

BEYOND STATUTORY FEDERAL ALLOCATION: A CRITICAL EVALUATION OF THE CONTRIBUTION OF PERSONAL INCOME TAX ON INTERNALLY GENERATED REVENUE OF BENUE STATE

ABSTRACT

Abstract

Internally generated revenue of the various state governments in Nigeria has consistently been on a decline owing to the neglect of this source of revenue and consequent preference on the statutory federal allocation. This is confirmed by the inability of the various state governments to even pay salaries and provide the basic infrastructural and social needs of its citizens. Considering the foregoing, the study examined the impact of PIT sources on IGR of Benue state government. The research utilized secondary sources of data from the budget office of ministry of finance from 1999 to 2014. The data were analyzed using multiple regression through (Eview statistical package). The Augmented Dicky-fuller test ADF and diagnostic test were carried out to test for data stationarity, multicollinearity and serial correlation. Findings show that PIT contributes significantly to IGR of Benue state during the period under study and hence recommend that the state should improve on these various sources of revenue as it is a genuine source through which the government deficits finances can be solved.

sKeyword: Personal income tax, Internally Generated Revenue, Revenue, Statutory Federal Allocation.

1. INTRODUCTION

The issue of internally generated revenue has continued to be a burning issue in public domain probably as a result of the evolving challenges faced by the various tiers of government in funding the budget and also providing good life for the citizenry which goes a long way in the stabilization of key indicators of economic growth. This emphasizes the paramount importance of internally generated revenue to the development of developing economies such as Nigeria and Benue state in particular (Ojo 2008 and Adeogun, 2012). Tax as a compulsory levy, is a way through which a government generate required revenue from its citizens and other businesses operating within its territories to enable it to obtain the required revenue to finance its activities (Akpa, 2008). Internally generated revenues, are the income accrues to the State and Local Governments from within as a result of their internal efforts as against allocations received from the federation account which includes taxes (Pay as You Earn and Direct Assessments), fines and fees, licenses, stamp duties, land registration and survey fees, rents of government properties, interest and repayment/dividends (Nassar and Fasina, 2005).

Akpa,(2008) posits that in the history of Nigeria beginning from the pre-colonial days to date, nothing has generated more constitutional, political and legal controversies and a times fierce clashes other than the issue of sharing and management of national revenue. This condition has provoked series of crisis in Nigeria prominent is the Niger-Delta region among other crises in Nigeria because of their dispute about the insufficiency of their share of the revenue from oil mineral produced in the region.

There is also consensus in the theoretical literature that the problem with public finance in Nigeria has been that the level of public revenue generated from tax and non-tax sources in recent years have not been adequate enough in meet public expenditure of government, especially at the State and Local Government levels due to the growing space of apportioned

services in the various areas of human life and consequent neglect of the IGR by the various states of the federation in Nigeria (Akpa, 2008).

Uviomo (2009) submits that the internally generated revenue of the various state governments and even the federal government have not been properly harnessed possibly because of the huge foreign exchange earnings from oil revenue and hence less efforts are been made by the various levels of Government in Nigeria to harness the enormous potential of IGR collections from tax revenue. He further argued that our constitution saw the need for dependence on tax revenue for sustainable development when it stipulated in Section 24(f) that it shall be the duty of every citizen to declare his income honestly to appropriate and lawful agencies and pay their tax promptly.

Consequently, it is pertinent to state that it is a constitutional duty for every citizen in Benue State and indeed the whole country to pay his tax for the collective growth of the nation considering the overwhelming increase in government responsibility. Considering the foregoing this research sets to evaluate the contribution of personal income tax to internally generated revenue of Benue state, with a view to evaluate the contributions of personal income tax to IGR in Benue state so as to determine whether or not personal income tax revenue has a significant contribution to internally generated revenue.

Sequel to the above, this research hypothesized that there is no significant contribution of personal incomes taxes (PIT) i.e. (PAYE and DIRECT ASSESSMENT) to internally generated revenue in Benue State.

2. 2.2 CONCEPT OF PERSONAL INCOME TAX AND THE PIT LAW IN NIGERIA

Income tax was first introduced in Nigeria in 1904 by Lord Lugard. The introduction of Native Revenue ordinance of 1927 was most difficult in the Eastern areas of the country, due mainly to absence of recognized central Authority Resistance to this form of direct taxation in such that it result to riots notably in calabar, Owerri and the famous, Aba women Riot of 1929 which was so severe that it attracted a probe (Omoigui-okaura, 2012). Beside, the Native Revenue ordinances were also Native direct taxation ordinance for the colony and the Native income tax ordinance (Adeogun, 2012 and Udeh, 2002). These ordinances were later modified and incorporated into the direct taxation ordinance No 29 of 1940, cap 54 and the income tax ordinance No 29 of 1943 respectively. The direct taxation ordinance 1940 empowered native authorities to tax Africans in their areas of jurisdiction while the income tax ordinance 1943 was for the taxation of non-Africans in companies. The two ordinances were the foundation of our modern taxation which necessitated establishment of board of internal revenue in each of the states of the federation which Benue internal Revenue Service is one of them.

Personal income tax is a compulsory levy imposed on employment income and or profit of individuals derived from a trade, business, profession or vocation. The income tax also includes other benefits in kind relating to the employment such as house and cars provided by employers for employees use. Sources of personal income tax include; levy on basic salary, all allowances subject to certain limits, investment income such as dividend, interest, rents ad business income or profit (Akpa, 2008).

PIT is generally collected through the Pay-as-you-Earn (PAYE) and Direct Assessment. PAYE is the levy paid by an employee on whatever income he/she earns from his employment in any particular month at the end of that month. Under this system, the employer deducts the relevant tax from the employee's total earnings including allowances on monthly basis and the employer remits such deductions to the state board of internal revenues (Agu, 2011).

On the other hand direct assessment is also a method of collecting PIT that is based on the proportion of the taxable income of self-employed persons from trade, businesses, professions and vocations. The self-employed persons are required by the law to render returns of their annual income at the beginning of each year to the relevant tax authorities, in this case Benue state Board of Internal Revenue Service. The self-evaluation is normally done by the tax payer from which the tax authority calculates the tax liability of the individual or company (Oseni 2013).

In Nigeria the law governing the personal income tax (PIT) is the PIT act (PITA) No. 104 of 1993 as amended. This act currently regulates the taxation of individuals, corporations, sole proprietorship, ad partnerships resident in Nigeria. This act clearly set out the procedure and administrative machinery for the effective and efficient collection of taxes from all the relevant quarters under this act (Ekpe, 2012).

The law establishes the joint tax board and saddles it with the responsibility of administering PIT in Nigeria as the apex administrative organ under section 85 of PITA 1993. Section 85a of PITA 1993 provided for the setting up state boards of internal revenue (SBIR) in all the states of the federation with the responsibility of assessing and collecting personal income taxes from individuals and corporations resident in the state with the exemption of the members of the armed forces and the police (Olotu, 2012).

In Nigeria, the embodiment of rules and regulations relating to tax revenue and the various kinds of taxes are made by the legislative arms of the government. These laws are constantly subjected to amendment. There is no

doubt that the frequency of amendment is a manifestation of inconsistencies in the tax administration which consequently hinders the achievement of the set up goals. (Nasar and Fasina, 2005).

Actual Internally Generated Revenue (IGR) Collection of Benue State from 1999-2014

YEAR	IGR	PAYEE	DA	MR
1999	851,828,517.89	104,237,230.01	27,393,981.24	72,019,736.64
2000	1,306,0485,772.12	330,415,077.70	34,499,550.06	941,134,144.34
2001	1,118,764,012.71	713,802,129.66	47,628,848.94	999,755,034.10
2002	1,186,765,977.11	729,675,241.50	39,176,015.90	41,791,479.70
2003	1,214,409,145.06	809,401,522.87	34,162,968.30	370,844,653.83
2004	1,727,787,695.87	1,003,048,280.64	28,010,590.43	724,739,415.20
2005	2,462,955,974.28	996,869,981.80	58,673,048.95	1,407,412,944.40
2006	2,085,598,891.94	1,067,681,587.45	57,232,016.39	960,685,288.11
2007	2,340,888,969.34	1,210,305,463.16	136,239,999.18	1,130,583,506.20
2008	4,718,735,123.12	1,952,325,625.00	172,058,271.33	2,594,351,226.80
2009	4,523,217,165.00	3,160,213,430.00	202,667,692	1,160,336,043
2010	6,877,690,630.00	4,479,040,612.69	235,197,421.31	2,163,452,596.10
2011	11,131,316,534.60	4,207,752,868.85	273,359,644.69	65,020,402.06
2012	5,542,694,834.00	4,938,828,813.00	443,846,756.00	160,019,265
2013	8,159,956,685.00	4,444,793,160.00	265,126,989.00	3,450,036,536
2014	7,469,975,430.32	3,823,471,117.00	268,409,157	3,378,095,156.30

Source: Benue State Budget

The result presented in the table above showed that total IGR increased considerably in the year 2000 with the return of civilian administration in Benue state. This is probably because the government made efforts to generate revenue to fulfill its campaign promises to its citizens; however the total IGR of Benue State witnessed a unstable trend between 2001 to 2007 with PAYE and MR contributing significantly. With the coming in of the new government in 2007, concerted efforts were made to generate more revenue. This is evident in the fact that the state revenue increased by over 100% in 2008 and the trend continued with a significant drop in 2012. In addition the information in the table above shows that PAYE, DA contributed 45 percent 3.12 percent respectively to the total IGR during the period under study. It suffice to say that the PAYE of private sector have not been properly harnessed as shown in the insignificant contribution of Direct assessment to IGR of Benue State which sourced from the private sector of the economy. This is because only the civil servants pay their taxes faithfully as it is deducted at source as in the case of PAYE.

2.3 BENUE STATE BOARD OF INTERNAL REVENUE IN PERSPECTIVE

Benue state Board of Internal Revenue was established shortly after the creation of Benue from the Benue plateau in 1976 with the primary responsibility of collecting all revenues that are accruable to the state government. The act establishing Benue state board of Internal Revenue was reviewed in 2010. With this review the name was changed from Benue State Board of Internal revenue to Benue state internal revenue service (BIRS), the revenue law of 2010 also gave the board more powers to collect both state and local government revenues. Ayabam (2013) states that with the enactment of this law and improvement in staff strength and general working environment the state witnessed massive improvement in the revenue generation from seemingly nothing to over a billion naira monthly.

2.4 EMPIRICAL EVIDENCE

Edogbanya & Ja'afaru (2013) studied the Impact of Revenue Generation on Government Developmental Effort in some Selected Local Council in Kogi East Senatorial District The researcher used both primary and secondary methods of data collection to generate the needed data. The data obtained through secondary data were analyzed using simple least square regression method with the aid of SPSS version17. The study found that there is a significant relationship between revenue generated and developmental effort of government, poor development of the areas, lack of basic social amenities to the rural people and lack of revenue to maintain the existing infrastructures. The study therefore recommended that the local government should provide basic amenities of high quality to enhance the economic productivity which will ensure the ability of tax payers to pay taxes.

Nassar, and Fasina (2005) examined the income profiles of Oyo state government and assessed the personal income tax impact on the income accruable to the state under the constitution of the Federal Republic of Nigeria. Secondary data sought from the approved budgets of Oyo state from 2000-2006 for the study. Stepwise regression technique was used

to select the revenue source that has the greatest impact on Internally Generated Revenue (IGR) in the state. Multiple R, R² and R²c were determined to analyze the individual, cumulative relationship and effect of the revenue sources on IGR respectively. Findings indicate that personal income taxes have the highest contribution of 68.4% effect on IGR in Oyo state. Both taxes and licenses jointly accounted for 68.8 %variation in IGR in the state. Hence, any improved strategy on taxes will boost Oyo state IGR. The study recommends an improved strategy through the use of Electronic Revenue Assessment, Collection and Monitoring technique together with unique taxpayer personal identification number (UTPIN) database to attract both the self-employed and salary earners into the Personal Income Tax net.

Luke and Onuoha (2013) examined the role of internally generated revenues education in Nigeria. The paper discusses the role of Internally Generated Revenue (IGR) as inevitable alternative funding for higher education in Nigeria. The paper leverages on available literatures to revalidate the inevitability of IGR as long as the government (or other university proprietors) fail(s) to provide adequate funding for the universities' operation and capital needs. Developed from the African Political Economy (APE) Model and Resource Dependence Theory perspectives, the paper concludes that IGR has a very significant role to play as a source of critical funding for all categories of universities in Nigeria. The paper, therefore, proposes that, in order to derive sustainable maximum contribution from IGR sources, university managements should seek professional and more efficient ways of developing their IGR initiatives. The paper further recommends that universities should restructure to accommodate an IGR co-ordination office to ensure that creative revenue generating initiatives are not stifled by long bureaucratic bottlenecks. The paper will be critically beneficial to all higher education managers in Nigeria and Africa in general.

3.2 METHOD OF DATA ANALYSIS

Descriptive statistical tool was used for data analysis, which includes tables for data presentation, a linear regression model with the equation expressed in line with the hypothesis stated in the foregoing in a null form, that:

H₀: there is no significant contribution of personal incomes taxes (PIT) i.e. (PAYE and DIRECT ASSESSMENT) on internally generated revenue in Benue State. The hypothesis will be tested at 5% level of significant.

The regression equation is expressed as thus:

$$y_t = \alpha + \beta t + x_t + \mu$$

Where:

y_t = Dependent Variable for time t

α = constant (intercept)

βt = Coefficient of Independent Variables

x_t = Independent variable for the time period t and

μ = error term

However the functional relationship is specified thus:

$$y_t = f(\text{IGR}) \text{ and } x_t = f(\beta_1 \text{PAYE} + \beta_2 \text{DA} + \beta_3 \text{MR})$$

Stochastically the model is expressed as thus:

$$\text{IGR} = \alpha + \beta_1 \text{PAYE} + \beta_2 \text{DA} + \beta_3 \text{MR} + \mu$$

Where:

IGR = Internally Generated Revenue

PAYE = Pay-As-You-Earn

DA = Direct Assessment

MR = Miscellaneous Revenues

α , β and μ are as defined above.

A priori expectation: $\beta_1 \beta_2 \beta_3 > 0$

This relationship is assumed based on a priori reasoning that there is a relationship between IGR and PIT.

4.1 RESULTS AND DISCUSSION

4.2 UNIT ROOT TEST

In order to determine the stationarity properties of the macro economic variables used in the study, the Augmented Dickey Fuller test was performed. The unit root results indicate that the order of integration of each of the variables is integrated at order zero and is presented in Table 1 below:

Table1. Unit Root Test

Variable	ADF statistic	Value	@test	Mackinnon Critical value @ 5%	Order of Integration
IGR	-4.572656		-2.960411		1(0)
PAYE	-3.243103		-2.960411		1(0)
DA	-3.752338		-2.960411		1(0)

Source: Author's computation 2016.

The results of the Augmented Dikkar Fuller test in the table above revealed that, all the variables are stationary at level and are integrated of order zero. This implies that, no long run information is lost thus, the application of ordinary least squares in the estimation process is therefore appropriate and not likely to yield spurious estimates.

4.3 Diagnostic Tests

To ensure that the data for this study was fit for the model, three (3) diagnostic tests were carried out on the data. These included the Shapiro-Wilk W Test for Normal Data, the Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity and the Variance Inflation Factor (VIF) Test for Multicollinearity.

Table 2: Diagnostic Test for Serial Correlation Test, RESET Test, Heteroskedasticity white Test

Type of Test		Serial Correlation LM Test	Functional Form	Heteroskedasticity White test
			RESET Test	
Model	F-stat	10.71752	87.06760	11.80693
	P-value	0.0004	0.0000	0.0000

Author's computation 2016

4.3.1 Correlation Coefficient for Serial Correlation

The result of the Breusch –Godfrey serial correlation as contained in table (2) above indicates that there is no serial correlation in the model with an F-statistic of 10.71752 and a prob. of 0.004 which is statistically significant at 5% level.

4.3.2 Ramsy Reset Test for misspecification

Ramsey's RESET test (Ramsey 1969) is another test for misspecification of the first order, including incorrect functional form and the exclusion of relevant variables. The RESET test is based on the notion that if the functional form of the model is incorrect, then the correct specification might be approximated by the inclusion of powers of the variables in the original model. The original set of independent variables is augmented by powers of these variables. If the coefficients associated with the added variables are statistically significant, misspecification from sources such as incorrect functional form or the exclusion of relevant variables is suggested. Consequently, the Ramsey RESET test of the functional form of the models which revealed that the model is free from misspecification problems of redundant and omitted variables with an F-statistic of 87.06760 and prob. value of 0.000 which is statistically significant at even at 1% level. This result shows that the functional form of the model is correct; hence there is no misspecification of variables in the model.

4.3.3 Heteroscedasticity White Test

The white test is a statistical test that establishes whether the residual variance of a variable in a regression model is constant (i.e Homoskedasticity). In cases where the White test is statistically significant, heteroscedasticity may not necessarily be the cause, but specification errors. In other words, the White test can be a test of heteroscedasticity or specification of error or both. Table (2) above revealed that, the null hypotheses of the presence of heteroscedasticity for the White tests in model is rejected. This is because the F-statistic of 11.80693 and a prob. value of 0.000 for the model which is statistically significant at 1% alpha level (p-value < 0.01). The conclusion is that, the presence of heteroscedasticity is minimal if not completely absent in the model there by satisfying the classical OLS assumption of homoscedasticity (constant variances). It therefore implies that, the application of OLS on these models will yield Best Linear and Unbiased Estimates (BLUE).

4.3 REGRESSION ANALYSIS

Following the result of the ADF above, the study adopts the technique of ordinary least squares for the regression analysis. This is based on the premise that, all the variables in the data set are stationary and can yield best linear unbiased estimates.

Table 5: Impact of Personal Income Tax on Internally Generated Revenue in Benue State (Ordinary Least Squares Technique)

Dependent Variable	Explanatory Variables	Coefficient	Std. Error	t-Statistic	Prob.
IGR	PAYEE	1.161037	0.351279	4.304962	0.0046
	DA	2.113458	0.596212	1.544998	0.3215
	MR	0.270868	0.850164	3.318607	0.0525
	C	2.974995	6.145472	0.484095	0.6322

Author's computation 2016

$R^2 = 0.897757$ Adjusted $R^2 = 0.882610$ D.W = 2.67 F-Statistic=59.26, Prob.(F-Stats) = 0.000000

The regression result in the table above revealed that, all the variables passed the t-test at the 5% level of significance. The results also showed that all the variables are positive and correctly signed. The positive impact of PAYEE showed that, PAYEE has a positive relationship with IGR. A unit change in PAYE affects IGR by 1.161037. Also, a unit change in DA and MR have a positive effect to the IGR. A unit change in DA and MR will affect IGR by 2.113458 and 0.270868 respectively.

An adjusted R^2 of 0.88 showed that 88 percent of the systematic variations in the Internal generated revenue (IGR) is influenced by the combined effect of the explanatory variables put together. The robustness of this result is further buttressed by an F-statistic of 14.19 while the Durbin-Watson Statistic of 2.67 clearly indicated the rear absence of autocorrelation. An estimated probability values (Prob. (F-stats)) of 0.0000 is significant enough to conclude that, the model has performed well data

TEST OF HYPOTHESIS

Test of Hypothesis

The two null hypotheses of study which states that;

Ho1: There is no significant relationship between PAYE and IGR in Benue State

Ho2: There is no significant relationship between DA and IGR in Benue State

The Hypotheses were tested using the probability value approach. The Decision Rule is that: Reject the null hypothesis if the probability value is less than the significance level (Prob. < α).

Decision: Testing at 5% level of significance (0.05), the null hypothesis which state that there is no significant relationship between PAYE and IGR is rejected in favour of the alternatives since the overall probability value of the model (0.0046) is less than the 5% (alpha level) level of significance. However the result for hypothesis two (2) which state that there is no significant relationship between IGR and DA for the period under study is not statistically significant with a p-value of 0.3215 which is statistically not significant at 5% level of confidence. Hence the null hypothesis is accepted.

4.4 DISCUSSION OF FINDINGS 4.4 DISCUSSION OF FINDINGS

The study employed regression analysis as the econometric tool for data analysis. For avoidance of spurious estimates, all the variables were subjected to unit root testing in order to ascertain the stationary properties of the data set. Upon estimation, the study found out that, all the variables were stationary at level and integrated of order zero I (0), this satisfied the assumption of OLS. The study therefore performed OLS and found a positive relationship between PAYE and IGR implying that, an increase in the PAYE will increase IGR of the State. Similarly, a positive relationship exists between DA and IGR. An increase in it will also lead to increases in the IGR. On the whole, the fitness of the model is good as evidenced by high value of the adjusted R squared and confirmed by a high F-statistic. Considering the regression results presented in the foregoing, it can be rightly concluded that if the various states in Nigeria harness personal income revenue sources effectively and efficiently by blocking the linkages, and also harness the enormous untapped PIT sources in the private sector, the states will surely generate sufficient revenue to be self sufficient. This findings are also in consonance with some the empirical studies reviewed in the foregoing. See (Nassar, and Fasina, 2005)

5.1 Conclusion and Policy Recommendation

5.2 Conclusion

Based on the empirical findings the study concludes that the various sources of internally generated revenue in the state significantly contribute to IGR and should be considered seriously.

5.3 Policy Recommendation

The study recommend that since the end of fluctuations in the oil price which characterise the oil market is not in sight the state should build and maintain the culture of sustainable internally generated revenue drive to enable it provide the desired services and development to its citizenry. Why government takes step to address the perennial annual budget deficits and tax gap, the citizens should wake up to their civic responsibilities in terms of tax compliance.

The government should intensify its effort in harnessing the enormous tax revenues in the state and should also resolve the inequitable tax regime which is one of the major problems in taxation. Considering the findings of this study as indicated in the empirical results above that PIT contributed significantly to IGR in the state during the study period, the study concludes and that:

1. Diversification of revenue sources for economic development is extremely important as against focusing on the oil revenues if Benue state and Nigeria in general must be among equals in the improvement of the lives of her citizens through the provision of the basic social responsibilities.
2. Government should not only create an enabling environment for business establishment but also give all necessary support for its survival because profits of businesses are one of the major sources of tax revenue.

3. Benue State Internal revenue Service should put in place vibrant and effective enforcement machineries which include among other things, adequate manpower, ICT and communication system. This among other issues call for the autonomy of tax administration which the system had long been yearning for.

Tax administration requires highly trained personnel to match up with the sophistication of tax evasion with the use of modern technology. This is because increase in tax revenue is a function of effective enforcement strategy which is the pure responsibility of tax administrators hence the need to effectively enforce the relevant tax laws for effective revenue generation.

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Appendix I Unit Root Test

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Null Hypothesis: IGR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.572656	0.0228
Test critical values: 1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(IGR)
Method: Least Squares
Date: 5/3/16 Time: 06:47
Sample (adjusted): 1999 2014
Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IGR(-1)	-0.009472	0.016541	-0.572656	0.5713
C	0.267511	0.129874	2.059775	0.0485
R-squared	0.011182	Mean dependent var		0.195594
Adjusted R-squared	-0.022916	S.D. dependent var		0.182204
S.E. of regression	0.184280	Akaike info criterion		-0.482383
Sum squared resid	0.984812	Schwarz criterion		-0.389867
Log likelihood	9.476929	Hannan-Quinn criter.		-0.452225
F-statistic	0.327935	Durbin-Watson stat		1.854825
Prob(F-statistic)	0.571291			

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Null Hypothesis: PAYE has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.243103	0.0268
Test critical values: 1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(PAYE)
Method: Least Squares
Date: 5/3/16 Time: 06:49
Sample (adjusted): 1999 2014
Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
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PAYE(-1)	-0.525619	0.162073	-3.243103	0.0030
C	2.011069	0.618527	3.251385	0.0029
R-squared	0.266152	Mean dependent var		0.008237
Adjusted R-squared	0.240847	S.D. dependent var		0.220159
S.E. of regression	0.191824	Akaike info criterion		-0.402141
Sum squared resid	1.067092	Schwarz criterion		-0.309625
Log likelihood	8.233181	Hannan-Quinn criter.		-0.371983
F-statistic	10.51772	Durbin-Watson stat		1.809700
Prob(F-statistic)	0.002972			

Null Hypothesis: DA has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.752338	0.0369
Test critical values: 1% level	-3.661661	
5% level	-2.960411	
10% level	-2.619160	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DA)
Method: Least Squares
Date: 5/3/16 Time: 06:50
Sample (adjusted): 1999 2014
Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DA(-1)	-0.308358	0.112035	-2.752338	0.0101
C	0.948495	0.336206	2.821169	0.0085
R-squared	0.207117	Mean dependent var		0.027954
Adjusted R-squared	0.179776	S.D. dependent var		0.210523
S.E. of regression	0.190662	Akaike info criterion		-0.414284
Sum squared resid	1.054213	Schwarz criterion		-0.321768
Log likelihood	8.421398	Hannan-Quinn criter.		-0.384126
F-statistic	7.575364	Durbin-Watson stat		2.334739
Prob(F-statistic)	0.010098			

Null Hypothesis: MR has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=2)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.896892	0.0276
Test critical values: 1% level	-3.670170	
5% level	-2.963972	
10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(MR)
 Method: Least Squares
 Date: 5/3/16 Time: 06:51
 Sample (adjusted): 1999 2014
 Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BASQ(-1)	-0.623922	0.201467	-3.096892	0.0045
D(BASQ(-1))	0.375746	0.202227	1.858036	0.0741
C	2.612221	0.851411	3.068110	0.0049
R-squared	0.262147	Mean dependent var	-0.023105	
Adjusted R-squared	0.207492	S.D. dependent var	0.177190	
S.E. of regression	0.157740	Akaike info criterion	-0.761103	
Sum squared resid	0.671808	Schwarz criterion	-0.620984	
Log likelihood	14.41655	Hannan-Quinn criter.	-0.716278	
F-statistic	4.796334	Durbin-Watson stat	2.036137	
Prob(F-statistic)	0.016504			

Appendix II OLS Results

Dependent Variable: IGR
 Method: Least Squares
 Date: 5/3/16 Time: 06:54
 Sample: 1999 2014
 Included observations: 16

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PAYE	1.161037	0.351279	3.304962	0.0246
DA	2.113458	0.596212	3.544998	0.0215
MR	0.270868	0.850164	0.318607	0.7525
C	2.974995	6.145472	0.484095	0.6322
R-squared	0.897757	Mean	7.686723	
Adjusted R-squared	0.882610	S.D. dependent var	2.070844	
S.E. of regression	0.709516	Akaike info criterion	2.294135	
Sum squared resid	13.59216	Schwarz criterion	2.523156	
Log likelihood	-31.70615	Hannan-Quinn criter.	2.370049	
F-statistic	59.26941	Durbin-Watson stat	1.671591	
Prob(F-statistic)	0.000000			

342 **Appendix III Serial Correlation LM Test**
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Breusch-Godfrey Serial Correlation LM Test:

F-statistic	10.71752	Prob. F(2,25)	0.0004
Obs*R-squared	14.77163	Prob. Chi-Square(2)	0.0006

Test Equation:
 Dependent Variable: RESID
 Method: Least Squares
 Date: 5/3/16 Time: 06:57
 Sample: 1999 2014
 Included observations: 16
 Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BLQ	0.681455	0.527377	1.292159	0.2081
INTR	-0.052124	0.458298	-0.113734	0.9104
BASQ	0.454597	0.694976	0.654119	0.5190
CAPS	0.003353	0.017597	0.190547	0.8504
C	-4.355644	4.927760	-0.883899	0.3852
RESID(-1)	0.671913	0.198484	3.385218	0.0024
RESID(-2)	0.119770	0.229818	0.521151	0.6068
R-squared	0.461613	Mean dependent var	1.02E-15	
Adjusted R-squared	0.332401	S.D. dependent var	0.662161	
S.E. of regression	0.541030	Akaike info criterion	1.799956	
Sum squared resid	7.317839	Schwarz criterion	2.120586	
Log likelihood	-21.79930	Hannan-Quinn criter.	1.906236	
F-statistic	3.572506	Durbin-Watson stat	1.926034	
Prob(F-statistic)	0.010771			

344 **Appendix IV Ramsey RESET Test**
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Ramsey RESET Test
 Equation: UNTITLED
 Specification: IGR PAYE DA MR C
 Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	9.331002	26	NA
F-statistic	87.06760	(1, 26)	0.0000
Likelihood ratio	47.03646	1	0.0000

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	10.46663	1	10.46663
Restricted SSR	13.59216	27	0.503413
Unrestricted SSR	3.125531	26	0.120213
Unrestricted SSR	3.125531	26	0.120213

LR test summary:

	Value	df
Restricted LogL	-31.70615	27
Unrestricted LogL	-8.187924	26

Unrestricted Test Equation:
 Dependent Variable: IGR
 Method: Least Squares
 Date: 5/3/16 Time: 06:58
 Sample: 1999 2014
 Included observations: 16

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PAYE	-0.498535	0.326014	-1.529184	0.1383
DA	0.447930	0.293546	1.525930	0.1391
MR	-1.516978	0.457502	-3.315786	0.0027
C	0.990450	3.010610	0.328987	0.7448
FITTED^2	0.444982	0.047689	9.331002	0.0000

Sum squared resid	3.125531	Schwarz criterion	1.161571
Log likelihood	-8.187924	Hannan-Quinn criter.	0.977842
Durbin-Watson stat	1.477344		

Appendix V: Heteroskedasticity Test White

Heteroskedasticity Test: White

F-statistic	11.80693	Prob. F(4,27)	0.0000
Obs*R-squared	20.36014	Prob. Chi-Square(4)	0.0004
Scaled explained SS	12.33829	Prob. Chi-Square(4)	0.0150

Test Equation:
 Dependent Variable: RESID^2
 Method: Least Squares
 Date: 5/3/16 Time: 07:08
 Sample: 1999 2014
 Included observations: 16

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.084664	1.651952	4.288662	0.0002
BLQ^2	-0.184808	0.044468	-4.155993	0.0003
INTR^2	0.042990	0.051228	0.839176	0.4087
BASQ^2	-0.233080	0.054133	-4.305699	0.0002
CAPS^2	-0.001787	0.000736	-2.427347	0.0222

R-squared	0.636254	Mean dependent var	0.424755
Adjusted R-squared	0.582366	S.D. dependent var	0.563081
S.E. of regression	0.363889	Akaike info criterion	0.958665
Sum squared resid	3.575210	Schwarz criterion	1.187686
Log likelihood	-10.33864	Hannan-Quinn criter.	1.034579
F-statistic	11.80693	Durbin-Watson stat	1.499073
Prob(F-statistic)	0.000011		

DEFINITIONS, ACRONYMS, ABBREVIATIONS

IGR: Internally Generated Revenue
 PIT: Personal Income Tax