THE ROLE OF INCOME INEQUALITY IN THE GLOBALISATION-POVERTY NEXUS: EMPIRICAL EVIDENCE FROM MINT COUNTRIES

Tolulope Temilola Osinubi
Department of Economics, Obafemi Awolowo University, Ile-Ife, Nigeria

Corresponding author's email: tosinubi@oauife.edu.ng

Abstract

Theoretical claims about the globalisation-income-poverty nexus suggest that globalisation generally reduces poverty, since more integrated economies tend to grow faster and this growth is usually diffused. In view of this, the study empirically analyses the relationship between poverty (absolute and multidimensional) and the various dimensions of globalisation (economic, social and political) in MINT countries (Mexico, Indonesia, Nigeria and Turkey) from 1980 to 2018, using a dynamic generalised method of moments (GMM) estimation technique. The key findings are as follows; (i) income inequality influences the nexus between political globalisation and poverty level in Mexico and Indonesia, and also influences the relationship between social globalisation and poverty level in Turkey, (ii) income inequality does not affect the relationship between all three dimensions of globalisation and poverty in Nigeria, and (iii) with the exception of Turkey, income inequality increases the level of poverty in MINT. Thus, as a policy recommendation, it is recommended that governments of MINT countries should embark on activities that would help in achieving equal distribution of income to benefit from the gains of globalisation in terms of poverty reduction.

Keywords: Income inequality; Globalisation; Poverty, MINT Countries

JEL Classification: D63, I3, O10

Introduction

Globalisation refers to the continuous expansion and spiraling of cross-border economic, political, financial, cultural and judicial relations. It is furthered by declines in cost of transportation and communication, emergence of new information technologies such as the internet, and liberalisation of products, services, labour, capital and technology markets. While this happens within current legal systems, in many cases, globalisation includes political decisions on competition, free trade and market integration. This changes people's habits and working environments around the world, bringing some new opportunities but also challenges and threats to others. Globalisation integrates the economic activities of the world through the development of international trade and investment, and it is one of the most important trends in the global economy today. Governmental organisations and economists posit that globalisation stimulates economic prosperity and decreases poverty. However, there is also a widespread notion that the economic impact of globalisation may be overestimated. It is argued that the growth effects of globalisation are not evident, though international trade may be better than financial globalisation. The effect of globalisation on income inequality has recently caught the attention of quite a number of researchers. There is growing concern that globalisation will make the distribution of incomes worse and hamper poverty alleviation. It is thus important to conduct a more thorough and systematic analysis of the interaction between globalization, income inequality and poverty, considering existing debates among the variables.

The MINT countries (Mexico, Indonesia, Nigeria and Turkey) came into the limelight in 2014 due to their strong growth rates, and are known as emerging economic giants, according to Jim O'Neill of Goldman Sachs (Matsangou, 2015; Osinubi & Olomola, 2020b). These countries are grouped together as emerging economies because of their similar characteristics. For instance, their working population has a highly youthful make-up, their strategic locations easily expose them to the globalisation process, they have interesting demographics, and Mexico, Indonesia and Nigeria are poised to be commodity producers (Olomola & Osinubi, 2018). Despite these advantages, the MINT countries are still severely challenged by high inequality, poverty and corruption levels.

Statistics indicate that despite the increased rates of globalisation (economic, cultural, social and political), MINT countries still suffer from poverty. The overall globalisation indices for Mexico, Indonesia, Nigeria and Turkey were 73 percent, 63 percent, 56 percent and 72 percent respectively, according to the Konjunkturforschungsstelle (KOF) Globalisation Index (2018). However, 11.2 percent, 27.2 percent, 77.6 percent, and 1.8 percent live on less than $3.20 per day in Mexico, Indonesia, Nigeria and Turkey respectively, while 2.5 percent, 5.7 percent, 53.5 percent, and 0.2 percent live on less than $1.90 per day in the same countries (World Bank, 2018b). Going by these statistics, Nigeria is adjudged the poorest among the MINT countries. Of all the MINT countries, only Mexico and Turkey have so far succeeded in achieving the United Nations Sustainable Development Goal of extreme poverty reduction to less than 3 percent by 2030.

Concerning income inequality, Mexico, Indonesia, Nigeria and Turkey have recently had income disparities of 45.8 percent, 43 percent, 40.1 percent and 39.8 percent respectively, according to the Standardized World Income Inequality Database (SWIID, 2018). Income inequality is calculated using the Gini index, and a Gini coefficient of between 0.36 and 1.0 is considered high. By implication, Mexico has the highest level of income inequality of all the MINT countries. Although income inequality dropped from about 40 percent in 2014 to about 39 percent in Turkey (SWIID, 2018), this does not exempt the country from the list of countries with the world's worst inequality. Given that high levels of globalisation are still associated with high levels of income inequality in the MINT nations, it becomes clear that globalisation creates winners and losers around the world. The World Bank (2018a) reports that globalisation reduces disparities in income between countries. Hence, the question is why the degree of income inequality is still high in the MINT countries.

The World Bank (2002, 2018a) also predicts that globalisation would lead to poverty reduction, as more globalized economies are likely to experience an improved economic growth trend. Existing literature however shows the relationship between globalisation and poverty to be complex. Thus, establishing a link between the two can be challenging, making the globalisation-poverty nexus one of the most highly debated issues in development policy. While many studies (see Kutor, 2014; Lee, 2014) view globalisation as a crucial growth engine that translates into a reduced level of poverty, others such as Singh and Huang (2011), Kanbur (2014), and Okungbowa and Eburajolo (2014) opine globalisation to have done more harm than good in reducing poverty.

Since evidence from the MINT countries shows highly prevalent poverty and widening income gap in spite of the increased globalization levels, could it then mean that there are other factors hindering the poverty-reducing impact of globalisation in MINT countries? The issue of whether globalisation reduces poverty remains somewhat unresolved, particularly in each of the MINT countries, thus necessitating further investigation.

Another issue of debate in extant literature is the relationship between inequality and poverty. Research shows that inequality can affect poverty either positively or negatively. It is argued that higher income inequality allows the rich to save more proportionately than the poor, resulting in higher levels of investment and growth, and thereby reducing poverty level (Nissanke & Thorbecke, 2010). On the other hand, some studies (see Clarke, 1995; Benhabib, 2003) show that income inequality could slow the growth rate as a result of social conflict, redistributive pressures, rent-seeking actions and expropriation (the act of depriving private property rights). This claim however contradicts the notion of economic growth being a way of reducing income inequality, as put forward by Kuznets (1955). As this is a pressing issue in literature, it therefore becomes pertinent to analyse the impact of inequality on the gains from globalisation in deciding the level of poverty in each of the MINT countries.

Against this backdrop, this study adds to established knowledge by analysing the impact of the different dimensions of globalisation (economic, social and political) on poverty, and also investigating the role of income inequality in the connection between globalisation and poverty. The rationale behind this is that globalisation has a deeper meaning than what is reflected in its conventional measures, such as trade openness, foreign direct investment and financial openness (Gohou & Soumare, 2012; Lee, 2014; Okungbowa & Eburajolo, 2014; Ucal, 2014; Durowah, 2017; Magombeyi & Odhiambo, 2017; Lazreg & Zouari, 2018; Dhrifi, Jaziri & Alnahdi, 2020). These conventional measures only capture the economic dimension of globalisation, leaving out both the social and political dimensions. Also, the study deviates from the existing studies by focusing on two measures of poverty—absolute poverty, proxied by household consumption expenditure, and multidimensional poverty index (MPI). Specifically, this study uses both MPI and absolute poverty, rather than absolute poverty only, because poverty is a multidimensional phenomenon affecting all facets of human life (Olofin, 2013). Lastly, to the best of the author's knowledge, this research is the first to compare each of the MINT countries on the basis of the interaction between inequality, globalisation and poverty.

The rest of the paper is arranged as follows; section 2 details the empirical review of relevant literature, section 3 discusses the research methodology, and the empirical results and conclusion are presented in sections 4 and 5 respectively.

Review of Literature

Income inequality-poverty nexus

Owing to the theoretical connection between inequality and growth, extended studies on the relationship between income inequality and poverty are often linked to economic growth. Several studies hold divergent views on the relationship between these variables.

On one hand, some researchers suggest that a reduced level of growth with lower income inequality brings about higher poverty level. Among such researchers are Agostini, Brown and Roman (2010) who conducted a study in Chile, and Karagiannaki and McKnight (2017). This is atheoretical because lower levels of income inequality are generally expected to induce a reduction in the incidence of poverty. On the other hand, some other studies claim that growth with lower income inequality helps in reducing poverty. Examples of such studies include those carried out by Dollar and Kraay (2002) in 92 countries, Fosu (2010) in a sample of African countries, Hassan, Zaman and Gul (2015) in Pakistan, Jencova *et al.* (2015) in the Slovak Republic, Fosu (2017) in 123

developing countries, Freeman (2018), and Lakner *et al.* (2019) in 164 countries. Apart from examining the effect of income inequality on poverty, some studies investigate the causal connection between poverty and income inequality. Evidence from some of these studies reveals a bi-directional causality between poverty and income inequality (Annim, Mariwah & Sebu, 2012; Hassan *et al.,* 2015; Ogbeide & Agu, 2015).

Similar studies have been carried out in some of the MINT and BRICS countries. For instance, in BRICS countries, Borooah, Gustafsson and Shi (2011) compare income inequality and poverty in China and India using microdata and survey method over the period January - March 2016. They find that income inequality in the two countries is the same in the mid-1990s. Their findings also show that inequality is higher in rural China than in rural India, while poverty is more severe in China than in India, since there are more educated people in India than in China. Similar evidence is provided by Xing *et al.* (2009) who study households in three villages in Guizhou province of China in 2004. The regression results indicate that poverty incidences vary differently among the villages and inequality is very high in these villages. The authors therefore confirm that the distribution of assets, particularly landholdings, is the major contributor to income inequality.

Additionally, Yao, Zhang and Hanmer (2004) investigate the growing inequality and poverty in China between 1995 and 1998. Using large household data with regression analysis, the study reveals a severe poverty that is difficult to alleviate in the face of a higher level of income inequality. Li, Luo and Sicular (2011) present an overview of income inequality and poverty in China over the period 2002-2007. Using a survey approach, they find that while households in all income classes, sectors and regions experience significant income growth during the period, income growth for richer households is faster for richer households than the poorest households.

In the MINT countries, Iniguez-Montiel (2014) examines the poverty-inequality-growth nexus between 1992 and 2008 in Mexico by adopting growth incidence curve and sectoral decomposition of changes in poverty. The author finds that growth with lower inequality helps in reducing poverty from 2000 to 2006, but a reduced growth rate with higher inequality causes poverty to increase after 2006. In Nigeria, Ogbeide and Agu (2015) investigate the direction of causality between poverty and inequality over the period 1980-2010. Their findings reveal that there is a direct line of causality between the two variables and indirect channels through which inequality aggravates poverty in Nigeria. Also, Bulama (2004), in a study of Nigeria between 1980 and 2001 with the aid of multiple regression analysis, confirms the existence of a correlation among poverty, inequality and economic growth. The study identifies Nigeria as a country plagued by abject poverty and high income inequality despite her level of economic growth.

Globalisation-Poverty Nexus

It is widely claimed that globalisation is an important factor for poverty reduction, although not all studies agree with this. This implies that globalisation produces both winners and losers among the people according to Harrison (2007) and the World Bank (2018a). Extant studies use different measures of globalisation in examining the relationship between globalisation and poverty. These measures include trade/financial openness and foreign direct investment (FDI).

Many researchers assert that trade openness reduces poverty. They include Salimono (1999), Ogbuaku, Adebisi and Feridun (2006) in a study of Nigeria, Bergh and Nilsson (2011, 2014) in a

study of over 100 countries, Goff and Singh (2014) using a panel of 30 African countries, and Fauzel, Seetanah and Sannassee (2016) in a study of Mauritius. However, Ogbuaku *et al.* (2006) and Okungbowa and Eburajolo (2014) argue that trade and financial openness respectively increase poverty in Nigeria. With respect to FDI as a globalisation variable, findings from literature reveal that it could either increase or decrease poverty levels. For instance, Gohou and Soumare (2012) confirm a positive relationship between FDI and poverty in Central and East Africa, while a negative association is established by Ucal (2014) in 26 developing countries, Ukamaka, David and Moses (2015) in Nigeria, Uttama (2015) in Southeast Asia, Durowah (2017) in 91 developing countries, Lazreg and Zouari (2018) in North Africa, and Dhrifi *et al.* (2020) in Asia and Latin America. The effect of FDI on poverty could also be insignificant or ambiguous, according to Gohou and Soumare (2012) in a study of Northern, Southern and Western Africa. Studies conducted in Nigeria by Ogunniyi and Igberi (2014) and Okungbowa and Eburajolo (2014) also support this claim.

In reference to the causal relationship between globalisation and poverty, Magombeyi and Odhiambo (2017) observe a one-way causal link from poverty reduction (as measured by life expectancy and infant mortality rate) to FDI as a measure of globalisation in South Africa. Other studies with similar findings include Gohou and Soumare (2012), Soumare (2015), and Fauzel *et al.* (2016). A study by Dhrifi *et al.* (2020) however shows the existence of a bi-causal relationship between FDI and poverty in Asia, Africa and Latin America. Teixeira and Loureiro (2019) corroborate this finding. Following this discussion, it is obvious that the impact of globalisation (captured through different measures) on poverty is inconclusive. Besides, extant studies show that there could be a unidirectional or bidirectional relationship between globalisation and poverty.

To this end, in the long run, globalisation through various mechanisms such as specialization, innovation, competition, economies of scale and incentives for macro-economic stability helps in improving the growth rate of an economy and consequently decreases poverty. For example, Stark (2004) establishes that globalisation helps in developing human capital in poor countries and therefore reduces poverty in the long run. In the short run, however, the effect of globalisation on absolute poverty is positive due to government size, transition costs, economic openness and shortage of human capital (Agenor, 2004).

Globalisation-income inequality-poverty nexus

There is scanty research on the role of income inequality in the nexus between globalisation and poverty. The studies that examine these three variables only investigate the effect of globalisation on income inequality and poverty in different economies. Some of the studies affirm globalisation as a means of reducing poverty and income inequality (Danacica, 2006; Neutel & Heshmati, 2006; Macdonald & Majeed, 2010; Castilho, Menéndez & Sztulman, 2012; Chaudhry & Imran, 2013; Dong, 2014; Lee, 2014; Im & McLaren, 2015; Liyanaarachchi, Naranpanawa & Bandara, 2016; Naceur & Zhang, 2016; Mahadevan, Nugroho & Amir, 2017; Teixeira & Loureiro, 2019). Others argue that globalisation increases income inequality and poverty (Topalova, 2007; Singh & Huang, 2011; Castilho *et al.*, 2012; Im & McLaren, 2015; Seven & Coskun, 2016). However, Rye (2016) shows that FDI as a measure of globalisation has no significant effect on income inequality and poverty.

In summary, evidence from literature reveals that globalisation has both positive and negative effects on poverty. This study is different from previous studies due to the following reasons. First, it uses various dimensions of globalisation. Most of the existing studies focus solely on economic

globalisation without considering the other dimensions of globalisation (social and political). Second, it considers another aspect of poverty—multidimensional poverty—in addition to the conventional measure of poverty—absolute poverty. Lastly, it compares the effect of income inequality on the relationship between globalisation and poverty in Mexico, Indonesia, Nigeria and Turkey.

Methodology

Data

The study uses annual data from 1980 to 2018 on all the variables of interest, and the data are extracted from various sources as illustrated in Table 1. Two measures of poverty, absolute poverty and multidimensional poverty index, are employed. Absolute poverty is proxied by real consumption expenditure per capita following the studies of Ogun (2010) and Oladipo and Olomola (2015). Real consumption expenditure per capita is calculated as the product of private consumption expenditure per capita and inflation rate divided by the total population. Multidimensional poverty index measures poverty as an extreme deprivation of a critical feature of living. The study uses four variables (per capita income, life expectancy, agricultural value added per worker, and household final consumption expenditure per capita) to generate the index by employing the Principal Component Analysis (PCA). This is consistent with Olofin (2013). PCA is a computational method using an orthogonal transformation to turn a set of linearly associated variables into a collection of values without losing too much information. It is used to provide information through a linear combination of the variance-covariance structure of a number of variables. Notably, for comparative purposes, all the key components (PCI, PC2 and PC3) produce the index in all countries (see Appendix 1).

Table 1: Measurements and Sources of Variables

Variable	Measurement	Source
Absolute Poverty (APOV)	Real consumption expenditure per capita	WDI (2019)
Multidimensional Poverty Index (MPI)	Using the Principal Component Analysis (PCA), it is constructed from per capita income, life expectancy at birth, agricultural value-added per worker and final household consumption expenditure per capita.	WDI (2019)
Globalisation	Economic Globalisation (EGB)	KOF GLOBALISATION INDEX (2019)
	Social Globalisation (SGB)	
	Political Globalisation (PGB)	
Income Inequality (INQ)	Gini coefficient	SWIID (2019)
Gross Domestic Product Per capita (GDP)	Real GDP per capita (Constant 2010 US$)	WDI (2019)
Human Capital (HUM)	Secondary school enrolment ratio (% gross)	WDI (2019)
Population Growth (POP)	Population growth (annual %)	WDI (2019)
Inflation Rate (INF)	The inflation rate, Consumer Prices (annual %)	WDI (2019)

Control of Corruption (COR)	Control of Corruption. It is on the scale of 0 (highly corrupt) - 6 (highly clean).	ICRG (2019)

Note: WDI is World Development Indicators; SWIID is Standardized World Income Inequality Database; ICRG is International Country Risk Guide Researchers Dataset.
Source: Author's Compilation (2020)

Conceptual framework

In defining the conceptual framework shown in Figure 1, this study aligns with Nissanke and Thorbecke (2006, 2010). The figure notes that globalisation stimulates economic growth and reduces income inequality across its various dimensions—economic, social, and political. Therefore, increase in economic growth and decrease in the level of income inequality are projected to induce a reduction in poverty. In other words, the primary effect of globalisation is economic growth stimulation resulting from the creation of incentives for trade and investment, and the generation of employment opportunities which contribute to poverty reduction.

It can be summarized that the effect of economic growth on income inequality dictates the nature of the relationship between globalisation and poverty. For example, if inflation causes an increase in income inequality, the level of poverty will increase because the poor will not benefit from the globalisation process. Additionally, income inequality can either increase (classical theory) or reduce (modern theory) economic growth. Higher income inequality enables the rich to invest more than the poor, according to the classical theory, and this may stimulate economic growth which in turn helps to reduce poverty. The modern theory, on the other hand, argues that higher income inequality reduces economic growth due to political and social uncertainty, redistributive pressure and unproductive rent-seeking practices, among others, which can contribute to poverty (Clarke, 1995; Thorbecke & Charumilind, 2002; Benhabib, 2003).

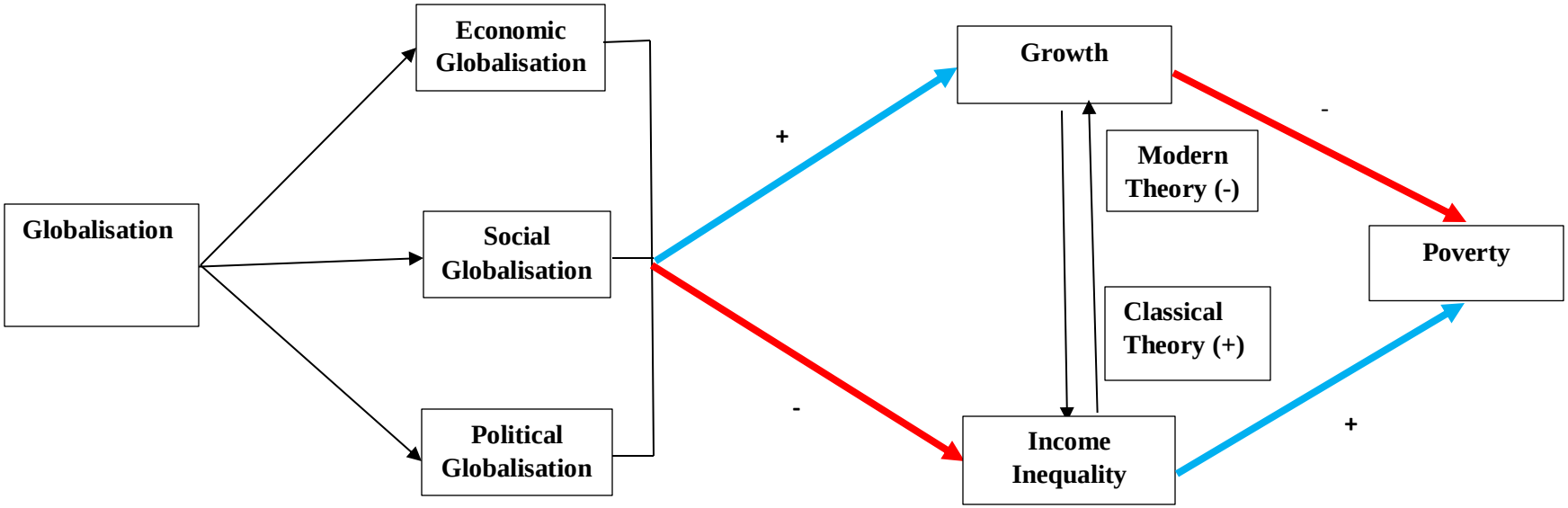

Figure 1: *Globalisation-Income Inequality-Poverty Link*
Source: Adapted from Nissanke and Thorbecke (2006, 2010)

Model specification

Following Lee (2014), the model described below is used according to the conceptual framework. The model shows that poverty is a function of globalisation and income inequality, as shown in equation 1. The model is therefore updated to take into account the various dimensions of globalisation.

$$POV_t = f(GLB_t, INQ_t, X_t) \quad (1)$$

Where POV represents poverty measures, GLB is vector consisting of globalization measures (economic, social and political globalization), INQ denotes income inequality, and X is a vector of control variables which contains human capital, population growth, inflation rate and control of corruption. Notably, POV, which is the main model determinant, also comprises of two measures (absolute poverty and multidimensional poverty index).

For the purpose of econometric estimation, the study variables are required to be expressed as linear combinations of their corresponding parameters. Thus, based on the definition of variables, the multivariate linear regression framework of equation (1) is reformulated as follows;

$$POV_{A,t} \,|POV_{M,t} = \sum_{j=1}^{3} \beta_j GLB_{j,t} + \pi INQ_t + \sum_{m=1}^{4} \gamma X_{m,t} + \varepsilon_t \quad (2)$$

Where POV_A is absolute poverty, POV_M represents multidimensional poverty index, j, and m are the various measures of globalisation and control variables respectively, t denotes time period in years, β_j captures the effect of the respective measures of globalization, π estimates the impact of income inequality and γ captures the effect of the control variables on both POV_A and POV_M . ε is the error term. In order to reduce the issues of heteroscedasticity as well as data fluctuations, data pertaining to all the variables, with the exception of multidimensional poverty index, are used for empirical analyses in their natural logarithmic forms. The control variables, included based on theory, empirics and intuition, are gross domestic product (Lee, 2014; Im & McLaren, 2015; Rye, 2016), human capital (Chaudhry & Imran, 2013), population growth (Macdonald & Majeed, 2010; Chaudhry & Imran, 2013; Im & McLaren, 2015; Rye, 2016), inflation rate (Chaudhry & Imran, 2013; Naceur & Zhang, 2016), and corruption (Kahai & Simmons, 2005).

Estimation technique

For empirical analysis, a dynamic model specification where the lagged levels of the response variable which is poverty are taken into account is used. The generalized method of moments (GMM) estimation approach is preferred in this case to other estimation approaches for the following reasons; (i) it generates unbiased estimates with omitted variables, (ii) it produces consistent estimates with measurement error, and (iii) it overcomes the problems of endogeneity and simultaneity that may occur among the variables and error terms (Bond, Hoeffler & Temple, 2001; Wooldridge, 2001). This estimator is used because poverty can as well determine income inequality (Annim *et al.*, 2012; Hassan *et al.*, 2015; Ogbeide & Agu, 2015; Osinubi & Olomola, 2020a) and globalisation (Gohou & Soumare, 2012; Magombeyi & Odhiambo, 2017; Dhrifi *et al.*,

2020; Osinubi & Olomola, 2020a). To add to this, Green (2003) argues that a dynamic model is preferred, given the nature of this study, because other methods like ordinary least square regression bring about inconsistent results. Thus, in order to estimate the study model as specified in equation (2), our specified dynamic model based on the GMM estimator is expressed as follows

$$POV_{A,t} = \alpha + \theta POV_{A,t-1} + \sum_{j=1}^{3} \beta_j GLB_{j,t} + \pi INQ_t + \sum_{m=1}^{4} \gamma X_{m,t} + \varepsilon_t \quad (3a)$$

$$POV_{M,t} = \alpha^* + \theta^* POV_{M,t-1} + \sum_{j=1}^{3} \beta_j^* GLB_{j,t} + \pi^* INQ_t + \sum_{m=1}^{4} \gamma^* X_{m,t} + \varepsilon_t^* \quad (3b)$$

Where α and α^* are constant terms, θ and θ^* measure the effect of the lagged response variables POV_A and POV_M, and ε and ε^* are the respective error terms.

The estimation technique was introduced by Hansen (1952), followed by Sargan (1958). The lagged values of endogenous and exogenous variables are used as instrumental variables, and are said to be valid when the J-statistic is insignificant and the instrumental rank is higher than the estimated parameters. The model is also accurate if the p-value from the AR(2) statistic is insignificant, which means that the residuals do not have a serial autocorrelation.

Prior to estimating the dynamic model specifications expressed in equations (3a) and (3b) respectively, income inequality is excluded from the model to determine the effect of globalisation on poverty in each of the MINT countries. Hence, the aforelisted equations are reduced and re-specified as;

$$POV_{A,t} = \alpha + \theta POV_{A,t-1} + \sum_{j=1}^{3} \beta_j GLB_{j,t} + \sum_{m=1}^{4} \gamma X_{m,t} + \varepsilon_t \quad (4a)$$

$$POV_{M,t} = \alpha^* + \theta^* POV_{M,t-1} + \sum_{j=1}^{3} \beta_j^* GLB_{j,t} + \sum_{m=1}^{4} \gamma^* X_{m,t} + \varepsilon_t^* \quad (4b)$$

Thereafter, equation (3) is estimated as specified to determine the role of income inequality in the nexus between globalisation and poverty in each of the MINT countries. More specifically, equations (3a) - (4b) are run for each of the MINT countries.

Empirical Results

Unit root test

Time series data often contain unit roots, it is therefore important to examine the stationarity properties of time series data through unit root testing to avoid wrong inference. This study thus employs Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and Kwiatkowski-Phillips-

Schmidt-Shin (KPSS) unit root tests in determining the stationarity properties of the variables. The null hypothesis of nonstationarity is dismissed if the test statistics from the ADF and PP tests are higher than the critical value (in absolute terms) at either 5 percent or 10 percent significance level, whereas the null hypothesis of stationarity is accepted if the test statistics from the KPSS test are lower than the critical value.

The KPSS test requires checking findings from the ADF and PP tests. It is worthy of note that the KPSS test is only used as a confirmatory test in cases where the results of the ADF and PP tests are conflicting. It is specifically used to test the stationarity properties of EGB and HUMC in Mexico, and POP in Indonesia, where both ADF and PP tests show different stationarity orders. The order of integration of these variables is therefore determined solely on the basis of the KPSS test. Both the ADF and PP tests are conducted under three different specifications; with intercept and trend, with intercept only and without intercept and trend, while the KPSS test is conducted with only intercept and trend. The unit root test results are reported in Tables 2-4. As observed in these tables, none of the variables are integrated of an order higher than one in all the MINT countries.

Table 2: Unit root tests with intercept and trend for Mexico, Indonesia, Nigeria and Turkey

Country	Variable	ADF Test (with intercept and Trend)			PP Test (with intercept and Trend)			KPSS (with intercept and Trend)		
		Level	First Difference	Order	Level	First Difference	Order	Level	First Difference	**Order**
	MPI	-5.58**	-	I(0)	-5.04**	-	I(0)	-	-	
	EGB	-4.25**	-	I(0)	-2.59	-7.53**	I(1)	0.08**	-	I(0)
Mexico	HUMC	-5.24**	-	I(0)	-1.96	-3.22*	I(1)	0.10**	-	I(0)
	COR	-4.98**	-	I(0)	-4.95**	-	I(0)	-	-	-
	APOV	-5.04**	-	I(0)	-4.98**	-	I(0)	-	-	-
	MPI	-4.41**	-	I(0)	-4.27**	-	I(0)	-	-	-
	SGB	0.51	-3.56**	I(1)	-0.43	-6.87**	I(1)	-	-	-
Indonesia	POP	-4.21**	-	I(0)	-1.52	-3.56**	I(1)	0.16	0.14**	I(1)
	INF	-4.84**	-	I(0)	-4.77**	-	I(0)	-	-	-
Nigeria	MPI	-5.74**	-	I(0)	-5.74**	-	I(0)	-	-	-
	MPI	-8.73**	-	I(0)	-8.96**	-	I(0)	-	-	-
Turkey	EGB	-2.37	-7.48**	I(1)	-2.26	-8.81**	I(1)	-	-	-
	POP	-0.08	-6.03**	I(1)	-1.10	-6.03**	I(1)	-	-	-
	Critical Values	Level	First Difference	Critical Values	Level	First Difference	Critical Values	Level	First Difference	
	5%	-3.54	-3.56	5%	-3.53	-3.54	5%	0.15	0.15	
	10%	-3.20	-3.22	10%	-3.20	--3.20	10%	0.12	0.12	

Note: ** and * represent 5% and 10% levels of significance respectively.
Source: Author's Computation (2020)

Table 3: Unit root tests with intercept only for Mexico, Indonesia, Nigeria and Turkey

Country	Variable	ADF Test (with intercept only)			PP Test (with intercept only)		
		Level	First Difference	Order	Level	First Difference	Order
	SGB	-0.31	-5.59**	I(1)	-0.38	-5.59**	I(1)
Mexico	INF	-1.26	-5.86**	I(1)	-1.16	-6.60**	I(1)
	PGB	-1.10	-2.95**	I(1)	-1.10	-7.36**	I(1)
Indonesia	HUMC	-2.12	-4.09**	I(1)	-1.88	-4.06**	I(1)
	APOV	-3.02**	-	I(0)	-2.95**	-	I(0)
Nigeria	POP	-5.34**	-	I(0)	-3.58**	-	I(0)

	INF	-3.44**	-	I(0)	-3.32**	-	I(0)
	SGB	-0.87	-4.90**	I(1)	-0.86	-4.85**	I(1)
	PGB	-0.87	-4.65**	I(1)	-0.86	-4.85**	I(1)
Turkey	HUMC	-0.36	-6.21**	I(1)	-0.35	-6.21**	I(1)
	COR	-3.75**	-	I(0)	-2.96**	-	I(0)
	Critical Values	Level	First Difference	Critical Values	Level	First Difference	Critical Values
	5%	-2.94	-2.94	5%	-2.94	-2.94	5%
	10%	-2.61	-2.61	10%	-2.61	-2.61	10%

Note: ** and * represent 5% and 10% levels of significance respectively.
Source: Author's Computation (2020)

Table 4: Unit root tests without intercept and trend for Mexico, Indonesia, Nigeria and Turkey

		ADF Test (without intercept and Trend)			PP Test (without intercept and Trend)		
Country	Variable	Level	First Difference	Order	Level	First Difference	Order
	APOV	0.39	-5.77**	I(1)	0.75	-5.87**	I(1)
	YINQ	0.23	-1.97**	I(1)	0.68	-2.83**	I(1)
Mexico	PGB	1.70	-5.00**	I(1)	2.24	-4.97**	I(1)
	GDP	1.36	-6.24**	I(1)	1.70	-6.25**	I(1)
	POP	-3.03**	-	I(0)	-2.15**	-	I(0)
	YINQ	-1.14	-6.73**	I(1)	-1.46	-1.62**	I(1)
Indonesia	EGB	0.52	-4.97**	I(1)	-1.79	-4.95**	I(1)
	GDP	5.80	-3.11**	I(1)	-5.80	-3.01**	I(1)
	COR	-1.31	-6.32**	I(1)	-1.52	-6.37**	I(1)
	YINQ	-0.92	-1.83*	I(1)	-0.92	-2.07**	I(1)
	EGB	-0.32	-6.22**	I(1)	-0.38	-6.45**	I(1)
	SGB	0.86	-3.61**	I(1)	1.11	-3.58**	I(1)
Nigeria	PGB	1.23	-7.25**	I(1)	1.29	-7.14**	I(1)
	GDP	4.49	-4.47**	I(1)	5.70	-4.65**	I(1)
	HUMC	2.93	-3.85**	I(1)	2.07	-3.77**	I(1)
	COR	-1.08	-3.98**	I(1)	-1.04	-3.91**	I(1)
	APOV	1.25	-5.90**	I(1)	1.22	-5.91**	I(1)
	YINQ	0.66	-1.83*	I(1)	0.31	-1.69*	I(1)
Turkey	GDP	4.49	-4.47**	I(1)	5.70	-4.65**	I(1)
	INF	-1.39	-6.04**	I(1)	-1.34	-6.05**	I(1)
	Critical Values	Level	First Difference	Critical Values	Level	First Difference	Critical Values
	5%	-1.95	-1.95	5%	-1.95	-1.95	5%
	10%	-1.61	-1.61	10%	-1.61	-1.61	10%

Note: ** and * represent 5% and 10% levels of significance respectively.
Source: Author's Computation (2020)

Globalisation, income inequality and poverty in MINT countries

In achieving the study's objective, two measures of poverty (absolute poverty, APOV, and multidimensional poverty index, MPI) are used to ensure robustness. All the variables of interest are used in their logarithmic forms, except for MPI which has some negative values. It is noteworthy that APOV, as measured by real consumption expenditure per capita, is interpreted in such a way that a significant positive relationship between APOV and either of the explanatory variables represents a reduction in the level of poverty. Higher values of the multidimensional

poverty index are associated with lower levels of poverty because the index reflects a better way of living. Against this context, a significant positive relationship between either of the explanatory variables and MPI represents a lowering of the poverty level. The regression results are presented in Tables 5 and 6. A comparison of the country-specific regression outcomes is made in this study. More specifically, all of the primary predictors and control variables significantly affect APOV and MPI at 5 percent, with the exception of Mexico's COR in Model 4a of Table 5 and Turkey's POP in Model 4b of Table 6 which are significant at 10 percent.

In examining the relationship between the dimensions of globalisation and poverty with and without income inequality, the previous values of APOV and MPI conform to the a priori expectation in all the MINT countries by increasing their present values, except in Mexico, where APOV(-1) fails to increase the current values of APOV. The explanation for these conflicting findings may be that Mexico now has better access to resources, such as financial and human capital, that can lift its citizens out of poverty in the current year when compared with the previous year, while in other MINT countries, the opposite is valid. This shows the importance of the past poverty level (both APOV and MPI) in the determination of future poverty values in all of the MINT countries, except for APOV in Mexico.

Concerning the role of income inequality in the globalisation-poverty relationship in each of the MINT countries, economic globalisation increases APOV in Nigeria and Turkey, and reduces it in Indonesia. The effect is insignificant in Mexico. The positive impact is in line with the findings of Topalova (2007), Castilho *et al.* (2012), Gohou and Soumare (2012), and Naceur and Zhang (2016), while the negative impact corroborates the findings of Ogbuaku *et al.* (2006), Bergh and Nilsson (2011), Chaudhry and Imran (2013), Ucal (2014), Lazreg and Zouari (2018), and Dhrifi *et al.* (2020). These results indicate that Nigeria and Turkey are not benefiting from economic globalisation due to their high levels of corruption and income inequality, as well as their lack of effective economic policies and transparency. Indonesia, on the other hand, is experiencing a reduced level of poverty (i.e. absolute poverty) as a result of its open economic policy and favourable socio-political climate through economic globalisation.

The results do not change after including income inequality in the models in all the MINT countries, except in Mexico, where economic globalisation becomes significant and positive. This shows the major role income inequality plays in the Mexican economy. Yet, although the country has successfully opened up to the rest of the world, this positive impact means that higher income inequality also dampens the poverty-reducing effect of economic globalisation. The effect of economic globalisation on the multidimensional poverty index, with and without income inequality, is similar to that of absolute poverty in both Nigeria and Turkey. Economic globalisation however decreases poverty in Mexico (MPI) and increases it in Indonesia. The variances in the findings may stem from the different measures of poverty.

The effect of social globalisation (SGB) on APOV remains the same in Mexico, Indonesia and Nigeria, both in the absence and presence of income inequality. Prior to the inclusion of income inequality, the nexus between SGB and APOV is negative in Mexico, Indonesia and Nigeria, but insignificant in Turkey. Income inequality positively shifts the insignificant impact of SGB on Turkey's APOV. The reason for this is because Mexico, Indonesia and Nigeria are able to take advantage of their level of social globalisation to reduce poverty. Social media, for example, serves as a platform for people to engage in economic activities that help to increase their means of survival. This is in agreement with the findings of Berg and Nilsson (2011). In Turkey, social

globalisation leads to poverty due to the illegal immigration of refugees which escalates social tensions and causes widespread discrimination. This is in contrast to the theoretical expectation.

In all of the MINT countries, social globalisation contributes positively to MPI, except in Indonesia, where its effect is negative. The positive effect is contrary to the study of Berg and Nilsson (2011) where social globalisation is claimed to aid poverty reduction. Nevertheless, the presence of income inequality causes the impact of SGB on MPI in Turkey to be considerably negative. This suggests that in the presence of income inequality, social globalisation decreases the level of poverty in Indonesia and Turkey, and raises the level of poverty in Mexico and Nigeria.

Political globalisation causes APOV to increase in Indonesia and decrease in Nigeria and Turkey. In Mexico, its effect on APOV is found to be insignificant. After incorporating income inequality into the model, its influence becomes positive in Mexico and remains unchanged in the other MINT countries. This implies that inequality is a significant driver of APOV when considering the effect of political globalisation on APOV. Research findings indicate that Nigeria and Turkey benefit from other countries in terms of international treaties and the number of embassies in their economies which help to increase investment and job prospects, thereby reducing the level of poverty. However, due to the political turmoil faced in the two nations, Mexico and Indonesia do not benefit from globalisation in terms of poverty reduction. When MPI is used as a measure of poverty, income inequality-free political globalisation decreases the level of poverty in all the MINT countries, except in Mexico, where its impact is insignificant. With income inequality, MPI continues to be negatively affected by political globalisation in Nigeria and Turkey, while it becomes significantly negative in Mexico and Indonesia. This suggests that when other human development indicators are used in measuring poverty (MPI), all the MINT countries gain from other countries through increases in international treaties and the number of embassies in their countries. This helps to increase investment and job opportunities and consequently reduces their poverty level.

Income inequality, as one of the primary predictors, unexpectedly reduces APOV in Mexico and Turkey. As expected, its effect is positive in Indonesia and Nigeria. A different result is found for Mexico when poverty is measured by MPI. Income inequality significantly increases it. This positive effect is in line with the modern theory and the findings of Xing *et al.* (2009), Jencova *et al.* (2015), Karagiannaki and Mcknight (2017), and Lakner *et al.* (2019) which establish that higher inequality reduces economic growth as a result of political and social instability, redistributive pressure and unproductive rent-seeking activities, amongst others, all of which can add to the poverty level (Clarke, 1995; Thorbecke & Charumilind, 2002; Benhabib, 2003). The negative effect as explained by Agostini *et al.* (2010) and the classical theory however indicates that higher income inequality increases economic growth as it causes the rich to save more. This therefore leads to investment and income-earning opportunities that help to alleviate poverty.

Concerning the control variables, their impacts on both poverty level measures (APOV and MPI) do not change after incorporating inequality into the model. Only minute changes are noticeable in the relationships between APOV and education (i.e. human capital) and between APOV and control of corruption. In specific terms, improved economic growth reduces absolute poverty (see Lee, 2014) in all the MINT countries, except in Nigeria, where its effect is positive, which is in contrast with findings from existing studies. This infers that higher levels of growth in Mexico, Indonesia, and Turkey are obtained from the labour-intensive market, such as the agricultural and manufacturing industries, as opposed to the Nigerian extractive industry. It explains why increased

economic growth in all of the MINT nations, except Nigeria, decreases poverty rates. The same results are observed when the effect of economic growth on multidimensional poverty is examined.

On the contrary, APOV in Mexico and Turkey is positively affected by the level of education proxied with secondary school enrolment rate, while the impact is negative in Nigeria, as expected. In Indonesia, education affects APOV insignificantly. When income inequality is incorporated, these findings improve only in Mexico, by reducing absolute poverty. The level of education in the absence and presence of income inequality raises MPI in all the MINT countries. The positive result differs from the a priori expectation and this shows that the level of poverty will continue to increase as higher education is obtained by people. This may be due to the fact that employers now attach greater importance to education. This is as a result of a high level of unemployment. The negative impact is also in concordance with earlier works by Goff and Singh (2014) and Lee (2014), implying that as more people get educated, the level of poverty will decrease as education will provide them with good employment opportunities. In other words, a higher level of education leads to an increase in the supply of skilled labour force which, in effect, leads to a reduction in the premium of skilled wages, thereby reducing the level of poverty (Mihaylova, 2015).

Interestingly, in the absence of income inequality, the coefficients for population growth and inflation rate of all the MINT countries, with the exception of Turkey, support the theoretical position that poverty level will rise as population growth and inflation rate rise. An increase in population in Mexico, Indonesia and Nigeria will reduce the opportunities for a better life for those already born, and decrease existing government resources to provide basic services. This backs up the conclusion reached by Chaudhry and Imran (2013). The results also show that population growth reduces the level of poverty in Turkey (Ucal, Haug & Bilgin, 2015). This implies that population growth in a country like Turkey should not be a concern as it will lead to an increase in market demand, leading to an increase in production and thus, an increase in investment and job opportunities which will help to reduce poverty level. The effect of population growth on MPI in all the MINT countries is fairly positive, with and without income inequality. This shows that using MPI as a measure of poverty only shifts the impact of the POP on poverty in Turkey to positive, as opposed to APOV.

Similarly, inflation rate has a positive impact on APOV and MPI in all the MINT countries. This confirms the a priori expectation which is in line with the findings of Macdonald and Majeed (2010), Faustino and Vali (2011), Salimi, Akhoondzadeh and Arsalanbod (2014), Mihaylova (2015), and Trinh (2016). It implies that increasing inflation decreases real wages and impacts those at the bottom of the income spectrum overwhelmingly, contributing to high rates of income inequality. This will also cause the level of poverty to rise, because inflation decreases the purchasing power of a nation and therefore affects the poor more than the rich (Easterly & Fischer, 2001).

Control of corruption has a positive impact on APOV in all the MINT countries, except in Turkey, where its effect is insignificant. When income inequality is applied to the models, the same positive outcome is observed for all the countries, with the exception of Nigeria, where its impact becomes negative. This positive effect suggests that the more the government of the MINT countries fight corruption, the lower the levels of corruption and poverty will be. In Nigeria, however, income inequality causes higher levels of corruption to be associated with lower levels of poverty. The inverse association is based on the idea that corruption will lead to higher economic growth if those resources gained by the public officers are used for public gains. This is in concordance with

the 'second-best theory' that states that corruption allows people to avoid regulations that hinder their investment opportunities, thereby enabling them to create more jobs that will help in reducing inequality and poverty (Leff, 1964; Huntington, 1968). However, the effect of corruption control on MPI in the Nigerian economy changes when income inequality is introduced into the models. It is also observed that an increase in the control of corruption (lower level of corruption) increases the poverty level in all the MINT countries prior to the addition of income inequality. This is contrary to the theoretical expectation that the more corruption a country is confronted with, the lower the level of poverty. This is not the case in Nigeria, where after income inequality is included, a lower level of corruption reduces the poverty level.

Table 5: Globalisation, income inequality and absolute poverty

Independent Variable	Dependent Variable: APOV							
	Model 4a				Model 3a			
	Mexico	Indonesia	Nigeria	Turkey	Mexico	Indonesia	Nigeria	Turkey
APOV (-1)	0.03**	-0.01**	-0.05**	-0.01**	0.03**	-0.02**	-0.05**	-0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
EGB	0.02	0.05**	-0.39**	-0.16**	-0.09**	0.08**	-0.30**	-0.14**
	(0.50)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
SGB	0.57**	0.28**	0.79**	0.02	0.28**	0.59**	0.53**	-0.02**
	(0.00)	(0.00)	(0.00)	(0.53)	(0.00)	(0.00)	(0.00)	(0.33)
PGB	-0.09	-0.59**	1.71**	0.47**	-0.08**	-1.57**	1.68**	0.43**
	(0.12)	(0.00)	(0.00)	(0.00)	(0.03)	(0.03)	(0.00)	(0.00)
INQ					1.45**	-0.42**	-4.65**	0.10**
					(0.00)	(0.00)	(0.00)	(0.01)
GDP	1.22**	0.70**	-1.09**	0.91**	0.77**	0.99**	-0.49**	0.91**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
HUMC	-0.37**	0.04	0.20**	-0.07**	0.10**	0.0004	0.22**	-0.07**
	(0.00)	(0.13)	(0.01)	(0.00)	(0.03)	(0.99)	(0.00)	(0.00)
POP	-0.13**	-0.36**	-3.14**	0.12**	-0.12**	-0.14**	-4.19**	0.14**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
INF	-0.99**	-1.00**	-1.06**	-1.02**	-1.01**	-0.99**	-1.04**	-1.02**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.00)	(0.00)
COR	-0.03*	-0.01**	-0.18**	0.002	-0.04**	-0.01**	0.35**	-0.002
	(0.09)	(0.01)	(0.00)	(0.65)	(0.00)	(0.00)	(0.00)	(0.61)
Inst. Rank	28	28	28	28	35	28	31	31
J-Stat.	8.78	8.99	8.35	8.50	9.19	7.98	8.97	8.99
(Prob.)	(0.96)	(0.96)	(0.97)	(0.97)	(0.95)	(0.87)	(0.88)	(0.88)
AR(2)	(0.20)	(0.18)	(0.89)	(0.10)	(0.51)	(0.20)	(0.50)	(0.23)
Obs.	35	26	36	36	35	36	36	36

Note: ** and * represent 5%and 10% levels of significance respectively.
Intercept values are not reported
P-values are reported in parentheses

Source: Author's Computation (2020)

Table 6: Globalisation, Income Inequality, and Multidimensional Poverty Index

Independent Variable	Dependent Variable: MPI							
	Model 4b				Model 3b			
	Mexico	Indonesia	Nigeria	Turkey	Mexico	Indonesia	Nigeria	Turkey
MPI (-1)	-0.37**	-0.32**	-0.21**	-0.55**	-0.39**	-0.33**	-0.22**	-0.63**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
EGB	1.60**	-1.43**	-0.58**	-7.12**	2.64**	-1.19**	-0.53**	-6.27**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
SGB	-5.53**	0.85**	-0.39**	-2.30**	-2.64**	1.77**	-0.64**	0.60**
	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.02)	(0.00)	(0.05)

PGB	0.49	4.05**	4.75**	13.71**	0.64**	-0.60	4.92**	9.47**
	(0.13)	(0.00)	(0.00)	(0.00)	(0.02)	(0.81)	(0.00)	(0.00)
INQ					-14.55**	-5.67**	-3.89**	14.12**
					(0.00)	(0.00)	(0.00)	(0.00)
GDP	8.17**	4.09**	-1.59**	4.63**	12.10**	5.94**	-1.18**	5.57**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
HUMC	-1.79**	-3.65**	1.19**	-3.43**	-6.30**	-2.97**	1.25**	-3.53**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
POP	-1.22**	-1.05**	-6.87**	-0.86*	-1.38**	-2.33**	-6.12**	-1.74**
	(0.00)	(0.00)	(0.00)	(0.06)	(0.00)	(0.00)	(0.00)	(0.00)
INF	-0.64**	-0.42**	-0.31**	-0.37**	-0.53**	-0.40**	-0.30**	-0.79**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
COR	-0.51**	-0.20**	-0.10**	-0.46**	-0.33**	-0.11**	0.03**	-0.35**
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.04)	(0.00)
Inst. Rank	35	28	35	28	36	29	36	35
J-Stat.	9.23	8.31	9.11	8.64	9.37	8.02	8.99	9.23
(Prob.)	(0.93)	(0.97)	(0.95)	(0.92)	(0.97)	(0.87)	(0.97)	(0.94)
AR(2)	(0.17)	(0.73)	(0.60)	(0.38)	(0.14)	(0.17)	(0.12)	(0.84)
Obs.	35	30	35	36	35	28	35	35

Note: ** and * represent 5% and 10% levels of significance respectively.
Intercept values are not reported
P-values are reported in parentheses

Source: Author's Computation (2020)

5. Conclusion

Income inequality and poverty are considered as some of the major challenges to development in MINT countries and many other developing countries. Consequently, the primary goal of the Sustainable Development Goals (SDGs) is to eradicate all forms of poverty by 2030 and this cannot be accomplished without a considerable level of income inequality. Earlier studies by Lee (2014), Im and McLaren (2015), Liyanaarachchi *et al.* (2016), Naceur and Zhang (2016), and Mahadevan *et al.* (2017) promote globalisation as a way to reduce both income inequality and poverty. The MINT countries, especially Indonesia and Nigeria, however still record high levels of income inequality and poverty regardless of their improved levels of globalisation. On this note, this study investigates the role of income inequality in the relationship between globalisation and poverty in Mexico, Indonesia, Nigeria and Turkey over the period 1980-2018. To this end, three different dimensions of globalisation—economic, social and political globalisation—and two alternative measures of poverty—absolute poverty and multidimensional poverty index—are used. The inferences are however based on the multidimensional index of poverty, since it affects all aspects of human life, and its findings are essentially similar to absolute poverty. The study uses the GMM approach to overcome potential endogeneity and simultaneity problems in the empirical analysis. The findings of the study are summarized below.

In Mexico, economic globalisation reduces the poverty level, social globalisation increases it, and the impact of political globalisation is insignificant. Income inequality however turns the impact of political globalisation into negative. Poverty level also increases as income inequality increases with the dimensions of globalisation in Mexico. In Indonesia, economic globalisation raises the level of poverty, while social and political globalisation cause a decline in poverty. When income inequality is considered, the effect of political globalisation becomes insignificant. With all the globalisation measures, income inequality in Indonesia aggravates poverty. In Nigeria, economic and social globalisation increase the level of poverty, while political globalisation reduces it before

and after income inequality is introduced. As expected, income inequality increases poverty with the dimensions of globalisation. A rise in the levels of economic and social globalisation increases the level of poverty in Turkey, while political globalisation reduces it prior to the addition of income inequality. Income inequality changes the effect of social globalisation on poverty from positive to negative. As against the outcome in the other MINT countries, income inequality reduces the level of poverty in Turkey with the dimensions of globalisation.

This study therefore concludes that income inequality plays a lesser role in the relationship between globalisation and poverty in all of the MINT countries, except in Nigeria, where income inequality does not influence the impact of any of the dimensions of globalisation on the poverty level. In addition, income inequality raises poverty rates in all the MINT nations, with the exception of Turkey, where poverty levels decline as income inequality rises. Based on these conclusions, the following recommendations are made. First, apart from the Mexican government, all governments in the other MINT countries should put in place policies that will allow them to benefit from economic globalisation in terms of poverty reduction. Second, the Indonesian and Turkish governments should find a way to improve the level of social globalisation to further experience a decline in the level of the poverty, while the Mexican and Nigerian governments should find a way to use social globalisation to their advantage. This could be by further increasing the spread of ideas and information. Third, all the MINT countries should strengthen their international treaties and the number of embassies in their countries as these could help to create investment and job opportunities, thereby leading to a reduction in poverty. Fourth, income inequality, which is found to be high in all the MINT countries, needs to be reduced, and this can be done by growing the minimum wage, creating more competitive employment opportunities for low-income workers, raising income tax, investing in education, pursuing redistribution policies and providing adequate infrastructure for those that are disadvantaged.

On this note, further research can examine the role of income inequality in the relationship between globalisation and poverty in other groups of countries such as BRICS, ECOWAS and the Next 11 countries. Also, other studies can employ overall globalisation index instead of the various dimensions of globalisation used in this study.

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Appendix

Appendix 1: The proportion of variance explained by the successive principal components (PC)

Eigenvalues: Sum = 4; Average =1					
Country	No	Eigenvalue	Cumulative Eigenvalue	Proportion of variance explained by each PC	Cumulative Proportion of variance explained
Mexico	1	1.85	1.85	0.46	0.46
	2	1.22	3.07	0.31	0.77
	3	0.78	3.85	0.19	0.96
	4	0.15	4.00	0.04	1.00
Indonesia	1	1.71	1.71	0.43	0.43
	2	1.35	3.06	0.34	0.77
	3	0.66	3.72	0.16	0.93
	4	0.28	4.00	0.07	1.00
Nigeria	1	1.52	1.52	0.38	0.38
	2	1.10	2.62	0.27	0.65
	3	0.91	3.53	0.23	0.88
	4	0.47	4.00	0.12	1.00
Turkey	1	2.26	2.26	0.56	0.56
	2	0.99	3.25	0.25	0.81
	3	0.58	3.83	0.15	0.96
	4	0.17	4.00	0.04	1.00

Source: Author's Computation (2020)