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Awojobi, Omotola and Bein, Murad

Eastern Mediterranean University

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Omotola Awojobi* Department of Banking and Finance, Eastern Mediterranean University; North Cyprus; and

Murad Abdurahman Bein Department of Economics, Eastern Mediterranean University; North Cyprus

Corresponding Author. Email: <u>mcawojobi@yahoo.com</u>

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Abstract

The main focus of this research is to juxtapose the features of microfinancing and the institutional forbearance of economic development in Nigeria. Based on empirical study, it has been observed that poverty is multifaceted and its persistence is due to lack of productive resources. The Nigerian case reveals that the major constraint to improving the standard of living of the poor is capital (finance). This has restricted their extensive participation in economic activities which could improve their lives. For this study, our theoretical a priori expectation is that provision of microfinance services such as savings and microloans have direct impact on GDP. A causal relationship will be established and evaluated with the 't-test' statistic, while the relevance of the independent variables in explaining the subject will be justified based on the F-statistic test and R^2 coefficient of multi-determination. Also, using a lin-log regression model, economic growth shall be regressed on poverty level in Nigeria. This will create an assertion whether Nigeria needs a systematic reinforcement of the microfinance mechanism to propagate a soothing trend for poverty reduction and economic growth.

Key words: Microfinance, Poverty, Economic Development, Economic Growth, Financial Services, Gross Domestic Product.

JEL Classification: G21, I38, O17, O43

1. Introduction

Microfinance is a phenomenon that reflects the provision of both credit and savings services to low income people. This provision of funds in form of credit and microloans empowers the poor to engage in productive economic activities which can help boost their income level and thus alleviate poverty in the economy.

In recent times, the growing awareness of the potentials of microfinance in poverty reduction, economic growth and development, coupled with the increasing number of microfinance institutions has effectively put the issue of microfinance a top agenda in most developing countries. The monetary authority (CBN) is spearheading this campaign in Nigeria and they act as the supervisory and regulatory body for this sub-sector. The financing of the industrialization process which is one of the major goal of Nigeria policy makers, cannot be overemphasized. For any program on poverty alleviation to be successful, the economy needs a viable industrial sector that can cushion the economic and production process in the country. In most developing countries of Asia, Africa, South America and the rest, poverty reduction is anchored on the development of small and medium scale enterprises. This is due to the low technological capacity of these nations; majority of people in these nations engage in low

productive activity. As a result, economic development in these regions to a large extent depends on how well the small and medium enterprises flourish. The inaccessibility of the poor to financing options has hindered the progress and survival of most of these enterprises thereby worsening the poverty incidence in these economies. Enhancement of small-scale production plays important role in development process of a developing economy. Apart from increasing the per capita output and expenditure, it enhances regional economic balances through industrial dispersal and promotes effective allocation of resources.

Robust economic growth can be achieved by putting in place well focused programmes to reduce poverty. These programmes empower the people by increasing their access to factors of production especially capital. The latent capacity of the poor for entrepreneurship is significantly enhanced through the provision of microfinance services. The financial services enable the poor to engage in economic activities that make them self-reliant, it enhances their household income and helps them create wealth. Thus, the potential of microfinance far exceeds the micro level, scaling up to address macro problems associated with poverty reduction.

Following this section, section 2 examines various concept definitions according to different scholars, section 2 presents an outlook of poverty in Nigeria, section 4 discusses the impact of microfinance; section 5 is the modeling and section 6 concludes the study.

2. Conceptual Issues

It has been acknowledged that microfinance captures elements of widespread perception, broadening, deepening and speeding up the interconnection to poverty reduction and economic development. Schreiner and Colombet (2001, p.339) clearly describe microfinance as "the attempt to improve access to small deposits and small loans for poor households neglected by banks." According to Olaitan (2001) and Akanji (2001), the tools of microfinance include increased provision of credit, increased provision of savings, repositories and other financial services to low income earners or poor households. Thus simply defined, microfinance is a development process through the provision of microcredit and savings service to small-scale entrepreneur. The Olaitan and Akanji perspective on microfinance go in line with Schreiner's description of the concept. Schreiner (2001) also proposed a definition of microfinance as "uncollateralized loans to the poor and small-scale entrepreneurs". This implies that

microfinance provides financial strength to the low income earners so as to enable them carry on economic activities that can earn them improved living standard.

UNDP (2001) identified microfinance as a major tool effective in alleviating poverty. It empowers the financially disadvantaged ones. According to Morduch *et al* (2003) and Alegiemo and Attah (2005), microfinance is the financial empowerment of economically active poor through the provision of microcredit as well as other productive assets; it enhances the latent capacity of the poor for entrepreneurship, enabling them engage in economic activities, be self-reliant and also enhancing the household income as well as creating wealth.

While some authors see the concepts of microfinance and microcredit as same in terms of definition, others opine that microfinance is an extension of microcredit. Osuji (2005) posits that microfinance is an extension of microcredit services which include savings services to the low-income but economically active poor. In lieu of this definition, the Canadian International Development Agency (2005) description of the concept as provision of small loans for micro enterprises, agriculture, education and consumption purpose seem incomplete. Microfinance is a concept that includes mobilization of savings and disbursement of micro-credit to the economically active poor, so as to provide employment and means of sustainability to improve the living standard in an economy.

A review of microfinance literatures has shown disparity in perception by scholars on this subject. While some relay microfinance as an instrument that empowers the poor, others negate this opinion; conceptualizing microfinance has a social liability. The conservatives view microfinance as social liability, consuming scarce resources, without significantly effecting long-term outcomes. Critics argue that the small enterprises supported by microcredit program have limited potential to grow and so have no sustained impact on the poor. They contend that these "microfinance programs rather make the poor economically dependent on the program itself" (Bouman and Hospes, 1994). Hence, even if the programs are able to reach the poor, they may not be cost-effective and hence worth supporting as a resource transfer mechanism. According to Zeller and Meyer (2002), the excitement about the use of microfinance to empower the low income people is not backed up with sound facts. Most microfinance providers are unwilling to evaluate the appropriateness and effectiveness of such scheme because they are perceived to be rigorous and expensive.

For economic development, it has been described as a sustained growth in superstructures and national income aggregates. According to Keynes in "The General Theory of Employment, Interest and Money" he hypothesized that national income depends on the level of employment; that is, the volume of resource channeled to production. In this direction, we can say poverty is as a result of idle productive resources. He also explained that full employment is attained when the economic resources are fully utilized; at this point, the economy is said to be at an optimal position. This is a desirable state for all economies. However, the neo-classical school of thought has substantially criticized the full employment condition, stating that it is impossible to achieve this condition (See Samuelson, P., and Modigiani, P., 1966). A standing point for both schools of thought is that full employment is desirable. Where microfinance strives, the masses are empowered financially to utilize their human resource capacity. Therefore, the exigency of this study is to validate the microfinance proposition has an effective mechanism for strengthening the economically active poor.

For the purpose of this paper, poverty is defined as a situation where income is not sufficient to meet minimum standard of living. This is an associated perception of poverty which is defined by Olowoni (1996) as a poor economic condition characterized by low calorie intake, poor housing, inadequate health facilities, low income, unemployment and underdevelopment. For sustained economic growth, a higher savings and capital accumulation level is required. For instance, Solow (1956) has argued that an increase in the savings ratio generates higher growth in the short run. The Classical theory of growth and Harrod Domar growth model also postulates a positive correlation between savings and growth. For developing economies such as Nigeria, a large division of population is engaged in the traditional sector. This sector forms the major component in a national savings and for high savings ratio to be achieved, a vibrant microfinance industry is key.

3. Poverty in Nigeria

Poverty is a multidimensional term, therefore has no single definition. It engulfs both economic and social dimensions some of which are not easily quantifiable. For instance, indicators such as real per capita income, housing condition, health facilities, unemployment rate, literacy level, consumption and saving level; are various yardsticks for measuring poverty. Yet, the reliability of these standards could fall short of precision in ascertaining the depth of poverty in a country due to dearth of data. The performance of the Nigerian economy has not been satisfactory in the last two decades looking at her enormous potentials for growth and economic development. In both absolute and relative terms, Nigeria is characterized by high incidence of poverty. Even among the poorest, Nigeria's performance on the quality of life index ranks low.

"insert table 1"

In spite of the fact that Nigeria ranks high among other countries in terms of gross domestic output, most social and economic indicators have relegated the economy to a category of underdeveloped country. From the above table 1, the Human Development Index (HDI) ranks Nigeria lowest. The HDI is a composite index that reflects three indicators: life expectancy at birth; educational achievement, which is a combined measurement of adult literacy (two-thirds weight) and the gross primary, secondary and tertiary enrolment ratio (one-third weight); and per capita GDP (in PPP US\$). The three indicators are important factors in measuring the state of deprivation in a state. Poverty in Nigeria is characterized by high illiteracy level, prevalence of malnourishment, high incidence of major disease outbreak, gender inequality, income disparity and unemployment. Looking at the gini index, there is a clear indication that Brazil has the highest inequality rate. Holding from past records, there has been a slight decline in the coefficient. Nigeria and Philippines also have high income disparity among her social class. This is attributable to corruption. Considering the country's inequality problem, the aforementioned importance of microfinance in promoting poverty alleviation and enhancing economic growth can be justified.

4. Impact Of Microfinance On Poverty Alleviation

The poor participate in microfinance programme with the expectation that borrowing will increase their income and sustain self employment. According to Rutherford (2000), access to savings and credit facilities is very important as it enable the poor to create, own and accumulate assets and smooth consumption expenditure. Also in line with this, the United Nations Capital Development Fund suggest that one of the principles for poverty reduction efforts to have a long lasting impact is by developing the financial system which includes microfinance so that the poor and low-income people can have access to sustainable financial services. This implies that microfinance involves the provision of credit and savings as well as

other financial services to the low income groups and poor households, to create or expand their economic activities and improve their standard of living. This sets the notion that microfinance has a significant deal on poverty reduction.

Microfinance reduces poverty through accelerated employment rate, improved average productivity of labour and increased real wages. In some countries where the programme has been implemented, microfinance has successfully opened economic opportunities, improving the socio-economic conditions of the poor. Example of such countries with success story include: Bangladesh, Pakistan, Philippine, India, Uganda, etc. The impact of microfinance could be measured directly using variation in income, employment, and consumption on a sustained basis. It could also be directly measured by evaluating changes in socio-economic outcomes such as fertility rate, literacy rate, housing pattern, etc.

In Khandker (1998), changes in income and employment among participants may affect the rural economy and the macro economy at large. Two important factors that determine the overall impact of the strategy are: the potentials of activities financed by the policy; and the extent of credit/savings market imperfection that are resolved with enhanced availability of financial services.

Assessing the impact of microfinance can be approached through the assessment of socioeconomic indicators relevant to the prime target – micro enterprises. The large number of these enterprises suggests that they are central to economic growth and poverty alleviation. They provide job opportunities to a large number of persons. The provision of microfinance services enhances the use of appropriate mode of production for goods and services. As such, a financing arrangement which is responsive to the funding of such a vital sub-sector in the economy is crucial to sustainable development. This is evident in some economies where microfinance has been successfully developed. Over the years, microfinance institutions have delivered huge amount of money through an array of responsive microfinance products and enterprise development services.

Across the world, there is large number of microfinance institutions; service of these institutions has significantly aided poverty alleviation in several ways – firstly, the income generating capacities of small-scale entrepreneurs have been enhanced. The poor are able to expand their business and also avoid the usury of moneylenders. Microfinance is unique among other development interventions. It delivers benefits to the poor on a large and permanent basis.

In lieu of this, microfinance allows the poor to protect, diversify and increase their sources of income which is an essential path out of poverty and hunger (Littlefield et al, 2003). Also, income has significant impact on consumption and capital formation as well as on other indicators of wellbeing. This is apparent when the income of a poor household increases, nutrition, access to health services and education of children are positively affected. In addition, MFIs provide services which seek to reduce the vulnerability of the poor. For instance, savings schemes are operated to assist beneficiaries to gradually build up capital which they could fall back on in times of crises or when the need for capital arises.

An efficient microfinance programme could also reduce the rate of unemployment and result to a paradigm shift of employment pattern from low-paid daily labour to diversified sources of earnings. Provision of financial service could also encourage self-employment and consequently, the poor may be able to make use effectively, their idle productive capacity to improve their wellbeing. Furthermore, in Nigeria, the agricultural sector that is lagging behind can be revitalized as credit facility to farmers and other participants will enhance productivity in the sector. Also, an enhanced productive agricultural sector will provide for the nutritional needs of the nation. This extension of microfinance service to the agricultural sector will significantly improve the living condition of the rural dwellers which forms the major part of the sector. As such, the severe rural-urban drift could be minimized and also, there would be a reduced gap in income differences of the rich and poor as the poor gradually get out of the state of being poor.

5. Prospect And Challenges Of Microfinance

For the strategy to achieve its prime goal of alleviating poverty by purveying credit and savings access to the poor masses, the microfinance sector in Nigeria needs institutions that can effect economic empowerment of the micro, small and medium entrepreneurs on a sustainable basis. The primary focus on the poor should be understood in the context of assisting only the less privileged to have access to affordable finance.

The microfinance sub-sector in the past few years has witnessed increase in the tempo of activities. Government, non-governmental institutions, International Agencies and Private Organizations has shown considerable interest in microfinance. This rising interest in microfinance is due to the increasing incidence of poverty in the country. The high level of

unemployment and downsizing by government and private sector institutions has triggered an influx of the Nigerian populace into the informal sector, hence an increasing demand for microcredit facilities. However, the emergence of a sustainable microfinance sector to meet this demand contends with some challenges. Strategizing microfinance to alleviate poverty will depend on how well these challenges are addressed. The visible challenges are discussed under the following framework;

5.1 Policy and Legal Environment

In the past, most microfinance initiatives were mainly informal in structures and operation. Traditional Help Groups (THGs) were organized and services were provided on trust with little documentation of rules and processes. Thus, operation of these groups was ignored by relevant barrage. In recent times the participation of the non-governmental organizations and even the formal banking financial institutions in the sub-sector has made the existence of an enabling policy environment imperative. However, on one hand, the legal institutions and policies of the formal system in Nigeria are too rigid and hard to sustain effectively the purpose of microfinance; on the other hand, the trust base of the traditional informal system is weak and poses high risk to this strategy.

From the foregoing, the microfinance sub-sector could be better developed if various actors come together and form a linkage between the formal and the informal sector, adequate incentives should also be provided by government to drive the process. In Pakistan for example the government encouraged linkages among various actors of the sector. It is evident that enabling policy and viable institutional arrangement matters a lot for microfinance to alleviate poverty successfully. This will widen the scope of the polity as the outreach objective will be achieved. Also, participation of the private sector encourages flexibility and innovation in the industry. The federal government could also use the linkage strategy to enhance rural infrastructural development. This will promote activities in the regions and create more employment, as rural-urban drift will reduce.

5.2 Flow of Funds

The market for microfinance in Nigeria a country of over 150 million people is enormous. The increasing population puts high demand on microfinance institutions for credit and savings

access. Large resource will be required to meet this demand. New MFIs will need resources while the existing institutions will require more funds to scale-up the activities and outreach. Currently, the industry is facing a challenge of inadequate flow of funds most microfinance institutions (MFIs) depend on International Agencies and foundations for assistance. Donors' funds have played vital role in the emergence and growth of MFIs as such, their capitalization is low as donors' funds are inadequate to propel the industry to a greater level. Other emerging developmental issues such as Health (especially AIDS), child abuse, etc, compete with Agencies for donors' assistance. In addition, savings mobilization is poor and members contribution also, do not amount much. This is because the beneficiaries are the poor persons with limited means and usually low level of profit. Moreover, the increasing hard economic climate with persistent increase in price level has made the poor to borrow more and save less. This deprives the sector of adequate funding and limits the viability of its operation.

However, the sector still holds an enormous potential as sufficient funds could be created beyond access to public savings and donors' funds. This could be through increased government commitment of resources or through institutional arrangements. The institutional arrangement should be such that funds will be managed by an institution empowered to mobilize funds for lending arrangement with MFIs and the institution should reflect the interest of all stakeholders in governance and management. In Bangladesh, the central financing authority played an effective role in providing sufficient flow of adequate funds in microfinance sector.

5.3 Suitable Manpower

With the launch of the policy supervisory and regulatory framework by the CBN in 2005, microfinance as emerged an industry with set of rules, procedures, organizational and institutional arrangements. Microfinance is more than disbursement and collection of small loans. It targets at small-scale entrepreneurs. A sustainable credit extension service to this group will require unique sets of strategies and processes. Akanji (2001) posits that the availability of adequately trained and motivated staff is a vital success factor in microfinance delivery to the poor.

An effective microfinance worker is more than just a financial service provider. Therefore, microfinance workers must be well versed in the technicalities of financing, as well as in

human relations and extension methods. They need to be trained so that they can genuinely be interested in the welfare of the loanees and not to see them as just beneficiaries but rather as respectable partners in the process of development (Ehigiamusoe, 2000:133). In this regard, Nigeria lacks suitable manpower for the successful implementation of microfinance policy. This is due to political intervention and manipulation.

The government most often appoint politicians to head sensitive offices in development institutions/parastatals; asides from this, there had been lack of suitable manpower in cooperative movement and non-government microfinance institutions. Very few of the established microfinance institutions have been able to attract, retain and train qualified persons because of the poor remuneration and rudimentary systems. For microfinance to be effective in reducing poverty in the economy, it faces the challenges of having a system – based with adequate quantity and quality manpower. Institutional systems could be improved upon and adequate motivation provided for staffs; microfinance institutions could also provide training programmes for their employees.

5.4 Co-operative

As earlier indicated, microfinance was initiate by individuals in various parts of the country. The co-operatives have since 1930s been involved in credit administration while the government started its direct involvement in finance focused at poverty alleviation (Akanji, 2001). The actors in the microfinance industry – government, NGOs, credit unions and private lenders basically have their targets. However, the interaction and inter-relationship of these actors is minimal. This could be enhanced to bring a meaningful linkage and promote partnership. Inadequate information flows have worsened this situation.

Efforts at the development of this sector must incorporate arrangements for the process of co-operation and partnership in programme implementation. The linkage will enhance efficiency in outreach and purpose of credit disbursement. For instance, in Pakistan, there were deliberate and comprehensive institutional arrangements for collaboration, and co-operation among public sector institutions, private sector organizations, formal banking sector, local communities, NGOs and donor agencies. Adequate incentives were provided to drive the process and this brought development to the sector in Pakistan (Olaitan, 2003: 37).

6. Model Estimation And Interpretation

This section makes use of multiple regression technique of econometrics to examine the impact of savings and microloans on economic growth on one hand; impact of unemployment rate and economic growth rates on poverty on the other hand. Poverty index is checked with changes in unemployment rate and GDP growth rate in Nigeria spanning from 1990 to 2009. These relationships are established using mathematical notation for empirical testing. In order to avoid a mis-specification of our model, Gross Domestic Product is expressed as a function of loans and savings as it appears in equation (1) while poverty is specified as a lin-log function of growth and unemployment rate. Therefore,

GDP = f(MFL, MFS); and

 $POV = f (\log GDP, \log UNEMP).$

The theoretical a priori expectation is that savings and microloans have direct impact on GDP. Hence, the classical regression model is specified as:

Model 1: $GDP = \beta_0 + \beta_1 MFL + \beta_2 MFS + \mathcal{E}_t$ equation (1)

In a like manner, a linear-log model is presented to test the causal relationship that exists between economic growth, unemployment, and poverty level. Thus,

Model 2: $POV = \alpha_0 + \alpha_1 \log(GDP) + \alpha_2 \log(UNEMP) + \mathcal{E}_t$ equation (2)

From our result, based on the F-statistic, model 1 is statistically significant at 1 percent level of significance while model 2 is statistically significant at 10 percent. However, the R^2 is used in determining the explanatory power of our independent variables as relate variation in the regressand. For model 1, R^2 is 0.93. This shows that about 93 percent variation in GDP is explained by changes in micro loans and savings. Model 2 has R^2 equal to 0.79. This also reflects the changes in poverty due to growth and unemployment.

Model 1 result of regression has shown that GDP is positively related to microloans and saving. This implies that increasing microfinance activities will impact positively on GDP significantly. The t-test probability for the parameter estimating MFL as seen in the results shows that the estimate is statistically significant at 5 percent, with parameter estimate for MFS having significance at 1 percent. Furthermore, the Durbin Watson result for autocorrelation shows there is no first order autocorrelation in the model. The autocorrelation result suggests that error terms are not correlated and series could be adjudged stationary. Model 1 output seems to be in good state because the estimates and other components conform to our a priori

expectations. It reveals the existence of positive relationship between growth and micro loans and savings. The global test of the significance of the model has also strengthened the reliability of the model.

However, result for model 2 is a bit different. It shows good coefficient of multidetermination, but one of the parameter estimates is insignificant despite the high positive \mathbb{R}^2 . Considering the t-test statistic for the parameter estimates, we can see our growth model reveals economic growth (logGDP) is negatively related to poverty (POV). This is in line with the theoretical expectation of the possible direction of causal impact of economic growth on poverty level of a nation. The second parameter that estimates the elasticity of unemployment has shown a positive sign. This means that poverty in Nigeria responds positively to unemployment rate. As unemployment rate increase, poverty increases also. The importance of unemployment in this model is to incorporate the productivity level of the economy into the model. For instance, a high GDP may not necessarily imply that economy is in full employment. As we have seen, the t-test has been tested to be insignificant at 1percent, 5percent, and even 10percent level of significance. Although, the estimator for unemployment conforms to the theoretical expectation, the statistical insignificance of the parameter as shown by the t-test, means that output is not significantly responsive to human resource usage in Nigeria. Evidence has shown that economic policies are badly implemented in Nigeria, with minimal impact on macro economy. In this case, employment generation is insufficient policy to eradicate poverty. It is very important for Government to attach productivity to remuneration of labour. However, the f-statistic shows the overall model is statistically significant at 10 percent level of significance.

7. Policy Implication And Conclusion

Empirical evidence indicates that microfinance is an imperative strategy in reducing poverty. Microfinance takes the joint effort of government, Central Bank, private sector, Non-Governmental Organizations and the people. Though it has been established that microfinance is relevant in poverty reduction process, the Nigerian performance of microfinancing is still not at its best because poverty level remains high.

The development of appropriate policy and strategy for poverty reduction and improvement in standard of living of people especially the poor requires a good understanding of the nature and dimension of poverty. In Nigeria for instance, poverty incidence has been attributed to lack of productive resource to enable the poor participate in productive activities. In this regard, the major constraint is capital. Since poverty reduction exercise in Nigeria has been constrained by lack of capital, microfinance development could be a constructive strategy to alleviate poverty. Provision of microcredit and savings facilities empowers the poor and enables them participate in economic activities which is expected to improve their wellbeing and help them acquire assets. Subject to this notion, government is expected to promote microfinance process through prerequisite policies, provisions of inducements and institutional framework that fosters linkages.

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	year	Brazil	Bangladesh	Nigeria	Philippines	Gabon
Undernourished (% of total population)	1990	10	36	15	21	5
	2008	6	26	8	15	5
Life-expectancy at	1987	65	52	51	64	52
birth (years)	2007	72.2	65.7	47.7	71.6	60.1
GDP per capita (PPP	1987	4307	883	668	1878	2068
US\$)	2007	9567	1241	1969	3406	15167
Human development index	1987	0.784	0.318	0.322	0.714	0.525
	2007	0.813	0.543	0.511	0.751	0.755
Gini (inequality index)	1986	0.592	0.369	0.386	0.41	na
	2007	0.55	0.31	0.429	0.44	0.415
Adult literacy above age 15 (%)	1985	78	33	43	86	62
	2007	90	53.5	72	93.4	86.2
Poverty incidence (%)	1987	42.1	94	22.9	64.1	31.4
	2007	21.5	40	34.1	25.1	19.6

 Table 1: Cross-Country Comparison Of Social Indicators.

Source: <u>Human Development Report</u>, 1990, 2009.

Model Output (imported from Eviews 6.0 workfile)

Model 1:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	1481.695	596.5459	2.483790	0.0245
MFL	185.7218	85.22275	2.179252	0.0446
MFS	264.1515	71.16914	3.711601	0.0019
R-squared	0.935283	Mean dependent var		6937.105
Adjusted R-squared	0.927194	S.D. dependent var		7456.999
S.E. of regression	2012.095	Akaike info criterion		18.19568
Sum squared resid	64776409	Schwarz crit	terion	18.34480
Log likelihood	-169.8590	Hannan-Qui	inn criter.	18.22092
F-statistic Prob(F-statistic)	115.6158 0.000000	Durbin-Watson stat		1.550660

Model 2:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	49.53733	5.533187	8.952766	0.0000
LOGGDP	-2.260131	1.019872	-2.216094	0.0415
LOGUNEMP	3.246580	3.568643	0.909752	0.3765
R-squared	0.794433	Mean dependent var		38.76842
Adjusted R-squared	0.706237	S.D. dependent var		4.242386
S.E. of regression	3.779685	Akaike info criterion		5.641098
Sum squared resid	228.5763	Schwarz criterion		5.790220
Log likelihood	-50.59043	Hannan-Quinn criter.		5.666335
F-statistic	3.338395	Durbin-Watson stat		1.844828

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