variables	simulacra of evaluation	continuity & sustainability	Hereafter
epistemic methodology sustainability	Closure	modeling, application, inferences, simulation	continuity & sustainability			

Now as a particular application of the generalized methodological system model of Tawhidi worldview we take the example of money and monetary policy as a specific example of application. By the methodology explained by Figure 1 money is defined as economic contravention of unity of knowledge in the domains interactively (organismic) integrating (consensus), followed by evolutionary (dynamic creative change) learning processes over the knowledge, space, time events along the trajectory of history. Consequently, the meaning of money in Islam is based on the continuity of social and economic specie that enables and is sustained by the continuity of the learning process of historical consciousness in terms of organic relations defining unity of knowledge by inter-causal relations between money as specie, spending as financial instrumentation, and the real economy in terms of the good things of life (halal at-tayyabah). Money (nuqud) thus establishes circular causation as the explanation of ethics in terms of the Tawhidi precept of monotheistic unity of knowledge in sustainability of events described by the continuity of events marked by the embedding denoted by, $E(\theta) = \{\theta, X(\theta), t(\theta)\}$, for the limiting value of knowledge-flow $\text{plim } \{\theta\} = \theta$ along the evolutionary values of such ' θ '-values that are evaluated by the total wellbeing (maslaha) function, $W(E(\theta))$, subject to circular causation relations.

The complete Tawhidi methodological model of money-specific wellbeing model is the following one:

$$\text{Evaluation} \quad W(E(\theta)) = W(\theta, \mathbf{X}(\theta) = (M(\theta), Sp(\theta), RE(\theta)), t(\theta)) \quad (2)$$

(estimate ‘as is’ state subject to circular causation relations:

$$\text{followed by simulation} \quad M(\theta) = f1(\theta, Sp(\theta), RE(\theta))_{t(\theta)} \quad (3)$$

$$\text{In simulacra of many} \quad Sp(\theta) = f1(\theta, M(\theta), RE(\theta))_{t(\theta)} \quad (4)$$

$$\text{‘as it ought to be states} \quad RE(\theta) = f1(\theta, Sp(\theta), M(\theta))_{t(\theta)} \quad (5)$$

$$\text{Empirical version of} \quad \theta = F(\mathbf{X}(\theta), t(\theta)) \quad (6)$$

The wellbeing function

The following variables are defined:

$\theta \in (M(\theta) = f1(\theta, S(\theta), RE(\theta))_{t(\theta)}, S): \Omega \rightarrow_S \{\theta\}$. This is the stage of methodological derivation of knowledge from the basis of Tawhidi ontological origin, with Ω as the supercardinal domain of Qur’anic knowledge; S denotes the continuous and well-defined mapping of Ω onto the formation of knowledge and explaining the nature of the Tawhidi world-system. This mapping is defined by the sunnah of the Prophet Muhammad. The complete description of Figure 1 is given by expression (7),

Figure 1: Explanation of the monetary function in Tawhidi supermanifold of unity of knowledge and the world-system

1	2	3	4	5	6	7
$(\Omega, S) \rightarrow \text{plim}\{\theta\} = \theta \rightarrow E(\theta) \rightarrow \text{Evaluate } W(E(\theta))$	simulacra	continuity	Closure			
(discursive)	Episteme	$\text{s.t equation system}$	sustainability			
Hereafter						(3-5)
Simulation by $\theta = F(\mathbf{X}(\theta), t(\theta))$						(7)

A system is defined here by the inter-causal nature of endogenously interrelating variables under the effect of knowledge induction. In the MSpRE($\square$)-model, the system of inter-variable

and inter-causal relations are brought together for evaluation of their complementarities, or lack of it, by using the social wellbeing function. By the inherent system of inter-causal equations between the variables, empirical evaluation of the social wellbeing function is

carried out subject to the system of circular causation relations.

Estimation evaluates the degree of prevailing inter-variable complementarities in the ‘as

is’ state of the financial economy. Simulation gives the way of generating the ‘as it ought to

be’ state of the complementary relationships between the variables. The vector of knowledge-induced variables selected is {M,Sp,RE, policy vector}[$\square$]. Each of the variables of this

vector is induced by the knowledge-flow, $\square$ -variable. ‘ $\square$ ’-values are calculated in light of the

desired level of inter-variable complementarities.

Ordinal values are assigned to the $\square$ -variable in the light of its prorated values of economic and financial performance. An average is then taken across the ordinal assignments of $\square$ -values in respect of given observations in data in order to obtain the final $\square$ -values as ranked values. In this way, the $\square$ -values form a set of data aligning with the MSpRE($\square$) observations. The entire data of observations including the generated $\square$ -values now comprise the full data set required for the assessment of the evaluation model comprising the social wellbeing and its circular causation equations.

The existing state and the simulated reconstruction for complementarities between the MFRE($\square$)-data are explained by the numerical signs of the estimated and simulated coefficients of money, spending, and real economy interrelations with the endogenous effects

of technology. Their degrees of complementarities are explained by the coefficients of the social wellbeing function.

The social wellbeing criterion in its measurable form indicates the degrees of complementarities that exist or can be alternatively simulated in the state of inter-variable complementarities as these 'ought to be'. The empirical form of the social wellbeing function now coincides with the monotone of $\square$ -function in the vector of variables. We denote it by, $\square = F(M, Sp, RE, \text{policy vector})[\square]$. The system of circular causation relations between the variables of the social wellbeing function is denoted by the system (2-6). The totality of all such equations forms the circular causation system of structural regression equations. All variables of the structural equations are driven by the normative outlook of the potentially complementary systems of inter-causal and inter-variable relationships. The policy variables and the (M, Sp, RE) variables are all together endogenous variables. The endogenous relations in the form of inter-variable circular causation in the formulation of the social wellbeing function are actualized by the configuration of the ' θ '-variables for the various (M, Sp, RE, policy vector)[θ]-variables.

Monetary policy vector in Tawhidi methodological meaning

Monetary policy vector is defined as the group of financial instruments that together influence the change in the stock of money, by thus converting the stock into the flow of money. An example of this case can be deduced from the quantity theory of exchange. It explains how a quantity of money determined in terms of the relationship between the circulation of money and value of spending. This latter case is to be taken as spending in the good things of life. The transformation of stock of money into flow by means of using the various types of financial instruments forms the vector of this transformation; and thereby of policy vector.⁴

⁴ Equation of exchange: $M(m_1, m_2, \dots, m_n) * v(v_1, v_2, \dots, v_n) = p(p_1, p_2, \dots, p_n) * y(y_1, y_2, \dots, y_n)$, with various decomposition of monetary function M as $m_1, m_2, \dots, m_n$; and correspondingly decomposition of velocity of money circulation v as $v_1, v_2, \dots, v_n$; price function 'p' in terms of disaggregate prices $p_1, p_2, \dots, p_n$; and the corresponding disaggregate project-wise components of y as $y_1, y_2, \dots, y_n$. Now by logarithmic differentiation we obtain, $dM/M + dv/v = dp/p + dy/y$. Furthermore, in terms of the change in the composite vector we can write:

Because the attributes of money in Islam in the intertemporal sense ($t(0)$) is based only on the unit of value, therefore, the rates of change in the variables are driven by actual changes in the stock caused by rates of change in the variables. Indirect changes such as prime rates of interest, open market operations governed by bond rates. Other attributes of money, such as, medium of exchange and store of value do not appear in the face of such direct measures of change in money and its diversities; and in terms of intertemporal indeterminacy of the quantity of money. Thus, the exclusive attribute of unit of measurement in the absence of store of value and medium of exchange make the monetary policy driving money in Islam to be the rates of changes in the modes of financing of micro-monetary related projects (Choudhury, 2017 forthcoming).

Specie flow of money through spending and real economy

The nature of attributes of money in Islam in terms of its function as a unit of value to the exclusion of medium of exchange and store of value establishes the fact that money is converted through financial instruments into a continuous regeneration of resource. Money cannot be held back such as in the form of bank-savings. The conversion of money into resource as a monetary flow via financial instruments into the real economy is equivalent to the continuous mobilization of savings into spending (e.g. investment). Besides, the prevalence of the life-sustaining regime of development implies that spending is in the participatory good things of life induced by knowledge-flows characterizing the maqasid as-shari'ah as needs (dururiyath), comforts (hajiyath), and refinements (tahsaniyath).

$$\sum_{i=1}^n (1/M) * (\partial M / \partial m_i) * (dm_i) + \sum_{i=1}^n (1/v) * (\partial v / \partial v_i) * (dv_i) = \sum_{i=1}^n (1/p) * (\partial p / \partial p_i) * (dp_i) + \sum_{i=1}^n (1/y) * (\partial y / \partial y_i) * (dy_i)$$

This expression explains that, the instruments of money circulation $\{m_i\}$, such as the participatory financial instruments, depends upon the changes in such instruments and the other factors as shown. The prices as shown can be product prices and rates of return in real and financial ventures. The output of these various ventures are denoted by $\{y_i\}$, $i = 1, 2, \dots, n$. Circular causation relations are implied between the rates of change in the various variables. Monetary policy vector is thus one such circular causation relationship in terms of the other variables in the sense of inter-causal endogeneity.

We present through Figure 2 three different ways of the specie flow model between monetary flow, spending, and real economy relations of the Islamic version of MCM model with the dynamic induction of knowledge embedding. This formalism leads into actualisation of pervasive complementarities between the good things of life (halal at-tayyabah = maqasid as-shari'ah). The three cases of the monetary specie flow model are (i) perfect match between the quantity of money and the value of spending in the real economy under the condition of valuation of actual ownership of the exchange of artefacts (qabd). In this case, $Mv = p.y$. (ii) the case of excess demand for cash balances to meet the value of spending in the maqasid goods is denoted by $Mv > p.y$. (iii) the case of cash flow being higher than the quantity of money in circulation, $Mv < p.y$.

1. $Mv = p.y$, in the general case of $0 < v < 1$.

Say the starting amount of total savings is D1,000. Because of the 100 per cent reserve requirement monetary system that circulates the savings fully into the real economy through various financial instruments, there is no resulting statutory reserve requirement at the central bank. Consequently, no usual monetary policy is needed to control the quantity of money.

Now, when money flows into the real economy, the rates of return (r) on the financial instruments inject the quantity of money into spending. The increased returns on mobilization of savings cause the increase in the quantity of money in the second round of savings in the bank, and so on. That is, the n th. round of circulating savings into spending affect the real economy bringing about the increase in money.

Thus, first round of savings = M_0 yielding $M_0(1+r) \rightarrow RE = \text{nominal output, } Y = Sp + \text{savings} \rightarrow \dots \rightarrow \text{accumulated } Y = M_0(1+r)^n + \sum_{t=1}^n Sp$. Any number of additions and withdrawals can be applied. (8)

2. $Mv > p.y$

The amount of savings mobilized as money into the real economy by means of financial instruments subject to the velocity of money circulation exceeds the potential spending capacity in the RE. Thereby, the amount $(Mv - p.y) = \Delta Mv$ that is not spent, is retained in the central bank on behalf of the central bank. Its currency value is defended by a proportionate amount of gold value (G). The stock of money so protected by the Gold Standard later becomes the additionally needed spending in RE. The equivalence shown by the condition (1) above is thereby once more established both at a point of time in terms of a lower level of spending; and intertemporally by regeneration of resources in RE. In this case, there is a withdrawal by monetary contraction from the RE temporarily within the limits of a lower scale of resource mobilization. Yet no usually targeted monetary policies, such as prime rate of interest, open market operation (bond-interest based) are used. Statutory reserve requirement is not used, for this is not in the interest of any of the agencies in relation to money, finance, and real economy. A purely endogenous relationship is invoked between money, finance, and the level of real economic activity.

3. $Mv < p.y$, with $p.y - Mv = \Delta Sp$.

This is the state of an excess demand for money to finance the stability of the participatory real economy in its duration of advanced economic growth. Now the central bank lends the excess demand for money as financial resource to the Islamic commercial banks to enact a 100 percent reserve requirement monetary system to finance the real economy of maqasid-goods. In this case of monetary transmission, the central role of resource mobilization uses most centrally the role of financial instruments in establishing and sustaining an evolutionary learning nature of evolutionary participatory social and economic system. The financial instruments that effectively work as endogenous monetary policies are the rates of change in mudarabah and musharakah instruments (see footnote 3).

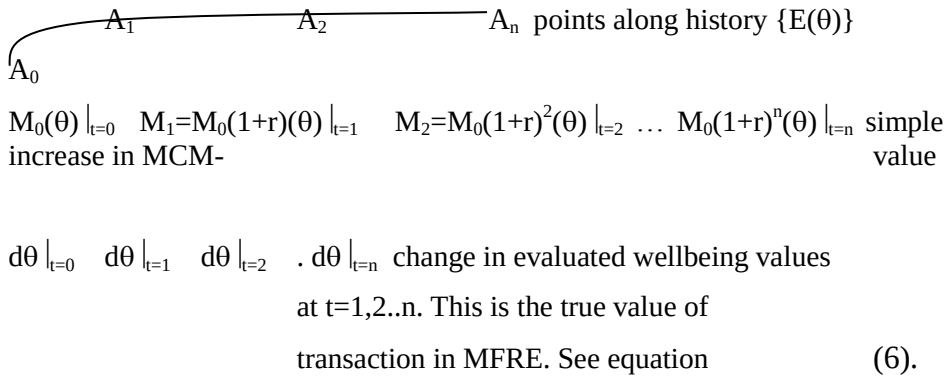
In all of the above-mentioned cases regarding the MFRE-condition (expression 8) holds. The possibility of fractional reserve requirement by way of excess reserves held at Islamic commercial banks is ruled out and replaced by endogenous forces of MFRE participation in the

monetary and real economy relations. Now to implicitly explain the endogenous relational induction of evolutionary learning in the whole system of MFRE relations, as the essential sign of complementarities in unity of knowledge, these variables become θ -induced. This relational extension is substantive in terms of formalizing the ontological Tawhidi law of organic unity of knowledge between the maqasid-goods.

The Wellbeing Criterion in MFRE-relations of the Islamic economy

The general theory of Tawhidi unity of knowledge establishes that the final goal of any analytical study is the evaluation of the Wellbeing Criterion subject to circular causation equations between the MFRE-variables and their disaggregation. Such a particular model derived from the general system-model is explained by the wellbeing relational system of expressions (2-6). Due to the knowledge-induced driving force of unity of knowledge between the variables the theoretical meaning of value of such evolutionary learning system is given by the following intertemporal knowledge-induced evaluation in terms of $E(\theta)$ = $E\{\theta, X(\theta), t(\theta)\}$ – Figure 2:

Figure 2: Meaning of value in terms of change in Wellbeing Criterion over evolutionary learning in time



Conclusion

Money in Islam is micro-money. It is directly linked endogenously with project-specific monetary flows. Thereby, the circular inter-causal relations between the variables of the monetary based wellbeing function explain and measure the unity of knowledge in the money, finance, and real economic interrelationship. Such circular causation establishes the meaning of ethics in the form of organic complementarities. Micro-money being asset-based, linked with projects form also policy orientation in such microeconomic perspectives. An example of micro-money is digital money and token money. Such kinds of monetary units being asset and project linked prove to be efficient market-determined specie. The market-oriented units of money, which was indeed thought of by the Austrian School of Economics (Yeager, 1983) have the consequence of an efficient circulation of money in the face of a specific nature of monetary policy. This is to circulate money in the market economy by the activity of rates of changes in the primary financial instruments of *mudarabah* and *musharakah*. Thereby, the role of Islamic banks is advanced contrary to the aggregate policy variables of macroeconomics of money through the central bank.

The presence of Islamic Dinar as coinage is a further example of micro-money as currency (Allouche, 1994). Its role in the promotion of trade taken in its broad sense of exchanges in the good things of life (*maqasid*-goods) contributes to money and income multipliers in terms of the real economy as established by the circularity of the $(MCM)[\theta]_t$ model of expression (1). This model is equivalent to the MFRE-model in the form, $(M,F) \rightarrow RE)[\theta]_t \rightarrow (M,F) \rightarrow RE)[\theta]_{t+1} \rightarrow \dots$. The message here is clear: The inter-variable complementary nature of the MFRE-model explained by the θ -induction of unity of knowledge establishes the grand monetary implication of the wellbeing criterion of money and monetary policy.

References

Allouche, A. (1994). *Mamluk economics, a study and translation of al-Maqrizi's Ighathah*. Particularly the chapter on "Currency [Islamic Currency]". University of Utah Press: Salt Lake City, UT.

Bordo, M.D. (1989). "The contribution of *A Monetary History of the United States 1867-1960*", pp. 15-70 in Bordo, M.D. ed. *Money, History and International Finance: Essays in Honour of Anna J. Schwartz*, University of Chicago Press: Chicago, ILL.

Cagan, P. (1989). "Monetarism", in Eatwell, J. Milgate, M. & Newman, P. (eds.) *Money, the New Palgrave*, pp. 195-205. W.W. Norton: New York, NY.

Choudhury, M.A. (2016). *Heterodox Islamic economic theory: the emergence of an ethico-economic theory*, Routledge: London, UK.

Choudhury, M.A. (2017 forthcoming). "Micro-money, finance, and real economy interrelationship in the framework of Islamic ontology of unity of knowledge and the world-system of social economy, *International Journal of Social Economics*.

Daly, H.E. (1992). "From empty-world to full-world economics: recognizing an historical turning point in economic development", in R. Goodland, H.E. Daly, S. el-Serafy & B. von Droste Eds. *Environmentally Sustainable Economic Development: Building on Brundtland*, pp. 29-40, UNESCO: Paris, France:

Friedman, M. (1956). "The quantity theory of money – a restatement", in Friedman, M. ed. *Studies in the Quantity Theory of Money*, pp. 3-24 Chicago, ILL: The University of Chicago Press.

Friedman, M. (1989). "The quantity theory of money", in J. Eatwell, M. Milgate & P. Newman eds. *New Palgrave: Money*, New York, NY: W.W. Norton, pp. 1-40.

Hayek, F.A. (1967). *Studies in Philosophy, Politics and Economics*, The University of Chicago Press, Chicago, ILL.

Hayek, F.A. (1990, reprint). "The use of knowledge in society", in Spechler, M.C. (ed.), *Perspectives in Economic Thought*, pp. 183-200, McGraw-Hill, New York, N.Y.

Heilbroner, R. (1985). *The Nature and Logic of Capitalism*, W.W. Norton, New York, NY.

Henderson, J.M., & Quandt, R.E. (1971) *Microeconomic Theory, A Mathematical Approach*. McGraw-Hill Book Co., New York, NY.

Jeans, W.H. (1970). "Borrowing and Capital Structure". Chapter 6 of his, *The Analytical Theory of Finance*, Holt, Rinehart and Winston, Inc. New York.

Laidler, D. (1989) "The quantity theory is always and everywhere controversial - why?" *Atlantic Canada Economic Association Papers*, Vol. 1.

Lawson, T. (2003). "Competing theories and policies within post-Keynesianism", in his *Reorienting Economics*. Routledge: London, Eng.

Moore, G.E. (1962). *Principia Ethica. Chapter II: Naturalistic Ethics; Chapter IV: Metaphysical Ethics*. Cambridge University Press: Cambridge, Eng.

O'Donnell, R.M. (1989). "Epistemology", in his *Keynes: Philosophy, Economics & Politics*, pp. 81-105. Macmillan Press Ltd.: London, Eng.

Schumpeter, J.A. (1961). *The Theory of Economic Development*, Harvard University Press, Cambridge, Mass.

Ventelou, B. (2005). "Economic thought on the eve of the General Theory", in *Millennial Keynes*, Chapter 2, M.E. Sharpe, Armonk, New York.

Von Mises, L (1976). *The Ultimate Foundation of Economic Science*. Sheed Andrews & McMeel: Kansas City, Kansas.

Wilson, E.O. (1998). *Consilience, Unity of Knowledge*, Vantage Books, New York, NY.

Yeager, L.B. (1997). *The Fluttering Veil, Essays on Monetary Disequilibrium*. The Liberty Press, Indianapolis, IN.

Yeager, L. B. (Spring, 1983). Stable money and free-market currencies. *CATO Journal*, pp. 305–26.

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- Effective use of humanitarian aids and development assistance for building resilience;
- Issues related to indebtedness and debt sustainability in financing development
- Resources and alternative approaches for regional cooperation on financing for development
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