Foreign capital and misery index in Nigeria

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Abstract
The study examined foreign capital inflows and misery index in Nigeria from 1981 to 2022. The objectives of the study are to; examine the impact of foreign direct investment inflow (FDI), foreign portfolio investment (FPI), diaspora remittance (DRM) and multilateral debt (MLD) on, misery index (MSI) in Nigeria. Secondary data were sourced from World Development Indicators and Central Bank of Nigeria Statistical Bulletin and the technique of Auto Regressive Distributed Lag modelling was used. The results showed that, while FDI, FPI and DRM reduces MSI, MLD increases MSI in Nigeria during the period of study. The policy implication is that foreign capital inflows to some extent attracted appreciable level of economic prosperity in Nigeria. Based on the findings it was recommended that, government should encourage friendly investment condition and trade policies to boost inflow of capital such as foreign portfolio investment into Nigeria. Also, the study recommends that fiscal planning should take an account of the inflow of remittances when curbing unemployment and inflation rates.

Keywords: Capital inflows, Diaspora, Misery index, Multilateral, Remittance

1. Introduction

Various nations of the word are endowed with one forms of financial resources or the other and this creates a high degrees of interdependence in terms of trade. This is because no nation can operate as an island and survive in the midst of macroeconomics challenge such as high inflation and unemployment rates. That is why trade exists between the Eastern and Western blocks despite their strong ideological differences. Similarly, in several developing countries overrun with the issues of vicious circle of poorness, low domestic savings, low government revenue and restricted exchange earnings, the resources to finance the optimum level of economic development are not enough. Thus, these nations resort to policies that will increase the inflow of foreign capital needed for advancement (Easterly, 2003) [6]. Meanwhile, foreign capital inflows are all sorts of capital that are received by a country from others countries in the form of export credit, grants, technical assistance and portfolio investment which are essential for economic development of the receiving nations. On the other hand, misery index measures the summation of the occurrence of inflation and unemployment rates in an economy. Therefore, the requirement for foreign capital inflows to enrich domestic economy has been seen as a catalyst for economic development in terms of reduction in inflation and unemployment rates of a nation (Garuba, Ohale, & Nenbee, 2023) [7]. Meanwhile, foreign capital inflows are an integral part of an open international economic system and a major economic growth and development catalyst. Since there is a growing need for countries to transact more and more to meet the demand of a growing population. But developing countries like Nigeria are faced with funding problems in international trade, there are issues of getting required fund to transact and operate on large scale in the global market. As earlier reported by Central Bank of Nigeria (2018), low level of domestic investment makes it compelling to attract foreign investment to augment domestic saving.

In Nigeria, socio-economic and environmental factors over the years, have dwindled the volume of capital inflows, for instance, FDI inflow which stood at $8.84 billion in 2011, plummeted to $2.39billion in 2020, which by implication declined with over 70percent. But it later increases with a 38.9 percent from 2020 to $3.31billion in 2021. FDI inflows in Nigeria registered a decrease of about 190 million U.S. dollar in 2022, compared to a surplus of 3.31 billion U.S. dollar in the preceding year (Nigeria Bureau of Statistics (NBS), 2022) [12]. Similarly, unemployment and poverty have been on the increase over the years. For instance, in real term, while over 63percent of the Nigerian population are unemployed, over 68% of Nigeria's 200 million population still live in extreme poverty and the scourge of poverty gap goes beyond mere measurement of household expenditure or welfare, its' dimensions include inadequate infrastructure, illiteracy (World Bank, 2016; Obayori, Udeorah & Aborh, 2018) [18, 14]. These and other relevant facts are not indicative of good performance for a country that wants to be accorded the developed status in no distance time.

The influx of foreign resources is supposed to reduce the misery index vis-a-vis unemployment and inflation and as well improve both economic growth and human development index which serves as major indicator of the general welfare of the citizens. Howbeit, the Nigerian situation appears to be different. Economic growth has plummeted in recent time as

the economy slipped into recession in the year 2016 following two consecutive negative growth rate (NBS, 2016) [11]. Unemployment and inflation have been on the rise to the point that Nigeria was ranked the capital of world poverty in the year 2020. Therefore, it is imperative to appeal to empirical evidence in order to find out the impact of various foreign inflows on misery index in Nigeria.

2. Literature review

2.1 The two gap model

The two gap model is credited to Chenery and Strout (1966) [5] and is considered as an extension of Harrod-Domar model as it emphasizes the roles that foreign capital inflows plays in developing nations, to achieve the desired investment level capable of guaranteeing a targeted rate of economic growth. The model is predicated on two fundamental assumptions: the relationship between investment and growth is linear and stable and capital inflow finances investment. The main thrust of this theory is that a greater proportion of developing nations are confronted with either two of these evils: inadequate savings to meet investment opportunities or inadequate foreign exchange to purchase capital goods and intermediate goods (Todaro & Smith, 2011) [17]. This results in two gaps: the savings gap (which connotes the amount by which domestic savings falls short of the amounts of investment needed to achieve a desired level of economic growth) and foreign exchange gap (which exists where foreign exchange earnings from export falls short of that required to procure necessary foreign capital goods). Thus, Todaro and Smith (2011) [17] averred that, the saving gap (domestic real resources) and foreign exchange gap vary in magnitude or are unequal and independent of one another. This implies that gaps are either going to be dominant or binding on developing nations at any time point.

In a scenario where the saving gap is dominant, it is suggestive that growth is impeded by domestic investment. When foreign exchange gap is binding, excessive productive resources abound, and available exchange earnings is ploughed into importation (Todaro & Smith (2011) [17]. Furthermore, Todaro and Smith (2011) [17] argued that the existence of complementary domestic resources would enable developing countries to undertake new investment provided finance are available to procure foreign capital goods.

2.2 Foreign capital inflows and misery index

Alnaa and Matey (2023) [2] examined the dynamic relationship between external debt and unemployment in Sub-Saharan Africa using data from 25 countries. This study demonstrates a direct relationship between foreign debt and unemployment, which is attributed to the erroneous application of discretionary fiscal policy decisions and the inefficient use of borrowed funds. Evidence also suggests a nonlinear relationship between external debt and unemployment across the countries studied.

Aderemi, Omitogun and Osisanwo (2022) [1] examined the effect of FDI on employment in ECOWAS sub region between 1990 and 2019 with the use of panel autoregressive distributed lag model. In the short run, the impact of FDI on employment is negative and statistically not significant. Meanwhile, in the long run FDI has a positive and statistically significant impact on employment rate. This implies that, FDI has the capacity to generate employment in ECOWAS sub region.

Nchofoung, Kengdo, Moumie and Fonsoh (2022) [13] verified the effect of official development assistance on employment in Africa. The data is collected for 37 African countries between the 1996 to 2019 periods. The methodology involves the fixed effect, random effect. The results revealed that, official development aid harms employment in Africa. There is positive effect of aid on agricultural employment, a negative effect on industrial employment, and a non-significant positive effect on service employment. The effect of aid on agricultural employment is significantly augmenting in East Africa, and that on industrial employment is negatively significant in East, North, and Southern Africa.

Ihedimma and Opara (2021) [8] examined the implications of remittances on unemployment in Nigeria. Data from 1981 to 2019 is calibrated for structural break points and stationarity under conditions of regimes changes. While the data was found to have been affected by regime changes and stationery in levels, an instrumental variable regression model was estimated, and it was found that remittance positively and significantly influence unemployment. However, when remittance is interacted with the dependants in Nigeria, unemployment is observed to fall.

Olayungbo, Olaniyi and Ojeyinka (2020) [15] used Nigerian data and the non-linear autoregressive distributed lag (NARDL) method to decompose remittances into positive and negative components in order to examine the asymmetric effect of remittances on economic growth from 1981 to 2018. The result showed that rising and declining remittance inflows caused a decline in the long-run productive base of the country. An increase in remittances retarded economic growth in the short run, whilst decline in remittances into Nigeria accelerate economic growth. This result is related to the pessimistic position on remittances denoting that it is a source of brain drain rather than brain gains.

Qureshi and Liaqat (2019) [16] estimated a panel vector autoregression model to examine the relationship between external debt and economic growth. We use a large dataset based on 123 countries, classified according to income levels over the period 1990 to 2015. While total external debt appears to have a negative effect on growth rate overall, it is positively associated with income growth in the lower- and upper-middle income countries. Further disaggregating external debt into its components reveals that public external debt negatively affects economic growth across all income categories of countries, whereas the impact of private external debt is not statistically significant. We do not detect a *common* threshold level in the relationship between public debt and economic growth across countries. Savings and investment are the primary channels through which external debt impacts economic growth. These results are robust to various model specifications, additional controls, and identifying restrictions.

Bayar (2014) [3] examined the relationship between unemployment, economic growth, export, and FDI inflows in Turkey during the period 2000:Q1-2013:Q3 by Using a bound testing approach based on autoregressive distributed lag. There is a long-run correlation between unemployment economic growth, exports, and FDI inflows, according to the study. In addition to this, empirical findings have shown that economic growth and exports undermine unemployment, while FDI increases it.

3. Methodology

This study adopts the ex-post facto research design due to the fact that, information about the variables employed are historical in nature and this research design guarantees a retrospective study with prospective implication for policy implementation. Also, the autoregressive distributed lag model (ARDL) which measures both long and short run relationship between the dependent and independent variables was used to analyze the data collected for the study.

Analytically, this study borrow the model from the work of Kizito and Hooi (2019) [10], who relates foreign capital inflow such as foreign portfolio investment, FDI, foreign loans and foreign aid to gross domestic product (GDP). In order to have a robust analytical framework, the present study extends the scope and used misery index (HDI) as the dependent variable.

Model Specification

The functional form of the model two:

$$MSI = f(FDI, FPI, DRM, MLD) \quad (1)$$

The mathematical form of the model one takes the form of;

$$MSI = \beta_0 + \beta_1 FDI + \beta_2 FPI + \beta_3 DRM + \beta_4 MLD \quad (2)$$

The linear econometric form of the model one takes the form of;

$$MSI = \beta_0 + \beta_1 FDI + \beta_2 FPI + \beta_3 DRM + \beta_4 MLD + \mu_2 \quad (3)$$

Model Two (Human Development Index Model)

The functional form of the model three:

$$HDI = f(FDI, FPI, DRM, MLD) \quad (4)$$

The mathematical form of the model one takes the form of;

$$HDI = \lambda_0 + \lambda_1 FDI + \lambda_2 FPI + \lambda_3 DRM + \lambda_4 MLD \quad (5)$$

The linear econometric form of the model one takes the form of;

$$HDI = \lambda_0 + \lambda_1 FDI + \lambda_2 FPI + \lambda_3 DRM + \lambda_4 MLD + \mu_3 \quad (6)$$

Where; MSI = Misery Index (proxied by unemployment rate plus inflation rate), FDI = Foreign direct investment, FPI = Foreign portfolio investment, DRM = Diaspora Remittance (Personal remittances divided by GDP), MLD = Multilateral Debt (Proxied by External debt stocks divided by GDP), λ_0 = intercepts or the constant terms, λ_1, λ_2, λ_3, and λ_4 are the slopes of the explanatory variables.

On the apriori, it is expected that, an increase in foreign capital inflow will, reduces misery index measured by both inflation and unemployment rates in the Nigerian economy. Therefore, $\lambda_1, \lambda_2, \lambda_3$, and $\lambda_4 < 0$.

4. Results and Discussion

Table 1: Descriptive statistic result

	MSI	FDI	FPI	DRM	MLD
Mean	27.21310	2.423571	-0.362357	8.963500	35.19857
Std. Dev.	16.33399	2.534156	1.022268	9.874048	29.62077
Skewness	1.516300	1.234442	-1.840356	0.352737	0.901820
Kurtosis	4.611005	3.337306	6.473288	1.225605	3.219637
Jarque-Bera	20.63601	10.86603	44.81990	6.380801	5.777375
Probability	0.000033	0.004370	0.000000	0.041155	0.055649
Observations	42	42	42	42	42

Source: Author's computation (2024)

Based on the descriptive statistic result, MSI has a mean value of 27% with a standard deviation of 16%. The skewness value of MSI is positive (1.5163), meaning that MSI has a long-right tail while the kurtosis value of MSI is 4.6 (i. e. more than 3), meaning that it is leptokurtic. That is, it has no distribution, meaning that the series has values not close to the mean sample. This implies that the country experienced worsening economic well-being over the period of the study. Furthermore, foreign direct investment inflow (FDI) has an average value of 2.42 and a standard deviation of 2.53%. The skewness value of FDI is positive (1.2344), meaning that FDI has a long-right tail while the kurtosis value of FDI is 3.33 (i.e. about 3), meaning that it is mesokurtic. Similarly, foreign portfolio investment (FPI) has a mean of -0.36 and a standard deviation of 1.2%. The skewness value of FPI is negative (-1.8) while the kurtosis value of FDI is 6.47 (i.e. more than 3), meaning that it is leptokurtic. In like manner, diaspora remittance (DRM) has a mean of 8.96 and a standard deviation of 9.87. The skewness value of DRM is positive (0.35), means that, DRM has a long tail while the kurtosis value of DRM is 1.22 (i. e. less than 3), meaning that, it is platykurtic. Multilateral debt (MLD) has a mean of 35.20 and a standard deviation of 29. 62%. The skewness value of MLD is positive (0.90), meaning that, DRM has a long tail. The kurtosis value of MLD is 3.2 (i. e. approximately 3), meaning that, it is mesokurtic.

From the summary of the result above, the variables to some extents are not normally distributed. Based on these observations, it is therefore necessary to test for the stationarity of the variables and the long run relationship since using the variables at level might give a spurious result.

Table 2: ADF unit root test result for estimated model

Variable	ADF at level	ADF at 1st difference	Status	Remark
MSI	-3.200295	-	I(0)	Stationary
FPI	-5.679048	-	I(0)	Stationary
FDI	-1.455288	-7.401991	I(1)	Stationary
DRM	-0.471923	-5.912814	I(1)	Stationary
MLD	-1.458222	-5.734548	I(1)	Stationary
Critical Value (5% level)	-2.935001	-2.935001		

Source: Author's Computation using E-view Software (2024)

The result of the unit root test in Table 2 revealed that, misery index (MSI) and FPI variables were stationary at level while FDI, DRM and MLD were stationary at 1st difference. The result depicts that the dependent variable used in model one was integrated of order zero, while the independent variables used in the estimated model were integrated of both order zero and one, that is I(0) and I(1). Since the ADF results indicated that the series are of mixed order of integration, the appropriate test to use in this study is the Bounds co-integration test.

Table 3: ARDL bound test for the misery index model

Model		F-statistic = 8.3323
F(FDI), (FPI), (DRM) (MLD)		K = 4
Critical Values	Lower Bound	Upper Bound
10%	2.4500	3.5200
5%	2.8600	4.0100
1%	3.7400	5.0600

Source: Author's computation using e-view software (2024)

From Table 3, the result of the bound co-integration test shows that the calculated f-statistic value of 8.3323 is higher than the theoretical critical value for the upper bound value of 4.0100 at 5 percent level. This means that there is a co-integration, hence, a long run relationship exists between FDI, FPI, DRM, MLD and MSI in Nigeria within the period under review. Since there is a long run relationship among the variables, the estimated model was subjected to both ARDL long run test and short run dynamic.

Table 4: ARDL long run estimation result for the estimated model

Variable	Coefficient	Std. error	t-statistic	Prob.
FDI	-0.845755	0.919759	-0.919540	0.3657
FPI	-4.199346	2.226422	-1.886142	0.0697
DRM	-1.018017	0.293568	-3.467736	0.0017
MLD	0.491896	0.097108	5.065473	0.0000
C	0.073310	6.331986	0.011578	0.9908

Source: Author's computation using e-view software

From Table 4 the result of the long run estimation shows that FDI has a negative (-0.845755) relationship with the Misery Index (MSI), suggesting that a percentage increase in FDI decreases the misery index by 0.8457 percent in Nigeria during the period of study. But the negative sign of FDI on MSI is not statistically significant at 5 percent level. The study therefore accepts the null hypothesis that there is no significant relationship between FDI and MSI in the long run. Also, foreign portfolio investment (FPI) has a negative (-4.199346) relationship with misery index (MSI), suggesting that a percentage increase in FPI decreases Nigeria misery index by about 4.2 percent during the period of study. But the negative relationship between FPI and MSI is not statistically significant at 5 percent level. Thus, the study accepts the null hypothesis that there is no significant relationship between foreign portfolio investment (FPI) and misery index (MSI).

Moreover, diaspora remittance (DRM) has a negative (-1.018017) relationship with the misery index (MSI), suggesting that a percentage increase in diaspora remittance (DRM) decreases misery index (MSI) by about 1.0percent in Nigeria. Also, the negative relationship between DRM and MSI is statistically significant at 5 percent level. In the long run, multilateral debt (MLD) has a positive (0.491896) relationship with the misery index (MSI), suggesting that a percentage increase in MLD increases MSI by about 0.5% in Nigeria during the period of study. But the positive relationship between MLD and MSI is statistically significant at 5 percent level.

Table 5: ARDL short run estimation result for the estimated model

Variable	Coefficient	Std. error	t-statistic	Prob.
C	0.066100	5.709807	0.011577	0.9908
D(MSI(-1)	0.413423	0.123797	3.339527	0.0024
D(FDI)	-1.02632	1.353746	-0.758140	0.4547
D(FPI)	-3.78638	1.629873	-2.323117	0.0277
D(DRM)	-0.91790	0.314576	-2.917913	0.0069
D(MLD)	0.211595	0.127525	1.659238	0.1082
ECM (-1)	-0.90166	0.157846	-5.712290	0.0000

Adjusted-R^2 = 0.7311; F-Stat. = 5.9812 (F-probability Value = 0.000084) Durbin Watson = 2.046338

Source: Author's Computation using E-view Software

From Table 5 the result of the short run estimation shows that FDI has a negative (-1.02632) relationship with the Misery Index (MSI), meaning that a percentage increase in FDI decreases the misery index by 1.02632 percent in Nigeria during the period of study. The negative sign of FDI on MSI confirms to a priori and therefore in line with economic theory. But the negative sign of FDI on MSI is not statistically significant at 5 percent level. The study therefore accepts the null hypothesis which state that there is no significant relationship between FDI and MSI in the short run. In the short run, foreign portfolio investment (FPI) has a negative (-3.78638) relationship with misery index (MSI), meaning that, a percentage increase in FPI decreases Nigeria misery index by about 3.8 percent during the period of study. The negative

relationship between FPI and MSI is statistically significant at 5 percent level given the p-value of 0.0277 which is less than 0.05 level of significance.

In the short run, diaspora remittance (DRM) has a negative (-0.91790) relationship with the misery index (MSI), meaning that a percentage increase in diaspora remittance (DRM) decreases misery index (MSI) by about 0.9percent in Nigeria. The negative relationship between DRM and MSI is statistically significant at 5 percent level since the p-value of 0.0069 is less that the critical value at 5% level. Thus, the study accepts the alternative hypothesis which states that, there is a significant relationship between diaspora remittance and misery index. In the short run, multilateral debt (MLD) has a positive (0.211595) relationship with the misery index (MSI), meaning that, a percentage increase in MLD increases MSI by about 0.2% in Nigeria during the period of study. The positive relationship between MLD and MSI is not statistically significant at 5 percent level. Thus, the study accepts the null hypothesis which states that, there is no significant relationship between multilateral debt and misery index.

From Table 5 the result showed that the ECM included in this model has the right sign (i. e. negative) and is statistically significant at 5 percent level. The coefficient indicated a high adjustment speed of about 90.166 percent. Furthermore, the Adjusted-R^2 of 0.7311 means that about 73 per cent of the total variations in misery index (MSI) are caused by the explanatory variables FDI, FPI, DRM and MLD. The value of the Durbin Watson (DW) is 2.0463 suggested that, there serial autocorrelation is not a problem of the estimated misery index model.

Table 6: Ramsey reset stability test for the estimated model

Test type	Value	Degree of freedom	Probability
t-statistic	0.07544	29	0.3987
F-statistic	0.06013	(1, 28)	0.3987

Source: Author's computation using e-view Software

Ramsey reset test is performed by regressing the predicted value of the dependent variable on the explanatory variables and then testing the joint significance of the coefficients on the latter. If these are significant, the linear model is mis-specified. Thus, the null hypothesis is that H=0, so it means that the powers of the fitted values have no relationship which serves to explain the dependent variable, meaning that the model has no omitted variables. The alternative hypothesis is that the model is suffering from an omitted variable problem. Based on the Ramsey rest test results on Table 6, the estimated models are well specified since the null hypothesis of the estimated model is accepted at 5percent level of significance. Specifically, in the misery index model, the t-value of 0.0754 and the corresponding probability value of 0.3987 which is greater than the critical value at 5%, showed that the null (HO) hypothesis which states that, the powers of the fitted values have no relationship is upheld.

5. Conclusion and recommendations

The study examined foreign capital inflows misery index in Nigeria from 1981 to 2022. The objectives of the study are to; examine the impact of foreign direct investment inflow on misery index in Nigeria; investigate the effect of foreign portfolio investment on misery index in Nigeria; assess the impact of diaspora remittances on misery index in Nigeria; and determine the effect of multilateral debt on misery index in Nigeria. Annual time series data on misery index, and the, foreign direct investment (FDI) inflow, foreign portfolio investment (FPI), diaspora remittances (DRM) and multilateral debt (MLD) was collected from World Development Indicators and analyzed using the technique of Autoregressive Distributed Lag (ARDL) method of analysis. The findings showed that, foreign direct investment inflow; foreign portfolio investment; diaspora remittances contributed to decrease or reduction in misery index. But multilateral debt does not help to decrease the high level of misery index in Nigeria during the period of study. Based on these findings, it was concluded that to a great extent foreign capital inflows have significant effects on reduction in the level of misery in Nigeria during the period of study. Thus, it was recommended that, fiscal planning should take an account of the inflow of remittances when curbing unemployment and inflation rates. Also, government should encourage FDI inflows by offering tax incentives, infrastructure subsidies and import duty exemptions. Remittances from abroad should be encouraged.

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