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CAPITAL FLOWS AND PER CAPITA INCOME IN NIGERIA (1982 – 2022)

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Abstract

This study examined the relationship between capital flows and per capita income in Nigeria from 1982 to 2022. Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), External Debt Stock (ExD) and Migrant Remittance Inflows (RMT) proxy capital flows. The objective was to provide empirical evidence to economic managers and policymakers with information on the nature of the relationships between capital flows and standard of living in Nigeria. The Autoregressive Distributed Lag model (ARDL) approach to cointegration was used to analyze the relationship and results show a long-run relationship between capital flows and per capita income. However, of the capital flows variables - FDI, FPI, and RMT - only foreign direct investment has a significant long-run coefficient, although a negative one, whilst changes in FPI and RMT had no lagged effects. The error correction model results show that around 57.99% of deviations from equilibrium were rectified per period if there was a shock to the long-run relationship. This study concludes that there is a long-run relationship between per capita income (PCY) and capital flows. It was also concluded that capital flows have a unilateral causal relationship with per capita income via the large error correction component flowing from capital flows to per capita income. As a result, the government should review its foreign direct investment and remittances inflow policies to make them contribute positively to the welfare of the citizens. More efforts should be made to attract more FPI to boost per capita income and the economy at large.

Keywords: *Capital flows, per capita income, remittances, ARDL, Nigeria*

1. Introduction

Per capita income is a widely used indicator of an economy's performance and to a great extent influences the decisions of national governments on economic matters. A rise in the per capita income of citizens of a country adjusted for purchasing power parity, is a sign of economic progress and improved standard of living (Ebikila, Agada Lucky, & Matthew, 2018). To achieve higher levels of per capita income, governments require huge capital investments in the fields of health, education, industrial production, capacity utilization, research, human development, full employment, and environmental conservation (Ogini, 2022; Adegbeni, 2018). However, due to insufficient domestic savings to cover domestic investments, foreign capital is required to close the gap between domestic savings and investments (Adeola 2017). Foreign funds can take the form of loans, remittances, foreign direct investment, and foreign portfolio investments. This would supply the necessary funds for investments that enhance per capita income and economic development. Through the process of human, physical and infrastructure development, this will change and improve the people's economic, political, and social well-being, preserving and raising the standard of living and enhancing per capita income (Ogini 2022). Increased capital formation and production activities brought forth by foreign investment boosts job opportunities and raise the average citizen's income. Additionally, Fagbohun and Adekoya (2016) assert that factors such as trade openness, capital as a proportion of GDP, and the efficiency of government decision-making, together with investment, determine the movement of per capita income.

Several academics and researchers have examined the effect of capital flows on per capita income. Results revealed conflicting results. For example, Ozigbu (2020), Fagbohun and Adekoya (2016), Siyasanga and Hlalefang (2017), and Ogini (2022) demonstrate long-term significant relationships, whereas Audu (2012), Hossan and Shakur (2017), and Egungwu (2018)

demonstrate negative relationships. Among academics and researchers, this has caused debate. Furthermore, the research on capital flows and per capita income has not received much attention in Nigeria. Should the effect of huge external debts, and the taunted foreign direct and portfolio investments inflows as well as the large amounts of remittances inflows not be examined in the face of continued poor standard of living in Nigeria compared to other developing economies? This study set out to interrogate the effect of capital flows on standard of living of citizens in Nigeria. Following the introduction is the review of related literature, the paper's methodology was covered in part three, data analysis was covered in section four, and the conclusion in section five.

2. The Review of Related Literature

2.1 The concept of capital flows

Defined, “capital flows are the movements of money and other financial assets used for trading, company operations, and investments”. Developing nations want capital to increase domestic savings for growth and development. As stated by Balogun, Okafor, and Layere (2019); Adeola (2017); Orji, Uche, and Ilori (2014); Nwosa and Amassoma (2014), the focus of foreign capital as a vital source of bridging the savings and investment gap in the majority of developing countries that lack resources is what encourages capital flows that are meant to sustain economic growth and development. According to Leyira and Yeritenwa (2018), Nigeria has depended on foreign capital flows in the form of foreign debt, foreign aid, and foreign direct investment. In this study, capital flows operate through debt, remittances, foreign portfolio investment (FPI), and foreign direct investment (FDI).

2.2 The concept of per capita income

The amount of money made per person in a country or geographic area is measured as per capita income, also known as output. The average income per person is calculated using per capita income to assess the level of life within a certain population. It's calculated by dividing the total revenue of the area by the population. The national income divided by the population size is the per capita income. Per capita income is frequently used to compare the wealth of various populations and assess the average income of a sector.

According to Ogini's (2022) research, per capita income has an indirect impact on sustainable development due to its involvement in economic growth, which includes the effects of migration, health, education, and sanitation. Low individual income per capita will result in a lack of information and education, as well as improved health and a rise in migration.

2.3 Empirical Reviews

Wolassa (2011) within the Southern African Development Community examines convergence in real per capita GDP, macroeconomic policy, and stability indices. There was no indication of absolute beta and sigma convergence in real per capita GDP across the SADC economies, according to empirical studies conducted between 1992 and 2009. The author argues that the lack of convergence does not always indicate a lack of economic development, since additional empirical analysis of potential conditional beta convergence failed to find any evidence of a propensity towards convergence to self-consistent stable states. The results reveal that in 2009, there was a trend for macroeconomic divergence in monetary policy, fiscal policy, and foreign currency reserve ratios in the majority of member state economies. Since the member nations have different levels of economic growth, macroeconomic convergence may not be achievable

since the goals themselves must be contingent on the degree of convergence in economic structure.

Audu (2012) examined the macroeconomic impact of foreign remittances on the Nigerian economy. The study used an error correction technique to evaluate the relative impact of both socio-political and economic factors of foreign remittances into Nigeria over a forty-one-year period (1970–2010) utilising primarily secondary data. The study indicated that the relationship between per capita income and workers' remittances is not linear and is positive at lower income levels but negative at higher income levels. The results indicate that altruism plays a significant role in remitting, as per capita income differentials, gives capital formation, official Nigerian migrant remittances, and economic / political freedom are significant and positive. Although this is not resilient to the differential specification, the researcher demonstrates that the growth of the financial sector would increase overseas remittances.

Michael and Oliver (2014) determined the empirical impact of foreign capital flows on the growth performance of the Nigerian economy between 1982 and 2012. The World Bank study, the Central Bank of Nigeria (CBN), and the Nigerian Bureau of Statistics (NBS) publications were the sources of the data. The hypothesis testing procedure used multiple regression analysis. The analysis's findings showed that, as measured by GDP, foreign capital inflows had a positive and significant impact on economic growth. This suggests that, over the course of the study period, foreign capital inflows played a significant role as a major fiscal policy tool for promoting economic growth.

Moreover, the GDP was positively and significantly impacted by the openness of the economy, which was another explanatory variable utilized to determine the growth performance of the economy. Conversely, Human Capital Development had a negligible and unfavourable impact on GDP. It is implied that within the specified time, it had little impact on economic growth. At last, the GDP and inflation rate showed a positive correlation. Nevertheless, it was statistically insignificant, indicating the strength of the inflationary pressure applied to the economy within the specified time frame.

Fagbohun and Adekoya (2016) looked at how investments have affected Nigeria's long-term per capita income growth between 1970 and 2014. It also uncovers other macroeconomic factors that influence long-term growth in production per capita. The linkages in the study are established using the Ordinary Least Square (OLS) estimation approach, which is based on time series data provided from the Central Bank of Nigeria (CBN). Empirical results showed that trade openness significantly and favourably affects Nigeria's per capita income growth rate. Nonetheless, there are indirect correlations between the growth rate of Nigeria's per capita income and the growth rate of capital as a proportion of GDP, government effectiveness as determined by government spending relative to GDP, and the enrollment rate in schools.

Hassan and Shakur (2017) evaluated how Bangladesh's per capita GDP grew from 1976 to 2012 in relation to inbound remittance flows. The Generalised Method of Moments (GMM), two stage least square, and combining approaches of conventional least square were used in the study to analyse the data. According to the study, remittances have a negative growth effect initially but a favourable one later on. It also showed that when the remittances were first received by migrant families, they were first used inefficiently. Better social and economic investments, however, made it possible to employ the remittances received later on for more beneficial purposes. The

analysis came to the conclusion that the data does not support the prediction that the degree of financial development will have an impact on the growth of Bangladesh's per capita GDP due to remittances.

Siyasanga and Hlalefang (2017) used time-series data from 1980 to 2016 to examine the dynamic influence of broad money supply on per capita income in South Africa. The influence of m3 on per capita income has been examined in this study using the Autoregressive Distributed Lag (ARDL)-bounds testing technique to cointegration and error correction model. Four macroeconomic variables are included in the model specification: GDP per capita, broad money supply (M3), interest rate (INF), and GDP. The results show that there is a statistically significant positive correlation between per capita income and money supply over the long and short terms.

Egungwu (2018) looks at how Nigeria's foreign debt stock, debt servicing, and human capital development are related to one another. The study's time frame was from 1986 to 2015. OLS regression was used in the study to estimate the empirical model. It was discovered that the growth of human capital was significantly hampered by the stock of foreign debt as well as the servicing of that loan. The results specifically indicated that the external debt stock borrowed from the London Club had a major positive effect, the Paris Club and multilateral creditors had a significant negative effect, and the bilateral creditors had a significant positive effect. With the exception of London Club, which had a notable positive impact, all creditors shown little positive effects when it came to debt servicing.

Ozigbu (2020) investigates the relationship between Nigeria's per capita GDP growth and capital mobility from 1980 to 2018. After breaking down foreign capital into its constituent parts of

debt, assistance, and migrant remittances, the heterogeneous nature of this capital was taken into account. Time data were gathered from secondary sources such as the World Bank, NBS, WDI, International Debt Statistics, and IFM International Financial Statistics for every variable. The study is based on a combination of the Granger causality test, ARDL, and ADF Unit root and bounds co-integration tests. According to the findings of the unit root test, the variables are mixed integrated. Once more, the boundaries test demonstrates that the variables have a long-term connection. According to the ARDL calculation, remittances from migrants have a considerable long-term beneficial impact on per capita GDP. GDP will expand by 2.25% percent on average with a 1% increase in remittances per capita. Conversely, international debt has a short- and long-term detrimental impact on per capita GDP. The findings showed that, although there is a unidirectional causal relationship between technical cooperation grants and GDP per capita, there is a bidirectional relationship between migrant remittances and GDP per capita.

Ogini (2022) The average citizen's economic well-being is gauged by their per capita income. Examining the impact of particular macroeconomic variables on Nigeria's per capita income is the study's primary goal. In particular, the study found that the money supply had an impact on per capita income in Nigeria. It also looked at the impact of exchange rates, interest rates, and inflation rates on per capita income in Nigeria. Finally, it evaluated the impact of variables related to the unemployment rate on per capita income in Nigeria. The study used econometric methods, such as the Autoregressive Distributive Lag (ARDL) and Descriptive Statistics Augmented Dicky Fuller for unit root. According to our research, the money supply, interest rates, exchange rates, inflation rates, and unemployment rates all significantly affect the ordinary Nigerian's quality of living over the long and short terms, with 65% and 73% of the former being the former. The study comes to the conclusion that a few key macroeconomic factors have been

useful short- and long-term policy tools that have a significant impact on the typical Nigerian citizen's level of life. Macroeconomic factors' short- and long-term effects on the ordinary Nigerian citizen's level of life provide evidence for this.

3. Methodology

There were two main variables: per capita income (the dependent variable) and capital flows (foreign direct investment, foreign portfolio investment, external debt, and remittances) the independent variable. Yearly time series data from 1982 to 2022 were obtained from the National Bureau of Statistics/Central Bank of Nigeria (CBN) statistics bulletin 2021, World Bank databank, and Global Knowledge Partnership on Migration and Development (KNOWMAD). All the data were converted to changes because of the disparate measuring units.

3.2 Method of data analysis

3.2.1 Autoregressive Distributed Lag (ARDL) Model Approach to Cointegration

A least squares regression with lags in both the dependent and explanatory variables is called an ARDL. When ARDLs are expressed, they are often written as ARDL (p, $q_1,\ldots,q_k$), where p is the dependent variable's lag count, $q_1$is the first explanatory variable's lag count, and $q_k$is the k-th explanatory variable's lag count. Because it enables the researcher to mix regressors that are I(1) or I(0) and yet produce consistent estimates of the long run coefficients that are asymptotically normal, the ARDL was used for the investigation (Pesaranet al., 2001) in his study.

3.3 Model Specification

The following model represents the functional link between capital flows and Per Capita Income (PYC):

$$PCY_t = f\left(FDI_t, FPI_t, DF_t, RMT_t\right)\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(1)}$$

Where;

PCY = Per Capita Income

FDI = Foreign direct investment

FPI = Foreign Portfolio investment

ED = External Debt

RMT = Remittance

The estimated equation based on the above functional relation is presented below in regression form.

$$PCY_t = \beta_0 + \beta_1 FDI + \beta_2 FPI + \beta_3 ExD + \beta_4 RMT + \mu_t \ldots \ldots \ldots \ldots \text{(2)}$$

$\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 < 0$, $\beta_4 > 0$,

Where,

β_0 , β_1 , β_2 , β_3 , $\beta_4 = are\ parameters\ to\ be\ estimated$

μ = error term

$\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 < 0$, $\beta_4 > 0 = indicate\ the\ apriori\ espectations$

4. Analysis and Results

4.1: Unit Root Test

Summary of Augmented Dickey –Fuller Unit Root Test results

Variable	~$I(d)$	Stationarity	Level of Significance
ΔPCY	$I(0)$	level	5%
ΔFDI	$I(0)$	level	5%
ΔFPI	$I(1)$	First difference	5%
ΔDF	$I(2)$	2nd difference	5%
ΔRMT	$I(0)$	level	5%

Thus, changes in foreign direct investment (ΔFDI) and remittances (ΔRMT) were stationary at level I(0), but changes in FPI were stationary at first difference. Because debt flow (ΔDF) was integrated at the second difference I(2), it was removed from the study owing to its excessive volatility. The unit root test for per capita income (ΔPCY) change indicates that it is stationary at level. Thus, given the mixed order of integration, i.e. I(0) and I(1), the ARDL model was appropriate to examine the relationship between capital flows and per capita income in Nigeria.

4.2: Results

Table 4.1: summary results of estimated capital flows and per capita income equation

Dependent Variable: PCY_NB
Method: ARDL
Selected Model: ARDL(2, 2, 2, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
PCY_NB(-1)	0.161180	0.157120	1.025838	0.3144
PCY_NB(-2)	0.258930	0.144438	1.792680	0.0847
FDI_NB	3.56E-10	5.28E-08	0.006732	0.9947
FDI_NB(-1)	-1.79E-07	7.84E-08	-2.286251	0.0306
FDI_NB(-2)	-1.98E-07	7.63E-08	-2.595130	0.0153
FPI_NB	2.37E-08	1.72E-08	1.381583	0.1789

FPI_NB(-1)	1.95E-08	2.28E-08	0.852566	0.4017
FPI_NB(-2)	-4.44E-08	1.83E-08	-2.426492	0.0225
RMT_NB	1.12E-08	2.54E-08	0.442737	0.6616
RMT_NB(-1)	-5.21E-08	2.73E-08	-1.908353	0.0674
C	21.94068	10.64649	2.060838	0.0495

R-squared 0.556293; F-statistic 3.259725(Prob(F-statistic, 0.007467) Durbin-Watson statistic 2.087374

Table 4.1 above show the standard least squares output of the selected model: ARDL(2, 2, 2, 1).

Table 4.1 shows that three variables have a substantial influence on per capita income. These include Foreign direct investment (FDI_NB(-1), FDI_NB(-2) and FPI_NB(-2) lagged one and two periods, respectively. The findings show that changes in per capita income have no relationship with changes in remittances, both current and lagged.

4.2.1: The Bounds Test for the determination of the long-run relationship between capital flows and per capita income

The Bounds Test is used to interpret the ARDL model. If the F-statistic value is less than the I(0) critical bound value, the test accepts the null hypothesis which states that there is no long-run relationship between capital flows variables and per capita income. If the F-statistic value lies between I(0) and I(1), no choice can be made on whether to accept or reject the null hypothesis. This is a point of indecision. However, if the F-statistic value is greater than the I(1) critical bound value, the test rejects the null hypothesis and conclude that there is a long-run relationship between capital flows variables and per capita income. The ARDL Bounds Test summary results are shown in table 4.2 below.

The results from table 4.2 revealed an F-statistic value of 4.911, which is greater than the I(1) critical bound value of 3.67. At the 5% level of significance, the study rejects the null hypothesis that there is no long-run relationship between capital flows and per capita income in favour of the alternative hypothesis that there is a long-run relationship between capital flows and per capita income.

Table 4.2: ARDL Long Run Form results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.911049	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Researcher's Desk 2023 (EViews 10 output)

Furthermore, of the capital flows variables - FDI, FPI, and RMT - only foreign direct investment has a substantial long-run coefficient, although a negative one, whilst changes in FPI and RMT have almost no lagged effects (see table 4.3 below).

Table 4.3: ARDL long-run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI_NB	-6.50E-07	2.78E-07	-2.339677	0.0273
FPI_NB	-2.00E-09	7.06E-08	-0.028332	0.9776
RMT_NB	-7.05E-08	4.76E-08	-1.478962	0.1512
C	37.83593	18.47163	2.048327	0.0508

Source: Researcher's Desk 2023 (EViews 10 output)

4.2.2: The Error Correction Model (ECM)

The error correction model was employed to determine the speed of adjustment - that is, the fraction of disequilibrium that is rectified every period if there was a shock to the long-run relationship. The results are shown in table 4.4 below.

Table 4.4 ARDL Error Correction Regression
Dependent Variable: D(PCY_NB)

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(PCY_NB(-1))	-0.258930	0.126242	-2.051056	0.0505
D(FDI_NB)	3.56E-10	3.48E-08	0.010210	0.9919
D(FDI_NB(-1))	1.98E-07	4.25E-08	4.655362	0.0001
D(FPI_NB)	2.37E-08	1.17E-08	2.031861	0.0525
D(FPI_NB(-1))	4.44E-08	1.25E-08	3.539430	0.0015
D(RMT_NB)	1.12E-08	2.02E-08	0.555966	0.5830
CointEq(-1)*	-0.579890	0.108943	-5.322873	0.0000

The error correction model results shows an error correction term (CointEq(-1)*) with a coefficient of -0.579890 and a t-statistic probability of 0.0000, as shown in table 4.4. To be useful, the coefficient was supposed to be negative and highly significant (Pesaran, Shin, & Smith, 2001). The error correction term (CointEq(-1)) has a properly signed negative coefficient value of -0.579890 and a probability value of 0.0000. This is particularly noteworthy since it demonstrates that around 57.99% of deviations from equilibrium are rectified per period.

4.3 Diagnostic Tests

The ARDL model's quality of fit was evaluated using the serial correlation and heteroscedasticity tests. the Breusch Godfrey serial correlation LM test, and the normality test using the Jarque-Bera statistic. All show that the model is reliable.

4.4 Discussion of Findings

After analyzing the collected data, the findings show that there is a long-run, relationship between capital flows and per capital income. This is consistent with the findings of Ozigbu (2020), Fagbohun, and Adekoya (2016). However, the findings contradict those of Audu (2012), Hossan and Shakur (2012), and Egungwu (2018) who found no long-run relationship between capital flows and per capital income.

5. Conclusion

This study concludes that there is a long-run relationship between per capita income (PCY) and capital flows proxy by Foreign Direct Investment (FDI), Foreign Portfolio Investment (FPI), and migrant remittances inflow (RMT). It was also concluded that capital flows represented by FDI, FPI, and RMT have causal relationship with per capita income via the large error correction component going from capital flows to per capita income. As a result, the government may rely heavily on FPI and FDI to boost per capita income and keep the usage of foreign debt to a bare minimum.

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